

An aerial photograph of a city skyline at sunset. The sun is low on the horizon, casting a golden glow over the buildings and the water. In the foreground, a large stadium with a white, curved roof is under construction, surrounded by roads and other buildings. The sky is filled with dramatic, dark clouds, with the sun breaking through on the right side. The overall mood is one of achievement and resilience.

FIVE YEAR REVIEW - A CELEBRATION

MAY 2022

THE RESILIENCE SHIFT

SECTION 1

INTRODUCTION

Foreword

The Resilience Shift was established to accelerate the theory and practice of resilience, hosted by Arup, and supported by a five-year grant from Lloyd's Register Foundation. The timing was right, as shocks kept coming and the first five years of The Resilience Shift have reflected a learning journey for the initiative. It has needed to be agile, responsive and resilient to the many challenges.

Over this period, there has been no halt in resilience-related events, whether large and newsworthy - flooding in Germany, wildfires in California and Australia, grid failures in Texas - or the ongoing creep of everyday shocks and stresses, such as the continued growth of water-stressed cities across the world. Such crises and disasters, whatever their cause, demonstrate the critical need to build ongoing resilience of infrastructure systems and services.

When the Covid pandemic took hold in early 2020, search traffic for the word 'resilience' rose to a new peak on Google, prompted by the impact of the virus and discussion of our need to be more resilient, at all levels of society.

As supply chains and essential services struggled, The

Resilience Shift stepped up to explore real-time learning from the crisis to help it build and share more understanding of what resilience is and why it matters.

As climate impacts further intensify, and huge shifts occur in our social, technical, economic and political environments, increasing uncertainties highlight the complex global interdependencies across our world, visible as cascading failures of infrastructure, global impacts on supply chains, or cross-border water and energy challenges.

We can be optimistic that resilience was in 2021 a key part of COP26 discussions, alongside the need for urgent decarbonisation. It is very likely that they will take centre stage at the future COPs.

We are thankful to our founders, Lloyd's Register Foundation and Arup, that The Resilience Shift has, in this five years, raised the overall level of knowledge and capability needed to develop resilient infrastructure systems.

We hope that this has contributed to the rising tide of knowledge and practice, and has set the foundational work for the global resilience shift to come.

We invite you to find out more about this journey.



About

THE RESILIENCE SHIFT

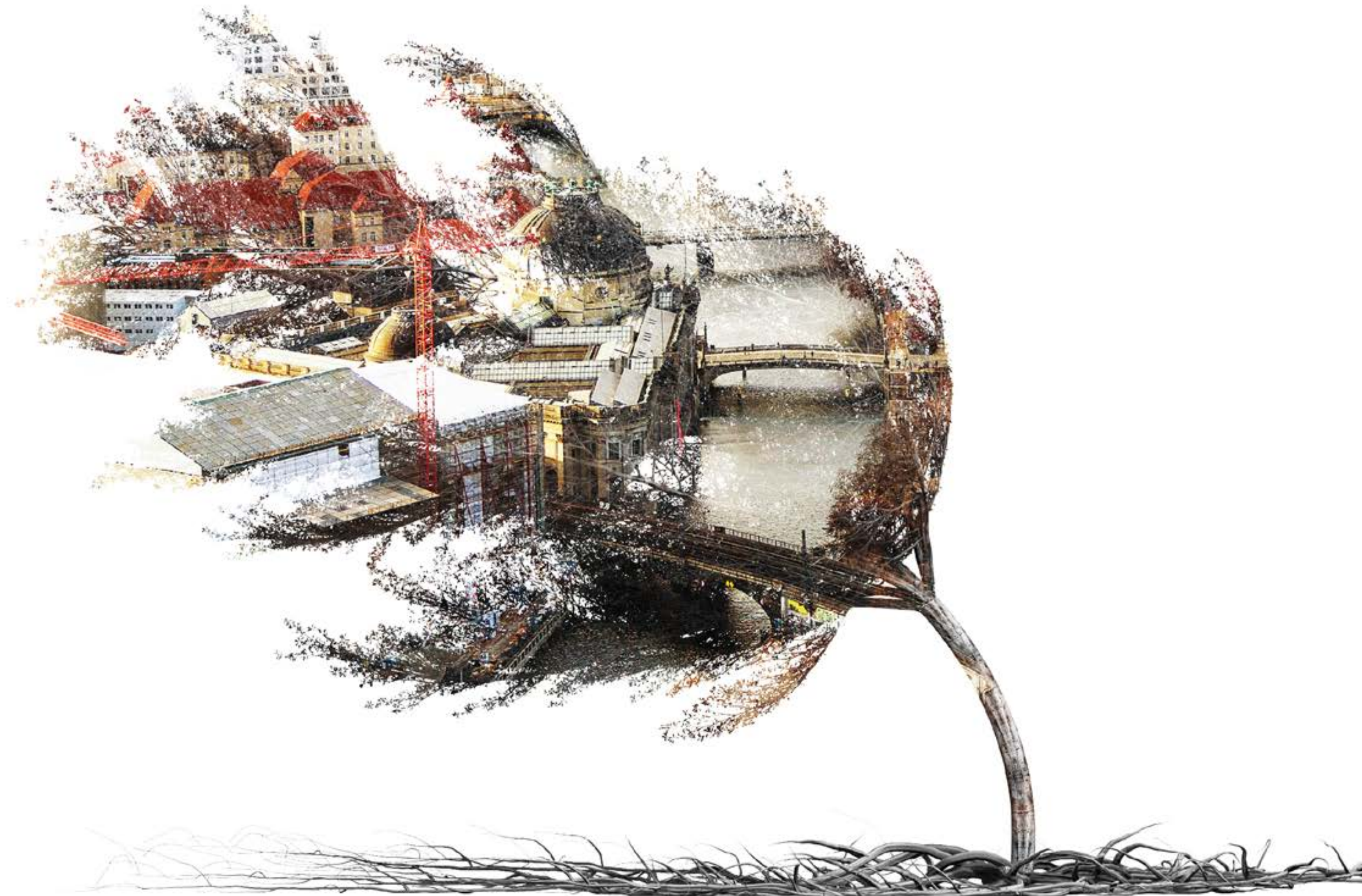
The Resilience Shift is a global hub for resilience, building awareness about resilience thinking and practice through convening, capacity building and thought leadership. With its partners, it engages leaders and decision-makers to influence thinking, shape practice and share learning across government and the private sector to deliver a long-term shift in resilience that secures a thriving future.

DEFINING RESILIENCE

Resilience is the ability to withstand, adapt and/or transform in order to recover positively from shocks and stresses. In the context of infrastructure systems, this applies not only to the physical assets, but also to the natural and human components.

CLIMATE RESILIENCE

The Resilience Shift's work recognises climate resilience is the biggest challenge in our field and that climate impacts every part of our social, technical and natural systems. But the initiative has not restricted its focus to climate, reflecting that the opportunity to build resilience to a broader range of known and unknown shocks and stresses will unlock the greatest value in the long term. In the context of climate change, its work has sought to deliver mitigation and adaptation hand-in-hand.



SECTION 2

WAYS OF WORKING

The journey of a grant

The Resilience Shift began as a research report on resilience engineering published by Lloyd's Register Foundation in 2015. From this, came the idea to create a dedicated catalyst initiative to take forward and accelerate this work, and a five-year grant between the two founding organisations, Arup and the Foundation, was agreed. Arup was the host and technical lead for this initiative, providing strategic direction, technical rigour and programme management. From the outset, there was a shared aspiration to deliver more than just a five year programme, so a new independent brand and identity was created. Arup would deliver a programme of activities funded by the £10m grant and focus on becoming the go to source for high quality and influential advice on all matters related to the resilience of infrastructure systems.

"Lloyd's Register Foundation is very proud to have created The Resilience Shift with Arup and funded its programme over the past five years. I am delighted to witness its impact upon infrastructure, engineering and climate change adaptation."

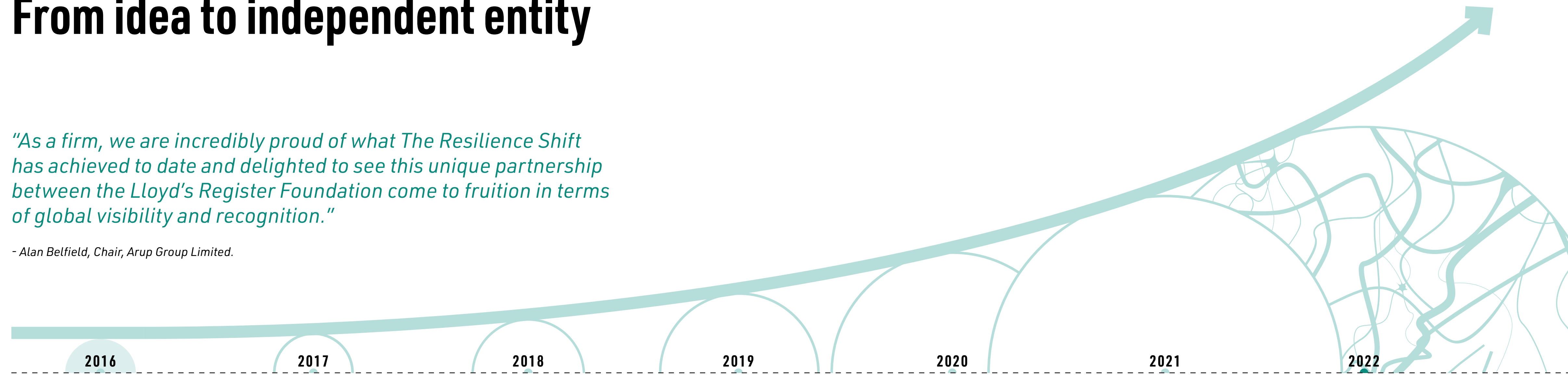
- Richard Clegg, CEO, Lloyd's Register Foundation



From idea to independent entity

“As a firm, we are incredibly proud of what The Resilience Shift has achieved to date and delighted to see this unique partnership between the Lloyd’s Register Foundation come to fruition in terms of global visibility and recognition.”

- Alan Belfield, Chair, Arup Group Limited.



IDEATION AND CREATION

LRF Foresight Report in Resilience Engineering published in 2015. Establishment of the Joint Programme for Resilience Engineering. Board set up with Arup and LRF representation and a neutral chair. Third party technical review and 'critical friend' provided by Cambridge University's Department of Engineering.

AGENDA-SETTING

Team established and appointment of Nancy Kete as Executive Director. Theory of change developed, grants awarded for baselining and scoping research, brand identity registered. Agenda setting research begins. Initial presence set up on web and social media.

LEARNING BY DOING

Experimenting before making bigger commitments with many small research and project grants awarded in sectors and related actions delivered in workstreams including water, tools and approaches. Ambassadors appointed, first major events and workshops hosted, comms strategy and activities initiated with expansion of website and social media channels, creation of editorial and thought leadership. Jo da Silva becomes acting Executive Director, Dr Juliet Mian appointed Technical Director.

OUTPUTS AND INSIGHTS

Scaling up outputs and insights including academic journals, digital tools, media visibility, new partnerships and support of other initiatives such as EARTH EX and Resilience First. New workstreams on policy and best practice. Fewer grants and more focus but growing audiences, a busy year for events, increasing collaboration and visibility, and delivering a growing community of interest and credible knowledge base. A point to refocus and a mid-term review, collating impact data.

BUILDING PARTNERSHIPS

The programme accelerated and amplified, aiming to be more agile and more entrepreneurial, seizing opportunities and developing new strategic partnerships including Resilience First and the ICSI coalition, AGWA, WRI, and Resilient Cities Network, among others. Seth Schultz joined as Executive Director, and the initiative built on/out and started new activities, sparked by Covid and changing agendas, and shifting to learning from the crisis in real time.

GLOBAL AMBITION

Aligning with the global climate agenda and building further scale, The Resilience Shift is at the heart of the Race to Resilience, seconding staff to the Climate Champions and providing managing partner and communications leadership to the COP Resilience Hub. This is the culmination of a year of high-profile event participation, and collaborations with the IPCC, Wood and Resilient Cities Catalyst in addition to ongoing major initiatives. The Resilience Shift is the subject of a highly commended case study in the MCA Awards for Arup's thought leadership. Founding partners agree the need for continuation of this important work.

SPINNING OUT INTO BIGGER THINGS

The team formally closes out the five-year grant and looks to the future. Institutions granted by The Resilience Shift or contributed to are gaining momentum, including ICSI, Resilience First and the Navigating a Changing Climate Coalition. At the same time, with partner support, The Resilience Shift spins out of Arup to become a separate entity and part of a new parent consortium called Resilience Rising. Amanda Eichel is leading the Resilience Shift programme into its next phase.



URBANISATION

By 2050 68% of the world's population will live in cities. That represents 1.5 million people moving into cities every week over the coming 30 years.

DIGITAL TRANSFORMATION

175ZB The global datasphere is predicted to reach 175 zettabytes by 2025 (One zettabyte is a trillion gigabytes).

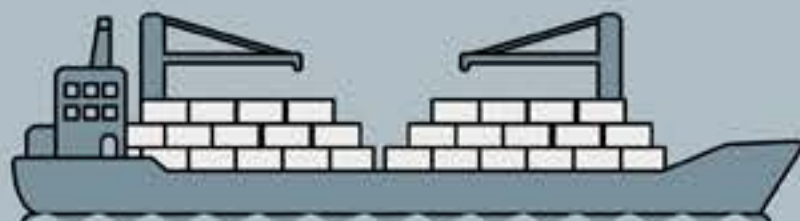


WORLD IS FULL OF DISRUPTIVE FORCES



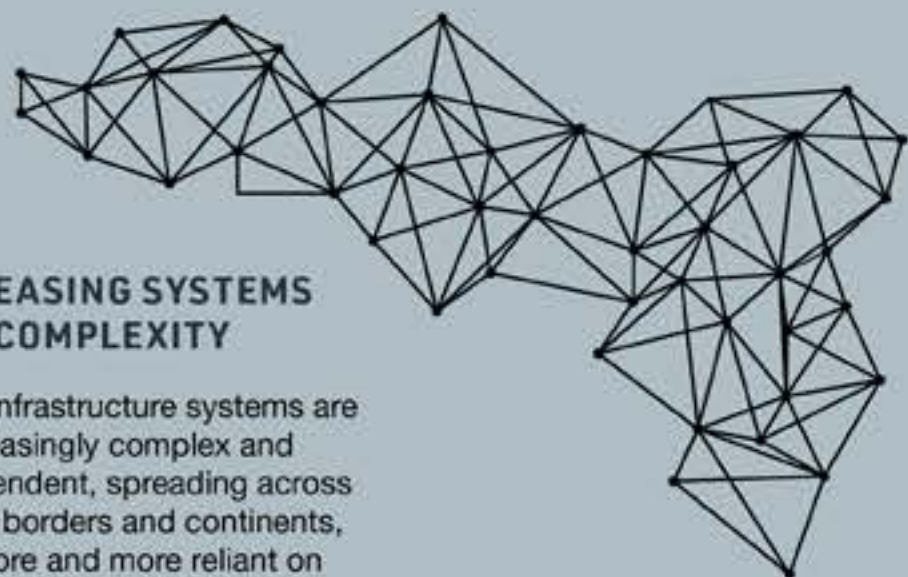
CLIMATE CHANGE

Some 470 million people in 45 cities are expected to face extremely high water stress by 2030, up from 255 million today.



GLOBALISATION

An equivalent to 45% of the sea freight capacity between Europe and Asia and the transpacific region was cancelled within a few weeks of the Covid-19 crisis.



INCREASING SYSTEMS COMPLEXITY

Existing infrastructure systems are increasingly complex and interdependent, spreading across national borders and continents, and more and more reliant on sophisticated digital technology.

THE RESILIENCE SHIFT

SECURING OUR FUTURE THROUGH RESILIENT INFRASTRUCTURE

INSPIRING AND EMPOWERING PEOPLE

Government and policy

Business and private sector

Thought leadership and knowledge creators



AND WE ARE CREATING A MOVEMENT TO BRIDGE THE INFRASTRUCTURE GAP

CAPACITY BUILDING

OUTPUTS

Thought leadership publications

Coalitions and partnerships

Guidance, standards and tools

CONVENING

OUTPUTS

Case studies and value stories

Events

Education and capacity building

THINK TANK

HOW WE WORK

WORKING ACROSS THE WHOLE VALUE CHAIN

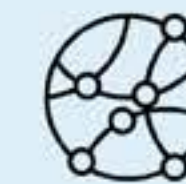
SHARING LEARNING

TRANSFERRING KNOWLEDGE BETWEEN SECTORS

INFLUENCING POLICY

DEMONSTRATING THE VALUE OF RESILIENCE

SHAPING PRACTICE

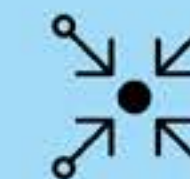


WHOLE SYSTEMS THINKING

Looking beyond the boundaries of any system and considering interconnectivity and interdependencies.



TO CREATE A SAFE, RESILIENT AND SUSTAINABLE FUTURE FOR ALL



OVERCOMING FRAGMENTED GOVERNANCE

Encouraging collaboration across different stakeholders in a system and moving away from siloed decision making.



MANAGING DEEP UNCERTAINTY

Not only mitigating known risks, but being able to respond to, and recover from, those risks we cannot predict or avoid in our uncertain and complex world.



FOCUSING ON OUTCOME-LED APPROACHES

Thinking about what the system does, not what it is will create the shift in practice that is needed for better infrastructure decisions.



ADOPTING TECHNOLOGY WHICH ENHANCES RESILIENCE

When using digital technology in infrastructure systems, it is essential to consider its broadest possible impacts to ensure that new vulnerabilities are not created and resilience compromised.

Learning by doing

The Resilience Shift’s work to date has captured what matters most, and what works best, to create the resilience shift we want to see, so that our infrastructure is resilient in the face of an uncertain future. From initial achievements in creating a community of interest and a credible knowledge base the initiative has built new momentum and influence, leveraging partnerships, delivering impactful change strategies, and aligning with the global climate agenda. The foundational elements are in place, in terms of knowledge, reputation, people, partners, networks, to galvanise further global action on resilience.

From the outset, the vision was global, systemic and focused on all the communities involved in the critical infrastructure value chain – who plan, finance, design, deliver and depend on it. The team learned by doing and ‘leaned in’ to the complexity of the challenge with the aim to remain neutral, to provide leadership without ego, and create a rising tide of resilience to benefit everyone.

10 insights of matters for resilience, drawn from our work to date. Although they seem quite simple at first glance, they represent a commonality of views and experience from different perspectives across the infrastructure value chain.



WHAT HAVE WE LEARNED ABOUT BUILDING RESILIENCE?

Communicating what matters for resilience is equal in importance to technical rigour. While the challenges are complex, we must seek a simple and clear message.

Significant investment is being put into infrastructure, and there is an urgent need to embed resilience into this investment now to deliver the infrastructure we need in the future.

The ability to systemically and rapidly form and support coalitions, networks and partnerships are all essential to create a resilience shift. No-one can solve this challenge alone, and fragmentation is the enemy of resilience.

The business community is at the forefront of tackling the most pressing issues of our time and resilience is an important driver for business continuity and long-term success.

Strong, multi-sectoral leadership and vision is essential to building a more resilient future.

Measuring impact is difficult – resilience is a complex and multi-faceted issue – but essential.

WHAT HAVE WE LEARNED ABOUT LEADING CHANGE?

Our success has been in our ability to adapt and flex, whilst never losing sight of our overall outcomes. We have embraced the complexity of our challenge.

We need to create opportunities for direct access to target audiences.

Our approach works - starting small, testing the value proposition, then growing.

The importance of creating and co-creating partnerships and collaborations.

Leadership is essential for resilience, and leaders themselves need to be resilient.

The importance of technical rigour and credibility.

For our work, the balance between 'facilitating' and 'doing' was essential to thought leadership.

The importance of team and community, creating an inspiring place to work.

We need to document lessons learned, particularly new ones, for example, reflectiveness as a resilient quality.

SECTION 3

ACTIVITIES AND OUTPUTS

Creating a shift in thinking



ENGINEERING A SAFER FUTURE

Reflecting on the unique opportunity for us all to consider the transformations we'd like to see as we emerge from Covid.



SHIFTING CLIMATE LEADERSHIP

Dialogues with climate leaders as they navigate leading through uncertainty in the face of overwhelming crisis.



SUMMARY FOR URBAN POLICYMAKERS

Distilling the latest Intergovernmental Panel on Climate Change (IPCC) assessments to inform action at the city scale.



COP26 COPPUCCINOS

A daily podcast during COP26 in discussion with a resilience pioneer from around the world as they share their unique perspective.



ROUNDTABLE DEEP DIVES

These forums for cross-sector learning engaged participants to reflect and respond to specific resilience challenges.



10 ESSENTIAL INSIGHTS

From analysis of our learning, what really matters in creating a shift in practice towards more resilient infrastructure.



USING VALUE CHAINS

Our value chain approach to resilience of critical infrastructure helps to break down barriers to resilience.



POLICY RESEARCH

How different mixes of policy instruments create the environment for enhanced critical infrastructure resilience.



GREENING THE GLOBAL RECOVERY

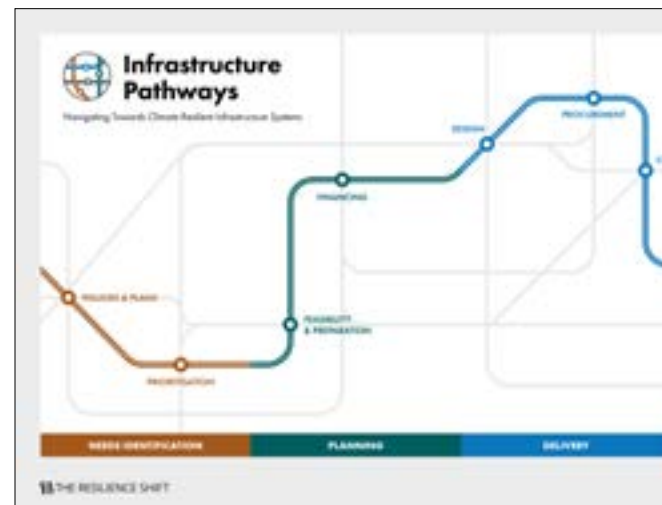
Seven key areas of investment for a green, resilient and inclusive recovery in the aftermath of the global health pandemic.



GOVERNANCE OF INFRASTRUCTURE

Case studies and engagement with infrastructure decisionmakers highlight the role that good governance can play in embedding resilience.

Creating a shift in practice



INFRASTRUCTURE PATHWAYS

A resource for practitioners in search of clear, easy-to-navigate guidance on climate-resilient infrastructure.



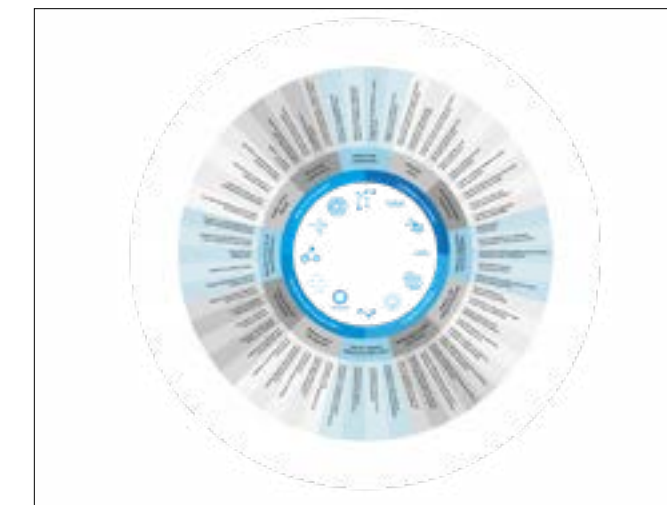
TOOLS AND APPROACHES

Research to identify and assess the tools and approaches that contribute to enhancing the resilience of critical infrastructure.



ICE BRUNEL LECTURES

Seth Schultz led a global discussion on '21st Century Leadership is Partnership: How a Coalition of the World's Engineers Can Change the World'.



CITY WATER RESILIENCE APPROACH

A step-by-step methodology to help cities worldwide to collaboratively build resilience to local water challenges.



RESILIENCE SELF-ASSESSMENT TOOL FOR ORGANISATIONS

A means for businesses to measure and promote their organisation's resilience.



RESILIENCE4PORTS

A multi-stakeholder, whole-systems approach for ports to become low carbon resilient gateways to growth.



GLOBAL FOOD SUPPLY CHAINS

Understanding the gaps and opportunities in the food logistics sector to meeting current and future infrastructure resilience challenges.



RESILIENCE HUB

A physical and virtual Hub at COP26 and the home of Race to Resilience.



RESILIENCE PRIMERS

Capturing resilience best practice to understand what can be done differently - potable water, ports, roads, rail, electricity infrastructure.



FOUNDATION OF ICSI

Mobilising an engineering-led coalition to make resilience and sustainability part of every decision in the infrastructure lifecycle.



STRATEGIC PARTNERSHIP WITH RESILIENCE FIRST

Combining our forces is a route to driving resilience best practice at scale globally, in a world facing deep uncertainties and complex interdependencies.



RESILIENCE REALIZED

A collaboration to showcase and reward inspiring examples of resilient infrastructure and the decisions underpinning them.

Creating a shift in learning



CAPE TOWN: DAY ZERO

Film-based learning modules distilling lessons learned in the response to the 2017-2018 water crisis in Cape Town.



LEARNING FROM CHRISTCHURCH

Community stakeholders and decision-makers explore their experience of disaster recovery to uncover lessons for infrastructure management.



CALIFORNIA LEARNING 1

Paradise Parks and Recreation District is working with nature and with communities to test new ways to live with wildfire and build resilience.



CALIFORNIA LEARNING 2

Ventura County is prioritising communication, information, and relationship building, to better serve hard-to-reach communities.



CALIFORNIA LEARNING 3

Oceanside is piloting a new approach to save its beaches from rising sea levels and erosion, after years of traditional coastal management.



CASE STUDY - ICRG INDIA

What good practice looks like for resilient infrastructure, cleverly combining technology with traditional techniques in rural communities and across 900 assets.



CASE STUDY - WASHINGTON DC

Why DC Water put green infrastructure at the heart of one of the U.S. Capital's largest infrastructure projects to upgrade the sewer system.



CASE STUDY - ITAIPÚ DAM

How natural ecosystems support one of the world's largest hydroelectric dams helping to regenerate its surroundings and increase its resilience to climate change.



TECH4RESILIENCE

Technology can enhance infrastructure resilience but can also create new unintended vulnerabilities. Showcasing blockchain, drones, and fresh water technologies.



STUDYING RESILIENCE

Resilience-related infrastructure education specialisations, departments and courses throughout the globe.



RESILIENCE ENGINEERED

Three films to demystify resilience and prompt discussion of what it is and why it matters, to build the case for change.



RESILIENT LEADERSHIP

Real-time learning from the Covid crisis captured over 16 weeks of reflective interviews with senior leaders.

SECTION 4

VISIBILITY

Building awareness

The Resilience Shift needed to quickly establish a visible presence in front of its key audience groups, and to show up in the right discussions with the right people on board. Creation of a distinct brand and communications channels was delivered as part of a wider strategy to work with pioneering organisations and individuals to initiate and collaborate on workstreams and projects. Growing this core community of interest was also supported with a drumbeat of storytelling.

Workstreams and products produced key milestones and insights to talk about while a sustained programme of events engaged with audiences, involved multiple stakeholders, and communicated perspectives on resilience theory and practice. As the ambitions grew, these events, and corresponding social media presence of The Resilience Shift, became more international, more significant and began reaching a wider audience linked to the global climate agenda. Despite no dedicated media outreach, The Resilience Shift garnered wide interest across many media and partner channels used by its different target audience groups.

OVER 310 EVENTS

Helped us to build brand awareness while actively engaging with our audiences



OVER 60,000 PEOPLE REACHED

By brand presence at physical and virtual events

COUNTABLE ATTENDEES



UNCOUNTABLE

12,000+

People (where countable) have attended an event or workshop hosted or co-hosted by The Resilience Shift, building awareness of brand and work.

~ 10,000

We estimate at least double that from other events where physical and virtual attendees could not be quantified or numbers obtained.

Big co-branded events also provided a big opportunity for visibility:

11,000+

Individuals and 1500 organisations took part in the **EARTH EX 2019** global resilience exercise that we co-branded.

10,000 PHYSICAL + **23,000** VIRTUAL

Visitors were welcomed at **The COP Resilience Hub**, that we also co-branded as a managing partner during **COP26**, and many more views/follows in the weeks before and after.

STEADY GROWTH OF ALL WEB AND SOCIAL MEDIA CHANNELS OVER THE FIVE YEARS

104,000+

website users since launch



3,500

Visits each month to the website



6,400+

Followers across all social channels



16,700 Google search results for "Resilience Shift"



2,080

Google search results for "resilienceshift.org"



2,654

Twitter followers

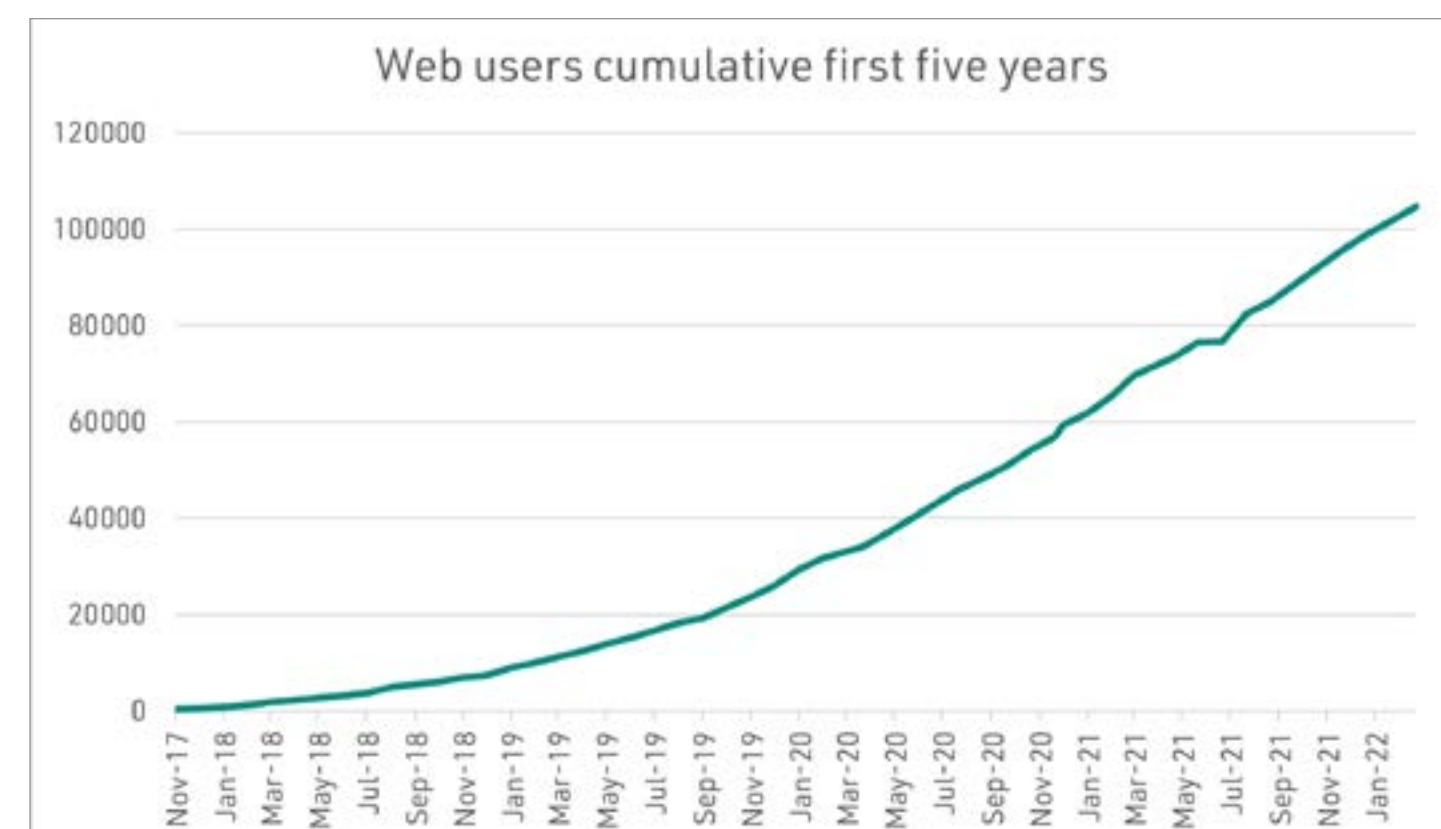
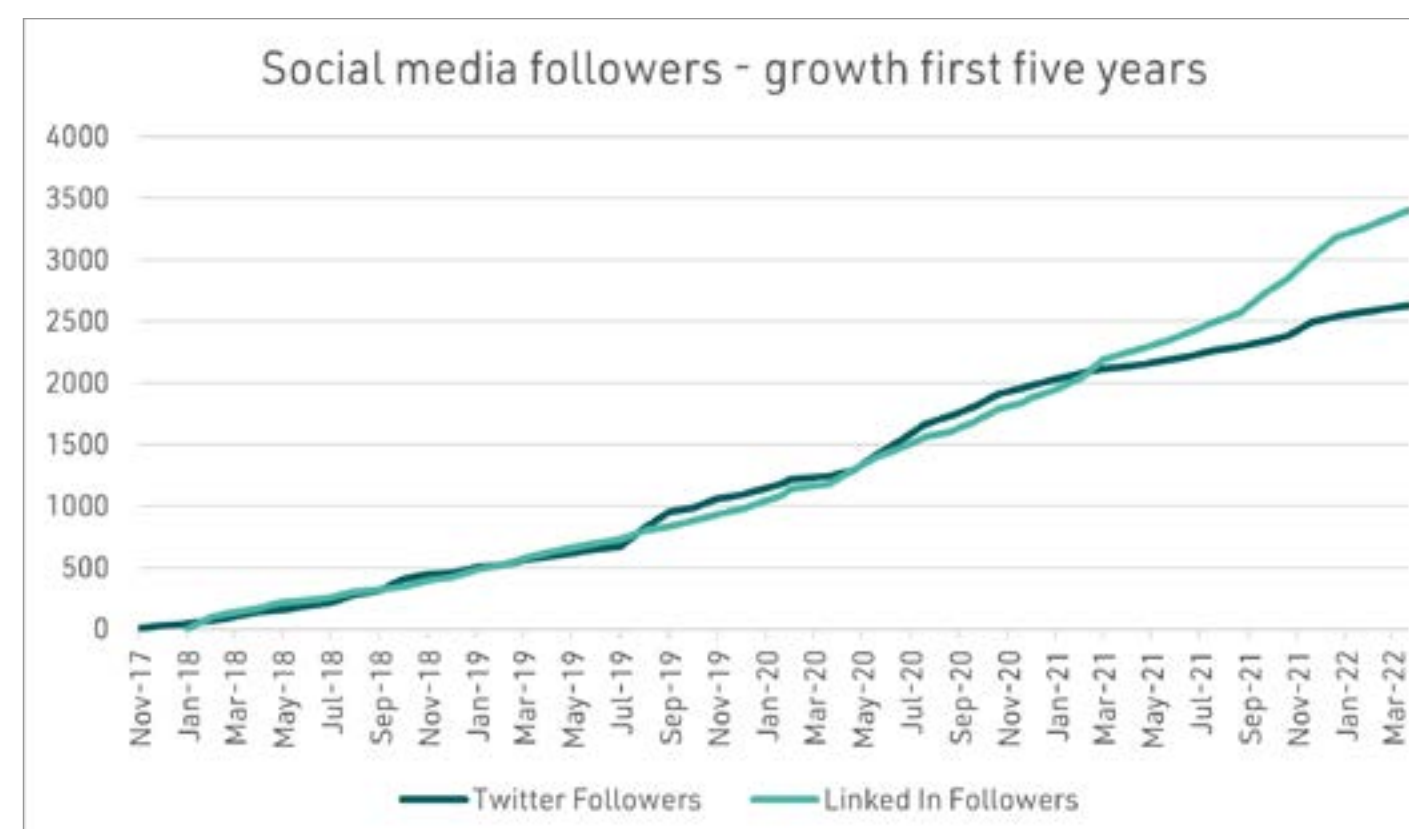
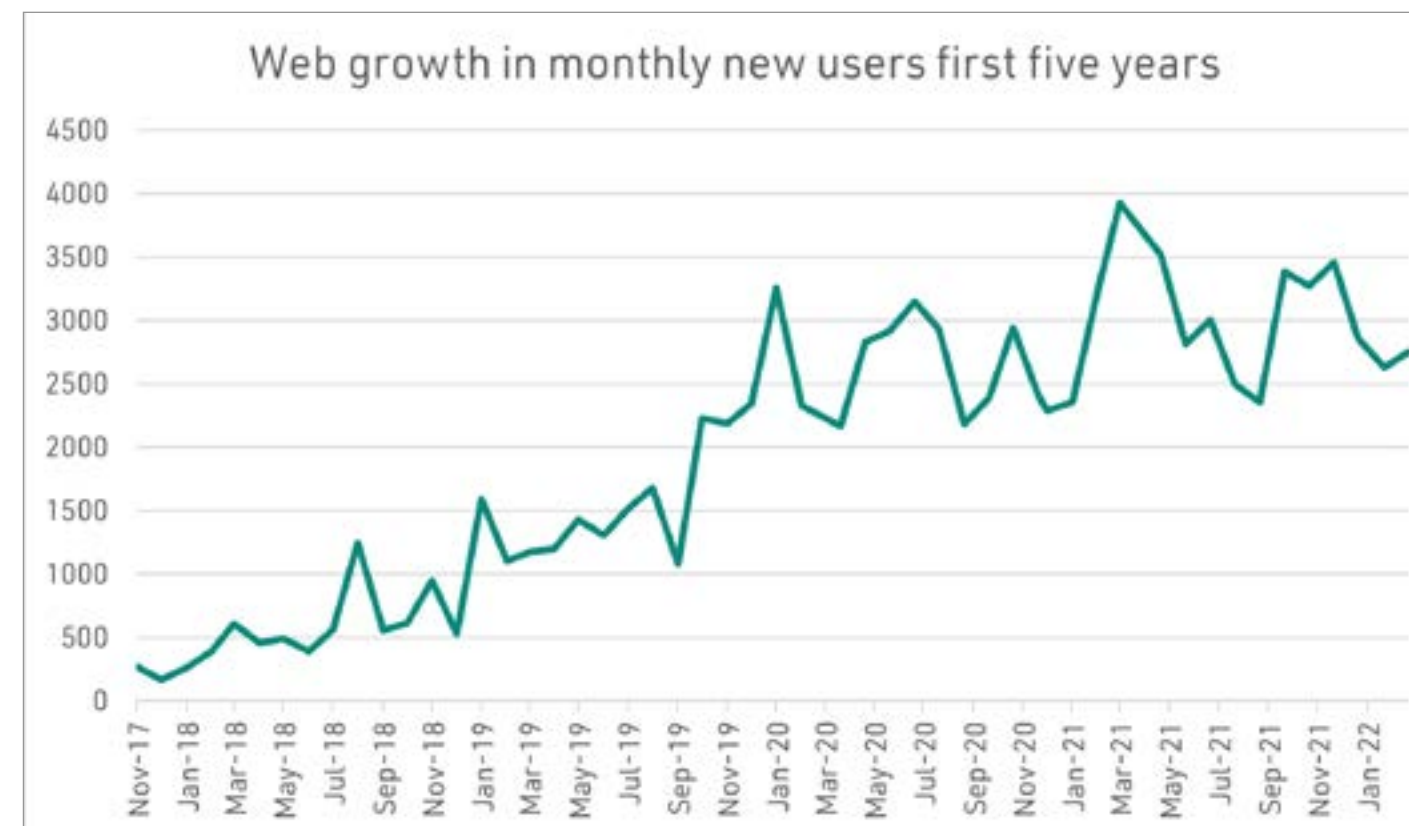
3,891 tweets posted reaching 1,539,223 impressions



3,402

LinkedIn followers

460,353 impressions of posts on LinkedIn



SEIZING THE MOMENT

The growth journey of The Resilience Shift reflects a rising tide of interest in the topic of resilience and adaptation as the shocks keep coming. We note that more courses are available to study the topic. Searches on Google for the term 'resilience' have increased slowly since 2015 peaking in mid-March 2020 at the first Covid lockdown. From the IPCC report published in August 2021, the terms 'resilience' and 'adaptation' started to align, and were often used together during COP26. Both terms are still less searched for than the term 'sustainability'. (source: Google Trends).

CASE STUDY

COP Resilience Hub

The Resilience Shift was appointed managing partner of this initiative to create a focal point for resilience and adaptation at COP, along with the Global Resilience Partnership and the Adrienne Arsht Rockefeller Foundation Resilience Center hosted by the Atlantic Council. We collectively wanted to raise the profile of resilience and adaptation, and create a common language across many competing and parallel interests. This unique and inclusive collaboration brought together many diverse and sometimes fragmented sectors and initiatives under one roof, and under the ambition of the Race to Resilience.

With 154 events across 10 themes and additional cross-cutting themes, the Resilience Hub was delivered from a virtual platform and six geographic locations including Glasgow – Africa, South Asia, Southeast and East Asia, Pacific, and Latin America. 80 partners and 176 participating organisations were involved, and there were 21 major sponsors of the Hub. The Resilience Shift took a lead on the communications of the Hub working in partnership with the leads on other aspects of the event, such as programming, fundraising, stand design, and stakeholder management.

The visibility across web and social media, and in the eyes of stakeholders, was key to the success of the Hub and was an

opportunity for Resilience Shift to grow its footprint globally and build brand awareness.

Over 10,000 physical visitors attended the Cambridge7-designed stand and 7,107 individuals from 182 countries registered on the event platform Giggabox for access to the virtual programme. During COP there were 23k users from 185 countries visiting the website, and of these, over 9k followed the live stream. 75 news and feature stories were published on the website along with film showcases from Waterbear, BBC MediaAction, BBC Life at 50°C, and specially produced content including a daily Windows on Resilience video round up, and Daily COPpuccino filmed interviews with resilience pioneers.

“We’re delighted that the Resilience Hub has been a real success here and we hope that it goes from strength to strength to draw more attention and direct more resources to resilience solutions”.

- Nigel Topping, UK High Level Champion for Climate Action COP26

LINKS

WEBSITE

A physical and virtual Hub at COP26 and the home of Race to Resilience.

REPORT

COP26 Resilience Hub Synthesis Report - Key messages and future directions.

RECORDINGS EVENTS

Recordings of all events from the COP Resilience Hub by theme and date.

COPPUCINO

Resilience pioneers share their unique perspectives in these interviews.

ADDITIONAL STATS

In March 2022, the Hub still has 1,151 followers on LinkedIn since launch in Aug 2021 and 738 followers on Twitter with website usage continuing to grow as users access the synthesis report and links to event recordings.

Now cumulative (still growing) 28k users of website since launch and 64k page views, over 9k watched original live stream on website.

MANAGING PARTNERS:



GLOBAL RESILIENCE PARTNERSHIP



Atlantic Council



Adrienne Arsht-Rockefeller Foundation Resilience Center

THE RESILIENCE SHIFT

SECTION 5

CREDIBILITY

Building a credible knowledge base

It was important to the founding partners that The Resilience Shift was seen as a credible organisation that could create a body of knowledge for the community of interest to use, and that would help to shift theory and practice, progressing the established work. Arup, as lead technical strategic partner, brought technical leadership and its ambition to 'shape a better world'. Its global network provided access to an expert community to input to key projects, and a beneficial exchange of research and innovation adding value. 148 technical experts from Arup were involved across different projects and initiatives.

The initiative called on experts from the Department of Engineering at the University of Cambridge to provide third party technical advisory and the role of 'critical friend' for the initial years of operation. They provided independent technical advice that informed the strategic direction of the programme and reviewed the quality of approach and outputs.

80+ ACADEMIC ORGANISATIONS

And many pioneering individuals were engaged by us, to bring current and expert thinking into its work.

75+ KNOWLEDGE PRODUCTS AND COLLABORATIONS

Have been published in collaboration with partners including journals, research reports, event synthesis, methodology, white papers, and digital resources.

8,400 DOWNLOADS

Of our publications to date, and nearly 7,000 users visiting the main publications page.

34,000+ views of 32 shared presentation slide packs

5,600+

Cumulative visits to individual Tools pages in the Resilience Toolbox and slightly more to the main Toolbox page.

4,000+ PODCAST PLAYS

of 30 podcasts (SoundCloud only, also on Spotify and other platforms)

400+ BLOGS

3,800+ TWEETS

380+ LINKEDIN POSTS

Were published in first five years including news and announcements, thought leadership, guest interviews and profiles, project news, and event reports.

17,000+ PLAYS OF 92 VIDEOS

On youtube including explainers, highlight videos, COPpuccino interviews, and more.

4,600+ EXPLAINER VIDEO VIEWS

Plus 7,200 views of interactive brochure page, plus 440 downloads/views of full brochure publication.



2,700+

BACKLINKS* FROM

474+

DOMAINS

* Backlinks where organisations have linked to The Resilience Shift website as a reference (source neilpatel.com)

50+ CITATIONS

For "resilienceshift.org" on Google scholar

COMPLEX IDEAS, SIMPLY SHARED:

We have prioritised creating accessible and credible content for audiences outside of academia. For this reason, we have used innovative formats including video, podcasts, digital resources, and interactive publications, and focused less therefore on publishing formal academic literature.

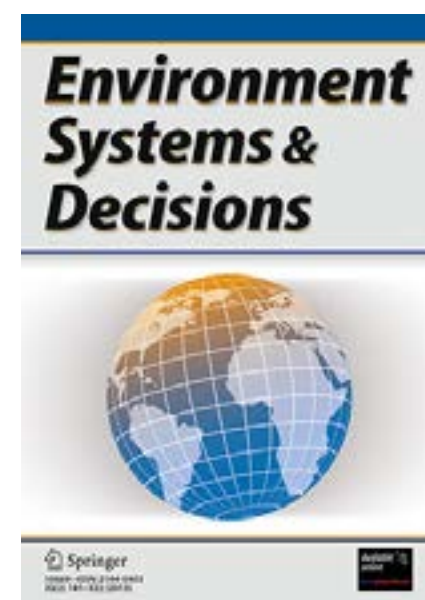
2 SPECIAL ISSUE JOURNAL COLLECTIONS

With multiple papers in special issues of Environment Systems and Decisions Journal, and in Water Security Journal, plus individually published papers.



HIGHLY COMMENDED

The Resilience Shift was the subject of a highly commended award for best use of thought leadership in the Management Consulting Association's prestigious Awards.



ON THE SYLLABUS

The Resilience Engineered film series is being used by academics and organisations to build awareness of resilience.

CASE STUDIES BROUGHT TO LIFE

Our publications include a wide range of case studies embedding throughout that show what good looks like for resilience.



ITAIPÚ DAM, BRAZIL



WASHINGTON DC, USA



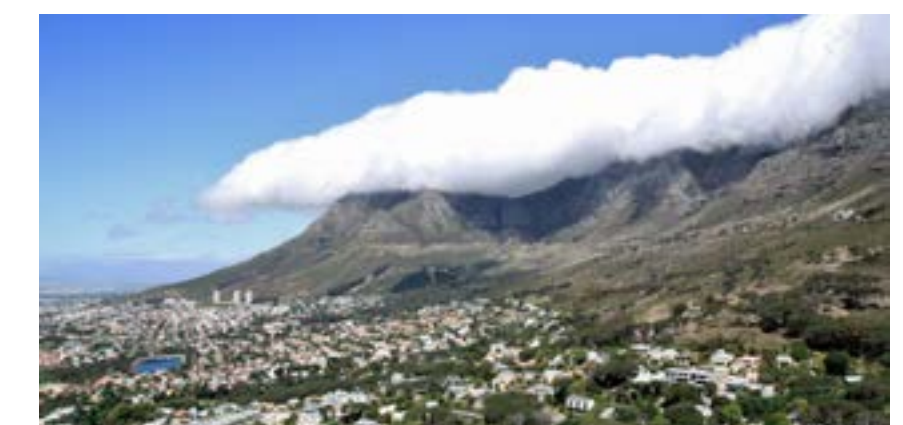
CALIFORNIA, USA



CHRISTCHURCH, NEW ZAELAND



INDIA



CAPE TOWN, SOUTH AFRICA

CASE STUDY

Infrastructure Pathways

Infrastructure Pathways has been created with leading thinkers and practitioners across the value chain for infrastructure resilience. It is the result of much preliminary work to understand and articulate the need for guidance, tools and standards for resilience, working with ICSI, GCA, CDRI, and others. Infrastructure Pathways is a multi-stakeholder project managed and led by The Resilience Shift and to be delivered through the ICSI platform. The project is bringing together existing guidance to provide a line of sight across the entire project lifecycle to embed climate resilience and deliver safe, sustainable and resilient infrastructure for all. It is intended to become the definitive platform for guidance and standards for climate resilient infrastructure, creating a golden thread across the full lifecycle. Launched at COP26 in a beta version, the resources has over 1100 users from across the world.

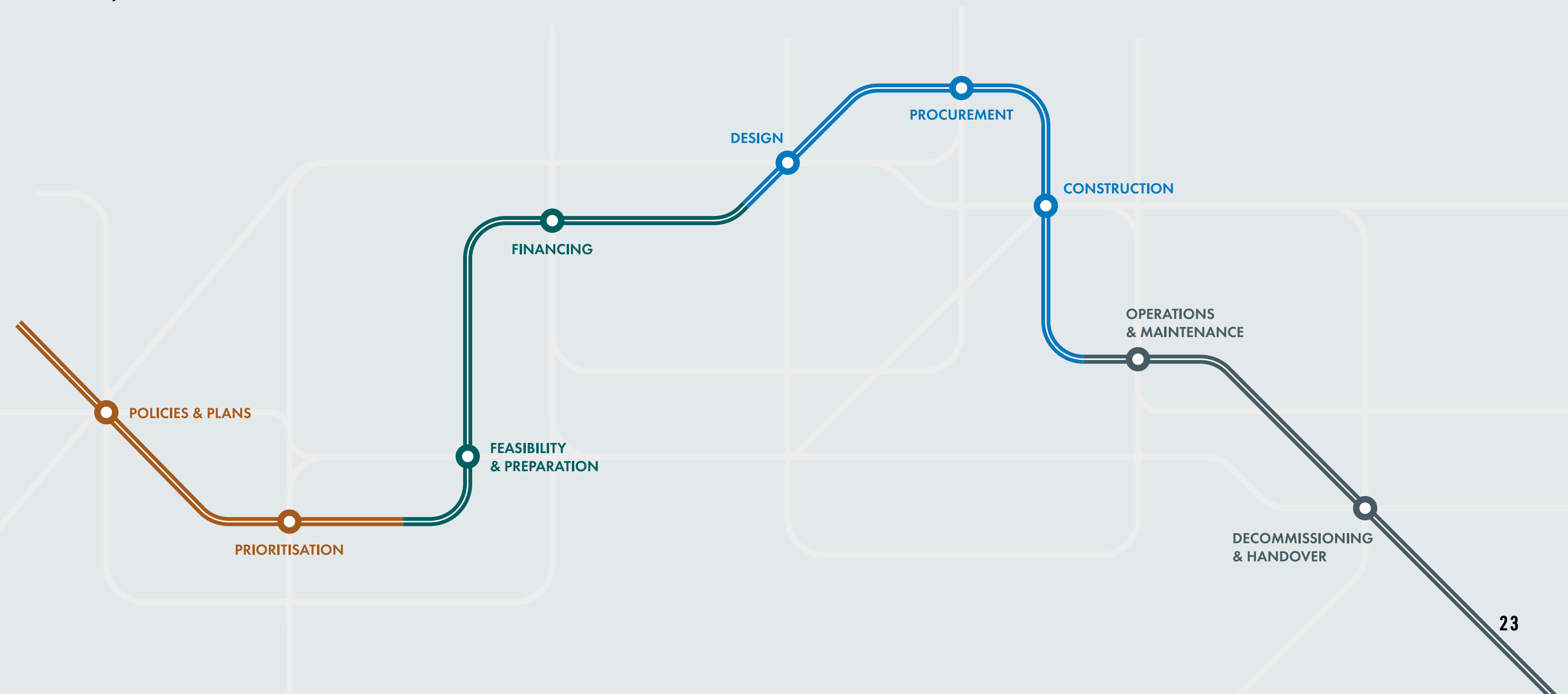
Resources such as Infrastructure Pathways have the potential to change thinking and practice across the value chain.

“The Resilience Shift serves an important role in building awareness around the importance of resilience and providing practical methodologies and examples. Your thought leadership publications have been influential in taking forwards practical thinking about resilience promoting uptake in practice.”

- Jim W Hall FREng, FICE, Professor of Climate and Environmental Risks, University of Oxford

“The gap that the Resilience Shift is filling in providing a broad and inclusive platform for resilience policy, practice and learning is extremely valuable. Moreover, the nature of their initiative is complementary to large research programmes such as ours as they provide a forum to amplify and reach a different audience.”

- Dr Ana Mijic, Co-Director, Centre for Systems Engineering and Innovation, Imperial College London



SECTION 6

INFLUENCE

Attracting and influencing partners of quality

Our ambition was that The Resilience Shift would become an organisation that others would want to engage and collaborate with, and that as a neutral convenor would encourage all parties across the value chain to collaborate. It would also raise the profile of resilience with influential bodies and with the global climate agenda.

ENGAGEMENT WITH ORGANISATIONS

The Resilience Shift has sought out pioneering individuals and organisations to work with and has attracted many partners of exceptional quality. It awarded funding to 53 grantees from 10 countries for new initiatives and research projects.

The Resilience Shift has put the emphasis on convening widely. It has successfully brought together public and private sector organisations across the value chain for initiatives, demonstrating cross-sector synergy and whole system shared perspectives i.e Resilience for Ports, City Water Resilience Approach, and more.

Partnerships and editorial collaborations have included



[Four Twenty Seven](#)



[Acclimatise](#)



[Adrienne Arsht Rockefeller Foundation Resilience Center](#)



[Alliance for Global Water Adaptation](#)



[American Society of Civil Engineers](#)



[ASCE Foundation](#)



[Arup](#)



[British Ports Association](#)



[Chartered Institution of Civil Engineering Surveyors](#)



[EIS Council](#)



[Global Center on Adaptation](#)



[Global Covenant of Mayors](#)



[Global Infrastructure Basel](#)



[Global Resilience Partnership](#)



[Institution of Civil Engineers](#)



[Lloyd's Register](#)



[Lloyd's Register Foundation](#)



[Major Projects Association](#)



[MMI Thornton Tomasetti](#)



[Nation Partners](#)



[Navigating a Changing Climate](#)



[Port of London Authority](#)



[Resilience First](#)



[Resilient Cities Catalyst](#)



[Resilient Cities Network](#)



[Resilient Organisations](#)



[The Schumacher Institute](#)



[Siemens](#)



[Stockholm International Water Institute](#)



[Student Energy](#)



[TNO](#)



[TRL](#)



[World Resources Institute](#)



[Wood](#)



[WSP](#)



[UNFCCC Climate Champions](#)

MAJOR PARTNERSHIP INITIATIVES



RESILIENCE FIRST

Having supported Resilience First initially from 2019, the Resilience Shift and Resilience First agreed a closer strategic partnership, formally announced in February 2021. With a global network of over 600 blue-chip and small business champions and stakeholders focused on business resilience, joining forces enabled many collaborative events convening the private sector with NGOs, and those working with infrastructure. It also provided opportunities to cross-share and amplify across web and social media channels. Announced as an official Race to Resilience partner initiative in 2021, this collaboration will directly impact the future of resilience in the private sector.



THE INTERNATIONAL COALITION FOR SUSTAINABLE INFRASTRUCTURE

The Resilience Shift is a founding partner of The International Coalition for Sustainable Infrastructure (ICSI) that was created in 2019 to mobilise the largest global coalition of engineers to accelerate the innovation, adoption and scaling of strategic resilient and sustainable infrastructure solutions built upon a commitment to tangible and collaborative action. The Resilience Shift hosted and provided direction, governance and comms support, including the launch of channels and the delivery of two major events. ICSI was announced as an official Race to Resilience partner initiative in 2021.



NAVIGATING A CHANGING CLIMATE

Following its work in the Resilience4Ports arena, The Resilience Shift was invited in 2021 to become the lead partner for the Navigating a Changing Climate coalition in 2021. NavClimate is leading the transformation of the water-borne transport sector under the combined forces of ten key organisations and represents ports and inland waterways in the Marrakech Partnership. The increased visibility of ports as low carbon gateways for growth is influencing the fossil fuel transition and the adoption of green corridors.

These major partners, together with The Resilience Shift, are part of the Resilience Rising consortium, launched in 2022. [see p. 38]

Engagement with the global climate agenda

The Resilience Shift took a targeted and proactive approach to getting resilience into the global climate conversation. As a small body, the best way to create impact was to engage with larger partners and find how best to get our knowledge shared into that space. The major opportunity was that COP26 was taking place in 2021, and the run up to the event provided opportunities to engage with influential groups.

Events such as Innovate4Cities, and New York Climate Week, as well as Regional Climate Weeks, enabled The Resilience Shift to convene its partners around a number of project areas, and bring into it its partners, Resilience First, representing the business community and the International Coalition for Sustainable Infrastructure, representing engineering input, and all those working with infrastructure. Both organisations joined as Race to Resilience Partners during the year.

Joining the Built Environment coalition and being part of the collaboration on the #buildingtoCOP plans, gave the opportunity to promote resilience thinking into shaping of the activities around this work at the climate conference, notably on the 'built environment' Day.

Work with the water community also continued as the City Water Resilience Approach was taken up for implementation in six Africa city regions as part of the World Resources Institute's Urban Resilience in Africa initiative. The Resilience Shift continued to

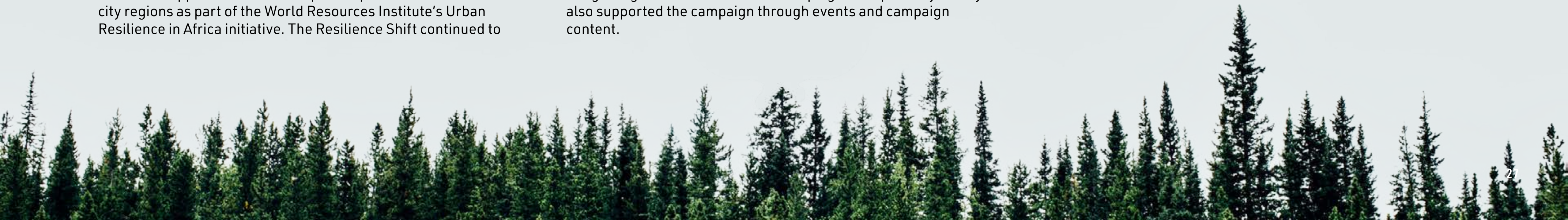
collaborate with and support the water community and the Water Pavilion at COP26, working with existing and new partners to highlight opportunities to include resilience.

Most strategically, two members of The Resilience Shift team were seconded to the Climate Champions' team, joining a growing team from across the public and private sector supporting the High-Level Champions ahead of COP26 in November 2021. The Resilience Shift secondees directly supported the Race to Resilience, the global campaign taking place alongside the Race to Zero, which has great potential to drive tangible impact for the most vulnerable people and communities. Its vision is that by 2050 we live in a world where all communities thrive in the face of the multiple risks and uncertainty posed by climate change; its main goal is by 2030 to catalyse action by non-state actors that builds the resilience to climate risks of 4 billion people.

The Race to Resilience team aimed to mobilise actions for resilience in the run up to COP26, through the Race to Resilience and the engagement, and development of partnerships with organisations and groups around the world, in particular in the Global South. Resilience Shift secondees took part in identifying and assessing infrastructure initiatives for Race to Resilience, developing metrics and operationalising the campaign, alongside integrating resilience into sector campaigns and pathways. They also supported the campaign through events and campaign content.

"Together we're creating a framework that will allow the campaign to track pledges and raise global ambitions for resilience. I also work with the built environment sector on mobilising stronger climate action, particularly on adaptation. The best part has been working together with a wide range of actors from public, private and third sectors, and the opportunity to make a successful campaign in the run up to COP26 that will deliver resilience to vulnerable people."

- Áine Ní Bhreasail, seconded by The Resilience Shift.



Engagement with major consultations and wider thought leadership activities

It is becoming clear that there is a demonstrable and growing increase in political will to address issues of resilience among key target audiences, such as infrastructure policymakers, utilities and private sector organisations.

INPUT TO CONSULTATIONS

The Resilience Shift, with its partners, has provided input to a number of consultations, landscape reports, and major framework documents, including the United Kingdom Houses of Parliament Select Committee consultations, the UK National Infrastructure Commission consultations, The Global Center for Adaptation's stocktake of resilience standards, and the shaping of the National Preparedness Commission (with Resilience First). A round-table was held with national infrastructure bodies to exchange perspectives and areas of alignment with a view to promoting collaboration.

CONTRIBUTING EXPERTISE

Leaders at The Resilience Shift have been influential in many relevant advisory groups and panels during the life of the initiative, and this has often resulted in fruitful collaboration and thought leadership. These include contributions to the Innovate4Cities Science and Technical Advisory Board, PIANC - the World Roads Association, 4TU's Resilience Fellowship, the ASCE's infrastructure panel, and more. The leadership team includes reputed specialists on resilience and respected speakers on wider issues.

REPRESENTING RESILIENCE IN INDUSTRY EVENTS

The initiative's leadership and technical experts have participated in numerous events focusing on bringing resilience into thought leading discussion including for the British Science Association's For thought series, The Institute of Asset Management conference, the Sonderberg Climate Conference, the World Bank Understanding Risk series, World Water Week, and many more.

TRANSLATING THE SCIENCE ON CLIMATE IMPACTS

The initiation of work to create a Summary for Urban Policymakers for the IPCC 6th Assessment Report that will influence the policy and research used by city and business leaders.

PROVIDING RESOURCES FOR WIDER PROGRAMMES

The City Water Resilience Approach has led to a step change in water resilience in 14 cities in 4 continents and further support from Resilience Cities Network and World Resources Institute, as part of the WRI's urban resilience in Africa programme.

"The Resilience Shift illustrates that you can have a truly global reach and impact with the right philosophy, strategies, and approaches. Even more impressive is the ability to do so with such a small team."

- Dr. John Matthews, Executive Director and Co-Founder, Alliance for Global Water Adaptation

SECTION 7

IMPACT

The first five years - impact

At a high level, we set out to:

Do, and support others to do, work that would accelerate the uptake of research into practice, promote best practice and drive innovation.

Fund research, education and collaborative projects.

Leverage others' knowledge, efforts and money.

Raise awareness, specifically supporting the pioneers and fostering a global network of resilience leaders.

Build and share a knowledge base to inform and encourage resilience in practice.



1. Coalitions for change and the foundation of the engineering-led coalition, ICSI, started with our recognition of importance of guidance, tools and standards, engaging widely across sectors and the value chain to bring different interests together.

2. Survive and thrive (learning from crisis) started with our commitment to education and capacity building, and desire to add value and something different to this space.

3. Whole systems thinking or systemic change, resulting in our work with ports, started with our commitment to map and articulate global systems and the supply chain for food.

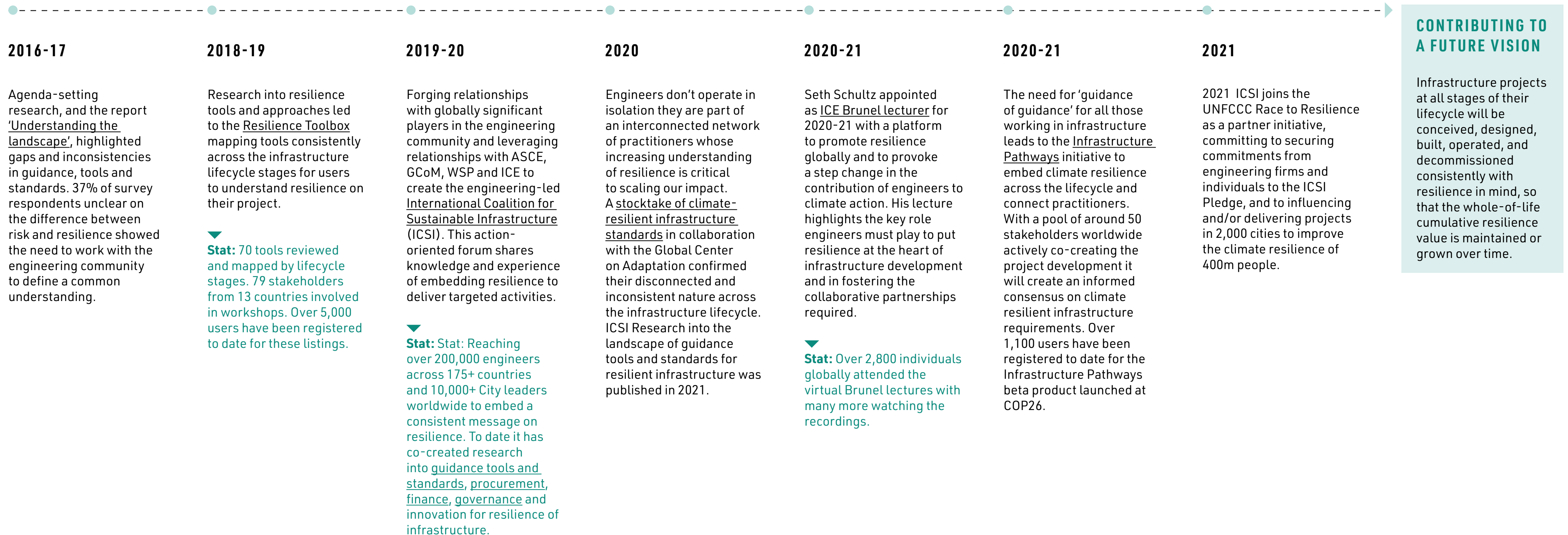
4. Transforming private sector leadership: inspire, empower, motivate, started with our commitment to a whole value chain approach to create the shift we seek.

5. Delivering action on the ground started with our recognition that there was an entry point for water and developed into a comprehensive approach tackling policy, practice and learning simultaneously, together with resources for cities to use to build resilience.

These five examples of growing impact help to provide our foundation stones for the future.

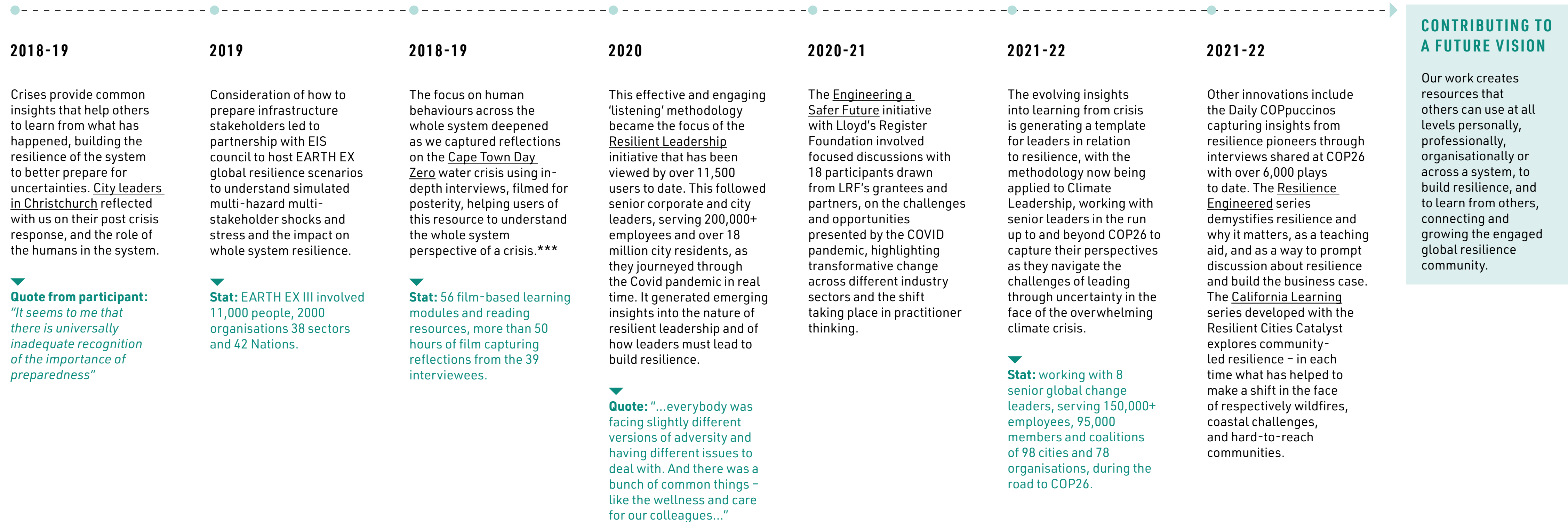
1. Enabling changes in practice, working better together to embed resilience

WHAT WE'VE LEARNED: **Coalitions for change** and the foundation of the engineering-led coalition, ICSI, started with our recognition of importance of guidance, tools and standards, engaging widely across sectors and the value chain to bring different interests together.



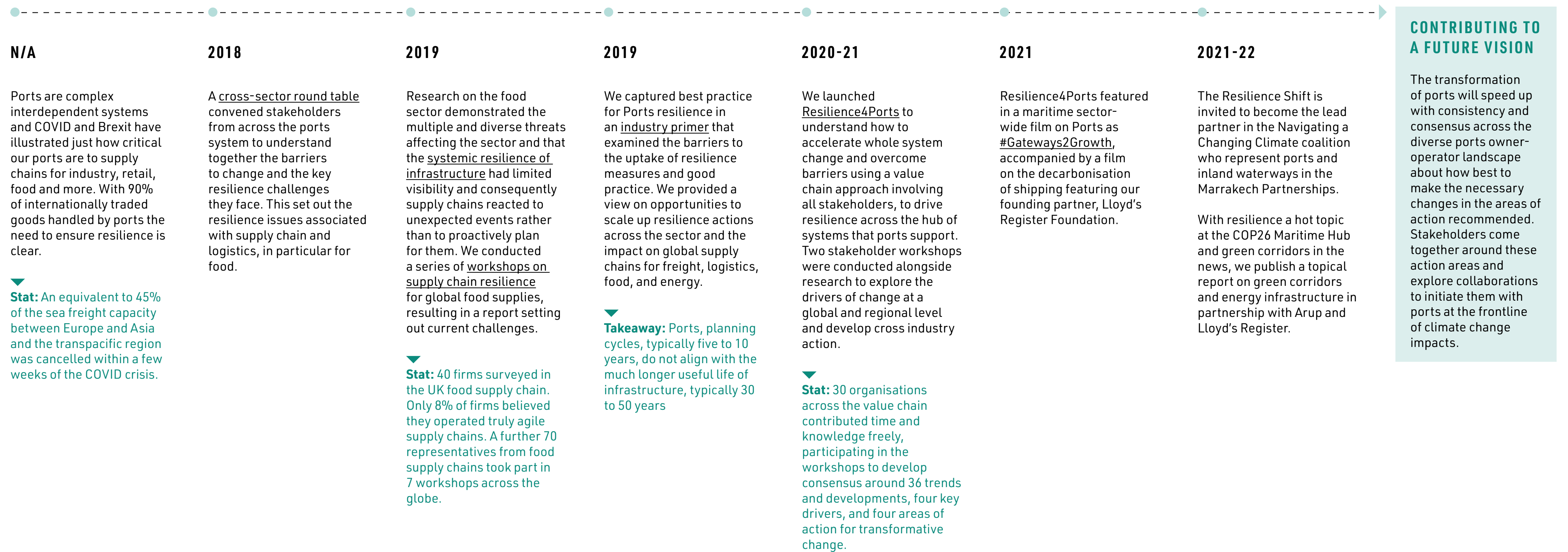
2. Learning from past, present and future crisis to build resilient communities

WHAT WE'VE LEARNED: **Survive and thrive (learning from crisis)** started with our commitment to education and capacity building, and desire to add value and something different to this space.



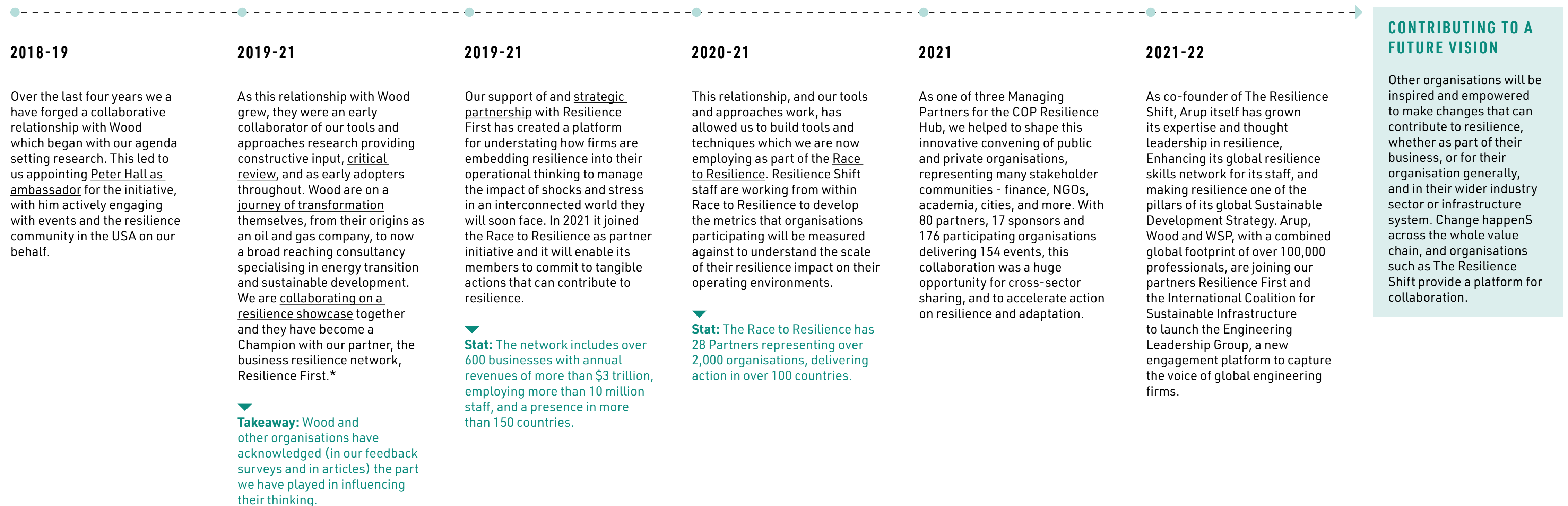
3. Building a consensus around whole system change for ports to speed up action

WHAT WE'VE LEARNED: **Whole systems thinking or systemic change**, resulting in our work with ports, started with our commitment to map and articulate global systems and the supply chain for food. Ports and port cities are now seen as critical gateways for low carbon resilient growth and transformation.



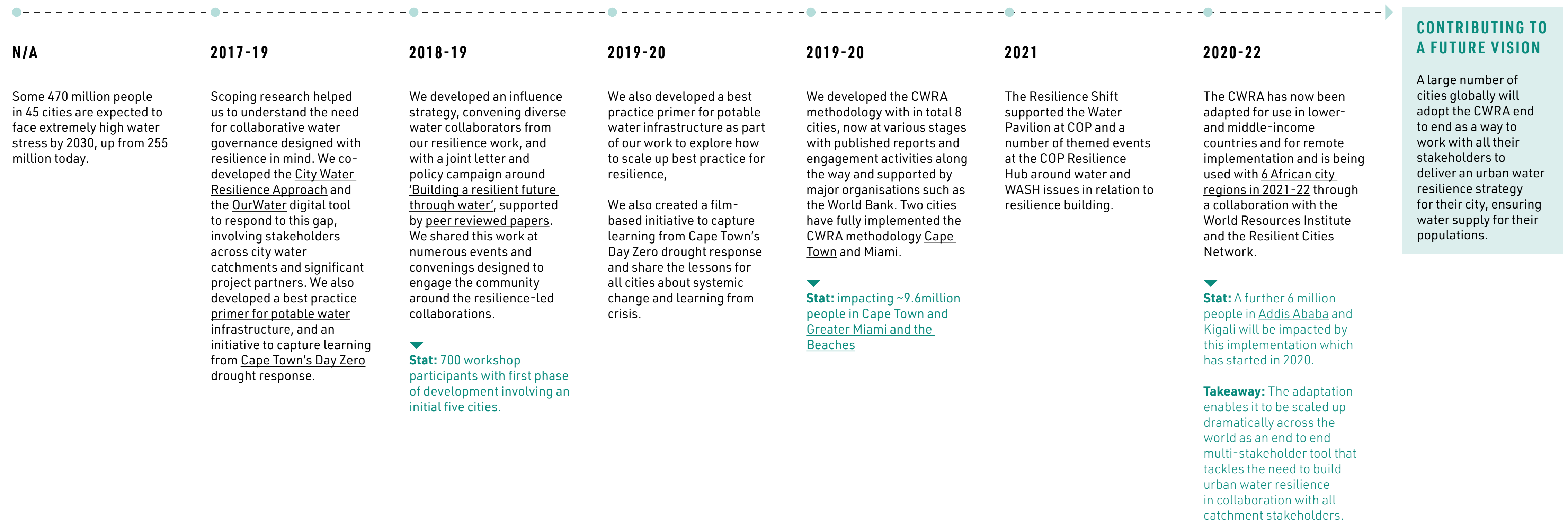
4. Transforming organisations with our aim to inspire, empower, and motivate change

WHAT WE'VE LEARNED: **Transforming private sector leadership: inspire, empower, motivate**, started with our commitment to a whole value chain approach to create the shift we seek.



5. Directly tackling urban water stress - one of the key challenges facing our world

WHAT WE'VE LEARNED: **Delivering action on the ground** started with our recognition that there was an entry point for water and developed into a comprehensive approach tackling policy, practice and learning simultaneously, together with resources for cities to use to build resilience.



CONTRIBUTING TO A FUTURE VISION
A large number of cities globally will adopt the CWRA end to end as a way to work with all their stakeholders to deliver an urban water resilience strategy for their city, ensuring water supply for their populations.

SECTION 8

NEXT STEPS

A rising tide for resilience

In 2022, at the conclusion of the five-year grant agreement between Arup and Lloyd's Register Foundation, The Resilience Shift has spun out of Arup to become an independent non-governmental organisation. This was one of the success criteria of the grant agreement to establish a long-term business model to enable the programme and its mission to self-sustain.

Through its foundational work, The Resilience Shift identified six essential communities of practice. Resilience Rising, a new consortium has launched, with core strategic partners, each focused on a dedicated purpose and audiences. With Lloyd's Register Foundation and Arup as ongoing partners, both organisations will remain at the forefront of resilience thinking and practice, and embedded in the DNA of the new entity.

Resilience Rising is innovating to make systemic resilience the norm as society transforms towards a net zero future, by building capacity, advancing thought leadership, and advocating for change.



THE RESILIENCE SHIFT

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