

National Resilience Strategy Call for Evidence

Introduction

We are the Institution of Engineering and Technology ('The IET'), a charitable engineering organisation working to engineer a better world by inspiring, informing and influencing the global engineering community for the benefit of society. We would be most interested to explore with you how our engineering expertise can assist the delivery of the Government's Resilience Strategy and complement the input provided by other specialist advisors to the Cabinet Office.

Vision and Principles

Q1: Do you agree with the proposed vision of the Resilience Strategy? Yes. Is there anything you would add, amend, or remove? The topic is relevant and timely, the vision, ambitious, the scale of the task, enormous. We as IET welcome the Strategy and **would wish to see it aligned with other relevant strategies being created across Government**, both published and 'in development'. This will greatly assist the conversation on other nationwide imperatives e.g. industry, defence, energy etc.

Q2: Do you agree with the principles laid out for the strategy? Yes. Is there anything you would add, amend, or remove? We would like to suggest three additions.

Firstly, alongside our colleagues at the Royal Academy of Engineering, we champion the role which engineering and technology will play in the delivery of these principles and the wider Strategy. We support the recommendations of the Academy's recent 'Critical capabilities strengthening UK resilience' report¹ around [1] 'embedding a systems approach' [2] 'an audit to map existing capabilities' and [3] 'development of a critical capabilities approach' and commend it to you. As mentioned in your Strategy document (p17, para 35), **we too have concerns regarding the interdependencies between different risks and the causal impacts these create** - inputs (e.g. supply chain dislocation) and outputs (e.g. supermarket food shortages).

Secondly, **we would wish to see the issue of sustainability added** or incorporated as a vital key principle. This is particularly important when considering such issues as supply chain resilience ('just in time') and security of critical supplies and materials ('just in case'). Increasingly, action on resilience has to support and contribute to wider sustainability and climate change goals i.e. reducing CO2 carbon emissions. We welcome the Government's public support for concerted international action to address the Climate Emergency e.g. as COP26 hosts.

Thirdly, there are [a] strategic, longer-term decisions and investments and [b] tactical, short-term measures and mitigations required against each of the six principles. These would benefit from **clearer presentation and differentiation within the National Resilience Strategy** document.

Risk and Resilience

Q1: Is there more that the Government can do to assess risk at the national and local levels? Yes. If so, what? Be explicit about what is acceptable risk and the required level of mitigation to offset that risk. Ensure you have the necessary specialist expert advice from people who have a deep technical understanding of the issues, processes, and interdependencies.

The UK is world-leading in its use of data gathering, mining, and harvesting. AI and machine learning provide powerful modelling systems which can be deployed to predict and pre-empt future outcomes. We as IET welcome statements within the Strategy document around 'improving decision

making through data and analysis' (p18, paras 40-42). Such analytic, predictive systems can be used to test different scenarios, identify critical resources, and assess and mitigate connected risks. We welcome the Government's announcement on the setting up of the National Situation Centre (SitCen) and **we as IET would wish to see greater emphasis placed on the role of data and analytics** within the Strategy.

Q2: Is there more that the Government can do to communicate about risk and risk appetite with organisations and individuals? Yes. **If so, what?** National resilience is delivered through an intricate and confusing hierarchy of networked organisations and agencies, each with specific roles and responsibilities. **A graphical mapping or infographic of the organisations and agencies involved in delivering national resilience would provide a most useful resource** for all those involved, helping to highlight the interdependencies between all parties and communicate the topic to the public, more widely. Such visual depiction might also enable those working across the boundaries of these interdependencies to spot and resolve, what is, a surprisingly complex picture.

Q3: How could the Government make risk assessment and data more accessible by frontline personnel in an emergency? Set targets for the **publication of non-sensitive, open data** on the internet by public sector organisations.

Partnerships

Critical National Infrastructure (CNI) owners and operators:

Q1: Do you think that the resilience of CNI can be further improved? Yes. **If so, how?** First and foremost, does the Government have any plans to review the 13 CNI sectors of chemicals, civil nuclear, communications, defence, emergency services, energy, finance, food, government, health, space, transport, water? Manufacturing supply chains have been in the news recently and were adversely affected during the pandemic. **We as IET suggest that manufacturing should be added as the fourteenth CNI sector.** We as IET have expertise in six sectors - energy, manufacturing, digital, healthcare, transport, and the built environment and would be most interested to explore with you how our engineering expertise could assist the delivery of the Government's Resilience Strategy.

Secondly, in the light of increased international competition for raw materials and precious metals, **a rigorous system of review of the resilience of such critical supplies** will help to mitigate shortages and encourage greater circularity of these items. (Vauxhall Motors plans Luton job losses amid chip crisis², BBC 22 Sept 2021). This is an increasing concern. Government needs to have a clear understanding of the manufacturing industries that would be most affected in the event of prolonged, severe shortages. Possible remedies and mitigations include [a] international trade agreements which encourage collaboration and provide access to raw materials [b] identification of substitutes [c] building on the UK's existing materials knowledge base and [d] circularity – reuse, recycle

Wider critical sectors

Q2: What are the risks that your business is most concerned about? Most immediately, concerns regarding the **lack of resilience within the UK's energy network** preventing a potential gas crisis, this autumn and winter.

Academic and research organisations

Q1: What can the Government do to make collaboration between academic and research organisations more effective? Target funding on specific resilience deliverables and encourage both parties to work with the private sector. Address the confusion that many businesses, particularly SMEs, face when seeking to access funding given the multiplicity of agencies, funding initiatives and pots available.

Community and local resilience

Q1: Do you agree that everyone has a part to play in improving the UK's resilience? Yes. Resilience should become a national pastime, from key skill development to core competency for all workers. A subject implicit within the curriculum. Professional engineering institutions such as the IET, can get involved and play their part too. We would do well to support Engineers in adding to their core problem-solving competencies, by adding 'survive and thrive' resilience to our continuous professional development programmes. After 50 years of relative calm, we face greater uncertainty with the prospect of further shocks and disruptions (pandemics, extreme weather, shortages etc.) to come, on a more frequent basis. At a local level, how we respond to high impact, low probability events e.g. loss of power and or internet connectivity over a sustained period, will help shape how resilient our communities, and we as citizens, can become

About the IET

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We have 158,000 members worldwide with offices in London, Hong Kong, China, and India. We champion engineers working and studying in the **built environment, digital, energy, healthcare, manufacturing, and transport**. Led-by IET topic experts from these industry sectors, we publish thought leadership, sector insights and white paper on key societal and engineering topics. By way of example, recent reports include "Interdependencies and resilience in digital transformation" a short report³ looking at adaptability and interdependence across energy networks, communications, and infrastructure in an increasingly interconnected world. www.theiet.org

References

- 1 <https://www.raeng.org.uk/publications/reports/critical-capabilities>
- 2 <https://www.bbc.co.uk/news/uk-england-beds-bucks-herts-58648533>
- 3 <https://www.theiet.org/media/8616/interdependencies-and-resilience-in-digital-transformation.pdf>