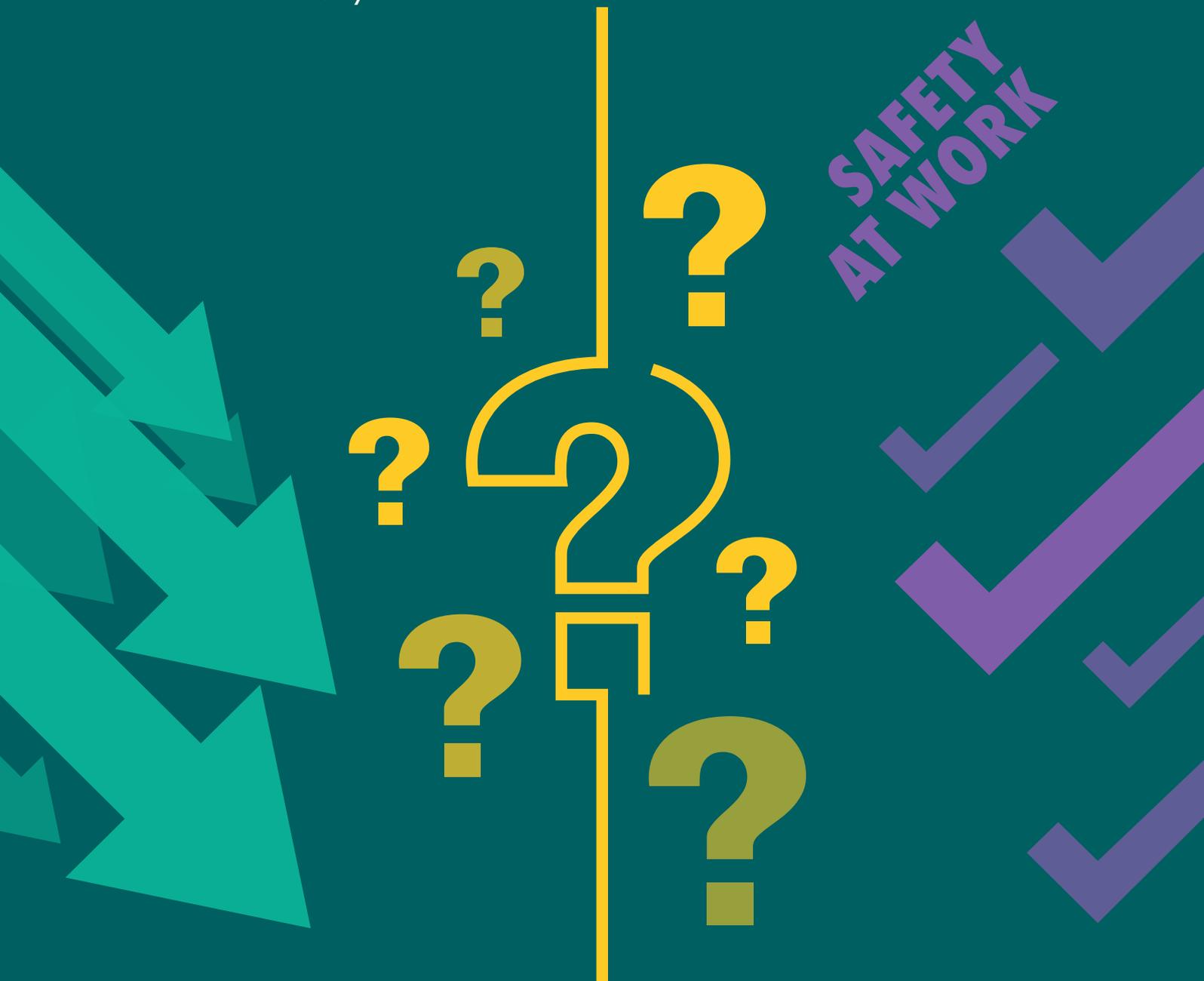


ENGINEERING A SAFER FUTURE

LEARNING FROM CRISIS: FROM DISRUPTION TO TRANSFORMATION

What has the Covid-19 pandemic taught us
about the future of safety at work?



SAFETY
AT WORK



AUTHORS

Amy Leitch, The Resilience Shift
Will Newton, Arup
Akshaya Kannan, Arup

ACKNOWLEDGEMENTS

Sam Dadd, Lloyd's Register Foundation



This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

CONTENTS

ABOUT THE SERIES: LEARNING FROM CRISIS	1
ABOUT THIS CONVERSATION	2
PARTICIPANTS	3
EMERGING INSIGHTS	4
PRIORITY ACTIONS / KEY TAKEAWAYS	8

ENGINEERING A SAFER FUTURE

LEARNING FROM CRISIS: FROM DISRUPTION TO TRANSFORMATION

This report, *What has the Covid-19 pandemic taught us about the future of safety at work?*, is one of a series of related reports and podcasts available at www.lrfoundation.org.uk/en/learning-from-crisis



Summary report



Data



Safety at work



Education



Infrastructure



Public understanding of risk

ABOUT THE SERIES: LEARNING FROM CRISIS

Resilience is the ability to withstand, adapt to changing conditions, and recover positively from shocks and stresses.

The Resilience Shift is committed to understanding how crisis can reveal both the weaknesses and strengths of the systems on which we rely, and to sharing stories and insights across a variety of sectors towards building long-term resilience.

We have investigated the experience of recent crises, bringing together diverse experiences and perspectives across stakeholders to bear witness to the impacts of deeply disruptive events, and the individuals, decisions, technologies and processes that shaped the response and recovery.

*Learning from Day Zero*¹ is a series of film-based learning modules capturing reflections from key individuals involved in the response to the 2017-18 water crisis in Cape Town, South Africa. Developed in partnership with the Cape Town Drought Response Learning Initiative, these modules feature insights curated from over 50 hours of in-depth, filmed conversations with government officials, civil society activists, academics, and business and community leaders.

The *Resilient Leadership*² project is a real-time reflective learning document that captures reflections from city government and corporate leaders navigating their organisations' responses to the Covid-19 pandemic. Through insights distilled from weekly conversations over a 4-month period, the project reveals key attributes of leadership during a crisis and identifies three questions to shape the future of resilient leadership.

*Engineering a Safer Future*³ – insights from which appear in this publication – seeks to explore the impact of disruption and its ability to create a window of opportunity for transformative change. The insights emerged from in-depth expert conversations with senior leaders about the ramifications of the Covid-19 crisis in more detail within specific sectors.

Collectively, these investigations not only strengthen our broad understanding of resilience in practice, but also help us to shape and influence future work. They also actively explore different and innovative approaches to capturing and sharing learning.

1 <https://www.resilienceshift.org/cape-town-learning-from-day-zero/>

2 <https://www.resilienceshift.org/resilient-leadership/>

3 www.lrfoundation.org.uk/en/learning-from-crisis

ABOUT THIS CONVERSATION: SAFETY AT WORK

The *Safety at Work* session, held on 15 September 2020, was a moderated conversation around safety challenges in a post-Covid world, from small-scale practical issues to long-term consequences to our institutions and systems.

The conversation drew on emerging findings from the Lloyd's Register Foundation's research as well as input from grant holders and experts around global perceptions on risk and safety at work, and how these might be affected by the Covid-19 crisis. The session reflected on how Covid-19 has disrupted existing practice around safety at work, how the sector has adapted, and what lessons the current disruption holds for our shared future.

In the session participants were asked to examine how their work life has changed between January and September 2020 due to the Covid-19 pandemic; how they have managed to stay resilient – both personally and professionally – and prepare for a 'new normal' future.

ENGINEERING A SAFER FUTURE

At The Resilience Shift, we have long recognised that the past is an increasingly unreliable predictor of the future, and that deep uncertainty around challenge and risk is felt across many sectors. In 2020, the rapid global impacts of Covid-19, and its consequences across every aspect of the work that Lloyd's Register Foundation supports, provided a unique opportunity for us all to consider the transformations we'd like to see as we emerge from this crisis.

Together, Lloyd's Register Foundation and The Resilience Shift have developed this series of conversations as an antidote to the pervasive online 'noise' that confronts us as we seek serious discussion and meaningful insight into the ramifications of this crisis. We sought to bring together innovators working within the Lloyd's Register Foundation's grant programme, joined by outside subject matter specialists, with the aim of surfacing insights on the likely scale and permanence of changes that Covid-19 has triggered. Our participants also examined how we approach infrastructure systems and interdependencies, and what the pandemic can tell us about our existing preparedness and horizon-scanning practices.

With the five sessions respectively focused on safety at work, data and information systems, education, infrastructure and public understanding of risk, this series explores both the impact of disruption and how disruption can create windows of opportunity for change.

APPROACH AND FORMAT

The closed-door, intimate roundtable format was designed to facilitate fluid interaction amongst a small group of partners, associates, subject matter experts and grantees of the Lloyd's Register Foundation and of The Resilience Shift. Participants were given latitude to steer the conversation towards their specific sector or area of concern, their experience of challenges, and their thoughts on plausible ways forward.



PARTICIPANTS

ABOUT THE MODERATORS

Dr. Juliet Mian | The Resilience Shift*
Deputy Director

An experienced Civil Engineer of over 20 years' experience working on infrastructure projects both in the UK and overseas, Juliet is a systems thinker who cares deeply about delivering engineering solutions to meet the challenges our planet faces.

Dr. Jan Przydatek | Lloyd's Register
Foundation Director of Technologies

Jan is currently Director of Technologies at Lloyd's Register Foundation whose portfolio includes the Foundation's grants to the Structural Integrity Research Foundation and ICON.

ABOUT THE PARTICIPANTS

Dr. Anthony Washburn | National Safety Council Campbell Institute Research Associate

Anthony is a research associate for the SAFER initiative at the National Safety Council where he conducts research on developing guidance for safely returning employees to work in the world of Covid-19. With the Campbell Institute and Work to Zero initiative Anthony conducted research on environmental, health, and safety best practices and the role that EHS technology plays in reducing workplace serious injuries and fatalities.

Dr. Ashley Hall | Royal College of Art*
Professor of Design Innovation, School of Design

Ashley researches in design for safety, experimental design, design pedagogy and globalisation design to cultural transfer. He has developed and led commercial-academic partnerships in the transport sector (Airbus Industries, Ford, Huawei), telecommunications (Huawei, O2 Mobile, 3 Mobile- Hutchison Whampoa, Nokia), FMCG (Coca-Cola, Unilever), consumer products (Philips, Sharp, Swarovski) and innovative materials (Samsung).

James Pomeroy | Lloyd's Register Group
Group Health, Safety, Environment and Security Director

James is responsible for advocating and delivering high standards, thought leadership and best practice in health, safety, environmental and security management across Lloyd's Register Group's global operations. He is leading the transformation of LR's Health, Safety, Environment and Security (HSES) programme which is introducing a greater focus on resilience, human factors and cultural leadership. An engineer by training, James has been involved in leading and transforming global HSES programmes in a variety of sectors, including upstream oil and gas, aviation, mining and heavy manufacturing.

* Lloyd's Register Foundation grant recipient

EMERGING INSIGHTS

Covid-19 has provided the global population with a common frame of reference for disruption, and likely permanently changed both how we work and what we focus on in terms of safety at work.

“There won’t be a person entering the workforce for ten years who doesn’t have Covid as a reference for the kind of disruption that can happen. We need to leverage that awareness.”

“Our increased awareness of the importance of stress and mental health is a real silver lining.”

The 21 global business districts (GBDs) in the world’s largest and most powerful business cities cover a total of nearly 100 million square metres of office space and before Covid, were the main workplace for nearly 4.5 million people.⁴

EMERGING INSIGHT 1

We’ve seen unprecedented cooperation for the common good

From acts of individual cooperation, to public-private sector collaboration, to international data sharing, the Covid-19 pandemic has seen organisations at all scales rapidly come together for the common good. Given the scale of likely future global challenges, the speed and effectiveness of the worldwide mobilisation in response to Covid is cause for real optimism.

We have an increased awareness of the efficiency with which private companies can work with public sector organisations when needed, and how public sector organisations provide both services and safety for the general public. The crisis has spurred an unprecedented recognition of both the role of public safety and the organisations that provide it.

THINGS TO THINK ABOUT:

- What new multidisciplinary bridges or links to other sectors did your organisation develop as a result of the Covid pandemic? How can these be supported and extended?
- What challenges did your organisation face in liaising with private institutions, public sector entities, or other sectors/industries during the pandemic? How can these communication channels be improved for greater efficiency in future disruptions?

⁴ EY. www.ey.com/en_us/real-estate-hospitality-construction/is-this-the-end-of-the-central-business-district

EMERGING INSIGHT 2

In terms of safety communications, unlimited real-time information can do as much harm as good

While the death rate of Covid-19 is much lower than that of the 1918 Spanish Flu, the public sense of acute crisis and awareness of collateral damage *seems* much more severe due to our 24-hour news cycle, social media platforms, and widespread public awareness of real-time data on infection and death rates. We have failed to manage the design of that information flow.

Managing this perception of risk is as important as managing actual risk. This means shaping organisational communications to cut through the noise of our real-time data overload by being clearly understandable and digestibly delivered. Most importantly, information must be actionable, to help restore a sense of agency and control.

THINGS TO THINK ABOUT:

- What channels did your organisation find most effective for both distributing and receiving safety information during the pandemic? How can you best support and extend these communication successes?
- What challenges did you face in managing and delivering safety communications during the pandemic? How would you navigate these obstacles differently during a future disruption?

EMERGING INSIGHT 3

Mental health and wellbeing impacts may outweigh the physical health consequences of the pandemic in the long term

The impact of the Covid-19 crisis on general mental health and wellbeing will be severe and long-lasting. The pandemic and regional responses have presented a 'perfect storm' of stressors. On the individual and community level, in addition to the issues of childcare, relationships and worry about the virus' impact on family and friends, many people are coping with an overwhelming information flow about a global crisis while simultaneously experiencing a severe reduction in human social contact. On a global level, the pandemic has revealed inequalities between nations, sectors, industries, and communities, while accelerating divides between both economic and technological haves and have-nots.

While the speed of our global shift to greater reliance on remote work and delivery logistics has been impressive, this transition has often meant losing the 'human glue' of daily interactions in favour of highly transactional exchanges. The impact of shifts in mental health environment and working patterns, and the tensions between economic interests and individual health exposed by the pandemic, will need to be carefully addressed as we move forward.

THINGS TO THINK ABOUT:

- How has the mental health and wellbeing impact of the Covid pandemic affected your organisation or sector? What long-term consequences of these impacts can you anticipate?
- What steps can your organisation take to extend support for both the acute and chronic mental health of personnel during future disruptions?

The global Covid-19 personal protective equipment market accounted for US\$ 60.4 billion in 2019 and is estimated to be US\$ 178.3 billion by 2029.⁵

**EMERGING INSIGHT 4****Our technological responses to disruption represent a shift in dependency, not a solution**

In one sense the world has been ‘lucky’ that Covid-19 struck at a moment when our technological platforms were mature enough to enable many sectors to transition to remote or distanced work with relatively minimal disruption. The relative seamlessness of that shift, however, risks masking the fragility inherent in our increased reliance on digital tools.

If the next virus is digital rather than biological, or worse, if a biological pandemic strikes alongside a major disruption to digital services, the consequences could be vastly more severe in both human and economic terms than what we’ve seen with Covid-19.

THINGS TO THINK ABOUT:

- What percentage of your organisational operations shifted to a digital or technologically-supported format during the pandemic? What challenges did that shift present?
- How robust and redundant are your organisation’s digital systems? Are they designed to ‘fail safely?’ What critical vulnerabilities might be addressed ahead of future disruptions?

⁵ Globe Newswire. www.globenewswire.com/news-release/2020/06/17/2049590/0/en/Global-COVID-19-Personal-Protective-Equipment-Market-is-estimated-to-be-US-178-3-Billion-by-2029-with-a-CAGR-of-11-5-during-the-Forecast-Period-PMI.html

EMERGING INSIGHT 5

Building real agility to deal with shifting disruptions is a better investment than concentrated planning for specific events

Most organisations foresaw a pandemic as a threat on their safety registers; very few foresaw an extended lockdown, and likely none predicted the fluctuations in lockdown severity between and within countries that have led to cascading systemic impacts and had significant economic and safety consequences.

Our ability to predict *events* outstrips our ability to predict *fallout*; this being the case, our planning time and resources are better spent on developing whole-systems thinking, multilateral agility and resilience rather than attempting to plan for specific responses to specific threats.

THINGS TO THINK ABOUT:

- What specific consequences of the pandemic had a surprising impact on your sector or organisation? How has that surprise affected your planning policies?
- How can your foresight or planning processes better support an agile response to unforeseen threats or challenges?

Women were already clustered in low-paying jobs. When the pandemic hit, women globally were 1.8 times more likely than men to lose those jobs.⁶

In the US, roughly \$758 million is being saved per day by post-Covid remote workers who used to drive for their commute, a cumulative savings of over \$90 billion since the onset of the pandemic.⁷



⁶ McKinsey & Company. www.mckinsey.com/featured-insights/future-of-work/covid-19-and-gender-equality-countering-the-regressive-effects

⁷ Upwork. <https://njbja.org/increase-in-remote-work-saves-americans-90b-in-commuting-costs/>

PRIORITY ACTIONS / KEY TAKEAWAYS

KEY TAKEAWAY 1

Global risks require global standards across sectors

While the outpouring of individual, organisational, cross-sector and international cooperation in response to the pandemic is significant, the Covid-19 crisis has highlighted the risk inherent in not having uniform global standards. Lack of such standards for responses in health emergencies, in this instance, complicated our global responses.

Viruses have no more regard for national boundaries than do pollution or climate events. Nationally determined medical health and safety standards are no more effective than nationally determined environmental standards when confronting truly global risks.

KEY TAKEAWAY 2

Managing the perception of risk is as important as managing actual risk

At all levels of an organisation, communication is key to 'lowering the temperature' of risk perception during rapidly developing crises; the Covid-19 pandemic has demonstrated that the *style* and *format* of that communication is as important as the content. In an environment of overwhelming real-time data, consistent, trustworthy communication delivered so as to impart messaging in digestible packages plays an important role in controlling perception of risk and preserving focus on actionable responses.

KEY TAKEAWAY 3

A mentally and physically healthy workforce is good for business

While the mental health impact of the pandemic has been severe, the Covid-19 crisis represents an opportunity for organisations to rebalance towards the 'health' component of 'health and safety'. Organisations worldwide are realising that particularly in the face of external stresses, a physically and mentally healthy, resilient workforce is a net asset. A meaningful focus on holistic employee wellbeing is key to organisational resilience.

In the long term, this means carefully assessing the utility of returning to pre-Covid work practices out of familiarity or habit, while ensuring that the technological substitutions we make for in-person changes are designed to be *effective*, not just *efficient*, and provide features to enable the informal, personal and serendipitous interactions key to human relationships.

KEY TAKEAWAY 4

True digital resilience is the next major safety challenge

Many of the changes in working patterns wrought by the pandemic are here to stay. Employees are realising that efficient work is possible without spending two hours in traffic; teams are realising that cross-sector and international cooperation is possible without the expense, fatigue and environmental impact of traveling by air; municipalities and organisations are recognising the benefits of emissions reductions from remote work.

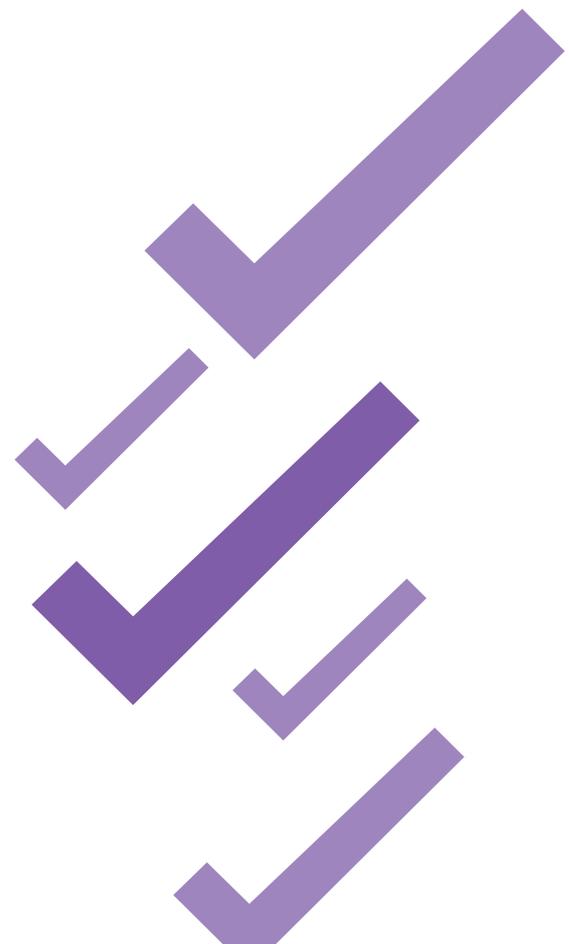
As organisations transition to support these new forms of distanced productivity, the digital platforms and systems that enable this shift must be made as resilient as possible. Redundancy, survivability and the ability to 'fail safely' will be key to ensuring that our heightened post-Covid reliance on digital infrastructure does not become a vulnerability in and of itself.

KEY TAKEAWAY 5

Plan flexibly, learn quickly, build agility

The ability of organisations, sectors and even nations to learn from one another's experiences in the Covid-19 pandemic has been remarkable. The failure of most models to predict lockdowns as a likely outcome of a pandemic has been sobering.

An ability to learn quickly, reallocate resources efficiently, and plan flexibly enough to react to even unforeseen events is critical to minimising operational risk in the face of global threats.



ABOUT LLOYD'S REGISTER FOUNDATION

The Lloyd's Register Foundation seeks to secure for the benefit of the community high technical standards of design, manufacture, construction, maintenance, operation and performance for the purpose of enhancing the safety of life and property at sea, on land and in the air.

The *Engineering a Safer Future* programme is designed to focus on sharing existing experience and knowledge within and between sectors, and forms an important part of the delivery of our strategic theme accelerating the application of research.

The Lloyd's Register Foundation's programme supports resilience, by addressing:

- Governance: incentives, standards, rules, legal and financial
- Capacity building and engagement: professional development, publications, communication and public engagement
- Data and supporting tools: shared datasets, modelling and simulation, decision support
- International and global scale networks: studies of global systems, supply chains, knowledge networks.

ABOUT THE RESILIENCE SHIFT

The Resilience Shift is a catalyst for positive change. We seek to inspire and empower a global community to make the world safer through resilient infrastructure. Our mission is to help ensure the safety and continuity of the critical infrastructure and services that make our lives possible. From water and transportation to communications and energy, resilience is essential to everything we do. We're working globally to help define resilience and provide pathways from theory to practice.

Supported by Lloyd's Register Foundation and Arup, The Resilience Shift provides knowledge and tools to those responsible for planning, financing, designing, delivering, operating and maintaining critical infrastructure systems. We are not just a think tank, not just a grant-making body, and not just a convening network. Our impact is achieved through a proactive approach combining all three of these roles.

The Resilience Shift's approach is through learning by doing in collaboration with others, as well as by sharing knowledge and fostering a global community. We want to create value for those we are seeking to influence, thereby maximising the positive impact for society. We focus on tools and approaches to put this shift in resilience thinking into practice, identifying the drivers and enablers for infrastructure resilience, and advancing a common understanding of resilient systems, within and between critical infrastructure sectors.

☺☺☺ THE RESILIENCE SHIFT



Lloyd's Register
Foundation

www.lrfoundation.org.uk/en/learning-from-crisis

