

COVID-19 and its implications for DRR & Resilience

3 July 2020

The Disaster Resilience Scorecard for
Cities and the Public Health System
Resilience Scorecard Addendum

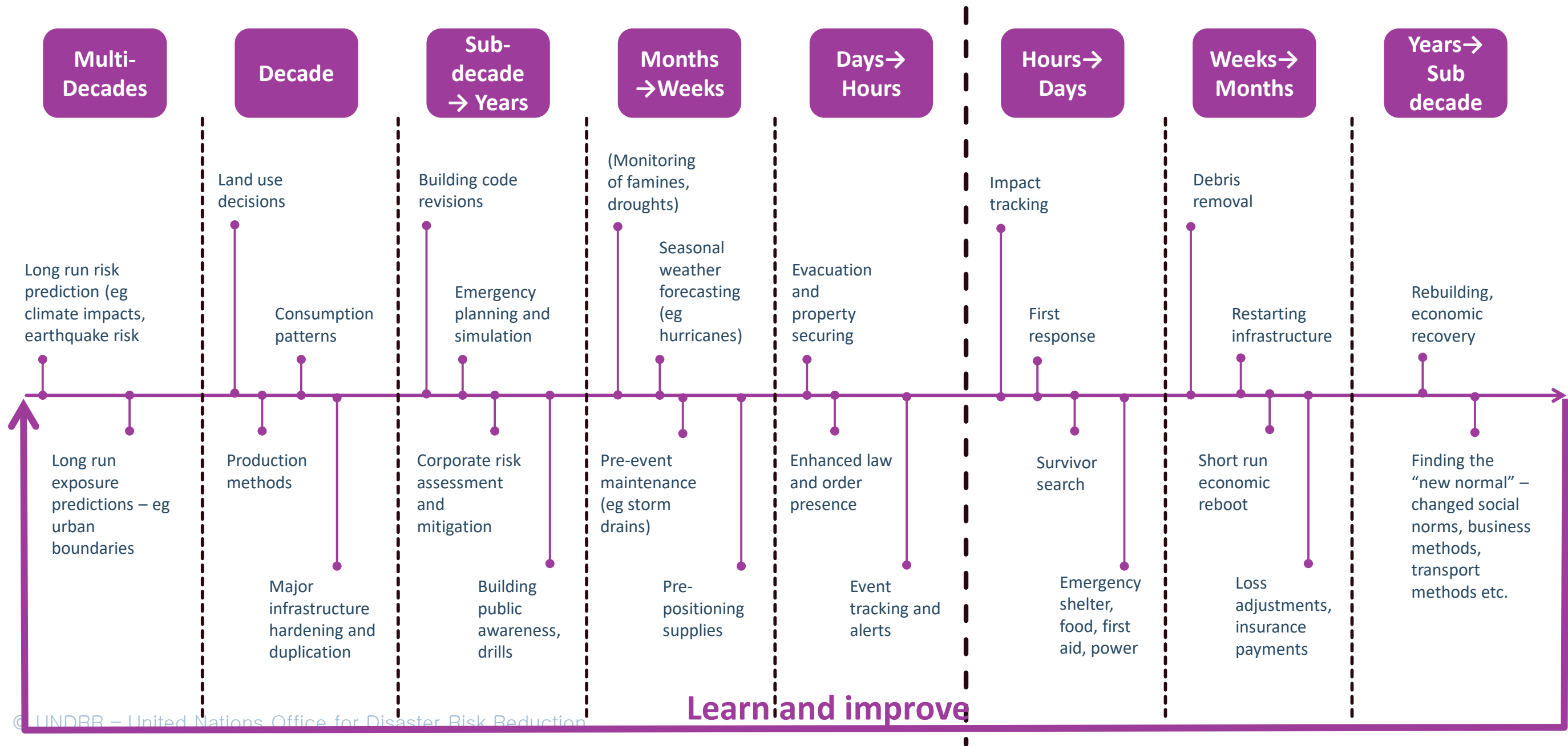


UNDRR

UN Office for Disaster Risk Reduction

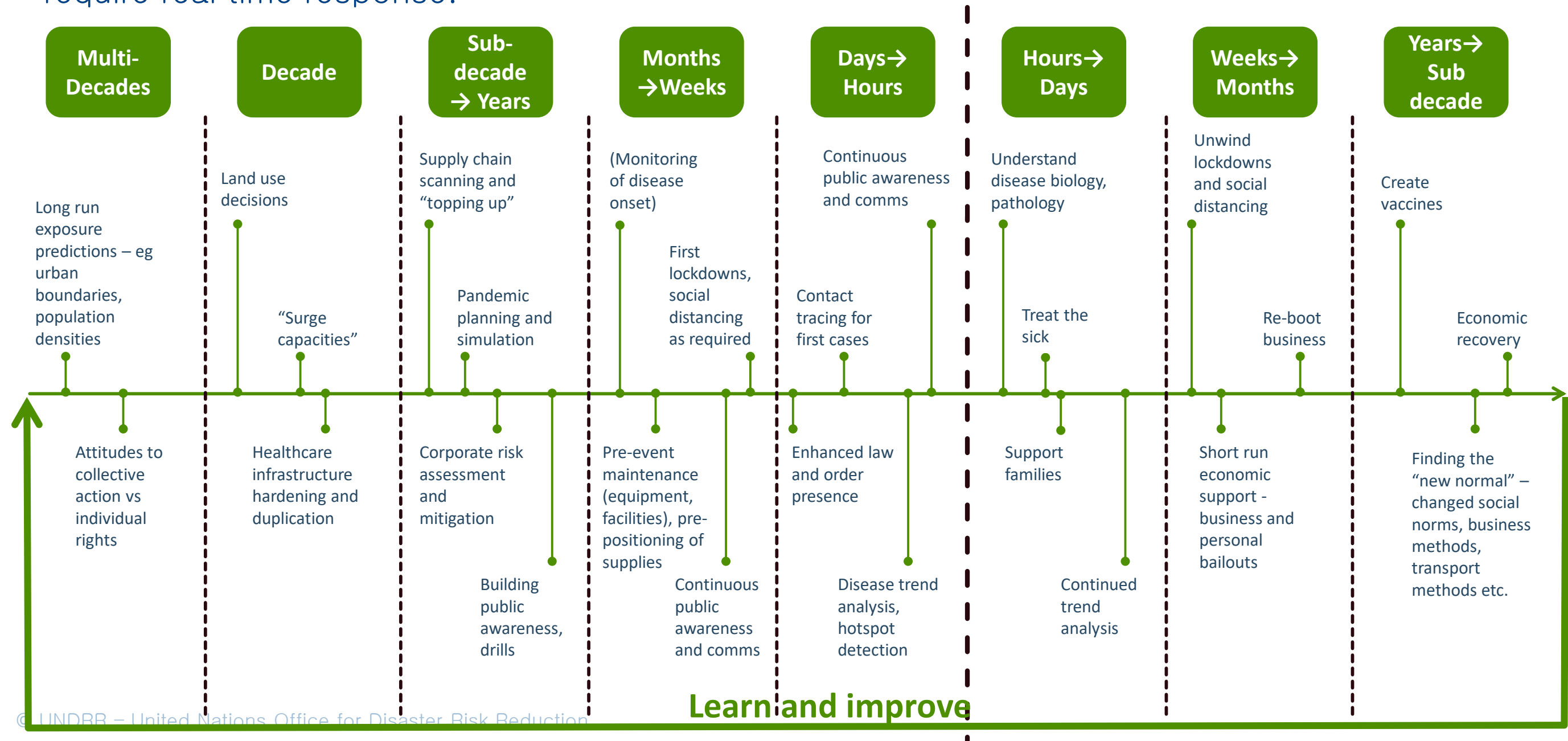
Perspective 3: Resilience is a *process*, with multiple timescales.

- Some resilience functions play out over many years. Others require real time response.

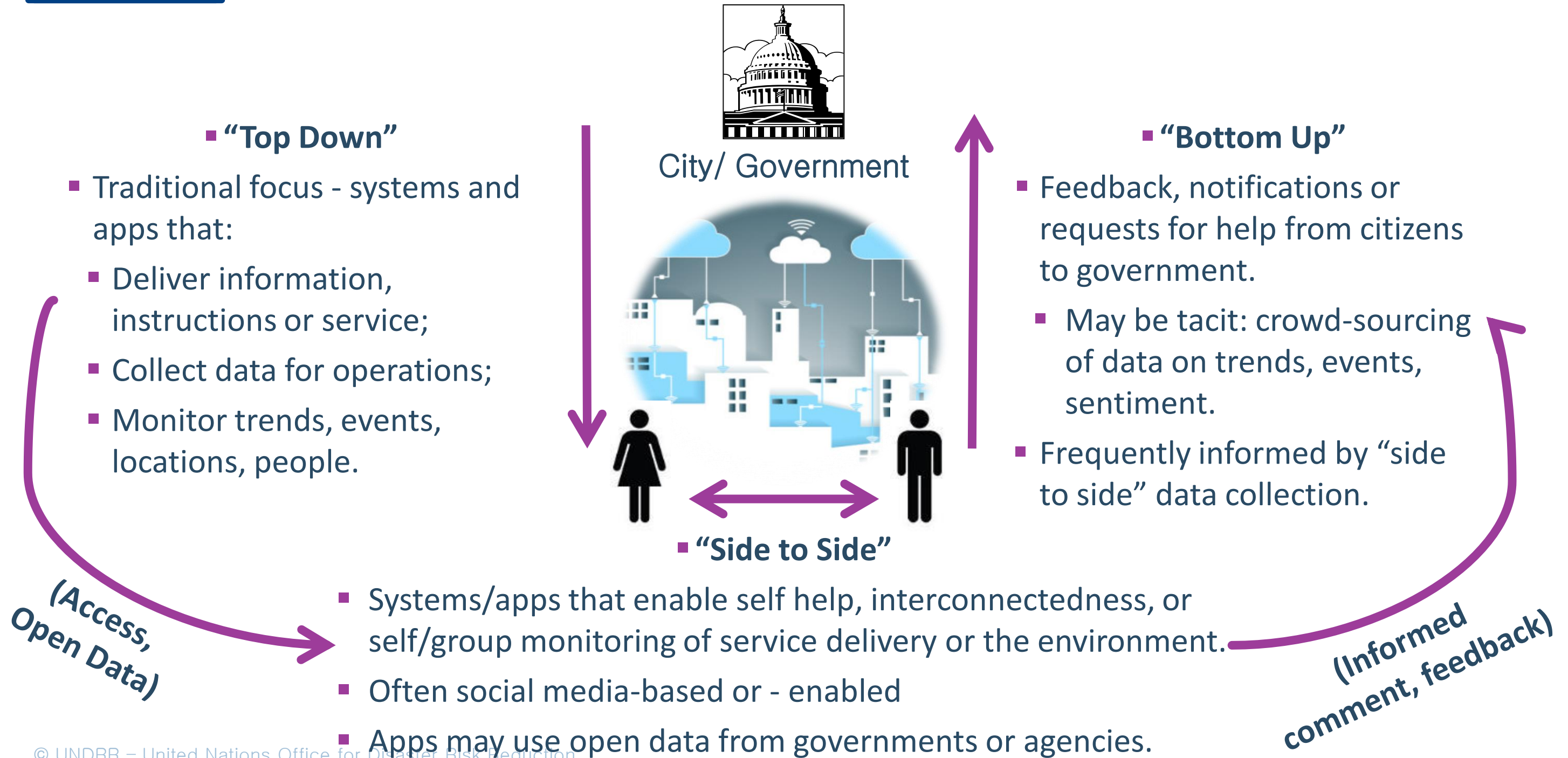


The resilience process for diseases (examples).

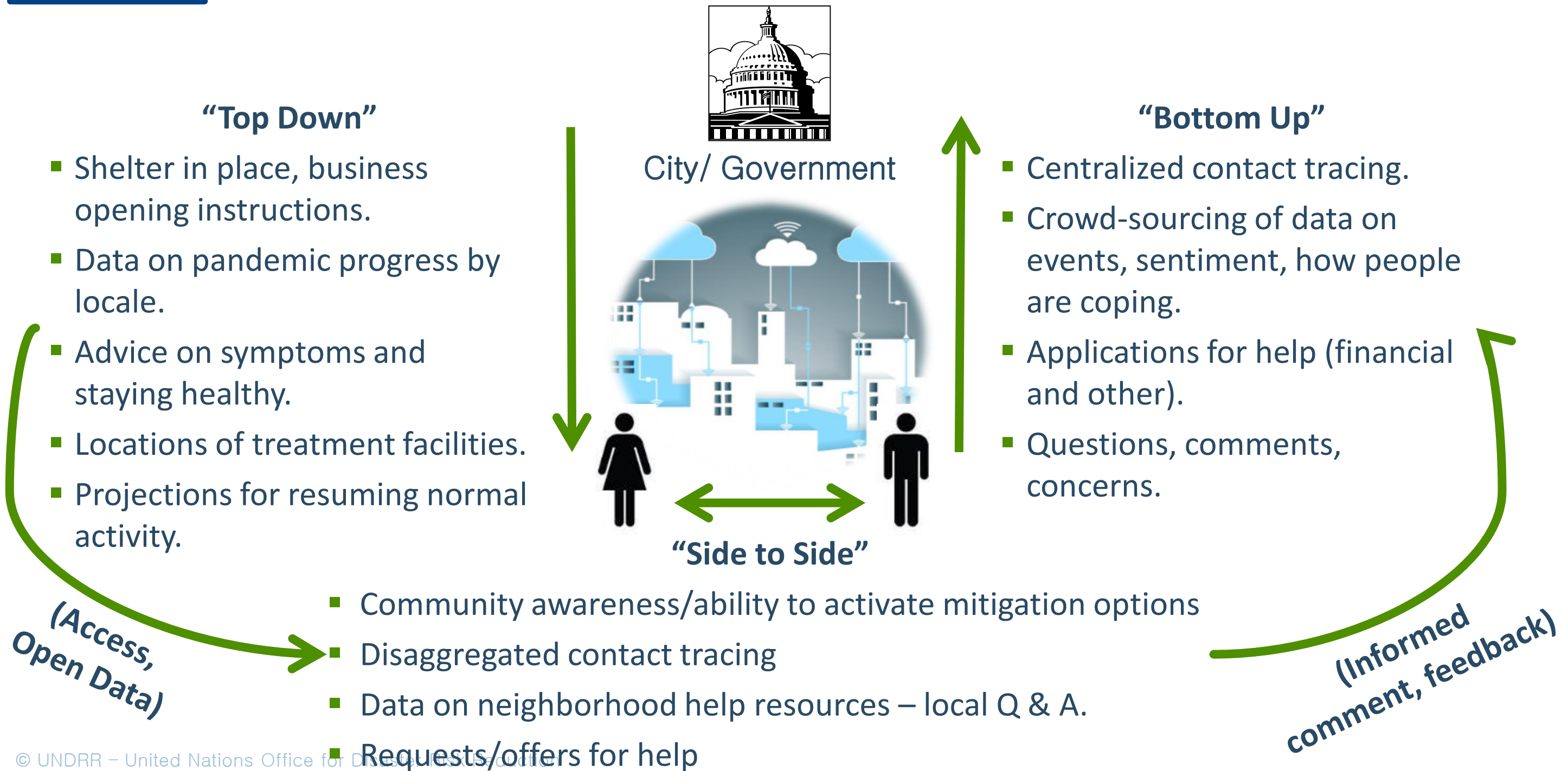
- As with other disasters, some disease management functions play out over many years. Others require real time response.



Perspective 4: Resilience is “U-Shaped”.

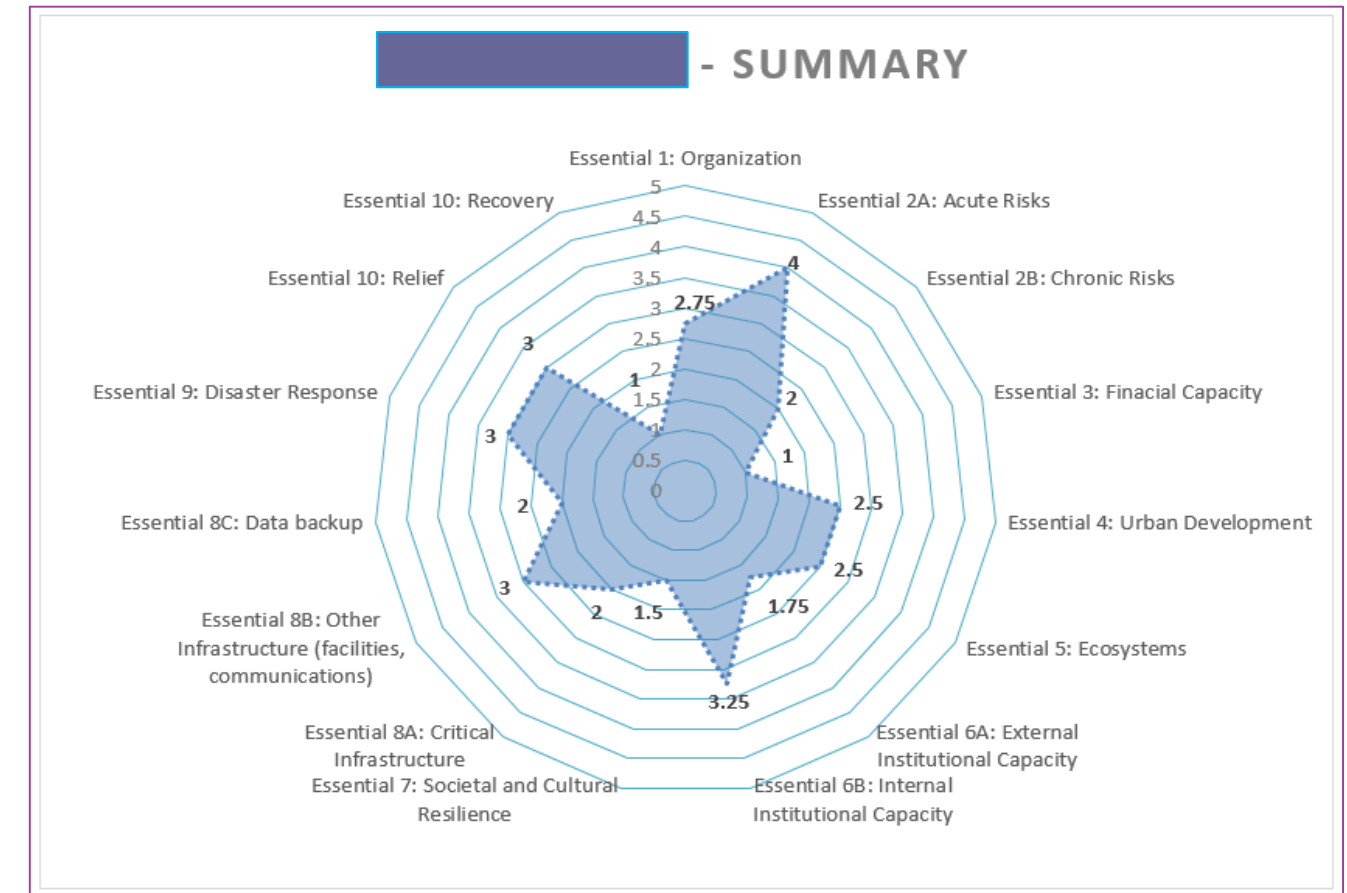


A “U-Shaped” response to pandemics and disease management

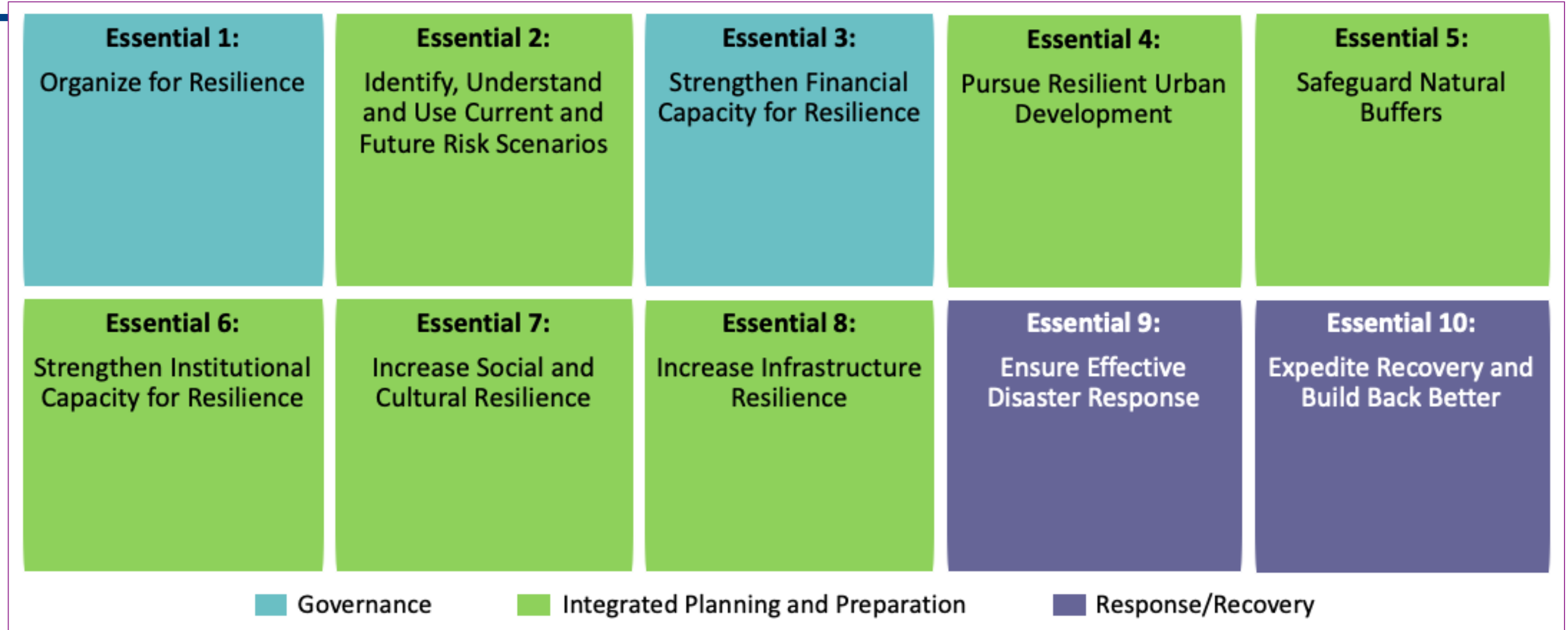


The Disaster Resilience Scorecard for Cities

- Co-authored by IBM and AECOM on behalf of UNDRR (UNISDR as it was then) and officially launched in 2017.
- The City Scorecard breaks the UNDRR's "Ten Essentials" for Making Cities Resilient into around 47-117 measurements, each scored 0 – 3 (preliminary version) and 0 – 5 (detailed version). It:
 - ... has now been used by ~ 200 cities worldwide, as well as by the EU for critical infrastructure resilience.
 - ... has been translated into 13 languages.
 - ... can be downloaded for free from:
<https://www.unisdr.org/campaign/resilientcities/home/toolkitblkitem/?id=4>
- A further version of the Scorecard, for industrial and commercial buildings was recently published and is available for free from:
<https://www.preventionweb.net/publications/view/69845>.

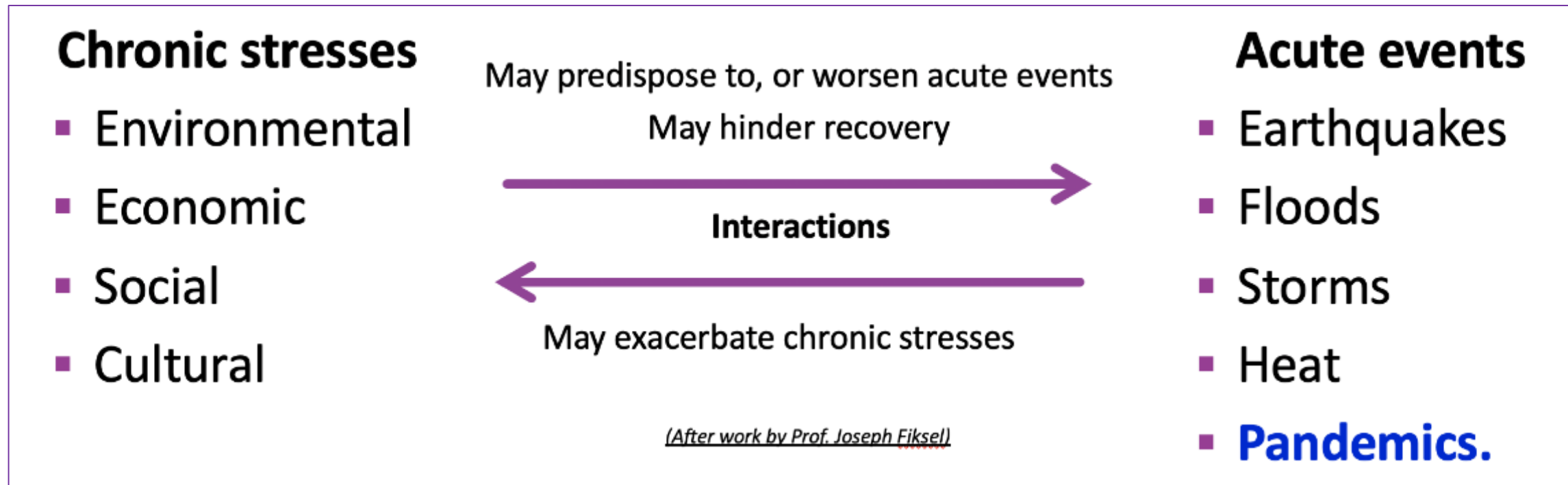


The UNDRR's Original “Ten Essentials” For Making Cities Resilient



- Pros: Relatively holistic, complete coverage of the field, and allows “systems of systems” (technological, social, economic) to be addressed: great for making connections between these.
- Con: *public health system* issues don’t emerge clearly from this structure.

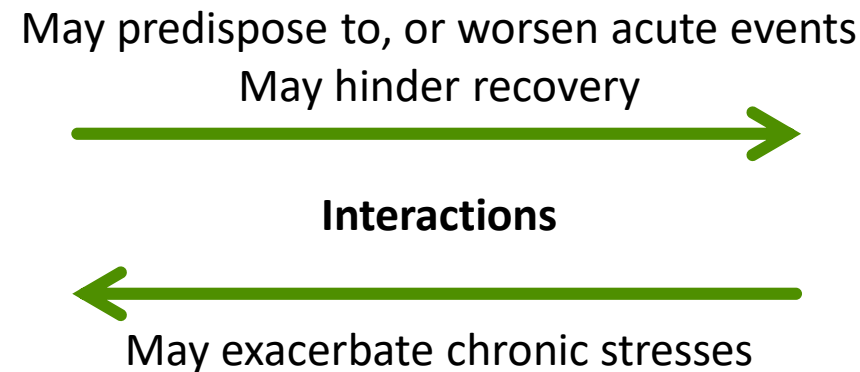
Resilience embraces chronic stresses and acute events



Examples of chronic stress and acute event interactions in a pandemic

Chronic stresses

- Drive acute events where:
 - Economic stress (poverty) leads to higher risk of contracting diseases such as COVID-19, through population density, poor sanitation and underlying ill-health;
 - Lack of open space makes it harder to exercise and maintain social distancing.
 - Air pollution increases susceptibility to the disease.

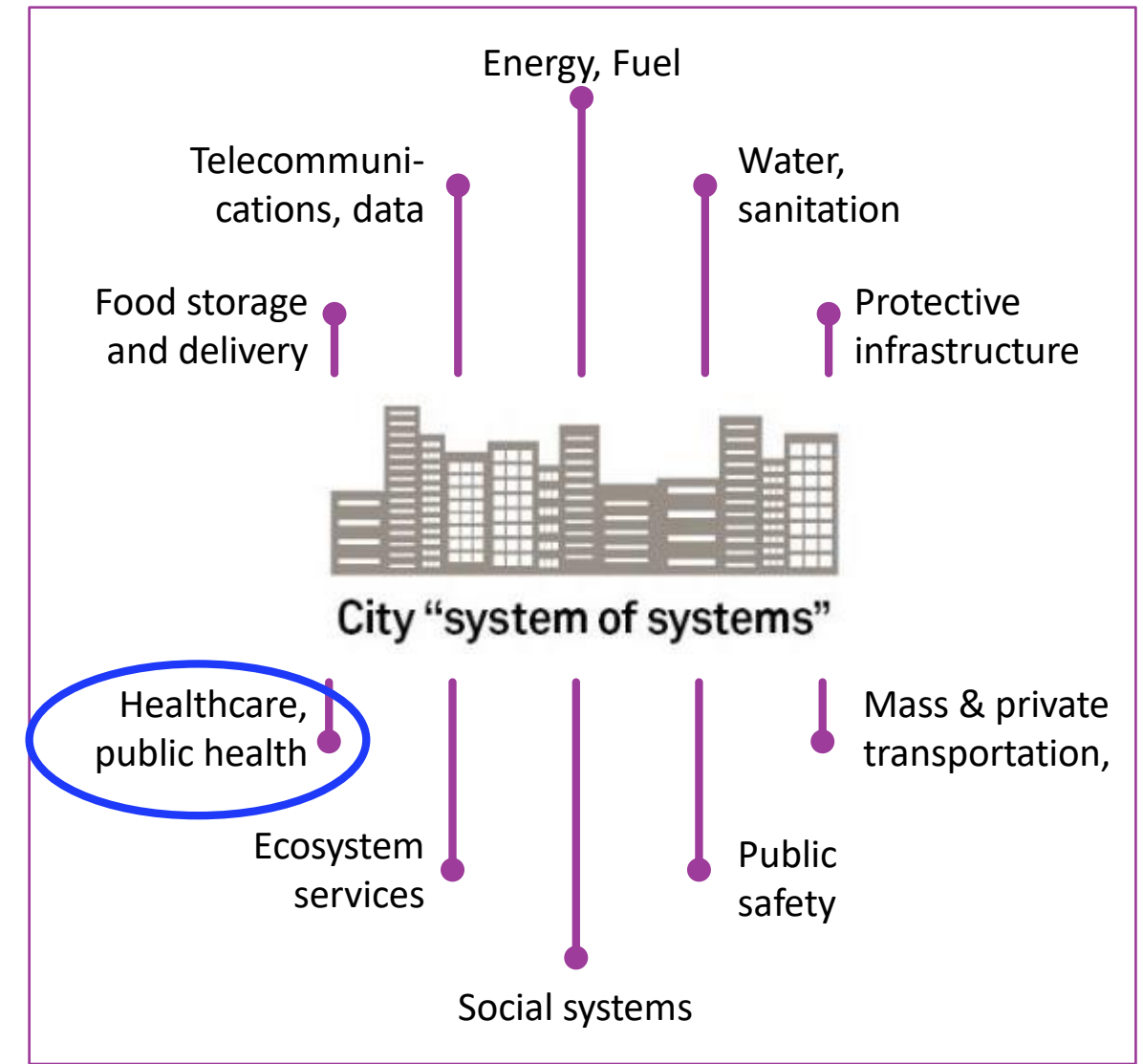


Acute event (pandemic)

- Exacerbate chronic stresses where:
 - Enforced closures force local businesses such as food stores and cafes and to close, so causing social and economic stress through lack of facilities and unemployment.
 - Public transportation is forced to close – so preventing people who may not have cars from getting to work.

Resilience must embrace “systems of systems”

- Cities and communities are complex because they are where multiple systems interact.
- Connections abound both causal, and those related to resources and data.
- Often, those connections can be a source of strength and resilience.
- However, connections can be missed, and some may only emergent when a disaster happens.
- This reduces resilience, because unforeseen consequences occur that may be disastrous.



The Disaster Resilience Scorecard for Cities

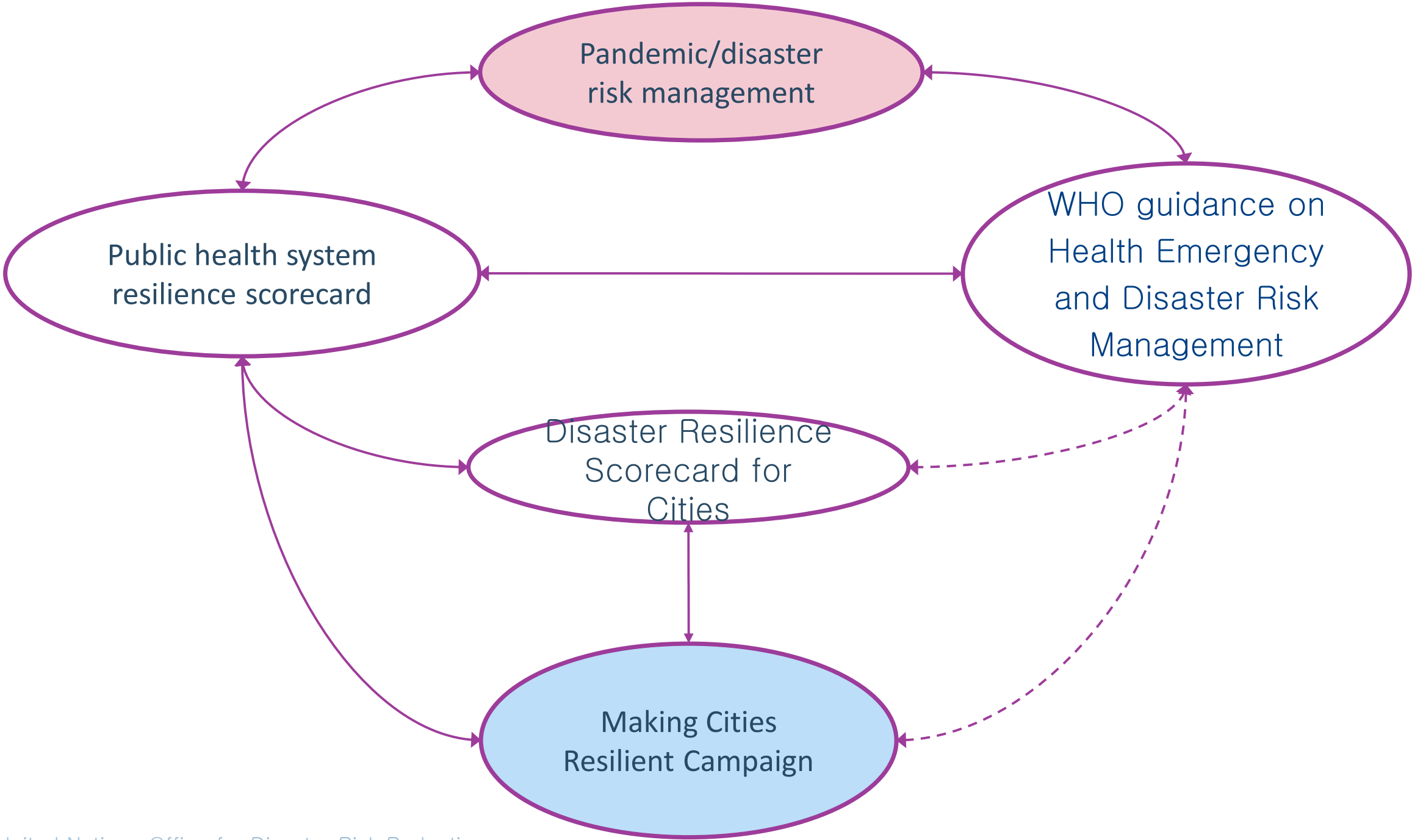
- Co-authored by IBM and AECOM on behalf of UNDRR and officially launched in 2017.
- The City Scorecard:
 - ... has now been used by ~ 200 cities worldwide, as well as by the EU for critical infrastructure resilience.
 - ... has been translated into 13 languages.
 - ... can be downloaded for free from:
<https://www.unisdr.org/campaign/resilientcities/home/toolkitblkitem/?id=4>
- A further version of the Scorecard, for industrial and commercial buildings was recently published and is available for free from:
<https://www.preventionweb.net/publications/view/69845>.



The City Scorecard – Structure. Example from Essential 1

Ref	Subject / Issue	Question / Assessment Area	Indicative measurement scale	Comments
1.1	Plan Making			
1.1.1	Risk consideration in Plan Making	To what extent are risk factors considered within the City Vision / Strategic Plan?	<p>5 – The plan includes a range of actions / priorities (e.g. urban growth and infrastructure projects) that directly respond to current and anticipated future risks.</p> <p>4 – The plan includes a range of actions / priorities (e.g. urban growth and infrastructure projects) that directly respond to current identified risks.</p> <p>3 – The plan context is framed around clear presentation of the city risk factors.</p> <p>2 – A robust risk assessment methodology is integral to the city plan.</p> <p>1 – There is evidence within the plan that risks (hazards x likelihood) is broadly understood within the City planning team.</p> <p>0 – Risks are not considered in the plan.</p>	<p>Risk identification and aggregation into scenarios is considered in Essential 2.</p> <p>This assessment criterion (1.1.1) is aimed at the city teams involved in strategic planning / plan making. Does the plan making process use best available science and risk assessment process to inform the order, magnitude and location of major new urban growth or significant infrastructure investment? i.e. is the future spatial vision for the city informed through clear risk assessment processes.</p>
1.1.2	Consultation in Plan Making	Is this strategy developed through inclusive, participatory multi-stakeholder consultation?	<p>5 – Yes – All relevant groups have been invited and attended. Stakeholders have been fully briefed on the process and receive regular bulletins on the progress of the plan.</p> <p>4 – At least 8 of the 10 listed groups (right) have been engaged / consulted.</p> <p>3 – At least 6 of the 10 listed groups have been engaged / consulted.</p> <p>2 – At least 4 of the listed groups have been engaged / consulted.</p> <p>1 – At least 2 of the listed groups were invited.</p> <p>0 – Stakeholder engagement has been undertaken.</p>	<ul style="list-style-type: none"> • The city emergency services; • Other city services and departments (public works, transportation); • The local health sector; • Utility providers including telecommunications; • Local businesses; • NGOs; • Civil society organisations including minority group representation; <ul style="list-style-type: none"> • Environmental sector; • The wider city population in all neighbourhoods, both formal and informal community groups; • Local universities; • Scientific institutions; • Other tiers of government or neighbouring cities, where necessary for the city's resilience; • Industry associations.

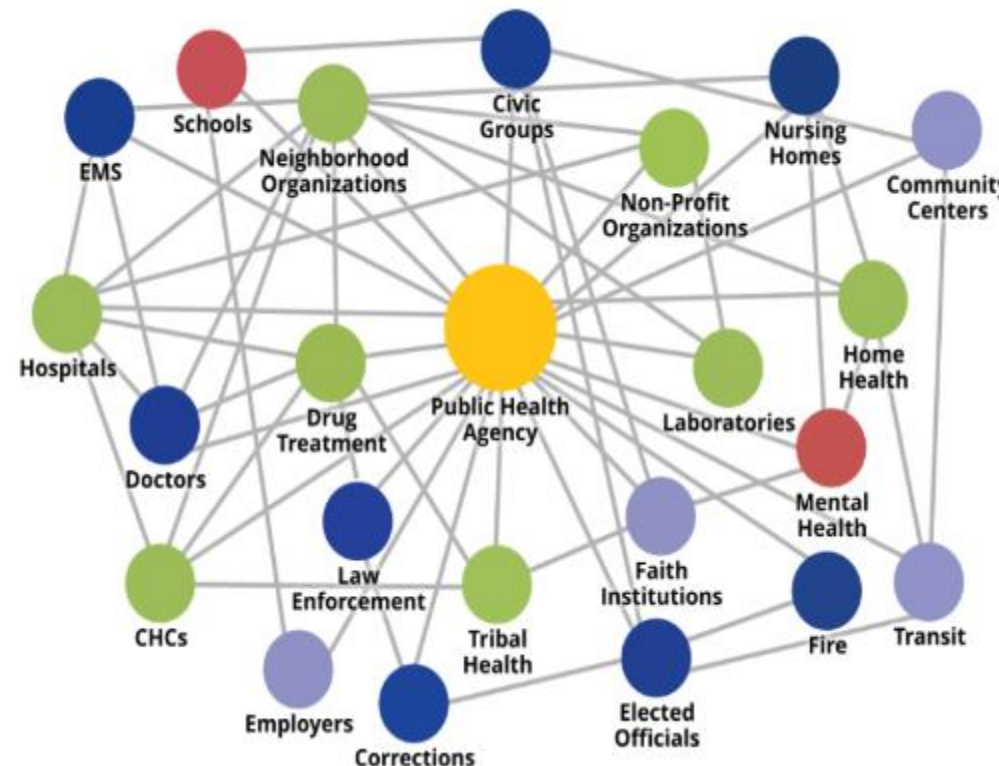
Multisectoral mechanism for supporting pandemic management



The Public Health System Resilience Scorecard

- Created to address the one obvious weakness in the “Ten Essentials”.
- Uses the same “Ten Essentials” structure as the City scorecard – in the context of a pandemic, focuses on the wider issues of management and recovery
 - It is **NOT** a medical or epidemiological tool, although these disciplines will inform answers given.
 - Addresses the “non-medical” issues of a medical emergency.

- Hospitals – local, regional;
- Isolation facilities;
- Residential facilities, nursing homes, assisted living facilities;
- Community health clinics, doctors’ offices, outpatient care facilities;
- EMS systems;
- Mental health facilities;
- Health laboratory and testing facilities;
- Public sector health departments.



- Water and sanitation systems;
- Food distribution systems;
- Pharmaceutical and medical supply distribution systems, drug stores;
- Environmental health systems;
- Community information, engagement and outreach processes and facilities;
- Skills, staff, assets, facilities and equipment required to function – availability post-disaster.
- Tele-medicine/tele-health systems.

Examples of What is Covered in the Public Health Addendum

Essential	Examples in Healthcare Addendum
1. Organization & Governance	<ul style="list-style-type: none"> • Are public health and medical professionals involved in disaster planning and management? • Are other professionals (e.g. sanitation, water, energy, comms) involved in public health planning?
2. Risk understanding	<ul style="list-style-type: none"> • Inclusion of a pandemic scenario in risk planning. • Inclusion of pandemics (and pre-existing chronic health stresses – malaria, malnutrition) as a complexity factor, alongside “disasters as usual” – floods, earthquakes, fire etc.
3. Financial architecture	<ul style="list-style-type: none"> • Adequacy and protection of funding • Resilience “dividends” – other benefits that arise from resilience spending
4. Land use and building codes	<ul style="list-style-type: none"> • Code and zoning compliance of key facilities
5. Ecosystem services	<ul style="list-style-type: none"> • Protection of ecosystem services with health benefits - natural water filtration, tree cover, recreation space
6. Capacity	<ul style="list-style-type: none"> • Availability of public health skills – medical and other • Availability and sharing of required data with (that is, to and from) other stakeholders
7. Social capacity	<ul style="list-style-type: none"> • Community engagement processes and effectiveness • Community trust of information provided • Community mental health and mental stress management
8. Infrastructure	<ul style="list-style-type: none"> • Resilience of key health infrastructures • Resilience of other relevant infrastructures– water, power, communications, sanitation, trash collection. • Surge capacity • Continuity of care facilities for those already sick
9. Disaster response	<ul style="list-style-type: none"> • Early warning systems • Integration with emergency management • Education, rehearsals, drills, public health supplies
10. Recovery planning	<ul style="list-style-type: none"> • Offsetting long run impacts on health • Learning and improving.

Scorecard indicators relevant to pandemic/disease outbreak

No	Assesses*
A1.1/9.2	Governance mechanisms for disaster risk and emergency management include public health professionals <ul style="list-style-type: none"> Emergency care, primary care, environmental health, epidemiology, medical supplies, other government entities, etc.
A2.1	Disaster risk planning includes public health emergencies <ul style="list-style-type: none"> Pandemics/outbreaks and other public health disasters are included in risk scenarios adopted by the city.
A2.2	Consideration of public health impacts arising from other disasters <ul style="list-style-type: none"> Trauma and post-trauma care, treatment of chronic conditions, water and food-borne illnesses, quarantine facilities, emergency shelters, psychological care, etc.
A3.1	Funding earmarked for addressing public health implications of disasters <ul style="list-style-type: none"> Essential hospital services, alternate care sites, emergency medical supplies, etc.
A6.1	Sufficient, skilled health professionals to maintain public health around disasters <ul style="list-style-type: none"> Doctors, nurses, allied health professionals, pharmacists, environmental health, epidemiologists, supply chain managers, laboratory technicians, etc.
A6.2	Public health data shared with all stakeholders that need it <ul style="list-style-type: none"> Awareness of public health assets and facilities needs pre and post disaster.

* Questions have been summarized

Scorecard indicators relevant to pandemic/disease outbreak

No	Assesses*
A7.1	Communities are prepared to maintain public health levels after a disaster <ul style="list-style-type: none"> Infectious diseases monitoring and alerts, air and water quality testing and supporting vulnerable.
A7.1.2	Community can access and trust public health information <ul style="list-style-type: none"> Emergency hygiene, disease prevention, support for vulnerable and outbreak information.
A8.1	Existence of health infrastructure besides hospitals <ul style="list-style-type: none"> Isolation capabilities, community clinics, nursing homes, laboratories, drugstores, supplies, etc.
A8.2	Health facilities can manage a surge of patients <ul style="list-style-type: none"> Estimated loss of critical bed days, urgent medical supplies and health workforce shortages.
A9.1	Early warning systems exist for impending healthcare emergencies <ul style="list-style-type: none"> City monitors health trends for the early warning of a healthcare emergency, such as a pandemic and chronic healthcare stress that is building towards a “tipping point”.
A9.4	Supply items and equipment required to maintain public health after a disaster <ul style="list-style-type: none"> PPE, first aid supplies, infection control and sanitation supplies, medications and medical equipment.

* Questions have been summarized

Sample questions – A2.1

Ref	Subject / Issue		Question / Assessment Area	<i>Indicative</i> measurement scale	Comments
A.2	Integration of public health and disaster scenarios (Essential 2)				
A2.1	Inclusion of range of emergencies and disasters (e.g., disease outbreaks/pandemics, famine, water shortages, etc.) as a disaster scenario in their own right	To what extent are emergencies and disasters including disease outbreaks included in disaster risk planning?	<p>5 – Emergencies and disasters including disease outbreaks are fully included by the city either as a risk scenario in their own right, or as a component of a “composite” scenario. The likely impact on staff availability and on health facilities is modelled and planned for, both alone, and in combination with other risks where an epidemic or pandemic may hinder ability to respond.</p> <p>4 – Emergencies and disasters including disease outbreaks are addressed as above, but they tend to be considered in isolation from other risks, and thus the interaction with other risks may not be fully addressed.</p> <p>3 – Emergencies and disasters including outbreaks are considered along with their likely impacts, but these impacts are not fully modelled.</p> <p>2 – Emergencies and disasters including outbreaks may be considered, but at a high level only.</p> <p>1 – Risk of outbreaks may be noted as an issue, but without active consideration of the impacts or required responses.</p> <p>0 – No consideration of pandemics at all.</p>		The Scorecard requires the development of (at least) a “worst case” and a “regular case” scenario from which to plan disaster resilience. This question addresses the extent to which emergencies and disasters, including disease outbreaks, are included in risk scenarios adopted by the city. The next question addresses the impact of health issues on disaster management planning, response and recovery.

Sample questions – A6.1

Ref	Subject / Issue		Question / Assessment Area	<i>Indicative</i> measurement scale	Comments
A6	Integration of public health and institutional capacity (Essential 6)				
A6.1	Availability of public health workforce with relevant competencies and skills for disaster resilience	To what extent are the workforce, competencies and skills required to plan and maintain public health systems and services for disaster resilience available to the city?	5 – All relevant workforce competencies and skills identified and assessed to be adequate for disaster planning, health services and post disaster recovery, both in terms of skill depth and numbers. 4 – All relevant skills identified, and some minor shortfalls known to exist in certain skillsets or numbers thereof. 3 – All relevant skills identified, and more significant shortfalls known to exist in depth and numbers. 2 – Incomplete skills identification and significant shortfalls in those that are known, in depth and numbers. 1 – Rudimentary attempt at skill identification – shortfalls in depth and numbers suspected to be universal. 0 – No consideration given to the issue.	As set out in the Health EDRM framework referenced earlier, key public health skills include, but are not restricted to: <ul style="list-style-type: none">• Doctors, nurses and other health workers where not addressed under Essential 8;• First responders where not addressed under Essential 8;• Other hospital or health facility staff;• Psychiatric care – doctors, nurses;• Care home staff;• Pharmacists;• Environmental health specialists (includes water and sanitation experts, food inspectors and vector control)• Epidemiologists;• Testing and laboratory staff;	

Sample questions – A8.2

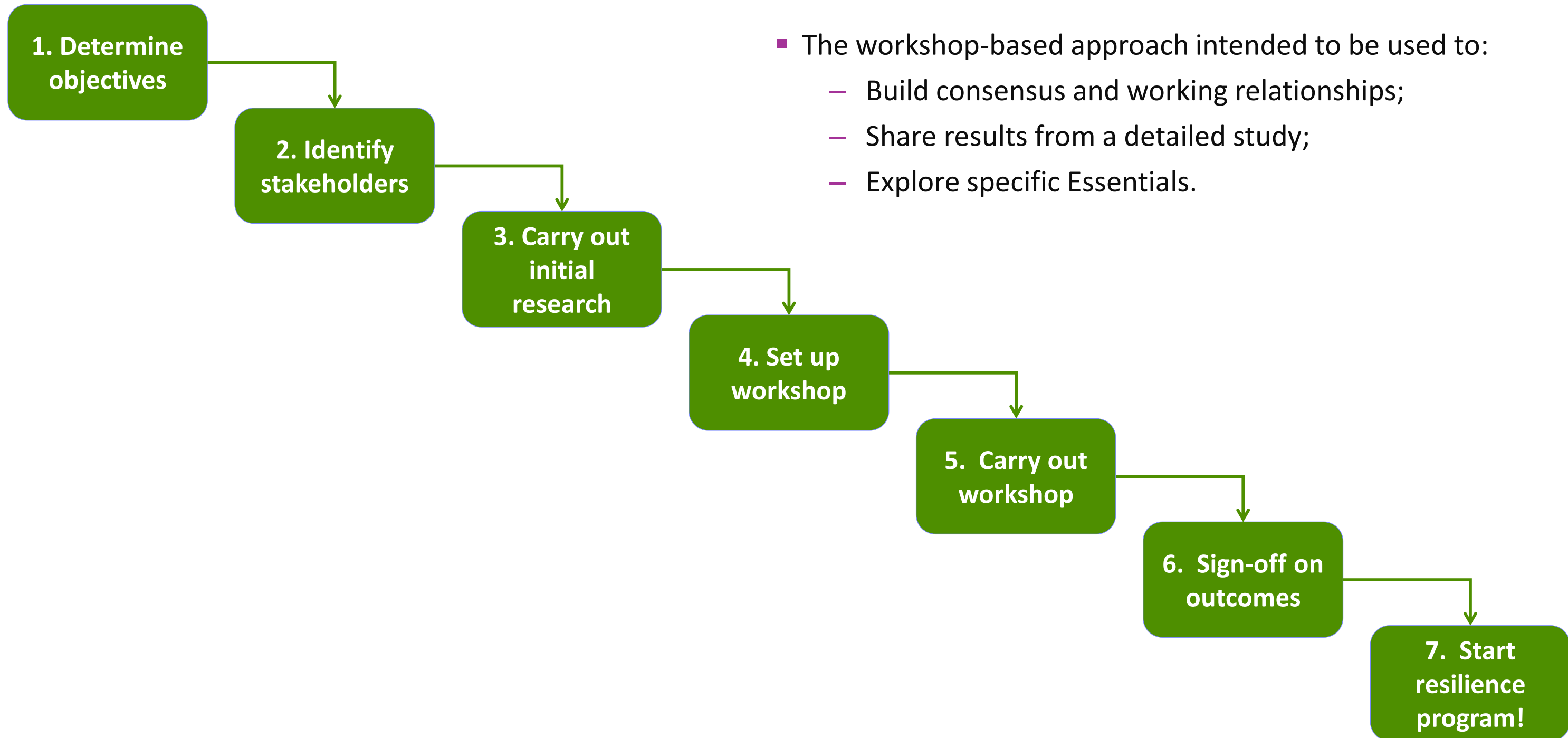
Ref	Subject / Issue		Question / Assessment Area	<i>Indicative</i> measurement scale	Comments
A8	Integration of public health and infrastructure resilience (Essential 8)				
A8.2	Surge capacity for public health infrastructure, where not considered in Essential 8	To what extent are hospitals and emergency care centers able to manage a sudden influx of patients?	<p>5 – Surge capacity exists to deal with additional health needs likely to arise from “most severe” scenario and is tested either via actual events or practice drills – can be activated within 6 hours.</p> <p>4 – Surge capacity exists to deal with additional health needs likely to arise from “most probable” scenario and is tested either via actual events or practice drills – can be activated within 6 hours.</p> <p>3 – Surge capacity exists but is known or suspected to have minor inadequacies relative to “most probable” scenario – can be activated within 6 hours. Under “most severe” scenario, more significant shortcomings in geographical coverage or type of service available and can only be activated within 12 hours or longer.</p> <p>2 – Surge capacity exists but is known to have more significant shortcomings in geographical coverage or type of service available and can only be activated within 12 hours or longer. Surge capacity has never been assessed for “most severe” scenario.</p> <p>1 – Surge capacity is theoretically available but has never been assessed or tested for “most probable” scenario.</p> <p>0 – No surge capacity identified.</p>	<p>Surge capacity should be built on the mass casualty management systems including the role of health facilities. This assessment needs to go in hand with estimated loss of critical bed days and estimated urgent medical supplies for trauma care and people with chronic diseases.</p> <p>This assessment should consider ability of key medical and health staff to access critical health facilities in order to address health needs in response to disasters.</p> <p>The required capacity may be achieved through mutual aid arrangements with facilities in neighboring areas – but it will be important to be sure that transportation routes are likely to remain open to allow those facilities to be reached.</p> <p>Surge capacity includes health and other personnel, facilities, goods and supplies (e.g., personal protective equipment) and support from other</p>	

Status of the Public Health System Resilience Scorecard

- Available for use from:
<https://www.unisdr.org/campaign/resilientcities/toolkit/article/public-health-system-resilience-scorecard>
- Reinforced with critical input from the WHO.
- Absolutely free, like all the scorecards.
- Recent webinar on the Addendum attracted 1146 attendees from 122 countries.
- Spreadsheet tool being created by UNDRR, and on-line version created by Baylor University, TX.
- Available in English, Arabic and Spanish



Workshop-based approach - the core process



Set up the workshop – typical agenda (1 of 2)

Day 1 (“What?”)	
8.00 am	Introduction from Mayor or senior city executive.
8.15 am	Introductions by participants
8.30 am	Purpose of the exercise, overview of resilience and overview of scorecard plus Public Health Addendum (PHA)
9.45 am	Break
11.00 am	Plenary consideration of Essential 1 plus PHA Essential 1 – agree scores
12.30	Lunch
1.15 pm	Breakout groups’ consideration of Essentials 2 & 3 plus PHA 2 & 3, and agree scores with report back to plenary**
2.45 pm	Break
3.00 pm	Breakout groups’ consideration of Essentials 4 & 5, plus PHA 4 & 5, and agree scores with report back to plenary**
4.30 pm	Plenary discussion of trends and issues so far.
5.15 pm	Close of Day 1
Day 2 (“What?”)	
9.00 am	Recap from Day 1
9.30 am	Breakout groups’ consideration of Essentials 6 & 7, plus PHA 6 & 7, and agree scores with report back to plenary**
11.00 am	Break
11.15 am	Breakout groups’ consideration of Essential 8 (this is split as it is a very large essential) plus PHA 8, and agree scores, with report back to plenary**
12.45 pm	Lunch
1.30 pm	Breakout groups’ consideration of Essentials 9 & 10, plus PHA 9 & 10, and agree scores with report back to plenary**
3.00 pm	Break
3.15 pm	Plenary discussion of trends and issues. Preliminary discussion of ideas regarding “How?”
4.45 pm	Close of Day 2

Set up the workshop – typical agenda (2 of 2)

***Note – assumes two breakout groups*

Day 3 (“How?” and “When?”)	
8.30 am	Recap from Day 2
8.45 am	Plenary consideration of actions required for Essential 1, and location on “impact vs difficulty” grid.
9.30 am	Break
9.45 am	Breakout groups’ consideration of actions required for Essentials 2 & 3, location on grid and report back to plenary
10.45 am	Breakout groups’ consideration of actions required for Essentials 4 & 5, location on grid and report back to plenary
12.00 pm	Lunch
12.45 pm	Breakout groups’ consideration of actions required for Essentials 6 & 7, location on grid and report back to plenary
1.45 pm	Breakout groups’ consideration of actions required for Essential 8, location on grid and report back to plenary
2.45 pm	Break
3.00 pm	Breakout groups’ consideration of actions required for Essentials 9 & 10, location on grid and report back to plenary
4.00 pm	Consolidation of grids, discussion, actions...
5.15 pm	Close of workshop.

- Assumes that City scorecard and PHA are considered together.
 - The PHA could be considered on its own: the structure would be very similar, although each session could be shorter and the whole workshop condensed to 2 days.

Key Resources

- *Disaster Risk Reduction Terminology:* <http://www.preventionweb.net/english/professional/terminology/>
- *Sendai Framework for Disaster Risk Reduction 2015–2030, UN:* <http://www.preventionweb.net/drr-framework/sendai-framework>
- *The Global Assessment Report & Global Risk Atlas:* <http://www.preventionweb.net/gar/>
- *Understanding Disaster Risk – based upon GARs 2009, 2011, 2013, 2015, UNISDR – including risk models, viewers and data:* <http://www.preventionweb.net/risk> and <http://risk.preventionweb.net/capreviewer>
- *The Global Risks Report 2019, 14th Edition, World Economic Forum:* http://www3.weforum.org/docs/WEF_Global_Risks_Report_2019.pdf
- *Unbreakable, GFDRR, World Bank:* https://www.gfdr.org/sites/default/files/publication/Unbreakable_FullBook_Web-3.pdf
- *Making Cities Resilient Campaign Website:* <https://www.unisdr.org/campaign/resilientcities/>
- *A Handbook For Local Government Leaders [2017 Edition]:* <https://www.unisdr.org/campaign/resilientcities/toolkit/article/a-handbook-for-local-government-leaders-2017-edition>
- *10 Essentials for Making Cities Resilient:* <https://www.unisdr.org/campaign/resilientcities/toolkit/article/the-ten-essentials-for-making-cities-resilient>
- *Health Emergency and Disaster Risk Management Framework, WHO :* <https://www.who.int/hac/techguidance/preparedness/health-emergency-and-disaster-risk-management-framework-eng.pdf?ua=1>

Thank You

Sanjaya Bhatia

**Head of Office for Northeast Asia (ONEA) and Global Education and Training
Institute (GETI), UNDRR**

bhatia1@un.org

4F Songdo G-Tower,
175 Art Center-daero,
Yeonsu-gu, Incheon
Republic of Korea