Developing approaches and standards for Urban Resilience

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ISO Definition of Resilience

"The ability to absorb and adapt in a changing environment"
Why City Resilience?

70% of World’s population will live in cities by 2050

75% of World’s energy consumed in cities

80% of World’s greenhouse gases produced by cities
BS67000 City Resilience Guide

- Developed by diverse group: consultants, cities, cabinet office, 100RC, infrastructure providers, universities.
- Provides practical guidance and tools
- Builds on the growing portfolio of guidance
- Intended for use by all stakeholders who contribute to city resilience
The changing perspective of resilience.

Developing
- Shock response/recovery focus
- Reactive

Matured
- Mitigation & response
- Horizon Scanning
- Shocks & Stresses
- Prevention and sustainability

Pioneering
- Thriving not just surviving
- Resilience in the round
- Value and outcome based
Fundamentals
Resilience Framework.

**ORGANIZE & DEFINE**
- Governance Arrangements
- Engage Stakeholders
- Empower Citizens & Organizations
- Agree Values/Goals
- Shared Understanding

**ASSESS & PRIORITIZE**
- Shocks, stresses, trends
- City Systems Mapping
- System Demand
- System Capacity
- Gap Assessment
- Prioritization

**PLAN & PREPARE**
- Resilience Strategy Development of Options
- Building the Business Case
- Secure Funding

**PARTNER & DELIVER**
- Manage programs
- Capacity Building
- Awareness Raising

**CONTINUOUSLY IMPROVE**
- Re-assess
- Reflect, learn, innovate & improve

**BUILD CAPACITY**
Value & Systems Based Approach

System Demand
- Technology
- Societal
- Natural
- Health
- Security

System Capacity
- Integrated
- Adaptive
- Inclusive
- Durable
- Reflective

City Values
- Governance
- Security & Safety
- Education
- Health & Social Services
- Employment
- Business Community
- Trade
- Natural Environment
- Food & Water
- Infrastructure & Housing
- ICT & Comms
- Mobility
- Community Cohesion
- Diversity & Inclusivity
- Sustainable
- Culture & Heritage
- Culture & Heritage
- Quality of Life
- Safe & Secure
- Economic Stability & Growth
- People & Communities
- Environment & Natural Resources
- Mobility
- Health & Wellbeing

System

bsi.
<table>
<thead>
<tr>
<th>Framework</th>
<th>Integrated</th>
<th>Inclusive</th>
<th>Adaptive</th>
<th>Reflective</th>
<th>Durable</th>
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<tbody>
<tr>
<td>Stakeholder engagement</td>
<td>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.</td>
<td>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.</td>
<td>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.</td>
<td>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.</td>
<td>Resilience has a place in the city’s strategic ambition, policy, budget/resourceing plans, etc. Stakeholder mapping underpins a stakeholder engagement plan which is kept current.</td>
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<td>Vision and values</td>
<td>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.</td>
<td>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.</td>
<td>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.</td>
<td>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.</td>
<td>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.</td>
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Evaluation

City Resilience Maturity Evaluation

- Pioneering
- Matured
- Developing

Legend:
- Blue: Integrated
- Orange: Inclusive
- Gray: Adaptive
- Yellow: Reflective
- Blue: Durable

Steps:
- Organize & Define
- Assess & Prioritize
- Plan & Prepare
- Partner & Deliver
- Continuously Improve
Organize & Define

- Infrastructure-related data
- Demographic data
- Socio-economic data
- Employment statistics
- Environment-related data
- Community/neighbourhood related data
- Housing
- Disaster risk data
- Disaster loss data
Assess & Prioritize

BEIRUT, LEBANON
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<tr>
<th>Programmes</th>
<th>SHORT</th>
<th>MEDIUM</th>
<th>LONG</th>
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<tr>
<td>Cross-Sectoral Platform for DRM Chaired by Mayor (CSP-DRM)</td>
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<td>Improve Data Collection &amp; Sharing</td>
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<td>Engagement &amp; Coordination Plan</td>
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<td>Governance and structure improvements</td>
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<td>Raise awareness of risks and actions</td>
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<td>Reduce earthquake risk</td>
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<td>Develop and maintain a risk-sensitive spatial plan</td>
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<td>Improve infrastructure Resilience</td>
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<td>Adaptation to Climate Change</td>
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<td>Manage Coastal resilience</td>
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<td>Risk Reduction Strategy Implementation &amp; Maintenance</td>
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<td>Response Plan Implementation &amp; Maintenance</td>
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<td>Recovery Plan Implementation &amp; Maintenance</td>
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<td>Implement People Centred Early Warning System</td>
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<td>Health improvement programs - communicable and non-communicable disease</td>
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<td>Integrated Community Resilience Building</td>
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<td>Improve mobility – mass transit</td>
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<td>Improve Air Quality</td>
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<td>Enable more job opportunities and improvements in productivity</td>
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<td>Greater traffic regulation &amp; enforcement</td>
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Plan & Prepare: Building the business case for investment

Annualised Potential Increase in Productivity

- People Centred Early Warning Implementation
- Health Improvement Programmes, both Communicable and non-communicable disease
- Improve urban mobility - mass transit
- Integrated community resilience building
- Governance & Structure Improvements
- Improve data collection & sharing
- Enable more job opportunities and improvements in productivity
- Cross Sectoral Platform for Disaster Risk Management Chaired by Mayor (CSP-DRM)
- Response Plan Implementation & Maintenance
- Greater Traffic Regulation & Enforcement
- Improve Air Quality
- Develop and maintain a risk sensitive spatial plan
- Improve infrastructure resilience
- Adaptation to climate change
- Manage coastal resilience
- Reduce Earthquake Risk
- Raise risk awareness and actions
- Engagement & Coordination Plan
- Develop information management system
Earthquake Risk Reduction

- Seismic Micro-zonation Map
- Vulnerability of existing critical buildings & infrastructure
  - Hospitals
  - Schools
  - Water Supply
  - Roads/bridges
  - Historic/Cultural buildings
  - Housing Stock
- Improvements in codes and enforcement
- Retrofit mandates, legislation & incentives
- Community awareness and preparedness programs
- Response & recovery plans
Coastal Resilience

- Tsunami risk assessment
- Coastal flood risk assessment
- Sea level rise risk assessment
- Flood defense assessment
- Contingency Planning
Recovery Planning

- Recovery Plan Framework
- Including build back better principles (revitalisation)
- Learning & improving
- Risk Sensitive Spatial planning
Community Resilience

- Increase Equality & Integration
- Target vulnerable communities
- Build social capital & community cohesion
- UNDP & Red Cross already have programs
Improve Mobility

- Develop mass transit systems - buses, trams, park and ride
- Provide cycleways and pedestrian zones
- Provide incentives to use these systems
- Utilise SUMP principles

Benefits
- Reduce emissions
- Reduce traffic congestion
- Improve air quality
- Link communities
- Provide health benefits - cycleways, pedestrian zones
- Increase green space
- Increase productivity
Arup’s Strategy Portfolio

- Amman Resilience Strategy
  - May 2017

- Resilient Byblos
  - April 2016

- Resilient Glasgow
  - September 2016

- Resilient Resilience Strategy
  - November 2016

- Resilient Thessaloniki
  - March 2017

- Santiago Humano & Resiliente
  - March 2017

- SANTA FE Resilience Strategy
  - June 2017

- Resilient Toyama
  - July 2017

- Rome Resilience Strategy
  - June 2018

- Montevideo Resilience Strategy
  - September 2018

- Buenos Aires Resiliente
  - September 2018
Thank You!

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