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Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 March 2019. It was prepared by Subcommittee SSM/1/7, *City resilience*, under the authority of Technical Committee SSM/1, *Societal security management*. A list of organizations represented on these committees can be obtained on request to their secretary.

Information about this document

The URLs referenced in this document were accessed on 7 March 2019.

Use of this document

As a guide, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification or a code of practice and claims of compliance cannot be made to it.

Presentational conventions

The guidance in this standard is presented in roman (i.e. upright) type. Any recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. “organization” rather than “organisation”).

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

0 Introduction

Cities are the social and spatial framework for most people's lives. This concentration of people, infrastructure, businesses and institutions creates a focal point for risks and opportunities. When shocks occur, they disrupt the continuity of services that most people take for granted. Severe shock events tend to be uneven in their impact, hitting the most disadvantaged and vulnerable hardest, imposing human and economic cost, hampering growth and curbing opportunities.

We are living in an increasingly dynamic and changing world. For example, climate change is associated with an increased frequency and severity of extreme weather, and high summer temperatures can tip into periods of acute and lethal heat stress. These can be further exacerbated by energy and transport disruptions, raising social tensions. Large regional inequalities exacerbate shocks. However, long-term stresses can also be a source of advantage. For example, technological change, if exploited correctly, can bring new industries and prosperity to cities.

Cities are increasingly complex places that demand an ever more proactive and integrated approach to resilience which transcends departmental and organizational boundaries and embraces a comprehensive understanding and evidence base.

Traditionally, resilience has been addressed through managing relatively short-term, acute risks through security and emergency response and recovery. However, this foundation needs to be built upon with a broader, proactive approach that enables cities not just to survive but to thrive.

City resilience describes the capacity to manage shocks and continue through disruption in the short term, and to adapt to stresses and realize opportunities that present themselves in the longer term. More resilient cities are better able to realize their strategic ambitions through protecting their critical resources, creating and sustaining opportunities for enterprise, and empowering individuals, communities and places to adapt and prosper.

City resilience is vital for protecting, sustaining and enhancing economic, social, physical and environmental value.

A comprehensive approach to city resilience can provide a common platform and shared understanding for adapting to a dynamic environment, empowering local government, businesses, service providers, citizens and communities around a common goal. This requires a broad view of issues, from healthcare and education through to community cohesion and security. It addresses shocks, such as flooding and terrorism, through to stresses such as air quality and demographic change.

Resilience is the responsibility of everyone, not just the city authorities. Citizens and organizations, communities and businesses that are aware and empowered to act can enhance a city's resilience.

A highly resilient city has the **hindsight** to learn from the past and to recognize its strengths, weaknesses, values and direction; the **insight** to know what can and cannot be controlled right now; and the **foresight** to anticipate and adapt such that it avoids or addresses future disruptions and change, and exploits the opportunities to maximize value and prosperity.

A highly resilient city also possesses the following fundamental characteristics, each of which delivers benefits:

- **Inclusive:** provides a high quality of life for all its citizens, builds community cohesion and empowers people and communities to play an active role in their future: communities, institutions and business agree a vision for the city's future, and are aware of the shock and stress risks the city faces and their respective and complementary roles in protecting and developing the city into the future;

- **Adaptive:** flexibility is designed into the city's systems so that it can understand and adapt to the rapid pace of change to be fit for the future, and develop the agility to make decisions quickly and act to manage risks and seize opportunities;
 - **Reflective:** has a deep and comprehensive understanding of the city systems and risks, allowing resources to be prioritized to provide maximum benefit, and applies shared knowledge and learning to innovative and improve continuously;
 - **Durable:** is prepared and robust against identified shocks and stresses, reducing the social and economic impacts and attracting investment from people and businesses, thereby increasing productivity and competitiveness and allowing the city to thrive, not just survive; and
 - **Integrated:** working across sectoral boundaries to achieve gains in efficiency and effectiveness, for example by initiatives that address more than one issue or realize multiple gains, e.g. green infrastructure development can mitigate flood mitigation risk and heat stress, support biodiversity and sustainable transport, and contribute to community regeneration.
-

1 Scope

This British Standard provides practical guidance and tools for increasing city resilience. It is intended for use by all stakeholders who contribute to city resilience: citizens, organizations, communities, government and business. The guidance is also relevant to towns or a wider area, such as that covered by a local enterprise partnership (LEP).

This British Standard builds on the growing portfolio of guidance on this evolving subject from initiatives such as the UNISDR ten essentials [1] and the 100 Resilient Cities [2] programme (pioneered by the Rockefeller Foundation), and lessons learned from cities. It defines key concepts and terms, and sets out a general framework (see [Clause 5](#) and [Figure 2](#)) that assists the prioritization, integration and development of local strategies and plans, to increase a city's resilience. The guidance is intended to support the following activities:

- a) engage and motivate city, community and business leaders to address resilience and provide the necessary conditions for success;
 - b) improve a city's understanding of resilience challenges over the short, medium and long term;
 - c) support and build deeper, broader and more integrated capacity in the city; and
 - d) prioritize and strengthen investment decisions.
-

2 Normative references

There are no normative references within this British Standard.

3 Terms and definitions

For the purposes of this British Standard, the following terms and definitions apply.

3.1 city resilience

capacity of individuals, communities, institutions, businesses and systems within a city to survive, adapt and prosper in the face of shocks and longer term stresses

3.2 disruption

deviation from expected performance in any aspect of a city caused by a shock or stress

3.3 governance

system by which the city is directed, controlled and held accountable to achieve its core purpose over the long term

[SOURCE: BS 13500:2013, 2.7, modified]

3.4 hazard

source of potential harm

[SOURCE: BS EN ISO 22300:2018, 3.99]

3.5 horizon scanning

systematic examination of information to identify potential threats, risks, emerging issues and opportunities, beyond the short term, allowing for better preparedness and the incorporation of mitigation and exploitation into the policy making process

[SOURCE: Modified from *Review of cross-government horizon scanning*, 2013 [3]]

3.6 infrastructure

system of facilities, equipment and services needed for the operation of a city

[SOURCE: BS EN ISO 22300:2018, 3.117, modified]

3.7 interdependency

condition of dependency upon services and other inputs in which dependencies between two assets exist in both directions

[SOURCE: Developed from *Keeping the Country Running* [4]]

3.8 interoperability

ability of diverse systems and organizations to work together

[SOURCE: BS EN ISO 22300:2018, 3.128]

3.9 mitigation

limitation of any negative consequence from a particular shock or stress

[SOURCE: BS EN ISO 22300:2018, 3.146, modified]

3.10 preparedness

activities, programmes, and systems developed and implemented prior to an incident that can be used to support and enhance prevention, protection from, mitigation of, response to and recovery from disruptions, emergencies or disasters

[SOURCE: BS EN ISO 22300:2018, 3.172]

3.11 prevention

measures that enable a city to avoid, preclude or limit the impact of an undesirable event or potential disruption

[SOURCE: BS EN ISO 22300:2018, 3.173, modified]

3.12 protection

measures that safeguard and enable a city to reduce the impact of a potential disruption

[SOURCE: BS EN ISO 22300:2018, 3.182, modified]

3.13 redundancy

availability of backup installations or spare capacity in a network or system that enables operations to be switched or diverted to alternative parts of the network or system in the event of disruptions to ensure continuity of services

[SOURCE: Developed from *Keeping the Country Running* [4]]

3.14 resilience

capacity to absorb and adapt in a changing environment

[SOURCE: BS EN ISO 22300:2018, **3.192**, modified]

3.15 risk

effect of uncertainty on objectives

[SOURCE: ISO 22300:2018, **3.199**]

3.16 risk management

coordinated activities to direct and control a city with regard to risk

[SOURCE: PD ISO Guide 73:2009, **2.1**, modified]

3.17 risk reduction

actions taken to lessen the probability and/or negative consequences associated with a risk

[SOURCE: BS EN ISO 22300:2018, **3.210**, modified]

3.18 security

pan-city mitigating processes, procedures and technologies deployed by stakeholders to establish a state of being free from danger or threat

3.19 shock

event that causes disruption, harm or damage on such a scale that specific action needs to be taken to respond and resources need to be diverted

[SOURCE: UK Civil Contingencies Act 2004 [5], modified]

NOTE Examples include fires, earthquakes and floods.

3.20 stakeholders

person, group or organizations that can affect, be affected by, or perceive themselves to be affected by a decision or activity

[SOURCE: BS 13500:2013, **2.18**]

3.21 strategic partnership

arrangement by which statutory agencies, communities, voluntary organizations, the business sector and city authorities debate, agree, articulate and come to a mutual agreement to support the city's vision

3.22 stress

factor that continually changes or stresses society, commerce and systems over time, and exacerbates the risk of shocks or becomes a shock itself

[SOURCE: *Resilience Insight: 12 Cities Assessment*, modified [6]]

NOTE This could be caused by macro factors such as globalization and climate change or internal stresses such as traffic congestion or inequality

3.23 sustainability

state of the global system, including environmental, social and economic aspects, in which the needs of the present are met without compromising the ability of future generations to meet their own needs

[SOURCE: ISO Guide 82:2014, 3.1]

3.24 system capacity

capability of the city to meet the demands on its systems

3.25 system demand

sum of the risk and opportunity loading on city systems from shock and stress factors

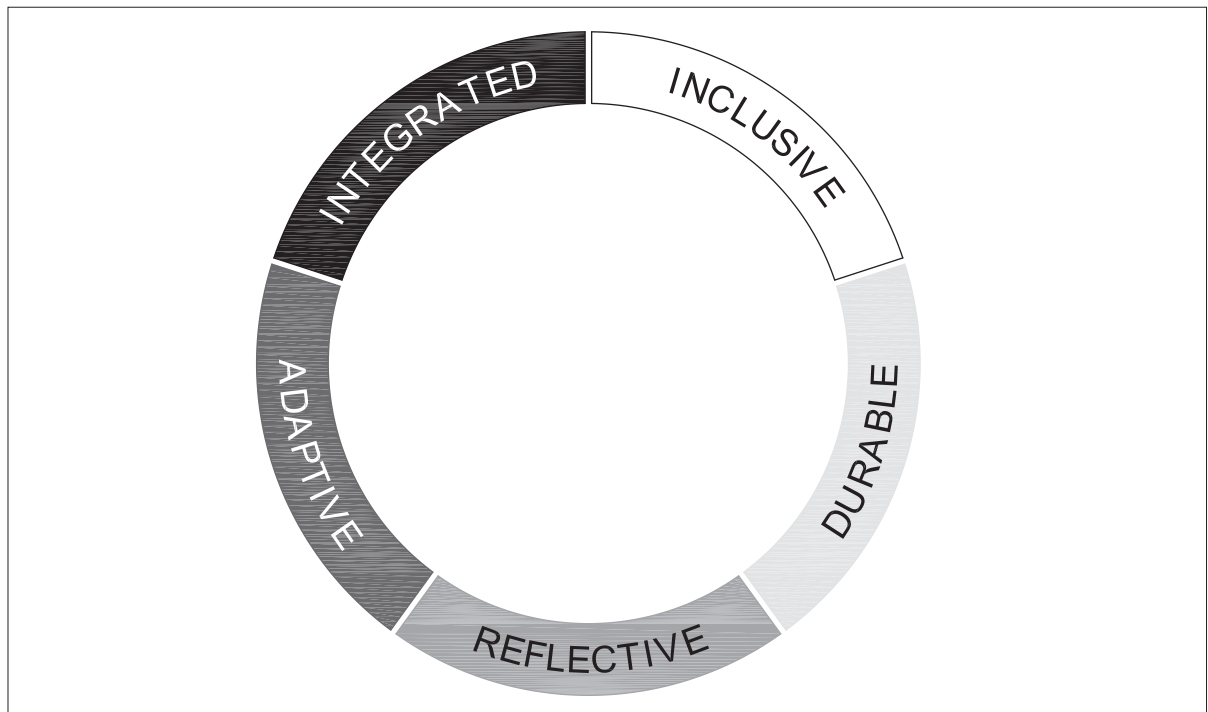
3.26 value

importance or worth that is delivered by the city, e.g. productivity, safety, quality of life

4 Fundamentals of city resilience

Five fundamentals underpin city resilience, all of which are required for a city to be, and remain, resilient. These fundamentals should guide city stakeholders in all activities, and should be at the core of behaviours, strategies, programmes and outcomes in the city, as shown in [Figure 1](#).

Figure 1 — *Fundamentals of city resilience*



Fundamental 1 – Integrated

City stakeholders should take a coordinated approach to strategy development and implementation, embedding resilience in all city decision making. Integration across systems, sectors, activities and risks, supported by a comprehensive evidence base, results in:

- a shared vision, understanding and ownership; and
- solutions that address more than one issue.

INTEGRATION CASE STUDY: POLICE SCOTLAND VIOLENCE REDUCTION UNITS

In 2005, Strathclyde Police set up a violence reduction unit (VRU) in an effort to reduce the level of violent crime. The VRU, which was directly funded by the Scottish government and had an arms-length relationship with Police Scotland, was later rolled out across Scotland. It adopted a public health approach to knife crime, in which the police work with those in the health, education and social work sectors to address the problem.

The results were dramatic: between April 2006 and April 2011, 40 children and teenagers were killed in homicides involving a knife in Scotland; between 2011 and 2016, that figure fell to eight.

Fundamental 2: Inclusive

Decision making should involve participation from all citizens and city stakeholders. This should fairly reflect the diversity of those within the city, resulting in outcomes that are owned by and deliver value for all, including the most disadvantaged.

INCLUSIVITY CASE STUDY: CHICAGO HEAT WAVE

In July 1995, Chicago experienced a sustained heat wave that led to at least 465 heat-related deaths over a two-week period. While all Chicagoans felt the heat, they did not suffer equally. The parts of the City with higher concentrations of low-income people, elderly people and African Americans experienced some of the highest heat-related death rates. Pinpointing the locations of these deaths revealed a map of climate vulnerability that highlighted stark racial divisions and inequality within Chicago.

However, the effects of the heat wave, deprivations and racial division were mitigated by social cohesion and social capital. Researchers found that three of the ten Chicago neighbourhoods with the lowest rates of heat-related deaths were low-income, African American communities. The reason that communities with similar demographics fared so differently was high levels of community interaction and organization that decreased isolation among residents. Put differently, there were fewer heat-related deaths in socially cohesive communities in which people were engaged in social or civic events.

Fundamental 3: Adaptive

Adaptability and flexibility should be built into planning and design. Agility and situational awareness should be developed to manoeuvre quickly in a changing risk landscape.

ADAPTABILITY CASE STUDY: FLEXIBLE LAND-USE POLICIES AND PLANNING IN SINGAPORE

Government agencies in Singapore worked together to review land use policies and planning guidelines to facilitate flexibility. Punggol North was designated as Singapore's first "Enterprise District" to test a new planning concept in which an appointed master developer (in this case, JTC) has the flexibility to change the use of individual sites within a district-level zoning plan, rather than each individual site being separately zoned. The master developer is responsible for delivering a people-centric vision, a comprehensive network of pedestrian walkways and cycling paths with green and community spaces, and district-level systems to manage waste and storm water. In Punggol North, JTC's business park now shares facilities and collaborative spaces with the campus of the Singapore Institute of Technology, creating synergies between academia and businesses.

Fundamental 4: Reflective

Continuous assessment, building knowledge, learning and improvement should be embedded across the city.

REFLECTION CASE STUDY: THAMES ESTUARY FLOOD RISK PROJECT TE2100

TE2100 was the first major flood risk project in the UK to put climate change adaptation at its core. It also fell within a national aim to reduce climate change and its consequences. Working with the Met Office Hadley Centre and other key organizations, the Environment Agency used the latest science to develop an understanding of future climate change impacts in the Thames estuary and recommended a series of interventions to be taken up until to 2100.

At the first five-year review, changes to the estuary, its populations and commerce were in line with projections, so the action plan and investment profile remained unchanged.

Fundamental 5: Durable

Risk and vulnerabilities within the city's systems should be addressed with layers of protection, robust design, redundancy and fail-safes, balancing risk, opportunity and cost.

DURABILITY CASE STUDY : NEW YORK'S RESPONSE TO HURRICANE SANDY

Hurricane Sandy was the largest ever recorded Atlantic hurricane, causing damage of around US\$70 billion in the US. While 24 US states were affected, it was the inundation of Lower Manhattan that generated the largest shock waves. The death, destruction and general havoc caused by Sandy laid bare the inadequacies of current approaches to coastal flood risk management and generated public outrage.

The response was to develop blue-green infrastructure to recreate a naturally-oriented water cycle that combined and protected the hydrological and ecological values of the urban landscape, while providing resilient measures to deal with flood and drought events. The Big U project creates publicly accessible green spaces intended to deliver social, economic and environmental benefits, even when the defences do not keep out storm surges, which is most of the time.

The lesson from Sandy is that, while there are good reasons why huge population centres have developed adjacent to and just a few feet above the ocean, living there involves flood risk; a risk that cannot be eliminated, but which can and needs to be reduced to a level that is acceptable, or at least tolerable.

5 Resilience framework

5.1 Overview

The resilience framework (see [Figure 2](#)) set out in this clause is an iterative process for building city resilience. The fundamentals of resilience are core to building a resilient city and are therefore a key consideration at every stage of the framework.

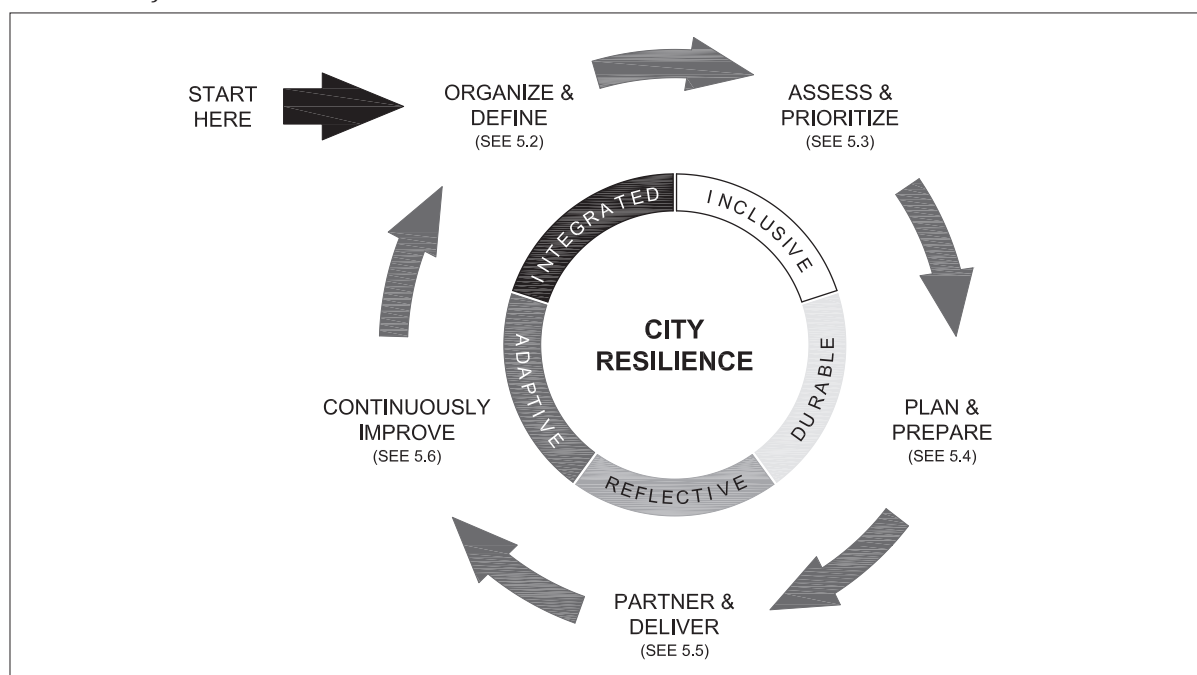
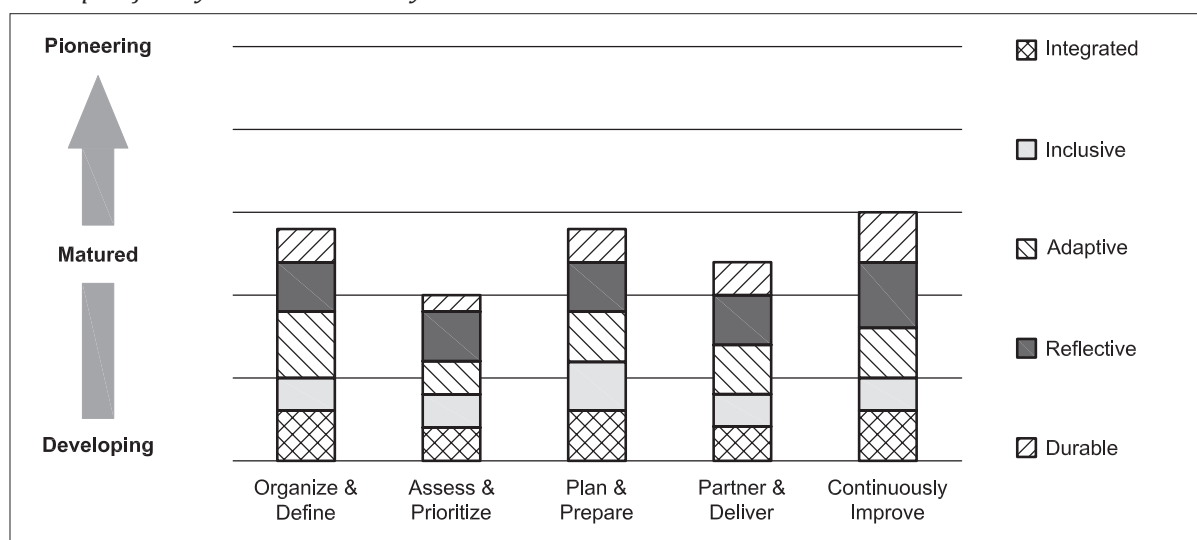
Depending on its maturity and need, a city may choose to use different entry points in the framework.

[Figure 3](#) shows an example resilience maturity assessment, demonstrating that cities have different strengths as a starting point.

[Subclauses 5.2](#) to [5.6](#) set out the steps shown in [Figure 2](#) and should be followed to provide an initial maturity assessment. A decision should then be taken as to a target level of maturity. Guidance in the subclauses can then be followed to build capacity. At the end of each subclause the state of practice can be assessed against the framework (developing through pioneering; see [Annex A](#)). Useful references and resources are also provided to support the city.

At the end of this process a second maturity assessment should be conducted to determine how this work has impacted the level of resilience. This is an ongoing process of re-evaluation in order to manage change and build capacity.

The framework can also be used in parts, or applied to individual projects, programmes or systems, depending on the city's needs and opportunities.

Figure 2 — Framework for resilience**Figure 3** — Example of a city resilience maturity assessment

5.2 Organize and define

5.2.1 Overview

Cities have long been concerned with the health, wellbeing and security of their citizens and economy. All cities have developed some level of resilience against key shocks and stresses and, indeed, many cities have highly evolved resilience practices. However, far fewer cities have actively sought to bring all resilience elements together within a comprehensive strategy or master plan. If approaching this for the first time, the first step is to organize and define the city and its systems, and define what resilience means in the short, medium and long term, as set out in [5.2.2](#) to [5.2.6](#).

5.2.2 Leadership and governance

Effective governance and leadership are key to enhancing the city's resilience. A range of governance and leadership structures can be adopted by the city, and the flexible approach set out in this clause is applicable to all. In each case, local leaders should determine where and with whom

accountability and responsibility for the resilience agenda resides. Through effective engagement and incentivization of stakeholder groups across sectors, the chosen structure can enable integration and inclusion and provide clear responsibilities and resource allocation. This can be facilitated through the appointment of a “chief resilience officer” or similar coordinating role with the necessary authority.

Governance arrangements should be designed to enable leaders to champion the resilience agenda. Leaders should:

- advocate;
- promote and legitimize;
- take ownership;
- ensure that resilience has a place in the city’s strategic ambition, policy, budget/resourcing plans, etc.;
- appoint someone with appropriate authority to progress the city resilience agenda;
- provide oversight;
- seek assurance; and
- ensure accountability.

The challenge for city leaders is then to engage, empower and energize the key stakeholders to form an effective and networked approach to deliver the resilience agenda.

CASE STUDY: RESILIENCE IN GOVERNANCE CASE STUDY: GLASGOW

The City of Glasgow built a network of partners with common concerns and a willingness to share resilience ownership by:

- a) council leaders agreeing to draft a resilience strategy and appoint a chief resilience officer;
- b) developing political leadership and involving leaders from other partners; and
- c) developing an inclusive process involving partner agencies, business and local communities.

The leadership and shared ownership across all key stakeholders resulted in a resilience strategy for the city.

CASE STUDY: STAKEHOLDER PLATFORM: LOCAL RESILIENCE FORUMS

In England and Wales the Civil Contingencies Act 2004 [5] provides a local resilience forum (LRF) structure based on police force boundaries and sets responsibilities for dealing with shocks. Depending on local circumstance, this could provide a foundation for a strategic partnership upon which to build a broader coalition of stakeholders to address both shocks and stresses, and maximize efficiency and effectiveness.

5.2.3 Stakeholder engagement

There are many formal and informal stakeholders with an interest in and responsibility for city resilience. These groups should be identified/mapped, assessed, engaged and empowered to play their part in building resilience.

The stakeholders within a strategic partnership should comprise a diverse group and reflect local circumstances, and may include:

- a) emergency services,
- b) infrastructure, utility and transport providers;

- c) a senior civic elected leader(s);
- d) strategic leads from local government, health and education;
- e) the chief resilience officer or similar accountable coordinating role;
- f) senior representation from the business sector;
- g) senior representation from the voluntary sector;
- h) senior representation from the faith sector;
- i) representation from community, relevant associations, groups and forums;
- j) educational establishments;
- k) local media;
- l) a secretariat with programme and project managers; and
- m) subject matter experts, where relevant, and custodians of key knowledge.

These stakeholders should cooperate, share information and understand each other's viewpoints, and form a strategic partnership that aligns the partners' interests with the interests of the city. This effort should be coordinated and the priorities aligned to agree the city's vision, values, objectives and priorities. This can be achieved by bringing together a group of stakeholders in a forum to agree what matters to the city and contribute to the development of the resilience programme (see [5.2.4](#)).

STAKEHOLDER ENGAGEMENT CASE STUDY: CITY OF BELFAST AGENDA-SETTING WORKSHOP

Following Belfast's successful application to join the 100 Resilient Cities initiative in 2016, around 80 key stakeholders from the public, private and community/voluntary sectors were brought together to discuss the priorities for a resilient Belfast and identify key areas on which the City's resilience strategy could focus. The workshop gained information about stakeholders' perceptions of resilience and sought to enhance awareness and understanding of the City Resilience Framework and its drivers. One session involved splitting the stakeholders into seven groups, with each group being asked to identify five shocks and stresses to be addressed as priorities. All seven groups included segregation, disengaged communities and social exclusion in their top five priorities. Other issues identified as priorities included ageing infrastructure, political leadership/governance, deprivation, poverty and coastal planning. Another workshop sought to identify the interdependencies between the "top five" shocks and stresses, concluding that segregated and deprived communities are often impacted most by shocks and stresses. The workshop participants then identified positive interventions which could make the greatest contribution to addressing more than one issue. Most of the interventions identified related to economy and society.

STAKEHOLDER ENGAGEMENT CASE STUDY: CITY OF BRISTOL COUNCIL “SOUNDING BOARD”

When assessing Bristol’s existing level of resilience and identifying areas for further work, the Chief Resilience Officer developed a stakeholder engagement plan to:

- a) identify, and harness the commitment of, public, private, statutory and third sector stakeholders with an interest in city resilience; and
- b) influence those with power but with less interest in resilience.

In addition, a high-level but informal resilience “sounding board” was set up comprising a selected group of 12 to 15 city stakeholders. The Board held bi-monthly meetings to support the resilience assessment and provide an “expert and challenging exchange of ideas on all aspects of Bristol’s resilience as they emerge through the strategy development process and on-going implementation”. The Chief Resilience Officer, with the support of the board, engaged with more than 1 600 people from across the City and region in order to create a resilience strategy for Bristol.

5.2.4 Vision and values

The vision and values determined through stakeholder engagement should provide a clear understanding of what is important to the city (its values) and what needs to be promoted through the adoption of the resilience framework and the associated programme, and in what order of priority.

The resilience programme is intended to protect the systems that deliver these and pursue opportunities to increase value within the changing context. [Figure 4](#) provides examples of city values and systems. A broad scope should be defined, encompassing social, economic, environmental, governance and physical systems.

Figure 4 — *Example city values and systems*

5.2.5 Citizen engagement

Citizens who are aware and empowered to act can enhance the city's resilience. This requires a balance between the ownership for resilience building between citizens, organizations, communities, government and business. Citizen participation should support the creation of both strategies and delivery of resilience actions.

Examples of activities that can be used to promote citizen engagement and participation include:

- a) education programmes;
- b) joint efforts to produce a mutually valued outcome;
- c) workshops;
- d) community level projects;
- e) publicity campaigns and media engagement; and
- f) grass roots initiatives.

Managing public expectations is important. Maintaining a dialogue on likely outcomes in the face of increasing shocks and stresses raises awareness, empowers citizens and manages expectations.

ENGAGEMENT CASE STUDY: GLASGOW

Glasgow sought to make its Resilience Strategy inclusive by:

- a) engaging with citizens, as well as partner organizations and stakeholder groups: more than 3 000 Glaswegians took part in events while the City's strategy was being developed; and
- b) striving to achieve a holistic character to the work, recognizing that a city only becomes resilient if all its citizens become more resilient, and seeking to engage all sectors and communities.

This strategy recognized that engagement with the wider public and a broad range of interest groups is crucial in determining what works best in a city. Inclusivity is vital to achieving a resilient city. Resilient actions are not only top-down but need to be bottom-up in design. A resilience strategy requires shared ownership from across the city.

5.2.6 Shared understanding

Stakeholder collaboration should lead to a shared understanding of resilience, risk, vulnerability and opportunity across the city. This may be facilitated by a shared database, which is managed appropriately to:

- a) allow access to a shared understanding of a given situation and facilitate appropriate planning and responses;
- b) support stakeholder alignment; and
- c) protect and assure the information available.

In this way, information sharing between partners is enhanced, improving decision-making and the effectiveness of cross-sectoral programmes.

DATA SHARING CASE STUDY: BRISTOL

Many data sets, including weather data, flood data, air quality, congestion, major incidents, are collected on many platforms and are available to the public through the "Open Data Bristol" platform:

<https://opendata.bristol.gov.uk/pages/homepage/> [7].

5.2.7 Maturity assessment

[Table 1](#) provides guidance on the types of initiatives and approaches for developing and sustaining comprehensive city resilience pertinent to the "organize and define" step. The city should evaluate its performance against the scale given in [Annex A](#) (0 - 5) for each box in [Table 1](#) to determine where it is on the journey to becoming a pioneering resilient city.

The statements within the table are for guidance only and are stated as outcomes for clarity. Once completed, a graph can be constructed, as shown in [Figure 3](#).

Table 1 — *Organize and define: maturity criteria*

Framework	Integrated	Inclusive	Adaptive	Reflective	Durable
Leadership and governance	There are clear and accountable expectations of behaviour and performance for leaderships, including high levels of transparency and integrity. A cross-sectoral platform is established providing leadership, coordination and strategic oversight across the city. A city resilience cross-sectoral single point of coordination is appointed (e.g. chief resilience officer)	Engagement strategies are focused on building relationships between interested parties and growing bridging and bonding capital. Inclusive terms of reference are established for all resilience-related activities and inclusive behaviours are promoted. Open and collaborative behaviours are rewarded; diversity of people and thought is championed; and difference is embraced as a means of making new connections, ideas and innovation. Terms of reference empower stakeholders to challenge behaviours that hinder inclusivity and engagement.	Decisions take into account the best possible evidence, including future scenarios and innovations. Supportive behaviours embracing innovation and removing barriers are rewarded. Resources are focused on initiatives with the best potential to increase city value and values. City resilience is structured around a mixture of centralized and decentralized networked interested parties coordinated through a central programme. Structures, roles and responsibilities for the rapid gathering, collation, sharing and use of data and information are defined.	Leaders draw on best possible evidence to support visioning, roadmap development and decision making. Assurance through independent audit, test and exercise is in place and empowered to drive learning across organizations. Principles of the learning organization and agility are adopted across organizations.	Leaders publicly advocate for a common resilience vision that is fit for the long term. Leaders are resilience champions with overt ownership of key resilience agendas. Interested parties are empowered to lead initiatives. Open, transparent and inclusive governance is demonstrably in place.

Table 1 (continued)

Framework	Integrated	Inclusive	Adaptive	Reflective	Durable
Stakeholder engagement	Values are aligned and integrated between organizations, businesses, communities, government and citizens in the city. There is alignment and integration of policies, procedures and practices for organizations in the city. There are clear definitions of agreed roles, responsibilities and resource commitments. Roles, responsibilities and board level representation are defined and underpinned by appropriate governance arrangements and support.	There is a defined programme of stakeholder engagement that respects the needs of all groups in the city. Under-represented groups are identified and actively engaged.	There is a programme to actively seek to increase the tempo of change within the city and remove barriers. Causes of change resistance amongst those affected are acknowledged and actively managed through a strong change narrative and effective engagement. There is a clear agenda of investment in infrastructure that is flexible to needs. Flexibility is enabled across organizations through the adoption of flat structures and empowered teams.	The approach to stakeholder engagement builds on existing policies, initiatives and capacity. Learning happens between organizations, businesses, communities, government and citizens, sharing experience and knowledge. Strategic decisions concerning the city are open and transparent, with clear lines of accountability. This includes decisions to do nothing or postpone actions.	Resilience has a place in the city's strategic ambition, policy, budget/ resourcing plans, etc. Stakeholder mapping underpins a stakeholder engagement plan which is kept current.
Vision and values	Leadership from across sectors is aligned to a common vision and roadmap for a resilient future. Core city values are defined across sectors and communities, canvassing the views of a broad stakeholder base.	The city vision has been created in a way that is fully inclusive of all city groups and appropriate channels are used to communicate with all groups. Terms of reference and engagement are defined to ensure every part and aspect of the city is actively included.	The city vision is regularly reviewed in light of future scenarios, needs and changes in circumstance. The vision and values are people and outcome-focused, and strongly influenced by the need to create a resilience culture within the city.	The city vision is cognisant of what has gone before, taking full account of previous narratives (including history and heritage), efforts and learning. The history and stories important to the city are curated and linked to the city's core vision and values within relevant strategies. Existing measures that support a stable environment and economy are defined.	The city vision and agendas are reinforced by strong public mandates and take into account long-term projections. Leaders from across sectors act as champions to lead city resilience initiatives.