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## Wellington Resilience Strategy – sustainability, resilience or both.

Marta Karlik-Neale Associate Director – Sustainability & Resilience, AECOM

#### **INTRODUCTION**

While the United Nations continues to lead focus on sustainability, , the word resilience has become more frequently used and the two concepts are sometimes confused. Based on experience with the development of Wellington Resilience Strategy it appears to me that both agendas can derive similar outcomes while using a different set of tools and perhaps coming from different perspectives.

Sustainable Development first came to prominence in 1987 through the report by Gro Harlem Brundtland under the auspices of the United Nations World Commission on Environment and Development (UNWCED), in the report entitled "Our Common future". This report defined Sustainable Development as:

"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

The concept was seized upon by the conservation and corporate social responsibility movement and further developed into the idea of Sustainability and the associated concept of the triple – environmental, social and economic - bottom line (TBL).

Where did resilience come from? In her book "The Resilience Dividend", Judith Rodin suggests that the concept has three main roots: asset management with its associated risk management frameworks, psychological concepts of personal resilience as an ability to cope and recover from stress, and systems thinking. The concept arose from uncertainty about the future and especially impacts of globalisation, urbanisation and climate change.

Both sustainability and resilience have a future outlook and aim to generate action that would enable society to continue to prosper indefinitely. In this paper I will show how the Wellington Resilience Strategy, while conceived off within and through a resilience framework, delivers on a number of sustainability goals. Some argue that resilience is one of the tools to help us achieve sustainable development.

#### 100 RESILIENCE CITIES FRAMEWORK AND TOOLS

100 Resilient Cities (100RC), Pioneered by The Rockefeller Foundation, was launched in 2013 and is now working with 100 cities around the globe to develop and implement their resilience strategies. Wellington joined 100RC in 2014. Through funding and expert support, 100RC helps cities become resilient to the challenges of urbanisation, globalisation and climate change. Over the last 4 years the organisation has built a tremendous pool of knowledge and practical experience that is now considered by many to be the best practice approach to urban resilience.

100RC defines urban resilience as "the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience". Hidden within that definition are a number of concepts that have been especially useful during the development of Wellington Resilience Strategy.

The first one is the City Resilience Framework, a system model of the city that identifies 12 drivers that should be considered when developing a city resilience strategy. The framework strongly illustrates that all parts of the city - communities, businesses, infrastructure managers, decision makers, researchers as well as civil defence and police - have a role to play and it is the collaboration between these parties that lead to more resilient communities.

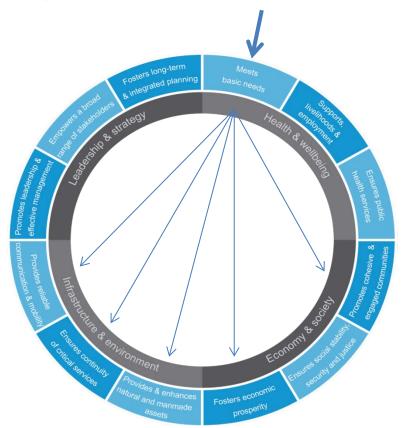


#### 100RC CITY RESILIENCE FRAMEWORK

Wellington used this framework in many ways. For example we used it as a checklist to ensure that all aspects of the city were represented at the stakeholder workshops and are now investigating how to use it for measuring progress.

What was most useful though, was an idea of designing resilience actions that generated benefits across the elements of the framework. For example a number of projects aiming at improve Wellington homes directly target the area of "meeting basic needs" – keeping homes warm safe and dry. But any investment into improving the quality of Wellington homes has a ripple effect through the rest of the system.

The interventions are designed to make homes a safe heaven for Wellingtonians in an emergency, enabling them to survive the immediate impacts, but also work from home for an extended period while the city recovers. At the same time these interventions can reduce a home's impact on the environment (energy and water use), improve community cohesiveness (designing for community interactions) and stimulate the economy through flexible working arrangements.



Co-benefits of housing projects across the city framework.

Of course many of those benefits will be enjoyed by the city regardless whether an emergency happens or not. 100RC calls this the "resilience dividend". Well-designed resilience interventions make the city a better place to live regardless of whether emergencies happen or not. The objective of resilience strategies is not just to survive but also thrive.

This leads me to a second concept that is core to the 100RC resilience definition – "no matter what acute shocks and chronic stresses". The experiences from many cities that form 100RC show that specific disasters are difficult to predict. Often, the disasters that cities prepare for never happen and others take a completely unexpected direction as they interact with some chronic stresses like homelessness or poor waste infrastructure. It is of course important that the emergency preparedness work is done to minimise risks, but the true value of resilience strategies comes from actions that are "hazard agnostic" – they make cities able to recover from any kind of disturbance.

Improving community cohesiveness is a good example. Building communication and collaboration skills in the community by providing them with spaces and opportunities to work together, prepares them as well for an earthquake, storm or an economic downturn.

The final 100RC concept I would like to introduce is the idea of "resilience qualities". Just like in the example above the most successful resilience interventions develop new skills or qualities throughout the city system. Those are flexibility, robustness, redundancy, integration, resourcefulness, inclusivity and continuous learning.

### WELLINGTON RESILIENCE STRATEGY ACTIONS THAT WILL MAKE THE CITY MORE SUSTAINABLE

As the Wellington Resilience Strategy was firmly rooted in the 100RC principles described above, it is likely that it will also result in more sustainable outcomes for the city. Many of the 30 actions included in the strategy have been designed to generate environmental and social co-benefits.

For example investment in infrastructure that could better support electric vehicles will significantly reduce our city's carbon footprint. New Zealand's electricity is 80% renewable – if all vehicles in Wellington used electric power we would see a 25% reduction in carbon emissions. At the same time the city is looking for 'car to home convertors' so that electric vehicles can become mobile batteries that could be used if the power lines fail in an earthquake or a storm.

Distributed systems are less prone to complete failure in an emergency than centralised ones. At the moment most of Wellington's water and electricity are delivered via centralised infrastructure where failure in one place leads to wide areas of the city being without water or power. Investment in solar power and rain water collection infrastructure would reduce this dependency on central systems and would potentially enable Wellingtonians to be self-sufficient for a short time if needed. Wellington is currently investigating a subsidy scheme where home owners get access to cheaper solar panels if they sign an agreement to become a neighbourhood "power emergency centre", allowing their neighbours to use their solar power in emergency.

Another strategy that would simultaneously build resilience and sustainability is the use of green infrastructure. Our green and blue spaces perform a variety of functions in the city – from water and air purification, coastal protection, slope stability to the provision of amenity and recreation. The Resilience Strategy intends to tackle various stresses associated with waste and storm water in Wellington through a variety of ecological interventions.

Wellington Resilience Strategy projects		UN Sustainable Development Goals						
1	Improve access to household resilience items	2 ZERO HUNGER	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	10 REDUCED INEQUALITIES	11 SUSTAINABLE CITIES AND COMMUNITIES		
2	Prepare for an ageing population	3 GOOD HEALTH AND WELL-BEING	8 ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	11 SUSTAINABLE CITIES AND COMMUNITIES			
3	Reduce homelessness	8 DECENT WORK AND ECONOMIC GROWTH	10 REDUCED INEQUALITIES	11 SUSTAINABLE CITIES AND COMMUNITIES	16 PEACE, JUSTICE AND STRONG INSTITUTIONS	17 PARTNERSHIPS FOR THE GOALS		
4	Help communities build resilience	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	8 DECENT WORK AND ECONOMIC GROWTH	13 CLIMATE ACTION			
5	Support community spaces in taking on wellbeing and post-disaster roles	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	G CLEAN WATER AND SANITATION	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	11 SUSTAINABLE CITIES AND COMMUNITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	
6	Develop sustainable food networks	2 ZERO HUNGER	3 GOOD HEALTH AND WELL-BEING	8 DECENT WORK AND ECONOMIC GROWTH	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	13 CLIMATE ACTION	15 LIFE ON LAND	
7	Develop disaster risk management plans for heritage areas	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE						
8	Increase economic resilience of central city and outside hubs	8 DECENT WORK AND ECONOMIC GROWTH						
9	Help improve business continuity planning	8 DECENT WORK AND ECONOMIC GROWTH						
10	Improve understanding of workforce trends	8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE					
11	Introduce regulatory tools (including enforcement) for resilience	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE						
12	Review Wellington Lifelines Group	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE						
13	Maintain monitoring and evaluation of resilience goals	17 PARTNERSHIPS FOR THE GOALS						
14	Give Wellingtonians information they need to make decisions	4 QUALITY EDUCATION	11 SUSTAINABLE CITIES  ABBETT					

	lington Resilience Strategy ects	UN Sustainable Development Goals			
15	Develop a virtual reality model of the central city build environment	9 MOUSTRY MOVALIDE 11 SUSTAINABLE CITES AND COMMUNITIES 17 PARTNESSHIPS FOR THE GOLDS			
16	Develop a communications and engagement strategy for the Adaptation Plan	9 MONTATE MONTATION 13 CLIMATE  ACTION			
17	Encourage climate adaptation actions	9 MONTATINETINE 11 RESTANABLE CITES 13 RIMITE 13 RIMITE 14 RESTANABLE CITES 15 RIMITE 16 RIMITE 17 RIMITE 18 RIMITE			
18	Undertake recovery planning for the Wellington region	17 PARTHERSHIPS FOR THE GOALS			
19	Carry out post-earthquake housing study	13 ACTION			
20	Help make homes warm, safe and dry	3 GOOD HEALTH BENG 8 DECENT WORK AND EDWOMMS GOOWTH 17 PARTNESSHIPS FOR THE SOALS			
21	Support insurance literacy campaign	4 EDUCATION			
22	Understand the scale of the non- weathertight homes problem	3 GOOD HEALTH 4 GUALITY 8 GECHT WORK AND COMPUTED TO THE CONDINING SCRIPTITE TO THE CONDINING SCRIPTIT			
23	Assess the capacity for large-scale remote working	9 MOISTEY INNOVATION B DECENT WORK AND ECONOMIC GROWTH			
24	Improve water systems through ecological interventions	3 GOODHEATH G CLEAN WATER AND SANTATION  13 CLIMATE AND SANTATION  13 CLIMATE AND SANTATION			
25	Explore options for sewage sludge disposal	6 CLEAN WATER 9 MOUSTRY, MOUVALIDE 17 PARTNESSHIPS FOR THE GOALS			
26	Ensure emergency water supply for Wellington Hospital	6 CLEAN WATER OF AND SANTIATION 9 MODIFIES TRUITING 13 CEINATE ACTION			
27	Invest in water and wastewater resilience and awareness	6 CLEAN WATER 13 ACTION  13 ACTION			
28	Support flexible energy supply	7 ALTHOMARIE AND 9 AND INTERCEPT 13 CLIMATE AND INTERCEPT 13 CLIMATE ACTION			
29	Support widespread adoption of electric vehicles	12 RESPONSIBLE CONCENSION OF CHEAN DEBICY ACTION AND PRODUCTION CONCENSION OF CHEAN DEBICY ACTION			
30	Leverage transportation investment to improve Wellington's resilience	9 MOINTAGENETIVE 13 CLIMATE  ACTION  13 CLIMATE  ACTION			

#### **CONCLUSIONS**

As outlined in the table above all of the Wellington Resilience Strategy projects contribute towards one or more UN Sustainable Development Goal. Both resilience and sustainability strategies take a system's approach and aim to achieve more than bare survival. When resilience is reduced to risk management, or sustainability to conservation, the two strategies might come into conflict, but when delivered within a best practice, wide perspective framework, they support each other achieving better outcomes for society, the environment and economy during good times and bad.

#### **ACKNOWLEDGMENTS**

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#### **ABSTRACT**

Wellington has just launched a new urban resilience strategy based on a global framework developed for the Rockefeller Foundation's 100 Resilient Cities programme (100RC). The framework consists of a number of tools aiming to address challenges of globalisation, urbanisation and climate change in cities. The 100RC framework uses systems thinking to identify intervention points throughout the city system – people, places, networks and knowledge - and to increase their ability to cope and recover in a face of a shock or a stress by making the system more flexible, integrated, robust, resourceful, reflective and inclusive.

This paper outlines how Wellington applied and adapted this global framework to analyse local shocks and stresses and to develop 30 interventions in collaboration with key city stakeholders.

Particular focus is given to issues related to climate change and population growth and how these relate to water and ecosystem services in Wellington. The paper explores the relationship between concepts of resilience and sustainability, reviewing their origin and application and outlining key differences and similarities.

#### MARTA KARLIK-NEALE, ASSOCIATE DIRECTOR

Marta is a sustainability and environmental management consultant with 15 years' experience in Europe and New Zealand. She leads AECOM's Sustainability and Resilience practice for New Zealand, specialising in environmental accounting (carbon footprints, LCAs etc.), infrastructure sustainability and climate change and resilience.

She studied economics and management in Poland, where she worked in communication and marketing. She also completed a Masters in Environmental Science with London University.

For the last year and a half Marta managed the development of the Wellington Resilience Strategy working closely with Wellington's Chief Resilience Officer, Mike Mendonça and various 100RC experts.

# Wellington Resilience Strategy – resilience, sustainability or both

Marta Karlik-Neale

Associate Director Sustainability & Resilience





### Resilience





### What is 100 RESILIENT CITIES?

- A \$100 million effort launched by the Rockefeller Foundation on its Centennial in 2013.
- Created to help cities around the world build resilience to the social, economic and physical challenges that are an increasing part of the 21st century.
- 100RC is a non-profit entity, managed by Rockefeller Philanthropy Advisors (RPA).

To help cities respond to the impacts of three worldwide trends:

#### URBANIZATION

Urban populations are growing rapidly: of an estimated global population of 9 billion by mid-century, 70% will live in cities. Many are in fragile ecosystems, and the number of people at risk is unprecedented.

### GLOBALIZATION

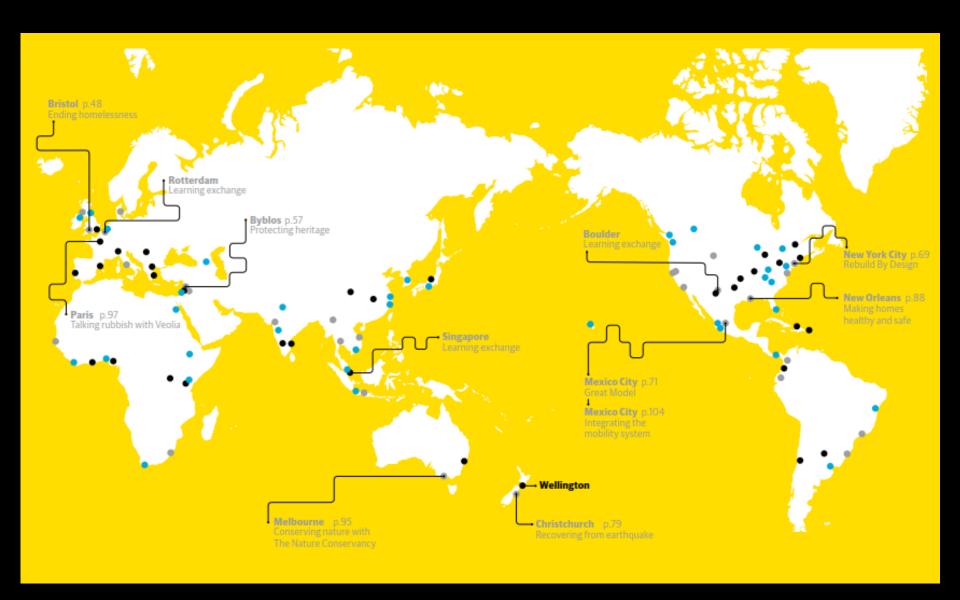
Cities are more interconnected than ever before, and a system failure in one city can cause problems across the globe.

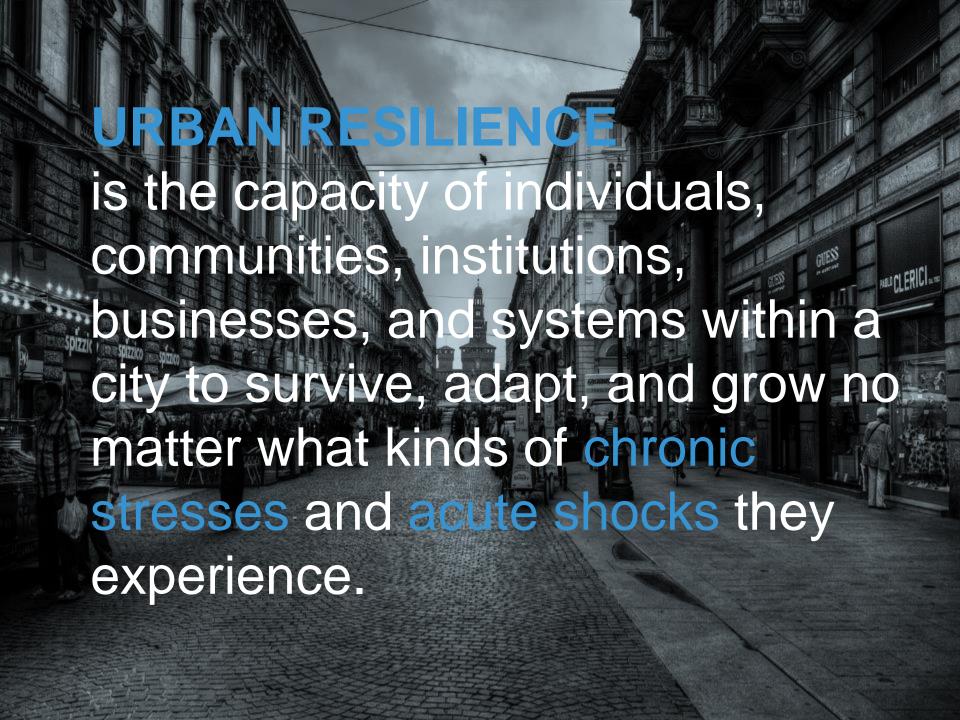
### CLIMATE CHANGE

Climate change places new social, fiscal and political pressures on urban systems.



### **100 Resilient Cities network**





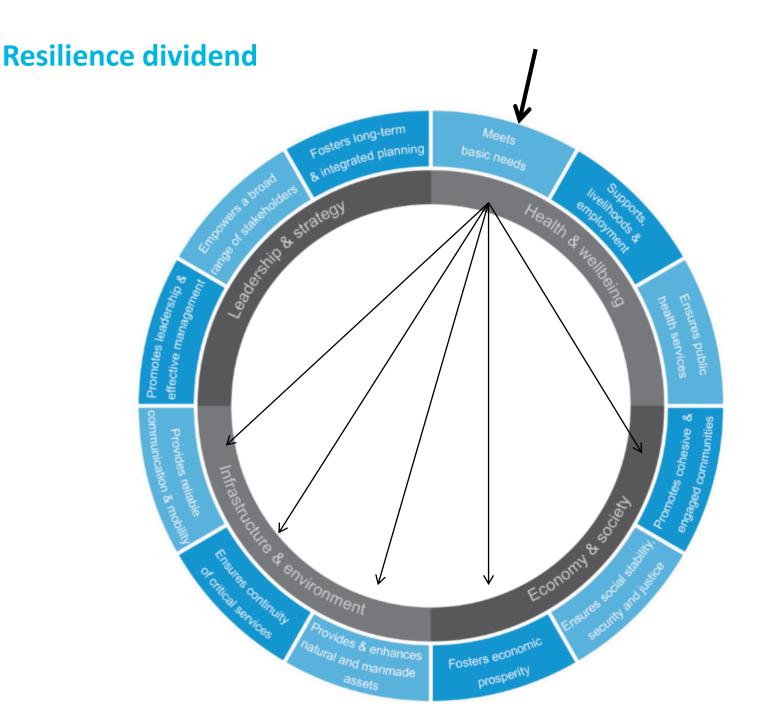
### **City Resilience Framework**





Project 20 Help make homes warm safe and dry





### **Hazard agnostic**









# Project 4 Help communities build resilience



### Resilient systems exhibit certain qualities

that enable them to withstand, respond, and adapt more readily to shocks and stresses

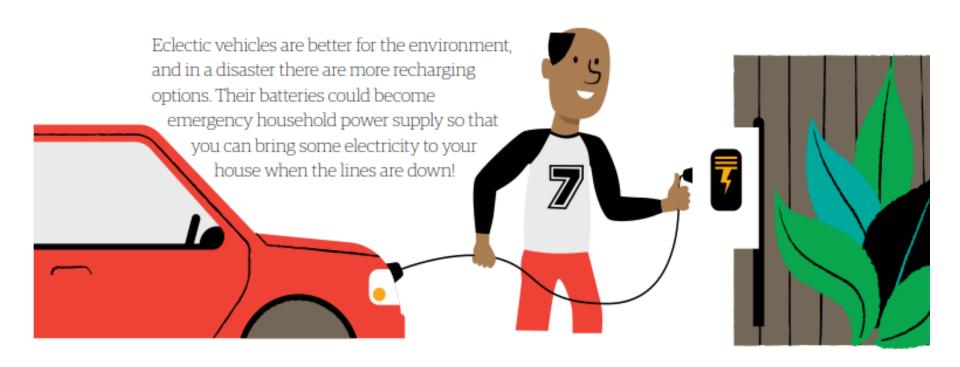
Reflective	Resourceful	Robust	Redundant	Flexible	Inclusive	Integrated	
Ability to learn	and act	conceiving systems & assets that can withstand shocks & stresses as well as using alternative strategies to facilitate rapid recovery			planned to take account of city-wide needs and promote coordinated actions		

# Resilient Wellington Vision



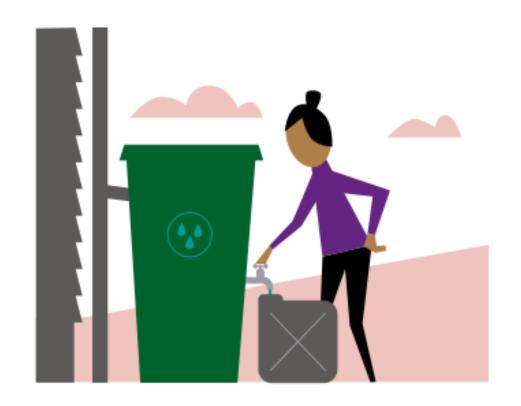
As Wellington changes, everyone here will survive and thrive.

# Project 29 Support widespread adoption of electric vehicles



# Project 27 Invest in water and wastewater resilience and awareness

Promotion of rainwater tanks and other rainwater retention options will reduce demand for water from the mains network, reducing pressure on water catchment areas, as well as reducing costs of water treatment and pumping.





# Project 24 Improve water system through ecological interventions

We have an opportunity to improve the quality of our urban spaces, enhancing biodiversity and our wellbeing, while at the same time improving its capability to cope with high rainfall or earthquakes.





# **Project 6 Develop sustainable food networks**



# Project 4 Develop sustainable food networks





# Sustainability

- Balance of environmental, social and economic concerns
- Preserving natural capital for the future generations

## Resilience

- Developing an ability to bounce back
- Regardless of what shocks and stresses we experience

## **Similarities**

- Systems approach
- Survival and more

# **Differences**

- Different set of toolkits
- Different roots:
  - natural hazards vs natural environment
  - defending strategies vs protecting strategies
  - anthropocentric position vs intrinsic value

# Sustainability & Resilience

At its best they work together

In practice they often differ

### Thank You

Questions?

