COMMISSION

Threats to UK security, prosperity, and societal well-being have surged.

- Indicative:

CONTENTS

It contains significant blind spots and frequently impedes timely planning for plausible future predicaments; adjustments to response arrangements in the light of new evidence are often highly targeted and limited in cross-sectoral benefits.

Now is the moment to be more ambitious, wide-ranging, and nuanced regarding the approach to measurement. This report, prepared by Marsh McLennan for the National Preparedness Commission, is intended to advance thinking and encourage debate over how to assess resilience more effectively. Primarily aimed at central government, the core elements can be adapted for use at different levels. Building on extensive desk research and interviews with resilience experts across the world, it is neither an assessment of the UK's resilience levels nor a critique of the country's resilience evaluation arrangements. While it should inform thinking about the contents of the Annual Statement to Parliament on resilience promised in the new Framework, it intentionally looks beyond civil contingency risks to broader strategic resilience challenges, such as those posed in the l☞f s.

The first chapter, "Gauging the Challenge", frames the key difficulties with measuring resilience and examines how different authorities and researchers tend to address them. The second chapter, "Gaining

Cyberattacks, extreme weather events, supply chain fractures, labour shortages, misinformation and disinformation campaigns, and declining water availability test households, organisations, and the public sector in di erent ways.

Second, resilience takes di erent forms, and the utility of those forms varies according to the risk. The risks mentioned above (and others like them) place di erent stresses on preparedness e orts, responsive agility,
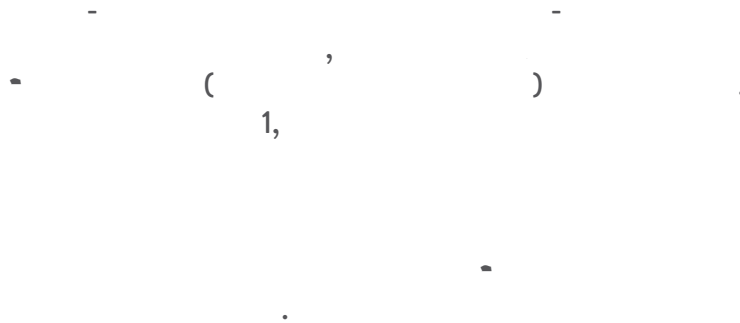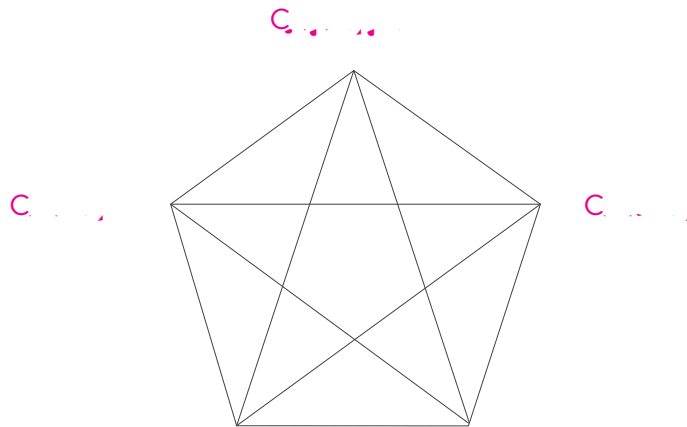
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Some studies identify characteristics (robust, flexible, inclusive) that are indicative of, or contribute to, resilience. At the level of the individual organisation, these may be attributes such as e ective and empowered leadership and the presence of information-sharing processes.[13] This approach is also used at city level, setting out features that help to "transition, transform and change to a better, stronger state".[14]

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Exhibit 1: Focus of resilience measurement

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EXAMPLES:

The OECD presents four key sets of drivers of resilience that lead to resilient qualities. These drivers are economic (such as diverse industries, innovation capacity), social (citizen networks, access to key services), institutional (clear leadership, long-term vision), and environmental (infrastructure, natural resources). Supporting indicators include average response time during an emergency, average duration of unemployment during an economic crisis, and average annual property damage due to natural disasters.[15]

Mexico City's resilience strategy leverages the Rockefeller Foundation's qualities for resilient cities — inclusive, integrated, robust, resourceful, reflective, redundant, and flexible. The di erent pillars of its strategy are then aligned with these qualities. Progress is qualitatively assessed through the resilience value of goals and actions under each pillar. For example, the pillar of developing innovation and adaptive capacity reflects the quality of robustness. One of the actions under this pillar is promoting private sector participation. The resilience value articulated for this is leveraging a broader set of capabilities and resources to accelerate recovery.[16]

One aspect of national-level resilience assumes that systems critical to the functioning of society and the economy — such as healthcare, education, energy, food, communications, and banking — can perform as required in the fac9.4 (a)t3.1 (a)4d3aym1, aad ba

With limited resources at their disposal, governments need to prioritise between resilience-building initiatives and infrastructure investment programmes. Measurement frameworks that guide the disbursement of public funds often estimate future benefits or opportunities that will result from resilience investments versus inaction. The economic case can also be made by calculating the negative ramifications of a less resilient system.

The concept of 'net resilience gain' has gained traction in infrastructure and climate resilience studies. Like 'net zero', 'net resilience gain' seeks to ensure that all new investments o set any additional risk they cause. More broadly, it aims to increase the overall resilience of a system by minimising actions (such as non-compliance) that reduce systemic resilience and by prioritising initiatives aimed at building systems that are resilient to future disruptions and crises.[28]

EXAMPLES:

A study in New Zealand calculated that NZD6 million spent on the seismic strengthening of electricity tran

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Exhibit 2: Recent UK challenges

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The bedrock of resilience is the reliability of the arrangements that underpin daily national life and the resources can be brought to bear on critical challenges to deliver pre-emptive preparedness, in-crisis responses, and (post-)crisis recovery programmes. Without the right "things", enough of them, the right quality, and in the right places, risk exposures are magnified and vulnerabilities expand. To avoid definitional complications, this lens consciously excludes as an asset the broader population of the UK, which is covered in Lens 3.

The core components of this lens are:

- *E o o ☞ o ☞ f☞ s* — including the provision of energy, food, water, and communications; transportation networks; critical manufacturing, storage, and research and development facilities; financial system arrangements; and health and education facilities

- *☞ ☞ o s*— encompassing minerals; the availability of water, sun, and wind; and natural ecosystems including productive agricultural land, fisheries, and biodiversity more generally

- *o ☞ ☞ ss s*— including logistics and supply chain assets, vital manufactured products and components, and data

- *F☞ ☞ ☞ ☞* — covering the availability of loans on reasonable terms, investment can9ncoj/SpanaDC ( )-1.21J/T1cd•(g)O.8Ce 9-1.2 Td (p)-0.0O2 T4.1 (a)ut cen — coi2-6 1O O O6 (d)-4.1 (u)-6.9 (c)-4.8 (a)2.6 (t)5.5 (

Powers, assets, and capabilities are not enough by themselves to galvanise and continually enhance resilience. To achieve lasting preparedness and agility, networks must be deepened and renewed, processes sharpened and tested, levers refreshed and expanded, platforms developed and leveraged, responsibilities clarified, and trust nurtured.

The core components of this lens are:

Exhibit 6:

On this basis, intelligence relating to communities, systems, and collaborations would generate insights into preparedness and potential performance. Details are set out in Exhibit 7 (see the next page).

Some examples of the importance of this lens may be helpful. The pandemic and energy price crisis resulted in high levels of government support to industries and businesses in trouble, with significant implications for national debt levels; moreover, both contingencies along with food price inflation had deeper impacts on poorer communities, contributing to a bro2 (t)7 Tw O -1.3 Td(p7).3 (c)1317.9 (d2 O -e)-11.9 (e th)-d.9 (n)-O.7s(n)-9.7(pe3.1

Exhibit 7:

RISK
CHALLENGE   OVERVIEW

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Value: Mapping the linkages and connections between di erent assets, flows, and systems helps uncover vulnerabilities and potential critical points of failure, enabling a more systemwide view of resilience needs. These exercises help set a foundation for measuring resilience more accurately and holistically, which is critical for ensuring the robustness and reliability of assets and capabilities both now and in the future. The work can inform the prioritisation of investment, guide the establishment of protections and backups, and provide a systematic basis for building complementary competencies.

The process of identifying dependencies within and across networks also helps improve coordination and mobilisation — for both asset-based and people-based solutions. Outputs provide tangible examples and use cases for cross-departmental and cross-sector engagement, enabling more intentional and effective communication and discussions about risk-sharing arrangements.

Considerations: Dependency mapping should look beyond the physical linkages between critical infrastructure assets and systems. It's important to account for cyber-based interconnections, where industrial control systems and other vital operations can be infiltrated, manipulated, and disrupted by malicious actors or technology failures. Other key dependencies include supply chain commonalities (including providers abroad) and the people-based connective tissue between di erent organisations, which may a ect service standards in a crisis. Indeed, it's important to appreciate how cross-organisational and cross-sectoral dependencies change between times of calm and during emergencies.

Adopting a broader view, events such as natural disasters or war can compromise supplies from a ected regions, on which key infrastructure or industries might rely. In a di erent way, localities that are dominated by a single business depend on the strategic and financial health of that company for employment and the viability of ancillary enterprises, and the collapse of that business will have cascading impacts on the community and the local economy.

Value: By examining how key trends might develop and interact and result in alternative futures, foresight and scenarios work is helpful for exploring the dimensions and potential gravity of the future risk landscape (including the evolution of emerging risks) and the associated vulnerabilities.

It's therefore useful for testing the ambition and validity of resilience strategies and for spurring better and earlier decisions about building preparedness and responsive capabilities. These might include the establishment of stockpiles and supply alternatives, the enhancement of emergency service provision and insurance capacity, and the development of new partnerships. The work also helps major investments to be planned, structured, and financed in a phased manner.

Considerations: Developing scenarios relevant for multiple time horizons is crucial. While shorter-term scenarios help planning for fast-onset events such as cyber outages, energy crises tend to play out as short-to-medium term emergencies, while slow-burn challenges such as declining water availability and food insecurity need to be planned for against longer time horizons.

Detailed risk scenario definition enables the anticipation of cascading impacts, an assessment of the adequacy of existing mitigations, and the timely identification of resilience solutions — albeit acknowledging that future realities will inevitably diverge from what has been envisaged. For risks that may be emerging, foresight exercises can spur further investigations, prompt the establishment of clearer responsibilities and authorities, and initiate business case development for enhanced or new capabilities.

The work should also help identify opportunities for improved information sharing between different parts of government and across critical sectors. The Data & Analytics Facility for National Infrastructure CReDo project uses information shared between different operators to create digital twins that help assess climate resilience across different scenarios.[34] Other projects may signal the need to develop information campaigns and strategic conversations with communities about actions they may need to take or that government will take.

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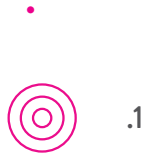
Value: Standards and benchmarks are most useful where clear targets or thresholds can be set, monitored, and reported on — especially those that are underpinned by hard data. For example, they are useful for monitoring the reliability of critical infrastructure and services, the achievement and preservation of designated storage or stockpile levels of critical goods, levels of compliance with key procedures, and the availability of human resources or capabilities in di erent critical services.

Well-articulated standards make expectations tangible, and well-chosen benchmarks become accessible proxies for critical issues that need to be explored. Standards can provide a yardstick for assessment and act as a basis for assurance; used in this way, they can support views of organisational maturity and the condition of arrangements for coordinating

Value: Whether discussion-based walkthroughs, tabletop simulations, or full-scale live rehearsals, exercises help validate plans, develop competencies

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Endnotes

1   UK Government (2022, December 19). The UK Government Resilience Framework. Retrieved April 18, 2023.

2   UK Government (2023, March 13). Integrated Review Refresh 2023: Responding to a more contested and volatile world. Retrieved April 18, 2023

3   UK Government (2023, August 3). National Risk Register, 2023 Edition. Retrieved August 3, 2023.

4   FM Global. (2022). 2022 FM global resilience index. Retrieved April 18, 2023.

5   Holzheu, T., Saner, P., & Lechner, R. (2022). Sigma 5/2019: Indexing resilience: A Primer for Insurance Markets and Economies. Swiss Re. Retrieved April 18, 2023

6   Lloyd's Register Foundation (2022). World Risk Poll Resilience Index. Retrieved April 18, 2023.

7   United Nations Office for Disaster Risk Reduction —

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