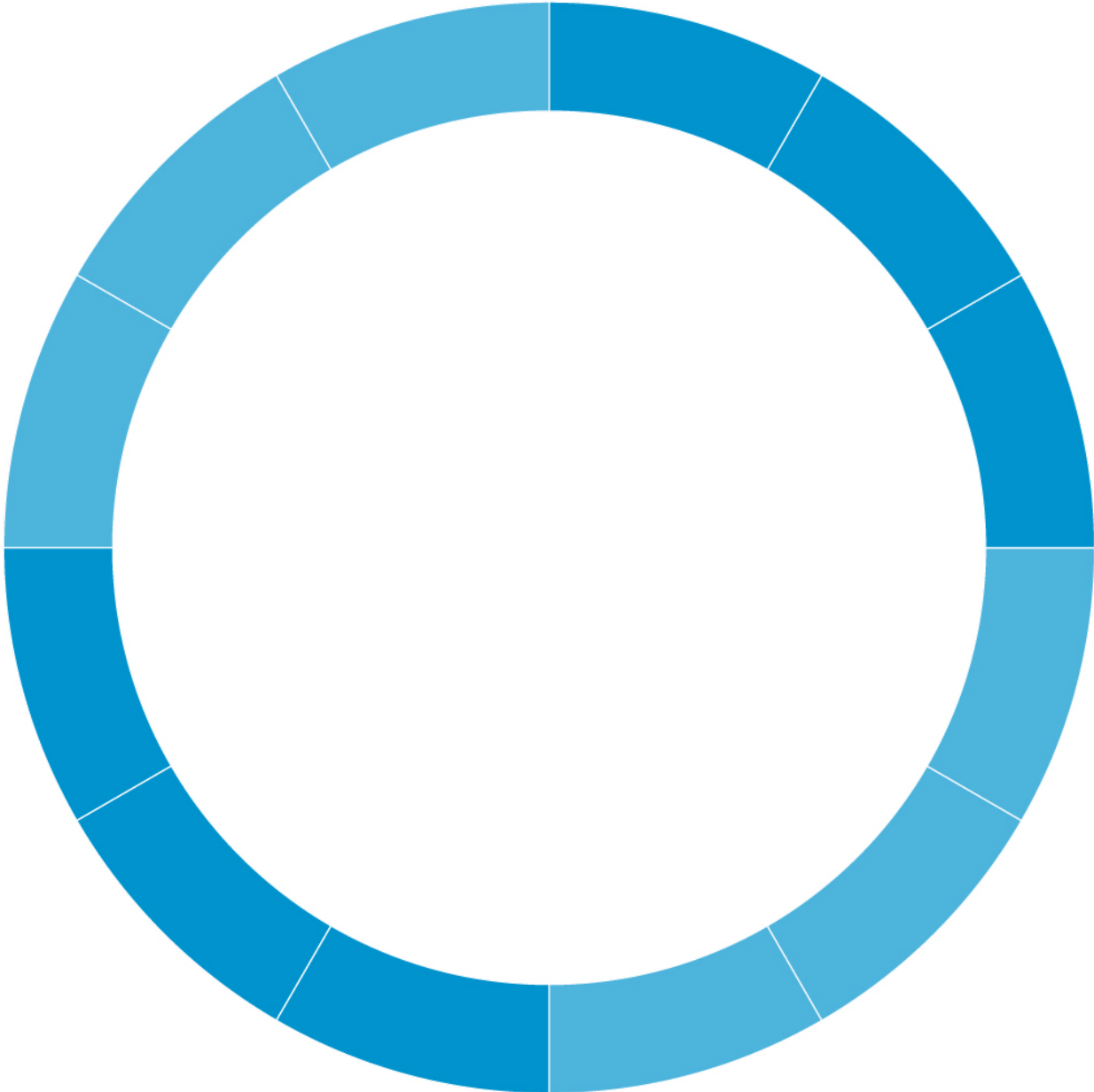


City Resilience Framework

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THE
ROCKEFELLER
FOUNDATION

ARUP

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100 RESILIENT CITIES



THE CITY RESILIENCE FRAMEWORK (CRF)

The City Resilience Framework is a unique framework developed by Arup with support from the Rockefeller Foundation, based on extensive research in cities. It provides a lens to understand the complexity of cities and the drivers that contribute to their resilience. Looking at these drivers can help cities to assess the extent of their resilience, to identify critical areas of weakness, and to identify actions and programs to improve the city's resilience.



CRF by the Numbers

- 4 Dimensions
- 12 Drivers
- (based on) 7 Qualities

Dimensions

Health & Wellbeing: The health & wellbeing of everyone living and working in the city.

Economy & Society: The social & financial systems that enable urban populations to live peacefully, and act collectively.

Infrastructure & Environment: Effective leadership,empowered stakeholders, and integrated planning.

Leadership & Strategy: The way in which man-made & natural infrastructure provide critical services and protects urban citizens.

Dimension	Driver
Health & Wellbeing	1. Meets Basic Needs: Provision of essential resources required to meet a person's basic physiological needs.
	2. Supports Livelihoods and Employment: Livelihood opportunities & support that enable people to secure their basic needs. Opportunities might include jobs, skills training, or responsible grants & loans.
	3. Ensures Public Health Services: Integrated health facilities & services, & responsive emergency services. Includes physical & mental health, health monitoring & awareness of healthy living & sanitation.
Economy & Society	4. Promotes Cohesive and Engaged Communities: Community engagement, social networks & integration. These reinforce collective ability to improve the community & require processes that encourage civic engagement in planning & decision-making.
	5. Ensures Social Stability, Security and Justice: Law enforcement, crime prevention, justice, & emergency management.
	6. Fosters Economic Prosperity: While Driver 2 is about individual livelihoods, Driver 6 is about the economy on a wider scale. Important economic factors include contingency planning, sound management of city finances, the ability to attract business investment, a diverse economic profile & wider linkages.
Infrastructure & Environment	1. Enhances and Provides Protective Natural & Man-Made Assets: Environmental stewardship, appropriate infrastructure, effective land use planning & enforcing regulations. Conservation of environmental assets preserves the natural protection afforded to cities by ecosystems.
	2. Ensures Continuity of Critical Services: Diversity of provision, redundancy, active management & maintenance of ecosystems & infrastructure, & contingency planning
	3. Provides Reliable Communication and Mobility: Diverse & affordable multi-modal transport networks & systems, ICT & contingency planning. Transport includes the network (roads, rail, signs, signals etc.), public transport options & logistics (ports, airports, freight lines etc.)

Dimension	Driver
Leadership & Strategy	4. Promotes Leadership and Effective Management: Relating to government, business & civil society. This is recognisable in trusted individuals, multi-stakeholder consultation, & evidence-based decision-making.
	5. Empowers a Broad Range of Stakeholders: Education for all, access to up-to-date information, & knowledge to enable people & organizations to take appropriate action. Along with education & awareness communication is needed to ensure that knowledge is transferred between stakeholders & between cities.
	6. Fosters Long-Term and Integrated Planning: Holistic vision, informed by data. Strategies/plans should be integrated across sectors & land-use plans should consider & include different departments, users & uses. Building codes should create safety & remove negative impacts.

QUALITIES OF RESILIENT SYSTEMS

Resilient systems withstand, respond to, and adapt more readily to shocks and stresses to bounce back stronger after tough times, and live better in good times.

Extensive research has shown that resilient cities demonstrate seven qualities:

- **Reflectiveness**
- **Resourcefulness**
- **Robustness**
- **Redundancy**
- **Flexibility**
- **Inclusiveness**
- **Integration**

Reflectiveness and **resourcefulness** are about the ability to learn from the past and act in times of crisis.

Individuals and institutions that are **reflective** use past experience to inform future decisions, and will modify standards and behaviours accordingly. For example, planning processes that are reflective are better able to respond to changing circumstances.

Resourceful people and institutions are able to recognise alternative ways to use resources at times of crisis in order to meet their needs or achieve their goals. For example, although households in cities in Chile's Central Valley use water provided by municipal networks on a daily basis, the service is often interrupted after strong earthquakes. As a response, many households maintain wells to continue provision of water.

Robustness, redundancy and **flexibility** are qualities that help to conceive systems and assets that can withstand shocks and stresses as well as the willingness to use alternative strategies to facilitate rapid recovery.

Robust design is well-conceived, constructed and managed and includes making provision to ensure failure is predictable, safe, and not disproportionate to the cause. For example, protective infrastructure that is robust will not fail catastrophically when design thresholds are exceeded.

Redundancy refers to spare capacity purposively created to accommodate disruption due to extreme pressures, surges in demand or an external event. It includes diversity where there are multiple ways to achieve a given need. For example, energy systems that incorporate redundancy provide multiple delivery pathways that can accommodate surges in demand or disruption to supply networks.

Flexibility refers to the willingness and ability to adopt alternative strategies in response to changing circumstances or sudden crises. Systems can be made more flexible through introducing new technologies or knowledge, including recognising traditional practices. For example, in times of crisis, cities may redeploy public buses for emergency evacuations.

Inclusive and **integrated** relate to the processes of good governance and effective leadership that ensure investments and actions are appropriate, address the needs of the most vulnerable and collectively create a resilient city - for everyone.

Inclusive processes emphasise the need for broad consultation and 'many seats at the table' to create a sense of shared ownership or a joint vision to build city resilience. For example, early warning reach everyone at risk will enable people to protect themselves and minimise loss of life and property.

Integrated processes bring together systems and institutions and can also catalyze additional benefits as resources are shared and actors are enabled to work together to achieve greater ends. For example, integrated city plans enable a city to deal with multidisciplinary issues like climate change, disaster risk reduction or emergency response through coordination.

[Learn more](#) about Arup and the development of the CRF.