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LEADERSHIP

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Global legitimacy crisis | Leadership in turbulent times | Thai cave rescue | Disaster governance | Blackouts & resilience | Citizens & smart cities | Crisis communication | Soft targets & security | Climate crisis | Greece wildfires | Animals in disasters | Hurricane recovery | Oversight

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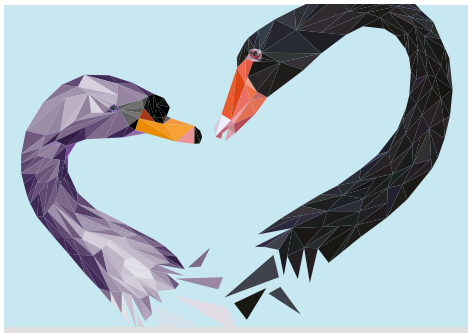

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comment

Our cover of this edition depicts growing malaise around governance, leadership, technology and trust.

Why are these issues so important in a crisis context? Put simply, because of the consequences that poor, malicious, narcissistic or corrupt governance can have on our daily lives, communities, livelihoods, safety and quality of life.

Denise Thompson (p64) explores the importance of governance in regulating the actors and processes around disaster risk reduction. Weak governance is a disaster risk driver, linked to other drivers, such as poverty, inequality, poor planning and development.

And other actors are always ready to fill the vacuum left by poor or weak governance, including those with criminal or malevolent intent, all too willing to capitalise on the opportunities this presents.

Humanity has inexhaustible supplies of ingenuity and creativity; none so evident as in the technology field. If applied correctly, the solutions have immense potential for good. Yet, as climate is a risk amplifier, if applied unwisely, technology can be a risk enabler.

Other articles examine governance and technology. On p14 Maha Hosain Aziz describes a 'global legitimacy crisis' which, she says, is linked with a headlong rush for technological domination. Meanwhile on p18, Andrea Bonime-Blanc presents a view of the megatrends that every leader – of nations, business, institutions, local governments or humanitarian organisations – needs to be aware of. She discusses the collapse of global trust, the ethical leadership paradox and how unscrupulous actors could commandeer technology to further their own agendas.

The Fourth Industrial Revolution is set to fundamentally change the way we live. On p58 Laurence Marzell calls for citizens to be placed at the centre of smart cities, emphasising that cities are for people. Vincent Mosco supports this on p66: "Genuinely intelligent cities start with a vibrant democracy, support for public space and a commitment to citizen control over technology," he says.

Constant monitoring, sensors and data gathering all present threats and opportunities. It would be naïve to expect Utopia, but we do have the opportunity to harness burgeoning technological developments for the benefit of our resilience, livelihoods and security. In this new, disruptive landscape, with emerging protagonists and technology, we need to be careful in what – and in who – we place our precious trust.

PEOPLE

It's been an exciting few months at CRJ, *and here's the official announcement of new people who have joined our Advisory Panel recently. Their extensive biographies are testimony to their wide and impressive experience – read more about them on our website. And a warm welcome to all of them!*

ELTON CUNHA, *Municipal Director of Barra Velha Municipal Civil Defence, Brazil. Elton was an Infantry Captain in the Brazilian Army for six years, as well as having worked as an analyst in the private sector. He holds a Bachelor's degree in Logistics from the Itajaí Valley University, focusing on Logistics Tools for Humanitarian Action.*

He joined Barra Velha City Hall - SC, Brazil, in early 2011, tasked with creating the Civil Defence Department. His efforts culminated in legislation to create the Municipal Civil Defence Co-ordination body in December 2011.

In 2017, Elton obtained approval from the mayor and city councillors to restructure the Municipal Civil Defence Directorate, thus raising the hierarchical levels, responsibilities and strength of disaster risk reduction within the state.

From 2017 to 2018, Elton was president of the Civil Defence Collegiate of Amvali, part of the Itapocu Valley Municipalities Association. Elton has also completed two Lato Sensu postgraduate programmes, one in Protection and Civil Defence and the other in Compliance and Crisis Management.

He is currently an academic at Univali's Business Administration undergraduate programme, Member of the Amvali inter-municipal Civil Defence Collegiate, Member of CRA-SC, Regional Council of Administration Santa Catarina State, and an international volunteer with the Lions Club.

ALICE HILL, *Senior Fellow for Climate Change Policy at the Council on Foreign Relations, USA. Alice has served as a federal prosecutor, judge, special assistant to the US President, and senior director for the US National Security Council. At the White House, she led the development of policy regarding national security and climate change, building climate resilience considerations and capabilities into federal initiatives, and developing national risk management standards for the most damaging natural hazards. Hill previously served as Senior Counsellor to the Secretary of the US Department of Homeland Security (DHS), helping guide senior leadership of DHS agencies, briefing Congress, and leading and establishing key programmes, including the internationally recognised anti-human trafficking initiative, Blue Campaign. For three years, Hill served on the National Security Council in the White House, focused on national preparedness for all hazards of global consequence.*

Hill is a Member of Boards of Directors of subsidiaries of Munich Re Group, the Environmental Defense Fund, and the Council on Strategic Risks, and a member of the Advisory Board of One Concern. Oxford University Press will publish her co-authored book, Building a Resilient Tomorrow, *in November 2019*

STEWART MASHITER, *Senior Lecturer in Emergency Planning, University of Wolverhampton. Stewart is an experienced Senior Lecturer and currently co-ordinates the work of the Emergency Management & Resilience Centre base at its Telford Innovation Campus in the UK. His experience in emergency planning and managerial roles stretches back to the late 1990s, mainly in local government, as well having a background in teaching and training, gained from his previous voluntary work with young people.*

Stewart has a demonstrated history of innovative working within higher education and a vision of advancing the emergency planning, incident management and wider resilience fields. He is constantly seeking opportunities to develop new ways of engaging in learning, especially for those already working in this area, as well as bringing together practical experience, training, research and qualification. Stewart has been delivering the MSc Emergency Planning Resilience & Response course since 2012 and a specific iteration of the course for military personnel since 2015.

More new Advisory Panel Members on page 6

'Chilling commentary' on future of antibiotics

USA: The healthcare market is failing to support new antibiotics used to treat some of the most dangerous drug-resistant superbugs, according to University of Pittsburgh School of Medicine infectious disease scientists.

Investigators used nationwide prescription data to determine that the current annual US sales of new antibiotics to treat carbapenem-resistant Enterobacteriaceae (CRE), one of the world's most insidious drug-resistant bacteria, is about $101 million annually – significantly short of the $1 billion believed to be necessary to assure the financial viability of a new antibiotic. Even if new anti-CRE agents were used as widely as possible to treat CRE infections, the projected market size is only $289 million. "New drugs against CRE address a major, previously unmet medical need and are critical to save lives. If the market can't support them, then that is a chilling commentary on the future of antibiotic development," said lead author Cornelius J Clancy, MD.

CRE infections are estimated to cause 1.5 to 4.5 million hospitalisations worldwide each year. The CDC has classified CRE as urgent threat pathogens and calls them the "nightmare bacteria." The WHO and Infectious Disease Society of America have designated CRE as highest priority pathogens for development of new antibiotics.

Since 2015, five antibiotics against CRE have gained US FDA approval and trials have shown three of them to be more effective and less toxic than previous first-line antibiotics. But one of the developers of the new anti-CRE drugs declared bankruptcy in April because of its steep losses.

The authors propose a combination of 'push' and 'pull' incentives to encourage sustainable antibiotic development, starting with approval of the bilateral *Disarm Act* under consideration in Congress. This would assure full Centers for Medicare and Medicaid Services reimbursement for use of new antibiotics against resistant infections in hospitalised patients, rather than subsuming antibiotic costs into the discounted bundled payment hospitals receive. This would remove the disincentive hospitals face in using more effective but expensive new agents, rather than cheaper, older agents. There also needs to be a cultural and behavioural change among hospitals and clinicians to encourage faster adoption and appropriate use of new antibiotics.

The study is published in Antimicrobial Agents and Chemotherapy, *a journal of the American Society for Microbiology*

Earthquakes: Lessons for business

Switzerland: Many regions of the world have been struck by a spate of damaging earthquake events over the last decade. Some of the quakes were truly historical, among the largest ever recorded. Others, although of lower magnitude, still caused catastrophic damage.

"Businesses can mitigate the loss potential resulting from earthquakes through practical and inexpensive preventative actions, such as securing free-standing machines and equipment through bracing," says SwissRe in a new report. Such pre-event mitigation measures can also lead to lower insurance premiums for earthquake coverage.

"Building codes and risk preparedness have proved their worth," the report continues. Mostly, the structural performance of buildings constructed according to the seismic codes has been effective, in particular with respect to saving lives.

"In terms of economic losses, including for business, however, these have been large – in some cases, surprisingly large, given that earthquakes have also struck countries such as Japan, New Zealand and Chile, global leaders in preparedness for (their high) exposures to seismic risk," according to the report.

www.swissre.com


Ritchie B Tongo | Shutterstock

Taiwan bridge collapse

Taiwan: A 140-metre long arched bridge suffered a catastrophic collapse, plunging into a bay on Taiwan's east coast. It crashed into fishing boats below, killing at least six people and injuring dozens of others.

Military personnel deployed a floating platform to help workers remove debris and to extract two boats from under collapsed sections of the bridge.

The bridge was 20 years old, but had previously undergone remediation work for its expansion joints, according to reports.

Independent bridge consultant Simon Bourne told the *New Civil Engineer* that the Nanfang'ao bridge collapse raises questions around the robustness of maintenance regimes in the aftermath of problems that triggered the closure of Hammersmith Bridge in London, UK, and the fatal collapse of the Morandi Bridge in Genoa, Italy, which claimed the lives of 43 people in August 2018 (see *CRJ* 14:1 for incident analysis).

See also Preparing for new risk scenarios (CRJ *14:2) by Paolo Garonna, who will be speaking at this year's International Disaster Response Conference (more details on p110)*

Predicting terror activity

USA: Data scientists have developed an early-warning model that can successfully predict how lethal a terror organisation will become in the future, based on just its first ten attacks.

The model, developed by researchers in Northwestern University's Kellogg School of Management, will allow security forces to identify and target the most destructive groups, potentially stopping them before they grow too powerful.

Researchers turned to the business world for inspiration for a better model, explaining that: "What if we think of terror organisations like a business whose product is lethality? How do we predict their success in producing that product?"

Venture capitalists and business investors use publicly-reported information, such as cashflows and technological skills, to predict company behaviour and success. Such information is not available for terror organisations, so the researchers worked to develop proxies, based on observable behaviour.

For example, business investors often view the timing of a company's product releases as a proxy for resources. They assume that a company that regularly launches new products is likely to have more resources than a company that delivers new products at random. Similarly, the researchers' model uses the timing of attacks as a proxy for a terror group's resources and organisational strength.

They were able to confirm these notions with factors such as the diversity of weapons used, the sophistication of those weapons, and their attack capabilities, defined as the extent to which the group succeeded in carrying out the mission of the attack.

Yang Y, Pah A R, Uzzi B (2019): Quantifying the future lethality of terror organisations, *PNAS doi.org/10.1073/pnas.1901975116*

in brief

Caribbean: New remote sensing technology is being deployed to improve prediction of climate-related events. LIDAR, the acronym for light detection and ranging, was effectively used in the USA in the aftermath of Hurricane Sandy in 2012.

Europe: Bulgarian and French law enforcement authorities, supported by Europol, dismantled an organised crime group involved in trafficking human beings for labour exploitation and money laundering. The criminal group recruited workers in Bulgaria for the harvest season in France. Investigations led to the identification of 167 potential victims, employed by four different wine growing companies.

USA: Eighty-two firefighters died on duty in 2018, according to the US Fire Administration's annual report on firefighter fatalities. Forty-four were volunteers, 33 were career firefighters and five were wildland firefighters.

Philippines: All nine people on board a small medical evacuation plane were killed after it crashed into a resort in the Philippines and exploded into flames. The light aircraft crashed into a resort compound in Pansol village in Laguna province, near the foothills of Mount Makiling.

Bolivia: Rain extinguished wildfires that destroyed more than four million hectares of land in eastern Bolivia. The fires started in May, becoming worse in August, and destroyed nearly 2.9 million hectares of grassland and forest areas in the Chiquitanía area alone.

See pages 13 and 26 for landscape fire analysis

PETER PATEL, *Founder and International Director of the Faculty of Disaster Medicine – India and Nepal. Dr Peter (Pankaj) Patel is a microbiologist with 22 years of track record in the biomedical and healthcare sector, with significant senior level teaching, management and leadership experience in academia and industry.*

He has special interest in infectious diseases, epidemics and pandemics and disaster medicine. In 2017, he stepped down as a full-time GP to lead on international work in disaster medicine and strengthening primary care for developing countries, focusing on commonwealth countries.

Peter is founder and International Director of Faculty of Disaster Medicine – India and Nepal, visiting Professor for Disaster Medicine at Sri Ramachandra University, Chennai, and Joint Chair of the Academic Development Board for Disaster Medicine of Sri Ramachandra University, Chennai, and Amrita Institute of Medical Sciences (deemed medical university), Kochi, India.

Peter started working in post-disaster reconstruction and rehabilitation projects after the 1993 earthquake in Latur, India.

Since then, he has carried out significant work in the post-disaster recovery phase, with a focus on health and education in the: Bangladesh floods (1998); Gujarat (1998) and Orissa (1999) cyclones; Gujarat earthquake (2001); South Asian tsunami (2004); and more recently, the Kashmir floods (2014) and Nepal earthquake (2015). In 2002, Peter founded the The National Institute for Pre-Hospital Care and Trauma Management at Ruby Hall Clinic (a major hospital) in Pune, India.

JACQUI SEMPLE, *Chair of the Emergency Planning Society, UK. Jacqui has extensive experience in leadership, management, emergency management, business continuity management, risk, crisis management, safety advisory groups, training and development.*

A graduate of Coventry University and Robert Gordon University, Aberdeen, Jacqui started her career in social services, holding numerous roles over 14 years, including managing home care services for older and vulnerable people and training as a counsellor to work with alcohol addiction and bereavement.

In 1998, she assumed the post of senior manager for the British Red Cross and was responsible for the management and support of more than 250 volunteers and staff.

With a successful career in local government, her current position is as senior manager, with responsibility for risk, resilience and safety. She has extensive experience in dealing with emergencies and has also led the planning and delivery of high profile and complex events.

Jacqui is a member and chair of various committees, working groups – both locally and nationally – and a member of a number of editorial boards. She co-facilitates the delivery of the emergency procedures advisor course and the event command course, at the Police College, Scotland.

RUSS TIMPSON, *founder and CEO of Horizonscan, a company focusing on risk, resilience and readiness for crisis events. He began his fire career with Kent Fire Brigade, during which time he completed the Fire Engineering Degree Course at South Bank University, UK. On leaving the Fire Service, he took up the position of Head of Safety for Virgin Atlantic Airways, leading a multi-disciplinary team of safety, health and environmental specialists.*

In 1999, Russ was headhunted by UK airport operator, BAA, to lead the response to a major fire at Heathrow's Terminal 1. In the following five years, he contributed to several major airport construction projects; including the skyway at Gatwick Airport and T5 at Heathrow Airport.

Russ was awarded the HSE's award for European Safety and Health at Work achievement 1998, European Strategic Risk Management Award 2004, International Fire professional of the Year 2015, and CIR International Risk Management Award 2017.

He now works as a consulting resilience and business continuity advisor to several multinational companies. Russ is past president of the UK South East Branch of the Institute of Fire Engineers and is the inventor of the Crisisboardroom concept for management of crisis events, see 54.

Environmental message for children

World: *Earth's Ekko* is a new film from Plastic Oceans International aimed at children from five to ten years old, *writes Claire Sanders*. The film presents the issues facing the world's seas through animation and live action, songs and easy-to-follow science, introduced by a friendly sea creature called Ekko.

Ekko is one of the oldest creatures that lives at the bottom of the sea and maintains the ocean's ecosystems. He is forced to leave his world for the first time in millions of years because it is being affected by something from above. Ekko goes on a learning adventure with three human friends to learn about plastic and the solutions to solve plastic pollution. Together, they learn to rethink plastic, find solutions, change their habits and inspire others to do the same.

To support the launch of the film, creative agency Crowd was briefed to develop an online home, which not only includes the complete short film, but also provides a fun environment to find out more about the issues. Aimed at schools and parents, the site covers key themes on plastic use, which can be discussed and applied at home and in the classroom.

■ *plasticoceans.org*

ICRC is now cyber law toolkit partner

World: The ICRC has become a partner in the international consortium that runs the Cyber Law Toolkit – the interactive web-based resource on the international law of cyber operations. It offers free detailed guidance for practitioners and scholars through the analysis of hypothetical scenarios inspired by real-world cyber incidents.

The ICRC says it will contribute to the development of the Toolkit by offering its expertise on International Humanitarian Law and cyber warfare.

At the Cyber Law Toolkit's heart lie 13 hypothetical scenarios, each containing a description of cyber incidents inspired by real-world examples, accompanied by detailed legal analysis.

The aim is to examine the applicability of international law to the scenarios and the issues they raise.

■ *cyberlaw.ccdcoe.org*

Global health mega-trends

World: Medical professionals believe that the climate crisis will be the most pressing global health challenge for the next 25 years and a massive 92 per cent agreed that misinformation and anti-science pose a dangerous threat to the future of healthcare. These are among the findings of a new report by the Royal Society of Tropical Medicine and Hygiene (RSTMH), which asked medical professionals from across the world what they think the next quarter century will hold for global health.

As part of the research report, the Society identified five global health mega-trends that respondents believe will play a huge role in shaping health around the world: the climate crisis, globalisation, urbanisation, demographics and technology.

The climate crisis came out as the biggest overall challenge. Within this, mass migration, new emerging diseases and the health and nutrition implications of climate-ravaged food supplies were highlighted as the biggest challenges to global health.

Despite these issues and others, more than half (53 per cent) are optimistic about the future of global healthcare, with 92 per cent saying that technology has improved healthcare systems over the last 25 years, and two thirds (65 per cent) thinking it likely that a company, like Amazon, will emerge and disrupt how healthcare is delivered.

■ *RSTMH polled health professionals across six continents and 79 countries. The full report can be found at rstmh.org*

Sea defences warning

Japan: Experts at Sheffield University's School of East Asian Studies have found that the Japanese Government did not account for global heating-driven sea level rises in its recommendations after the devastating earthquake and tsunami of March 11, 2011.

The researchers studied the seawall under construction in Tarō, north east Japan – where sea defences were destroyed by the 2011 tsunami.

They found that while the new wall represents an: "Incremental improvement on pre-2011 defences," it risks being overwhelmed by a future tsunami of a similar scale.

The findings have implications for coastal and low-lying regions around the world that are at risk of destructive tsunamis, as recent research shows arctic permafrost is already melting at levels not expected until 2090.

The resulting rise in sea levels could make tsunamis on the scale of 2011 more common.

"Instead of preparing for the past by failing to imagine the future, governments around the world must live up to their obligations in the *Paris Climate Agreement* and adopt a transformational approach suitable for an era of increasingly severe mega-disasters," one of the authors noted.

■ *The paper was published in the* Asia-Pacific Journal*; apjjf.org*

Rice irrigation worsened landslides

Indonesia: Irrigation significantly exacerbated the earthquake-triggered landslides in Palu, on the island of Sulawesi, in 2018, according to an international study led by Nanyang Technological University, Singapore (NTU Singapore) scientists and the Asian School of the Environment (ASE), together with collaborators from institutions in Indonesia, the United States, the United Kingdom, China and Australia.

The research highlights the urgency for Southeast Asian nation states to review locations with intensive rice farming activities that lie among active faults.

The 7.5 magnitude earthquake struck the Indonesian city on September 28, 2018, taking the lives of over 4,300 people, making it the deadliest earthquake in the world that year.

The landslides in Indonesia's Palu Valley resulted from widespread liquefaction in areas that were heavily irrigated for rice cultivation. A century-old aqueduct that carried water into the Palu Valley to irrigate rice artificially raised the water table to almost ground level. This elevation increased the potential for liquefaction.

The combination of this fluid-like sediment and the slope of the valley floor exacerbated the catastrophe, creating wide lateral spreading of water, landslides, and debris, which swept through the villages.

This fatal cocktail marked Indonesia's deadliest earthquake since Yogyakarta in 2006.

"This event is a wake-up call for any area where active faults and irrigation coincide," said Dr Kyle Bradley, a principal investigator at NTU's EOS who led the research.

"We need to improve the awareness and understanding of liquefaction-related landslides and pay closer attention to places where irrigation has artificially raised the water table," added Dr Bradley, who is also a lecturer at NTU's ASE.

■ *www.nature.com*

Heavily irrigated rice paddy fields artificially raised the water table to almost ground level, worsening the landslides triggered by an earthquake in Palu, Indonesia, in 2018

Gilles Brocard | University of Sydney

Global Assessment Report: Living with uncertainty

Published biennially by The United Nations Office for Disaster Risk Reduction (UNDRR), this year's report, *GAR19*, highlights take-home observations for nations, organisations, communities and individuals to consider when thinking about risk and disaster risk reduction. **Claire Sanders** reports

One of the main thrusts of the *GAR19* is how to live with uncertainty. Taking risk analysis and the issues associated with unknowns and surprises, the report states that we must be able to adapt collectively, with a degree of flexibility in order to anticipate and respond to change. The human predisposition that everything must be under control needs to make way for a more opportunistic attitude, which allows for gaps in understanding to be acknowledged and explored in a rational and collaborative way. Paradoxically, the more we find out about the world, given our extensive accrual of data, the more we realise what we don't know.

Opportunistic attitude

Collaboration is key. Compartmentalising risk and building silos is not the best way to deal with extreme events. As society becomes more complex, so the need for less hazard-by-hazard risk reduction becomes greater. All sectors should be involved in DRR strategies as part of national planning bodies that appreciate the need for sustainable risk management. Risk should be viewed in a non-linear way. Indeed, *GAR19* uses a waterfall model with feedback loops to outline the connections between context, stressors, tipping points and failure. The correlations are complex, but manageable if risk is viewed more laterally.

The social aspect of DRR also plays a role. The disparities between population groups and households often become more marked following an extreme event. Imbalances should be taken into account from both ends; acknowledging that some people have free rein with their choices whereas others are restricted in theirs by location, age, gender, disability or income group. Safety nets and social protection schemes are not always available to all members of society. Resource sharing, sustained funding and timely intervention will help those facing vulnerability to cope with disaster risk more ably.

Moving away from the vicious cycle of "disaster-respond-rebuild-repeat" is crucial if global threats are to be countered successfully. The Sendai Framework connects post-2015 agreements, such as the 2030 Agenda and the *Paris Agreement*, in reducing risk and how it links to building resilience. Risk-informed development should allow for collaborative approaches that improve resilience, generating resources that enable expected and unexpected consequences to be avoided.

Hand-in-hand with this comes planning for the unexpected. Governments will succeed with risk-informed investment and planning strategies in place; national and local DRR strategies are a requirement of the Sendai Framework by 2020, but *GAR19* reports that we are not on track to meet that target. Again, collaboration is important – stakeholders, governments and experts all need to share and report data. Addressing risk at an individual level is also vital as we all share in decision-making.

The report addresses the "great risk amplifier," climate change, urging more ambitious measures regarding the speed and extent to which changes are made. Vulnerability reduction plans need to account for changes needed in energy, industrial, ecological and urban systems which would help the sustainable development goals to be met and DRR strategies should include near-term climate scenarios.

■ *The full report can be read here: gar.unisdr.org*

The more we find out about the world, given our extensive accrual of data, the more we realise what we don't know

Lightwise | 123rf

Author

CLAIRE SANDERS *is Editorial Assistant with the* Crisis Response Journal

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Professionalisation of emergency management: A chicken or egg conundrum?

Research by **Hugh Deeming** has revealed an underlying frustration with the current state of the resilience sector in the United Kingdom. The time has come, he says, for leaders in the UK emergency management sector to develop the peer leadership and guidance structures that Chartered Institution status provides for so many other professions

In 2014, Eve Coles wrote an essay summarising contemporary thinking about professionalising the UK emergency management sector. She reflected on the development of emergency management from its emergence as a discipline in the early 1990s, when previously more *ad hoc* arrangements were formalised in direct response to what had become known as the 1980's 'Decade of disaster'.

As high impact emergencies focused minds, Coles described how the role for UK emergency management continued to develop into the new century. In 2004, the *Civil Contingencies Act* (*CCA*) introduced statutory duties and defined responder organisations, adding further impetus to drive emergency management from:

Advisory Panel


Paola Albrito *Chief of the Regional Office for Europe of the United Nations Office for Disaster Risk Reduction (UNDRR)*


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Albrecht Beck *Director Prepared International, Senior Disaster Preparedness and Evacuation Expert Switzerland*


Helen Braithwaite *OBE, Head of Resilience, Department for Communities and Local Government, UK*


Andrew B Brown *CMgr FCMI, FSyl, Chief Security Officer and independent Crisis and Hostage Negotiation Expert, UK*


Winston Chang *Global Thematic Focal Point for the International Search & Rescue Advisory Group Secretariat, Geneva*


Jeremy Collymore *Honorary Research Fellow, Institute of Sustainable Development, University of West Indies*


Elton Cunha, *Municipal Director of Barra Velha Municipal Civil Defence, Brazil*


Dennis Davis *CBE, OStJ, QFSM, MPhil, CEng, FIFireE, CCMI, Civil Protection Advisor, Vice Chairman FSF, VP, CTIF, UK*


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Colonel Robert 'Rob' Fagan, *US Army (Retired), Crisis Management Consultant, USA*


Roger Gomm *QPM, Advisor, Trainer, Consultant, Associate Lecturer, Cabinet Office Emergency Planning College, UK*


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Qu Guosheng *Prof of Earth Sciences, Deputy Director Science & Technology Committee, Deputy General Team Leader CISR, China*


Deborah Higgins, *Head of the Cabinet Office Emergency Planning College, UK*


Alice Hill, *Senio" Fellow for Climate Change Policy at the Council on Foreign Relations, USA*


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Arn Howitt *MA, PhD, Executive Director, Ash Center for Democratic Governance & Innovation, John F Kennedy School of Government, Harvard University, USA*


Christine Jessup *is a professional educator of more than 35 years, based in Australia*


Ørjan N Karlsson *Specialist Director, Directorate for Civil Protection & Emergency Planning (CPEP), Norway*

"A Cinderella job into an emerging profession."

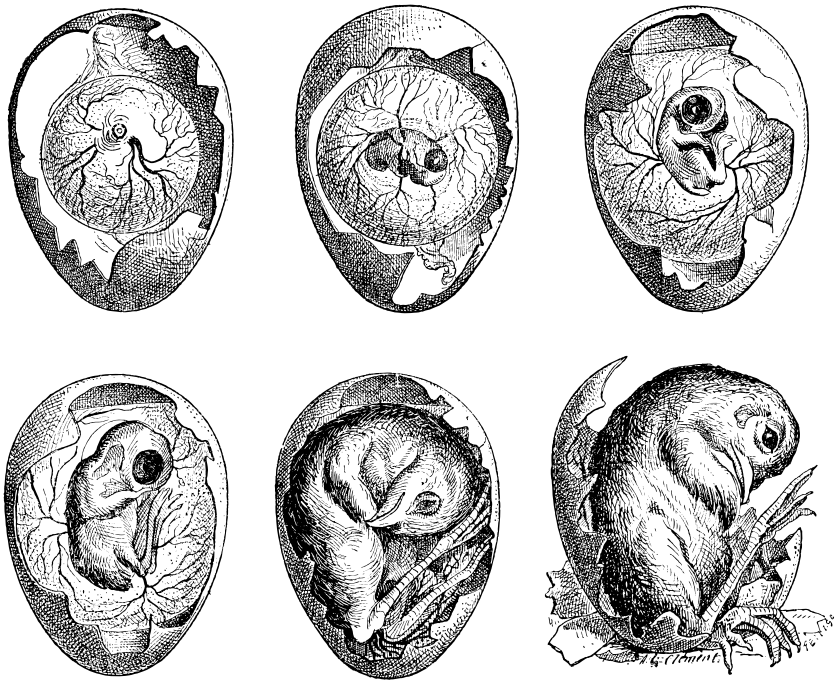
In terms of achieving professional status, however, Coles pointed out that the complex cultural underpinnings of emergency management make a clear definition of 'the profession' difficult, owing to the blend of skills and practice that make up this discipline. For example, some emergency managers' responsibilities have expanded beyond integrated emergency management to include additional functions, such as business continuity, community safety, event management, environmental protection, public health and so forth.

In addition, Coles noted, although the percentages were increasing (to 72 per cent in 2012), emergency management was still not a full-time role for 100 per cent of those responsible for delivering it. And this challenges the interpretation of emergency management as a profession.

In 1961, Alan Klass suggested the three key criteria of a profession as: Monopoly; autonomy; and control. Professions such as civil engineering clearly meet these criteria (ie they have autonomy through the ability to self-regulate membership, as well as monopoly over who can enter the profession and control over education, scholarship and the growth of the body of knowledge and standards). However, Coles suggests it is harder to accept that emergency management meets these criteria – for example, the diversity of responsibilities within this role restricts the key criteria of monopoly.

Coles also discusses work by Cwiak (2009), who investigated professionalisation in the US. Cwiak identified two interesting mindsets within the emergency management sector: identity-centric and

Patrick Guenette | 123rf




Arjun Katoch *Emergency and Disaster Management Advisor, India*


Lina Kolesnikova *Consultant in international relations, security, risk and crisis management, Brussels, Belgium*


Dr Patrick Lagadec *Former Senior Research Scientist, Paris, Consultant in crisis intelligence and leadership, France*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Russ Timpson, *founder and CEO of Horizonscan, UK*


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"If I had to select one sentence to describe the state of the world, I would say we are in a world in which global challenges are more and more integrated, and the responses are more and more fragmented, and if this is not reversed, it's a recipe for disaster"

António Guterres, United Nations Secretary-General, 2019

power-centric. She suggested that the sector's role diversity affects its identity and its perceived subordinate position in power relations with decision-makers, restricting its ability to promote its value to sufficient advantage for it to be considered a profession.

Despite such challenges, with the *CCA* in effect, the need to develop competencies within the sector was clear. In the late 2000s, this led to the development of National Occupational Standards (NOS) and from them, the Emergency Planning Society's (EPS) Core Competency Framework. The aspiration was for this framework to become an integral part of practitioner education, training and development and, as such, ultimately to open a pathway to Chartered Institute status for the profession.

Since their inception, NOS and Core Competencies have undoubtedly informed the development of training inputs. For example, all training course content offered by the Emergency Planning College (EPC) and others is currently mapped to achieve NOS outcomes. However, almost a decade since their inception, the sector is now somewhat ambivalent as to whether NOS or the Competency Framework remain sufficiently relevant. For example, one participant in the recent training needs assessment (TNA) carried out by the author for the CCS and the EPC, stated that NOS were being used to inform training and competency development in their local resilience forum (LRF) simply: "In the absence of anything else."

Austerity and Brexit

While the focus of the TNA research was to be on how the EPC was meeting the sector's learning and development needs, analysis to explore other factors was also encouraged. The research revealed an apparent sense of frustration with the current state of the resilience sector. This was aimed at the twin pressures of austerity and Brexit, the combination of which are perceived to have reduced the ability of resilience units to operate as effectively as they would like, owing to the enforced financial and workload restructuring. However, it was clear that frustration also existed in relation to two further factors: The sector's lack of an ability to influence strategic leadership of the importance of emergency management (a power-focused perspective); and the perceived lack of substantive assurance frameworks (an identity-focused perspective). Interestingly, the EPC appeared to bear the brunt of these frustrations. The sector's current professional institutions, the EPS and ICPEM were, for many participants, considered an irrelevance.

As the Cabinet Office's college for resilience training, the EPC is regarded by many in the sector as the 'gold standard' training provider. However, two factors challenge any perception that believes responsibility for sector professionalisation should fall solely on the college.

First, the college's status as a government owned, contractor operated (GOCO) institute means that while being a provider of assured training, it is simply not within the college's remit to regulate how practice is conducted. Without doubt, the college provides direction through its development of course content, outreach and instructive guidance. However, on its own, it simply does not have the capacity or authority to sanction – a crucial element of Klass's control criterion.

The second issue that indicates the inappropriateness of expecting the college – or any college – to be the single arbitrator of good, leading and poor practice, is the growing engagement with and acceptance of, the value of interoperability across the sector.

It is true that since their inception in 2013, the Joint Emergency Services Interoperability Principles (JESIP) have still not become universally and evenly embedded, even across the three blue light services that were originally targeted. However, what was made clear during the TNA was that LRFs are increasingly seizing on the value of the collaborative working, which JESIP promotes, to build their people's individual competencies and their teams' capabilities. It is being realised that bringing learning and development in-house into LRFs and LRF partnerships actively enhances capabilities through the application of the key emergency management idiom of, 'making friends before you need them.'

However, without an assurance framework, do the locally focused training inputs that result from such dispersed delivery (which may or may not include EPC delivered content) themselves risk an incremental divergence of practice? If so, will this negate any move now, by those seeking to achieve encompassing professional status?

It's a chicken and egg situation, but let's look at the quote at the top of this page. Given Coles' analysis of a sector unready for professionalisation in 2014, combined with the contemporary frustrations about missing leadership, but embracing local interoperability, what does the UN Secretary General's stark statement impel of us?

Surely the time has come for leaders in the UK emergency management sector to drive forward defining what 'good' looks like, by developing the peer leadership and guidance structures that Chartered Institution status provides for other professions. If not, then are we risking further fragmentation and the hobbling of our profession in a way that actually seeds the disaster of António Gutteres' fears, as outlined in the above quote? C·RJ

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Amazon fires: A global problem

Elton Cunha unpicks the tangle of misinformation to find the truth behind this year's fires in the Amazon, and reports that the facts are serious enough not to need embellishment

The world was shocked by images and information emanating from Brazil, showing the outbreak of fires throughout the Amazon rainforest. World leaders, media personalities, artists and the national and international community were moved to protest in support of one of Earth's largest and most important biomes – which are defined as distinct biological communities.

Fires on Brazilian soil occur naturally every year. However, burning is encouraged by the farming industry and mineral exploration organisations. This year, extreme fire events have generated an institutional and political crisis in Brazil and elsewhere.

Information, much of it propagated without consulting reliable sources, was disseminated across social networks and the media. This generated confusion, institutional gaffes, even information warfare and fake news.

Brazil is currently experiencing ideological struggles. Some pointed fingers at each other while the Amazon burned. Rather than addressing the problem, a blame-shifting attitude created an operational blockade.

The much-respected Director of the National Institute for Space Research (INPE), Dr Ricardo Galvão, was fired for disclosing data about above average burning rates. His dismissal was undertaken at the behest of President Jair Bolsonaro by the Minister of Science and Technology, Marcos Pontes.

INPE's information is in the public domain but it embarrassed the Brazilian Government. Bolsonaro criticised the data, dismissing it as exaggerated and ideologically biased. Ironically, this intervention resulted in even wider dissemination of the data.

Meanwhile, the intelligence sector of the Brazilian Federal Police released information alleging the possibility that several groups had planned to mark 'Fire Day' on social media in order to: "Destabilise the government's image in the face of public opinion or, even take advantage of cuts in personnel responsible for supervision, financial cuts and the contingencies of the public budget to deforest and burn at will."

Environment Minister, Ricardo Sales attempted to relax environmental licenses in order to justify the development and strengthening of the Brazilian economy. He appeared in the media defending his management stance, aligned with the thoughts of Bolsonaro; views that are not always supported by all Brazilians.

The government took too long to react in a strategic way to the fires in the Legal Amazon – the part located within Brazil – while leaders of friendly nations fought each other on social networks and through media interviews. This highlighted the inertia and how firefighters, Brigadistas and the forestry and civil defence units had become overwhelmed in combatting the flames. Bolsonaro eventually ordered the Armed Forces to reinforce firefighting units and other Brazilian states sent military firefighters and equipment to help fight the blazes.

Information about the fires was repeated and disseminated, but some of it was mismatched or just plain inaccurate, with images such as African giraffes and elephants, Australian koalas and Asian monkeys in front of burnt-out scenes, purporting them as being victims of the fires. Images up to 30 years old, along with pictures of fires from other regions, were also disseminated.

There are criminally-set fires every year, but the Brazilian Government seems to turn a blind eye. Brazil has some of the best environmental legislation in the world, yet the future of the Amazon is compromised by a lack of enforcement, corruption and increasing world demand for ore, raw materials and food.

What matters most? The survival of humanity with conserved and protected biomes, or greedy consumerist lifestyles? Should we wait for the world to collapse before we work out how to survive the apocalypse? CRJ

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This comment is based on a longer blog, available at www.crisis-response.com

Skellos | 123rf

Our global legitimacy crisis

Maha Hosain Aziz explores how we are at a global crossroads – geopolitically, politically, economically and socially. We are faced with a unique set of risks that has been, or will be, shaped by technology, she explains

There's no getting around it, 2020 will be a tough year. The usual suspects – from extremist groups to natural disasters and multiple refugee crises – will continue to plague us. We will keep speculating about nuclear developments in Iran and North Korea, escalation of the South China Sea dispute and growing superpower proxy wars in battlegrounds such as Venezuela, Yemen and Afghanistan. These factors will hinder stability in the international system; that's global risk in a nutshell. But what else should we expect?

We are at a very sensitive global turning point. Like many, I was perplexed by Donald Trump's victory in the 2016 US presidential election and the Brexit vote results in the UK that same year. But, on reflection, I realised that there was much more happening globally than these two shock events. There were similar threats to stability – what I term our 'global legitimacy crisis' – building in most parts of the world, and which persist today. We are faced with some major questions with no clear answers, adding to global instability. If not a US-led world anymore, who will be in charge of the international system? If democracy is weakening, is there a better system to replace it? If globalisation is failing, is populism the answer? And if liberal values are in decline, will xenophobia dominate?

We know the geopolitical status quo of US hegemony has shifted and that's why I label the world currently as 'post-hegemonic'. Even if the US is still setting the tone in geopolitics in some ways, no one can deny President Trump's unilateral rhetoric emphasising that the US is no longer responsible for the world. Nor can we ignore China's repeated declarations of its global ambition; France's growing influence via soft power; Russia's dominant hybrid warfare; and so on. The international system appears to be headed in a more multipolar direction, after 25 years of post-Cold War US hegemony. Others, like author Dr Parag Khanna, argue that the future is Asian, while some studies illustrate that the future is African population-wise, with one in five people coming from Africa by 2030.

It may be time to re-evaluate what we mean by power today. A superpower is traditionally defined by its superior position globally in terms of its economy, diplomacy, culture and military. Yet military strength is changing – it is no longer just about conventional or even nuclear weapons. As with many issues today, it boils down to technology. In my book, *Future World Order*, I consider how tech is changing the very nature of power, especially military power – and will likely determine the next leading superpower.

The consensus among the superpowers Russia, US and China seems to be that AI will be key to their national security in the future. AI could revolutionise military power – and war – as much as nuclear arms, according to a 2017 Harvard report. Russian President Vladimir Putin has openly said that the country with the best AI will 'become the ruler' of the world and this may be why his country has already publicly declared that it will build autonomous weapons no matter what. China has plans to dominate all types of AI by 2030, including weaponry. Clearly, tech is going to be the game changer in securing power in the international system. How do we manage this? An AI treaty is needed now to secure future global stability – and prevent World War III, as Elon Musk and other experts have warned.

Turning to politics, let's face it, it's a pretty tough time to be a politician. Whether led by a political novice or seasoned veteran, governments everywhere are struggling to tackle major risks – and citizens have figured that out. In recent years, frustrated citizens have thrown food at their elected officials (Brazil, Germany), slapped their politicians (Nepal, India), set themselves on fire outside state offices (Morocco, Greece), launched mass demonstrations against specific policies (US, Chile, Poland, Hong Kong) and even brought down entire regimes (MENA). Democracy or dictatorship, citizens are clearly unhappy with their governments – and they are not afraid to show it. This is a global crisis of political legitimacy where the political status quo is challenged by protesting citizens. There's a recurring feeling among more citizens, often armed with technology, that there must be a better, more legitimate way to govern.

Democracy under threat?

Furthermore, democracy – long touted as the 'sole surviving source of political legitimacy' and the 'end of history' by theorists like Fareed Zakaria and Francis Fukuyama – is under threat. The promotion of democracy, a major marker of US foreign policy in recent decades, does not appear to be a priority for the current government. The EU, led by Germany's Chancellor Angela Merkel and perhaps now France's Macron, is likely now to take a larger role in democracy promotion globally. But it's questionable whether citizens even want it anymore – one study suggests that in long-standing democracies the public, especially millennials, don't care about democracy as much as previous generations.

So which political system or idea will win? Democracy as we know it today may not make the cut, but non-democracy may not either. Any government in today's post-hegemonic world, in the democratic or non-democratic context, needs to account for a more informed, activist, tech-savvy citizenry and needs to leverage technology for renewed political legitimacy. This basic

Today's global legitimacy crisis could simply be history repeating itself – the first era of globalisation ultimately saw similar tensions with a resurgence in nationalism, followed by two world wars and the Great Depression. But we need to recognise that today's global legitimacy crisis can also be an opportunity to reshape our future. Non-state actors appear to have figured that out already

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truth must be embedded in a new social contract.

The global economic status quo has been challenged for a while, although globalisation is still defended by many world leaders, including China's Xi Jinping at Davos, and international institutions like the IMF. But globalisation has been challenged for years and the economic status quo is clearly under threat. Citizens who felt excluded from globalisation's expected benefits launched movements like the Battle Against Seattle and Carnival against Capitalism in 1999, while WTO, G7 and G20 meetings have seen recurring protests. In the last decade, governments themselves have responded by promoting an anti-globalisation agenda rooted in populism, from the EU to Latin America and the US.

The problem is that the proposed alternative of populism may not necessarily deliver what the public expects. We may see citizen frustration at both ends of the spectrum – protests will recur against globalisation, but ultimately may also surface against populism, as governments struggle to meet citizen expectation.

Technology is exacerbating this economic crisis as automation unemployment looms large. Digital skills may be key for our future economy and the Fourth Industrial Revolution (see p58), may even create new jobs. But where does that leave those who might be unable to adapt to these new tech-focused jobs? As Jack Ma put it, automation will create: "More pain than happiness in the next 30 years."

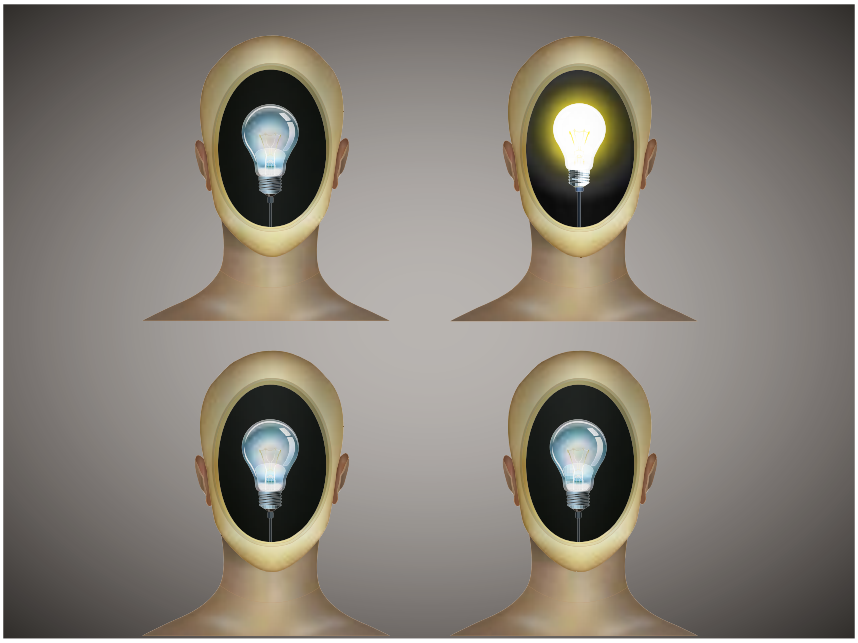
It seems unlikely that we are prepared for what is to come. The uncertainty and related anxiety around tech-induced unemployment will likely lead to more people joining the precariat – the growing global class with: "No occupational identity or narrative to give to their lives," as economist Guy Standing explains. These individuals felt excluded from globalisation and may ultimately also feel excluded from a tech economy.

Perhaps universal basic income (UBI) will appease this growing class, but for now, many will have to tackle a work-related identity crisis. We should expect more citizen frustration as tech-dominant economies leave some behind, while governments struggle further to meet economic expectations.

Are we globalists or nationalists? This is the crux of our global identity crisis today. We are clearly confused, perhaps partly owing to a lack of political leadership or a world with no real global values. Xenophobia has been on the rise for a while. A BBC global survey reveals 75 per cent of people believe their societies are more divided than ten years ago, with over 40 per cent attributing this to diversity in ethnicity or religion, especially in Western Europe.

The marked decline of collective empathy has seen the

notable rise of hate groups and related violence in recent years. Consider the actions of empowered hate groups against migrants and refugees in parts of the US, Europe, Africa and Latin America, plus the exclusionary rhetoric from governments led by populist leaders. And let's not forget the violent nationalism directed against Muslim minorities brewing in Asia, particularly in countries like Myanmar, Sri Lanka and India. Where is the counter-narrative to such hate? Will these minorities ever (re)gain a sense of belonging alongside the majority? Maybe, but not in the near term.



In a world lacking political leadership, who will step in to ease the global legitimacy crisis?
Nadia Forkosh | 123rf

Technology has undoubtedly made our identity crisis worse, as social media is still leveraged to instigate xenophobic violence. UN human rights experts confirm that Facebook has been used to spread hate speech against local Muslim minorities in Myanmar (some anti-Muslim posts have been directly tied to senior military personnel). In Sri Lanka, Buddhist mobs' anti-Muslim riots have been, in part, driven by disturbing Facebook posts like: "Kill all Muslims, don't let even one child of the dogs escape." In India, both Facebook and WhatsApp messages have promoted fake news and hate speech, which have led to killings of certain minorities. In the US and the EU, far right extremists have leveraged social media to spread their anti-minority views and violence.

Let's face it, it's a pretty tough time to be a politician

Yes, we all know that regulation of social media, and the tech giants who created it is key, but we've been saying that for a while. WhatsApp, Facebook and others have also been saying for years that they're doing everything they can to prevent the spread of hate speech through their platforms. But what else can we do to counter the narrative of hate and also perhaps reclaim our global values in a post-hegemonic world?

So, we are undoubtedly at a crossroads in our human development. Where are we headed? That's a tough question. Today's global legitimacy crisis could simply be history repeating itself – the first era of globalisation (1850-1914) ultimately saw similar tensions with a resurgence in nationalism, followed by two world wars and the Great Depression. But we need to recognise that today's global legitimacy crisis can also be an opportunity to reshape our future. Non-state actors appear to have figured that out already, at times filling the gap left by weak governments.

Our political systems in this sense are already evolving.

Non-state actors, beyond traditional civil society, are the relatively new influencers in our political systems. In recent years, we have witnessed the power of the citizen protester, bringing down dictatorships in the MENA region, challenging austerity policies in certain EU countries and ousting seemingly corrupt leaders in countries like South Korea and Brazil. But such citizen power has gone beyond domestic problems, becoming global movements focused on major issues like women's rights, immigration and climate change. Such activism has been facilitated by social media – a reminder of how tech companies are also a key non-state influencer in our post-hegemonic world, perhaps at times, more powerful in shaping society than governments.

But it's also worth noting the rise of the activist billionaire in our political systems. These days, they are spotting trends and sharing views publicly more than ever. Some of these billionaires are techies and are, perhaps, seeing it as their responsibility to remind us of the negative impact technology will have on society, including greater unemployment. Sam Altman is even working on a pilot project to assess the viability of UBI to support those who will lose jobs to automation. Through his LA-based thinktank, Nicolas Berggruen is developing new ideas to: "Shape political, economic and social institutions in an era of great transformations." In response to President Trump's rhetoric, Michael Bloomberg pledged $15 million to the UN to tackle climate change, while Elon Musk sent solar packs to bring energy back to hurricane-struck Puerto Rico. Collectively, these non-state actors – the citizen protester, tech company and the activist billionaire – are starting to ease the global legitimacy crisis. They can do this, and perhaps need to, in a world lacking political leadership.

And what about you? What role will you play in easing our global legitimacy crisis in the coming years? C·RJ

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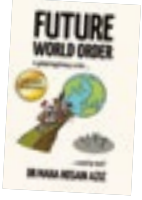

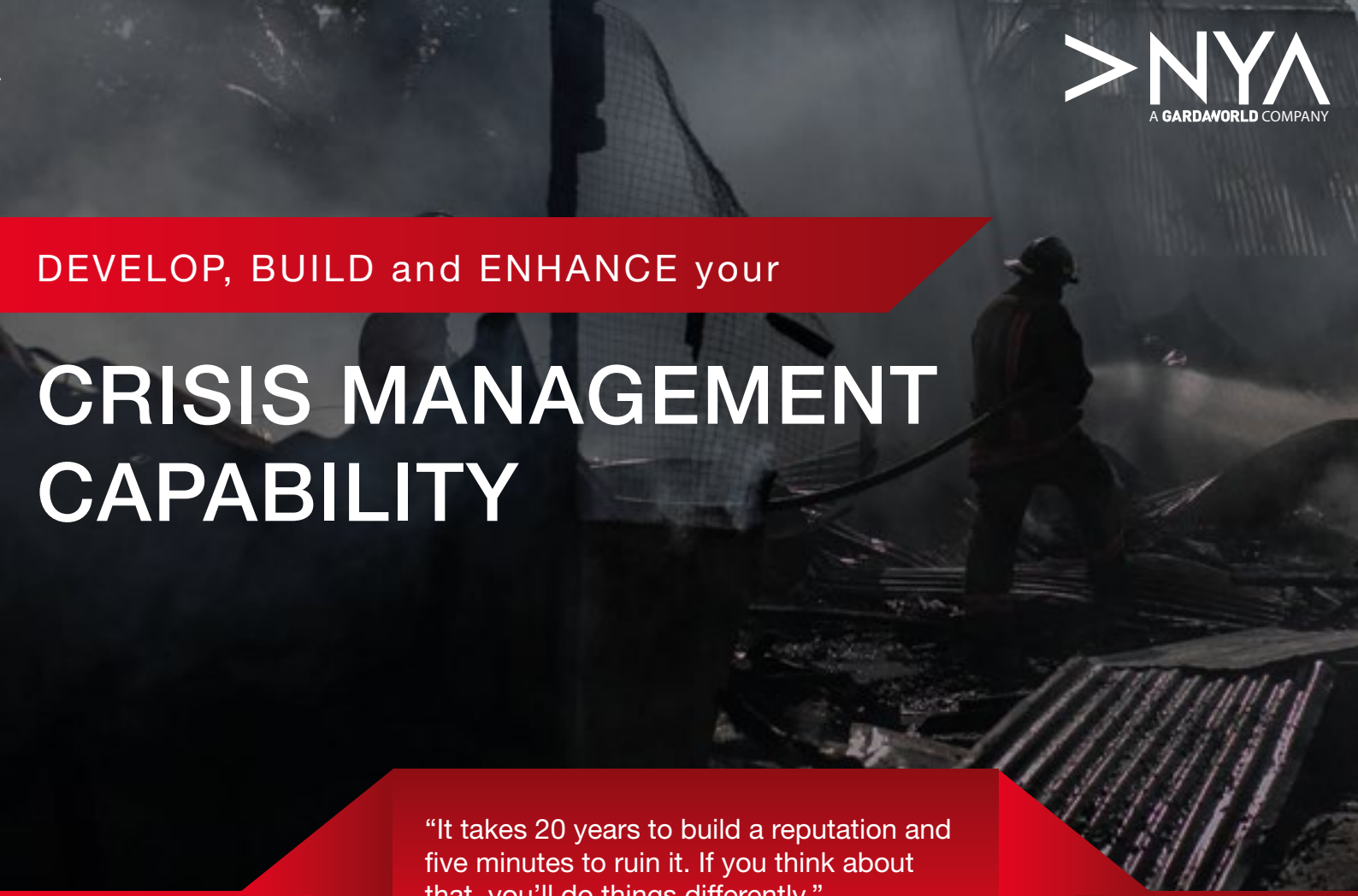

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The ten megatrends of our turbulent times: A situational blueprint for leaders

Andrea Bonime-Blanc examines the ten megatrends that leaders of every type – business, society, government – should factor into their organisational strategy to guide their entities through the largely uncharted, choppy or turbulent waters of today's Scylla and Charybdis

Will leaders properly recognise the strategic environmental, social, governance and technological (ESGT) disruption and conflagration that is taking place and help their primary stakeholders and our planet meet these interconnected, complex ESGT issues and risks, transforming them into promise, opportunity, solutions and value? If they do, we will be safer, more productive and constructive. If they don't, I don't want to guess what would follow 'turbulence' in the downward spiral.

Here is a look at the ten megatrends of our turbulent times and how leadership should deal with them.

■ **The Fourth Industrial Revolution:** *Hurtling through space at the speed of light*. The pace and footprint of change have accelerated and grown exponentially, affecting and changing everything. AI, robotics, quantum computing, 5G communication, nanotechnology and Crispr are affecting everything from the macrocosm of international governance, to the microcosm of individual daily behaviour, psychology and biology.

There will be intended and unintended – potentially existential – consequences, both negative and positive. Think sophisticated military drone robotic biological weapons, in the wrong hands. And yet there may also be resolution of some of the most intractable global health, hunger, climate, communications and sustainability challenges, such as genetically engineered cures to diseases.

The Fourth Industrial Revolution is unstoppable. We are living through the fastest period of change humankind has ever experienced, whether walking down the street, riding bikes, even driving cars while fixated on our screens, oblivious to the world around us, engaging in new physical and psychological behaviour and creating novel health and safety dangers. And this is only the beginning. Wait until we have biologically embedded chips, apps and the Singularity…

To confront this, leaders must urgently incorporate technological, digital and associated disruptions into their organisational strategy, tactics and culture, preparing stakeholders for the impacts – good and bad.

■ **Global trust collapsing:** *Recession or depression?* The entire world and its major institutions – government, business, media and the non-profit sector – are experiencing a continuing downward trend in stakeholder trust. Is this a trust 'recession' from which we will recover, or a longer-term collapse, closer to a trust 'depression', from which we will have to meticulously and deliberately build our way back to normality or some other new normal?

This continuing deterioration in trust will lead to a shorter and more brutish world (to paraphrase Hobbes) where some of the worst aspects of human nature will dominate – deceit, fraud, corruption, violence and war. Or, to paraphrase another source – where the seven deadly sins of pride, greed, lust, envy, gluttony, wrath and sloth would prevail.

Building back trust will require a deliberate, conscious and constructive effort by conscientious leaders in each of our institutions and/or the building of novel trustworthy ecosystems, perhaps powered by Blockchain. Either way, leaders have an opportunity, indeed an obligation, to reinstate stakeholder trust by creating social value, competitive advantage and reputational opportunity.

Leaders must undertake an analysis of their organisational trust issues, risks and opportunities by fostering a deep understanding of key stakeholders and their expectations.

■ **The 21st Century ethical leadership paradox:**

We are living in a world of extremes – extreme opportunity for good and bad, giving rise to the ethical leadership paradox. The unethical, narcissistic and dangerous can commandeer ever greater tech tools for the wrong purposes. Yet, more emotionally intelligent leaders, driven by a sense of social responsibility, can deploy such tools and assets for the greater good. The real question is: What type of leadership will prevail?

Unchecked, and unaddressed, unethical and nefarious forces will seize the lead. Witness the 2020 Social Credit system in China, whereby more than a billion citizens

will be continuously tracked and rated digitally, socially, financially and reputationally. And this is certainly not the worst example of what leaders can do with technology. Responsible and ethical leaders must seize technology for good, creating responsible and ethical decision-making at all levels – from the inception of new technologies such as AI, to their implementation.

Going forward, we need deeply ethical leaders who will think beyond the box on how their organisation can be part of the solution to interconnected socioeconomic risks and opportunities.

■ **Complex interconnected risk rising:** Both natural and human-caused risks are rising and interconnecting like never before. Only half-jokingly I would say: beware the new Black Swan of our times – the Purple Techno-Swan, a risk that is both unprecedented and unpredictable, propelled by an age of exponential technological change.

The intended and unintended, potentially existential, consequences of technological and scientific innovation that humans are unable to control, are ushering in the rise of new and intractable and existential risk. This includes risks we don't know already exist and risks we may never be able to predict or mitigate until it's too late. Think about what quantum computing might yield in terms of power and impact if in the wrong hands. And in the right hands?

Leaders must undertake complex interconnected risk identification, co-ordination, mitigation, prediction and translation into strategic solutions, opportunity and value.

■ **Ecological apocalypse:** *A decade to oblivion or salvation?* Climate change is here and now; will humanity get its act together in time (over the next decade) or are we, and future generations, doomed to live in a more hostile, short and brutish world?

Look at the burning of the Amazon this summer – not just a periodic natural phenomenon, but one fuelled by uncaring, compromised anti-environmental leadership, both within and outside of the affected territory. The reverberation of this ecological damage may be existential, as the Amazon produces 20 per cent of global oxygen. This ecological destruction, together with the simultaneous, unprecedented melting of glaciers, are reflections of a climate change that is endangering habitats, species and coastal areas, creating deserts and other uninhabitable areas.

Most leaders know what's going on, despite some notable exceptions. There are collective global vehicles for action – the *Paris Climate Agreement*, the UN's Sustainable Development Goals (SDGs) – and myriad local, urban, communal, social, business and governmental initiatives worldwide, which can come together to mitigate the climate onslaught. We can do this, together, now. We have ten years (or fewer) to act decisively – all types of leaders must lock arms yesterday to implement urgent solutions globally and locally today.

■ **The new geopolitical abnormal:** *Rumblings or tectonic shift?* Does the global regression in domestic democracy and international governance to greater forms of populism, tribalism, illiberal democracy and authoritarianism represent a fixable erosion of post-WWII norms or a tectonic break to a more unstable unknown?

Whether the US re-emerges from its current anti-internationalist, anti-immigrant, pro-authoritarian trends, or another coalition of nations is able to represent global 'moral' political leadership, there are opportunities to move the global agenda forward. These include continuing G7 and similar global governance vehicles and implementing the *Paris Climate Agreement*, as well as moving forward on the SDG agenda, with the help and collaboration of the UN and other global institutions, such as the IMF, World Bank and others, along with business and NGO communities globally, regionally and locally.

The time of orderly, predictable international relations is over. Geopolitical risk needs to be part of everyone's risk management, crisis management and business continuity planning

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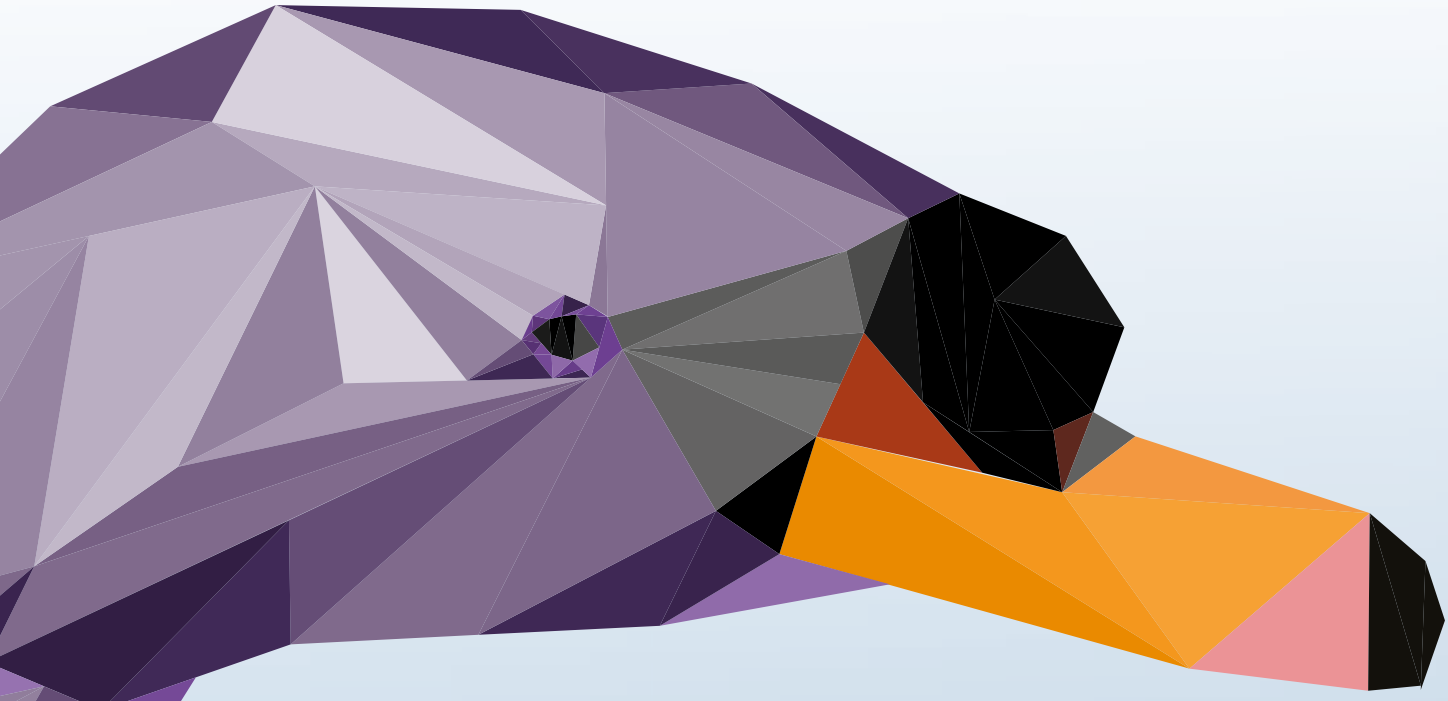

Move aside, black swan. Only half jokingly, the author says beware of the purple techno-swan – a risk that is both unprecedented and unpredictable, propelled by an age of exponential technological change

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The time of orderly, predictable international relations is over. Geopolitical risk needs to be part of everyone's risk management, crisis management and business continuity planning.

The meteoric rise of ESG and the virtual stakeholder: *Mirage or reality?*

The rise of all things ESG over the past two decades reflects the rise in power of previously ignored or excluded stakeholders – beyond the primary ones (for example, shareholders). In addition to shareholders, customers and employees matter a lot. For non-profits and NGOs this means that, in addition to beneficiaries, donors and suppliers are vitally important. For governments, in addition to citizens and residents, other groups, such as transients and immigrants, also matter. Is the rise of the concept of ESG and its expanded base of 'stakeholders' an evanescent mirage or a long-term reality?

Business is grudgingly acknowledging this shift as The Business Roundtable (comprising 200 global corporate CEOs) recognised in its August 19, 2019 declaration, signed by 181 CEOs. Organisations that do not amplify their lens to incorporate the views, expectations and consequences of ignoring their full spectrum of key stakeholders on ESG (or ESGT) issues, risks and opportunities, run the risk of losing to competitors, engaging in misadventures, increasing reputation risk, liabilities and losses, or even losing their license to operate. Those who do recognise this shift stand to gain for a broader number of key stakeholders.

All types of organisation must incorporate the more complex landscape of ESG/ESGT issues, risks and opportunities and the interests and expectations of stakeholders.

Business as the new global social/moral conscience: *Fake or fact?* With deteriorating political leadership in both democratic and non-democratic regimes around the world, and the decline in trust in all other fundamental institutions, business suddenly finds itself in the possible role of global moral steward. For example, the *Edelman Trust Barometer 2019*, found that 76 per cent of respondents thought CEOs should take the lead on change rather than waiting for government to impose it.

Much of the corporate moral leadership on these topics can also be seen in the rise of ESG from an investor and impact investor standpoint. Combined with the UN SDGs, there is no doubt that there is a convergence of ESG (ESGT), ethics, compliance and corporate responsibility in global business.

Blackrock CEO Larry Fink's 2017 and 2018 letters to CEOs and boards urging them to pay attention to ESG and stakeholders and the aforementioned August 2019 US Business Roundtable declaration, clearly point in this direction. While some may argue that this is window dressing or a new form of greenwashing, it nevertheless underscores an important megatrend: the business sector at least hears the clamour, or at

best is seizing the opportunity to lead conscientiously. Business leaders have an opportunity for broader moral global leadership – will they do so sincerely or will they greenwash it?

From hyper-transparency to super-opacity: *Reputational risk on steroids.*

The hyper-transparency brought about by the explosion of the Internet, telecommunications and social media, combined with new technologies, has given way to a serious unexpected consequence: the viralisation of super-opacity, where fake news and deep fake technologically-enabled capabilities are creating new forms of distrust that translate into reputational risk.

Social media and the Internet have democratised information. Denizens of the dark arts – whether nation states, international crime rings or the oddball sitting in his mother's basement – have twisted this positive force into a dark one, deploying tech to create fake news, fake audio, fake video and all manner of other deep fakes. This will continue to get worse before it gets better.

Reputational risk is an amplifier risk that layers on or attaches to other risks – especially ESGT – adding negative or positive implications to the materiality, duration or expansion of the other risks on the affected organisation, person, product or service.

This development also aggravates and complicates reputational risk, because fake news and opacity will be in the mix – producing the megatrend of reputation risk on steroids, for which leaders and their entities must now be prepared.

All types of leaders need to understand the power and the danger of the age of opacity – being savvy with social media and the darker tech arts involving all things fake – they and their entity's reputation depend on it.

Future fear: *Utopia, dystopia, life on Mars?* The World Economic Forum considers that we are in for a few future shocks. Its list includes: Weather wars – the use of weather manipulation tools, stoking geopolitical tensions; Open secrets – quantum computing rendering current cryptography obsolete; City limits – the widening gulf between urban and rural areas reaching a tipping point; Against the grain – food supply disruption emerging as a tool as geo-economic tensions intensify; Digital panopticon – advanced and pervasive biometric surveillance allowing new forms of social control; Tapped out – major cities struggling to cope in the face of the ever-present risk of water running out; Contested space – Low Earth orbit becoming a venue for geopolitical conflict; Emotional disruption – AI that can recognise and respond to emotions, creating new possibilities for harm; No rights left – In a world of diverging values, human rights openly breached without consequence; and Monetary populism – escalating protectionist impulses calling into question the independence of central banks.

Will our future be utopian – where everyone works a little, has a social safety net in the form of universal basic income and is free to pursue their passions with enough time for leisure, entertainment, family and friends? Or will it be more dystopian, with large swathes of able-bodied people unable to find work because the 'machines' have taken over, among other things? Or will we be living on Mars with Elon Musk?

While we cannot expect a utopian future, we can see a world where collaborative groups of cross-disciplinary experts work together to solve some of the greatest ESGT challenges of our time – climate, hunger, violence, inequality, poverty – and the new tech challenges of AI, quantum computing, nanotechnology and many others. Hope is not lost, but leaders have the urgent responsibility to understand future trends and their impact on strategy, risk, opportunity and stakeholders. CRJ

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Andrea Bonime-Blanc will be speaking at the IDR 2019 Summit and the Crisis Response Journal Conference in London this December. *See p110*

Andrea Bonime-Blanc's book, Gloom to Boom: How Leaders Transform Risk into Resilience and Value, *is available from Routledge*

Thai cave rescue: A volunteer's perspective

The world watched aghast as reports emerged of a junior football team and its coach becoming trapped deep underground in a flooded cave system in Thailand last year. International rescuers and volunteers joined the Thai authorities in an extraordinary and lengthy rescue attempt – here, **Emily Hough** speaks to one of the specialist cave diver volunteers to gain his personal perspective on the incident

Originally from Denmark, Ivan Karadzic visited Thailand for the first time in 2006. He became captivated by scuba diving, to the extent that he eventually sold his apartment in Denmark, moved to Thailand permanently, continued his diving training and was certified as an entry-level diving instructor.

In 2012, he opened his own advanced dive centre with a partner: "I teach experienced divers how to become diving instructors and I teach divers how to become more advanced at scuba diving."

On June 23, 2018, 12 members of a junior football team, the Wild Boars, visited the Tham Luang Nang Non cave in Chiang Rai Province, a well-known landmark, to celebrate one of the group's birthday. Aged between 11 and 16, the boys were accompanied by their assistant coach. Heavy rains partially flooded the cave system, which runs for 10 km, trapping the group 2.5 km inside with rising, muddy waters.

The author (in yellow helmet) in one of the chambers with Erik Brown from Canada

Mikko Paasi

Says Karadzic: "I was sitting in a resort in the south of Thailand with a friend who was about to conduct a cave course. We were briefing new cave divers on a lost diver scenario." He relates a feeling of unreality: "There we were, explaining procedures on how to find a diver

lost in a cave, and how to give that diver the biggest chance of survival. And then, in the background, the television was showing this scenario in real life."

He explains: "Cave diving is a niche sport; in Thailand, we have about 50 – around 25 foreigners and another 25 Thai cave divers. We have messenger groups and we know each other. These groups started to light up with people asking what they could do to help."

Ivan's friend, a Thai national, got in touch with a government contact, volunteering the cave divers' assistance. "The feedback in the first days was that they didn't need divers; this was not a diving operation," he says. At that stage, there was still hope that rescuers would find the football team in a non-flooded area of the cave; parents, local rangers and volunteers entered immediately, spending most of the night searching. "Unfortunately, they came out without having found them." Thai Navy SEALs were called in, joined a few days later by international rescuers from around the world. Rescuers faced difficult conditions in the cave system, hampered by narrow passageways, zero visibility and steep slopes. The passageways are linked by a series of chambers, and rescuers made it to chamber three, which became their base. Eventually the boys were located; a military medic and Navy SEAL divers remained with them until they were rescued.

A few days later, Karadzic and his cave diving friends bought travel tickets to the area: "I went back to my company, and gathered all my specialist equipment."

I ask whether the authorities had thought to contact the – admittedly tiny and virtually unknown – diving specialist community. "No," he replies. "Ninety-nine per cent of the planet doesn't know about cave diving. The authorities did the best they could. They went to the best divers they knew – the Thai Navy SEALs – and believe me, these are hard-core divers, but they are not cave divers. They are physically strong, trained for incredibly uncomfortable environments. But they lack essential training for this specific environment, and specific equipment for this kind of dive."

On arriving at the scene, Karadzic and his cave diving community introduced themselves. But, as others who were involved in the rescue have noted, it was difficult initially to demonstrate their expertise and credentials to those in charge of the official rescue effort.

"For the two first days, we were not called upon. We had our own little tent containing all our equipment and we just sat there and waited," he says. Karadzic has short hair and a military background. "Most of the other divers have dreadlocks and maybe a few more tattoos and when you look like this, and you want to be part of a military operation there's a certain perception… 'look these foreigners sitting with their long hair, barefoot and relaxed'. I understand that as an officer, a responsible party, or as a member of the military, you don't necessarily take note of the views of the hippies! And I fully understand that," he smiles.

A Thai national with his group eventually acted as liaison. This was particularly important when it came to translating cave diving terminology and equipment. "I think he played a big part in convincing the Navy that although we might have looked a little weird, we knew what we were doing," Karadzic says. They developed a relationship with an American Major: "And then we kind of felt like part of the US team. He would receive orders from Thai command, then allocate different tasks to his soldiers and to us, the cave divers. We would then self-organise as a team. We had five active divers and two experienced cave divers who did not take part in the dive.

"Our first mission was to bring some tanks into what is known as chamber six in the cave," he continues, explaining that these were reserve tanks for the rescuers, who had to operate a relay system for air, equipment and supplies. He emphasises how this involved working in an incredibly hostile environment. "We are all experienced cave divers, but none of us have dived that particular cave because it is flooded every year and the rainwater coming down into it means that it is just mud, with no visibility and nothing to see." The extreme danger was brought home tragically when a highly experienced ex-Navy SEAL diver died during the rescue.

Zero visibility

The golden rule in cave diving is to set a guideline. "It's a very strict rule – this line keeps you alive in case your torch doesn't work. So we stay very close to this tiny, thin line and in an emergency we can guide ourselves out. We have other procedures – how we dive, how we communicate and so on," Karadzic tells me. "But in this instance, many of these procedures just weren't possible. Before I arrived, the pumping of water out of the cave had already started. The Thai Navy dive team and volunteers who had gone in before us had a really tough job – they had to swim into the cave, without a guideline, against a very strong flow of water from inside the cave to outside. So they were swimming upstream in zero visibility and rising flood waters."

The first job was to bring the tanks roughly halfway into the cave for the relays; the round trip took between eight and 12 hours every day. "When we were not diving, other divers were using the tanks that we brought in to take medicine, food and water to the boys."

The teams continued with this for several days, when the weather forecast worsened. Amid warnings that the entire system was likely to be completely submerged and concerns about falling oxygen levels in the cave where the boys were trapped, the need to take drastic action was forced – a cave dive rescue that had never been done before.

"Many experts, including some from the specialist

All the divers from the Euro team preparing for a dive. From left: Claus Rasmussen (Denmark), Ivan Karadzic (Denmark), Nick Vollmar (Germany), Erik Brown (Canada) and Mikko Paasi (Finland)

Erik Brown and the author taking a short rest after travelling from the cave entrance to chamber three, a 90-minute trek

Mikko Paasi

teams, were against it. But the alternatives simply would not work," Karadzic explains. "One idea was for the boys to be left *in situ* and rescued after the monsoon finished, but that would have been a long, long time. Another was to drill into the mountain and try to locate them that way. But calculations showed it would take 30 days to drill that distance through dolomite." He says, however, that all the operations, including the drilling, continued. "None of the other plans was aborted. They all ran simultaneously, even to the very last minute."

On July 6, they were given the go ahead for the dive rescue. "Our practice day was on July 7," he says. "We did a rock drill outside the cave in the parking lot with all the different divers. We took some chairs with lines and reconstructed the cave with the different chambers, up to number nine, which is where the kids were trapped. There were some holes in our plan, it was not perfect so we had to adjust it."

A precise map of the cave existed, but the mud and flood waters complicated identification of the various chambers – to be used as relays for air replenishment and personnel waypoints – especially in terms of knowing which cave was which. Two British divers entered the cave on the rescue day and simply stuck up laminated signs denoting numbers in the various chambers.

Karadzic continues: "After the rock drill, we went to a pool at the local school where young children acted as dummies. This type of rescue had never been done with kids of this size. So we needed to test the equipment, the full face mask and the way we wanted to configure the kids and the rescue divers." Traditionally, most divers wear their tanks at the back, while cave divers generally have their tanks at their sides. It was decided that the trapped children would have tanks on their stomachs, and a handle attached to their backs.

The need for full face masks, a highly advanced piece of kit uncommon in diving technology, also presented problems. If a full face mask becomes flooded, experienced divers have a procedure for clearing the water, but the children would not be able to do this. "We had a hard time finding a full face mask with a narrow face. Eventually, we found a producer that had a slightly smaller full face mask designed for girls," he says.

The rescue attempt started early in the morning of July 8. "My mission was to stand in chamber six, which was the halfway point. The distance in and out was too long for it to be practical to carry out a dive on one or two tanks. So it was like a pit stop for exchanging tanks," he tells me.

Hypothermia

There were concerns about hypothermia: "They were small kids to start with and they had been starving for ten days. Time was essential," says Karadzic. But the divers had become more experienced and familiar with the caves, and engineers outside were still pumping water out, so water levels had decreased: "So there were places where we didn't have to dive and could swim on the surface; you could see everything and could move much, much faster."

It was decided the boys should be sedated; medication to decrease their saliva was also administered so they would not choke during the rescue. The boys and their parents were asked for – and granted – their consent. At the time there was some controversy over this move, but Karadzic says it was the practical thing to do: "They might have panicked, and then the divers might have panicked…"

The rescue was a success, with all of the team and the coach being brought out alive.

One of the main things that Karadzic has taken away from his involvement is the need to improve liaison between communities, volunteers and government and official rescue organisations. "We lost a few days because we were a bunch of unknown guys sitting around. If we had a badge, licence or some sort of official identification, that would have helped," he says. CRJ

Author

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A year after Greece's wildfire disaster

In 2018, Greece experienced the second deadliest fire of the 21st century – with 102 fatalities, 150 injuries and extensive damage. The Government appointed an independent committee of wildland fire experts to look at what went so badly wrong, and prevent the repetition of such a tragedy. Here, the committee summarises its findings for CRJ readers

On July 13, 2018, at 16:41, a wildfire broke out on the eastern slopes of Penteli mountain, 20 km north east of the centre of Athens and 5.2 km from the eastern coast of Attica.

It happened on a day when very high fire danger was predicted for Attica, owing to an unusually strong westerly wind. Another wildfire had started earlier near the town of Kineta in west Attica, 50 km west of the centre of Athens, and was burning in full force, spreading through the town and threatening the largest refinery in the country.

The combination of rapid fire spread in a populated area, lack of a common operational overview and poor co-ordination between the actors involved, combined with incorrect assessment and an initial underestimation of the situation, led to a delayed and inadequate response. Many resources had been moved to the Kineta fire, which allowed the eastern Attica blaze to grow rapidly.

Spreading through the fringes of the Athens metropolitan area – the wildland-urban interface settlements east of the flames' origin, first Neos Voutzas and then Mati – the fire reached the sea in little less than two hours. Its rate of spread, especially in the last stretch towards the coast, reached four to five kilometres per hour for short periods of time.

In its path, it burnt the mostly pine (*Pinus halepensis*) vegetation in small forest stands or gardens, destroyed or damaged more than 1,500 buildings, caused 102 fatalities and seriously injured about 150 people. Many of the victims were trapped in a traffic jam that developed in narrow streets while trying to escape in their cars (Image 1), while several others were trapped by the flames on a steep cliff above the sea (Image 2) as they tried to reach the sea. Others, who managed to get to the water, were exposed to heat and smoke for hours before rescue boats could reach them. Many of the fatalities were from burns, smoke or hot gas inhalation, or through drowning while attempting to swim away from the coast to escape the unbearable conditions (Image 3, p28).

The total burnt area was 1,431 hectares, before the flames were stopped by the sea (Image 4) – a blessing in disguise, as it could have been much worse.

This is the second-deadliest wildfire event in the 21st century, after the 2009 Black Saturday landscape fires in Australia, and it brought Greek society to a state of shock, making headlines around the world with images of extreme horror and pain. The initial grief was followed by political finger pointing and concerted efforts by experts and non-experts in forest fires alike to assess the reasons and the mistakes made, before and during the event, which had led to this unprecedented disaster.

In September 2018, while scientists continued to identify lessons to be learnt and the justice system was investigating, trying to pinpoint failures in order to charge those responsible, the government moved a step ahead. This huge catastrophe followed the disastrous years of 1998, 2000 and 2007. Against the backdrop of an increasing trend in damages and fatalities, the Prime Minister appointed an Independent Committee of wildfire experts, titled the 'Committee on Perspectives of Landscape Fire Management in Greece'. Its aim was to shed light on the deeper causes of the worsening wildfire problem in the country and to propose potential solutions. The committee consisted of the authors of this paper.

During its first five months of work, the

Image 1: Many of the victims were trapped in a traffic jam that developed in narrow streets

Dr Gavriil Xanthopolos

Image 2: Other victims were trapped by the flames on a steep cliff as they tried to find a way of reaching the sea

Dr Gavriil Xanthopolos

committee collected and analysed data; prepared and circulated questionnaires to 73 wildfire experts and professionals; met with 28 different agencies involved in wildfire management; and organised a round table to bring the main agencies together.

It completed its report in February 2019, delivering it to the Prime Minister, the President of the Hellenic Republic, the President of Parliament, all political parties and to the mass media. Immediately afterwards, the report was also made freely available to the public online.

The first part of the report described the evolution of the forest fire problem in Greece and its current state. The data shows that the situation has been worsening during the last decades, with larger burnt areas annually, increasingly extreme fire seasons with greater damages and fatalities, and much higher costs.

The accumulation and continuity of burnable vegetation (wildfire fuels) in forests and open landscapes have been identified as major contributors to the deteriorating situation. This is because intensive land use in the countryside has been abandoned, along with the lack of forest management owing to limited availability of funds and institutional strength of the Forest Service.

There is also an increasing risk of wildfires in peri-urban areas, villages, farmsteads and tourism centres. Fire prevention is very weak and ineffective. Prevention shortcomings identified include: Lack of common co-ordinated approaches in fire prevention planning; absence of approved and documented local fire plans; unregulated and unplanned construction in forest areas and development of wildland-urban interface areas; very limited public information, awareness and mobilisation campaigns; and ineffective organisation of volunteers. Wildfire statistical data, which could guide preventive actions, are of low reliability and have serious gaps, while the adoption of modern technology and scientific methods to support planning and operations is at a poor level. And there is great discrepancy in the allocation of funds between fire prevention and suppression, in favour of the latter.

Increased funding of fire suppression capacities over the last 20 years has not led to a proportionate increase in effectiveness and efficiency. The reasons for this are related to human and technical shortcomings, and a serious deficit of co-operation and synergy among the agencies involved.

Existing legal gaps

Analysis of legislation and available data, as well as of the opinions expressed by experts and agencies, concur that the existing system is currently very complex and characterised by a lack of the co-operation, co-ordination and operational readiness required to be prepared and to manage large scale wildfire disasters. A large body of authorities from many ministries are all involved in wildfire prevention, and they need to be co-ordinated in a common framework. According to legislation, the co-ordination of prevention should be implemented by the Forest Service. But this is not feasible owing to existing legal gaps. In wildfire suppression, 17 authorities from six ministries must co-operate to execute 11 institutional responsibilities and tasks.

Based on these findings, the committee recommended that the problem of landscape fires should be tackled by the state using a holistic approach, through an integrated

and coherent framework for landscape fire management. This system should replace individual and disconnected services and actions. Overall unified planning should address wildfire prevention and suppression jointly, as well as restoration of burnt areas in an integrated manner to ensure and strengthen societal, environmental and economic resilience. It is vital to ensure legislative provisions are integrated into operational planning within the framework of a unified, interagency national plan for the protection and safety from wildfires.

New co-ordinating body

Addressing of all the above issues should be the subject of a scientific, advisory and co-ordinating organisation for the systematic management of landscape fires at national level – tentatively designated as Landscape Fire Management Agency (ODIPY). This organisation should co-operate with the other competent bodies, having an advisory, co-ordinating and supervisory role in landscape fire management, with the mission of developing a national, interagency fire management plan and to monitor and follow up its application. Without such a mechanism, it will not be possible to achieve a continuous and substantial effort to prevent fires, nor the necessary spirit of co-operation between the actors involved.

ODIPY should take a leadership role in devising, guiding and supervising the collective measures in landscape fire management at national level. To a large extent, its success will depend not only on the correct choice of its management, but also on the quality, capacity and competence of its staff.

One of ODIPY's main goals will be to function as an interconnection body of scientific knowledge, technology and operational practice (science-policy-practitioners interface). It should therefore ensure the co-operation of relevant bodies on all aspects of landscape fire management, establishing permanent interdisciplinary and thematic committees. These will comprise well-known specialised scientists, as well as executives and representatives from operational entities.

ODIPY will co-ordinate the development of a National Landscape Fire Management Plan, which will include a joint design of measures and actions for landscape fire management at all administrative levels, with the participation and co-operation of all stakeholders. A scientifically documented national wildfire risk assessment system, and a revision of the start and end of the fire season, based on available statistical data and climate change assessments, will support the plan. At the strategic level, ODIPY will work on balancing and rationalising expenditure on landscape fire prevention and suppression.

Maximising effectiveness and efficiency will be at the heart of its efforts. For example, in terms of firefighting, ODIPY will promote optimum use of all involved agencies' resources through central planning, improved co-operation and co-ordination,

Image 3: Many of the fatalities were from burns and inhaling smoke and hot gases, or from drowning while attempting to swim away from the coast to escape the unbearable conditions

creating joint and certified training programmes for all stakeholders' staff, and organising joint interagency exercises at regional level. Emphasis will be placed on managing large fires by assigning highly trained personnel, certified in wildfire behaviour and incident management (ie following the example of the US NIMS system), rather than hierarchical criteria and ranks.

ODIPY will conduct methodical public awareness campaigns and promote the voluntary participation of citizens in landscape fire management. Importantly, along with relevant stakeholders, it will help develop large scale map layers of wildland-urban interface areas and assets potentially at risk, such as critical infrastructure and cultural heritage sites.

An even more important and challenging task for ODIPY will be to advise policy development regarding the management of rural land use systems in terms of wildfire hazard reduction (fuel management), and the support of rural populations in managing fire risk, including self-defence of rural assets. In this respect, it will promote scientific evaluation of the possibilities and conditions for applying prescribed burning in Greece for fuel reduction purposes and for using suppression firing as a firefighting tool.

Finally, a key task will be to develop, implement and operate a monitoring and data collection system that will include tools, such as a central daily readiness reporting system (fire season) of the actors involved in fire protection, and a recording and mapping system of funded prevention projects (eg where local authorities have applied fuel management projects). The focus will be on building an effective cost and activity accounting system that will allow evaluation of the system's efficacy and efficiency, a necessary precondition for assessing trends, successes, shortcomings and failures, in order to introduce changes where needed.

Reform of Forest Service

In addition, the report recognised that the essential reorganisation and reform of the Forest Service is an important element of the new system. This service has been weakened over the last two decades and needs support to rebuild capabilities, resources and funding to restore and improve forest management, fire prevention and to acquire a role in fire suppression in the land it manages. If forest and rural landscapes are to be managed, the problem of wildfires will increase independently of any efforts to strengthen suppression mechanisms.

The report also says that as the main fire suppression authority, the Fire Service should continue to be involved in suppressing landscape fires. However, it stresses the need to improve the service's effectiveness by advancing its co-operation with the other actors under the guidance of ODIPY. It should also improve its staff and volunteer training, adopt innovative technical and tactical solutions and, most importantly, decrease the degree of dependence on aerial firefighting resources.

So, where are we one fire season later?

Changing from a suppression-focused to a balanced, integrated landscape fire management system is clearly not easy and cannot be achieved in a short period of time. Whereas all the political parties and many other actors recognise the value and validity of the committee's recommendations, adoption of these findings requires a lot of thinking and many clarifications, as the necessary changes are manifold and complex, spanning the mandates of several ministries and affecting the current *modus operandi* of some agencies.

As the fire season of 2019 arrived, the emphasis turned once more towards fire suppression, steeply increasing aerial firefighting capacity, with the corresponding financial implications. Fire prevention measures were increased slightly, and local authorities were asked to co-operate and contribute. Combined with a relatively easy fire season, this resulted in a less than average burnt area. However, some fires in mature pine forests, under relatively difficult conditions, again highlighted remaining weaknesses.

The real test of the capacity to change the fire management system into one that offers a scientifically based long-term solution, begins. A new government is being challenged to address the issues in the report.

With careful planning and swift action, it will be possible to achieve first results within the next two to three years, without compromising short-term results. There are certain prerequisites, including that: The lessons of 2018 have been learnt; the identification of the reasons behind the long term worsening of the landscape fire problem highlighted in the Independent Committee report have been understood; and the necessary political motivation for a truly sustainable solution exists. C·RJ

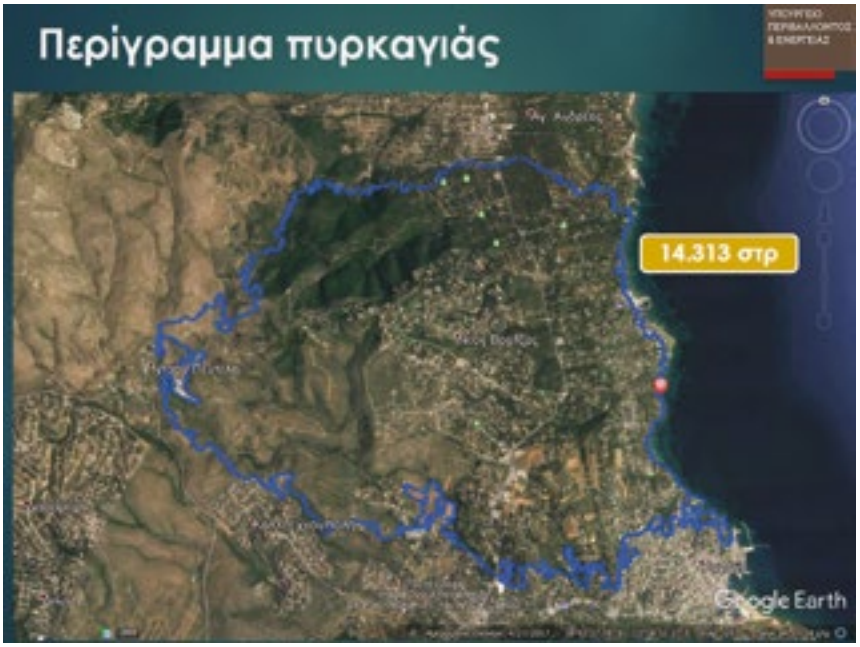

Image 4: The total burnt area reached 1,431 hectares before the fire was stopped by the sea – a blessing in disguise, as the situation could have been much worse

Hellenic Ministry of Environment & Energy

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Energy resilience: Blackouts and worse

Although blackouts are considered low probability events, this year has seen a number of high profile, widespread electricity cuts in various parts of the world, writes **Lina Kolesnikova**. And these incidents highlight worrying vulnerabilities

A blackout is a low probability, high impact event that results in the total disconnection of all generation sources from the transmission grid, leaving consumers without supply. Although this type of incident is generally assessed as a low probability event, we see regular reports of blackouts – some of them widespread – from different countries. The duration and the degree of impact differ, but all cases show a large and indiscriminate effect. Consistent reporting of such incidents is generally missing so far, making one-to-one comparison qualitative rather than quantitative.

The six-hour blackout in France, in January 2019, hit households, businesses and critical infrastructure. There are not enough details of the individual impact per category, but overall damages were reported to be over €1.5 billion.

On February 19, 2019, everything stopped working in the South East of Berlin; around 31,000 households and 2,000 businesses were left without power and, as a result, all electrically-powered services were down for over 30 hours. The reported cause is a pair of 110,000-volt cables damaged by construction works. Interestingly, some reports say the cables were redundant. Simultaneous damage to redundant cabling is usually judged to be an unlikely scenario, but in this case, the cables had been laid in immediate proximity to one another. The logical conclusion is that redundancy does not automatically mean a reliable supply.

In a UK blackout on August 9, 2019, nearly one million people were left without power for several hours. The National Grid said the incident was caused by a highly unusual and unlikely event: two simultaneous failures, one at a gas-fired power station in Cambridgeshire, the other at an offshore wind farm in the North Sea.

There are many unanswered questions as to why and how a lightning strike knocked two electricity generation providers offline; and why some priority consumers and critical infrastructure facilities, such as airports and hospitals, lost power.

A more far-reaching observation is that it appears the system or, at least some of its components, might have vulnerabilities that no one thought to test in advance. Electrical supply to the railway network was not cut completely, but the quality of the supply caused behaviour which, in the cybersecurity area, would be considered as a possible outcome of an intentional attack. Full details of the incident are not yet publicly available, but the interim report by the National Grid says that 60 trains "reacted unexpectedly" and required intervention by engineering teams to get them back into service.

This incident raises alarms about the reliability and resilience of the entire British energy generation and distribution system. Such alarms were at the heart of discussions between 'green' parties advocating for renewable energy supplies (turning electricity supply from brown to green) and their professional adversaries, who insisted that the current state of renewable energy supply technologies and operations does not provide the same levels of resilience as fossil fuels or nuclear energy. Given the current inability of renewable energy supplies to compensate for peak demand promptly, suggestions have been made that this type of power is weaker when considering the risk of blackouts and other unexpected or unlikely events.

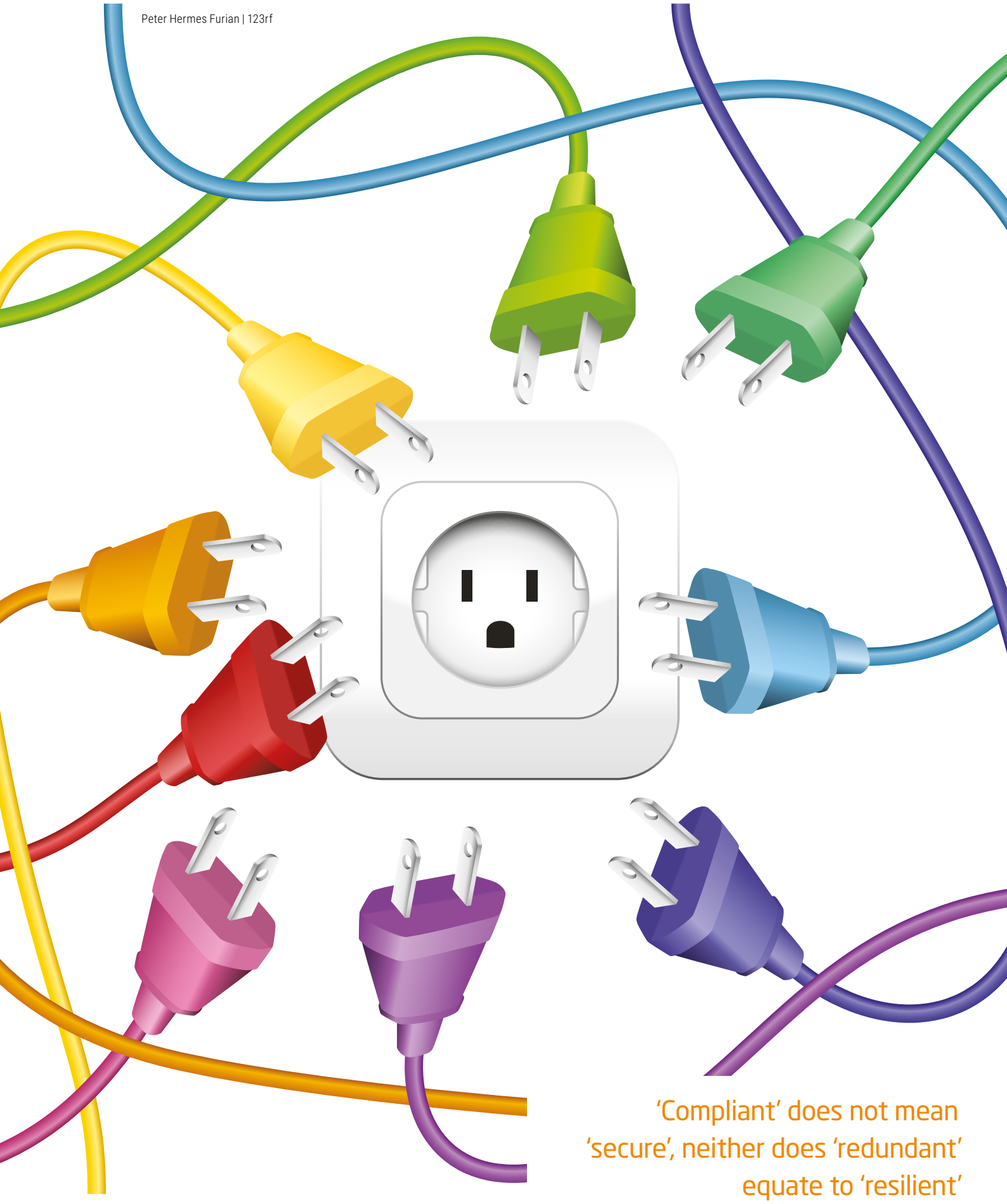
Human-caused events

Natural events are not the only cause of potential problems within the electricity supply industry. Over the past ten years, the sector has experienced significant cyberattacks. Some of these are on a par with concentrated 'attacks' by Mother Nature.

- In 2010, the US-produced Stuxnet computer virus caused significant damage to Iran's nuclear power centrifuges by manipulating control systems to spin them out of control and beyond normal levels.
- In 2014, a team of hackers cancelled approximately $650,000 of electricity bills due to be paid to a Turkish energy company.
- In 2015, control systems at three Ukrainian energy companies were compromised, leaving 225,000 customers without electricity. Once again in Ukraine, in 2016, Crash Override malware framework caused a second cyber-related blackout in Ukraine.
- In 2018, the US Department of Homeland Security admitted that hackers had infiltrated the control rooms of multiple US electricity utilities to the extent that they had the ability to disrupt the flow of electricity to customers. Nothing was done with this power, but the announcement of the hack is chilling.

The energy sector is one of the most important within critical infrastructure in most territories. This sector has rich experience in protecting its critical infrastructure from environmental events, physical attacks and in

Peter Hermes Furian | 123rf



'Compliant' does not mean 'secure', neither does 'redundant' equate to 'resilient'

building resilient networks. Or, most of us believed this to be the case. It is clear now that it needs to enhance security protocols and implement new strategies and practices to address new threats emanating from the digital world. The increasing number of new technologies employed in the industry (often without a long and proven track record), along with regulatory changes such as the separation of generation from distribution and removal of single-handed control, coupled with the rise of new agents in the ecosystem, all need attention. Those who have overall responsibility for energy provision must be more alert to the cascading effects across the entire system when a system goes down, especially in unexpected and unlikely events, which as real life cases have shown, do happen.

Despite multiple industry specific initiatives to share cyber information in real time, or cross-border information sharing, collective situational awareness is a long way off. Herein lies the conundrum of balancing regulatory objectives to make the system is less centralised and more distributed, with the efficiency of centralised systems, where single-handed control permits faster and more organised and co-ordinated reactions.

Interconnected & interdependent

While the continuous evolution of technology will help through increasing maturity of security controls with advanced analytics, machine learning, AI and even quantum computing, many challenges exist and are likely to continue. The electricity sector has always been heavily interconnected, with interdependencies across the supply chain, not to mention with other critical infrastructure, such as telecommunications, ports, sewage systems and so on.

This interconnectivity and these dependencies are increasing and becoming more complex. As the former US Secretary of Homeland Security, Kirstjen Nielsen, said: "Hyper connectivity means that your risk is now my risk and that an attack on the 'weakest link' can have consequences affecting us all."

To build an effective resilient system, businesses need to secure their 'backyard', but should also co-operate mutually along the entire supply chain to ensure that the whole 'neighbourhood' is also secured.

Bearing in mind that the energy sector is one of the most heavily regulated, it is a constant challenge to navigate the regulatory landscape – particularly for multinational organisations, which are increasingly ruling the electricity markets and need to comply with and absorb the related costs of the different regulations across every market in which they operate.

Nonetheless, it is crucial to acknowledge that 'compliant' does not equal 'secure' – in the same way that 'redundant' does not mean 'resilient'. True cyber resilience is a matter of strategy and culture, rather than tactics. Strategies should deal with cyber risks as systematically as with other, more traditional risks. They should also involve a culture where each employee feels personally responsible for the organisation's resilience and, overall, for its mission in society.

Owing to the particular importance of the electricity industry (as it plays a vital role in societal resilience, survival even), cyber security should be one of the top priorities. The electricity system (including the power grid) is an increasingly popular target for cyber threat actors, including hacktivists wanting to cause civil unrest, organised criminal groups seeking ransom or other economic benefits, or state-sponsored groups performing espionage activities or preparing retaliation activities. Moreover, electricity organisations operate in an interconnected and interdependent environment where the consequences of a cyberattack on one can – and is likely to – cascade to multiple others.

Combating growing cyber risk requires leaders to reconsider their thinking on cyber resilience. It should be mutually accepted that cyber risk is not only a business risk, but is much wider – it is a risk for the whole of society. Cyber risk management should be taken into consideration for all business decisions, especially when it comes to resilience.

In an interconnected environment such as electricity supply, the mindset should be to think beyond just the cyber resilience of one's own assets and towards the cyber resilience of broader areas, including suppliers, customers, competitors and other stakeholders.

Energy always was – and will be – a security issue. The security conundrum – how to provide available, affordable, reliable, efficient, and environmentally friendly energy services – is a technology and policy challenge unlike any other.

Emerging trends, such as distributed energy generation and smart grids, are transforming the sector. The global security landscape has changed, with growing concerns about threats from non-state actors, such as piracy and terrorist attacks, including cyber.

In the early 2000s, several supply disruptions led to discussions about energy being used as a weapon, increased dependence on importing energy in many countries, and the ability of exporting countries to use energy supply as a political tool. On top of this, environmental concerns and continuously rising consumption have brought the sustainability of existing energy systems into question.

Most developed countries are increasingly dependent on high-tech solutions as a basis for the information-driven economy. Yet tech-based economies are even more vulnerable to power cuts, even short-term ones. Blackouts are serious reminders that our energy systems should continue to strengthen their resilience.

Reinforcing systems to absorb and manage failures will bring extra costs. Yet, the resultant higher degree of resilience will reduce the magnitude and duration of disruptive events and their impacts on societies and economies. This will provide significant benefits in terms of enabling stable operations and, thus, the most friendly environment for continuous investment.

Big data, data analytics, AI and even Blockchain could also help. These technologies can provide support in mitigating the risk of cyberattacks affecting critical electricity infrastructure and in defining the best approach to cyber resilience in our increasingly complex electricity ecosystem. It should be like rubber – elastic and able to withstand impacts. One just needs to remember that having fragile – or even inconsistently solid particles – inside any one element of the overall system, will surely lead over time, to internal damage and eventual breaks in the otherwise resilient properties of rubber. CRJ

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Real-time insights and response

Whether building infrastructure such as a telecommunications network, or helping to rebuild in the aftermath of a natural disaster, companies operating in risky overseas environments need access to the latest information regarding local conditions, according to **Tim Willis**

With potentially thousands of staff in the field who are working in challenging or dynamic locations, in extreme and volatile environments, real-time situational awareness and enhanced understanding of local events and information are vital.

In that respect, employees at home and abroad need to work as part of a highly distributed network, where a common understanding and working knowledge of facts are essential to operational excellence and agility.

Yet for corporations operating in overseas markets, scarcity of information presents a particularly perplexing problem. When traditional media doesn't exist or only delivers news hours – or sometimes days – after an event has occurred, multinationals can remain unaware of the dangers facing their operations. Furthermore, it may prove challenging in terms of receiving timely notification of a breaking event in remote areas with uneven coverage by news agencies.

How can information gathered from publicly available information sources – including social media posts, blogs, the dark web, earthquake monitors and flight arrival and departure data, among other data sets – enhance corporate responsiveness?

Given the need to deliver vast amounts of materials and employees to remote parts of the world, global companies face a logistical challenge, complicated by the fact that some areas in which they operate may be unstable owing to natural disasters, famine or other crises. This is where real-time information from publicly available sources can bridge the gap between what a company and its personnel need to know to operate on the ground safely and what their traditional sources of information may tell them.

Nevertheless, when it comes to moving people and assets within volatile environments, the timeliness of information plays a critical role in risk mitigation. For example, information about a recent outbreak of disease in a village along a supply route could alert company employees to take a different path to their intended destination.

Furthermore, gathering data from a plethora of real-time sources complements information from on-the-ground sources, to assess the situation in a region. Traditional sources may prove accurate, but limiting the number of reliable points of input comes with a level of risk. Moreover, personnel may become accustomed to certain risks in a familiar environment, especially if the types of threats remain constant over time.

Neither does proximity to breaking news always provide perspective. An event could take place within a couple of miles of a location of importance, while critical personnel could be preoccupied with an incident response effort at their present location, meaning that they have no visibility at all into what's happening just over the horizon. Similarly, in addition to providing insight to those people overseas, objective real-time information can also help management teams outside the country provide additional guidance for teams on the ground.

> The lack of real-time information could be risky or even fatal

While operating in some of the most dynamic and challenging regions of the world, a multinational's personnel can rely on alternative data to receive real-time alerts based on specific topics and languages of interest.

For example, employees visiting a location for the first time can quickly learn what is happening in real time and make plans accordingly. Prior to their departure, they can assess the prevailing conditions on the ground. Then, as soon as they arrive, they can check the latest developments, including the effects of natural disasters or disease outbreaks, emerging threats such as the arrival of a new weather system, or traffic conditions on the route to their hotel.

Gathering and disseminating data from publicly available sources can also promote the free exchange of information and ideas, even in the largest organisations. "Having the same set of information available to a wider set of people allows communication to take place," says a spokesperson from Dataminr. "Individuals can start talking, based on common knowledge, which otherwise might have taken precious time to establish and share." Consequently, less time spent gathering and communicating basic facts translates to more time spent on the task at hand. Making sure everyone in the organisation possesses the same information can help streamline response efforts and ensure the greatest impact.

While not every foray into a foreign market exposes company personnel to mortal danger, in isolated circumstances, the lack of real-time

information could be risky or even fatal.

Despite the threat to personnel operating overseas, many multinationals face contractual obligations to operate in dangerous markets. A failure to do so comes with immediate and sometimes long-term financial implications in the form of fines, penalties and loss of future business opportunities.

There is also a reputational risk that comes from committing to an overseas project, then failing to deliver owing to concerns about the safety and security of company personnel. This can prove especially damaging for a multinational that earns a significant portion of revenues from operating in trouble-prone overseas markets.

For that reason, in the right hands, real-time information can provide a competitive advantage when working overseas, as it allows multinationals to operate in troubled regions without accepting excessive risk.

Emerging risk detection

Companies operating globally require the ability to detect an emerging risk before it becomes a full-blown disaster. In fact, the most effective response to an incident requires real-time information. And while it's tempting to assume that traditional media sources can cover events as they happen, in reality, many news agencies lack the ability to investigate every story and often rely on social media to gain visibility into breaking news.

A multinational's personnel can rely on Dataminr around the clock to receive real-time alerts based on their specific topics and geographies of interest. The heightened awareness that real-time data delivers can empower employees to protect themselves, the staff they manage, and the assets under their control. CRJ

artqu | 123rf

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Dataminr is a Key Network Partner of the Crisis Response Journal

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A Balkans gem – SAR training in Kosovo

Mention the Balkans and the image generally conjured up is one of war and bloodshed, writes **John Doone**. Yet there have been many stories of triumph over adversity. Kosovo, a land-locked country of less than two million people, is one such example and its Search and Rescue Training Centre (SARTC) is a shining beacon of just what can be achieved

Emerging from a bloody war at the end of the 20th Century, Kosovo began to rebuild and develop. NATO's military presence, Kosovo Force (KFOR), patrolled the streets and, from June 1999, the United Nations provided an international civilian and security presence to help with administration and capacity building. KFOR Commander, General Sir Mike Jackson, along with Hashim Thaçi, General Commander of the Kosovo Liberation Army (KLA) and Prime Minister of the Provisional Government in Kosovo, signed the agreement for the demilitarisation and transformation of the KLA.

The Kosovo Protection Corps (KPC) was created, a 5,000-strong force tasked with providing a disaster response capability to industrial accidents and toxic spills, search and rescue (SAR), de-mining and rebuilding infrastructure and communities. Many countries, including the UK, US and Turkey, provided training and equipment to the fledgling KPC. Through this, SAR skills and expertise grew and real-time incidents requiring operational response were added to its experience.

In 2009, the KPC restructured into the Kosovo Security Force (KSF), a leaner organisation of 2,500, with only 1,400 former KPC members permitted to join. This included the establishment of a SAR unit comprising four SAR components – mountain, urban, diving and water, and firefighting teams. Development continued, but relied upon outside countries sending training teams, which was expensive and time-consuming for donors. To offset this, KSF instructors were internally qualified and began teaching classes, often under the tutelage of international instructors.

Ongoing and repetitive training is essential. Armed with the skills and equipment, the missing element was a site to perform training. A ministerial level decision was taken to build a SAR training area for KSF personnel.

What happened next was remarkable by any standards. Visits to other training establishments in Europe were conducted and plans and budgets developed. Within weeks, working groups came together. The road forward was defined and implementation began.

A pivotal moment came when the Swedish Rescue Training Centre provided an expert consultant and diagrammatic plans of its training buildings, with advice on how to improve the structures, including a building that simulated a total building collapse and another simulating a semi-collapsed building. Construction began in August 2015 but, as work progressed, it quickly became apparent that the anticipated training opportunities should not be limited to KSF members and needed to be extended to other emergency responders both in Kosovo and regionally.

Observations from other training centres were that facilities were of high quality, but limited. The Kosovo centre wanted to be different and cater for as many potential disaster scenarios as possible, creating a one-stop shop for emergency responders. For example, collisions involving trains and cars at level crossings are a common occurrence in Kosovo. Highlighting creativity, the centre's Director saw a music video of a local rap artist singing on the roof of a train and thought it would be good to have some carriages for emergency responders to exercise dealing with rail crashes. Following extensive negotiations with Kosovo Railways and government ministries, three train carriages were donated to the centre. Soon, three large metal water containers due to be scrapped were recovered free of charge and added to the carriages to simulate hazardous material containers.

In September 2016, Kosovo President HE Hashim Thaçi officially opened the SARTC. Initially, the centre focused on its core fields of urban and mountain SAR, diver training and water rescue.

The vision of being a one-stop-shop did not halt. Efforts to source an old helicopter frame from donors proved unsuccessful. Undaunted, SARTC staff decided to build one themselves. Taking photos and schematics from the Internet, and using recycled materials, they built a 23-metre long helicopter frame over a four-week period during evenings and weekends. The nose section is the front of a scrapped minibus, the centre is an old metal container and the tail was assembled from damaged metal roofing planks. Broken skis and more metal roofing planks form the rotor blades, which rotate mechanically. Inside includes two seats for pilots, six for passengers and six stretchers for casualties. The total materials' cost, most of which was paint, amounted to €125.

Now, as well as crash scenarios, the helicopter frame is used to simulate casualty evacuation by helicopter and a helicopter landing containing casualties. As the centre section is metal, it can also be set on fire, adding extra reality to scenarios.

A mainstream Kosovo television station, Klan Kosova, produced videos simulating news items on multiple earthquake scenarios and a refugee crisis. This was initiated by SARTC staff, who wrote and storyboarded the text. When these videos are played during courses, with real headlines and real news broadcasters, the students' eyes are the size of dinner plates.

Staff also constructed a 30-metre long tunnel from old concrete reinforcing blocks used during urban SAR training. At less than a metre high and a metre wide, it is a challenging, claustrophobic training area, sometimes made more complex when internal walls are added during courses.

The SARTC also has an 18-metre high abseiling tower with four differing wall fascias, again designed by an instructor. Rooms converted to simulate multiple scenarios are inside the tower. More than 20 scrap vehicles surround the collapsed building, including an old fire truck, adding to scenario realism.

Next on the agenda is construction of a SARTC HQ building, which will comprise a 200-seat auditorium, classrooms, offices and high quality sleeping rooms for 60 students. Expected completion of works is October 2020.

Further future plans include sourcing two aircraft frames, a bus and a truck to add to the vehicles around the collapsed building, and a 25-metre outdoor swimming pool with an underwater obstacle course for diver training. Ignoring financial limitations, much of this will be achieved by the instructors themselves who, from day one, consider that with imagination and creativity anything can be achieved.

From a vision several years ago, the SARTC has developed into one of the greatest accomplishments of the KSF and the Republic of Kosovo. It now offers over 20 different courses including disaster response, incident command, swift water rescue, winter and woodland survival, hostage negotiation and terrorism studies. Course design and content are revised continually and extra programmes added to the syllabus.

Regional strengthening

The importance of Kosovo SARTC extends socially and politically, as the centre strengthens regional co-operation with training programmes available to neighbouring countries, helping to enhance regional interoperability and effectiveness. Students from Albania, Bulgaria and North Macedonia have attended training and, in the future, participants from Croatia, NATO's KFOR, the UK and the US are expected, as well as public and private companies. Training is provided in Kosovo's two official languages – Albanian and Serbian – plus the international language of SAR, English.

A bonus is that the centre currently offers its facilities to all emergency response organisations, free of charge, subject to availability. All are invited to use the facilities, either independently or with the assistance of SARTC staff.

The centre's goal is to provide the best SAR training in Europe and to have more training objects in one location than any other SAR facility in the world.

Judging by previous innovation and inventiveness, nothing should be excluded. CRJ

Author

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Long term disaster recovery: A broken landscape

When a disaster recedes, life safety is stabilised, and press conferences with high ranking officials making promises of support and recovery are done, local officials are often left facing a long and arduous process of long-term recovery. But it is these leaders at ground zero who must pick up the pieces and find a way forward to rebuild the community, when the fabric of what they had once known as home is gone and changed forever. **Judge C H 'Burt' Mills Jr** and **William R Whitson** elaborate on some possible solutions

On August 25, 2017, Hurricane Harvey came ashore in Aransas County near Rockport, Texas as a Category 4 hurricane. The hurricane's eyewall crossed over this small jurisdiction on the Texas Gulf Coast, packing winds of up to 135 miles per hour (mph) with torrential rains and an eight-foot storm surge. The storm raged for over 12 hours, causing significant devastation and widespread damage, including 25 per cent destruction and loss to the local tax base. The Courthouse, City Hall, Local Aquarium, Hospital and Center for the Arts were all destroyed and a main bridge accessing a local island (Key Allegro) was heavily damaged.

Yet, nearly two years later this tourism-dependent area is just now seeing significant federal and state dollars for rebuilding. Despite the fact that local officials have identified workforce housing as a top priority for the local recovery effort, around 500 of the original 700 units of such housing have still not been repaired or rebuilt.

Natural disasters are occurring more frequently, leaving local communities to recover from major hurricanes, wildfires, devastating floods, tornadoes and more, without adequate and timely support.

The federal government, along with its state and local partners, excels in disaster forecasting, event management, and immediate post-event response. However, as it currently stands, the overly complex and lengthy federal recovery processes and programmes designed to help, often leave smaller local communities in the lurch at the precise moment when they most need support.

If we are to be effective, we must seek new ways, processes and programmes that can continue the use of National Incident Management System (NIMS) principles into the recovery process. There is no reason to leave local governments struggling to recover from natural disasters for years. Speed is critical for communities that desire to recover from natural disasters. Instead of worrying about missteps leading to federal funding claw-backs, local governments should be focusing on how they can build back more resilient and disaster-resistant communities.

It's time to see what can be done to improve the recovery process under the *Stafford Act*.

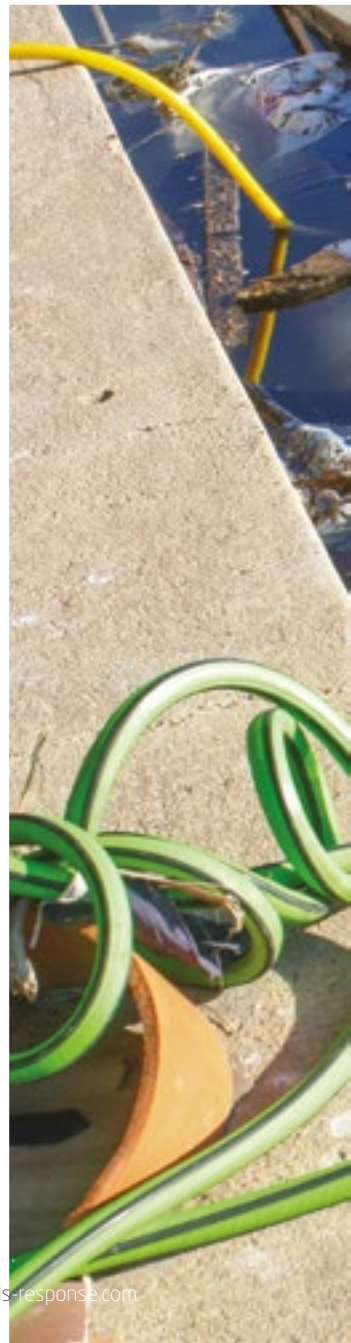
When disasters strike, local governments turn to programmes authorised by the *Stafford Act* to provide assistance. Under the *Act*, the Presidential declaration of a state of emergency triggers response by the Federal Emergency Management Agency (FEMA). The NIMS is unrivalled in its ability to handle disaster preparation, storm response and immediate after-impact phases. The system can rapidly deploy public safety personnel, distribute food and water, clear roads, account for damage and execute search and rescue operations like clockwork. Yet when it comes to restoring communities through long-term recovery processes, FEMA and state partners are just as overwhelmed as the local officials and are often not adequately prepared or able to handle and sustain the intense, long road to recovery.

Cumbersome system

Why is our federal government falling short in supporting long-term recovery efforts? In large part, it is owing to the limitations of a cumbersome, top-down system controlled from Washington in which federal dollars are limited to specific situations and subjected to lengthy federal procurement processes and rules. Though the *Stafford Act* was recently amended following Hurricane Katrina, in an effort to make the programmes more flexible and responsive after natural disasters, the system still functions much as before.

By way of example, in Aransas County we experienced great difficulty working to clean up water-based debris from our community's waterways. This is a coastal county and has miles of natural bays, estuaries and shorelines. The economy is based on tourism and fishing. Harvey's high winds deposited debris including roofing, cars, fences, furniture – even boats and trailers – into the waters. After the disaster, the county worked in concert with FEMA and the state to remove over 3.8 million cubic yards of debris from land-based rights of way.

However, the area's waterways became the subject of a never-ending bureaucratic argument over jurisdiction. While not an immediate health and safety hazard, dangerous sharp objects and environmental debris were a major barrier to the overall economic recovery of the



area. The strings attached to federal funding left FEMA unable to address the conditions threatening the economy and welfare of local citizens. In areas like Rockport, which relies on tourism to sustain the economy, the extra time it takes to return the local waters to usable condition results in a direct economic hit long after the disaster has passed.

One of the *Stafford Act*'s goals is to promote hazard mitigation measures that reduce the risk to life and property from future disasters. Yet again, as we discovered in Aransas County, FEMA's red tape and extensive documentation procedures became a major hindrance and barrier to preparing our communities for the next disaster.

Hazard mitigation funds allocated through Harvey were run through a complex cost-benefit analysis model, requiring local communities to put time into compiling extensive technical records, historic narratives, and re-create maintenance records, leading to months of delay in the application process. This was further complicated by many records and documents being destroyed by the storm. Instead of emphasising projects key to the recovery effort and making the area stronger and more resilient, funds and staff focus are only approved for those that meet complex and arbitrary cost-benefit ratio formulas. Meeting requirements for these exhaustive records and cost-benefit analyses should not be more important than developing projects that local officials identify as essential to recovery. Locals have a much greater understanding and knowledge of what is needed and what will work.

Planning for sustainability and resilience is made more difficult by current federal requirements in other ways. Aransas County has many areas with high concentrations of poverty, and thousands of low and moderate income residents lost the use of their homes. While Community Development Block Grant-Disaster Recovery (CDBG-DR) funds should be available to help these residents, these funds also come with strict

Hurricane Harvey threw debris including roofing, cars, fences, boats and trailers into the waterways of Aransas County, which has a tourism-based economy

All images: Collin Jackson November 2017, County of Aransas, Texas, USA

The area's waterways became the subject of a never-ending bureaucratic argument over jurisdiction. Dangerous sharp objects and environmental debris presented a major barrier to the overall economic recovery of the area

limitations. For example, the majority of the affordable housing lost in Aransas County was not originally tied to sewage infrastructure before the storm, relying on septic tanks. But the use of such tanks is a huge environmental problem for a coastal county with wet soil conditions, and septic tank runoff causes significant environmental harm to water quality in this sensitive environment. Yet despite the clear benefit of using CDBG-DR dollars to extend sewer infrastructure simultaneously with the development of replacement housing units, we were, by rule, prohibited from doing so. As one state staffer said: "If the storm did not break it, then you cannot make it!"

This leaves many rural communities limited to replacing outdated and environmentally hazardous systems instead of supporting forward looking improvements at the same time as recovery. If the goal is to create more stable and storm resilient situations, which save future disaster dollars and improve the environment, such investment after a major storm makes sense. Instead, federal rules, or narrow interpretations of the rules, often prevent help from arriving for many months, sometimes years after it was promised.

Long-term disaster recovery goals

So how can we better utilise these important funds to rebuild communities after major disasters? FEMA has a key role to play in providing technical assistance in setting upfront goals for long-term disaster recovery. Once those goals are in place, it should be the responsibility of the state and local governments, supported by federal resources, to work towards meeting them. This means that states need more leeway to direct and approve projects, rather than forcing local governments to deal with the current system's bureaucratic bottleneck and complex rules. It takes hundreds of staff hours to research, review and apply for the federal funding streams that are critical to recovery operations, and hundreds more to meet lengthy and complex administrative reporting processes required by federal procurement rules. Local governments spend months waiting for FEMA approvals where NIMS principles are forgotten by Washington, sending in multiple documents (often repeatedly), causing delays in purchasing much-needed equipment and repairs for things such as lost radio towers, patrol cars, radios, fencing, and building repairs. For cyclical disasters, these lengthy delays leave smaller communities like Aransas County exposed and even more vulnerable into the beginning of the next hurricane season.

Imagine if state and local partners could work together to co-ordinate and determine the most pressing needs created by the disaster, and meet them in a matter of months, not years. It is critical that we build new recovery strategies through a more locally-orientated, bottom-up approach, based on the experience and expertise of those with boots on the ground at the disaster scene. Local and state governments should encourage FEMA to offer more administrative flexibility in emergency situations and to provide block grant funding support for innovative pilot programmes that will support and prepare local officials for long-term recovery efforts. State and local governments need to be allowed more administrative discretion in the face of emergencies, especially as they relate to clean-up efforts for conditions that threaten the local economy, hinder long-term recovery efforts, or pose a health and safety risk to the public.

> 'If the storm did not break it, then you cannot make it!'

FEMA should specifically be given new tools and charged with the responsibility of assisting in the development of local hazard mitigation and disaster recovery plans that will fast track and speed up efforts to aid the overall resilience and recovery of an affected community. Congress needs to allow specifically for the waiver of some federal rules for grants, system administration and procurement when and if smaller local jurisdictions develop a state-approved action or recovery plan, rather than continuing to emphasise difficult funding applications, stove pipe grant programmes and onerous reporting processes. Such waivers could be allowed only inside the impact zone and for a specified period of time (say up to 24 months) to help expedite and stabilise the recovery response.

In addition, federal, state, local and private sector block grant opportunities could be arranged to respond more promptly and relieve delays in long-term recovery efforts that are now happening at local levels. This is especially true for housing and infrastructure needs. FEMA could create a new pilot programme for smaller jurisdictions, such as those with fewer than 50,000 residents, based on this bottom-up approach.

Under one potential model, following a federally-declared disaster, local officials would identify needs and, together with the state, develop a local recovery and response plan for approval by the Governor. At that point, federal, state, and even private sector resources could be allocated in a block grant to fund and execute the local adopted plan.

Results would be measured based on performance successes and outcomes, not compliance with mountains of rules and complex regulations.

FEMA should also be working to adapt the use of the best technology available to respond after a disaster. In Aransas County, we requested a snap-together modular housing technology pilot programme to provide temporary housing instead of traditional manufactured housing units synonymous with FEMA trailers. This would have been delivered faster and more cost-effectively, while also providing victims stronger, more resilient permanent housing that would provide protection in future storm events. FEMA could authorise pre-bid contracts so that in future natural disaster events, the necessary procurement processes would be fast tracked to address community needs better. Unfortunately, this request was never taken seriously, nor approved.

To conclude, long-term recovery looking from the bottom up needs significant improvement. It's time for federal, state and local partners to get on the same page and authorise a new set of tools and a form of the block-grant model approach to fix the system. It's time to give the dedicated professionals at FEMA and the states new flexibility and the tools that they need to improve the recovery process.

We believe we can do better than this. Will our future look like the past? We sincerely hope not. CRJ

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Building cultures of preparedness: A forward-looking approach to community resilience

A new report published by FEMA's Higher Education Programme in the US suggests that a culture-based approach to community and household level preparedness goals can promote greatly improved outcomes. Its findings and recommendations are equally applicable to the European context and the vast diversity that its nations and peoples represent, say the report's authors, **Katherine Browne** and **Laura Olson**

The first goal of FEMA's *2018-2022 Strategic Plan* is to 'Build a Culture of Preparedness'. This goal emerged from the realisation that attempts to enhance levels of preparedness among individual households, communities and organisations had shown little to no sign of improvement in the US over the past two decades. Campaigns such as Ready.gov, America's PrepareAthon, and National Preparedness Month, all aimed at individual households and communities, had not produced the desired results. In fact, FEMA's 2014 report, entitled *Personal Preparedness in America*, documented research insights gathered over the course of eight years that showed: "The percentage of surveyed individuals taking recommended preparedness actions remains largely unchanged since 2007." Additional research on preparedness, such as the 2009 Citizen Corps National Survey, demonstrated that public outreach campaigns and education efforts were having no effect on preparedness levels. The new goal represents a commitment to closing preparedness gaps in the areas where progress had previously been stymied.

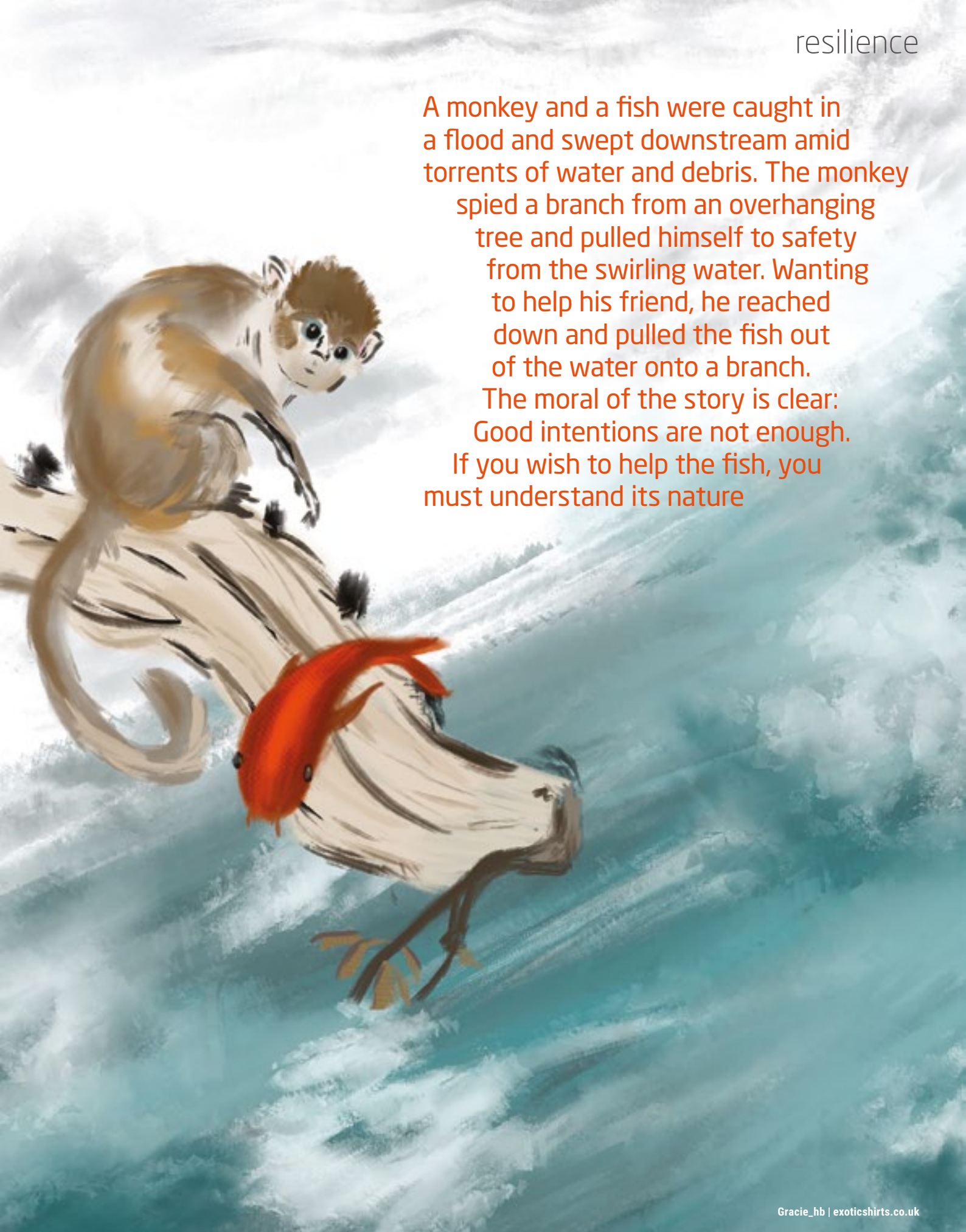
As authors of this report, we believe that the ambition of achieving a nationwide transformation in levels of preparedness is realisable, but only if past methods that failed to produce desired results are left behind. We need new concepts and tools and better incentives and motivating strategies. These need to be embraced by people living in the communities at risk.

Recognising the vast diversity of communities and individuals across modern nation states, we suggest that the goal is not to build a monolithic, national culture of preparedness, but rather to encourage local engagement with preparedness projects that meet the needs and enhance the capacities of individual communities. Locally-specific solutions will produce better results because they respond to the distinctive histories and practices that communities are already invested in and care about. Thus, an operational methodology that supports the vision of a resilient nation requires us to think in the plural, in terms of building 'cultures of preparedness'.

Different cultural contexts

So what does culture have to do with preparedness? The FEMA Higher Education Programme report that this article references proposes the very first step towards achieving an outcome of readiness and resilience involves understanding that preparedness looks different in different cultural contexts. Why? Because the demands of distinctive and heterogeneous local environments mean that the culture of preparedness we desire will have to be built one community at a time. One-size-fits-all strategies have failed. Instead, to achieve enduring results, the approach to preparedness must incorporate local knowledge and recognition of the character and attributes of distinctive communities. In short, the report points out, successful preparedness requires locally tailored solutions that are embraced by residents at the community level.

Consider the problem of preparedness, as highlighted in the report through an excerpt from a traditional Chinese fable: A monkey and a fish were caught in a terrible flood and were being swept downstream amid torrents of water and debris. The monkey spied a branch from an overhanging tree and pulled himself to safety from the swirling water. Then, wanting to help his friend, he reached into



A monkey and a fish were caught in a flood and swept downstream amid torrents of water and debris. The monkey spied a branch from an overhanging tree and pulled himself to safety from the swirling water. Wanting to help his friend, he reached down and pulled the fish out of the water onto a branch. The moral of the story is clear: Good intentions are not enough. If you wish to help the fish, you must understand its nature

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the water and pulled the fish out onto a branch.

The moral of the story is clear: Good intentions are not enough. If you wish to help the fish, you must understand its nature.

The monkey and the fish may belong to the same national society, but their differences demand distinct forms of adaptation. Similarly, varied microcultures make up American 'culture', just as cultural differences distinguish groups within the broader social landscape of Europe.

None of us is born with culture, but we all grow up learning how to value certain ways of doing and seeing. Every human group and human being is influenced by such factors that shape decisions and viewpoints. We learn how to speak and be understood, how to distinguish good from bad, what foods give us comfort, what it takes to earn status, how to treat our elders, and who to trust. Culture connects these different aspects of life in an interconnected web.

One of the most potent aspects of culture is how often the cultural conditioning that influences people is hidden from view. For most of us, our own ways of doing, seeing and believing have become second nature. These ways of moving through the day and the world feel natural, becoming the standard for what we assume is normal. This point suggests that there is a naturalising quality of culture. It is in this hidden, natural-seeming realm of culture that those who attempt to work with, or communicate across, cultural groups can encounter a special difficulty, because it is often hard to tell that communication is not getting through.

This is precisely why past preparedness efforts have not had the reach or penetration we need. If people wore buttons or badges to identify their own cultural sensibilities – their set of beliefs, values, traditions and ways of conducting everyday life – it would be much easier to reach out effectively.

Values and world views

Culture is a great influencer of the work we do in the field of disaster management. What is risky, what is safe, what successful disaster response or recovery looks and feels like, what is considered rational, and what preparedness comprises, are all shaped by people's values and world views. The importance of understanding these world views is often neglected when compared with the emphasis placed on the physical structure of levee systems, on the measurable integrity of buildings, or economic assets of a community.

Yet cultural differences also infuse less visible aspects of life – how we design and situate homes, how we perceive risk, why we choose to stay rather than evacuate. It is impossible to overstate the variety of ways that culture can affect how we prepare for and respond to disasters.

The point is that when disaster managers are responsive to cultural context and the values of specific groups of people they are working with, preparedness initiatives are likely to be successful because trust and respect are earned through knowledge and awareness. Moreover, research suggests that people are more resilient when their cultural needs and values are represented, respected and supported.

Preparedness that includes cultural knowledge enhances resilience for one important reason: resilience is premised, in large part, on access to the strengths and familiarity that come from one's own cultural system. Preparedness strategies that invest time and money in understanding the cultural strengths and needs of different groups will help reduce vulnerability and give people the best possible chance of strengthening their collective capacities.

We all grow up learning how to value certain ways of doing and seeing – how to speak and be understood, to distinguish good from bad, what foods give us comfort, what it takes to earn status and who to trust. There is a naturalising quality of culture and it is a great influencer of work in the field of disaster management

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The report's 'culture-based approach' to individual household and community-level preparedness goals lays out four guiding principles for building cultures of preparedness. For each of these guiding principles below, the authors present practical strategies and examples that demonstrate successful outcomes in real-world settings:

- **Trust –** Develop trust by understanding the culture, context, and history of communities outside of disaster, as well as when an event occurs;
- **Inclusion –** Bring the cultural perspectives of all stakeholders to the table;
- **Cross-cultural communication –** Design communication efforts as cross-cultural encounters; and
- **Support local practices and successes –** Learn about the ways people are already prepared and enhance these efforts using culturally-aware strategies.

To operationalise the four guiding principles that underlie this culture-based approach to preparedness, the authors recommend a novel methodology: the use of culture brokers. These are people with local knowledge and the trust of community members, who are capable of bridging gaps and would be trained to use the four guiding principles to enhance local levels of preparedness. Recruiting these individuals can help outside organisations and local communities connect, build trust and share knowledge. Such a methodology holds great promise for national, provincial, regional, local, indigenous and overseas territory disaster managers seeking to achieve new preparedness targets among diverse communities and hard to reach cultural groups.

- *If you enjoyed this article, we encourage you to read our report.* C·R|

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- *The full* Cultures of Preparedness Report *can be viewed here https://training.fema.gov/hiedu/latest/2019.aspx*

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Look back: You might learn something!

Jelte Verhoeff and **Paul Minnebo** describe a ten-step procedure developed for the Dutch police that lays the groundwork for producing complete, honest, fair and effective evaluations, helping organisations to learn from experience and improve their performance

Conventional wisdom is that, as a rule, law enforcement and intelligence organisations spend little time on evaluating their activities when there is no obvious and absolute need. This lack of attention is both understandable and dangerous. Understandable, because often there is simply no time to dwell on the past when new operations have already started and must be completed. Dangerous, because mistakes may be repeated if they have gone unnoticed and good practice may be overlooked. The costs could potentially be enormous in terms of money, time, resources and reputation.

Evaluations are important to every organisation, including intelligence and the police, because they allow identification of the circumstances under which people and resources can be deployed to maximum effect and confirm the value of resources and methods successfully employed. Time allocated to evaluations is well spent, because they can help prevent wasting time on less than adequate ways of working, and misuse of funding, staff and other scarce resources. Therefore, evaluations may even result in saving time, as illustrated by the parable of the lumberjack who chose to continue to use his ever blunting axe, despite it progressively slowing down his work; until he discovered that taking the time to sharpen the axe every now and again significantly reduced the time it took to get his work done.

Performance of an organisational unit cannot exclusively be defined by results. A law enforcement operation can be handled with a lack of professionalism bordering on stupidity and still result in a successful arrest and conviction. On the other hand, it is always possible that an investigation carried out with the highest professional standards might end up with no results at all. One could – and should – argue that the former is in more need of a thorough evaluation than the latter, to prevent the lack of professionalism displayed in the bad investigation repeating itself in future operations. And it is not always the actors who are at fault. Poor results sometimes arise from poor management, and part of the blame can also lie in factors beyond the competencies of both the actors and the managers.

From this understanding, an evaluation methodology has been developed for the Dutch police, which is loosely based on the Management Oversight and Risk Tree (MORT) methodology developed in the late 1960s, (*Johnson, W G, 1973*), but significantly modified for use in evaluations in a law enforcement environment.

This methodology focuses on constantly exploring four aspects of the performance of an organisation, unit or operational team:

- **Activities:** The performance of individual operators through methodologically scrutinising their activities (the top of the iceberg that is visible to anyone);
- **Management:** The direction, facilitation and monitoring of operations by management levels, applicable legislation and policies which, in the background, determine performance and results (the part of the iceberg that is hidden under the surface);
- **Accepted risk;** and
- **External pressure**.

Accepted risk and external pressure cover the facts, events and circumstances outside the sphere of influence of the investigators and their management, but that

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nevertheless have an impact on what the team can achieve. This includes risks that simply cannot be avoided in the course of one's professional activities without seriously limiting their aims, purposes and results. Another example is circumstances under which a team has to operate that affect performance, but cannot be neutralised because of political, legislative, hierarchical or other competency issues.

As is true in most – if not all – activities, it is the careful preparation of every consecutive step that makes the difference. The ten-step procedure developed for the Dutch police lays the groundwork for complete, honest, fair and effective evaluations that help organisations learn from experience and improve their performance.

The first step is to decide on what to evaluate and why. This is often overlooked, but is of pivotal importance in every evaluation and in accordance with the general principle that a professional organisation would be ill advised to spend time and effort on any activity without having thought about a valid reason for engaging in it at all. And how would one know where to stop when the reason for undertaking an evaluation has not been defined?

Scapegoating

The evaluation can be aimed at explaining choices made, risks taken and expenditure in terms of people, resources, money and time, in order to defend courses of action once an operation has been concluded, then learn from both mistakes and successes. An evaluation already set in motion halfway through an operation can help to decide upon changing tactics, on the acquisition of additional or specialised expertise, or in proving the case for requesting more resources. Every goal is justified, as long as the evaluation is not exclusively aimed at finding a scapegoat to blame for anything wrong in an organisation. That would be the main ingredient in a recipe for lack of co-operation, incomplete information and biased results.

The 'what' to evaluate follows in part from the 'why' and usually comprises things that went obviously wrong, which an evaluation consequently will focus upon – the visible part of the iceberg. To rely on the obvious however, is a dangerous course, as events are often part of a causal factor chain and do not occur in a vacuum. Incidents have direct causes, root causes and contributing factors. Therefore, the next step to take in an evaluation is to construct a mind map and allow all stakeholders to help it expand in all possible areas that could – in principle – be of interest for the evaluation. From the oversight thus reached through multiple associations, one can – as a third step – decide what to include in the evaluation and what not to.

The fourth step is the construction of a new, or the adaptation of an existing, fault-tree diagram, noting the subject of the evaluation at the top, and descending through four main branches, considering the four aspects of performance in every evaluation, along with a myriad of sub-branches. The fault-tree is constructed hierarchically and logically, not intuitively like the mind map, and helps to identify questions that need to be answered to unearth the direct causes, root causes and contributing factors of things that went wrong in an operation, or to highlight activities that were performed successfully. The level of detail should be decided upon by the client.

The questions collected in the fourth step will then be included in a matrix, along with a list of sources that could provide answers. That is the fifth step, followed by the sixth, which is to decide upon methodologies to extract information from the various sources, and the seventh step, during which the necessary conditions to approach the sources by the evaluator(s) should be created. The eighth step consists of doing the actual research; to approach and question the sources, and collect, evaluate and process their information.

None of the techniques, procedures and activities in the ten-step procedure so far are new or alien; all have proven their worth in intelligence and law enforcement analysis. Used in combination however, and supplemented by subject knowledge and a strong sense of purpose, they provide a powerful tool in identifying and harvesting learning points in an ongoing operation or one that has been concluded.

An important aspect of the ten-step procedure lies in the transparency of the methodology. Trust is essential for obtaining the full co-operation of all concerned. Trust in the conciseness, accuracy and impartiality of the evaluator can be reached through displaying a high degree of openness about all the steps. This openness is ingrained in the ten-step procedure: in the mind map that stakeholders contribute to and check, in the fault-tree diagram that stakeholders can contribute to and check and in the information/source matrices that offer stakeholders a complete insight in the type of information the evaluator is focusing upon, enabling them to share their comments, discuss the approach and suggest adjustments where necessary.

All of this reduces the anxiety of everyone involved in the evaluation about the possible outcomes of the enterprise, which might compromise them where mistakes have been made, and persuade them to offer full disclosure.

Finally, in steps nine and ten, the findings are presented to the client. What will be reported and presented? The ten-step procedure shows the evaluator the whole iceberg, including the part that is under water, and leads to a thorough understanding of the strengths and weaknesses (the internal factors) of an organisational unit as demonstrated in the activities that were investigated. A SWOT overview is a valuable tool for the development of any organisation. A proper understanding of the 'S' and the 'W' helps to identify and understand possible 'O' (opportunities) and 'T' (threats) that the organisational unit had to deal with, as well as external factors other than the 'external pressure' and 'accepted risks' the evaluation focuses upon. The organisation, hopefully learning from the identification of the 'S' and 'W' elements, will probably face the same 'O' and 'T' in present and future operations, and it is best to be prepared.

A tentative inventory teaches us that this ten-step evaluation is not widely in use by the Dutch police. We have been involved in a number of evaluations ourselves and know of others that have been carried out along the ten steps, but these appear to be the exception. In evaluations however, the concept of the four aspects is widely acknowledged. Mind mapping is also common in evaluations, as is the use of information and source matrices.

Evaluators tend to use the elements of the ten-step procedure they think is most useful. We think that this – although less than optimal – is also of great value.

Because the lumberjack is very busy….

Authors

JELTE VERHOEFF *worked for the Dutch police as an analyst in Organised Crime and in IT. Together with Paul Minnebo, he developed a structured method for evaluating police investigations.*

PAUL MINNEBO *is a criminologist and has taught analysis techniques and evaluation methodology at the Dutch Police Academy, as well as holding positions in crime and criminal intelligence analysis in the police, private sector, prosecution service and Europol*

Breaking the waves: Leadership during crisis

Anger, confusion, fear, mistrust... Pressure in many forms beating down on you from every direction – time is against you, your board of directors and shareholders may or may not remain with you... Every move you make, every mistake you make, every false step or misspoken word can result in failure or even loss of life... Welcome to leadership during a crisis, says **Stephen Grossman**

Being capable of successfully running a Fortune 100 company, or controlling a small or medium-sized family business whose stewardship has been handed down over generations, does not automatically qualify or even grant a person the skill, temperament or cognition to manage a crisis. It is a fallacy to think a smart and talented person is gifted at all things. And genuine leaders inherently understand this.

Great leadership is ultimately about being a supremely gifted identifier of talent, evaluator of risk and reward, and a master craftsperson at adeptly deploying resources (human and material), which – when all combined – amalgamate into winning strategies and tactics.

Companies fail during a crisis not because the challenges the event presents are insurmountable, or because they are facing the proverbial perfect storm when everything seems to be working against the victim. More often than not, they fail because of the false belief that those who lead the organisation during normally challenging times should inevitably lead it during a crisis.

Crises must be managed specifically, because such events have their own life cycle and nuances. They have their own unique points of origin, a start date as it were, and equally, they must have a point of closure.

Tackling a crisis requires very specific skills, which might include cyber security, physical security, medical, evacuation planning, psychological, environmental, legal, investigative, high stakes negotiations (involving kidnap for ransom, extortion, blackmail, cyber ransom or cyber extortion, corporate espionage and blackmail, etc), humanitarian, engineering, political, knowledge of religions or geography, or of anthropology or government policy – the list is virtually endless.

The top executives or traditional inner circle may not have any of the skills needed to grasp or grapple with the root cause or the developing effects of the crisis and would therefore be found wanting when it comes to designing and deploying an effective response. If the crisis involves a malicious act or intent to cause harm, the targets of that negative action may be the very leaders of the company tasked with dealing with the attack.

Just as lawyers should never represent themselves in court, corporate executives should never lead the management of a crisis in which they are the target. And while surgery should never be conducted by a pastry chef, a cyberattack should never be countered by someone who has trouble syncing their Outlook calendar with their iPhone.

And when the crisis is resolved, the crisis mode is finished and the company must return to its established business-as-usual pace and posture.

But this is often easier said than done. The collective brain and body of the team has been pumped for a sustained period of time with a cocktail of adrenaline, cortisol, noradrenaline, oestrogen and testosterone, dopamine and serotonin. These energy-generating, feel-good chemicals are served gratuitously by a hormone mixologist from the exhilarating fight or flight bar, which never closes during crisis mode. This particular cocktail can be addictive. It makes a person feel like a superhero and is certainly more exhilarating than most usual workdays spent sitting behind a desk watching cute cat videos on social media feeds.

Hang up the superhero cape

Hanging up one's superhero cape can be difficult. But it must be done. Many executives, particularly when they have handled a crisis well and seen or felt the benefits of a job well done, simply refuse to let go of that cape. So crisis mode becomes permanent, and that can be as damaging as the initial threat.

The key to keeping your business running while winning out over your crisis is to form an effective, well trained, well selected 'tiger team' or crisis response team, a term I prefer over the more commonly used crisis management team (CMT). The term 'crisis management' elicits a sense of keeping up with something, almost reactionary and defensive, and maintaining it, managing it, keeping it running. Crisis should not be handled in this manner.

A crisis should not be managed; it should be overcome. The conflict must be resolved, the escalation must de-escalate, the threat must be mitigated or neutralised (in the truest meaning of the word and not with

reference to Hollywood action movie terminology).

The tiger team is an *ad hoc* crisis response unit designed to resolve a specific crisis. It comprises a group of specialists or experts in relevant fields coming together to achieve a specific goal. Consider what was said above about common obstacles in successfully overcoming a crisis and good leadership, then consider the key concepts of a tiger team: A group of specialists working together towards a common goal (against a common but potentially complex challenge). And, once that goal has been achieved, the team is disbanded.

A company can – and should – form tiger teams from throughout the organisation, regardless of job title or position, and sometimes it must bring in experts from outside the organisation. A company should expect to have different teams operating at different times, or even simultaneously, while achieving various goals or tackling different crises. The team should report to designated executives or to a board of directors.

Team members can be anyone, provided they possess the following skills or qualities:

- Expertise or skill in an aspect relevant to the specific crisis;
- Cognitive skills most likely to enhance the team's ability to work through the problem;
- Behaviour befitting a team operating in extreme circumstances (team cohesion is critical);
- Ability to carry out the responsibilities of the tiger team while continuing their everyday job role, or have a viable temporary replacement while serving in the tiger team;
- Discretion;

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I prefer the term 'tiger teams' over the more commonly used crisis management team (CMT). Crisis 'management' elicits a sense of keeping up with something, almost reactionary and defensive, and maintaining it, managing it, or keeping it running. Crisis should not be handled in this manner

- High threshold for stress;
- Open-mindedness and a willingness to consider best options, even if the idea is not generated by herself/himself;
- Strong communication skills – is able to frame an argument, ask smart questions, challenge, constructively disagree, etc; and
- Thick skin – tiger teams must be focused on the goal, not the feelings of its team members. This is not to say the feelings of the team are irrelevant (if a person is not in an optimal state of mind, they don't perform effectively and cannot focus on anything other than themselves), but the goal is greater than any one individual in the team. This is not the same focus or balance as when an organisation is operating in everyday mode, it is particular to crisis mode.

To avoid the after-event headache where one laments not knowing 'something like that could happen to me', or to an organisation like yours, it is wise to assess your risks. Take into account where you operate and with who you communicate, consider who benefits and who may be affected or offended by what you do. You must assess the effects the nationality of your company's base of operations may have in various places where you operate or wish to work, and think about your messaging and the messages you have been receiving from inside and outside your organisation – this is part of regular threat intelligence.

You also need to take the time and effort to weigh your cybersecurity vulnerabilities, be sensitive to the effects that the behaviour of key executives inside and outside the office may have on others, and look at how events have affected your competitors or companies similar to yours in other ways.

Essentially, it is worth the time and cost of conducting intelligent, pragmatic, strategic and tactical assessments of your risks. Be sure to include internal and external threats, cyber and physical security vulnerabilities, financial risks, health and safety risks, travel security, natural disasters and climate-related impacts, political exposure, etc. And continue these intelligence reviews and analysis with regular updates and modifications to your threat assessments, response stance and response readiness.

There are various risk experts who can assist.

Be sure, though, that the consultants you choose have subject matter expertise. And it is worth bearing in mind that sometimes the best expert is not the one who fights crime and faces disasters, but the person who has actually carried out a crime or caused upheaval at some point in their lives. Taking the backgrounds of such expertise into account, it is best to have your trusted risk consultants select and manage these experts with the unique insider view of certain threats. There are hackers who have turned from the dark side to help companies protect themselves and some formerly radicalised individuals are now working to de-radicalise others. These people can provide great insights into worlds one would otherwise never fully understand.

Equally important to a good response capability is to know your resources. You would be well served to conduct profiling exercises to know the types of people and skills you should have in various predesignated scenario-based tiger team set-ups. Identify what type of team composition is best for which kind of event (mapped out in risk assessments mentioned above) and then figure out who would be best suited for which teams. This requires a matrix of skills assessment and behavioural based profiling to identify who has the right skills and which skilled person has the right personality, cognition, acuity, communicativeness, stress management and so forth to contribute most to the team or teams (a person could possibly contribute to more than one deployed tiger team).

Anarchistic pixies

Leaders know they will face crises, regardless of the size of their organisation. The world today, with all its connectivity and ability to operate with relative anonymity with global reach and lightning speed, presents rich targets for organised crime groups, individual criminals, state actors, antisocial types or for anarchistic pixies to attack. Prevention is great. But prevention is nothing without preparedness and the ability to effectively respond to a threat.

The key to building and maintaining this threat response capability is to reach out to the expertise in your organisation and pull in talent from the greater business community, to engage strategically those who will be most effective in a team dealing with certain threats or crises. Train those team members. Educate the rest of the company on how to respond during a crisis. And, during an actual event, it is as essential to communicate internally as it is externally – inform in a smart way what is happening and what is being done about it, and provide timely, well-considered and honest assessments of the impact.

Explain to your stakeholders what you are doing (without giving away operational secrets or providing the source of the threat more ammunition) and demonstrate with actions, and not only with words, the seriousness with which your organisation executes its duty of care to its employees, customers, partners and community. CRJ

Stephen Grossman will be speaking at the International Disaster Response Expo Summit, to be held in London, UK, on December 3–4, 2019. See page 110 for more details. Don't miss the Crisis Response Journal Conference, which takes place simultaneously at the same event – come to the conferences and visit the Crisis Response Journal village. More details from: www.disasterresponseexpo.com

Author

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A blueprint for crisis leadership

Leadership in any setting is about influence. It isn't a skill that you're born with, but something that can be strengthened and developed over time. It takes practice, commitment and huge amounts of resilience, none more so than in the sphere of crisis leadership, according to **Scott Walker**

From observing over 250 different types of crises occurring all over the world, five key leadership principles that led to a successful resolution in these cases have emerged. It didn't matter whether the crisis was a cyberattack, a kidnapping, an emergency evacuation or any other similar type of peril; regardless of whether a person's life hung in the balance or the very viability or existence of a global organisation was faced with extreme challenges and uncertainty, the key principles remained the same.

So, what enables the best leaders and high-performing teams to successfully resolve such situations? What did they specifically focus on that enabled them to overcome and achieve where others failed?

- **Stepping up:** Self leadership and creating a winning mindset.

In a crisis there is no room for ego. The most effective leaders realise this and park theirs at the door. Only once a leader is able to manage their thoughts and behaviour effectively, can they begin to influence their teams. They have great self-awareness and know all too well the importance of taking time to engage the team before any crisis actually occurs, while embedding a training and learning culture, rather than one of blaming and shaming. They encourage comments, observations and advice from others but are always prepared to challenge assumptions, particularly their own.

Nor do such leaders seek to play the hero in its popular sense, despite most crises offering the opportunity to do so. The Latin root of 'hero' actually translates as 'protect' or 'serve'. Great leadership is therefore servant leadership; which is not naive or weak, but comes from a place of contributing to the greater good, of the mission, the team or the organisation, showing empathy and compassion through meaningful action. The best leaders have a clear sense of purpose, which sustains them when the going gets tough. And it always gets tough, never more so than in a crisis.

This is why, in a kidnap for ransom case for example, the primary outcome is always the safe and timely recovery of the victim, rather than apprehending the offenders. This requires tremendous courage and strength to have difficult conversations or make tough decisions, often with incomplete or contradictory information, and while staying focused on achieving the strategic objective in the face of adversity.

- **Getting a grip:** Identifying and leading your team.

The initial response to a crisis should be decisive, with an intent to bring clarity and perspective to what is usually a chaotic and unclear situation. Never is it more crucial to have what Jim Collins described as: "The right people on the right bus, sitting in the right seats," when responding to a crisis. Urgently forming a small crisis management team (CMT), with clearly defined roles and responsibilities to ensure efficient and effective discussion and decision-making, is key. If required, an incident management team (IMT) can also be stood up at the tactical level to report into the CMT.

The most pressing issue for the chair of the CMT is to take 100 per cent responsibility for the situation and to accept the reality of what's being faced. At the same time, it is vital to remember that being 'calm is contagious' and essential for the leader to provide direction and then empower the team to deliver. The most effective leaders also avoid burying their heads in the sand and are always expecting the best, but preparing for the worst. Nor do they avoid asking (and answering) those difficult questions that arise in such situations.

Another factor is building resilience among their teams, as depending upon the nature of the crisis, the duration could be a matter of hours, days, weeks or even months. No one can go flat out indefinitely, so establishing a workable battle rhythm for the long haul is crucial to ensure such resilience and enable effective decision-making.

- **So what and now what?** Applying the strategies.

Once the CMT (and potentially IMT) is established, the key question asked to be asked is: "So what?" What does this mean for the family, team, organisation, etc? Is it merely a minor bump in the road and unlikely to disrupt the business? Or is it likely to be game over, with catastrophic consequences? To assist in this, the leader must rapidly ascertain who the key stakeholders are, how they should be communicated with, and with what message throughout the crisis. Once this has been established, the leader can then clearly articulate working strategies. In a kidnap for ransom scenario, one of these strategies would be to determine how much they – or the family – are willing and able to pay for the release of the victim. It's then a case of holding your nerve through the delicate negotiations, while balancing the need for flexibility to improvise, adapt and overcome as the crisis develops.

- **Crisis communication:** Becoming a persuasion ninja.

A well-thought through and effectively used communications plan is fundamental to a successful resolution in any crisis situation. Crucially, this is not the same as the marketing or PR department quickly throwing

Author

SCOTT WALKER *has spent almost 20 years helping to resolve crises all over the world and across all industries and sectors. Built on his experiences as a former Scotland Yard Detective, Scott has advised and coached business leaders and organisations in improving their effective leadership and decision-making in challenging situations. He is a full-time member of NYA's Crisis Response Team*

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- *www.nyarisk.com*

There is no room for ego in a crisis – the most effective leaders realise this and park theirs at the door

Matthew Corrigan | Alamy

together a press release. Crisis communication is one of two fundamental components of crisis management, with the other being operational incident management. It's possible to do the latter well, yet mess up the former, thereby exacerbating the situation even further.

In a kidnap or extortion case, effective communication is literally a matter of life and death. A wily kidnapper will explore all avenues to spread confusion, contacting as many members of the victim's family, community or company as they can in order to obtain as much money as they can. Effective leadership seeks to narrow the options for the bad guys by instilling 'One voice, one number, one message'. With the help of experts to coach and guide, the company or family selects a communicator who will become the single point of contact with the kidnappers. Having established rapport and listened intently, the communicator is then able to convey the clear messaging agreed by either the CMT or IMT, with the intent to influence the kidnappers. The communicator is not the decision-maker though, thus allowing a firewall to be created, which provides necessary breathing space and thinking time.

- **Review and repeat:** Future proofing for success.

No effective leader is an island and they neglect their support crew at their peril. What they have is a relentless pursuit of constant improvement and learning for themselves and their teams. The training never stops, as there are always new skills to learn or existing ones to refine.

In summary, effective leadership in any form of crisis requires a quick response, with the setting of clear, unambiguous strategies to achieve the desired outcome. The effective leader can then influence what should be a united, purpose-driven team to achieve this outcome, with the focus being on empowering others to become effective leaders, too. CRJ

The latin root of 'hero' translates to 'protect' or 'serve'. Great leadership is therefore servant leadership

Making a case for crisis command

Russ Timpson says that after conducting more than 300 crisis simulations in various industry sectors, consistent learning points have emerged from every exercise, irrespective of location or industry

Crisis command – the need for command and clarity of purpose during a crisis – is essential if a structured response is to be made. Crisis management is therefore inappropriate in the early stages of any disruptive event, as the term 'management' infers a considered and consultative process that will not stand the test of short high-pressure time frames and unpredictable developments. As a skill or competency, however, crisis command can be learnt and improved through training and practice.

Horizonscan is a business resilience consultancy that specialises in conducting crisis simulations. Over the last three years it has completed more than 300 crisis simulations in various industry sectors and countries. And, irrespective of location or industry, there are consistent learning points that emerge from every exercise.

These include the fact that crisis command is not established quickly and there are long delays in answering simple questions like, 'Who is in charge?' Another point revolves around the excessive time taken to deploy an effective crisis team structure and get everyone available working productively as a team. Further points include not working to appropriate priorities or avoiding diversions and distractions, and not communicating to stakeholders in a timely and considered way. Focusing on crisis related issues and delaying responses to business recovery imperatives is another issue.

As crisis events are infrequent and the current business environment is hectic, with restricted time and budgets, it is not always easy to release senior staff to undertake training and coaching for crisis command. Horizonscan's recommendations to several of its client organisations that they should include crisis command duties in job and role descriptions as part of a competency requirement, have been successful. An excellent manager may be

able to think on her or his feet in a crisis, but this is not a quality, auditable and repeatable outcome.

We are living in an age of reduced redundancy. Our societal, industry and personal infrastructure is being pushed to levels of capacity and utility not seen before. For example, in the UK, we are now abandoning the hard shoulder lane of our motorways in favour of emergency lay-bys. This is clearly an attempt to increase capacity at the expense of safety redundancy – safety margins are being challenged by priorities that are testing how much the system can withstand.

This approach will increase the risk of combined latent failure of large interconnected processes; the potential outcome could be large-scale crisis events. The tragedy of the Grenfell Tower fire in London was not down to a single ignition source, but rather a sustained reduction in safety margins and redundancy across the entire design, construction and commissioning process of large-scale building works. And the reality of such a reduction in redundancy will be increased impacts of crisis events.

In our daily lives, we rely on simple tools to overcome crises. Consider the average car embarking on a long-distance journey. It is likely that it will probably contain equipment to be used in the event of an emergency, much of it mandatory in some countries, including spare tyre and tools, a warning triangle and recovery insurance. Having recently acquired a small hatchback car, I was surprised to discover that it had no spare tyre. Instead, the car was equipped with an aerosol can of tyre repair foam. Again, this is a reduction in redundancy.

The average office or work building will normally have available a first aid kit, fire extinguishers, emergency lighting, a means to raise alarm and an assembly point. However, none of these will help to establish crisis command when something bad occurs. As communities, organisations and businesses come to terms with a more volatile, uncertain, ambiguous and complex working environment, they must equip themselves with tools that will help in a crisis.

Crisisboardroom provides essential tools to establish crisis command in the early stages of any disruptive event. In essence, it is a distillation of the learning points mentioned above. Housed in a large secure suitcase, the Crisisboardroom kit includes a standard operating procedure/process for crisis command, role cards for everyone on the crisis team and large reporting boards to help visualise the current status of important aspects of the crisis response.

The crisis toolkit further incorporates separate tools for supporting an initial investigation and evidence preservation, along with accounting tools for petty cash and immediate costs. One of the most popular features is a press pack, which contains simple instructions for dealing with media enquiries, social media and standard responses to typical questions in the early stages of an event.

Once an organisation has taken the decision to declare a crisis, there will be a need to establish a crisis command centre (CCC) to provide a focus and structure to the response. There are two likely locations for the CCC, depending on the nature of the crisis. It could be a pre-agreed and equipped room at a specific location within the organisation's building stock. Alternatively, in some high resilience industries and organisations (eg airports), the CCC is permanently established and ready to go live. Another approach is to have a storage facility on site, containing all the necessary equipment.

Some crisis events, such as a fire or hazardous chemical release, will lead to an evacuation and denial of access to existing buildings. In such cases, the crisis command team will need to relocate to an off-site CCC, often a neighbouring business or local hotel. Either way, the new venue is unlikely to have facilities and information to help establish a CCC.

Instantly structured response

It is very easy to transfer the Crisisboardroom kit to any location, unpack the contents and establish a CCC in approximately ten minutes. Responding staff will then assume predesignated roles within the crisis command structure. Each of these designated roles has a one-page role card, with set objectives and deliverables. As information and updates become available, they are transferred onto the report boards to form a crisis command dashboard of information. The Gold Commander's assistant keeps a decision log, populated with events and a working timeline of progress for future reference.

The kit is now in use in 20 countries around the world and has been used in 11 real crisis events, where it has proved itself to be an invaluable tool for establishing command and guiding managers through the unfamiliar territory of a crisis response. CRJ

Author

RUSS TIMPSON, *founder and CEO of Horizonscan, a CRJ Key Network Partner, is a Member of CRJ's Advisory Panel. Crisisboardroom will be exhibiting and demonstrating the two versions of its kit at BCI World in London this November, on stands 45 and 46*

- *crisisboardroom.com*
- *horisonscanbcp.com*

Investigating to an absolute conclusion

Humans refuse to embrace chaos, says **David P Perrodin**. We want today to be like yesterday and tomorrow to be like today. But these biases mean we ignore the conditions that permit tragedies – whether school shootings or large-scale fires such as the blaze that consumed Notre Dame Cathedral in France – and fail to fully investigate ways of preventing their reocurrence

In my book, *School of Errors: Rethinking School Safety in America*, I propose the existence of torus theory, or the engrained human behaviour of feverishly pursuing a similar condition of being. We want today to be like yesterday and tomorrow to be like today. People vehemently resist the formless disorder that is chaos.

In fact, chaos is natural and liberates us so that we can consider non-linear options, opening a window to a different way of doing things. But humans refuse to embrace chaos, whether it manifests as a fire devouring a medieval cathedral, or a shooter rampaging through the hallways of a school. We fight it. We seek to reboot to a state of pre-chaos. This seems right; it feels necessary. It's badged as healing or as preservation. But it can be a myopic and incomplete way of doing things.

Myopic and incomplete

In Paris on the morning of April 15, 2019, confirmation bias matched reality to expectations – perceiving Notre Dame as we wanted to perceive it, ignoring teetering statues literally strapped to the building like luggage atop a station wagon. Positive recency convinced the world that the centuries-old cathedral would go through the typical pace of the day with its doors open as usual, visitors taking in the sights, cursory safety walk-throughs and, with nightfall, the breathtaking structure bathed in light to awe the tourists. Yet chaos was waiting in the wings.

The lacklustre response to the initial fire alarm at 18:20 exemplified a belief that the unthinkable simply wouldn't happen and it is here that biases came into play. Cathedral staff searched, but failed to find the fire before a second alarm was sounded 23 minutes later. Although the cathedral was evacuated immediately, it was assumed the first alarm was a technical glitch, showing how the inspectors' brains punched override buttons to protect the torus. Panic was held in abeyance until absolute confirmation of a crisis situation was made. Forensic analysis of the initial alarm waded through a sea of red flags. Then those investigating the second fire alarm were confronted by the sight of flames sweeping through the attic forest.

The prescribed linear steps included evacuating the building and notifying the fire department. As predictability ceded to chaos, the dash to save relics and firefighters' attempts to combat the blaze can be categorised as 'working the problem'.

Chaos gradually simplified the options. Firefighters could either attempt a futile effort to salvage the attic, or focus on saving the towers. The fuel of the mostly stone-built structure would eventually be consumed, thousands of gallons of water would knock out the flames and it was a matter of chaos running its course before a retreat to a distorted similarity. And, if a wall collapsed, that would become part of 'working the problem'. People were in a 'flow state'.

Against an ember-glowing backdrop, President Macron vowed to the world that France would rebuild the cathedral. Yet at that stage he had not been informed of the scope of the damage, the potential for the building to collapse, nor importantly, the root cause of the blaze. Did anyone question at that stage whether it even made sense to rebuild the cathedral?

Macron delivered what people wanted to hear and not what they needed to hear, ie the message was that 'everything will return to normal'. This is a politician's tool to herd people from chaos and bewilderment towards acceptance and hope. It's not a bad thing, but it's sorely incomplete. An underwhelmed mandate to winnow out the root cause of what just happened and then deploy findings to inform better practices in the future, can be dangerously dismissive.

The nearly billion dollars of donations that flooded in within 24 hours of the fire were impressive, but not unexpected. Again, humans seek the torus. Although the cathedral had been crumbling for years, preventive measures and detection systems, exercised with fidelity, could have been put in place to mitigate the inferno. Yet the gradual erosion of the torus was either not detected or simply dismissed as 'being proximal enough to the torus that it's nothing to worry about right now'.

This also provides a lesson for school safety. A sentinel school safety event, such as a school shooting, spurs parents' demands to hear politicians championing increased safety funding. They order police cars to line the streets in front of schools. But temporary responses are not distilled from empirical evidence – they are a facile blanket. Anxious people want their fuzzy torus back.

The direct cause of the Notre Dame Cathedral fire was most likely an electrical fault or errant cigarette butt. However, although placing blame appeases the masses, knowing the direct cause does not solve the problem

Gracie_hb | exoticshirts.co.uk

As we sprint towards recreating what existed before, we blur past a fleeting opportunity to study the freshly exposed chasms that reveal root causes. Of course, confronting root causes is uncomfortable, as doing so challenges our engrained practices, accepted truths and, inevitably, situates us into a new normal – a different torus. Everybody dreads change and nobody machinates against the torus.

Let's think about it this way. The direct cause of the cathedral fire was most likely an electrical fault or errant cigarette butt. And although placing blame appeases the masses, knowing the direct cause does not solve the problem. Rather, the aggregate root cause of the fire can be determined as inadequate deterrent measures; the cathedral's fate was nudged towards the cliff edge by decisions taken not to install sprinklers, and the assessors who went through the motions of probing the initial alarm without panning a flashlight on every timber.

Turning towards school violence, what is the root cause of such violence in the USA?

One root cause is the impediment to threat reporting owing to the 'youth code of silence'. In 2008, the United States Secret Service and United States Department of Education released a study titled: *Prior Knowledge of Potential School-Based Violence: Information students learn may prevent a targeted attack*. This report's findings were alarming in that they suggested that the youth code of silence played a contributory factor in most school shootings.

Information from the Safe School Initiative case files indicated that only four per cent of individuals with prior knowledge attempted to dissuade the attacker from violence, including not conveying the threats to adults. Of course, we must not overlook the reasons behind this, not least the perception that raising such concerns about a fellow student might have unfavourable consequences. Whatever the cause, it is indisputable in many cases that the reporting system failed, and it continues to fail.

And this all brings about the issue of need versus want, building back the same and rebooting to a state of pre-chaos, as exemplified by France announcing an international competition to rebuild the spire of Notre Dame Cathedral. I suppose this means that a call for the best safety system will just have to wait. CRJ

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DAVID P PERRODIN, *PhD is a professor in the School of Education at Viterbo University in La Crosse, Wisconsin, USA. He is the author of* School of Errors: Rethinking School Safety in America *(Rowman & Littlefield, 2019)*

What have the Romans ever done for us?

Cities are evolving faster than at any point in our history, putting them on the cusp of major transformation which, if managed well, could lead to unprecedented economic growth and prosperity for all, but if managed in an uncoordinated manner, could drive social, economic and environmental decline, explains **Laurence Marzell**

Apart from better sanitation, medicine, education, irrigation, public health, roads, a freshwater system, baths and public order, what have the Romans ever done for us? Yet, despite these amenities, the Romans had as many public health issues as their predecessors, in part because they failed to understand the interconnected and interdependent nature of the environment in which they lived – lessons we would do well to learn in the mission to transform 'smart' cities into 'intelligent' ones

Monty Python | Alamy

For many people, the phrase 'What have the Romans ever done for us?' recollects the classic comedy scene from Monty Python's *Life of Brian*. When plotting to overthrow the Romans, the rebel leader asks this question, only to hear from his followers that the Romans gave them better sanitation, medicine, education, irrigation, public health, roads, a freshwater system, baths and public order.

Whether these were truly Roman inventions or not, they certainly brought societal order to a huge variety of citizens, with technological development providing a higher quality of life.

This pace of change could be likened to that which we see today, as modern society rushes ever deeper into the Fourth Industrial Revolution, the outcomes of which are yet to be clearly understood.

The Fourth Industrial Revolution is expected to fundamentally change how we live. Developments such as Blockchain, AI, the Internet of Things (IoT), autonomous systems, and big data are too often looked at individually.

Although both academia and policymakers understand theoretically that society functions as an interconnected ecosystem, this insular view of the component parts of the Fourth Industrial Revolution shows this is not being effectively put into practice. Instead, it serves to provide a very limited understanding of their combined effect and changes on the societal ecosystems they are intended to foster.

In parallel with these developments, urbanisation is set to increase and, with it, the complex societal challenges it brings. Today, cities occupy just 2.6 per cent of the Earth, but are home to more than 50 per cent of the world's population, generate more than 80 per cent of the world's GDP and use 75 per cent of the world's natural resources. The International Energy Agency estimates that urban areas account for over 67 per cent of energy-related greenhouse gases, expected to rise to 74 per cent by 2030.

The UN estimates that our global population will rise to 9.6 billion by 2050. Most of this growth will occur in cities, with an estimated 66 per cent of the global population living in urban areas by 2050.

These cities are evolving faster than at any point in our history, which puts them on the cusp of major transformation. If managed well, this could lead to unprecedented prosperity. But, if managed in an uncoordinated manner, it could drive social, economic and environmental decline. This is especially true when the many challenges mentioned in the UN's Sustainable Development Goals (SDGs) – such as climate change, sustainability and migration – are brought into focus in the context of urbanisation.

The consequences of the Fourth Industrial Revolution and urbanisation will coalesce around the development of smart cities – connected places to empower citizens to lead smarter lives.

But it is here where the humorous question: 'What have the Romans ever done for us?' might become a practical one, providing lessons for our future smart society; helping to shape the concept of smart cities to be one of intelligent cities instead, as described so judiciously at the World Economic Forum.

Despite the fact the Romans outwardly removed signs of poor hygiene from their cities, they didn't understand how to benefit fully from their own technological advances. They failed to recognise the interconnected and interdependent nature of the environment in which their problems existed. The Romans had not designed their sewers or aqueducts poorly, but instead made parallel bad decisions that worked cumulatively to undermine health improvements. Despite their amenities, the Romans had as many public health issues as their predecessors. The risks from poor hygiene remained unseen elsewhere, creating no deeper benefit to societal resilience than existed before.

The Romans lacked the knowledge of the interconnected ecosystem upon which society sat; they needed a whole system approach and the understanding this brings of the consequences and management of their technological innovation.

Despite society's advances, we have an analogy with the Romans in terms of the technology-driven transformation of society. The outputs of the Fourth Industrial Revolution will soon permeate our daily lives and urbanisation will continue relentlessly. Without a whole system approach and its holistic view, smart cities will struggle to become intelligent ones. The advertised benefits of innovation, just as with the Romans, can backfire through unintended consequences from the very interconnectivity of society that the technology was intended to enhance. This is especially so in terms of societal resilience, which could be described as being achieved through the sum of the parts of the many disparate activities and essential services provided to citizens by public, private and voluntary organisations. These are the services that keep communities safe from harm and promote their wellbeing. By no means exhaustive, examples include: Community policing; serious and organised crime; health and social care; crisis and emergency planning; critical infrastructure protection; public health; education; welfare; fire safety; and local government services.

Fragmented implementation

The challenge as it exists today, between the practical application of these activities on the ground, and the often misunderstood narrative of societal resilience as a single, albeit vague concept, comes essentially through a lack of understanding and visibility of the interconnectivity between these separate activity domains and the roles they play within the whole system. This is further compounded by a lack of coherence between policy and practice, with often fragmented implementation in the delivery of these services on the ground and, therefore, the outcomes sought across the different domains, stakeholders and strategies.

This lack of understanding results in increased risk and dilution of resilience – both in its conceptual societal sense as well as in practice on the ground – affecting many areas of daily life for citizens and communities in real terms.

Cities are for people. To become truly intelligent, as opposed to merely smart, they need to become inhabitant-centric: placing emphasis on citizen focused approaches and outcomes that can address the root causes of our increasing urban challenges – rather than introducing quick fix technology as is often the case.

This is particularly true for these essential services described that are the lifeblood upon which cities run. For inhabitant-centric intelligent cities to avoid the analogous pitfalls of the Romans, adoption of a whole system approach to improve

> The Romans lacked the knowledge of the interconnected and interdependent ecosystem upon which their society sat; they needed a whole system approach

understanding, management and integration of these component parts that underpin sustainable and socially resilient community ecosystems is key.

An approach like that more recently used in the EU Horizon 2020 project, Unity, will bring the governance, people, process, technology and information together into a unified view of the whole. This gives decision-makers clearer views of the interconnected consequences arising from urbanisation and the Fourth Industrial Revolution. With this comes an essential governance framework for information to help organisations work collaboratively. Thus, they can make better informed decisions from collective understanding – ones that transcend their individual boundaries or artificial borders to improve resilience at a meaningful societal level.

In intelligent cities, heterogeneous data must flow seamlessly if it is to be manageable and achieve sustainable and resilient innovation. Data is the new currency, where smart usage is as important as quantity. Managing its volume in an increasingly connected society is essential to beneficial transformation, as this data becomes correspondingly more complex. Even with advances in big data processing, those providing essential infrastructure and services still need to decide which data becomes useful information and how to use it. The current methods of stockpiling or scatter-gunning compound the complexities of this data, reducing its efficiency and increasing the risks in decision-making.

A whole system approach facilitates a governance framework for information and decision-making, such as that of the Joint Decision and Information Governance (JDIG) used in the EOPEN H2020 project. Here, the system architecture approach provides volume data users with the means to identify how they can improve their services. This takes place through better understanding and focus on information identification, collection, communication and storage and the governance needs surrounding it. The JDIG, being a core component within the whole system approach, facilitates the identification of shared challenges in multi-organisational decision-making to tackle contemporary challenges.

One significant aspect of these challenges to future cities is that of cybersecurity. Here, where data, systems and services are interconnected, resilience is compounded by the fragmented approach of cybersecurity. If citizens are to trust in the benefits of the Fourth Industrial Revolution, then cybersecurity must become integral to the whole system approach, integrated within the governance, people, process, technology and information capabilities upon which communities sit.

Such a 'public good' approach to cybersecurity, is posed eloquently by co-authors Mariarosaria Taddeo, Research Fellow and Deputy Director, Digital Ethics Lab, Oxford Internet Institute, University of Oxford and Francesca Bosco, Project Lead, Cyber-Resilience, Centre for Cybersecurity, World Economic Forum. In their article, *We must treat cybersecurity as a public good*, the authors argue cybersecurity should be treated no differently to defence or streetlighting.

Whether or not this is revelatory, the essential infrastructure and services upon which society relies don't just need to be individually smart, they need to become collectively intelligent with their associated whole system resilience, bolstered through public input and acceptance, treated no differently to that of public health, sanitation or defence. Bringing the infrastructure, services, cybersecurity, and other disparate elements needed for our future wellbeing into a whole system unified view, is an intelligent lesson to learn from the Romans, in that the visible improvements innovation brings do not necessarily transform society in a sustainable and resilient way. CRJ

Hakki Arslan | 123rf

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Emerging technologies: Brave new world or resilience nightmare?

In this age of innovation we are constantly faced with emerging technologies we will have to accept and embrace – robotics, artificial intelligence (AI), the Internet of Things (IoT), or driverless automobiles are likely become as routine to future generations as television, computers, the Internet and social media have been to previous ones. **Lyndon Bird** explores their potential ramifications

As new technologies are becoming established, the public has begun to understand how technology can be misused. High profile data breach cases have been around a while, but the public only recently appears to have realised the extent of how its data is legally traded by trusted companies, with neither knowledge nor permission.

Issues such as data breach and privacy are at least out in the open for debate. A much harder challenge lies in the dark web, the alternative universe for some of the most evil and depraved individuals and organisations to trade people, weapons and drugs. It also provides the cyber tools and training that criminals can use to attack systems and infrastructure for personal gain or ideological reasons.

Until recently, the existence of such underground networks was not widely appreciated outside the information and cyber security community. Activities that take place are untraceable by law enforcement agencies, partly because the perpetrators trade using cryptocurrencies, another poorly understood technical phenomenon. To the layperson, it might seem that cyber experts should be able to interrupt these activities, identify culprits and prosecute them. Unfortunately at present, even leading specialists are only able to make limited progress – the criminals seem to be able to keep well ahead of the law.

Data, cybercrime, IoT vulnerabilities, cryptocurrencies, self-driving cars, AI – we must consider how such new, advanced and innovative technologies change us as a society

Roman Yakovliev | 123rf

Cryptocurrencies are not illegal; they are an investment vehicle for those willing to take a risk on a super-high yield option and they are recognised as an investment asset for tax purposes in the US, subject to both capital and short-term gains rules. However, unlike conventional financial dealing, there are no checks or balances and a third party cannot establish what your assets are unless you tell them. There are no servers involved, no central controlling authority and the system is decentralised across

a peer-to-peer network – perfect for criminals who trade with each other and do not need to turn their crypto-balances into any central bank issued currency.

The old adage, 'Generals always fight the last war', seems to be apt in the context of financial regulation. Most western governments are still imposing tight regulation on banks as an ongoing response to the 2007–08 crash. For example, unnecessary burdens have been imposed upon normal citizens who do not have significant amounts of money worth laundering, in the hope of catching a few organised crime syndicates or Russian oligarchs. Meanwhile, the real criminal money transactions are unregulated and take place outside of the formal financial world in cryptocurrencies that cannot be seen, monitored, controlled or taxed.

We should avoid being Luddites, but be realistic about the risks that come with new technologies. We should also ask: are they robust enough yet to withstand the challenges to which they will be constantly subjected?

The main objection to robots has usually been their impact on particular communities, in that they have largely replaced unskilled and semi-skilled factory jobs where heavy engineering was the predominant type of employment. Robotics has done for factory work what the personal computer revolution did to traditional clerical jobs – changed or eliminated them.

AI seems to be on the verge of some dramatic advances. However, influential thinkers such as Bill Gates and the late Stephen Hawking have warned of its danger, though in different timescales.

Hawking argued that we must not accept the myth that machines can never control humans. Intelligence creates power – humans control other life forms not because they are more physically powerful, but because they are much cleverer. If AI has the potential to be more intelligent than humans across the whole range of human activities, what would stop it taking control? Clearly this is very far away and many argue it will never happen. It should not unduly concern us as an imminent problem. However, a weaker form of AI is already with us and certainly will challenge existing career structures in the same way that automobiles did for horse-drawn carriage drivers, robots did for production line workers and the personal computer did for shorthand typists.

In this limited form, AI is a technology that can be applied to any application to make it more effective, costly and reliable. It does not need a physical presence, so it is not just the 'brain' of robots as commonly assumed. It only needs a physical form to undertake tasks that need physical movement. Any profession where knowledge and training (rather than an individual level of aptitude or talent) form the basis of a career, will face challenges to justify why AI cannot perform the standardised functionality as well as, or better than a human being.

The main security concern with IoT seems to be that basic domestic appliances can be hacked. They need a local wireless network to talk to each other, but to talk to the outside world they need to connect to the Internet. This makes them as vulnerable to hacking as any computer device, but without the user being aware. It is unlikely that people will ever pay the same security attention to their refrigerators and cookers as they do to their computers or phones.

Why would anyone hack a fridge? It has nothing to do with the fridge itself, but rather to use the device for illegal data transfer purposes, to pass messages to a targeted server as part of a co-ordinated DDoS attack, for example. Once any device becomes connected, security problems expand exponentially. IoT can open up your home or office, potentially allowing criminals to access computers, phones and cameras.

When considering AI applications, driverless cars are in some ways, the most challenging of all, as the technology far exceeds the readiness of potential clients to adopt it. Unlike IoT, which is largely hidden to people who don't want to use it, a driverless automobile involves a fundamental change in human behaviour.

Trust, ethics and culpability

This is not just about safety, it raises issues around trust, ethics and culpability. Will AI have any ethical code and, if so, how will it be embedded? If every accident becomes the fault of the company that makes the vehicle rather than the human driver, personal responsibilities for driving safely and insuring drivers or other victims will not exist. Will every accident become a corporate dispute and how will blameless victims be compensated? A vehicle being taken over by hackers is a nightmare scenario; they could demand a ransom, instigate a major crash or use it for any other purpose. Is our cyber security rigorous enough to ensure nothing can go wrong – or are automobile manufacturers able to guarantee the zero-fault computing essential to this type of application? I suspect that we are some way from either of those becoming a reality.

In conclusion, we must consider how such new, advanced and innovative technologies change us as a society. A resilience professional will clearly face challenges beyond the conventional ones that have traditionally been thought of as 'crisis management'. Society must balance innovation with risk reduction, privacy with security, and individual freedom with government oversight.

These challenges cannot be confronted by any one group of interested parties; certainly not by business alone (when commercial pressures always dominate), nor by governments (where short-term politics usually override long-term initiatives). Balanced regulation can help, but this usually rewards compliance with existing norms, rather than high-risk innovation. Better education among the population is urgently needed, so individuals can make informed judgment about the risks they take and the choices they face. Schools, universities and the media all have a major part to play.

In other words, dialogue between all facets of society is essential if we are going to have a workable public policy on emerging technologies.

If we get the correct balance, we can all enjoy the benefits such new technology can bring. If we are over tolerant towards security lapses, people will become less trusting of established institutions.

If this leads to a less stable society, I believe we will become less capable of dealing with the complex crises that are certain to arise. CRJ

Author

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Disaster risk governance

Investment without governance is dead, contends CRJ Advisory Panel Member **Denise Thompson** in her new book. And if disaster risk governance is neglected, this has undermined all efforts – whether time, money or resources – invested to reduce disaster risk in developing countries since the late 1970s

Despite the tremendous investments in disaster risk reduction (DRR), disasters have wiped out the developmental gains of many developing countries. This book by Denise Thompson offers the first extensive engagement with disaster risk governance (DRG) in the Caribbean and sub-Saharan Africa.

Disaster Risk Governance: Four Cases from Developing Countries, takes on the need for a focus on DRG as a practical and academic matter. The book's central argument is that DRG has not been given the attention it deserves. As a result, this neglect has undermined efforts – time, money and resources – invested in developing countries to reduce disaster risks since the late 1970s and early 1980s.

In order to build momentum and contribute to sustainable development, it is essential that developing countries focus on disaster risk government as a priority

Gary Waters | Alamy

The author's argument is that in developing contexts, DRG must go further than merely signing on to global DRR frameworks, but several factors limit this. DRR does not happen on its own – it must be carefully orchestrated to be successful and formal and informal institutional contexts must be in place to facilitate it. Social and cultural, legislative, managerial, technical and financial aspects must be brought together, integrated and harmonised to ensure that the system

under scrutiny

as a whole is steered down a path to the DRR goals.

Historical and contemporary developmental contexts often limit the ability of developing countries to create the governing environment necessary to promote DRR and management and to capitalise on their benefits.

Using a Summary DRG Inventory Matrix developed by the author, the book examines historical and current aspects of development in detail, unearthing the hard and soft aspects of governance that hinder effective DRG. She finds commonalities among the countries with stronger and weaker governance contexts and pulls together themes across four case study countries.

With over 180 signatories, mostly developing countries, the Sendai Framework seeks to homogenise critical principles of DRG worldwide. Global frameworks have promoted a general set of principles for DRG and developing countries have worked with these frameworks to build an integrated DRG mechanism, albeit not effectively. One size does not fit all in DRG and the difficulties of homogenisation are evident once a disaster occurs. The problem remains, how to use already developed frameworks in diverse geographic, cultural and economic contexts to improve DRR outcomes.

The author lays out the DRG architecture in four developing countries, including key concepts associated with DRR and DRG, defined as: "The specific arrangements that societies put in place to manage their disaster risk within a broader context of governance." She makes the case as to how DRG can reduce disaster risks in developing countries, using Kenya, Jamaica, Dominica and Zanzibar as examples – all have suffered massive destruction from disasters arising from natural hazards.

Thompson weaves together some of the conceptual issues that frame DRG in developing countries. DRG must take its cue from its social, economic, political and administrative contexts, as well as their development imperatives and ideals. Within these contexts, concepts such as development, and sustainable development, vulnerability, under capacity and resilience, plus their links, require some reckoning. For example, the concepts are contentious, making it difficult to stake out the scope of what constitutes governance or how to define it.

One of the chapters claims that DRR needs DRG (or risk governance) to translate risk reduction processes and decisions into collective action among multiple actors. Notwithstanding the earlier definition of DRG, this chapter shows that the concept's definition is far from settled, because its root concept – governance – is contested. Governance is the central focus of this book because of its importance in regulating the multiple actors and processes around DRR. The author argues that weak governance is a disaster risk driver, linked to many other risk drivers – including poverty, inequality, poor planning and development – and that we need to understand, facilitate and leverage it to improve disaster outcomes. Although governance principles are universal, their implementations are country-specific in focus.

In the process, the author examines the evolution of risk reduction activities in developing countries, showing a pattern of strategic growth contingent on movement at the global level, one that neglected DRG. Chapter Two reviews some of the important global DRR frameworks and agreements since the UN initiated the International Decade for Natural Disaster Reduction. Fundamentally, institutions play a central role in governance. Chapter Five shows that healthy institutions both reflect and create successful service delivery outcomes, including DRR. The chapter conducts an in-depth examination of the institutional aspects of DRG and discusses some of the key institutional issues in developing countries with a bearing on DRR.

Within the case studies, the author examines the disaster risk governance architecture in Jamaica, picking apart some of the limitations of governance that affect DRG in this country. The following chapter focuses on DRG in Dominica, an interesting case study because the assessment comes after Hurricane Maria ravaged the island in 2017. Dominica is on the front lines of climate change, which could have catastrophic consequences – this small island could potentially be wiped off the map. In the wake of Hurricane Maria, the Prime Minister has vowed that Dominica will become the world's first disaster resilient island. To understand whether the proposition is even feasible, the chapter examines the disaster risk governance context before the hurricane occurred.

Macro-environmental factors

The author examines the macro-environmental factors in Kenya, laying out the new devolved system of governance and placing DRG in this broader governance context. Her analysis shows that Kenya's disaster profile is becoming more complex. While efforts to contain these threats and strengthen the country's ability to cope with them are piecemeal, there have been recent initiatives over the last decade to integrate them. Yet Thompson shows that the lack of political goodwill might be the biggest hindrance to a well-established DRG context and ultimately diminish disaster outcome.

The book also analyses the Revolutionary Republic of Zanzibar, where the DRG status is mixed. The combination of Zanzibar's economic, political, social and geographic factors – including the island's small size, remoteness, and dependence on global multilateral and bilateral actors – means that global and regional actors are an integral part of its DRG landscape. The country's broader governance context, plagued by political instability, inadequate information and knowledge management and weak institutional capacity, impede its ability to manage the impact of disasters or to reduce their associated risks.

The current discourse on climate change, sustainable development and how to achieve their major targets is a central question for developing countries. Thompson contends that DRG must take centre stage. CRJ

Author

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Putting humans at the centre of smart cities

Both the promise and the peril of smart city technologies require a set of principles to guide the appropriate applications of technology for everyday and emergency uses, says **Vincent Mosco**. The goal of smart city technology applications is first and foremost to improve the quality of life and the capabilities of those who live in cities, not to expand the profit and power of businesses or the control of government over its citizens

Smart cities are increasingly showing up in the news, particularly because supporters believe they will strengthen the governance of urban life, including the effective management of crises.

The smart cities movement began in 2008 when, in the wake of the global financial meltdown, businesses converged on cities around the world to sell technology, harvest valuable data and contribute to help govern rapidly expanding urban areas throughout the world. They have partnered with governments to promote what, on the surface, look like unalloyed benefits to city dwellers.

These include safe streets, clean air, efficient transportation, instant communication for all, and algorithms that take more of the governance out of the hands of flawed human beings. Rapid response to emergencies typically finds a place in the promotional literature.

Flawed human beings

But another story lies beneath that surface. Technology-driven smart cities also deepen surveillance, increasingly shift responsibility for urban management to private companies and create opportunities for malicious hackers. As a result, critics insist that human governance still matters, that it is people who make cities smart, and that genuinely intelligent cities start with a vibrant democracy, support for public space and a commitment to citizen control over technology. Whatever the point of view, it is essential to understand what powers the global smart cities movement.

Three technologies – literally connected through wired and wireless high-speed telecommunications – provide the IT infrastructure for what is anticipated to be the leap to smart cities. These include the Internet of Things (IoT) – the connected sensors embedded in objects such as streetlights and traffic signals, which can monitor and report on everything within the reach of their surveillance capabilities.

The IoT depends on cloud computing facilities, especially the data centres that store and process what the sensors monitor. Finally, big data analytics turns the data into useful information and decision-making algorithms. Together these provide the backbone for the Next Internet.

By making use of these systems, the smart city movement is spawning an entire industry comprising engineers developing technologies and applications, as well as tech-savvy city planners and designers responsible for their integration into existing or entirely new urban areas.

Reports on the economic prospects for smart city technologies tend to agree that this is an industry that is about to hit explosive growth. One study has concluded that the smart city market is now worth about $1.2 trillion and will be valued at $2.75 trillion by 2023. By 2020, forecasters say that there will be 600 smart cities throughout the world, half of which will be located in China alone.

Rahultiwari3190 | 123rf

Managing the vast array of urban technology applications that make up smart cities is an enormous challenge, particularly to ensure the efficient operation of crisis management activities. To do so, technology companies have urged civic officials to build centralised monitoring and decision-making facilities. IBM was the first to succeed in this endeavour, constructing a centre for Rio de Janeiro, which has become the model for many smart cities. Called the Rio Operations Centre and resembling a military war room, it became operational at the end of 2010.

As is so often the case, it was a crisis that precipitated the opportunity for authorities to centralise monitoring and control in the region. A massive storm led to flooding in Rio that killed 70 residents and many more outside the city. In the wake of this tragedy, the city's mayor teamed with IBM to integrate the data processing and monitoring activities of some 30 municipal and state agencies, as well as utilities, in a single, unified, technology-rich structure.

The official aim of the Rio Operations Centre is to enable the city to run more efficiently, especially during emergencies. The centre integrates key departments, such as police and firefighting, and enables the centralised monitoring of emergency situations, as well as surveillance of weather, traffic, electricity, recycling, gas, water, refuse collection, and disease outbreaks. The facility also contains a crisis room that allows the mayor to meet with advisors and make executive decisions when faced with security threats.

The centre's staff of some 70 analysts – all dressed in white jumpsuits – sits before banks of screens. An enormous wall monitor is divided into grids containing live video feeds from surveillance cameras, along with other data. Google satellite and street view maps are integrated into the system, enabling analysts to overlay additional data and obtain close-ups. The facility has the capacity to locate and identify every public vehicle (such as a city bus), at any time, and to find and track the movements of both citizens and visitors.

Centralisation of key urban functions has its merits, but the Rio Centre is notable for its tall gates, tight security and near-complete lack of transparency. Data from monitoring devices – including video cameras stationed throughout the city – enters the facility and feeds into a centralised decision-making process that has practically no citizen input.

The centre was used to monitor protests against the 2014 FIFA World Cup and the 2016 Olympic

Genuinely intelligent cities start with a vibrant democracy, support for public space and a commitment to citizen control over technology

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The goal of smart city technology is not principally to expand the profit and power of businesses, or the control of government over its citizens

Games, both held in Brazil. The former mayor of Rio de Janeiro, who has promoted the project on the TED lecture circuit, boasted about these surveillance capabilities in a promotional film: "The operations centre allows us to have people looking into every corner of the city 24 hours a day, seven days a week."

However, a research assessment of the centre has raised serious concerns, noting: "While the use of these systems in Brazil is quite recent, it would appear that smart-city technologies are not being used to solve problems of radical inequality, or systemic poor governance, or compromised urban planning agendas – all of which continue to be the 'dumbest' elements of Rio de Janeiro."

The Rio government responded to criticisms with a few modifications (it subsequently built an accessible website). Nevertheless, the first fruit of IBM's smarter city initiative, a $4 billion urban surveillance operation, is still shrouded in controversy.

In addition to concerns about surveillance, there are those who worry that the centre offers more flash than function. According to smart cities expert, Anthony Townsend: "Urban security experts who I have spoken with are sceptical that it will have any significant impact on law enforcement and technology experts point out that beyond the video streams, there has been little investment in new infrastructure to feed real-time data to the centre."

It appears to Townsend that looking smart is often more important to civic officials than actually being smart, and that this need to appear smart drove the mayor and other elected officials: "Into the arms of engineers."

The idea of a centralised command centre for smart city applications has spread to other locales.

The German tech company Siemens, which has invested heavily in urban technology, built what it calls a City Cockpit for Singapore, saying that it enables real-time government: "Here, state-of-the-art information and communication technology (ICT) enables the mayor and other decision-makers to track and analyse processes in their city in real time. All of the important information flows into a central system that

processes the data for convenient display and indicates to what extent specified objectives are being met."

According to the company, the launch of the City Cockpit was followed by 200 groups of visitors (including crisis management teams) from around the world, eager to learn about the best ways to integrate the vast stores of data produced by their growing monitoring systems. This step was followed up by another joint Siemens-Singapore project that produced a 'digitalisation hub'. Launched in 2017, it centralises the development of smart city applications for the city-state and the entire Southeast Asia region.

Like Rio, Singapore has raised alarm bells about surveillance and centralisation. Some places have paid closer heed to social policy concerns. In 2014, when technology companies – including Google – convinced the city of Oakland, California, to create a centralised facility to co-ordinate police, crisis management and other surveillance operations in the eerily-named Domain Awareness Centre, mass protests led to cancellation of the project.

Profit, power & potential for mischief

Both smart city supporters and opponents acknowledge that the IoT, cloud computing, and big data analytics, create significant surveillance opportunities. These provide enticing opportunities for governments interested in deepening control, for corporations that want to market technologies, services, and data, as well as for hackers looking to make mischief.

So, what makes a city smart? Both the promise and the peril of smart city technologies require a set of principles to guide the appropriate applications of technology for everyday and emergency uses.

- **People make cities smart:** The collective experience and intelligence of those who live and work in cities, along with those who visit them, are what make cities smart. The goal of smart city technology applications – especially Next Internet systems like the IoT, big data analytics, and cloud computing – is first and foremost to improve the quality of life and the capabilities of those who live in cities. It is not principally to expand the profit and power of businesses or the control of government over its citizens.
- **Smart cities are democratic cities:** Citizens must be involved in decision-making about smart city applications from the beginning of each project through to completion, as co-participants with governments, private companies and public non-governmental organisations. Citizens should have the right to access all information, including plans, policies and debates, about the smart city development process. A key index of a successful smart city project is the extent to which it helps citizens to expand democracy, ie to achieve the fullest possible participation of citizens in the decisions that affect their lives.
- **Smart cities value public space:** Public space comprises areas where individuals and social groups are free to come together to communicate openly, which includes exchanging ideas about social problems and political action. It is to be distinguished from commercial space, whose primary purpose is to sell products and services. Smart city technologies make it easier to turn exchanges into market transactions, thereby threatening spaces outside the commercial sphere. Because public spaces are central to supporting the free flow of ideas and democracy, smart cities must protect public space, both on and offline. This includes public communication through universal access under public control, essential public utilities that provide energy and water, as well as public institutions such as schools, parks, libraries and public meeting places.
- **Smart cities share data:** Data gathered from smart city projects belongs to the people it is collected from. People have the right to retain, remove or place in a citizen-controlled public trust, all data collected on their activities in smart cities. Data gathered on citizens should not belong to the private companies or government agencies that collect it. Citizens can agree to have private and public institutions make use of their data, but only when all parties are fully informed and when there is a guarantee that, if someone chooses not to share data at any time in the process, there will be no repercussions.
- **Smart cities defend privacy:** People have the right to personal privacy. That means any smart city data-gathering system must de-identify data at the source of collection and must take full responsibility to ensure that personal data does not go to third-parties (for sale to advertisers or other interested entities).
- **Smart cities do not discriminate:** Smart city projects – whether aiming to improve transportation, energy delivery, communication or security – must be carried out without gender, race or social class discrimination. This includes the algorithms used in the decision-making process. These must be subject to public review and oversight, with the goal of ending the replication of historical social divisions.
- **Smart cities preserve the right to communicate:** People have the right to communicate, not just to receive communication. It is essential for public authorities to create universal and affordable citizen access to high-speed communication and extend access to information, especially when it comes to the operation of municipal governments and their private sector partners.
- **Smart cities protect the environment:** People have the right to a healthy planet. At every stage of each smart city project, it is essential to place at the forefront the goals of meeting the challenge of climate change, reducing and eliminating the use of non-renewable energy resources, and maintaining a healthy biosphere.
- **Smart cities and their streets are about people, not cars:** The design of city streets and pavements is smart only if it begins with pedestrians, whose use of both breathes life into cities. Smart pavements are built to be filled with people and lined with trees. An empty pavement is like an empty theatre – both demonstrate that there is something wrong with the production. Smart streets are best designed to accommodate the needs of pedestrians and those who travel on non-motorised vehicles first.
- **Smart cities deliver services:** Abiding by these principles, particularly the commitment to citizen control over technology, it is reasonable to expect that smart city applications will strengthen the efficient management and delivery of all municipal services, especially emergency operations. These include public transportation and energy systems, as well as fire safety, policing, waste removal, water and sewers.

Furthermore, they can help in the delivery of public health services, as well as the management of public housing and public education. Smart cities can improve crisis management, but only if they are built so that public service comes first. CRJ

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- The Smart City In A Digital World *by Vincent Mosco is available through Emerald Books, ISBN: 9781787691384*

School security: Back

Active shooter call boxes. Gunshot detection systems. Bullet proof whiteboards. Inflatable escape slides. What do these have in common? Many schools have either installed or will procure these items in 2019. What else do they have in common? They do absolutely nothing to prevent an attack, contends **Jenni Hesterman**.

School security is now estimated to be a three-billion-dollar business in the United States, owing to massacres such as Columbine, Virginia Tech, Sandy Hook and Parkland. Schools are also soft targets for terrorists, as they are vulnerable and would provide the shock factor and press coverage coveted by terror groups.

Schools are understandably afraid, and they don't know what they need. Many security companies are happy to oblige, rushing to sell fearful school managers things they don't need and will likely never use. Often resource-constrained, schools are increasingly spending their precious funds on solutions that only help after the attack. Somehow, the goal has shifted from keeping weapons out of the school to mitigating and responding to an attack. And perhaps the most important piece of security hardware for accomplishing this goal is actually the least embraced – metal detectors. They will prevent guns, knives and other weapons from entering the property and deter those with bad intentions from even trying, yet there is a general resistance to their use.

Opponents falsely imagine the long queues and delays we see at airports. However, there are best practices for the use of metal detectors in schools. For instance, at my daughter's K-12 school in the Middle East, all 2,200 students, staff, volunteers, workers and visitors processed through a metal detector and were subjected to bag checks upon entering the property through one of four entrances. The security screening was very smooth in the morning, causing little, if no delay. The result? Teachers could teach and students could study, without fear of attack. Yet according to the National Center for Education Statistics, only about 4.5 per cent of schools in the US employ metal detectors and this number has slowly fallen in the last ten years. Since most school shooters are insiders, the absence of a detector or bag check means the weapon will simply walk inside.

To protect its most valuable assets, the military and those protecting critical infrastructure such as nuclear power plants, use a construct called defence in depth – rings of security acting as tripwires between the protected asset and the adversary. This

to the ABCs

serves as a delaying tactic, slowing down the advance of an enemy. As the adversary advances towards the objective, security increases, and meets more resistance, losing momentum. These challenges cause frustration, a change in plans or tactics, and alter the timetable of the attack. Also, the enemy risks detection, therefore losing the element of surprise. The good guys gain the power and advantage.

Layered security

To visualise layered security in the education realm, let's use concentric rings and the example of a high school. The building's occupants – students, teachers and staff – are the protected asset located at the very centre of the circle. Each classroom, lab, and office space is hopefully protected by a door with no glass, which opens outward into the hallway so it cannot be kicked in, and has a secure locking mechanism on the inside. Physical security of the building is a must, with access control and locked doors. Another thing to consider is that if the outer rings are properly addressed, the centre of the circle is very last line of defence and theoretically requires less security. For example, on a military installation, no one is armed except for law enforcement. Despite being targets and soldiers who are well trained in the use of firearms, base personnel rely on layered security to protect them and their families from attack.

Moving out beyond the secured inner circle, the second ring consists of the school grounds and car park. Perimeter fencing is desirable, with access control via locked gates during school hours and manned, if possible. Attractive barricades should protect student gathering areas and bus stops from kerb-jumping vehicles. If not possible, use of crime prevention through environmental design (CPTED) concepts to work with the natural environment is always helpful. In my work, I find signage on the property is often lacking, yet is inexpensive and effective, indicating the area is under surveillance and regularly patrolled. Included within this ring are bus drivers and groundskeepers; they enter the area surrounding the asset, thus introduce vulnerability and require screening.

The third ring is the perimeter around the

To visualise layered security in the education realm, we use concentric rings and the example of a high school

school complex – neighbourhoods, businesses, adjacent streets, parks, convenience stores and bus stops. This area provides a critical overwatch role, designed to identify danger before it arrives at the school. For instance, most recent terrorist attacks at soft targets include pre-operational surveillance.

Many amateurs lack the requisite skill set, thus are sloppy and easily detectable – but only if someone is watching.

Military installations have relationships with fast food, fuel stations and other facilities outside the base perimeter fence for this very reason, as they will see people taking photographs of the gates, doing dry runs, even trying to cut holes in the fence or stack objects to help them get over (all of which are real life examples from my own experiences as a military base commander). Schools also must extend security out beyond the property, build relationships and provide contact information so the tripwire works and provides notification.

In addition, when schools advertise gatherings like dances and sporting events to the community, they should take the opportunity to include security language. Stating 'we will conduct bag checks', or thanking the local police department in advance for their presence at the event goes a long way to deter.

The fourth ring when it comes to potentially violent students is their home. There are many cases of actual or thwarted school shootings where parents did not know what was happening in their child's room, yet the child was building bombs, stockpiling weapons and writing journals filled with violent thoughts and plans. Or parents look the other way at odd behaviour during periods of stress, like bullying or relationship drama.

Take the case of John David LaDue. In months of planning the attack on his school, he rented a storage locker and stockpiled three completed bombs, bomb-making materials and weapons. In his room, there was a 180-page journal detailing plans to kill his family, then go to school, kill the resource officer, and carry out a mass shooting and bombing. When confronted with this evidence – discovered by police after someone reported suspicious activity at the storage unit – his parents said they did not believe their son would have gone through with his plan.

As a virtual community, social media is also in the outer ring. There are plenty of cases where school shooters melted down on social media while in emotional decline, even stating their future actions.

Columbine attacker Eric Harris posted violent essays on the Internet; University of California Santa Barbara shooter Elliott Rodger posted a YouTube manifesto; Marysville Pilchuck High School assailant Jaylen Fryberg melted down on Twitter; the Umpqua community college shooter posted his intentions on 4chan; and Independence High, Arizona, shooter Dorothy Dutiel posted "goodbye" on Twitter the night before she shot her best friend and killed herself at school.

Often parents and friends see these posts and do nothing. At the very least, schools need a system to gather and address reports from concerned individuals and should consider using widely available applications to monitor their students on social media for indicators of potential violence.

Having a look at what the staff is posting on social media might also be helpful. Everyone has a public life, a private life and a secret life. The latter may include domestic, financial, substance abuse, gambling or other problems of which you are unaware, but clues may reside in their public social media profile. In the US this year, there have been several incidents of school employees committing suicide in their school, including a security officer.

For my latest book on soft target hardening, I undertook research on the impact of CCTV on terrorism and crime. I stumbled upon interesting data collected from convicted murderers and burglars. After all, if you want to know how to prevent crime, who better to ask than the bad guy? Both groups said they were not deterred at all by the presence of cameras, assuming (perhaps correctly) they were not monitored, not recording, not working or were dummies. What would have deterred their act? People.

The face of rage

Human contact disrupts the plan. Not only is there the chance of a physical barrier between the bad actor and the target, but someone, preferably a trained guard, is now confronting, asking questions, delaying. There are things that cameras won't detect like the actor's involuntary physical responses to the stress of being challenged, such as sweating, rapid breathing, darting eyes and threatening mannerisms. There is even a unique 'face of rage', a distorted expression, which cannot be reproduced and is the same, regardless of race, ethnicity, or gender. The skin above the bridge of the nose folds in a certain way (think of the shape of the letter A), the lips become thin, and upper and lower teeth are visible and the eyes become bloodshot from bursting blood vessels.

Humans are outstanding sensors. One of our most under-appreciated natural gifts is intuition, or the ability to know something from instinctive rather than conscious reasoning or proof of evidence. People are constantly observing and scanning the environment, compiling knowledge and experience, in what experts call 'accumulated judgement' over time. Intuition taps into all these subconscious bits and pieces. Investing in human security will certainly strengthen the ability to prevent an attack.

I often speak with college presidents and school principals about the possibility of a terrorist attack or an active shooter event on their property.

Some exhibit signs of security fatigue, tired of the topic and resentful of it taking them away from their primary job as educators. Some feel hopeless and believe if an attack is going to happen, there is nothing they can do to stop it. Others exhibit infallibility, saying: "It will never happen here," or: "It will never happen to me." I tell them they are compounding the vulnerability of their school to an attack, not only in crisis planning activities, but in the event of an actual attack. They have no awareness of the threat, mental preparation, or sense of determination to engage and lead.

Securing soft targets like schools is a marathon, as the threat is persistent and on the rise. Every attack is different and hits the reset button in security. As we're drowning in a sea of security technology and a constant barrage of new ideas, perhaps it's best to ask a simple question: What are we doing to prevent an attack? C·RJ

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COMEXPOSIUM

Business preparation for active assault

Traditional attack scenarios have changed for companies, staff and individuals. Many different types of weapons are now being used – from firearms and knives to vehicles – while the random and violent nature of these attacks has spread alarm across the world, writes **Giles Greenfield**

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This new threat is increasingly challenging current security and evacuation protocols, in the event of a random and violent incident or attack materialising within or around a building. Understanding what is required to be resilient and responsive is critical to all employers for them to be able to exhibit true duty of care to their employees.

The question is: What can an organisation do to protect itself from these threats? We know from experience that the major security worries of many company directors relate to some form of radicalisation and terrorism, or similar manifestations of violent crime. This might be directed against employees in the workplace, who are travelling overseas, or some form of company cyber crisis. For many directors, knowing who to call whenever such issues arise, which may be at any time of the day or night, can be problematic.

As well as the risk of being a terrorist target themselves, businesses also risk facing the impact of a nearby attack.

A number of clients I have worked with who have been affected by nearby terrorist incidents, have suffered restricted access to their premises, with ensuing concerns about staff safety, business continuity and the suitability of planning for future incidents.

In fact, we have received several requests about contingency planning from businesses that have never been affected, either directly or indirectly, but are nevertheless concerned about the possibility of being caught in such events.

There is more awareness of the need for a business to have travel plans and contingencies in place. It is important for businesses to have a variety of steps in place in order to ensure that travel to certain countries is assessed on behalf of their employees and that all training, awareness and precautions are taken in order to keep their employees aware.

Due diligence must be adhered to by companies. This is no different from localised contingency plans for a business should an attack happen close to home. Issues such as what staff should do if an incident happens in the close vicinity or in the building should be addressed. Would employees be able to work from home successfully? Is there infrastructure built into the company that allows for remote continuation plans to ensure that business activity is kept to acceptable levels in the event of a crisis?

Many clients, especially those with substantial numbers of manual workers, have expressed concerns about the possibility of radicalisation. This could be either through online conversion or through friends or relatives returning from Jihadist activity overseas and exerting influence. In one case, where a former employee was involved in a lone act of terror using a vehicle as a weapon, the company was criticised – perhaps unfairly – for not having picked up the individual's radical tendencies in its vetting procedures.

Businesses' concerns about violent crime are reflected in the increasing threat of knife crime, violence in the workplace, sexual assault and online trolling. Meanwhile, concerns about dangers to lone travellers – from the threat of street robbery in a crowded city to assault in a remote hotel – are driving more requests, especially from people travelling alone who are seeking pre-trip advice. Even in developed countries, police and government forces are hard pressed to cope with the volume of incidents. Therefore, companies are increasingly having to resort to self-help measures.

Stolen data

With personal and corporate data being stolen on an industrial scale, the chances of a company being targeted by hackers or extortionists are increasing, along with directors' concerns about the possibility of being targeted. Many of our clients have reported receiving demands via their company email, threatening to close the system down if a certain sum is not paid to the perpetrator's anonymous virtual account.

According to the UK Department for Digital, Culture, Media and Sport, the year 2017 saw 43 per cent of all businesses experiencing cyber security breaches. Broken down, this figure translated as 72 per cent of large businesses and 47 per cent of small businesses. This suggests that there is a real and immediate threat to any business, regardless of its size.

Leaders have a duty of care to their employees and they have to manage public expectations at the same time. Particularly in the UK at the moment, many company directors' headaches are reflected in the public's anxiety about security. This is at an all-time high, according

Businesses' concerns about violent crime are reflected in the increasing threat of knife crime, violence in the workplace, sexual assault and online trolling

to research by Unisys, especially around war and terrorism, which has shown an 84 per cent increase in the index of security concerns in the last three years.

For many small and medium sized companies, resourcing an in-house security team may not be feasible, while the financial costs of funding an outsourced security service may be prohibitive.

Companies that have not experienced a crisis may believe the best response is to alert the police or government agencies, such as the Foreign and Commonwealth Office in the UK. However, a potential crisis that is a top priority for the business, may not be so for the police – who will probably be more focused on apprehending perpetrators than on post-incident issues facing the business.

Having a crisis insurance policy can therefore complement the internal business preparation and training. These days, policies for crisis insurance are more holistic than a response-only scenario. Policies offer advice on how to assess and prepare for a range of security risks, and on-the-ground support from experienced crisis management consultants in the event of a critical incident.

In the light of these risks, don't leave the security of your business or employees to chance. CRJ

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Securing aid worker safety through effective budgeting

This summer, the European Interagency Security Forum (EISF) has been lobbying aid and donor organisations around the world. Aimed at improving the budgeting processes for aid worker safety and security, the 'At What Cost?' movement has gained traction across the sector, according to **Aisling Sweeney**

The month-long EISF campaign successfully reignited dialogue on the funding processes for security risk management in the aid sector, which no longer reflect the current realities of programme implementation. For aid organisations, this discussion is not new. As one supporter remarked, the topic: "Has been in the fridge for a while." However, for donor organisations that don't have clear dialogue with the agencies they fund, these issues can come as a surprise.

While giving evidence for the UK International Development Committee's enquiry on violence against aid workers, EISF's Steering Group Chair, Fredrik Palsson, spoke about the challenges of not having direct budget lines for safety and security.

In the following session, Matthew Wyatt from the UK Department for International Development (DFID) responded to the question of inadequate funding by saying: "… we certainly do not get NGOs coming to us saying, 'You are screwing us so far down on costs that we cannot do the security we need to do', and certainly, were anyone to suggest that they were worried about that, we would be very sympathetic to ensuring that this was not the case and that they could properly finance the security that they needed from our programmes."

With more aid agencies operating in higher-risk environments than before, financing processes for safety and security must catch up. The commonplace treatment of security risk management as a general administrative cost – as opposed to a direct cost essential for access, with its own justifiable budget lines – means that both aid and donor organisations risk falling short of their duty of care.

The case that led to the *Norwegian Refugee Council vs Dennis*, occurred in 2012 when a convoy was attacked by six gunmen, during which the Kenyan driver of one of the cars – who had been hired that day – was shot four times and died on the spot. The Kenyan driver of another car was shot twice in the back and was seriously wounded, and two other staff members were also shot and injured. Four additional staff members from the VIP convoy were kidnapped.

Dennis, a Canadian citizen who was abducted and subsequently suffered depression and post-traumatic stress disorder, successfully sued his employer – the Norwegian Refugee Council – following the incident.

As the EISF's 2018 review of the ruling notes: "What security risk management and duty of care have in common is the expectation that reasonable and practicable measures are taken to mitigate the likelihood and impact of foreseeable incidents."

Unfortunately, an organisation's ability to meet these standards is affected by wider issues related to funding, which have resulted in a large number of under-resourced aid programmes. Staff in aid agencies faced with cuts to programme funding understandably search for other areas to reduce costs. This means that operational overheads and general administrative expenses often bear the brunt of underfunding. Since this is where safety and security are commonly included in budgets, security measures can be one of the first things to go.

When this happens, the likelihood that 'reasonable and practicable measures are taken to mitigate the likelihood and impact of foreseeable incidents' diminishes, affecting the standard of care that the organisation is providing for its staff. This, in turn, reflects on the donor, who may not be meeting their 'ethical duty of care' for recipient organisations. And this is particularly pertinent for local partner organisations, which are further down the funding chain and have fewer options for financing security risk management.

On a human level, underfunded security risk management can lead to serious injury, psychological damage or even death for staff members operating insecurely.

While the 2012 incident referred to earlier in this article was not a result of cutting costs, it does, however, demonstrate the toll that insufficient security measures can take on human life.

At the organisational level, liability can be extremely damaging to both its finances – owing to legal costs and donors revoking funding – and its reputation. The knock-on effects of a breach of duty of care will reach all aspects of an aid agency, from staff to beneficiaries, ultimately affecting the organisation's ability to operate.

Inconsistencies

In an effort to counter the neglect of security risk management costs, some aid agencies allocate a set percentage of all programme budgets to safety and security. While this may sound like a simple way to avoid the side-lining of security measures, it leaves little room for manoeuvre when inconsistencies inevitably arise.

From the donor perspective, an arbitrary percentage ignores the differences in risk appetite and programme type between aid organisations. Risk appetite can be defined as the amount or type of risk that an organisation is willing to take in order to meet its objectives. An arbitrary percentage would mean that an organisation with a higher risk appetite, operating in more insecure environments, would spend the same proportion of its funding on security risk management as one with a low risk appetite that only operates in medium risk contexts.

From the organisational perspective, internal differences in the funding required by different programmes and contexts are ignored entirely by allocating a standard percentage of every programme budget for

Staff in aid agencies that are facing cuts to programme funding, understandably search for other areas to reduce costs

Gary Waters | Alamy

safety and security. As noted in EISF's open letter to aid and donor organisations, if a programme in Colombia requires €100,000 less for security than a programme of the same size in Somalia – where extremely costly measures such as armoured vehicles are sometimes required – current funding processes would not allow room for manoeuvre in even a conundrum as simple as this.

Finally, without explicit budget lines, organisations cannot demonstrate the true cost of operating in a high-risk context.

Because security risk management is not an easily quantifiable function, justifying costs – both externally to donors and internally to programme and finance teams – can be difficult. Managers must therefore be supported to identify and account for the cost of not only 'hard' security measures, like communications equipment, but also 'soft' measures, such as the working hours spent building acceptance in a local community.

For any funding proposal, donors usually require a log-frame that includes a section on 'risks'.

By including security risks as well as programme risks within this, mitigating measures can be directly related to the achievement of the project goals. Therefore, by understanding the reasoning behind these costs, both aid and donor organisations can know that they have taken reasonable and practicable measures to mitigate the likelihood and impact of foreseeable incidents, thereby meeting their duty of care.

Guidance on identifying security related costs can be found in EISF's 2013 paper, *The Cost of Security Risk Management* (see website details, right).

Since EISF's open letter was released as part of the 'At What Cost?' campaign, the UK's Department for International Development (DFID) has announced it will be updating the template and guidance for its Rapid Response Facility (which provides bilateral funding to NGOs for humanitarian emergency responses) to include a specific line for security risk management.

This crucial first step will ensure that organisations funded through this mechanism must actively consider the cost of meeting their duty of care obligations to the staff of each project. DFID's changes therefore set a promising precedent, which EISF hopes will inspire further reforms among donors and across the aid sector at large. CRJ

■ *To keep up with EISF's research and campaigning, follow @EISF1 on Twitter or visit eisf.eu*

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Beware the hidden

In a world of ever evolving cyber threat, there has never been a more significant time to consider your online footprint, or those of your employees. **David Eames** explains why

As a user of the web and social media platforms, are you aware of the private information you are giving access to in terms of consented data – where you accept the terms and conditions without really reading them? Where the vulnerabilities lie, or whether there is the potential for data compromise?

Without even venturing into the murky world of the dark web, there is sufficient threat on the clear web to justify a certain amount of apprehension.

Social media companies have, on the whole, upped their game in at least adhering to law enforcement requests for information and offering greater protection to subscribers. But look into this further, and the evidence of illegality is there to see. Cases of extorting money and other demands involving an aspect of sexual exploitation (sextortion) are on the rise. Sextortion is defined as: 'A sexual act covertly recorded for financial gain, sexual gain or to gain control over the victim'. While there is no specific criminal offence of sextortion in the UK, it is covered in the offence of blackmail under Section 21 of the *Theft Act 1968*.

Cases of suicide

Contrary to popular belief, the victims of sextortion are predominantly males aged between 17-24 years of age and the vast majority go unreported owing to embarrassment, a belief they will be ridiculed, and concerns that law enforcement will not take their report seriously. This has serious implications. Law enforcement research has indicated that there are thousands of cases every year and, tragically, this has led to four known, linked cases of suicide among young men in the UK.

Owing to the demographic of the victims and their perceived lifestyle, the National Crime Agency has worked closely with the Ministry of Defence (MoD) to raise awareness. The significant threat to the MoD is that the victim could be coerced and become an insider threat by divulging sensitive information.

In 2016 *The Independent* newspaper reported that children as young as seven are sexting online. The rise in popularity of apps like Snapchat have led to the sharing of sexualised images among children.

Snapchat allows a message to disappear ten seconds after the recipient has viewed it. There are other messaging apps, such as Wickr and Telegram, which will allow a short video message to be sent and, by adjusting the message settings, this can be set to 'burn' or self-destruct at a time set by the sender.

Under its parent company Snap Inc, Snapchat is a member of the Internet Watch Foundation (IWF) and works with law enforcement to address and eliminate online child sexual abuse. It is both a messaging platform and a social network application. It can't be used as a web version and exists only as a mobile app that you download to your iPhone or Android device. There are now 190 million daily active users and it is very popular with young smartphone users, including teens and young adults.

Snapchat users can chat with their friends by sending them photos and short videos of up to ten seconds long. Text chats and video calls are two other features that have recently been added.

Because Snapchat photos self-destruct automatically, a big trend has emerged in sexting, where users take provocative photos of themselves and send them, feeling more comfortable because they know that those photos disappear after a few seconds. However, screenshots can be captured if a user does it within the ten seconds. Snapchat will send you a notification to let you know that the recipient has taken a screenshot of your video, but what's to stop someone with a little bit of knowledge using a free screen recording tool on a mobile phone emulator, which replicates your mobile onto your PC, and takes minutes to set up? You won't be notified that someone has captured it as a still image or in video format and your 'disappearing' video is now captured and can be played however many times the recipient wishes. It can be used as a tool to exploit you.

Your online presence leaves a trail of breadcrumbs to your real identity, which can, unless you have taken appropriate measures to secure it, quickly lead to your most personal information such as your name, date of birth, sexual preferences, home address, occupation and employer, your children's ages and identities, email addresses and passwords and telephone numbers.

So, taking this into account, would it be a good idea for Members of Parliament to use their parliamentary email address to sign up for a well-known dating site? One would have thought not…

Breached databases are an Aladdin's cave of information. These are databases where details of customers' or members' information have been unlawfully obtained, usually in some form of malware attack against a company, such as in November 2018 when Marriott International announced that cyber thieves had stolen approximately 500 million customers' details. The breach originally occurred on systems supporting Starwood Hotels in 2014 and the attackers remained in the system after Marriott acquired Starwood in 2016, lying undiscovered until September 2018.

The attackers were able to take combinations of contact info, passport numbers, Starwood Preferred Guest numbers, travel and other personal

dangers of oversharing

information. Marriott also believed that the credit card numbers and expiration dates of more than 100 million customers were stolen. Once obtained by the hackers, the data is used for identity theft and offered for sale, predominantly on the dark web.

Once the hackers have finished with the information, it is often discarded in bulk onto pasting sites such as Pastebin.com. Here, legitimate database companies will scrape the compromised data from the web into a searchable format, enabling the user to check their details, such as their email addresses and passwords, to see if they have been compromised and seek to have them removed from the database. This can, however, also be used to gather personal information about someone to harass or stalk their intended victim, assault, kidnap, blackmail or even burgle their house.

We can also be the victim of our own downfall in terms of consented data – the terms and conditions that are usually never read. For example, when you sign up for a PayPal account you consent to your information being sold to over 600 companies, including your name, address and bank details.

Consented data can bypass your privacy by granting access to your photographs, files, contacts and IP address – the latter can provide a geographical location for the area in which you live.

The recent popular trend #FaceAppChallenge is an example of whereby agreeing to the terms of use and privacy policy you are consenting to: "A perpetual, irrevocable, non-exclusive, royalty-free, transferable sub-licensable license," to use or publish the content you upload. FaceApp can track your location, the websites you visit, when you open the app, and other metadata; it will create a detailed biometric map of your face – which can be as unique as your fingerprint or DNA. The fact that the app is based in Russia, where companies are legally obliged to share their information with security agencies, shouldn't cause concern should it? CRJ

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Playing the long game

In the third part of this ongoing CRJ series about propaganda, influence operations and fake news, **Ørjan Nordhus Karlsson** discusses how to build cognitive resilience within the public in order to counter this malign influence

If you have taken an interest in the way propaganda, influence operations, fake news and all things related threaten to weaken our democracy and the public's trust in our institutions, I would recommend you watch the Netflix documentary, *The Great Hack*. If you ever doubted the power of aggressive targeted marketing (a nice term for civilian psyops), *The Great Hack* lays it bare.

Personally, I found myself slightly disheartened at the end. How do you counter this volume of propaganda and fake news? There is no easy answer, other than to play the long game.

A recent study from The Norwegian Media Authority highlights both the challenges and the possibilities in making the general population more robust in withstanding outside manipulation.

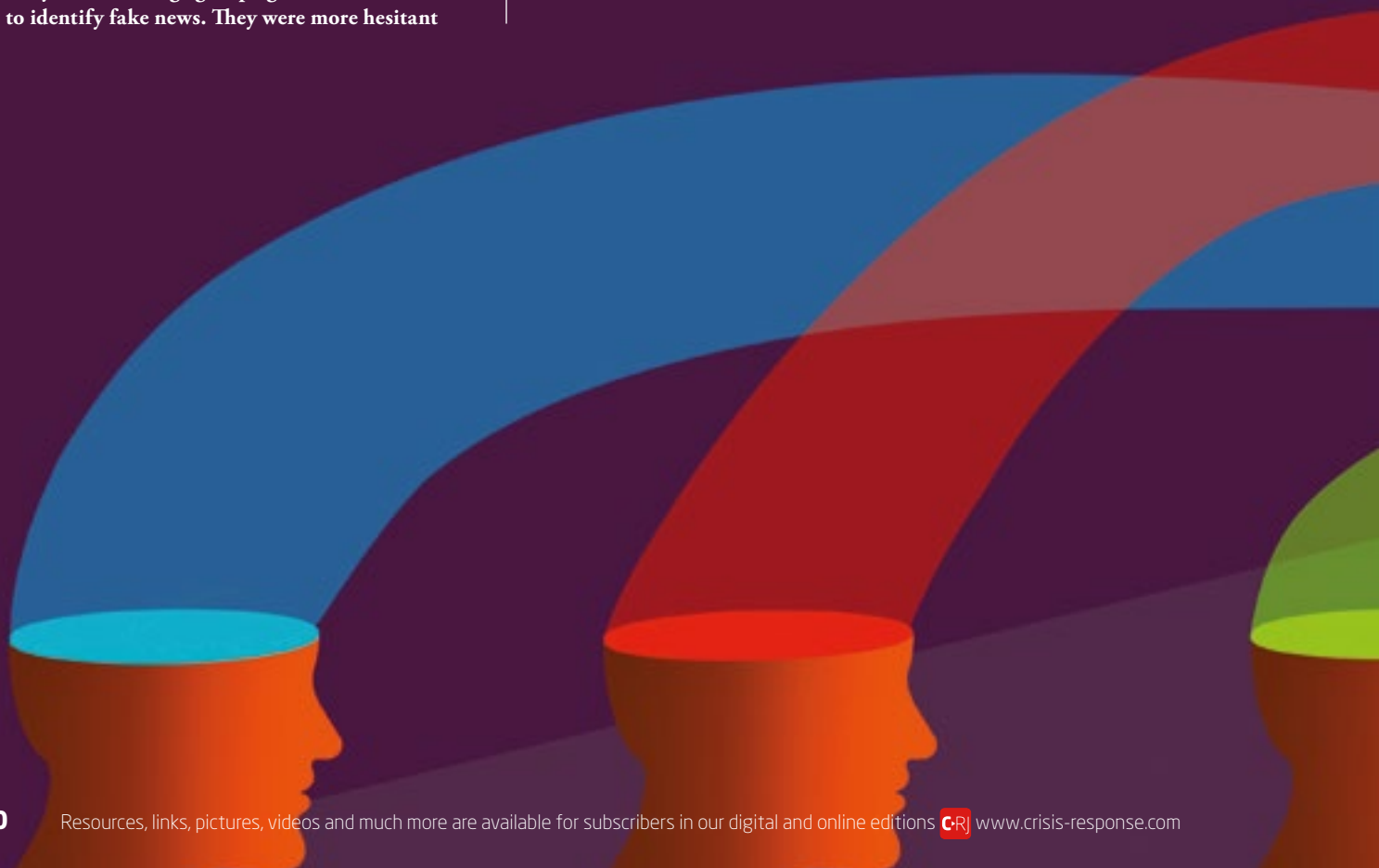
Here are some key figures from the study:

- Half of the respondents in the survey had come across one (or more) untrue/fake news items in the previous 12 months;
- People under the age of 30 are most proficient in identifying fake news (66 per cent);
- Only half of the age group aged 60+ was able to identify fake news. They were more hesitant than younger people to flag such news, and many did not know what clues to look for; and
- Approximately six out of ten of those above 60 years of age have a low digital competence.

Based on these findings, the Norwegian Media Authority launched an interactive awareness campaign it summed up in these three key words: Stop. Think. Verify.

The campaign, launched ahead of the Norwegian regional and municipal elections, aimed to heighten public awareness across multiple platforms. Part one of the campaign showed the participant three short news stories based on 'real' fake news. After the viewer had seen the clips, he or she was asked whether they thought they were real or fake. Afterwards, the clips were broken down to show how fake news often plays on strong emotions and/or bipartisan political viewpoints.

The next step showed different newspaper ads containing ambiguous content and, at the end of the



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campaign, the participant had the opportunity to take a quiz to test his or her own ability to detect fake news. In addition to this, a website was created as a reference and guidance tool for the public to access.

The key underlying message was to highlight the responsibility of each and every one of us not to share and spread fake news, especially on social media.

At the same time, the campaign acknowledges that there are grey areas. Most propaganda and influence operations on the web are, at least according to Norwegian law, within our right of free speech. But that does not make them less false.

The aforementioned campaign is hardly rocket science. And that's my point.

The old psychological defence method – to raise the awareness and strengthen the cognitive robustness of the general population – is still our best defence against propaganda, fake news and psychological operations. But unlike during the Cold War era, today we have to deal with these threats in a progressive and organic digital environment.

In *The Great Hack* it turned out that the audience targeted during the US 2016 election comprised individuals who had already been pre-identified as being undecided – ie voters who could easily be swayed, and this was done with the help of data from, among others, Facebook.

Manipulation

A survey such as the one I have described above says nothing about the respondent's political point of view. But it tells us something about which age groups are more susceptible to manipulation, and this gives us a starting point.

Building and maintaining cognitive resilience is an ongoing process. It's a core activity in the preservation of our western democracies, and a shield against the forces that want to erode the public trust in our institutions.

This is a process without an end. Instead, it must change and adapt to a changing environment. It's the long game defined. CRJ

Only half of the age group aged 60+ was able to identify fake news. They were more hesitant than younger people to flag such news, and many did not know what clues to look for

Author

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■ *The views expressed here are the author's own, and not necessarily those of the DSB*

Private organisations and social media in terrorist incidents

How does the private sector use social media to communicate internally and externally during terrorist attacks when their businesses – or employees – are caught up in terrorist incidents? **Gianluca Riglietti** wants to find out

In November 2017, London experienced a terror alert in the Oxford Circus area. The chaos started when several shoppers dashed for the exit in Selfridge's, one of the most iconic stores in the heart of the city, causing significant apprehension among the crowd. At that time Olly Murs, a popular UK singer, found himself in the store. After seeing people running out in the street and hearing talk of gunshots, he hid in a back office, turning to Twitter to inform the public of the imminent danger. "Everyone get out of Selfridges now! Gun shots!! I'm inside," he wrote, then added: "Really not sure what's happened! I'm in the back office... but people screaming and running towards exits!" Murs has over seven million Twitter followers and 4,000 of them retweeted that message, inflating the climate of alert.

However, the 35-year-old singer must have felt somewhat embarrassed when police arrived and verified that what had happened was a fight between two men. It should be made clear that the tweeting incident was not the only cause of this scare; several calls to the London Metropolitan Police also reported gun shots in the area, which prompted law enforcement to intervene and verify that, luckily, there was no real danger. It is important to underline though, how Murs' tweets worked as an echo chamber for such false alerts, making the job of law enforcement officers even harder.

At a time when there are over four billion Internet users and nearly three billion active social media users, according to the *Global Digital Report*, social networking and messaging platforms must be part of the equation when formulating a crisis response plan. In most large cities, such as New York and London, the local police have established social media plans to disseminate reliable

information during emergencies, including terrorist incidents. In this specific case, for instance, the Met Police issued advice to the general public, telling people where to go and what to do to stay safe.

The Business Continuity Institute has delved into this issue in its *Emergency Communications Report 2019*, which analyses how organisations prepare for a variety of disruptions, focusing on their communications arrangements. The majority of respondents (53 per cent) highlighted that they rely on official social media accounts to gather information during an emergency, with a slight preference over official media agencies (52 per cent). In addition, the report revealed that nearly half of the respondents (45 per cent) use private messaging apps, such as WhatsApp, to communicate during an emergency.

In her research entitled *Do You Tweet When Your Friends Are Getting Shot? Victims' Experience With, and Perspectives on, the Use of Social Media During a Terror Attack*, Elesbeth Frey interviewed nine survivors of the 2011 Utøya island attack in Norway, when a white nationalist terrorist killed 69 people during a shooting spree (see p86). The participants revealed how social media was a key part of managing a situation of extreme emergency, sending out and receiving information that became instrumental for their survival. Ultimately, they used social media to get in touch with their friends and family once they were safe. Similarly, another case of positive use of social media during a terrorist incident was the use of the hashtag "#PorteOuverte" (Open Doors), used by Parisians during the November 2015 attacks to signal residents who were willing to host bystanders in the affected areas.

Moreover, a quick search on the web reveals a variety of situations where private organisations, law enforcement and healthcare services have used commercial messaging platforms such as WhatsApp to communicate during an emergency. Even academic studies have observed, to some extent, the usefulness of this type of platform in crisis communications, which goes some way to explaining why social media is tempting. After all, there are several advantages to using services such as WhatsApp. Employees are likely to be familiar with them, they are free and provide full encryption. On the other hand, social media platforms were not originally designed for emergencies, hence using them during a terrorist incident would be a risk.

In light of the thoughts and cases described above, there is a series of questions that comes to mind:

- How safe is the use of social media to gather information and communicate during a terrorist incident?
- If social media has a place in handling such incidents, what is it?
- Are social media platforms in direct competition with emergency notification software, or can they work together?
- What are the most popular social media solutions used to communicate during a terrorist incident? Do they really work?
- Who is responsible for co-ordinating social media use within organisations during a terrorist incident?
- What about concerns such as data privacy?

Moved by curiosity to answer these questions and explore this topic further, I developed the pilot for a

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research project, along with a former colleague of mine, Dr Kamal Muhammad, who is Research and Insight Analyst at the Business Continuity Institute. We built a questionnaire and conducted follow-up interviews with respondents to the *Emergency Communications Report 2019*.

As this is a sensitive issue, practitioners were cautious about sharing their own experiences, which made the data gathering phase quite challenging. Still, eventually we managed to get hold of 17 professionals who agreed to share their views and real-life cases. The interviewees came from different professional backgrounds, including physical and cyber security, business continuity, risk management and insurance. All were all from private organisations except for one, who worked for a public agency (that collaborated with the private sector during emergencies).

Last June, we presented the results of our research at the Terrorism and Social Media Conference 2019, where terrorism experts from academia, government and tech companies converged to share insights and find new ways to counter the terrorist threat. The way we presented our findings followed the structure below.

- **Automation versus manual monitoring:** Roughly two-thirds of the respondents reported relying on software to gather information on social media during a terrorist incident. The remaining third preferred having someone monitoring social media manually, without feeling the need to invest in a more advanced solution. It is interesting to highlight that, out of those who used software, some had developed their own internal web application to gather or share information, owing to dissatisfaction with the commercial products available on the market.
- **Ownership of social media processes:** For most of the respondents, those in charge of social media during a terrorist incident belonged to either protective functions (business continuity, crisis management, physical security), or customer-facing ones (stakeholder relations, corporate communications). When it came to escalating and sharing the information received through social media, some interviewees said they would share it with senior management, while others mentioned customers on the ground or peers from other organisations in the affected area. The latter category was especially interesting, as they revealed online chat groups with their counterparts from other organisations to exchange real-time intelligence during a terrorist incident.
- **Most used platforms:** The most common platforms to gather information were Facebook and Twitter, although respondents also mentioned LinkedIn and Snapchat. Practitioners relied on commercial messaging apps such as WhatsApp and Viber to communicate and share updates. Some also employed internal platforms with a public feed and a messaging app for private communications, such as Yammer, an enterprise social network developed by Microsoft. However, it should be made clear that most respondents also had separate emergency notification solutions in place, which they relied on for crisis communications.
- **Validating social media information:** All respondents stated that they would not rely exclusively on social media to gather information during a terrorist incident. They described validation as a key part of the process, usually relying on traditional news channels to triangulate the reliability of the information. In addition, some would have open communication channels with someone on the ground. This could be a security manager, or a customer based near the affected area. For example, one interviewee from the travel industry told us how she (pronouns have been randomised to protect anonymity) received updates from customers who were in the Tunisian capital at the time of the 2015 Tunis attack. Several respondents highlighted data privacy as a significant concern, since commercial messaging apps are not adequate channels for sharing sensitive information.
- **Case studies:** Interviewees mentioned several examples in the last few years when they had resorted to social media, among other means, to gather information and communicate during a terrorist incident, such as the 2017 London Bridge attack or the 2014 Ottawa shooting. In our presentation, we decided to focus on two specific cases, owing to the scale of the attacks and the modalities of the responses, namely the 2017 Manchester Arena bombing in the UK and the 2015 Narcos blockade in Guadalajara, Mexico.

Narcos blockade

In the first case we spoke to the business continuity manager of a company with facilities in the affected area. The respondent stated that the response involved activating the business continuity plan and escalating the incident to top management. The organisation employed emergency notification software to communicate during the incident; however, it also used Yammer to keep staff updated and share information. While this was not the primary means of communication, it still proved useful during the event.

The second instance was very different and yet extremely insightful. A security manager based in Guadalajara revealed to us that as Narcos took control of the city's highways and prevented normal circulation through an armed siege, he was able to share and receive information with his peers through messaging apps such as Viber. This was key in orchestrating the response, as it provided organisations with crucial intelligence on how to adjust operations according to the unfolding events. For instance, transport could be redirected to avoid casualties and loss of goods.

As the findings show, social media does play a part in communicating and gathering information during a terrorist incident. Even though many of the professionals who took part in our study employed different means to communicate and gather information (eg emergency notification software), social media's adoption proved to be widespread.

I am convinced that this will be a topic of great interest to policymakers, tech companies and academia in the near future, which is why we have decided to partner up with RTI International, a non-profit research institute, and the *Crisis Response Journal*, to bring this project to the next level and conduct a much broader analysis.

To achieve this goal, it will be extremely important that crisis response professionals give us their take on the matter. Hence, we kindly ask you to take the short survey, which is less than five minutes long and anonymous, so that we can keep generating fresh insights in the interest of everyone. The link is below.

We would be extremely grateful for your support to this not-for-profit initiative.

- *https://it.surveymonkey.com/r/CRIRESP*

Author

GIANLUCA RIGLIETTI *is Head of Research and Intelligence with Panta Ray. He would like to credit Dr Kamal Muhammad from the BCI and Dr Joe Egerman from RTI International for their input into this project*

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Communication challenges after a mass casualty event

Where do we meet? What do we say? What is the situation? Who should be giving interviews? These are some of the questions the author – **Kjell Brataas** – and his colleagues grappled with in the hours and days following the July 2011 terror attacks in Oslo and on Utøya island in Norway

We learnt the hard way that you need alternate locations and means of communicating when a bomb disrupts buildings and IT structures.

After the South East Asian tsunami in 2004, the Norwegian Government had made a number of necessary changes for crisis communication, including 24/7 staff and modern facilities that included two floors below ground in the tall building that housed the Prime Minister and the Ministry of Justice. I was part of a small group that designed and planned the facilities, and they included dedicated rooms for media monitoring, meeting rooms with modern AV equipment and even a few bedrooms.

The government complex in Oslo, where the Prime Minister and most of Norway's ministries have their offices, occupies a relatively small area in the downtown area. When the 950kg bomb detonated right outside the entrance to the Prime Minister's office at 15:25, it killed eight people immediately. The whole building shook and windows blew out, but in spite of the terrorist's meticulous planning and hopes, it did not collapse. However, the devastation was immense and, as a result of the bomb, several computer systems in the building stopped working immediately – including email and intranet connections.

Not pre-planned, but the area outside the Oslo Cathedral worked well as a gathering place for international media

Kjell Brataas

The first question was – where to meet? Obviously, the dedicated facilities at the government complex were now out of order, and after contemplating alternatives it was decided that the offices of the Ministry of Defence should be the main meeting place for officials dealing with the tragedy. This was a good choice, as these offices are in an area of Oslo that is not part of the main government complex. Another reason was that it was relatively easy to establish a guarded parameter around the building, which meant that armed forces, the police and government security personnel could control access. Together with other colleagues who were not on vacation, I therefore reported to work at the Ministry of Defence on the evening of July 11.

Rumours and speculation

In the first hours, our main crisis communication tasks were to try to figure out what was happening, establish and validate facts we could give the media and start planning updates on ministry web pages and social media. There were lots of rumours and speculation, including the number of terrorists and casualties. At the same time, live video was coming in from near the island of Utøya where 564 people had been fighting for their lives. TV reports (later criticised for being too graphic) showed shocked and wounded survivors climbing out of the boats that had saved them, while frantic family members were calling the police, hospitals and journalists to try to find out what had happened to their loved ones on the island. Needless to say, being on top of the situation was not possible.

After a large terrorist attack, national interests are at stake. It was vital to inform the public quickly that Prime Minister Jens Stoltenberg had survived, but his whereabouts could not be revealed owing to the fact that there was a substantial fear of more attacks on government buildings or politicians. At 15:58, a short statement was released saying only that: "Prime Minister Jens Stoltenberg is safe." At 17:35, Stoltenberg gave his first interview to NRK Radio. His statements were partly based on what British officials said right after the terror attacks in 2005, and he reiterated that everything was being done to help

Large TV trucks assembled on a farm near Utøya, so that journalists could cover visits to the island by next of kin and survivors

Kjell Brataas

those in need. Stoltenberg also said it was too early to speculate on the cause of the explosion. Later the same evening, the PM spoke at a press conference covered live by Norwegian and international media. "No one will bomb us into silence. No one will shoot us into silence. No one will ever scare us away from being Norway," he said.

Other communication challenges had to deal with internal information. Hundreds of civil servants in Norwegian ministries were still on vacation, and they had numerous questions about what had happened and whether their colleagues were safe. Communication staff from the various ministries informed their personnel in a variety of ways, including sending text messages through mobile phones and creating closed Facebook groups for employees. The most successful way of reaching those in the Oslo area, however, were staff meetings, which several ministries organised on July 23.

The following week, a major obstacle was that so many ministries' offices had been destroyed by the bomb. Only four of the 17 Norwegian ministries had planned for and organised alternative locations and therefore, in the scramble to find new places to work, most of them became tied up in hectic negotiations with those in charge of neighbouring commercial buildings.

In the spring of 2005, I was part of a small group at the Ministry of Foreign Affairs that planned and organised two trips to Thailand for family members of the 84 Norwegians who died in the tsunami. The trips were a logistical challenge and a costly arrangement, but the outcome was successful and applauded by its participants. Such trips have now probably become the norm in Norway and, shortly after the terror attacks on July 22, discussions started about how and when to bring survivors and family members back to Utøya. Although these visits did not have an international dimension, they also proved challenging, owing to a very short planning time and few transportation options.

The second to last weekend in August of 2011 was chosen, and it was agreed early on to organise two days of visits – one for survivors and one for next-of-kin. Logistical challenges included getting participants to and from the land side (we organised free bus transportation from Oslo), conveying them safely across the lake to the island and making sure visitors were safe throughout their stay. Another challenge was how to handle the massive media interest.

We knew that our guests on the island did not want to meet journalists or photographers there, so we set up a temporary media camp on land near the island. We rented parking space and land from a local farmer and put up tents that would protect from potential rain. This arrangement worked well, especially as we arranged for officials and politicians to come by the camp for interviews.

It is my personal opinion that those of us who worked with crisis communication after the terror attacks did everything we could to get the right words and messages across. In hindsight, however, here are a few learning points to consider next time a tragedy happens:

- More social media monitoring;
- One dedicated web page for informing the public – in Norwegian and English; and
- More active use of social media to deter rumours and to direct the public to where it can find messages and news from the authorities.

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Hospitals and extreme weather events

Does the climate affect hospitals? If you ask the person in the street, the answer would most likely be no, of course not. Surely, it's what happens within the building that matters, not the environment surrounding it? **Ruth Wozencroft** explores why that's not the case

Hospitals are really not that different from houses. Their design, in relation to their location, is directly linked to the comfort of those within the building. Whether it's a house or a hospital, if the building cannot withstand the weather it faces or the climate to which it is exposed and function successfully within the surrounding environment, then problems will arise that will prove most challenging to solve.

Consider hospitals that are situated close to the sea. This might be a perfect place for a holiday, but perhaps not an ideal location for a healthcare facility.

In places such as Cornwall in the UK, owing to the geographical locations of several of the county's towns and cities, a hospital is likely to have been built in close proximity to the sea, in an area exposed to winds and where the average annual rainfall is high. This brings with it many challenges in terms of hospital design and maintenance.

The wind, moisture, temperature, sea salt and even the local seagull population can all have an adverse effect and thus create extra work for the hospital estates team. Take roof structures for example. As Cornwall's average temperature is fairly stable throughout the year, with no particularly high peaks in the summer, moss can grow on the roof(s) of a hospital all year round without being burnt off by the sun. This can cause problems with leaks and mould – potentially wreaking havoc in the storeys below.

Extreme weather events bring increased pressure on healthcare systems

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Wind and rain also cause their fair share of problems in a marine setting; wind-driven rain can dislodge roof tiles more easily and, if they are lifted, rainwater can get into the roof and potentially into the hospital itself. This can lead to closures of vital patient care areas.

However, in a global context, Cornwall is relatively temperate throughout the year. What about regions where the weather is more intense, as we face increased changes and extremes in climate throughout the world?

The global climate, as we see time and again, has a direct and sometimes devastating impact on hospitals and their ability to provide healthcare, causing damage to existing infrastructure – in some cases no matter how robustly it may be built.

In 2012, superstorm Sandy caused the closure of New York City's Bellevue Hospital after basement fuel pumps flooded.

Hurricane Katrina was responsible for the shut down

of many of the city's hospitals as they simply could not withstand the storm's damage. And in Houston's Texas Medical Centre, US$300 million of losses and damage were accrued in multiple buildings as tropical storm Allison brought days of relentless rain.

Subsequently, climate also affects how healthcare can continue to be delivered at those hospitals that have been damaged by extreme weather events. The resilience of hospitals is especially vital for areas that only have one major medical centre. These central hospitals don't just have to keep the lights on during a storm – they often also serve as the centre of the entire area's emergency management during extreme events.

In the US, such is the worry that hurricanes are worsening each year, some hospitals on the coast are updating their buildings to be more resilient and able to withstand strong winds and torrential flooding. This includes: Using layers of tempered glass so that windows cannot break when hit by flying debris; building extensions or new structures up to ten feet above sea level to help prevent flooding; and using more supportive building methods to make buildings able to tolerate high winds better.

To protect from flooding, in one US coastal hospital, mechanical gear is housed on the third level and its new emergency department and surgery centre have their operating rooms on the second floor, or higher. In addition to a power plant that is designed to withstand winds of over 180 mph and generators that are elevated 40 feet above the flood plain, these measures can keep the hospital's systems running for nine days.

Last buildings standing

These hospitals are being designed to be the last buildings standing in the case of an extreme weather or climatic event – but building new, stronger structures takes time and resources – and certainly won't be a quick fix.

Most recently we have seen the devastation wreaked by Hurricane Dorian throughout the islands of the Bahamas. On September 1, 2019, Dorian made landfall in the Bahamas – it was the strongest category five storm ever to hit the archipelago, with sustained winds of 185 mph and gusts of up to 220 mph.

The hurricane devastated key infrastructure, including healthcare facilities, across the Abaco and Grand Bahama islands. The main hospital on Grand Bahama was reported to be unusable. A smaller, private hospital on the island remained open and usable during and after the hurricane, but road access to the facility was hampered by very high water levels.

Damage to the healthcare estate following such a catastrophic weather event is inevitable and this can have a sustained impact on a hospital's ability to support and treat patients in the short, medium and long term.

In recent years, Q-bital Healthcare Solutions has been involved in installing mobile hospital wards and operating rooms throughout the world, following major or catastrophic weather events.

In Australia, Q-bital installed a temporary operating room at the Alfred Hospital in Melbourne in order to replace a main hospital theatre, which had been damaged by a storm. Installation of the unit was key to ensuring that numerous patients were not forced to wait weeks or months for procedures that had to be postponed. Within the unit, surgeons completed what is believed to be a world first – undertaking open heart surgery in a mobile operating theatre environment.

Professor Paul Myes, the hospital's Director of Anaesthesia and Perioperative Medicine, described the solution as: "Innovative." The theatre remained at the Alfred until repair work was completed. This is an example of how such mobile theatres can offer a quick solution for hospitals or healthcare facilities that require flexibility and portability, to help them to deliver the services that patients need.

Q-bital's sister company in the UK, Vanguard Healthcare Solutions, supported Gloucestershire Hospitals National Health Service (NHS) Foundation Trust when torrential flooding severely disrupted hospital services in the area. One of its major hospitals had been left virtually inaccessible, leading to extensive disruption and resulting in hundreds of operations being cancelled.

In both cases, the weather caused such significant damage to hospital estate and infrastructure that patient care was directly adversely affected in the short-term and possibly into the medium and long term as well.

The effect on the physical structures of hospital buildings is just one instance of how climate and climate change can influence healthcare throughout the world. It goes without saying that extreme weather events bring with them an increased pressure on healthcare systems, as they cause inevitable and unavoidable injury and illness as well as – in some cases – the displacement of people in need of treatment from one community to another.

Q-bital works hard to be a part of the solution when such extreme weather events directly affect a hospital's ability to provide healthcare to its population. It strives to make sure that its fleet of mobile operating rooms, wards, clinics, endoscopy decontamination units, central sterile service departments, minor injury units and endoscopy suites are prepared and able to function in order to replace weather-affected healthcare services in all climates – be it windy Cornwall or arid Australia. CRJ

Author

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■ *www.q-bital.com*

Q-bital strives to ensure that its fleet of mobile operating rooms, wards, clinics, endoscopy decontamination units, central sterile service departments, minor injury units and endoscopy suites are prepared and can replace weather-affected healthcare

Q-bital

Health-related surge impact of thunderstorm asthma

Emergency communications centres are prone to surge activity, it's the nature of emergency services work, says **Amee Morgans**. However, most demand is predictable, such as heatwaves, public events and weather-related surge. Here she looks at the lessons learnt after the largest recorded global epidemic of thunderstorm asthma occurred in Victoria, Australia in 2016

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On the night of Monday, November 21, 2016, the largest recorded global epidemic of thunderstorm asthma occurred in Victoria. Its sheer scale was unprecedented and there was no warning that the storm would have any health-related surge impact.

The maximum daytime temperature was 35˚C, and the daily pollen count in Melbourne was high, but had been higher in previous weeks. Wind gusts were up to 83 kilometres per hour.

Soon after 18:00, an active storm cell affected north-west Melbourne, causing a thunderstorm asthma event. The sudden downpour led airborne pollen to burst into tiny allergenic particles and create a high allergic asthma caseload. This was, effectively, a mass allergic reaction and triggered asthma in people who had not previously suffered from the condition.

Unplanned demand

This phenomenon presented as a watermark surge, where unplanned demand continues to rise beyond forecast volumes. Emergency Services Telecommunications Authority (ESTA) operations call teams quickly realised that a state level health emergency was taking place.

There was a clear pattern of respiratory cases, with demand spreading across the state and affecting people from multiple locations concurrently. The cause was unknown.

Over the next 12 hours, more than 9,000 people arrived in hospital emergency departments across the state and 2,666 calls were made to triple zero (Australia's emergency number) for emergency ambulance assistance. Between 18:00 and midnight, the state-wide EMS case volume was 1.93 times greater than the 99th percentile of the two-year comparator period.

Several challenges were faced that evening and that have already been described by the authors of a paper published in the *BMJ* (see references).

They noted that a total of 332 patients were assessed by paramedics as having acute respiratory distress on November 21, compared with a daily average of 52 during the historical period. "After adjustment for temporal trends, thunderstorm asthma was associated

with a 42 per cent increase in overall caseload for the emergency medical service and a 432 per cent increase in emergency medical attendances for acute respiratory distress symptoms," the authors say.

The paper in the *BMJ* also found that emergency transports to hospital increased by 17 per cent and time critical referrals from general practitioners increased by 47 per cent. Large increases in demand were seen among patients with a history of asthma and bronchodilator use. The incidence of out-of-hospital cardiac arrest increased by 82 per cent and pre-hospital deaths by 41 per cent.

Out of these challenges came lessons learnt, not for just emergency call-taking and dispatch, but for the emergency services sector as a whole.

Demand forecasting is critical to service delivery and is the cornerstone of how ESTA manages daily call volumes. In addition to this predicted surge function, it has developed sentinel surveillance analytics, based on demand forecasting, to provide alerts during possible watermark surge events. The alerts advise when we experience demand proportionally above forecast, allowing early detection, evaluation and decision-making, and supporting the earliest possible sector notification of potential events.

Predictable surge demand is common for ESTA, and usually presents as severe weather, planned events and seasonal peaks, such as public holidays. However, while we can predict when an event will occur with high accuracy, optimisation of consequence estimation is an emerging opportunity.

The warnings that form the basis for predicting surge, such as weather warnings, are generic and do not easily translate into information to guide forecasts of relevant consequences to emergency services. Analytics under way with partner agencies, including the Bureau of Meteorology, are allowing us to translate generic weather information into geospatial and event-type demand consequences. This helps us to improve the prediction and enhance preparedness for surges, so as to provide consistent and high availability service delivery.

The state of Victoria has a model that centralises dispatch and call-taking functions across all emergency services at state level. On an average day, ESTA takes about 7,000 calls to triple zero and co-ordinates resource allocation across the state. In other states, call-taking and dispatch services are generally managed within each emergency service, and sometimes further fragmented at a regional level.

The centralisation offers two great advantages in terms of resources. Firstly, it offers a critical mass of workforce resources that can be deployed between emergency services. Secondly, it offers a layer of interoperability that prevents duplication of workload between services, driving the efficiency of process and of resourcing decision-making.

There is greater opportunity to leverage multi-agency, skilled call-taking staff and dynamic triple zero call-routing technologies to allow agency specific demand surge to be met by multiskilled staff. Of ESTA's 800 operational personnel, half work primarily for a single agency. By cross-skilling our staff, we are able to provide surge capacity within the workforce pool that is already on shift and at work.

Developing strategies to optimise off-shift workforce availability is another important way to ensure that we have enough resources when major or ongoing demand requires, and further work in the industrial relations arena is under way to accommodate this flexibility.

The ESTA model of centralised service provision across agencies allows for alignment of emergency response and disaster management protocols. In the wake of thunderstorm asthma, it became clear that differences in nomenclature and definitions of terms relating to disasters, incidents and event-type classifications across the sector have hindered our ability to align community messaging and response.

The interagency work that has been carried out since the thunderstorm asthma event of 2016 has ensured that we are all talking the same language and are able to contribute to a mutual understanding of event size, impact and consequence.

The digitisation of information and improved connectivity under 5G networks will also provide faster, higher-quality information transmission, including video and image sharing in real time.

During this event, several actions undertaken occurred outside of usual protocols, based on command and control decisions in the field. Examples include sending emergency medical responders to community members whose clinical presentation would not normally be eligible. Similarly, sending police to conduct welfare checks or transport to healthcare is not usual practice, but this may have saved lives.

> Out-of-hospital cardiac arrest increased by 82 per cent and pre-hospital deaths by 41 per cent

Retrospective evaluation has identified that some of these decisions could be pre-authorised and agreement between agencies to provide out-of-scope services in disaster scenarios could be established.

This would provide clear guidelines for frontline operational decision-makers about when to activate and where contractual responsibilities, management of risk and remuneration can occur.

Thunderstorm asthma has offered us an opportunity to look at how we work as a sector and refocus some of our business effort into preparedness.

The ESTA model of centralised call-taking and dispatch services for all emergency services at state level also offers some important opportunities to focus on interagency partnerships to effect a better response in a surge event.

The advantages of centralisation to interoperability and process efficiency are evident in daily work, and are further magnified in surge situations, which is where incident risk management and consequence reduction strategies are implemented to their best effect. CRJ

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IPCC report on climate: An overview

The IPCC *Special Report on Climate Change and Land*, which addresses desertification, land degradation, sustainable land management, food security, and greenhouse gas, was published earlier this year, reports **Roger Gomm** for the *Crisis Response Journal*

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The Intergovernmental Panel on Climate Change (IPCC) is the United Nations (UN) body for assessing the science related to climate change. Created in 1988 by the World Meteorological Organisation (WMO) and the UN Environment Programme (UNEP), its objective is to provide governments at all levels with scientific information that they can use to develop climate policies. IPCC reports are also a key input into international climate change negotiations.

The IPCC is an organisation of governments that are members of the UN or WMO and it currently has 195 members. Thousands of people from all over the world contribute to its work. For the assessment reports, IPCC scientists volunteer their time to assess the thousands of scientific papers published each year in order to provide a comprehensive summary of what is known about the drivers of climate change, its impacts and future risks, and how adaptation and mitigation can reduce those risks.

Global challenges

The report gives some interesting insight into the challenges faced globally. The facts below highlight the issues in the report based on 'People, land and climate in a warming world'.

People currently use one quarter to a third of available land as primary production for food, feed, fibre, timber and energy. Land also provides the basis for many other ecosystem functions and services, including cultural and regulating services, which are essential for humanity and the planet's survival.

Land is both a source and a sink of greenhouse gases and it plays a key role in the exchange of energy, water and aerosols between its surface and the atmosphere.

To varying degrees, land ecosystems and biodiversity are vulnerable to ongoing climate change and weather and climate extremes. Sustainable land management can contribute to reducing the negative impacts on ecosystems and societies caused by multiple stressors, including climate change.

Data available since 1961 show that global population growth and changes in per capita consumption of food, feed, fibre, timber and energy have caused unprecedented rates of land and freshwater use,

with agriculture currently accounting for about 70 per cent of global freshwater use. An increase in commercial productivity has led to the expansion of agriculture and forestry, in order to support increased consumption and food availability among growing populations.

With large regional variations, these changes have contributed to increasing net greenhouse gas emissions, loss of natural ecosystems such as forests, savannahs, natural grasslands and wetlands and declining biodiversity.

The data also shows that the per capita supply of vegetable oils and meat has more than doubled and food calories per person have increased by about a third. Currently, between 25 and 30 per cent of total food produced is lost or wasted and these factors are associated with increases in greenhouse gases. Changes in consumption patterns have contributed to approximately two billion adults now being overweight or obese, while an estimated 821 million people are still undernourished.

About a quarter of the Earth's ice-free land area is subject to human-induced degradation. Soil erosion from agricultural fields is estimated to be currently ten to 20 times (no tillage) to more than 100 times (conventional tillage) higher than the soil formation rate. Climate change exacerbates land degradation, particularly in low-lying coastal areas, river deltas, drylands and in permafrost areas. Between 1961–2013, the annual area of drylands experiencing drought has increased, by slightly more than one per cent per year on average, with large inter-annual variability. In 2015, around 500 million people lived within areas that experienced desertification between the 1980s and 2000s. The highest numbers of people affected are in South and East Asia, the Sahara region, including North Africa, and the Middle East, including the Arabian Peninsula. Other dryland regions have also experienced desertification. People living in already degraded or desertified areas are increasingly being negatively affected by climate change.

Since the pre-industrial period, the land surface air temperature has risen nearly twice as much as the global average temperature. Climate change, including increases in frequency and intensity of extremes, has adversely affected food security and terrestrial ecosystems, as well as contributing to desertification and land degradation in many regions.

Since the pre-industrial period (1850–1900) the observed mean land surface air temperature has risen considerably more than the global mean surface (land and ocean) temperature (GMST). From 1850–1900 to 2006–2015 mean land surface air temperature has increased by 1.53°C, while GMST increased by 0.87°C.

Warming has resulted in an increased frequency, intensity and duration of heat-related events, including heatwaves in most land regions. The frequency and intensity of droughts have increased in some regions, including the Mediterranean, western Asia, many parts of South America, much of Africa and north-eastern Asia, and their heatwaves are defined in this report as: "A period of abnormally hot weather." Heatwaves and warm spells have also seen an increase in the intensity of heavy precipitation events at a global scale.

Satellite observations have shown vegetation greening over the last three decades in parts of Asia, Europe, South America, central North America, and south-east Australia. Causes of greening include combinations of an extended growing season, nitrogen deposition, carbon dioxide fertilisation, and land management. Vegetation browning has been observed in some regions, including northern Eurasia, parts of North America, Central Asia and the Congo Basin. Globally, vegetation greening has occurred over a larger area than vegetation browning. The frequency and intensity of dust storms have increased over the last few decades, owing to land use and land cover changes. In addition, climate-related factors in many dryland areas are leading to increasing negative effects on human health, in regions such as the Arabian Peninsula and broader Middle East, Central Asia.

In some dryland areas, the increased land surface air temperature and rates of evapotranspiration and decrease in the amount of precipitation, combined with climate variability and human activities, have contributed to desertification. These areas include Sub-Saharan Africa, parts of East and Central Asia, and Australia.

Global warming has led to shifts of climate zones in many world regions, including expansion of arid climate zones and contraction of polar climate zones. As a consequence, many plant and animal species have experienced changes in their ranges, abundances, and shifts in their seasonal activities.

Climate change can exacerbate land degradation processes. It does this through increases in rainfall intensity, flooding, drought frequency and severity, heat stress, dry spells, wind, sea level rise, wave action and permafrost thaw, with outcomes being modulated by land management. Ongoing coastal erosion is intensifying and impinging on more regions, with sea level rise adding to land use pressure in some regions.

Agricultural pests and diseases have already responded to climate change

Climate change has already affected food security, owing to warming, changing precipitation patterns, and greater frequency of some extreme events. In many lower-latitude regions, yields of some crops (including maize and wheat) have declined, while in many higher-latitude regions, yields of some crops (such as maize, wheat and sugar beets) have increased over recent decades. Climate change has also led to lower animal growth rates and productivity in pastoral systems in Africa.

There is robust evidence that agricultural pests and diseases have already responded to climate change, resulting in both increases and decreases of infestations. Based on indigenous and local knowledge, climate change is affecting food security in drylands, particularly those in Africa, and high mountain regions of Asia and South America.

The reports call for actions to be taken in the near-term, based on existing knowledge, to address desertification, land degradation and food security, while supporting longer-term responses that enable adaptation to and mitigation of climate change. CRJ

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■ *The full report can be obtained here: www.ipcc.ch*

Not waiting for rain

Adapting to climate change in Cambodia

Anastasia Kyriacou speaks to Diana Njeru and Gemma Hayman about projects across East Africa and Cambodia, which focus on improving the way climate change is communicated to improve the livelihoods of affected populations

Recent extreme and unpredictable weather changes are affecting the lives of Cambodians. Half of the country's labour force works in agriculture and 75 per cent in rural areas reliant on farming and fishing. A Sida-funded nationwide survey conducted by BBC Media Action looking at Cambodians' experience of climate change, found 81 per cent of respondents felt such changes had damaged their income, with half remarking on the decrease in agricultural production over the last decade and three quarters believing fish numbers have declined. Eighty-five per cent also felt weather changes were harming their health.

This, along with accompanying media and outreach outputs, called the Neighbours Together project, is helping vulnerable Cambodians adapt to the increasing severity of weather events, through raising awareness of climate change risks, encouraging discussion and adoption of new practices.

Most respondents believed there should be more government and NGO support, with others feeling ill-equipped to respond, owing to lack of resources or relevant information; some were reluctant to try anything new. Interestingly, when action was being taken, it was often on a large scale – a third of Cambodians were more likely to make big life alterations such as changing their job, as opposed to simpler methods to deal with changes in weather.

Preparing for the future

Country Director for Cambodia, Gemma Hayman, points out that institutional investments and NGO initiatives exist, and the reason that people might be looking to others to address climate change is down to a lack of knowledge and confidence to take action themselves. Despite this, 93 per cent of respondents stated they were confident that communities could work together to tackle problems and prepare for the future.

Key insights from the research inspired digital output, community events, capacity building, and a 12-episode national TV series called *Don't Wait for Rain*, which aired on CTN and MyTV.

The programme provided simple, replicable techniques to help people adapt to the effects of extreme weather, such as drought, flooding, increased prevalence of pests and lightning, while exploring some of the reasons that may prevent them from planning in the first place, emphasising the accessibility and affordability of solutions.

Hayman remarks on the need for trust and relatability in communication outputs, as 37 per cent of respondents reported they were fearful of discussing actions with others and 42 per cent said they didn't know anyone who was taking action. So it was important for the TV shows to bring model contributors – or 'people like me' – together.

Explaining things simply and demonstrating how people could use materials they could find in their community enabled them to take ownership and control.

The TV show, which won 'Best TV Feature on Climate Change' at the Fourth ABU Media Awards on Climate Change and Disaster Risk Reduction, has been well received. Hayman emphasises the need for a *Don't Wait for Rain* format into a second series, including a 'what happened next?' segment, as audiences said they would like to see the journey to success: "This would help to build the trust that audiences have already shown in the programme." Meanwhile, more community screenings for those who do not have access to a TV could help to maximise the programme.

The project brought to light that Cambodians are aware of the issues, but gaps in actual understanding persist – only 42 per cent understand what the term climate change means – although there is an appetite among Cambodians to adapt to the changes in the weather and environment they are experiencing.

Seasonal forecasts are not enough for those living in Northern Kenya around the Lake Victoria shores and Uganda, who are subject to adverse changes in climate and weather. To improve the quantity and quality of information these people, BBC Media Action teamed up with the Network of Climate Journalists in the Greater Horn of Africa to create Weather Wise.

The project conducted research to improve understanding of four key areas:

- Knowledge, attitudes and practices among the target audience of farmers, fishermen and pastoralists on weather and climate;
- Media consumption patterns and information needs when it comes to weather and climate;
- Who the target audience's key influencers are; and
- What challenges journalists and scientists face trying to communicate weather and climate information.

Interviews and focus group discussions exposed a dysfunctional relationship between journalists and scientists. While journalists struggled with the technical language used by scientists, the latter were reluctant to explain it to the former, as they

Contributors to the Don't wait for rain *episode on building a freshwater collection system*

BBC Media Action

believed journalists distorted their message.

One example is the science of probability, often misunderstood and consequently miscommunicated by journalists. Project Director, Diana Njeru refers to 2016 when the regional Met Offices predicted an El Niño in Uganda. The government was advised to prepare for a disaster; hospitals were equipped and the Red Cross mobilised. When El Niño did not happen, the emergency strategy cost millions of dollars and people lost trust in scientific forecasting, exacerbated by the President referring to the Met agency as being unreliable.

Although scientists were confident about El Niño's occurrence, they insisted it was – like all forecasts – purely prediction-based. Njeru remarks on how the media is not trained to say this, and struggles to explain the science of probability. The erosion of audience faith in scientists leads to further misinformation, which is why Weather Wise aimed to strengthen the relationship between scientists and journalists.

Residential workshops were set up to bring journalists and scientists together to work out how to produce accurate, understandable and context specific content. "We encouraged the two actors to seek out clarification where it was needed and simplify explanations about why the weather is changing, what to expect and how to prepare and adapt," says Njeru.

Many scientists were unaware of the requirements to produce a media report on the weather, or how they should communicate. Teamwork exercises provided them with images of potential audiences and asked questions such as: "Do you think this local woman, who has had no formal education, will understand a technical forecast?" This helped them to understand the need to describe rainfall in terms of how high water will rise in relation to familiar objects.

Weather Wise partnered with eight local radio stations across East Africa to broadcast weekly features reported by passionate journalists, most of them community volunteers.

The better informed journalists were by scientists, the more poised they were to approach relevant departmental ministries, then combine contextually relevant information. Unifying different disciplines to provide accurate, simplified weather and climate reports built engaging content. "Journalists have said they are a lot more confident in covering climate and weather stories," Njeru states: "They went from reluctantly reporting on such issues to now understanding how they affect every other area, such as security and transport."

Njeru emphasises: "Audience feedback was that the programme's advice induced positive results, such as: 'farming this way generated a positive yield'."

These case studies show an appetite to adapt and improve awareness about changes in the weather and climate among audiences – so long as the information is accessible and contextually relevant. Coupling storytelling with practical solutions offered by experts, communicated in an engaging, accurate and understandable way by media, enables people to take control and make wiser decisions.

In Khmer, the expression: "Don't wait for rain," means you are sitting around waiting for something to happen. Given the resources, information, and community support, many Cambodians seem ready to take action. CRJ

Author

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www.aidexpo.com

Raising standards in K9 search and rescue

The applications for using canine teams in crisis response situations are manifold, according to **Jim Vernon**. But the lack of truly international and uniform standards, auditing, research and training in this field are of genuine concern. We need to fix this

Search and Rescue (SAR) dogs are probably the best known canine teams to *CRJ*'s readership and the term is also widely known and used by the public. But then it gets slightly more complicated, with tracking or trailing K9s, along with 'live body' and 'dead body' distinctions, such as in the cadaver search K9's role.

Response to a crisis such as a terrorist incident or active shooter, might include an attack dog (tactical K9), an explosives detection dog (EDD), a forensic/evidence retrieval dog and a people-screening dog. There truly are many different K9 team applications; one search dog type literally does not fit all.

Currently dogs are a massive sector and employer in a large number of applications, from SAR to wildlife protection, medical, bio-detection and even bed bugs. There are arson accelerant detector dogs, agricultural dogs, guide dogs, assistance dogs, avalanche dogs... It's a long list.

Search for a chainsaw murder victim's body parts in a swamp

DESA

In short, anything that gives off an odour (and almost everything does, even solid metals), in reasonable conditions, can be detected by a well-trained dog team. When asked, how do we teach a dog to search? I answer: "We don't, it can already do that. Born blind, a puppy smells its way to the mother's teat for its milk. We just get a dog to do it in a semi-disciplined manner that we understand and can exercise reasonable control over." Although the less we interfere with the dog's own natural search pattern, the better.

And equally, there are hundreds of different standards and accreditations that exist in the dog world. Numerous international governmental and law enforcement, or civil or first responder agencies, all seemingly have their own.

They hold international conferences or working groups, all with the same claimed aims and outcomes regarding standardisation, accreditation and often legislation. After the events are over, participants

disperse back to their domains and not a lot happens. They mostly slip back into the 'our way is best' mode and if – or as soon as – dollar signs get involved, then the sharing of any best practice is, at best, lukewarm.

But the truth is that even when it comes to agreeing a simple common platform for recording and capturing data for audit, performance analysis, or even for citizen science and research purposes, it is a totally fragmented landscape. Most agencies and bodies all fire up on different platforms, working to and from different standards.

Those of you old enough may remember the fight over which video tape format would dominate – VHS or Betamax. Younger readers may prefer the Blu-ray and DVD parallel. But when looking at the current international K9 Rubik's cube, I wonder if we will ever get all colours and all four sides matching?

I have travelled the world banging the drum for some form of compulsory governmental standardisation and legislation. For over three decades, I have written to successive UK Governments, and lobbied Members of the House of Lords.

Yet 30 or more years later, we are really not a lot closer on this journey here in the UK and only pockets of initiatives exist in other countries.

The key to the success or failure of searches when using dogs is often down to the human elements, from the trainers to the handlers. This human element makes it possible to impose written guidelines and standards to ensure the success, auditing and safety of search operations. Most so-called false indications, or failures by dogs are human-caused or influenced. Dogs, put simply, do not lie – they have no concept of falsehood and I haven't yet met a dog that can read.

When I started this work back in the late 1980s, there were really no UK civilian explosives search dog teams. The police could not be everywhere, despite the IRA terror campaign of bombings on the UK mainland. Unless there was a definite proven threat, or suitably important VIP at an event, the police would not attend; there simply was not the capacity, nor was this service offered.

Today, the police have highly trained search teams with their own National Police Search Centre (NPSC), equipment and dogs.

But still, the force cannot service the civil sector needs for specialist search. Indeed, UK Government cuts mean that police are now using private K9 security companies – in varying degrees – to assist, as do most major sporting events and conferences worldwide.

But the fact is that almost anyone can turn up with virtually a spaniel on a knotted piece of rope and offer explosives search without any uniformly recognised qualifications. There are a number of self-proclaimed associations or accredited experts but, with few international and agreed standards or some kind of definitive genuine plimsoll line, how do we define expertise? What standards are we measuring it against? What true career paths exist in K9 search? For the most part, this is simply gauged by length of time served or simply because they are the biggest, or are ex-police or military dog handlers, etc.

Have you noticed how most websites for specialist search dog services state they are the 'best' or the 'world leaders', only made up of global experts, ex-military or ex-police? Most people who hire me, ask me to speak or to write for them, call me a subject matter expert. But what can I measure that against? If I am an expert under those terms, then I am a reluctant one.

Moving on, assume each organisation has written decent standards and training systems. Who audits that? What recognised quality assurance is employed? Importantly, is it independent?

How does a major sporting events director with no personal knowledge of specialist scent discrimination, odour plumes, K9 threat analysis methods or correct actions on a find, know where best to employ the teams to maximise that capability, or even have a clue as to their limitations, whether they are licensed or even what license exists? The answer currently is that in most cases, they cannot.

Pockets of excellence

The USA has made huge improvements (mostly following the 9/11 attacks) since I first started visiting the FBI, US Customs, FEMA and later the TSA while it was still being formed, then sharing techniques and expertise and learning from each other. Sadly, the US also has its share of K9 horror stories. But now this country is a leader in pushing for various sector standards while most of the rest of the world is barely trying to establish various standards and the solid research results required to prove that those standards work effectively. Of course, some pockets of excellence do now exist globally.

Probably one of the best and longest serving is the *International Mine Action Standards* (*IMAS*), drafted and researched by the Geneva International Centre for Humanitarian De-Mining, which have stood the test of time, are truly internationally accepted and endorsed by the UN.

So, hopefully this subject is of interest and will stimulate further debate. I can, if requested, follow this article with some current solutions and suggestions and even give examples of horror stories and successes that I have encountered. CRJ

Who is training who in this picture? The author says: "Born blind, a puppy smells its way to the mother's teat for milk. We just get a dog to do this in a semi-disciplined manner that we can understand and exercise reasonable control over."

DESA

Author

JIM VERNON *is the former chairman and founder member of the Drugs and Explosives Search Association (DESA). After leaving the British Army in the mid 70s, he has taught CT-search utilising dog and handler teams. He has lectured, trained and provided services to law enforcement, military and private security, including NGOs. Jim came out of retirement to push for better K9 CT-search standards. He writes and advises on training programmes and is a Level 4 Lead Internal Quality Assurance professional*

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Putting animals on the global disaster agenda

Notwithstanding the pain and misery that animals suffer in the aftermath of disasters, they are often the linchpin of households, whether a loved pet, vital form of transport or the main source of income, as **Claire Sanders** discovers when talking to Eugenia Morales of World Animal Protection

In the immediate aftermath of a disaster, whether human-caused or as a result of a natural event, animals are often overlooked. They are the "forgotten victims of disasters," says Eugenia Morales, Disasters Project Manager for the charity World Animal Protection (WAP) that recently organised the 'Don't Forget Them' campaign.

The charity deploys to disaster zones within days of an event to offer healthcare, food, shelter and to help reunite lost animals with their owners.

Based in the UK, the charity has been in operation for 55 years and one of its aims is to influence decision-makers to put animals on the global agenda.

"We know that over one billion of the world's poorest people depend on animals for their food or their transport and we know that the only way to help them is to make sure that their animals are protected from disasters," says Morales.

"We hear so many stories of people trying to save their animals, and happy stories when we have reunited them," says Eugenia Morales

Eugenia Morales | WAP

Her team launched the campaign for WAP earlier this year to raise awareness at the international level and to ask governments to develop animal-inclusive disaster risk reduction (DRR) strategies. "Not only because animals are sentient beings and they suffer, but also because what happens to the animals is affecting their owners as well," she reasons.

"In my opinion, sometimes animals suffer even more, because they are not necessarily aware of what is happening or are incapable of taking measures as they depend on us, especially if they are domesticated."

The campaign consisted of silent protests and the

dissemination of information at the UN's Global Platform for Disaster Risk Reduction in Geneva, Switzerland, last May. The main stars of the campaign were six large inflatable animals, each with their own story to tell.

Morales explains the rationale behind the idea: "It's an event where decision-makers within DRR get together – governments, NGOs, international organisations and the media. So we brought our inflatable animals with us because, of course, we couldn't bring real animals to the conference! We wanted to do something that caught everyone's attention, but also something that would allow us to reflect on their suffering and the journey that these animals had been on."

A pig named Florence

Each animal has a home country. For instance, the pig came from the US and was named Florence after the hurricane that struck in September 2018; the goat represented an earthquake survivor from Costa Rica and the dog from Thailand had survived a flood. I can hear the compassion in Morales' voice as she says: "They all had this really emotional story to remind everyone that these are the stories of the animals who are suffering in disasters and that by not including them in our DRR strategies, these are the ones we are forgetting."

The animals certainly got their message across. Each one was videoed in their home countries saying farewell to their families and photos were posted around conference areas in Geneva. The idea is a clever one; the animals were clearly noticeable, but logistically safe and manageable.

I ask if she thinks the campaign worked. "It was a really good way to get people's attention," Morales answers. "Once we can do that, we can explain to them how important animals are to people and they understand it, they get it. Particularly because we have solutions. We're not just saying: 'This is what you need to do.' We have solutions on how to do it, so that really facilitates things for people."

She describes the excitement that the animals generated: "People came to us and wanted to learn more of what were about and what those huge inflatable animals were doing at an international conference in Geneva. It was really exciting and a great experience, different from what you usually see at this kind of event."

Based in the Costa Rica office, Morales has worked at WAP for eight years and it is clear from her enthusiasm and passion that she has enjoyed every minute. She has been able to see progress and changes in people's attitudes towards animals, even though she describes her tenure as being relatively short in the 55-year history of the charity.

She enthuses about her work: "It's so rewarding when you work alongside a community or a government and you know that you have changed the way they see things, the way they see animals and how they incorporate animals into their daily lives. And how, after working with us, they cannot conceive of a different way of doing things without including their animals, without considering animals in policy, in solutions."

She has taken part in numerous projects, with teams co-ordinating their efforts all over the globe. She tells me that she feels fortunate to participate in persuasive campaigns that all strive to protect animals from disasters. "I've worked mostly on DRR, so I've been to responses after the fact," she explains.

The idea of bringing inflatable animals to the UN's Global Platform for Disaster Risk Reduction in Geneva was inspired – the animals were clearly noticeable, but logistically safe and manageable

Eugenia Morales | WAP

The emergency response teams are deployed from one of four global offices to dispense immediate relief such as shelter, food, water, medical care and evacuations. The teams make an assessment of the situation to judge whether there has been an impact on the animals and they communicate with local contacts to plan deployment. "Once we are able to approve the deployment, the team will plan an intervention, which details how we are going to give the relief that is needed. So they assess whether the need includes vaccination, veterinary assistance, food or shelter." The intervention is always planned hand-in-hand with local authorities, ministers of agriculture or civil defence, NGOs or local partners. "We always work alongside a local partner," stresses Morales.

Morales travels to the sites of the events in the subsequent months. "I would go afterwards to plan a drill or to work with the local community to carry out DRR to ensure that the situation doesn't happen again."

This comes in the form of a community-based project to help residents to build their resilience. She visited the Philippines six months after the devastating damage caused by Typhoon Haiyan in 2013. "It was a major disaster and it was awesome that even six months after, you could still see the effects of the event. It was a really massive disaster, but the people were so inspiring and resilient." To date, WAP has helped more than 70,000 animals in the aftermath of the typhoon.

Morales and her team were able to see their guidance being followed and to offer further assistance where needed. "Throughout all our DRR projects, we always try to come back and evaluate how the people are implementing our advice."

She admits to being an optimist, but she estimates that most people implement at least one of WAP's solutions. "If we find something that's simple enough and that people can understand well enough, they will use it. I think that's encouraging."

The solutions provided by WAP include helping governments to build policies and 'how-to' guides for pet owners.

The NGO has worked with the governments in New Zealand, India, Kenya and Costa Rica to help

Over one billion people depend on animals for food, transport or income. WAP is campaigning for governments to introduce animal-inclusive disaster risk reduction strategies

Eugenia Morales | WAP

them come up with sustainable solutions using sample legislation from other governments and tailoring it to their needs. "It's up to the governments to ensure that they facilitate the information, the processes, the legislation and the tools for the animal owners," she comments.

Morales believes that starting at ground-level is equally important. "The first line of response is always the animal owner," she says. "We, as animal owners, are responsible for their wellbeing, their welfare."

Local people are also often the first ones on the scene following a disaster, so their decisions are the ones that will change the animals' lives. Giving them the ownership and responsibility goes a long way to securing their animals' safety.

Despite telling me about the usual problems that charities face – funding, resources and the inability to: "Do everything all the time and be everywhere," Morales believes that the future is bright. And the 'Don't Forget Them' campaign is gaining traction. "As we speak, our team in India is conducting its own campaign in Tamil Nadu, working with the community. They're doing games and activities to ensure that the animals' owners and the state government don't forget them."

Inflatable ambassadors

And this is where the inflatable animal ambassadors' legacy continues. She chuckles as she tells me: "They even came back to meet with the Animal Health Services Director in Costa Rica to explain to him what happened at the platform and how they were able to raise the voice for the rest of the animals."

Each animal has now gone back to its country of origin to enforce the message through local and national activities and lobbying to ensure that governments develop animal-inclusive DRR strategies.

When I ask Morales about the emotional side of the job, I can sense both joy and pain in her voice. She herself is inspired by the work of the first release vets who are on the scene in the first few days after an event. "They've been to situations like the earthquakes in Haiti and Nepal – events that are just so massive – and everyone is so affected that I know our immediate release team has been left without words. I really admire vets who are able to just take off and do that."

There is, undoubtedly, a commitment that perhaps only animals can engender in people. She continues: "You have no idea of how many times we've been talking on New Year's Eve or Christmas Eve about an event that has happened somewhere and working out whether we need to deploy or not, making contact on the ground and then following up. The whole disasters team is so committed to the cause that they'll just take off, no questions asked."

She says that these feelings are mirrored in the people who she talks to in the communities that WAP has helped. "We hear so many stories of how people try to save their animals from drowning, or how they try to stop them being affected by these events, and also happy stories when we have reunited them with their animals."

Having animal-inclusive DRR strategies will help owners to protect their animals safely, without putting themselves at risk.

While the campaign might seem heart-warming and light-hearted, there is a clear driving force behind it. To ensure that peoples' livelihoods are protected, animals must become part of DRR strategies. Notwithstanding the pain and misery that the animals themselves suffer in the aftermath of disasters, they are often the linchpin of households, whether a loved pet or the main source of income. Surely it is a duty for all of us to make provision for them in times of crisis. CRJ

Author

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Horses supporting PTSD recovery

Equine assisted therapy is fast gaining global recognition for its therapeutic benefits for many clinical conditions, particularly PTSD, anxiety and depression, explains **Brenda Tanner**. It allows a qualified therapist to use the interaction between a client and horse as part of the therapeutic process

For the past five years, Equine Encounters Australia (EEA) has been running highly successful equine assisted therapy (EAT) programmes for military veterans and first responders, as well as partner and family programmes. These clinically proven, residential programmes help participants to rebuild confidence and trust, develop self-awareness, learn to self-regulate and re-connect socially.

Horses are sentient, community creatures – as an animal of prey, they live in a state of hypervigilance, ready to take-off if the wolf comes out of the trees. However, they have learned to live symbiotically with that experience and only react when a situation requires them to do so. Quite simply, they live in the moment.

Post-Traumatic Stress Disorder (PTSD) is an insidious condition, pervasive throughout military personnel and first responders.

Hypervigilance

With past events running like scripts and hypervigilance off the scale, victims' lives become increasingly affected. Going to a shopping mall, waiting in a doctor's surgery, travelling on public transport amid large groups of people, limited exits, too many uncontrolled parts – all become completely overwhelming.

Usually developed over a number of years through experiencing repeated traumatic events, PTSD slowly robs its victims of trust, confidence and joy, to the point where they can become isolated and everyday situations cause them enormous anxiety, fear or anger. Close relationships may be left in tatters.

PTSD sufferers shut down and start to exclude themselves. For many, sitting in a therapist's chair and talking about their problems can be incredibly triggering and, all too often, the victim simply doesn't want to tell the 'story' again, being too frightened of the all the memories that flood back.

Exchange the room for a paddock, the therapist for a horse and you've got a winning combination.

EAT isn't about training a horse or riding, it is a triangulated relationship that incorporates a qualified therapist, horse(s) and a client.

Through a series of interactions and activities with the horse, the therapists can help the client to slow down, learn to recognise their patterns of behaviours, observe their thoughts and notice what their body is experiencing (the somatic response).

Humans don't just experience life as a series of thoughts, we embody every experience. Normally, if we feel sad, our chest can feel heavy and there may be tears – if we feel joy there may be a lightness about our bodies, possibly a tingling in our stomach.

PTSD suffers will often tell you they feel nothing emotionally – it's as though they stop at the neck and everything is processed only as thought. However, as Van Der Kolk has noted, the truth is that their body is keeping score – a pressure cooker of suppressed experiences wants to bubble up and could blow at any moment.

Through training, conditioning and dealing repeatedly with traumatising situations, military veterans and first responders develop hard-wired (limbic) responses. They learn to shut down their emotions and 'do the job'.

This behaviour is effective while at work; the problems start in social or familial situations, where responses are mostly driven by 'what ifs', based on historic information, rather than the rational (pre-frontal cortex) responses based on the present moment.

When you interact with a horse, it doesn't see the 'front' you put on for the world, it only knows what it's authentically experiencing – it is 600 kg of free-thinking flesh that has choice. If a client starts getting

Svetlana Golubenka | 123rf

The bond between a horse and human is unique – predator and prey, fight and flight, natural instincts and learnt behaviours have to be suspended by the horse and the human in order to build trust in each other

anxious, the horse will become fretful, agitated; if the client's attention wanders, the horse will simply walk away; when the client is grounded and self-regulated, the horse is quiet, connected and curious.

Part of the therapist's work is to help the client slow down and notice what's happening for them in the moment, by observing what's happening for the horse – this brings their reasoning (pre-frontal cortex) online. Almost immediately, the client will begin to focus externally and start to regulate.

In the therapeutic context, horses can be used to allow the client to project their emotions and feelings, or it can be used as a metaphor to create situational or relational awareness for the client. It is the work of the therapist to know how and when to use these different techniques.

There is no doubt that horses have supported humans, in many ways, for thousands of years. However, it's only in the past 15 – 20 years that the power of the connection has been truly acknowledged.

In the treatment of mental illness, this is becoming a game changer when offered by a qualified practitioner.

The bond between a horse and human is unique – predator and prey, fight and flight, natural instincts and learnt behaviours have to be suspended by the horse and the human in order to build trust in each other. In reality, the human is learning to back themselves, trusting that, as they work with this large creature, they will read the cues in both themselves and the horse.

EEA programmes were developed by the author to support those who have suffered traumatic events during their working life. These highly experiential, immersion-style programmes are designed to disturb the homeostasis in order to catalyse positive and sustained change – offering participants the opportunity to explore their thoughts, behaviours and emotions without any external influences.

Activities are carefully graded to develop the individuals' ability to remain regulated and stay with the discomfort of the unknown, whether emotional or situational, for longer. EEA's facilitators are all certified equine assisted practitioners, as well as being qualified counsellors, psychologists or psychotherapists, so its programmes incorporate a number of therapeutic modalities. These include: Equine assisted therapy; relational gestalt; narrative group work; art/photo imagery and mindfulness.

These therapeutic modalities are designed to help participants gain greater self-awareness and develop tools and techniques to support them in everyday life.

With their newly-developed resources and focus, most will actively seek to continue further clinical work with their psychologists, such as eye movement, desensitising and reprocessing therapy (EMDR), cognitive processing therapy (CPT) and exposure therapy.

The process is best illustrated by a case study.

Laddie (aka Rattlers Lad) was an ex-racehorse, two months off the track in North Queensland. He had been owned and trained by a couple in Townsville from two years of age. After five years on the racetrack, he was physically spent and at the end of his racing life. Having seen EEA's work on national news and not wanting Laddie to end his days at the slaughterhouse, his owners offered him to be part of the trauma support programme.

> When you interact with a horse, it doesn't see the front you put on for the world, it only knows what it's authentically experiencing – it's 600kg of free-thinking flesh that has choice

After a gruelling four days being transported 1,800 km in a truck with six other horses, off-loaded every night at holding stables and being exposed to new sounds and smells, he arrived disorientated at EEA's property in the Hunter Valley, New South Wales, five days before a residential PTSD recovery programme for military veterans was due to start.

Sweaty and breathing heavily, Laddie backed out of the truck to find himself in an unknown paddock, open landscape with tree-clad mountains as a backdrop and five other horses in an adjoining paddock.

Ears pricked, muscles twitching, snorting to take in as much air and scent as possible and scanning the environment, there was a transient moment of freeze while he assimilated this new terrain.

Satisfied the moment was safe, he walked tentatively to the fence to exchange breath with the herd on the other side – a horse's way to connect.

For two days, he was kept separated in his own paddock to allow him time to acclimatise to the environment without the added pressure of dealing with herd dynamics.

Like most racehorses, Laddie had never run freely as part of a herd – the result of track life conditioning. We had decided that he shouldn't be included in the upcoming programme, as he would need time to settle in.

Nevertheless, the acclimatisation process continued and, on day three, he was introduced to the herd in one of the large holding paddocks at feed time. All went well, the other horses gestured towards him, signalling his place in the herd.

Pausing the 'What ifs' – mindful connection helps to build trust and confidence, allowing participants to develop new self-awareness

Brad Cone | Threefold Production

Once feeding was over, one by one the other horses wandered out through the open gate into the back 20 acres to graze.

Laddie got to the gate and froze – he simply couldn't go through into the wide, open space; shaking and calling with a pleading cry, he stood for six hours waiting for them to come back. When eventually they returned for the next feed, he settled. This went on for two days – his fear overwhelmed him.

Early on Sunday morning, eight hours before the participants were due to arrive, the horses had just finished feeding and, as normal, the herd was heading down to the back paddock.

From the house, I could see Laddie stop and take up his place at the gate. Then, something shifted, he looked back over his shoulder and took off at full gallop down the paddock. As he came up behind the other horses, his wave of energy sent them all into a canter and for the first time he ran with a herd – he had overcome his fear.

Nick got out of the minibus at 16:00 that afternoon. A young veteran in his early 30s, he was nervous, beads of sweat on his forehead and unable to hold more than limited eye contact. Along with seven other participants, he was in unknown surroundings, with strangers and on a dry programme (no self-medication) – all his familiar supports had been removed.

Nick's story is all too familiar: he joined the army in his teens and was assigned to infantry after basic training. He had a highly successful career, worked his way up through the ranks, completed several deployments and finished his career as an instructor.

Physically and mentally broken by his years of service, he was medically retired from the army. Cast into civilian life – where there is no structure, seemingly no clear set of rules and no routine – he became lost and struggled with his family life.

Very quickly, PTSD symptoms emerged, and ideation of suicide was very real and recent.

In the initial group discussion, Nick sat just outside the group looking at the ground, finding it difficult to connect. When invited, he shared his story, clearly overwhelmed by suppressed emotion and survivor guilt for his mates who had not made it home. He said it was the first time he had felt safe enough to share the whole story, among others who understood what he had been through without feeling judged.

When asked by the facilitator what his objectives for being on the programme were, he replied: "To feel again and to be a good dad."

For the first activity, the group was invited to meet the herd and see which horse they connected with. Before starting, the participants were asked what they were thinking; some said they were nervous as the horses looked big, others were excited. Nick was concerned that he wouldn't be liked and therefore wouldn't be chosen by a horse.

After a safety briefing on how to approach and be around horses, the group walked into the paddock. The horses looked up from grazing and watched as the humans entered through the gate – some horses stayed transfixed, checking the potential of threat. Others, more confident, came over to sniff some of the participants.

Laddie had come in that morning and didn't want to be put into a separate paddock, so we had decided to leave him in, but to monitor him closely. Being the 'newbie' and the outsider, he had been standing on the other side of the paddock watching. Then, very slowly, he walked up to Nick, lowered his head and put his nose in his chest. Tentatively, Nick put his hand on Laddie's cheek – the connection was made.

It was a moment of complete and utter trust for both of them.

Throughout the week, Laddie met Nick every day in the paddock, ready to teach Nick about himself and for them both to learn what they had to offer in their new lives outside the worlds they had left behind. The parallel between their existences was remarkable, and it was a transformational week for them both.

Each day, as the graded activities pushed boundaries and expanded Nick's window of tolerance for the unknown, their confidence in themselves and each other grew.

A lifetime of parallels – Nick and Laddie supporting each other to learn a way forward

Brenda Tanner | EEA

Self-awareness

Nick's growing self-awareness and ability to regulate allowed him to re-engage with emotions that had been deeply suppressed – he realised he was still a good man with the capacity to feel many things – not just anger or sadness, but joy, fun and love. Through his trusted connection with Laddie and the support of the EEA facilitation team, Nick allowed himself to explore all these emotions and thoughts without fear.

This story is similar to many of the 300 participants who have been through EEA trauma support programmes, whether male or female, young or old, military veterans or first responders.

Learning to build trust, self-confidence, slowing down to a point where they can pause long enough to separate 'what ifs' from the 'what if it doesn't', they realise that, in each moment, they have choice, rather than being hijacked by their thoughts.

Some of the EEA programme's participants have gone on to study at university, have represented Australia at the Invictus Games, or even studied psychology to help others through their journey. Nick is now a very happy dad, raising two boys and taking them all over the world to experience life to its fullest. CRJ

Author

BRENDA TANNER, *Grad Cert Gestalt Therapy, Clinical Resource Therapist, Equine Assistant Practitioner, is the founder and lead facilitator of Equine Encounters Australia. Nick's interview, recorded at the end of the programme, can be seen on EEA's website at www.equine-encounters-au.com*

How technology could help avert water conflict

Claire Sanders speaks to Susanne Schmeier to find out how machine learning, forecasting models and data could help with early identification of global hotspots, allowing conflicts over water to be picked up on before they turn violent

Doctor Susanne Schmeier joined IHE Delft in 2018 as a researcher and senior lecturer in Water Law and Diplomacy. Her research focuses on the legal and institutional aspects of water resources management at national and transboundary levels, the connections between water insecurity and conflict and the sustainable management of ecosystems linked to water resources.

Schmeier is overall co-ordinator for the Water Peace and Security (WPS) partnership, a collaboration between several organisations with the support of the Netherlands Ministry of Foreign Affairs.

Explaining the rationale behind the partnership, Schmeier tells me: "In the last five to six years, we have seen an increasing debate on the links between climate change and security, suggesting that there will be impacts of global climate change on security. As a response, the Dutch Government intiated WPS. Given that climate change translates itself largely through the water sector, it made sense to look at the links between water issues on the one hand and water-related risks such as drought, flood and changes in water availability, and conflict on the other."

I ask Schmeier to outline WPS Partnership's progress and aims. She explains that the research is currently in a two-year phase focused on establishing the link between water and security at global and local levels, and then unpicking the details. She and her team want to ask the question: "What are the explanatory factors that help us to explain why, in a country or region, water scarcity and sudden changes in water availability lead to conflict or to other human responses – such as migration or people joining terrorist groups – but not elsewhere?"

I ask her whether there are more likely to be water-related conflicts when the issue is transboundary or internal. "That's what has been suggested for a long time. However, research by people like Aaron Wolf of Oregon State University and others, actually found that the vast majority of events over transboundary resources are co-operative and, even if there is a conflict, it usually involves the exchange of diplomatic notes or a little verbal aggression. But it hardly ever extends into violence."

Internationally, it is clear that the stakes are too high. It is a different story at the more local or national level, she explains: "There tends to be more violence here, especially if it is related to other issues, such as cultural differences in ethnic groups and disparities in access to resources and livelihood opportunities. For instance, in Mali there has been violent conflict between the farmers, herders and fishermen when it comes to who has access – and when – to the inner Niger Delta and its water. Similarly, Iran has seen protests over water, and violent clashes between people in cities and farmers over rivers that have run dry. There are numerous other examples. So I think when we talk real violence, this is more at a local level."

The partnership is trying to pick up the conflicts before they turn violent. Schmeier explains how: "The violence doesn't happen overnight, you can see it building up. We aim to identify hotspots early so that policymakers in their respective countries, in international organisations or third parties can act before the situation escalates." She continues: "When we go into more local analysis, we also look at mechanisms to adapt to a situation or to deal with vulnerability, because we can see countries and regions around the world that have water crises as well, with conflicts between different users. However, there is no violence because there is institutional capacity; the legal systems and conflict resolution mechanisms that prevent escalation. Ultimately, this is what needs to be established in countries that do have a threat of water-related violence."

> Given that water is one of the key factors, the way that it is being managed in order to address the security risks needs to be changed

To answer the questions it posed, the partnership developed an early warning tool. Schmeier explains: "We call it a global hotspot identification tool because it helps us to identify areas where we think that conflict over water resources or related to water resources will occur. It has a 12-month forecasting cycle and it is based on machine learning." The input consists of parameters ranging from hydrological data such as rainfall and evapotranspiration, and crop-related data such as soil moisture and crop growth.

It also collects data from the social, political and economic aspects of the region. She expands: "For example, we look at data for poverty, such as child mortality, which

Workshop in Mali: Collaboration is so important, says Schmeier because, typically, the groups do not necessarily talk to one another, let alone work with each other

Rozemarijn Ter Horst | IHE Delft

we think is a good proxy for development. Then we examine population growth, sudden shifts in population – perhaps through migration – population density, and the regime or type of government. We combine that with a database that helps us to identify where there is a conflict either building up or exists right now." The team can then filter the information to determine whether the conflict is water related and the model gives rise to hotspots that might lead to water conflict. It can analyse a range of factors which, when combined with conflict over ethnical issues, might potentially lead to a water conflict.

Underlying reasons for conflict

But it is not enough to simply identify the hotspot. Schmeier and her team want to know more: "What is really happening – is it really water that is driving the issue? Are there underlying conflict reasons?" The team can apply its technology to model the hydrological situation, based on a large set of hydrological data, and combine it with human responses.

"How do people act if their water availability changes and, as a consequence, their water use changes? For example, if they have less water for irrigation or water is being extracted upstream, the availability downstream goes down." Her team then addresses the questions: "Does that lead people to migrate? Or does it make them shift their livelihoods? Or will there be conflict instead, say, between farmers and herders or farmers and fishermen?"

The human response aspect is difficult to approach from an office or research lab in the Netherlands, so the partnership works with local people in the selected regions. Participatory modelling enables local communities and stakeholders to interact and use the data that the WPS partnership provides in order to understand each other's needs and requirements. Schmeier tells me about recent projects in where this approach has worked. "In early July, we held a workshop in Mali where we brought together representatives of agricultural communities, ie farmers and herders, fishing communities, the Ministry of Internal Security and other people responsible for the different sectors in the inner Niger Delta and Mali. We trained them in the use of the participatory models and then discussed different scenarios with them." The team asked questions such as: "How will people react if the Fomi dam upstream is built and less water becomes available downstream, or water availability varies more across the year?" Potential response pathways were then discussed.

Schmeier feels that the response to the workshops in Mali has already been positive. She says that to her knowledge, it is the first time that representatives from different groups of water users have come together to exchange views with representatives from the security community – normally, these are complete silos. She explains: "There might be some co-ordination between the different water users, but then there is a totally different community that looks at security and is not aware of the role that water and other natural resources play in these conflicts. They are just trying to bring stability, but not

looking at the root causes of the conflict. Gathering these people into one room, I think, already has an added value." She says that they can increasingly see the origin of the conflict and are better able to understand that things might need to be done differently. This doesn't mean that the conflict is then easily resolved, but it's a step in the right direction. "Hopefully, there will be more discussions and more exchange between these different groups and that's exactly what we aim at."

Bringing partners together is a challenge because the range of representatives is so great, including people from security thinktanks, researchers and analysts from IHE and NGOs. Schmeier expands on why collaboration is so important: "Typically, the groups do not necessarily talk to each other, let alone work with each other. And we see that in the discussions that we have in the partnership. Some people work on models, but have little engagement with the local communities, whereas the NGOs that we work with focus largely on the communities, but have never worked with sophisticated statistical models or machine learning."

Schmeier is keen to stress that the WPS partnership does not provide the solutions or conflict resolution. "We provide the scientific, methodological input into dialogue processes that are initiated by others – either by the communities on the ground or by third parties, by governments and international organisations. We offer our knowledge, information and scenarios so that people can hold an informed discussion."

What the WPS partnership really hopes to do is to raise awareness and contribute to the discussion. Schmeier explains that at the global level, the team wants to highlight the role that water plays in conflict, especially in the climate change and security debate. "If you look at what is being discussed at the UN Security Council, it is rather general, focusing on climate and security. We think that this has to be broken down further, to look at how climate change translates itself in certain places, ecosystems and regions. Given that water is one of the key factors, the way that water is being managed in order to address the security risks needs to be changed."

So, what's next for the WPS partnership? "We will be expanding the work that we are doing in Mali and in Iraq and we do have a few requests from other regions in the world," she tells me. "We are demand driven. We will also be reaching out to organisations to support their processes. But we'll definitely continue to upscale the work over the next four years."

Added parameters

It is clear from Schmeier's enthusiasm that the project's future is bright. "We will be formally launching the global hotspot identification tool in November. But we're still debating how to refine it because we want to make it publicly available for everyone to use. We will disclose all our datasets although, at the same time, we have to find a way that people can use it but not abuse it." This makes perfect sense – some groups might seek to capitalise on the knowledge of conflict locations.

"In addition, we are in the process of adding food and energy security parameters to our global and localised models," Schmeier reveals. "We know that water conflict easily translates itself through food security, for instance, where reduced water availability might lead to less crop productivity, leading to less food being produced, rising food prices and so on."

The applications of the global identification hotspot tool could prove varied and extremely timely in a world where natural resources are likely to be stretched to their limits in the very near future. C·RJ

The human response aspect is difficult to approach from an office or research lab, so the partnership works with local people in the selected regions

Rozemarijn Ter Horst | IHE Delft

Author

CLAIRE SANDERS *is Editorial Assistant with the* Crisis Response Journal

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Tap into the CRJ's collective

The *Crisis Response Journal* has been involved in putting together the content of two exciting conferences this December at the International Disaster Response Expo – read on to find out more and join us in the CRJ Village at IDR in December

International Disaster Response Expo is the global showcase uniting the humanitarian aid and disaster relief communities to debate, innovate and deliver relief to those affected by crisis and conflict. The two-day event will feature a large-scale exhibition, showcasing the latest products and technologies used to improve response and aid, as well as free-to-attend conferences and workshops. The Crisis Response Journal Village will feature companies that are bringing technological breakthroughs and innovations.

As its overarching theme, the IDR conference is focusing on 'Living in the era of the unexpected'. It is widely accepted that surprise is the 'new normal' and, as the UNDRR's *Global Assessment Report* (see p8) comments, the era of hazard-by-hazard reduction is over: "We need to reflect on the systemic nature of risk and how we deal with it."

This event will look at the stressors that are building into tipping points – with a focus on today's crises, potential outcomes and developments into tomorrow – with climate as the greatest threat amplifier of all.

What are the solutions? How can we protect people, livelihoods and habitats? What do we need to do to ensure that disciplines genuinely work together?

Sponsored by Everbridge, the event will also explore what warning systems are currently in place, set against the backdrop of *EEC Directive Article 110*. This directive regulates the scope and capabilities of warning systems for all European countries that have a warning system in place. One of the aims of the summit is to address the requirements of this regulation and consider what can be learnt from countries already successfully running public warning systems around the globe.

The first session will set the scene, with speakers including Rob Cameron, Director General of Emergency Management Australia and Amy Pope, former US deputy homeland security advisor to the President of the United States. They will be joined Korbinian Breinl, who should be familiar to the readers of *CRJ* for his work on *Black Swans and Grey Rhinos* (*CRJ* 14:2).

Three other familiar, world-renowned experts take the lead in Session Two, which homes in on how today's threats could develop into tomorrow's catastrophes. Paolo Garonna, who has written on *Disasters and opportunities* (*CRJ* 13:2) and *Preparing for risk scenarios* (*CRJ* 14:2), will be expanding upon these themes, while Eric McNulty, Associate Director, Harvard NPLI, will be talking about *Leadership and governance in turbulent times* (*CRJ* 14:3). Meanwhile, Andrea Bonime-Blanc will be talking about the issues she raises on page 18 of this edition.

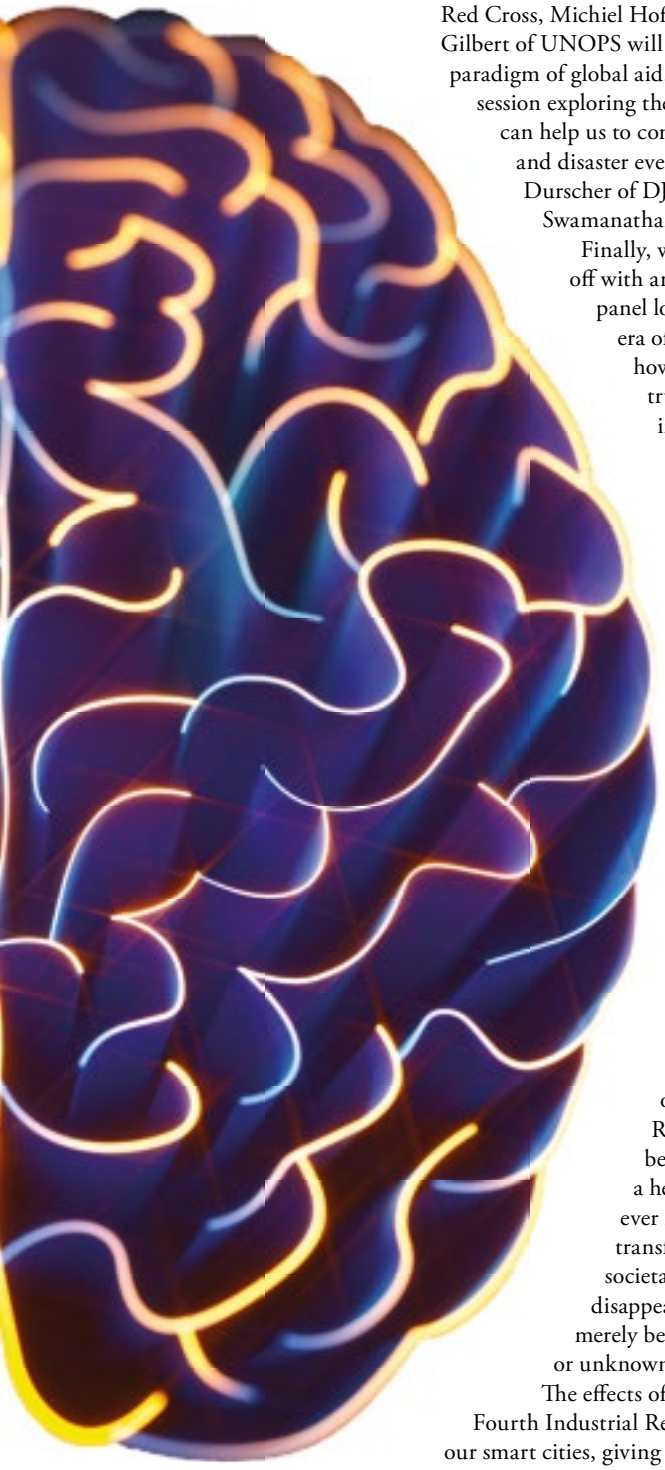
Session Three focuses on the current consequences of the changing threat landscape in terms of refugees, IDPs and forced displacements. Chaired by Nikolaj Gilbert of UNOPS, it will feature Rosella Pagliucha-Lor of UNHCR.

Following the scene-setting on Day One, the second day of the event aims to crystallise how – given the changing nature and growing frequency of disasters and the complexity of humanitarian response – we can ensure and

KTSDesign | 123rf

The Crisis Response Journal Theatre will look at the two most important elements of resilience and disaster planning. People and where they live are at the heart of everything that the sector does

intelligence at IDR



maintain trust in aid and response organisations. How do we guarantee the transdisciplinary, multi-sectoral decision-making that is so vital? Will organisational attitudes have to change? And how can we embrace the massive burgeoning of technology aimed to improve assessment, prevention and response?

Paul Knox Clark, Ben Webster of the British Red Cross, Michiel Hoffman of MSF and Nikolaj Gilbert of UNOPS will explore the changing paradigm of global aid. This will be followed by a session exploring the technical innovations that can help us to confront future humanitarian and disaster events, featuring Romeo Durscher of DJI (*CRJ* 13:4), Rohini Swamanathan (*CRJ* 14:3) and Everbridge.

Finally, we will round the conference off with an interactive discussion panel looking at reputation in an era of the unexpected, exploring how building and maintaining trust underpins all activities in the field of disaster and humanitarian response – our very own Stephen Grossman (p49) will be leading the discussions.

The Crisis Response Journal Theatre, running concurrently in the same venue, will bring the themes that the publication covers on a regular basis to life. We have divided the two days into themes – places and the people who live in them.

Day One looks at places. United Nations research shows that urbanisation is set to increase to unprecedented levels by 2050, yet the outcomes and consequences of the Fourth Industrial Revolution are still very far from being understood. Society is in a headlong rush towards being ever more connected and digitally transformed, but today's complex societal and urban challenges won't disappear. Like all risks, they will merely be displaced, perhaps unseen or unknown, into our smart new world. The effects of both urbanisation and the Fourth Industrial Revolution are coalescing around our smart cities, giving rise to many questions. This day will tackle several key overarching themes to help us understand, navigate and anticipate these questions and the consequences before they occur.

If the future essential services and critical infrastructure upon which we depend are individually smart, then collaboration and collective decision-making are essential in tackling our shared and complex challenges to support our future wellbeing. These services and infrastructure therefore must also collaborate to be collectively intelligent. But to fully understand and plan for both the opportunities and consequences that result, requires a cohesive and coherent whole system – policy to practice – approach. And this is a concept very far removed from the current disparate, fragmented and technologically-centric way we see developing today.

Intelligent cities

Our three interactive panel discussions will address how – if the intelligent cities and services upon which we all rely are going to empower citizens through being inhabitant-centric – will they enable a greater, more joined-up and meaningful approach to societal resilience, social value, information sharing and knowledge generation for the public good?

The second day of the CRJ Conference will look at people. Sponsored by Markham (p74), Giles Greenham will be exploring travel risk and violence against workers, while Alison Burrell will look at blackmail and reputation. Emergency NGO will also provide a case study on protecting workers in extreme risk areas.

Session Two will look at communication and post incident support, when Anna Averikou – a regular correspondent for *CRJ* – will examine how to protect people and reputation in a crisis in a presentation titled 'Being human'. Also in this session, Kate Rawlins (*CRJ* 13:2) will provide advice to help emergency responders to counter fake news.

As with the IDR Conference, the CRJ Theatre will finish with an interactive masterclass looking to the future: precipices and tipping points. Panellists – drawn from global experts in leadership, crisis and disaster trend analysis – will discuss what the future holds for people and where they live, asking how do crisis communication, fake news, leadership and changing stakeholders affect crisis management and response?

The event is expected to attract more than 5,000 visitors from 85 countries, representing the full spectrum of disaster response management from preparing, responding to, protecting and recovering from human-caused or natural events.

■ *International Disaster Response Expo is taking place on December 3-4, 2019 at Olympia London, UK. Registration is now open, so get your free ticket and save the entrance fee using this link: https://idr-2019.reg.buzz/idr-crj* CRJ

Connecting the dots through collaboration

Humanitarian responses often involve large numbers of national and international actors, frequently working in the same geographical areas towards the same goal of improving the effectiveness of emergency responses in affected countries. With the ever-increasingly complex situational demands, individual organisations cannot work in isolation to achieve common goals.

The Leading Edge Programme (LEP) was launched in 2015 as an informal, collaborative platform for humanitarian experts to meet and work together to identify and implement sustainable solutions to humanitarian response challenges. It is a year-round, collaborative, problem-solving platform governed by a strategic group, co-chaired by the Swiss Agency for Development and Cooperation (SDC) and the Office for the Coordination of Humanitarian Affairs (OCHA). It is open to humanitarian networks, partnerships and focus taskforces, with the aim of setting clear objectives, unlocking innovative solutions and creating tangible outcomes.

The annual Humanitarian Networks Partnerships Week (HNPW) has been growing in size and importance. HNPW 2019 was attended by 2,200 participants representing organisations from all over the world. More than 75 annual meetings and consultations of 30 networks and partnerships were held throughout the week, along with 1,500 participants on Inter-Network Day.

The LEP is identifying priority issues for cross-network collaboration with previous participants and humanitarians and aims to address them with a concrete plan of action that will be agreed upon during the sixth HNPW, which will be held at the International Conference Centre in Geneva, Switzerland from February 3 – 7, 2020.

There are many advantages of attending and participating in the upcoming HNPW 2020. HNPW 2019 welcomed participants from 150 Member States and 400 organisations from UN agencies, funds and programmes, governments, military and civil protection, NGOs, the Red Cross and Red Crescent movement, private sector and academia.

With 30 networks and partnerships involved in 2019, more than 130 events took place throughout the week, including briefing sessions, annual network and partnership consultations, technical meetings and cross-network sessions. All HNPW participants are free to attend any of the network meetings' open sessions.

In 2019, the event offered 1,500 participants 30 cross-network sessions co-organised by several organisations. Attended by several high-level representatives, the day's opening and closing ceremonies were an opportunity to reflect on the challenges facing the humanitarian sector and the need for increased, year-round collaboration and networking. United Nations Geneva Director-General, Michael Møller and Assistant to the Secretary General and Deputy Emergency Co-ordinator Ursula Mueller, were among the guest speakers. C·RJ

See diary dates opposite for information

Opening speakers at Milipol 2019

Milipol Paris 2019, the international event for homeland security and safety, will take place from November 19 – 22 2019, at the Paris-Nord Villepinte exhibition centre. More than 1,000 exhibitors and 30,000 visitors are expected at stands, workshops, demos and at the new Innovation and Research stage.

For its 21st edition, the opening conference will feature two renowned experts in the fight against terrorism – Ali Soufan and Kumar Ramakrishna. Soufan is managing director of the Soufan Group, a not-for-profit organisation dedicated to research, analysis and strategic dialogue related to international security issues and emerging threats. His experience as a former FBI agent has seen him investigate and oversee extremely delicate and complex cases of international terrorism, including the US embassy bombings in East Africa and the events of 9/11. Ramakrishna is a tenured associate professor, head of Policy Study and head of the National Security Studies Programme at the S Rajaratnam School of International Studies in Singapore. His current research is focused on British propaganda in the Malayan Emergency, propaganda theory and practice, the history of strategic thought, and counter-terrorism, with a focus on radicalisation.

To explore the leading theme of 'The Internal/External Security Continuum' a series of conferences will be held on November 20 – 22. Included in the series are private security, large event security management, and smart borders. Also featured will be the fight against terrorism, cyber security, AI and predictive analysis, civil defence and crisis management, security of public places, safe and smart cities and regional government. C·RJ

■ *Visit milipol.com for more details*

Keep your eyes peeled for Risk-In 2020!

The third edition of Risk-In, to be held in Zurich, Switzerland from May 13–15, 2020, is aimed at heads and teams involved in emergency risk management, security, insurance and resilience. The goal at this exciting event is to bridge the silos to enable better management of risks. Among 2019's high calibre speakers were past *CRJ* author, Emmanuelle Hervé, (*CRJ* 14:2) and current author, Andrea Bonime-Blanc (see page 18 of this edition). The many themes of the 2019 event included cyber security, governance, water-related risks and risk in endurance sports. The extensive schedule of debates, workshops and panel discussions was a great success, with positive feedback that will inform and shape this year's agenda. The programme has not been revealed yet, but details will be published soon. See the Risk-In website below. C·RJ

■ *Visit risk-in.com for details*

October 28 – 30, 2019
Commercial UAV Expo Americas, Las Vegas, USA
expouav.com

November 1, 2019
Fire Aid Conference, London, UK
fire-aid.org

November 4, 2019
ASIS Middle East Industrial Safety Conference, Bahrain
asis-me.org

November 6 – 7, 2019
Seventh OED/IED and Countermine Symposium
countermine.dsigroup.org

November 11 – 13, 2019
CBRN Summit, Geneva, Switzerland
defenceiq.com

November 13 – 14, 2019
AidEx 2019, Brussels, Belgium
aid-expo.com

November 19 – 22, 2019
Milipol Paris, Villepinte, France
en.milipol.com

November 20 – 21, 2019
Infosecurity Expo, New York, USA
infosecuritynorthamerica.com

November 20 – 22, 2019
Homeland Security Week, Washington DC, USA
idga.org

November 25 – 27, 2019
Border Management and Technologies Summit, New Delhi, India
ibmata.org/events

December 2 – 3, 2019
Global Congress on Carbon, Kuala Lumpur, Malaysia
scientificfederation.com/c-2019

December 3 – 4, 2019
International Disaster Response Expo, 2019, Olympia, London, UK
disasterresponseexpo.com

December 3 – 4, 2019
Crisis Response Journal Conference, Olympia, London, UK
disasterresponseexpo.com

December 3 – 5, 2019
21st PSCE Conference 2019, Paris, France
psc-europe.eu

December 3 – 5, 2019
CBRNe Summit Asia, Bangkok, Thailand
intelligence-sec.com

December 4 – 6, 2019
Amsterdam Drone Week and UAM Summit, the Netherlands
amsterdamdroneweek.com

December 5, 2019
Developing the UK's Flood Resilience Forum, London, UK
westminsterinsight.com

December 10 – 13, 2019
Disaster Resilient Smart Cities, New Delhi, India
scdr.jnu.ac.in

February 3 – 7, 2020
HPNW, Geneva, Switzerland
hpnw.org

February 18 – 19, 2020
Urban Safety and Security, Manchester, UK
intelligence-sec.com

March 10 – 12, 2020
Cyber Intelligence Asia, Kuala Lumpur, Malaysia
intelligence-sec.com

March 10 – 12, 2020
DIHAD 2020, Dubai, UAE
dihad.org

March 16 – 17, 2020
2020 Asia Pacific Science and Technology Conference for DRR, Kuala Lumpur, Malaysia
ukm.my/apstcdrr

March 23 – 25, 2020
Geo Week, Washington DC, USA
lidarmap.org/geoweek

April 15 – 16, 2020
World Humanitarian Forum, London, UK
whf.london

May 13 – 15, 2020
Risk-In, Zurich, Switzerland
risk-in.com

See more dates on our online calendar at www.crisis-response.com

Fighting plastic pollution

In July last year, CRJ featured a blog about Emily Penn and her work on plastics in the ocean and toxic ocean pollution. Here, **Claire Sanders** speaks to Emily to learn more about where her work has taken her

Above: *Attaching a tracker to ocean debris*
Right: *Emily Penn studying a sample of plastics found in the ocean*

Lark Rise Pictures

Over the last 12 years, Emily Penn, skipper and ocean advocate, has been determined to raise the profile of ocean plastic pollution. Her endeavours have taken her across the world, facilitating science at sea, outreach and the implementation of solutions on land.

She outlines her latest project: "In 2014, I co-launched eXXpedition – organising all-women sailing voyages with a focus on plastic and toxic pollution in the ocean. This October, we will be taking 300 women around the world over two years with eXXpedition – it's our most ambitious programme yet."

Starting off on a bio-fuelled boat 12 years ago, Penn hitchhiked around the world to Australia: "Shocked by finding plastic in some of the most remote places on our planet, I chose to live on a group of Pacific islands for six months to organise a community clean-up."

Her interest piqued, she journeyed to California to learn more from experts in ocean plastic. "It's been non-stop ever since," she enthuses as she goes on to describe a 'typical' day: "I am often travelling to share my story with people. I spend a lot of my time on a boat, whether that be with eXXpedition or with a partner brand. If I'm in London, I work with the team out of the new, environmentally friendly members' club, Arboretum, in Charing Cross."

Penn is motivated when she sees how the public has responded to the plastic problem, with millions of people now trying to make a difference. "It is an exciting time to try to build an army of change-makers who want to turn off the tap at the source," she explains.

Not only does Penn run eXXpedition, but she also works on SHiFT, a platform that delivers events and resources for the plastic-fighting community. "There is little time for rest," she says wryly. "This October, we are taking eXXpedition around the world. We are running back-to-back ambassador training programmes at sea, for a full global circumnavigation. On land, we will also be working on SHiFT to support our growing community of ocean lovers, and encourage greater impact and collaboration." She is also currently working with Sky as an ambassador and adviser to its Sky Ocean Rescue initiative.

Penn's round-the-world eXXpedition will cover 38,000 nautical miles over 30 voyage legs. In addition to investigating the ocean plastic problem and looking for possible solutions with a multi-disciplinary approach, the project aims to redress the imbalance of female representation in STEM professions, while also looking at how plastics in the ocean can affect women's health.

Anyone who is so passionate about her cause and so positive about the future could not possibly fail.

■ *For more details, visit emilypenn.co.uk and eXXpedition.com* CRJ

Author

CLAIRE SANDERS *is Editorial Assistant at the* Crisis Response Journal

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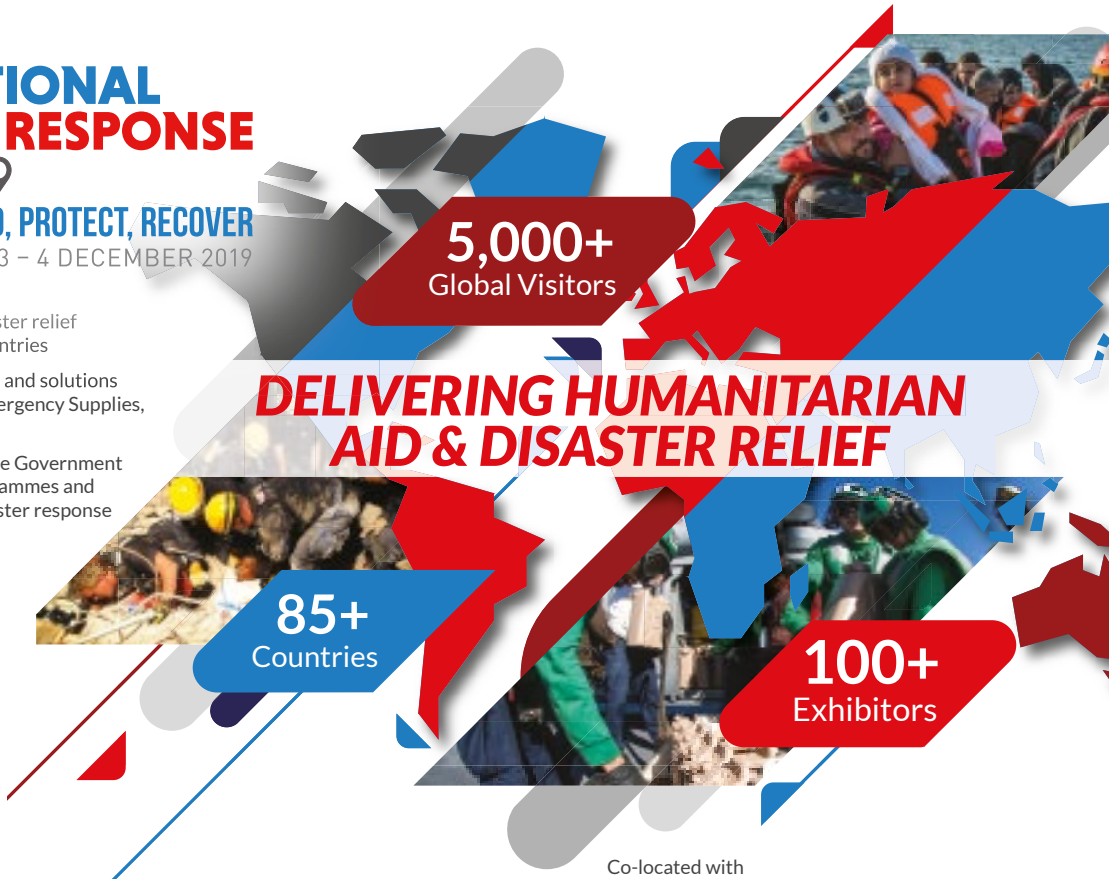

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