

Case Study 8

Integrating individual competence and organisational capability in the management of Risk and Resilience – as a route to organisational outperformance.

Summary

Societies throughout the world are coming under increasing stress from a range of influences. Principal amongst these are demographic pressures, resource constraints and environmental impacts.

In the UK water sector these manifest themselves in population growth, mismatches in water availability and demand, and environmental pressures. Such stresses are compounded by threats to safety, property, and service provision from weather events and rising sea levels - increasingly seen as attributable to climate change. For organisations charged with addressing these challenges, exhibiting resilience in the face of a spectrum of acute and chronic risks is now a material performance management issue. A key goal is achieving sustainability of service provision. Sustainability is typically characterised by consideration against 'three pillars' (social, environmental, and economic) but can, more tangibly, be linked to the UN's Sustainability Development Goals.



Resilience performance management has come to the fore via the Water Act 2014. This places an additional duty upon the economic regulator of the water sector in England & Wales (Ofwat) to 'further the resilience objective'. Ofwat's definition of resilience, and its integrative role on behalf of multiple water sector regulators, has led to incorporation of resilience considerations in a requirement for multiple, common performance commitments by individual water companies. Ofwat's regulatory outcome delivery incentivisation (ODI) mechanism can result in outperformance payments or underperformance penalties for variances from already stretching performance commitments written into companies' AMP7 business plans.

The L&DA risk and resilience course equips learners from across the water & environmental sectors to understand and implement the key concepts & processes necessary to succeed in the face of such challenges. Understanding the distinctions between risk, reliability, resilience, and sustainability is a first step.

Issues around Ofwat's initial steer

Resilience as a concept is subject to multiple interpretations. Ofwat's guidance during its five-yearly price review submission process (PR19: 2015-19) left application of its resilience principles open to interpretation by water companies – with mixed results. Similar interpretive requirements exist for regulatory bodies that have parallel operational responsibilities, such as the Environment Agency in England, and Natural Resources Wales. And the principles and lessons can be mirrored in the other UK 'nations' whose water sector performance management processes are benchmarked against those of England and Wales. Ofwat's initial resilience thinking relied upon the 4 x R's approach – Resistance, Reliability, Redundancy, and Response & Recovery. This had been set out in a Cabinet Office response¹ to a decade's experience of acute, natural hazard risks' impacts upon UK infrastructure. Whilst providing a good starting point, subsequent academic study has shown the distortive effect of some of the terminology used.

Concepts, terminology and definitions

The concepts described below apply to any organisational system faced with resilience challenges. In the water sector these may apply directly (e.g. to water companies' and environmental management bodies' performance commitments) or indirectly (e.g. to their partners or suppliers via contractual commitments).

By combining recent academic research² on reliability, resilience, and sustainability with established thinking on Enterprise-Wide Risk Management (EWRM) and distinctions between Risk Appetite & Risk Attitude it is possible to improve clarity of thought around these concepts. That thinking, when applied in the work environment, should improve risk and resilience performance outcomes.

Risk management, as a concept, is generally understood and practiced by individuals, often unconsciously. However, when applied within organisations by many individuals to multiple, often complex, issues the term is open to varied interpretation. Without clear direction, this can lead to sub-optimal organisational outcomes. Implementing efficient and effective organisational risk management processes is therefore a necessary precursor to achieving organisational risk and resilience management capabilities.

However, appropriate organisational attention to both risk and resilience is unlikely to be achieved without a clear, and shared understanding of the two concepts' terminology and definitions. Familiarity with frameworks / models in which those concepts, and their interrelated processes, can be placed permits such shared understanding to emerge. Three such frameworks / models are described here. Achieving this understanding is not a one-time occurrence, since individuals' competence and the resulting organisational capability will ebb and flow as turnover occurs amongst employees, contractors, suppliers, and agents of the organisation.

The Safe and SuRe Framework

The Framework was developed by Professor David Butler and his team at Exeter University's Centre for Water Systems in collaboration with a range of parties. These included several water companies, the Environment Agency, Natural Resources Wales, The Consumer Council for Water, environmental sustainability representatives and consultants). The underpinning research points the way forward from the, still current, Cabinet Office 4 x R's approach. Helpfully, it distinguishes between reliability and resilience with the threshold between the two being an appropriate performance measure (level of service).

Resilience has a wide range of, subtly distinct, definitions dependent upon system context (e.g. social, technical, and socio-technical). The water sector requires a complex interplay of individual competencies and organisational capabilities to fulfil its functions. These include the knowledge, skills, and behaviours necessary to discharge respective roles under normal conditions and those required to restore system performance to required levels when stressed by exceptional conditions. Water sector activities, arguably, represent a socio-technical system.

System reliability is perceived to be the probability of successful operation. It can be defined as 'the degree to which the system minimises level of service failure frequency over its design life when subject to standard loading'. The existence of performance measures (e.g. wastewater treatment effluent concentrations relative to permitted discharge limits) are thus intrinsic to the measurement of system reliability.

Resilience can be defined as 'the degree to which the system minimises level of service failure magnitude and duration over its design life when subject to exceptional conditions'.

Sustainability can be defined as 'the degree to which the system maintains levels of service in the long-term whilst maximising social, economic & environmental goals'.

Reliability is a necessary system attribute but does not ensure resilience. Likewise, exhibiting resilience is necessary but not sufficient for ensuring sustainability.

Maintenance of this pyramidal relationship relies on balancing performance (measured against levels of service) with a range of system properties. Performance can be maintained, recovered, or improved by the manipulation of those properties. Such properties include flexibility, diversity, redundancy & connectivity. Given the socio-technical nature of the organisation these properties apply equally to people as to infrastructure.

The thinking underpinning development of the Safe and SuRe framework represents a step forward from the Cabinet Office position, which confusingly mixes performance measures (reliability; response & recovery) with properties (resistance; redundancy). It also remedies the confusion frequently introduced into risk management discussions (and perpetuated in the Cabinet Office document) by conflation of the terms 'impact' and 'consequence'. Impact can be defined, at a system level, as 'the degree of non-compliance with a defined level of service'. Consequences can be defined as 'any social, economic or environmental outcomes for a recipient due to the effects of non-compliance with a level of service'.

Enterprise-Wide Risk Management

The Safe and SuRe framework anticipates the existence of an efficient and effective risk management capability. It expects the identification of a wide range of threats facing an organisation and their addressing by the institution of a range of control measures. This is consistent with Ofwat's expectation in 'Resilience in the Round'³ that 'companies will need to see the bigger picture if they are to deliver against customer expectations'.

The Safe and Sure framework recognises threats to reliable service provision as being mediated by the influences of the water system (in its broadest organisational sense). Conventional organisational risk management processes fulfil this role through the development of 'mitigation strategies'. Where fully mature, these processes will embrace and engage the entire organisation's actors and activities in Enterprise-Wide Risk Management. This 'EWRM' process aims to identify and assess material threats to the organisation's goals, and the critical processes underpinning their achievement.

EWRM permits the evaluation of alternative means of reducing the likelihood, and/or mitigating the impact of, such threats' crystallisation. The aim being to maintain service provision under 'standard loading' within pre-defined levels of service. Good practice typically requires the existence of multiple control barriers to safeguard against the existence of deficiencies in any one barrier. However, weaknesses of the EWRM approach include its limited ability to cope with uncertainty (i.e. the occurrence of a known threat whose likelihood and/or impact is either random, or so infrequent as to render prediction uncertain) and its blindness to unknown threats. Such top-down analysis also becomes increasingly complex where threats may have multiple impacts, or different threats may have the same impact. Despite the existence of multiple barriers (controls), these can, periodically, be defeated by such threats.



The Safe and Sure Framework's enhancement of EWRM

The Safe and Sure Framework encourages exploration of 'adaptation strategies'. Adaptation is defined as 'any action taken to modify specific properties of the water system to enhance its capability to maintain levels of service under varying conditions'. This differs from: EWRM's focus on creating barriers to prevent failure; or incident management's response and recovery focus. Adaptation analysis and resultant actions can be undertaken pre-event. Such an approach does not require assessment of the likelihood of an event's occurrence or the identification of the event's causation – thus accommodating uncertainties and unknown threats.

Coping strategies are designed to address the link between impacts and consequences. They are defined as 'any preparation or action taken to reduce the frequency, magnitude or duration of the effects of an impact upon a recipient.' This frees up analysis from EWRM's top-down, sequential focus on cause, impact, and consequence by reversing the focus. Consequences can be considered from a range of recipients' perspectives. For example: as customers in receipt of alternative water supply provision by the water company; as communities requiring an integrated response by a range of responders to flood incidents; as individual or community-based self-help providers; or as 'first responders' until other resources can be deployed.

Learning strategies are defined as 'embedding experiences and new knowledge in best practices'. Analysis can move beyond the conventional top-down EWRM approach, taking a middle-based approach by considering the impact of system failures without the need to identify their causation. Or it could adopt a bottom up, consequence-based approach to social, economic, or environmental impacts. Examples could inform flood resilience studies or identify critical infrastructure vulnerabilities.

However, a challenge inherent in both EWRM and the Safe and SuRe Framework is the influence of individuals and groups on risk decision making processes. The Risk Appetite & Risk Attitude (RARA) model serves to integrate these related themes.

The RARA Model

In the 'Risk Appetite' component of the RARA model⁴, developed by Hillson and Murray-Webster, individuals are acknowledged to have different risk preferences and risk propensities. These can be established by use of tools such as the Myers-Briggs Type Indicator test. Such preferences and propensities will interact with the organisation's risk culture. This may be a complex function of, for example, an organisation's governance mechanisms, leadership, decision making processes and the resources deployed to develop individuals' competencies and organisational capabilities. Such a combination of individual propensities and organisational culture will determine the organisation's Risk Appetite. This isn't amenable to immediate modification – it simply 'just is'. It informs the 'gut feel' answer to the question 'how much risk do we want to take'?



The Risk Attitude component of the RARA model provides a moderating influence by attempting to answer the question 'how much risk should we take?' It contains the conventional risk assessment, evaluation, and mitigation feedback loop consistent with EWRM's approach. But it encourages recognition that an individual or group's response to the inherent risk exposure may be coloured by a 'triple strand' of factors (conscious; unconscious; and affective) that distort perception of the risk and hence influence the attitude toward both risk mitigation and the setting of risk thresholds (levels of service). These risk thresholds are important in both relative (comparative performance) terms and in absolute (organisational risk capacity) terms.



Level 5 Award in the Management of Risk & Resilience in the Water & Environmental Industries

The Learning and Development Associates Level 5 Risk and Resilience course integrates these differing perspectives and approaches with a wider appreciation of leading-edge risk management knowledge, tools, and techniques to help individuals and organisations maintain and improve their reliability, resilience and sustainability performances. Thorough understanding, implementation and application of these approaches can be a significant enabler of organisational outperformance of regulatory performance commitments and stakeholder or contractual expectations.

References

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