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National Economic & Social Council



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Long-term Resilient and Sustainable Cities: A Scoping Paper

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Table of Contents

Acknowledgements	v
Executive Summary	1
Resilience Frameworks	3
The Role of Policy	3
International Models	5
Irish City Readiness	6
Resilient City Actions for Irish Cities	8
Preparatory Recommendations for an Irish Resilience City Initiative	8
Chapter 1: Introduction	10
1.1 Purpose of this Report	13
1.2 Defining Resilience	13
1.3 Report Methodology	15
1.4 This Report	16
Chapter 2: Building Resilience—A Literature Synopsis	17
2.1 Understanding Resilience	18
2.2 Resilience Framework	19
Chapter 3: Resilient and Sustainable Development in Cities—The Role of Policy	22
3.1 Resilience: A Global Agenda	23
3.2 Climate Resilience: A Global Priority Solved Locally	26
3.3 Socio-Economic Resilience: Recovery and Rehabilitation	29
3.4 Environmental Resilience: An Emphasis on Nature-Based Solutions	32
3.5 Global Networks in Support of Resilience Building	35
3.6 Situating the Local Mandate for Building Resilience	35
3.7 Conclusion	36
Chapter 4: Belfast’s Journey in Building Resilience	39
4.1 Leadership	41
4.2 Governance	41
4.3 Building Strategic Partnerships	42
4.4 A Focused Agenda	43
4.5 The Value of Collaboration	49
4.6 Funding	50
4.7 Lessons Emerging	51

Chapter 5: Insights From Other Cities on a Resilience Journey	53
5.1 BRISTOL	54
5.2 MILAN	60
5.3 Lessons Emerging	64
Chapter 6: A Resilient Cities Agenda—Policies, Processes and Practices	66
6.1 Leadership	68
6.2 Governance	70
6.3 Place-Based Leadership	73
6.4 Engagement	74
6.5 A Focused Agenda	75
6.6 Irish Cities Participation in International Networks	75
6.7 The Principles for Resilient Cities	77
Chapter 7: Reflections—Building Long-Term Resilient and Sustainable Cities on The Island of Ireland	80
7.1. Readiness of Irish Cities	83
7.2. Future Investigations	84
Appendices	87
ANNEX 1: Introducing the Research Team	88
ANNEX 2: Schedule of Interviews	90
ANNEX 3: Literature Review	91
A3.1 City Resilience Definition	92
A3.2 Resilient City Frameworks	94
ANNEX 4 – City Networks	122
B1 Resilient Cities Network (Formally 100 Resilient Cities)	122
B2 C40 Cities	122
B3 8 80 Cities	123
B4 Global Covenant of Mayors	124
B5 Local Government for Sustainability	124
References	126

List of Figures

Figure 3.1: The UN Sustainable Development Goals (SDGs)	24
Figure 3.2: Elements of Climate Resilient Pathways	28
Figure 3.3: Conceptualising the Realms of Resilience	33
Figure 3.4: Additional benefits that green spaces provide	34
Figure 4.1: The Relationship between the Belfast Resilience Strategy and the Community Plan, the Belfast Agenda	43
Figure 4.2: Belfast City’s Shocks and Stresses as Identified through Collaborative Processes	44
Figure 5.1: Bristol City Council Structure	55
Figure 5.2: The Five Realms of Civic Leadership – and their application in Bristol	59
Figure 5.3: Shocks and Stresses of Milan 2018	63
Figure A3.1: Documents per year with “City Resilience” in Title, Abstract or Keywords, from the Scopus Database	91
Figure A3.2: Resilient City Planning Framework	95
Figure A3.3: Resilient Cities	97
Figure A3.4: Milestone Framework	100
Figure A3.5: City Resilience Action Planning – CityRAPO Framework	101
Figure A3.6: City Resilience Network Framework	105
Figure A3.7: EPA Urban Climate Resilience Framework	112
Figure A3.8: Visualisation of EPA Assessment Score	113
Figure A3.9: Bangkok Resilience Strategy formulation process	117

List of Tables

Table 2.1: The UN-Habitat City Profiling Tool	21
Table 5.1: Bristol Resilience Disruptive Actions	58
Table 6.1: Key Governance Principles Guiding a Resilient and Sustainable Future	70
Table A2.1: Resilience Conversations on the Island of Ireland	90
Table A2.2: International Resilience Conversations	90
Table A3.1: Resilient City Framework – Key Questions	96
Table A3.2: UN-Habitat Self- Assessment Structure and Sample Questions	102
Table A3.3: Sectoral Modules associated with the CityStrength Assessment	107
Table A3.4: Example Entries in the CityStrength Assessment	108
Table A3.5: Sample Indicative Scales from the Disaster Resilience Scorecard for Cities	110
Table A3.6: Resilience Assessment Framework Dimensions and Criterion	114
Table A3.7: Instruments associated with modes of governance	118
Table A3.8: Criteria related to governance and institutions	119



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Abbreviations

100RC 100 Resilient Cities	NPF National Planning Framework	UNDRR United Nations Office for Disaster Risk Reduction
BBB Build Back Better	NSO National Strategic Outcome	UNFCCC United Nations Framework Convention on Climate Change
CARO Climate Action Regional Office	NTA National Transport Authority	UNISDR United Nations International Strategy for Disaster Reduction
CRO Chief Resilience Officer	NWRA Northern and Western Regional Assembly	
DEM Directly Elected Mayor	OPW Office of Public Works	
EMRA Eastern and Midland Regional Assembly	PPN Public Participation Networks	
EPA Environmental Protection Agency	RDS Regional Development Strategy	
FDI Foreign Direct Investment	RPA Review of Public Administration	
GI Green Infrastructure	RSES Regional Economic and Spatial Strategy	
ICLRD International Centre for Local and Regional Development	RSO Regional Strategic Outcome	
IREO Irish Regions European Office	SRA Southern Regional Assembly	
IVI Innovation Value Institute	SDGS Sustainable Development Goals	
NDP National Development Plan	UN DESA United Nations Department of Economic and Social Affairs	
NESC National Economic and Social Council		
NIHE Northern Ireland Housing Executive		

Executive Summary

City resilience is seen as a city capability to recover from large events, such as natural hazards, and to positively manage ongoing city “stressors,” such as the climate crisis, demographic change, social inequality, unemployment, and poverty. While the term ‘resilient city’ has its origins in dealing with natural disasters, its use now extends to a number of independent but interacting resilient domains, such as social resilience; economic resilience; community capital; institutional resilience; infrastructure resilience; and environmental resilience.

At its core, the concept of resilience is rooted in action and not just high-level principles. It has become an important goal for cities around the world – not least in response to climate change. As a term, resilience has not been well-defined, and has been criticised for its vagueness and malleability. But it is these very traits that enables it to become a “bridging concept” between the challenges facing the natural world and policy responses. At a socio-ecological level, it understands that systems are constantly changing in non-linear ways – thus making its use appropriate in discussions on the adaptability of highly complex, and often clunky, systems in operation across cities. Resilience speaks to the ability of places to activate protective qualities and processes at the individual, community, institutional and systems level to engage with hazards or stressors. It operates to the quadruple helix model whereby stakeholder engagement, via interdisciplinary dialogues and collaborations, involves public, private, academic and community stakeholders. It is central to maintaining or recovering functionality in the face of a disturbance while also adapting to a new equilibrium and minimising the accumulation of pre-existing or additional risks and vulnerabilities. While there are over 25 distinct definitions of urban resilience identified in the literature, spanning the fields of engineering, agriculture and biological sciences, environmental science, social sciences, and business management, a working definition by Meerow et al. (2016) is offered:

Urban resilience refers to the ability of an urban system – and all its constituent socio-ecological and socio-technical networks across temporal and spatial scales – to maintain or rapidly return to desired functions in the face of a disturbance, to adapt to change, and to quickly transform systems that limit current or future adaptive capacity.

This is reflective of the definition adopted by the 100 Resilient Cities (100RC) programme, of which a number of the cities referenced in this paper are part. Placing an emphasis on adaptative action and highlighting the importance of networking, they define 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.

Resilience Frameworks

Resilience frameworks came about to help cities identify needs for enhancing urban resilience, as well as the efficiency and effectiveness of planned or implemented measures. As illustrated in Annex 3, frameworks are built on a set of resilience principles – or qualities – such as those of the 100 RC ‘City Resilience Framework’: reflective; robust; redundant; flexible; resourceful; inclusive; and integrated. Frameworks presented as complete planning supports will include a defined resilience initiative pathway and a supporting assessment. The assessment dimension can be linked directly back to the given framework’s stated resilience principles, such as those in the UN-Habitat self-assessment: urban governance; urban planning and environment; resilient infrastructure and basic services; urban economy and society; and urban disaster risk management.

The Role of Policy

Building resilience is not a stand-alone policy issue. Resilience planning entails making difficult social, economic and environmental choices on the best ways to ensure basic security and quality of life against shocks and stresses. Resilience in mainstream policy is largely driven by the recognition that there is a strong interdependence between global challenges and local contributions, and global goals and local responses and actions. Since 2015, there have been a number of global initiatives, aimed at nations, to build their resilience and recover and adapt to the key challenges of this time – namely climate change and social justice. These include the United Nations (UN) 2030 Agenda for Sustainable Development which includes the 17 Sustainable Development Goals (SDGs), the Paris Agreement (COP 21), the UN Sendai Framework for Disaster Risk Reduction, the UN’s New Urban Agenda (Habitat III) and the European Commission’s European Green Deal. All speak to the importance of pursuing sustainable development, of addressing climate and environmental challenges, and making the transition just and inclusive for all. They speak to the seminal role of action at the local level in progressing a resilience agenda and ‘building back better’.

For the purposes of this paper, these global priorities are considered as emerging resilient policy agendas across the island of Ireland as they apply to: (1) climate resilience, (2) socio-economic resilience, and (3) environmental resilience.

The resilience debate has in many respects been driven by the climate crisis. As greenhouse gas emissions continue to rise, climate change will continue to accelerate. The implications of the climate emergency for the island of Ireland are increasingly prevalent in national and regional policies across both jurisdictions, recognising that approaches taken to mitigate and adapt to climate change – whether through broad Government policy, national and regional spatial planning and economic development strategies, and climate action plans – will impact the future resilience of Irish jobs and enterprise, and shape society. The component parts of climate resilience are, therefore, broad-ranging, and cannot be considered in isolation of either economic resilience or environmental resilience. Public bodies,

such as local government, will play a central role in demonstrating that Ireland is embedding a strategy of climate resilience, decarbonisation, sustainable development into every aspect of Irish society.

Building socio-economic resilience centres on that inter-relationship between people and place. With severe disruptions, such as Brexit and COVID-19, the socio-economic resilience of the island of Ireland is being tested; with responses strongly linked to environmental quality, climate resilience, creating better opportunities and quality of services. In response to Brexit, for example, both jurisdictions on the island of Ireland are placing a strong emphasis on building economic resilience. This includes transitioning to a low-carbon economy and exploring new growth opportunities based on local asset-bases. The recovery strategies being published in response to COVID-19 strongly argue for a 'green recovery', for any response to be couched in the SDGs and climate resilience. Green recovery is also seen as a sustainable pathway to a stronger and better economy, and higher quality health and wellbeing. Policy at all scales argues that economic resilience is only possible when there is integration between the liveability, strong natural capital, health, community structures and sustainability of a place. In response, the various national and regional plans and strategies as they relate to spatial development and economic growth speak to the growing need to promote compact growth, nurture industry clusters, diversify the local/regional business base, broaden the citizen's skills base and foster lifelong learning.

Increasingly, the evidence suggests that the planet is bound by ever-reducing time-limits to address climate change and reverse the decline in nature. As evidenced during COVID-19, the natural assets that underpin our communities – parks, green spaces and open spaces – can, with the right design and management, build resilience not only in climate change, but also in improving air quality, reducing health inequalities and contributing to an improved quality of life. Policies, North and South, acknowledge the role of green adaptation in building environmental resilience while also addressing climate resilience and contributing significantly to socio-economic resilience. Local authorities across the island of Ireland are, for example, leading the charge of Green Infrastructure (GI) development, with common thematic pillars including biodiversity; climate change; accessibility, recreation, health and wellbeing; and sustainable economic development and investment.

There is undoubtedly growing evidence across the island of Ireland of strengthened interconnectedness between spatial planning, regional development, economic, social and environmental policies. It is not possible to speak to building one type of resilience only – planning for climate resilience, for example, has implications for building socio-economic and environmental resilience. This is wholly the right approach – but challenging as all scales of government continue to struggle with silo-based working. Furthermore, enhancing resilience is not the responsibility of any one stakeholder but rather requires a collective response – from national government to local communities.

International Models

Based on studies of Belfast, Bristol and Milan, this paper contends that for resilience programmes to be successful they should have sufficient authority, be institutionalised, and have strong governance structures that embed a wider grouping of stakeholders in the initiative. Proposals should also take the approach of continuous renewal, reflected in the ability of the governance structures and relationship to change as city priorities shift.

Consensus from the three studies, and the advice of international resilience networks, highlight the fact that resilient city programmes are multifaceted, with large stakeholder groupings. While local government via the city or county/district council has a vested interest and are rightly the focal point, the success or not of any resilience programme is dependent on the involvement of agencies outside their control, from central government departments to commercial associations, academia and, many would argue most importantly, community and voluntary groups.

Institutionalisation is important as it disrupts 'silo-thinking,' not uncommon in any local government body, and provides 'legitimacy'. The ensuing cohesive local authority is then in a far better position to engage with, and gain the trust of, wider stakeholder groups. This trust is important as any initiative needs to be drafted and driven by the collective, as this will aid the continuing support of all.

Given the complexity of resilient city programmes, the city is better served if the programme 'leads' are sufficiently senior within the local authority structure. This not only lends to the legitimacy and importance of the agenda, but also gives them the authority to engage with leaders in key external stakeholder agencies.

From the models studied, thematic boards built around identified city priorities, and populated by a cross-disciplinary membership that either shapes or informs the theme of the board, have proven to be an appropriate governance structure. Invited members represent the relevant range of stakeholders and are given the authority to draft domain specific resilient programmes for the city. These boards are regarded as potential 'zones of innovation', whereby the membership place positive pressures on each other to think and act in a way that will be transformative as they future-proof the city against potential shocks and the impact of accumulates stresses – current and probable.

Resilient strategies should be viewed as living documents. The shocks and stresses when first identified are defined at a moment in time and, it could be argued, are biased by those engaged in the process. There is a strong case, therefore, for updating the shocks and stresses every two years at least – new risks can emerge and others can evolve, escalate or be addressed. As the focus of the plan or strategy adapts, so too should the focus and make-up of the thematic or cross-sectoral boards established to deliver on the established priorities and proposed solutions.

Irish City Readiness

As part of this scoping paper, interviews were held with local government representatives from Belfast City, Cork City, Derry City, Dublin City, Dún Laoghaire-Rathdown and Limerick City. According to senior staff in each, the current focus of resilience initiatives is to build “*stable communities*” in terms of physical, social and economic stability. To a large extent, they feel that resilience building is at the core of their work and is captured under the umbrella term of ‘sustainable development’.

The conversations with local authority service directors suggest that they have a relatively fixed mandate, and they manage the problems that are in front of them at any given time (e.g., homelessness, congestion, flooding, wind damage), within a known set of boundaries of budget and the balance of central and local government decision making. All local authorities were, for example, tasked by Government with providing a local response to COVID-19 lockdowns that met the needs of those restricted to their homes, especially those aged over 70 years. This placed a particular emphasis on combatting social exclusion and ensuring they had access to groceries, fuel, medication, meals and other essential items.

While a number of local authorities are engaging with the climate change agenda and are developing adaptation strategies (notably Cork County Council and Derry City and Strabane District Council), at this point in time climate action is more an emerging high priority in local government – rather than well-established. The pending enactment of the Climate Action and Low Carbon Development (Amendment) Bill 2020 in Ireland will quite quickly change this landscape, with all local authorities then being statutorily required to develop climate action strategies.

From discussions held with local government on the island of Ireland, and other retired Irish and Northern Irish public servants, this paper concludes that the issues for cities are that:

- Resilience is highly contextual;
- Resilient cities are ‘living cities’;
- Resilient cities must have the ability to self-govern; and
- Resilience must include social resilience.

While all local authorities are addressing problems of a similar nature, for example sustainable transport, any solution must take into account local considerations, such as natural geography, population density, legacy infrastructure and so on. The inference to be taken is that the ‘right solutions’ are dependent on tapping into local knowledge.

It has become clear that every domain-specific resilience effort must include a corresponding social effort. The logic is that, for example, a given transport policy or housing policy will positively or negatively affect a multitude of wellbeing issues. This was borne out during the March 2020 lockdown in response to COVID-19 when there was a significant increase in calls for assistance to local authorities and other agencies regarding access to essential services and more generally, overall

wellbeing. The resulting response and renewed pride in place have enhanced the calls for greater investment in “living cities” or “living communities”. Social resilience is underpinned by access to opportunity, in particular having a balance of job opportunities that sustain a variety of urban living models. Beyond services, small scale urban manufacturing, for example, offers opportunity potential due to direct and indirect employment in supply chains and spending in local retail and services.

Recent months has shown how the south side of Dublin City’s focus on offices, students, tourism and transient workers has become a disadvantage, with the district not faring well in the current COVID-19 crisis. This has supported the generally held idea that resilient cities are, by definition, ‘living cities’. This infers that resilient cities have a basic critical mass of people living in the urban core, with access to a diverse range of facilities (services, green spaces, public realm, etc.), and offering sustainable employment.

A strong argument was made that cities are better able to develop resilience the more they are in control of their own resources and decision making i.e., the principle of subsidiarity. As it currently stands, cities across Ireland and Northern Ireland are highly restricted financially and to the extent that they can make decisions independent of central government’s influence. In terms of decision-making, cities often need to refer to state bodies, be it central government (e.g., for decisions on social housing), or state agencies such as the National Transport Agency (NTA) or the Office of Public Works (OPW). While the arguments in favour of centralisation for economic scale and expertise are sound, in the context of resilience planning there is a balance that needs to be achieved. In a similar vein, there is an argument that the aforementioned thematic boards (p.xiii), built around identified city priorities, are not sufficient to capture citizen input. For those who hold this view, they argue full engagement can only be achieved with elections. Any potential city leader must stand on a platform, indicating the priorities and compromises that they stand for, and upon which they will ultimately be measured. Such scenarios, however, are not part of the local authority electoral system in Ireland or Northern Ireland at present.

The pending move towards a Directly Elected Mayor (DEM) in Limerick City and County, with an enhanced suite of powers, including statutory consultation rights across all Government Departments and a higher level of financial autonomy, could result in the transformation needed to ensure citizen engagement lies at the heart of resilience planning – as happened in Bristol. This will require a fundamental review of the relationship between central and local government. Limerick’s DEM, scheduled for appointment in late 2021, will prove to be an important ‘test-case’ of the principle of subsidiarity, as embedded in the Europe Charter of Local Self-Government.

Resilient City Actions for Irish Cities

Based on the studies of international cities and the interviews with public servants in both Ireland and Northern Ireland, it is clear that the primary foci for a resilient city initiative are the identification of the potential short term shocks and long term stresses that might affect the city, developing a wide ranging participatory governance structure, adopting the principle of subsidiarity, and striving to create living cities.

Identifying potential stresses and strains is dependent on access to relevant data and information, accessible through government agencies and third level institutions. A number of validated international frameworks offer a pathway to identification of stresses and strains and development of an implementation plan. Any such plans need to take into account the inevitable social impact that ensues with large shocks, such as COVID-19, or long-term stressors, such as changing demographic profiles.

It is clear that resilience initiatives are multifaceted necessitating large stakeholder involvement. This is referred to as place-based leadership, civic leadership involving the overlap of political leadership, public managerial/professional leadership, community leadership, business leadership and trade union leadership.

Subsidiarity is the principle that decision-making powers on public policy should rest as close as possible to where those policies are being delivered. The primary reason for the importance of this principle in building city resilience is that resilience planning is understood to be contextual. Different issues and different stakeholders pertain. Different physical, social and economic conditions prevail. No two cities are alike.

The COVID-19 impact on Irish cities has shown that 'living cities' have more resilience potential than hollowed-out urban cores. Living cities are communities which, to a large extent, are self-sufficient. Citizens have access to localised support, local facilities and local employment. While this is certainly aspirational, it should be a principle in any future initiative; with the 10-minute town concept, as promoted by the Southern Regional Assembly, being a step in the right direction.

Preparatory Recommendations for an Irish Resilience City Initiative

In preparation for building resilient cities, this paper recommends that the following be taken into consideration:

The arguments in this document on living cities are still highly conceptual, suggesting research into the definition of, and current experiences of living cities across the island of Ireland, is warranted. The paper argues that resilience is a multi-level concept but that its implementation is 'local'. This may mean that there are many versions of living cities, based on geography, local services, local facilities and local employment. An important piece of future work, for example, would be to determine what traditional and new forms of employment should and could be

relocated in cities. As we face into pos-COVID-19 recovery, there will undoubtedly be opportunities to diversify local economies. Advances in technology have, during lockdowns, provided many people with the capabilities to work from home. The same technology can enable other sections of the labour force to relocate to cities; e.g., advanced urban manufacturing.

Part and parcel of what is a living city is the identification of the appropriate stakeholders. This will be drawn from the quadruple helix of state, commercial, academic and community actors. Further investigation is warranted into the impacts of different models of governance and decision-making on the outcomes of resilience strategies, particularly in the context of large stakeholder groupings.

The argument that emerged through the development of this report is that cities are complex, and resilience must be context-specific, employ a place-based approach and have the required legitimacy to support the scalar responses adopted. The logic of scale and national policy for the betterment of all needs to be balanced against the local needs. The relationship between local and central government needs to be (re)defined. The principle of subsidiarity, whereby local government has the autonomy and financial resources to make strategic decisions, will play a key role in ensuring the best interests of the city are served over the long-term. The forthcoming DEM elections in Limerick City and County in 2021 provide a 'living lab' for the rebalancing of power required between top-down and bottom-up approaches to effective socio-economic, environmental and climate resilience.

Chapter 1: Introduction

As the 21st Century unfolds, we will live in an increasingly urbanised world. In 2018, it was estimated that 55% of the world's population lived in urban areas; by 2050, this is expected to increase to 68% (UN DESA, 2018¹) and by 2100 to 85% (European Commission, 2019²). This growth in urbanisation presents both socio-economic and environmental challenges “that are unprecedented in scale, scope and complexity” (Meerow and Newell, 2019). As urbanisation increases, the scale and predictability of risk – via a range of accumulated stresses or sudden shocks – becomes more complex and unstable (Arup, 2014). Global pressures are increasingly playing out at the scale of the city. Some like flooding or forest fires are not new but are increasing in frequency and intensity, as a result of climate change. Other shocks such as disease pandemics are posing new challenges (Arup, 2014). Fostering resilience in the face of such challenges has captured the attention of governments, policy-makers, investors and academics alike (Meerow et al, 2016; Arup, 2014) as an organising principle or concept around which key stakeholders, together with resources, can be assembled (Meerow and Newell, 2019).

The climate emergency and COVID-19 pandemic have, together, placed a renewed emphasis on the concept of resilience (NESC, 2020), while geo-political uncertainties such as the decision by the UK to leave the European Union (or Brexit) has highlighted the vulnerabilities of a number of sectors. Resilience is not a new concept. It comes from the Latin root of *resi-lire*, meaning to “spring back”. Since the 1960s, the term has been closely associated with systems change and the achievement of equilibrium across a range of disciplines – physical science, ecology, engineering, psychology, economic geography, disaster studies, environmental management and planning (Davoudi, 2012). In the early 2000s, resilience became associated with a place's or sector's bounce-back-ability. A decade on, bounce-back-ability has been replaced with Build Back Better (BBB), the principle of which is to use a shock event, or disaster to create more resilient nations and societies than before through the responses adopted.

At governmental level, the concept of resilience has long been associated with disasters and emergency responses. In 2010, the United Nations International Strategy for Disaster Reduction or UNISDR (now known as the United Nations Office for Disaster Risk Reduction or UNDRR), with a number of partner organisations, launched the global ‘Making Cities Resilient: My City is Getting Ready’ programme. Aimed at local decision-makers and city leaders, the objective of this programme was to increase understanding, and encourage commitment by local and national

1 <https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html>

2 https://ec.europa.eu/knowledge4policy/foresight/topic/continuing-urbanisation/developments-and-forecasts-on-continuing-urbanisation_en

governments, to make disaster risk reduction and resilience and climate change a policy priority. The three central themes to this programme were to (1) to know more, (2) to invest wiser, and (3) to build safer. In promoting resilience activities and increasing local level understanding of risk, the programme has adapted over the years to take account of the Sendai Framework for Disaster Risk Reduction (see below) and Agenda 2030 and associated Sustainable Development Goals (SDGs), both 2015, and the New Urban Agenda, 2016. In October 2020, this programme was replaced with 'Making Cities Resilient 2030'³ which recognises the role cities play at the frontline of dealing with current and future risks and crisis, and the urgent need to move from advocacy to implementation of action via communities of practice.

In 2013, recognising the diverse physical, social, and economic challenges facing cities in the 21st Century, as a result of the combined impact of accumulated stresses and sudden shocks, the Rockefeller Foundation pioneered the 100 Resilient Cities (100RC) programme to help cities build resilience. Over three open calls between 2013 and 2016, more than 1,000 cities applied and 100 cities were selected to join the Network—representing more than one-fifth of the world's urban population. In June 2015, the United Nation's General Assembly adopted the Sendai Framework for Disaster Risk Reduction, a key principle of which is 'Build Back Better' (BBB) in recovery, rehabilitation and reconstruction. The principle of BBB has its roots in the improvement of land-use, spatial planning and construction standards through the recovery process while also addressing the root causes of the vulnerabilities that may have led to the disaster or shock in the first instance.

These, together with other similar type programmes and frameworks, recognise that every city is unique, that resilience is increasingly becoming an important goal for cities around the world, and that there is no single blueprint upon which to understand, design or implement the response systems needed to absorb, recover and prepare for future shocks, stresses and strains. Rather, resilience is an integral part of place-making and local planning activities – even where the shock may be global in scale (Coaffee, 2013).

1.1 Purpose of this Report

In October 2020, the International Centre for Local and Regional Development (ICLRD) and the Innovation Value Institute, Maynooth University, (see Annex 1) were appointed by the National Economic and Social Council (NESC) to deliver a scoping paper that explores the conditions required to enable cities across the island of Ireland to build resilience, and develop sustainably.

This scoping paper includes:

- A review of resilience city literature, including extracting resilient city models and considering their use as assessments. It also extracts commentary on governance, as this informs the management of initiatives, and critiques, as these suggest limitations to any given framework;
- A review of policy (from international to local) as it relates to climate, socio-economic and environmental resilience;
- A mini-case study of Belfast City’s resilience programme. Belfast is the only city on the Island of Ireland that has a formal Resilient City initiative. The origins of this initiative coincided with Belfast being accepted into the 100RC programme which, in turn, allowed for the appointment of a Chief Resilience Officer (CRO);
- Vignettes of Bristol and Milan’s resilience programmes. These are two smaller investigations into cities who also have formal resilient city programmes, also supported by the Rockefeller Foundation, in addition to being involved in other global networks such as C40 and ICLEI – Local Governments for Sustainability;
- A summary of interviews with public servants within local government and other government agencies on the island of Ireland to understand the motivation and the current status of resilience planning in cities. This also looks at cities’ participation in international city resilience networks; and
- Reflections of the literature review, the interviews, the case study, and vignettes leading to a set of principles for resilient and sustainable cities on the island of Ireland and the identification of gaps which warrant further investigation prior to any potential resilient city initiative.

1.2 Defining Resilience

Urban resilience represents a new paradigm in urban management and spatial planning. There are many definitions of resilience, with organisations and networks such as UN Habitat, 100RC, Organisation for Economic Co-operation and Development (OECD), the UNDDR, and ICLEI – Local Governments for Sustainability each having their own variant. Common to each is the ability of a territorial system and its associated networks, communities and societies to absorb, withstand, adapt to, transform and recover from the effects of sudden events and slow-burn challenges that derive from natural and anthropocene dynamics.

For the purposes of this scoping paper, the proposed action-oriented definition by Meerow et al (2016: 39) will be adopted, and that is:

Urban resilience refers to the ability of an urban system – and all its constituent socio-ecological and socio-technical networks across temporal and spatial scales – to maintain or rapidly return to desired functions in the face of a disturbance, to adapt to change, and to quickly transform systems that limit current or future adaptive capacity.

This is reflective of the definition adopted by the 100RC programme, of which a number of the cities referenced in this paper are part. They define 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.

Resilient cities must have a combination of effective city leadership, good infrastructure, social cohesion, collective identity and relative prosperity (ARUP, 2014). Hernantes et al. (2019) argue that building city resilience requires a holistic approach that includes understanding dependencies across city services, potential vulnerabilities and cascading effects, and cross-organisational resilience and collaborative efforts (Cavallo & Ireland, 2014; Collier et al., 2013). The compact city dimension of sustainability is also an important factor, i.e. having development that is reasonably dense, not car dependent with jobs and services accessible. The commonalities of the various definitions, and their emphasis on the adaptive capacity of cities and citizens to cope and manage in the face of crisis, has ensured that resilience has become a central issue in urban/spatial planning discourse, and place-making more specifically (Brand et al., 2020). Places are different and, as argued by Hambleton, the responsiveness to shocks and stresses can be improved only when public policy and planning policy – both integral to place-making – are “tuned more sensitively to the different needs of different areas” (2020: 13). This includes embedding a “fruitful co-existence with nature into urban policy and practice” (*Ibid*, p.61).

While an increasingly popular term, resilience can be criticised for its vagueness and malleability. But it is these very traits that enables it to become a “bridging concept between the natural and the social sciences and stimulate interdisciplinary dialogues and collaborations” (Davoudi, 2012: 306; Coaffee, 2013; Meerow and Newell, 2019). For many commentators, resilience is a catalyst for cross-disciplinary collaboration (Arup, 2014; Davoudi, 2012) and responsible urban experimentation (Fastenrath and Coenen, 2018), and these are core strengths of the concept. While acknowledging that there is a fine line between vagueness and flexibility, the concept of resilience has to date facilitated both nations and communities alike to identify, understand and seriously respond to the interconnections across domains (Meerow and Newell, 2019). The OECD, for example, in defining resilient cities

promote sustainable development, well-being and inclusive growth⁴. The recent UN study on the socio-economic impacts of COVID-19 notes that any successful recovery strategy must be directly linked to the SDGs (2020). Indeed, the global responses to COVID-19 are seeing nations steer future policies in the direction of “clean energy, green jobs and lifestyles that tread more lightly on the planet” (Hambleton, 2020: 59). Such approaches require cross-disciplinary collaboration and multi-level governance that are rooted in action to be in any way effective.

1.3 Report Methodology

This scoping paper was completed in an eight-week period. A four-phase methodology was adopted, incorporating both primary and secondary research.

Methodology Strand 1: Strategic policy analysis and literature review

This strand of the research programme involved a literature review of city resilience models as used by cities and other public bodies, and a policy analysis of urban resilience and sustainable development at various spatial scales – from international to local. To this end, the analysis is considered in the context of the principles and objectives of sustainable development, not least the UN’s Sustainable Development Goals (SDGs); all of which recognise the value added from mixed land use, compact building design, age-friendly neighbourhoods, active travel, collaborative engagement and a strong sense of place. It also includes a brief overview of key policy developments at an international and European level that are informing policies on the island of Ireland, particularly at a national and regional level. This analysis considers resilience policy as it applies to climate change, socio-economic development and environmental management and conservation. This strand also considers the range of resources open to local government and cities as they embark on their resilience journey; this includes international networks such as C40 Cities, the Global Resilient Cities Network, the Global Covenant of Mayors, and ICLEI – Local Governments for Sustainability. A summary of this analysis can be found in Chapters 2 and 3.

Methodology Strand 2: International Practice in urban resilience

This strand of the methodology resulted in the collation of innovative/good practices in urban resilience in cities that have initiated resilience programmes. The three cities of Belfast, Bristol and Milan have all initiated resilience programmes, supported by the Rockefeller Foundation over the last three open calls (commencing in 2013). For Belfast, a mini case study was completed based on interviews, publicly accessible information and documents provided by Belfast City Council to the authors. For Bristol and Milan, vignettes were created based on one interview with an advisor, or city council staff member, acquainted with the city’s

⁴ <https://www.oecd.org/regional/resilient-cities.htm#:~:text=Resilient%20cities%20are%20cities%20that,cities%20can%20increase%20their%20resilience>

initiative and publicly accessible information. Particular attention was paid to leadership, governance and strategic partnerships in these cities.

The purpose of these interviews was to identify key knowledge and elicit a fuller and more holistic understanding of the driving forces behind their respective resilience strategies and priorities. The perspectives gathered are key to understanding the driving forces behind the development of resilience strategies, where they 'fit' within the existing hierarchy of plans and strategies in operation across cities, and the institutional, governance and funding arrangements required to support the effective delivery of resilient city programmes locally. A summary of this analysis can be found in Chapter 4 and 5.

Methodology Strand 3: City Resilience – An Island of Ireland Perspective.

Under this strand a series of conversations with representatives of local authorities and other public servants across the island of Ireland, provide insights into the resilience pathways being adopted by cities, with a particular focus on current resilient city strategies/programmes, emerging practices (including governance), policies, collaborative partnerships and the role of networking and funding. A summary of this analysis can be found in Chapter 6.

See Annex 2 for a summary of interviews held.

Methodology Strand 4: Final Report, Analysis and Recommendations

The final phase involved the synthesis of the findings from strands 1, 2, and 3, as outlined above, and recommendations for future investigations in building resilient and sustainable urban cities. This strand also included the development of a proposed 'Principles for Resilient Cities' framework devised from both the primary and secondary research undertaken.

1.4 This Report

The following scoping paper informs future research and policy thinking on building long-term resilient and sustainable development in cities across the island of Ireland. It considers what resilience means for cities on the island of Ireland and what future challenges or opportunities, if any, would lead them to develop a resilient and sustainable city strategy. It examines strategies and approaches that have been adopted by international cities to date to develop their respective resilience in the current climate emergency, the urgent need to transition to low carbon living, and the necessity to plan and grow in a sustainable way. It contemplates what the high-level goals often associated with resilient strategies mean in practice, and how such goals can effectively lead to action. It investigates the governance and funding arrangements that underpin such strategies, with the objective of better understanding the barriers and opportunities for building resilient cities across the island of Ireland over the medium and long-term. This scoping paper also includes reflections on the current capability of local government to lead-out on resilience planning, where additional resources may be required, and how existing frameworks can support resilience capacity.

Chapter 2:
Building Resilience—A Literature
Synopsis

A literature review was completed to elicit from various literary sources the current thinking on resilient cities, and to establish how this can inform any future discussions on building resilience across the Island of Ireland. The resulting literature review is detailed in Annex 3. In addition to considering the various definitions of resilience as they apply to building city resilience systems, the primary focus of the review was on highlighting the range of frameworks that exist, their various traits and their use as assessment tools. To enhance any future discussion, specific attention was placed on extracting commentary relating to governance, as this informs the management of initiatives, and critiques, as these suggest limitations to any given framework.

2.1 Understanding Resilience

Resilience literature is primarily directed at resilience to climate events, agro-ecosystems and natural disasters. It is a multi-disciplinary concept that seeks to strengthen the capabilities of social and ecological systems to recover, adapt and transform as required (Elmqvist et al, 2014). In addition to the definitions as outlined in Chapter 1, Patel and Nosal (2016) further consider the role of ecology as a bedrock for common definitions of city resilience, and the emphasis placed on the transformation of a given system into a fundamentally new one following a certain degree of stress. They assert that resilience is an action-oriented process; whereby resilience can be improved by measures that reduce exposure and vulnerability, with human agency playing a key role in the mitigation of the economic and human costs of a natural shock or stress. As such, resilience seeks to not only restore functionality but also correct existing social, political, and economic structures that may have increased exposure and constrained capacity to cope with the crisis. Other commentators (e.g., Pirlone et al., 2020; Croese et al., 2020; Meerow et al., 2016) emphasise the relationship between resilience and sustainable development, and the need to manage the multiple risks and challenges that arise from rapid urbanisation and greater global connectedness via dynamic and multi-disciplinary pathways. While all facets may not be entirely relevant in an island of Ireland context, the structure and approach to management of resilience initiatives is transferable and can inform a discussion on building resilient cities.

The concept of resilience now extends to a number of independent but interacting resilient domains, such as social resilience; economic resilience; community capital; institutional resilience; infrastructure resilience; and environmental resilience (Ostadtaghizadeh et al., 2015; Cohen et al., 2019; Pirlone et al. 2019); recognising that there are social, economic and environmental repercussions of living in a finite world (Newton and Doherty, 2014).

Recognising the inter-dependencies and connectedness between places, resilience cannot be considered in geographic or sectoral isolation. The resilience ‘of’ cities is highly dependent on an integrated network of production, supply, consumption, and disposal (Elmqvist et al, 2014). Understanding these inter-relationships has implications for policy.

2.2 Resilience Framework

Resilience frameworks have a role to play in assisting cities and communities to understand the stresses and shocks they face. All frameworks are built on a set of principles of resilience, normally called ‘qualities’. These are high level characteristics of a city to which all future measurement can be linked. An example of these qualities is set out by Godschalk (2003) who, based on a review of assessments at that point in time, concluded that resilient systems should have the following qualities:

- **Redundant**—with a number of functionally similar components so that the entire system does not fail when one component fails;
- **Diverse**—with a number of functionally different components in order to protect the system against various threats;
- **Efficient**—with a positive ratio of energy supplied to energy delivered by a dynamic system;
- **Autonomous**—with the capability to operate independently of outside control;
- **Strong**—with the power to resist attack or other outside forces;
- **Interdependent**—with system components connected so that they support each other;
- **Adaptable**—with the capacity to learn from experience and the flexibility to change; and
- **Collaborative**—with multiple opportunities and incentives for broad stakeholder participation.

We can distinguish between three sets of frameworks. The first is academic frameworks, which are presented as conceptual work in support of the design of resilience readiness assessments and action plans. They are built on argument and can often be useful with the questions they pose and solutions they offer (e.g. Desouza and Flanery, 2013; Jabareen, 2013).

The second is what we, for the purposes of this report, define as “frameworks in use”. They represent the most common frameworks in practice and are presented as usable assessment and action plan packages. Many such frameworks have been developed. For example, Sharifi and Yamagata (2016) included twenty-nine when they presented a set of principles and indicators that can be used for developing an

urban resilience assessment tool. Ostadtaghizadeh et al. (2015) identified a separate ten-point framework focusing on community disaster resilience.

Due to the quantity of the frameworks, we focus on those identified in the recent work of Cardoso et al. (2020) who published a new framework – the Resilience Assessment Framework – grounded in the analysis of existing frameworks. This set of frameworks is representative of the more prominent frameworks in use and offer an understanding of framework structure and use. These frameworks are:

- Local Governments for Sustainability (ICLEI 2010);
- UN-Habitat City Resilience Profiling Tool (UN-Habitat CRPT) 2013;
- Rockefeller and Arup 2014;
- World Bank 2015;
- United Nations Office for Disaster Risk Reduction (UNDRR, former UNISDR) 2017; and
- U.S. Environmental Protection Agency (EPA, 2017).

Further details on each are available in Annex 3.

In general, the frameworks assume the implementation of a resilience initiative. They tend to offer an implementation plan which includes an assessment tool. The assessment is divided into measurable resilience dimensions, which can be qualitatively measured with a set of given questions. An example of this is the UN-Habitat City Profiling Tool (see Table 2.1).

Table 2.1: The UN-Habitat City Profiling Tool

Focus:	Sub-Saharan Africa small cities and communities
Implementation Plan	Understand urban Governance Data Collection and organisation Data Analysis and Prioritisation Development of the City Resilience Framework for Action
Dimensions	Urban Governance Urban Planning and Environment Resilient Infrastructure and Basic Services Urban Economy and Society Urban Disaster Risk Management

The third framework type is the maturity framework (e.g. Gimenez et al., 2017; Hernantes et al., 2019). Maturity frameworks are a special case, as they provide, along with the assessment, a means of characterising the measure along a scale of maturity. This allows users to define their current status and to also describe aspirational levels of maturity.

Commentary on governance was extracted from literature as this informs any debate on the management of any resilience initiative. There is quite a high level of overlap between frameworks on the criteria for governance. An example of this is the work of Sharifi and Yamagata (2016) which suggests governance be built on: leadership and strong multi-stakeholder participation; efficient management resources; contingency, emergency and recovery planning; regulations and enforcement; and education.

There is an emerging debate on the use of resilience frameworks and different forms of criticisms have been levelled against them. These include Leitner's (2018) reflection of papers which claim resilience programmes tend to reinforce neoliberal norms and that they favour redress, rather than adaptation. Croese et al. (2020) and Meerow et al. (2019) point to a lack of focus on equality. Finally, Patel and Nosal (2016) suggest efforts are not based on evidence, but rather built on simple change theories.

Chapter 3:
Resilient and Sustainable
Development in Cities—
The Role of Policy

Building resilience is not a stand-alone policy issue. Building resilient cities requires places adapting to social-economic (e.g. demographic change, public health, competitiveness and changing geo-political arrangements) and environmental (e.g. climate change) challenges. It entails making difficult choices on the best ways to ensure basic security and quality of life against shocks and stresses. The success of such adaptations is dependent on the depth and commitment of collaborative partnerships; recognising that enhancing resilience is not the responsibility of any one stakeholder but rather requires a collective response – from national government to local communities. Planning for resilient cities requires strong place-based leadership dedicated to constructing secure futures. It necessitates an effective policy programme focused on the delivery of the UN’s Sustainable Development Goals (SDGs); and which speaks to the complexity of the relationships between social, economic and ecological systems. As noted in Chapter 1, a central focus of resilience is the presence of a stable equilibrium point to which systems return by ‘bouncing back’ from an external shock (Davoudi et al. 2012). As noted by Canpano and Jie Woo, “This equilibrium- and response-based understanding of resilience has similarly persisted in its application to public policy” (2017: 4), with responses increasingly moving beyond bounce-back only to emphasise recovery, mitigation and adaptation as resilience moves from “a fringe topic to a mainstream policy approach at all levels” (ICLEI, 2019).

Resilience in mainstream policy is largely driven by the recognition that there is a strong interdependence between global challenges and local contributions, and global goals and local responses and actions. In the Irish Programme for Government, there is a commitment that all local authorities will align to the 17 SDGs when drafting their development plans (Government of Ireland, 2020) – a process currently under way as every County Development Plan is updated to ensure it aligns with national and regional policy under *Ireland 2040*.

3.1 Resilience: A Global Agenda

Since 2015, there have been a number of global initiatives, aimed at nations, to build their resilience and recover and adapt to the key challenges of this time – namely climate change and social justice. In 2015, the United Nations (UN) published the 2030 Agenda for Sustainable Development or Agenda 2030. Its overall mission was to end all forms of poverty by calling for action by all countries to promote prosperity while protecting the planet and tackling climate change through 17 Sustainable Development Goals (see Figure 3.1). They recognise that ending poverty is interconnected with strategies that tackle climate change and build economic sustainability while addressing a range of social needs including education, health, and social protection (NWRA, 2020).

The SDGs and targets are integrated and indivisible. They are global in nature and universally applicable – while also taking into account different national realities and respecting national policies and priorities.

Figure 3.1: The UN Sustainable Development Goals (SDGs)



Each government decides how the SDGs are incorporated into national planning processes, policies and strategies, noting they are not only planning-related but are interwoven to the sustainable development of the economy, society and the environment.

The Paris Agreement (COP 21) was also adopted in 2015. Legally binding, its aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C. The Agreement also aims to strengthen the ability of countries to deal with the impacts of climate change, calling for greater adaptation and resilience measures. Ireland is a party to both the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement. Ireland will miss its 2020 targets under the Paris Agreement; with an assessment by Prof Kevin Anderson of University of Manchester indicating that for Ireland to comply fully with its 2030 obligations it will need to begin cutting its carbon emissions by more than 12 per cent a year⁵. The Programme for Government (2020), however, plans for a 7% reduction on average per annum up to 2030.

The Sendai Framework for Disaster Risk Reduction was similarly adopted in 2015 at the World Conference on Disaster Risk Reduction. Led by the UN, its aim is to

⁵ <https://www.irishtimes.com/news/environment/irish-climate-targets-fall-well-short-of-mark-under-paris-pact-1.4400382>

achieve the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries over the next 15 years. A key global target is to build resilience by reducing the damage to critical infrastructure and the disruption to basic services caused by shocks such as flooding and epidemics. The Sendai Framework has played a decisive role in broadening the underpinnings of resilience as a concept from a 'bounce-back' to its previous state or equilibrium to 'Building Back Better' in the recovery, rehabilitation, reconstruction and revitalisation of livelihoods, economies and the environment – thus creating more resilient places and societies than before.

In 2016 the New Urban Agenda was adopted at the United Nations Conference on Housing and Sustainable Urban Development (Habitat III) in Ecuador. Its aim is to provide a shared vision for a better and more sustainable urban future for both developing and developed countries by driving sustainable urban development at the local level. It contributes to the localisation of the 2030 Agenda for Sustainable Development in an integrated manner, and to the achievement of the SDGs, including Goal 11 of making cities and human settlements inclusive, safe, resilient and sustainable.

Adopted in 2019, the European Green Deal is the European Commission's plan to make the EU's economy sustainable. This will be achieved by turning climate and environmental challenges into opportunities, and making the transition just and inclusive for all. Recognising climate change and environmental degradation as an existential threat, the proposition is that Europe needs a new growth strategy that will transform the Union into a modern, resource-efficient and competitive economy, where

- There are no net emissions of greenhouse gases by 2050;
- Economic growth is decoupled from resource use; and
- No person and no place is left behind.

The European Green Deal is an action plan that outlines the investments needed and financing tools available to boost the efficient use of resources by moving to a clean, circular economy and restore biodiversity and cut pollution. In addition to climate action, the Green Deal is bolstered by a range of initiatives covering sustainable mobility, building and renovating and the shift to cleaner construction, sustainable agriculture, clean energy, sustainable industry, farm to fork and sustainable food systems and, biodiversity⁶.

This selection of international and European programmes promoting the sustainable development of place clearly demonstrate that there is a growing emphasis on enhancing resilience in the face of unprecedented shocks and accumulated stresses. This includes urbanisation, climate change and loss of biodiversity. Building resilience, as a necessary approach to meet the challenges of

⁶ https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

sustainable development (Elmqvist et al, 2014) requires a holistic approach “that includes understanding dependencies across city services, potential vulnerabilities and cascading effects, and cross-organisational resilience and collaborative efforts” (Hernantes et al, 2019: 97). They demonstrate that building resilience cannot be over-simplified; but rather requires a multi-functional and multi-disciplinary approach, as no one shock or stress exists independently.

Drawing on core themes emanating from the global resilience agenda, the remainder of this chapter will consider the emerging resilient policy agendas across the island of Ireland as they apply to:

- 1) Climate Resilience;
- 2) Socio-economic Resilience; and
- 3) Environmental Resilience.

3.2 Climate Resilience: A Global Priority Solved Locally

The resilience debate has in many respects been driven by the climate crisis. As greenhouse gas emissions continue to rise, climate change will continue to accelerate. As noted in the Climate Action Plan, “The shift in climate is bringing profound shifts of desertification, rising sea levels, displaced population, profound challenges to the natural world, and economic and social disruption” (Government of Ireland, 2019: 8). The climate emergency will have implications for the island of Ireland, and it is increasingly urgent that the long-term causes of climate change are addressed through “reducing our greenhouse gas emissions while adapting to its effects over the short, medium and longer-terms” (Government of Ireland, 2018: 119). Public bodies, such as local government, will play a central role in demonstrating that Ireland is embedding a strategy of climate resilience, decarbonisation, sustainable development into every aspect of Irish society (Government of Ireland 2019); the long-term benefits of which will impact both socio-economic and environmental resilience. The approach taken to mitigate and adapt to climate change will have an effect on the future resilience of Irish jobs and enterprise, and shape society (Government of Ireland, 2019). Future action must, therefore, consider its “impacts on other sectors and levels of governance” (Government of Ireland, 2019: 143).

According to the Centre for Climate and Energy Solutions, climate resilience is often associated with acute events or stresses such as heavy downpours, hurricanes, or wildfires that will become more frequent or intense as the climate changes, while also taking account of chronic shocks such as rising sea levels, worsening air quality, and population migration⁷. There is, as noted in the Northern and Western Regional Assembly’s Regional Economic and Spatial Strategy (RSES) “marked evidence that Ireland’s climate is changing with projections for Ireland indicating

⁷ <https://www.c2es.org/content/climate-resilience-overview/>

that there is a likelihood of a rise in sea levels, changes in rainfall events, increased frequency of storm events, changes to air and soil temperature and periods of increased drought” (NWRA, 2020: 20). The island of Ireland is committed to a long-term climate policy, informed by both UN and EU policy, and for Northern Ireland, Westminster policy also. Planning for climate resilience is non-linear; Ireland’s mitigation and adaptation includes transitioning to a competitive, low carbon, climate resilient and environmentally sustainable economy by 2050. This includes compact growth, sustainable mobility, transitioning to sustainable energy, the sustainable management of water and other environmental resources, and retrofitting of housing – all National Strategic Outcomes and Strategic Investment Priorities of the National Planning Framework (NPF), *Ireland 2040*.

The component parts of climate resilience are broad-ranging, and cannot be considered in isolation of either economic resilience or environmental resilience as outlined below (The Citizen’s Assembly, 2018⁸; Shine, 2018). Climate change is largely attributed to the human expansion of the ‘greenhouse effect’ since the mid-20th Century. The consequences of changing the natural atmospheric greenhouse include an increase in climate extremes and global sea level rises through warming. Addressing the climate emergency, therefore, centres on a range of actions aimed at reducing greenhouse gas (GhG) emissions. The transition to sustainable energy, for example, entails both strengthening energy security and resilience to support an island population of 8 million people; this includes electricity inter-connectors, a diversification away from a near total reliance on fossil fuels and a parallel shift towards wind, gas with carbon capture and sequestration, biomass and other renewable sources.

The NPF commits to the refocusing of the future planning and development of local communities to tackle Ireland’s higher than average carbon-intensity per capita (2020: 12). In the Regional Spatial and Economic Strategy (RSES) adopted by the Eastern and Midlands Regional Assembly (EMRA) in 2019, the need to enhance climate resilience and transition to a low carbon society recognising the role of natural capital and ecosystem services is one of three cross-cutting principles spanning the strategy. For the EMRA, the core goals are to “ensure the long-term management of flood risk and build resilience to increased risks of extreme weather events, changes in sea level and patterns of coastal erosion to protect property, critical infrastructure and food security in the Region” (2019: 25). The Southern Regional Assembly (SRA) in its RSES, adopted in 2020, identifies three priority areas for action to address climate change and to bring about a transition to a low carbon economy and society - one of which is climate resilience. The other two are decarbonisation and resource efficiency (SRA, 2020: 20).

It is clear from national and regional policy that in order to build resilience to future climate impacts, Ireland will not only need to reduce its emissions, but will “need to continue to intensify its efforts to build adaptive capacity and manage climate risk” (Shine, 2018: 11). In calling for climate change to be at the centre of policy-making in Ireland, the Citizens Assembly, in its deliberations on climate change in late 2017,

⁸ <https://2016-2018.citizensassembly.ie/en/How-the-State-can-make-Ireland-a-leader-in-tackling-climate-change/>

called for the state to take a leading role in addressing climate change through mitigation measures, undertaking an assessment of the critical vulnerabilities of the nation’s infrastructure and work closely with particular sectors – not least agriculture and transport – in addressing greenhouse gas emissions. But climate resilience is not just a state priority. Recognising the role of local responses to global challenges, the Climate Action and Low Carbon Development (Amendment) Bill 2020⁹ requires each local authority to prepare a climate action plan which shall specify the mitigation measures and the adaptation measures to be adopted by the local authority. The Bill recognises that the success of these plans is dependent on consultation and collaboration in development and coordination in delivery.

As Ireland fails to meet its binding greenhouse emissions targets for 2020, the need to urgently adopt climate resilient pathways is evident (see Figure 3.2). As defined by Shine, these pathways lay out “the development trajectories that combine adaptation and mitigation to realise the goal of sustainable development... include political, economic and socio-technical strategies, choices and actions” leading to “co-benefits for broader societal goals on energy, health and quality of life” (2018: 15).

Figure 3.2: Elements of Climate Resilient Pathways (Shine 2018: 16).

Awareness and capacity
A high level of social awareness of climate change risks
A demonstrated commitment to contribute appropriately to reducing net greenhouse gas emissions, integrated with national development strategies
Institutional change for more effective resource management through collective action
Human capital development to improve risk management and adaptive capacities
Leadership for sustainability that effectively responds to complex challenges
Resources
Access to scientific and technological expertise and options for problem solving, including effective mechanisms for providing climate information, services, and standards
Access to financing for appropriate climate change response strategies and actions
Information linkages in order to learn from experiences of others with mitigation and adaptation
Practices
Continuing development and evaluation of institutionalized vulnerability assessments and risk management strategy development, and refinement based on emerging information and experience
Monitoring of emerging climate change impacts and contingency planning for responding to them, including possible needs for transformational responses
Policy, regulatory, and legal frameworks that encourage and support distributed voluntary actions for climate change risk management
Effective programs to assist the most vulnerable populations and systems in coping with impacts of climate change
Reproduced from IPCC, 2014b. Chapter 20, p.1113. © Intergovernmental Panel on Climate Change, 2015.

⁹ <https://www.gov.ie/en/publication/984d2-climate-action-and-low-carbon-development-amendment-bill-2020/>

While there is growing evidence to suggest that the shift to a resilient, low carbon economy will lead to economic opportunities and be a net driver of job creation, there is also a growing acknowledgement that there will also be transitional challenges, particularly for workers and communities as this shift takes place. As argued by the Grantham Research Institute on Climate Change and the Environment, “One of the ways to accelerate climate action – and optimise its benefits – is to ensure that it is inclusive” (Robbins et al., 2018: 6). Achieving both policy coherence and a convergence of all actions to achieve inclusivity – or a just transition – is vital. Research undertaken by NESC clearly articulates that the realisation of coherence and convergence in policy and action necessitates a shift to a more systematic means of identifying, examining and responding to the opportunities and challenges associated with a low carbon economy and just transition (Mercier, 2020). As a new and emerging concept, there is no blueprint for just transition. It could be argued nor should there be. There are key principles to a just transition approach – such as “embracing change” and embodying “a commitment to a participative process of in-depth exploration with stakeholders and those experiencing the transition and change first-hand¹⁰”. In their application these must, based on a study of just transition approaches elsewhere, not least the approach being adopted in Scotland, be place-based, context specific and cognisant of regional differences (Mercier, 2020: 115).

There is a strong commitment to Just Transition across all three regional assembly RSEs, with the objective being that the impacts of policies as pursued and implemented to achieve climate resilience and decarbonisation do not disproportionately affect the most vulnerable in society. As Shine argues, however, Ireland has a long way to go to have all the right elements in place to pursue such pathways, with the choices made today determining “how the goal of a low-carbon, climate resilient and environmentally sustainable economy can be met by 2050” (2020: 15). The objective of climate resilience will significantly influence and shape future investment choices.

3.3 Socio-Economic Resilience: Recovery and Rehabilitation

Socio-economic resilience centres on that inter-relationship between people and place. With severe disruptions, such as Brexit and COVID-19, the socio-economic resilience of the island of Ireland is being tested; with responses strongly linked to environmental quality, climate resilience, creating better opportunities and quality of services. The opportunities and targets contained within the SDGs, Paris Agreement and the EU Green Deal can be a catalyst for reimagining the economy and society and their relationship to the natural environment.

Ireland is an open economy that is heavily dependent on trade and exports in sustaining and building economic growth. Building the resilience of the economy

¹⁰ <https://www.nesc.ie/work-programme-archive/transition-teams/>

requires it to be flexible to change and external influences. Following Brexit, the island's direct linkages with other EU countries by both air and sea will become significantly more important. A National Strategic Outcome (NSO) of the NPF is "A Strong economy supported by enterprise, innovation and skills" which requires a "competitive, innovative and resilient regional enterprise base...to provide jobs and employment opportunities for people to live and prosper in the regions" (Government of Ireland, 2018: 144). A key objective of the National Development Plan (NDP) 2018-2027 in response to Brexit is to build economic resilience. The recovery strategies being published in response to COVID-19 strongly argue for a 'green recovery', for any response to be couched in the SDGs and climate resilience. There is also a strong case for any green recovery programme to also be a pathway to "a better economy, to better health and wellbeing, to inclusion and a just transition, and with respect for planetary boundaries" (Bhattacharya and Stern, 2020). This entails aligning a people-centred recovery with the net-zero global agenda while also strengthening climate and environmental resilience (NESC, 2020).

According to an agendaNI report on 'Recovery and Resilience', there are numerous challenges facing Northern Ireland's economy; not least of which is a recognised productivity gap compared to other regions. As a low productivity economy, Northern Ireland relies heavily on the likes of retail and hospitality as large employment sectors, many of which have been hit hardest by the pandemic¹¹. In rebuilding the economy, the Northern Ireland Executive's COVID-19 recovery framework places an emphasis on:

- Higher paying jobs;
- A highly skilled and agile workforce; and
- A more regionally balanced economy (Department of the Economy, 2020).

The devolved government's approach to climate change will cut across all of these strategic goals, and will be integral in the development of policies.

One of the key pillars in Future Jobs Ireland 2019 which builds on the strategic actions in Enterprise 2025 Renewed, Ireland's national enterprise policy, is "Transitioning to a Low Carbon Economy". It places an emphasis on developing talent, producing jobs that are resilient into the future and in "creating attractive places throughout Ireland so that we can fully realise the potential of our regions" (Government of Ireland, 2019a: 36). To this end, the Local Enterprise Offices (LEOs) are a key stakeholder in supporting indigenous enterprises and start-ups. Higher and further education institutes also have a role to play in promoting lifelong learning and upskilling so that "The workers of the future must be adaptable and resilient with strong transversal skills" (*Ibid*, p.59).

The Irish Government's Programme for Government commits to reigniting and renewing the economy in a way that is "fair and balanced, leaves no one behind and is future proofed against shocks" (2020: 7). As part of this recovery a National

¹¹ <https://www.agendani.com/recession-and-recovery/>

Economic Plan is being developed which sets out the priorities and objectives for medium term recovery post-COVID and the Brexit transition. This roadmap will be structured around three key themes:

- Building resilience across enterprise and sectors;
- An inclusive and balanced economy; and
- Future proofing our economy and society.

Economic resilience requires a commitment to effective regional development as promoted via the NPF, and carried through in the RSEs as adopted by the regional assemblies. Within the Eastern and Midlands Region, there is a dedicated Regional Strategic Objective to economic resilience under the key principle of 'economic opportunity'; the objective being "Protect and enhance international connectivity and regional accessibility to support economic development, build economic resilience and support strengthened rural communities and economies including the blue-green economy and tourism" (2019: 25). In the Southern Regional Assembly's RSEs, Regional Policy Objective (RPO) 40 focuses on regional economic resilience; the objective being "to sustainably develop, deepen and enhance our regional economic resilience by widening our economic sectors, boosting innovation, export diversification, productivity enhancement and access to new markets" (2020:103). It speaks to nurturing industry clusters, diversifying the business base, broadening the citizen's skills base and promoting lifelong learning. The regional strategy of the Northern and Western Regional Assembly (2020) argues that economic resilience is only possible when there is integration between the liveability, community, strong natural capital, health, and sustainability of a place – with digitalisation/ technology playing a key support role.

The Climate Action Plan is committed to the improvement of resilience within and across "communities and households by providing information and building capacity, taking account of the distinctive needs of urban and rural communities" (Government of Ireland 2019: 139). This will be achieved through awareness raising and improved training and support initiatives for all community and voluntary stakeholders to support low-carbon action, address fuel poverty, and ensuring services are resilient in the face of severe weather events. As part of the wider national agenda to revitalise and sustain rural communities across Ireland, the *Action Plan for Rural Development* encourages the diversification of rural economies to build resilience and create additional jobs in sectors such as renewal energies, the green economy, and tourism. It places a strong emphasis on ensuring that future areas of employment are linked to the mitigation and adaptation required to address climate change, and which offer employment propositions that make rural living a viable option (Government of Ireland, 2018a).

3.4 Environmental Resilience: An Emphasis on Nature-Based Solutions

The Landscape Institute in publishing its policy paper, *Greener Recovery: Delivering a sustainable recovery from COVID-19*, highlighted that any recovery programme addressing the impacts of COVID-19 couldn't ignore the ever-reducing time-limits to address climate change and reverse the decline in nature. They called for a "green recovery" whereby investment and regulatory reform would: (1) Take a natural capital approach to new infrastructure and housing, (2) Invest in maintenance and renewal of existing places, (3) Set higher and fairer standards for green space, (4) Invest in natural solutions to climate change, and (5) Create a step-change in green skills, digital and data" (Landscape Institute, 2020: 3).

This approach recognises the national assets that parks, green spaces and open spaces represent which, with the right design and management, can build resilience not only to climate change, but also in improving air quality, reducing health inequalities and contributing to an improved quality of life. In calling for more investment in green infrastructure, the Landscape Institute references research by Vivid Economics which suggests that "a £5.5bn investment in urban green infrastructure would generate over £200bn of physical and mental health benefits" (2020: 6) whilst also contributing towards net zero¹².

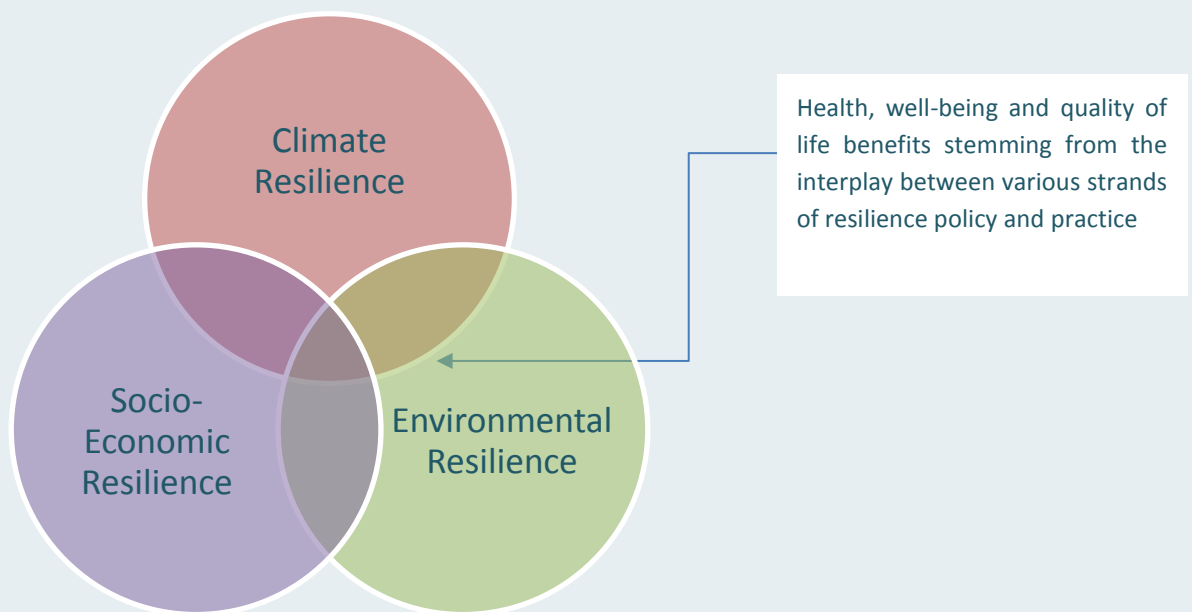
The NPF recognises the role of green adaptation which seeks to "use ecological properties to enhance the resilience of human and natural systems in the face of climate change" (Government of Ireland, 2018: 120). This entails the creation of green spaces and parks to manage micro-climates while also contributing to health and well-being. Under the Programme for Government, the Irish Government notes its intent to direct any relevant funding under the EU Green Deal towards decarbonising projects such as renewable energies, retrofits and ecosystem resilience – as well as "clean research and development spending, and reskilling needs to address unemployment from COVID-19 and other structural shifts from decarbonisation" (Government of Ireland, 2020: 23). In Northern Ireland, the Regional Development Strategy (RDS) 2035, as an overarching strategic planning framework, recognises the importance of accessible green infrastructure (GI) and promotes the link between environment, health and wellbeing (Department for Regional Development, 2001). The importance of GI is further emphasised in the more recent 'Strategic Planning Policy Statement for Northern Ireland (SPSS) Planning for Sustainable Development' (Department for Infrastructure, 2015), recognising as it does for example that green infrastructure provides important ecosystem services that reduce the effects of flooding and the urban heat island. This again highlights how resilience is multi-dimensional (see Figure 3.3).

At a regional level, the Just Transition for the Midlands programme has a strong nature-based solution focus to the resilience of the Midlands region as it adapts to the accelerated exit from peat announced in November 2019. As a model of

¹² <https://www.vivideconomics.com/wp-content/uploads/2020/07/Greenkeeper-Report-for-FPA-Greening-Programme-July-2020.pdf>

international significance, it takes “a proactive, inclusive and place-based” approach to just transition, recognising that such adaptations within an economy also operate “within environmental and social limits” (Mercier, 2020: 4).

Figure 3.3: Conceptualising the Realms of Resilience (adapted from Landscape Institute, 2020: 4).



A significant proportion of the Just Transition Fund is dedicated to bog restoration and rehabilitation, including the restoration of 1800 hectares of bog across 7 counties. The restoration of the bogs will create natural carbon sinks, thus contributing to climate adaptation and, in furthering the region’s sustainable economic development, will lead to the creation of an estimated 100 jobs. The transition out of peat is the Irish Government’s first test of just transition and it is hoped it will be a leading “example of how large communities can introduce major changes in their daily lives and workplaces and still thrive” (Government of Ireland, 2020: 39).

Leading the charge in GI development on the island of Ireland are Wicklow County Council and Derry City and Strabane District Council. In 2016, Wicklow County Council produced the ‘County Wicklow Green Infrastructure’ Development Plan Strategy’ which, as a chapter within the County Development Plan, outlines high level objectives as they relate to Green Infrastructure opportunities across the county. Going a step further, Derry City and Strabane District Council (DCSDC) published a ‘Green Infrastructure Framework’ in 2018 which outlines a vision for GI in the District, particularly as it relates to its future economic, environmental and social needs. The Framework outlines four key themes on which GI will be

progressed; with the themes in turn being structured around the two key principles of connectivity & functionality:

- Biodiversity;
- Climate change;
- Accessibility, recreation, health & wellbeing; and
- Sustainable economic development & investment (Derry City and Strabane District Council, 2018).

In 2019, the Council published its GI Plan which reviews the existing green infrastructure (green and blue spaces), identifies gaps in provision and investigates opportunities to improve the green infrastructure (Derry City and Strabane District Council, 2019). In late 2019, the Council published its Natural Capital Account. Carried out by Vivid Economics with Carnegie Trust, the report considers not only the economic and health/well-being benefits of investment in green spaces but also maps the ecosystem services they provide (see Figure 3.4). This includes a contribution to climate resilience and biodiversity enhancement.

Figure 3.4: Additional benefits that green spaces provide (Vivid Economics and Carnegie Trust, 2019).

Ecosystem service	Benefits	Impact in Derry/Strabane
Temperature regulation	Greenspaces can help cool urban environments. This mitigates labour productivity losses from heat and reduces the need for air conditioning.	Greenspaces and tree cover in greenspaces have an annual cooling effect of 0.06°C in Derry City*.
Air pollution removal	Greenspaces provide physical health benefits by removing harmful pollutants from the air. These benefits translate into economic gains due to decreased medical expenditures for the NHS and supports individual wellbeing.	The Office for National Statistics (ONS) estimates that all vegetation in Derry and Strabane District, including greenspaces, generates £7.50 in annual benefits per resident. This is equivalent to £1.1 million in avoided health damages per year.
Ecological quality	Greenspaces contribute to the preservation of biodiversity and habitats for urban species.	Derry and Strabane have a wealth of plants, animals and natural landscapes. The GI Plan stresses the importance of biodiversity and ecosystem services to the economy, environment, health & wellbeing.

3.5 Global Networks in Support of Resilience Building

There are a range of resources open to local government and cities as they embark on their resilience journey; this includes international networks such as C40 Cities, the Global Resilient Cities Network, the Global Covenant of Mayors, and ICLEI – Local Governments for Sustainability (see Annex 4). As membership-based organisations, each offers its own programme of supports to local governments in building resilience – from capacity building and training to research to peer-to-peer networks and focused workshops and seminars. They recognise that Mayors and local governments are both key targets and key drivers in building urban resilience. In addition to following through on their own programmes, they also come together in support of new programmes. For example, ICLEI is working with the Resilient Cities Network, UN Habitat, the World Bank, the World Council on City Data and UNDDR on the role-out of the Making Resilient Cities 2030 campaign. This is in part recognition that cities are about to embark on a steep learning curve in terms of actually understanding what resilience planning means, the need for a holistic approach, and the changes to systems and behaviours that it will require.

Cities will be unable to make these adaptations alone. It requires advisory support, resilience financing, improved coordination across governments and government departments, and will require strong collaborative partnerships. As governments and cities face into a ‘Decade of Action’, such networks have a key role to play – and should be regarded as a resource rather than a ‘stick’.

3.6 Situating the Local Mandate for Building Resilience

The European Charter of Local Self-Government (1985) affirms the role of communities as the first level for the exercise of democracy. A key driving principle of the Charter is that of Subsidiarity – decision-making powers on public policy should rest as close as possible to where those policies are being delivered. While both Ireland and the UK are signatories to the European Charter, both countries have been very slow to devolve further powers to local government; indeed, both Ireland and the UK could be regarded as super-centralised states. Notwithstanding, the role of local government in both Ireland and the UK has evolved over the last number of decades (via ‘Better Local Government’, 1996¹³; ‘Putting People First: Action Programme for Effective Local Government’, 2012¹⁴; and the Local Government Reform Act 2014¹⁵ in Ireland and the Reform of Public Administration¹⁶ (2015) in Northern Ireland), with a greater emphasis being placed on strategic planning, regeneration and economic development.

¹³ <http://www.kildare.ie/localdev/LocalGovtReform/BETTER%20LOCAL%20GOVERNMENT.html>

¹⁴ <https://www.gov.ie/en/publication/5655c2-putting-people-first-action-programme-for-effective-local-government/>

¹⁵ <http://www.irishstatutebook.ie/eli/2014/act/1/enacted/en/print.html>

¹⁶ While the Reform of Public Administration (RPA) was finally implemented in 2015 – seeing the number of local authorities with enhanced powers reduced from 26 to 11 – the process took 13 years to implement. See <https://www.agendani.com/local-government-reform-delivering-services-or-facilitating-outcomes/>

These additional powers proved critical in local government's response to the ongoing COVID-19 pandemic in terms of how they employed an agility, that many didn't know they had, to develop innovative ways of ensuring continued service provision. In social resilience terms, the councils took a lead role in protecting the most vulnerable and isolated within their respective jurisdictions by mobilising volunteers to support these citizens as needed. As the focus of response globally evolves from being largely health based to a need to balance economic stability with public health safety, local authorities are playing an increasing role in that brokerage role. In Ireland, for example, achieving economic stability has been closely linked with the already planned review of the Local Economic and Community Plans (LECPs) as part of the Government's plan for living with COVID-19¹⁷ – highlighting further the value of the principle of subsidiarity in addressing local need effectively.

3.7 Conclusion

From an analysis of a wide range of national and regional policy, covering spatial planning, regional development, economic growth, rural regeneration, social justice, climate change, COVID-19 recovery, green infrastructure and green recovery on the island of Ireland, it is increasingly evident that economic resilience is interdependent with climate and environmental resilience. The actions necessary to build climate and environmental resilience will, for example, play a key role in driving the economic recovery. The analysis clearly demonstrates the need for enhanced collaborative working across Government Departments initially to strengthen their respective understandings of the inter-relationships between policy fields. In acknowledging the essential role of local action in addressing global challenges, the policy analysis further highlights the need for greater collaboration across society in the design of resilience plans, strategies and programmes. This includes regional and local government, industry/businesses, academia and communities. Only then can society 'build back better'. There is also an acknowledged need to achieve a balance between the role of the state and local government and communities in the delivery of resilience, with each having an active role to play. This has implications – increasingly so – for the mandate and financing of local government

Resilience is a capability; increasingly thought of as recovery, mitigation and adaptation. While there are a number of global initiatives to build resilience in response to the key challenges of this time, it is increasingly understood that associated responses and actions must be local in nature. Building resilience is not a stand-alone policy issue. There is a strong argument that the solution includes an economy with a higher component of green activity – that a green recovery programme is not only a pathway to a better and stronger economy, but also to better health and wellbeing and a just transition. Enhancing resilience is not the responsibility of any one stakeholder but rather requires a collective response.

¹⁷ <https://www.gov.ie/en/campaigns/resilience-recovery-2020-2021-plan-for-living-with-covid-19/>

Public bodies such as local government play a central role in building resilient and sustainable cities. This requires a holistic approach, acknowledging that while the resilience debate has been driven by the climate crisis, it is also couched in biodiversity loss and social and economic disruptions. As Ireland fails to meet its binding greenhouse gas emission targets for 2020, it is increasingly clear that choices made today at a policy level will significantly influence whether the goals and targets for 2050 can or will be met.

Building resilient and sustainable cities centres on the inter-relationship between people and place. It pivots on building ‘living cities’ underpinned by strong natural assets. Undoubtedly the opportunities presented by the SDGs, Paris Agreement and EU Green Deal can be a catalyst for reimagining the economy and society, and their relationship to the natural environment. Central to this will be strong place-based leadership, particularly within local government.

This report is timely because any recovery programme can’t ignore the ever-reducing time-limits to address climate change and reverse the decline in biodiversity, but in a local context, and with consideration for local stresses and strains. To some degree this is happening. A fulcrum of Ireland’s national enterprise policy is its commitment to transitioning to a low carbon economy – evident across spatial planning, urban governance, economic development, environmental management and sustainable energy policy at all levels of government. As noted, the NPF is committed to the refocusing of the future planning and development of local communities to tackle Ireland’s higher than average carbon-intensity per capita - however difficult it will be for some section of society. There is no blueprint for just transition, there are a number of key principles such as embracing change, and committing to, and engaging in, a participative process with stakeholders and those experiencing the transition first-hand.

There is a growing acknowledgement that the island of Ireland must intensify its efforts in building resilient places – not least in managing climate risk. While the policy landscape reflects the scale of change required, it remains largely silo-based across key national and regional agencies and, thus, somewhat divorced from the required joined-up, cross-disciplinary implementation approach needed. From a city perspective, this will be better served when the principle of subsidiarity is a reality across both Ireland and Northern Ireland. The impending election of a Directly Elected Mayor (DEM) in Limerick City and Council in late 2021, with enhanced powers and budget, could be the transformation needed to build better resilience.

The remainder of this paper considers how a number of cities, namely Belfast, Bristol and Milan, are building resilience. These insights, considered in Chapters 4 and 5 and based on primary and secondary research, reflect on many of the key issues raised by this policy analysis including the non-linear nature of resilience; and the need for a multi-functional and multi-disciplinary approach to building resilience that recognises, and both pre-empts and reacts to, the interactions between socio-economic and ecological systems. The case studies explore the key role of spatial planning and development policy and practice in tackling the interdependencies between shocks and stresses; and the importance of building adaptive capacity and nurturing place-based leadership. They delve into the key role to be played by local government and the value added that can be brought to the action oriented

process that is resilience building when models of collaboration such as the Quadruple Helix or New Civic Leadership are employed.

The case studies are followed in Chapter 6 by the perspectives offered by representatives from cities across the island of Ireland on resilience building, and where resilience 'fits' within the mandate of local government. The concept of resilience is considered using similar headings to Chapters 4 and 5; this is to signal where cities on the island of Ireland are currently in their journey in building the adaptative and transformative capabilities required in building resilience. While interviewee responses are anonymised, this chapter solely reflects the opinions shared.

Chapter 4:
Belfast's Journey in Building
Resilience

In 2018, Belfast became a member of 100 Resilient Cities¹⁸ (100RC), a programme funded by the Rockefeller Foundation. 100RC is a global network of cities which are united in their objective of identifying and reducing urban threats – whether shocks or accumulated stresses and strains. The process of becoming a member of this global network of cities coincided with the adoption of the city’s first Community Plan, The Belfast Agenda. Community Planning has been a statutory function of local government in Northern Ireland since 2015 with the reform of local government; with community plans identifying long-term priorities for improving the social, economic and environmental well-being of districts and the people who live there. Published in November 2017, the Community Plan sets out a vision and long-term ambition for Belfast’s future – this includes detailing a series of key priorities – and was created by a partnership of key city partners including statutory agencies, businesses and academia, and residents and community groups.

In its commitment to ‘Growing the Economy’ the Belfast Agenda pledges to make Belfast a resilient city and advances, as part of the 100RC programme, the appointment of a Resilience Commissioner “who will work with partners to develop a strategy to take a targeted approach to addressing the issues which pose the greatest risk to the city and its economy” (Belfast City Council, 2017: 26).

For the period 2017-2021, the Community Plan committed to four key themes, namely:

- Growing the economy: creating jobs and investment;
- Living here: making life better for all our residents;
- City development: creating a competitive and sustainable city; and
- Working and learning: connecting people to opportunities.

The delivery of the Belfast Agenda is overseen by four boards, established as part of the city’s Community Planning Framework. One of the four boards is the Resilience and Sustainability Board, a multi-agency partnership responsible for both the design and delivery of the Belfast Resilience Strategy, launched on the 15 December 2020. Embedding Belfast’s involvement in the 100RC programme in the Community Plan would ensure its legitimacy, not only across Council but with key city stakeholders whose buy-in to the process – and resulting actions – would be essential to the success of any resulting strategy.

¹⁸ As of 2020, this is now known as the Resilient Cities Network.

4.1 Leadership

Under the 100RC, a budget was provided to each successful local government to recruit a Chief Resilience Officer (CRO). In Belfast City Council's case, they opted to recruit a Commissioner for Resilience. An appointment to the post was made in late 2017, incidentally coinciding with the publication of the Community Plan, and taken-up in mid-2018.

The commitment by the Rockefeller Centre to the appointment of a lead person to deliver on city resilience is to be welcomed. The leadership role envisaged by both the Council and the Commissioner for this position was quickly established as a result of the Commissioner leading on the response to the Bank Buildings fire in Belfast City Centre in late August 2018¹⁹. This would result in the complete closure of a number of businesses for many months and the need to divert traffic and pedestrian movements around the immediate vicinity²⁰. As cities are taking decisive action to shape the city according to progressive values – for example, advancing social justice, building economic resilience, promoting care for the environment and bolstering community empowerment – such place-based leadership plays a critical and influential role in shaping future possibilities that are grounded in local knowledge and understanding of the challenges and opportunities facing a place at a particular point in time (Hambleton, 2014). As further argued by Hambleton, radical change in public services cannot be brought about in the absence of bold, forward looking leadership (2014: 9). Such leadership is an integral part of the CRO role envisaged by the 100RC programme.

4.2 Governance

The Belfast Commissioner for Resilience is employed by Belfast City Council and reports directly to the Chief Executive. While not an Executive Director, the Commissioner is part of the Senior Management Team and attends the Corporate Management Team meetings. As part of their role, they Co-Chair the Resilience and Sustainability Board and the Belfast Climate Commission. They also attend the All-Party Working Group on Climate Crisis.

Placing the Commissioner's role within the Senior Management Team is regarded as essential to embedding the work of the Resilient Team in the operations of Council and to giving legitimacy to the resilience agenda, particularly given its cross-cutting nature and focus. It lends a 'permanency' to the agenda, and over time, should result in it becoming self-sustaining.

Building the resilience of a city is not a one-person role. It requires a team, and while that is being built, it demands a commitment of resources, even on a part-

¹⁹ <https://www.belfastlive.co.uk/news/belfast-news/primark-fire-belfast-live-updates-15081025>

²⁰ <https://www.bbc.com/news/uk-northern-ireland-49484120>

time basis, to provide the insights required, to identify the key players and to be the ‘connector’ both within Council and without.

4.3 Building Strategic Partnerships

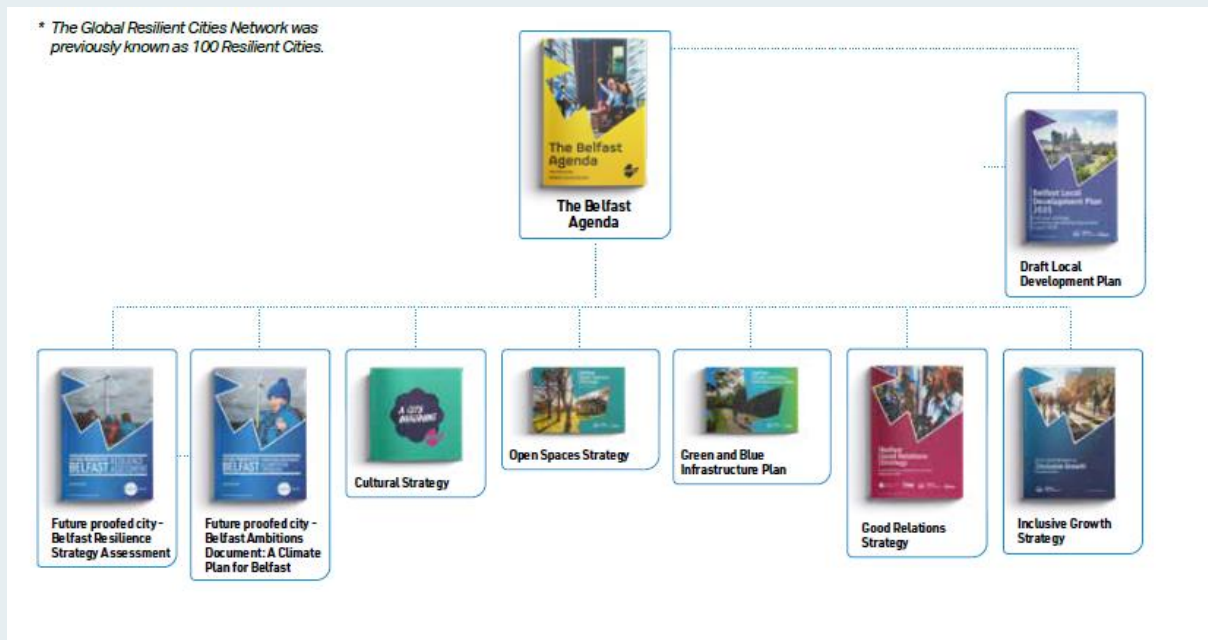
Through its involvement in the 100RC, Belfast benefited from having access to the Rockefeller Foundations’ strategic partner in the roll-out of the programme, Arup²¹. In 2014, Arup and the Rockefeller Foundation jointly devised the City Resilience Framework (CRF) as a tool to “baseline what matters most for making cities more resilient” (Arup, 2014: 1). The CRF is used by all partners in the 100RC network. It consists of four categories, twelve performance-based goals (3 per category) that are “the backbone of a resilient city” (*ibid*, p. 8) and describe the “fundamental outcomes of a resilient city” (*ibid*, p.7) and a series of qualities that are considered critical in preventing breakdown or in enabling a timely response. Through the Framework, the City mapped out its vulnerabilities and risks against potential actions, and facilitated engagement with partners citywide in Belfast to gather evidence and formulate possible solutions (Belfast City Council, 2020: 16). Undoubtedly, the Framework has its place in the process – in capturing data, in identifying the weaknesses, etc. But whether or not it is essential to the process is still up for debate.

As noted in the introduction to this Chapter, the Community Plan welcomed the city’s success in becoming part of the 100RC programme, and committed to the appointment of a Resilience Commissioner (equivalent to a Chief Resilience Officer in other cities). From the outset, Belfast City Council recognised that any future resilience strategy would need to be aligned to the Community Plan – given its statutory ‘teeth’. Indeed, the Belfast Resilience strategy is one of several documents that aims to deliver the Belfast Community Plan (see Figure 4.1).

The ‘capture’, therefore, by the Commissioner for Resilience of one of the four sub-boards that form part of the governance of the Community Plan was a critical move in ensuring that the resilience agenda would be taken seriously not only across Council but by all the city’s stakeholders. Having access to the Community Planning Partnership Board, the main oversight body, and its membership would ensure that the newly named Resilience and Sustainability Board would get the key agencies needed to build city resilience around the table. In addition to the aforementioned external strategic supports, this was considered essential in further strengthening the links – and legitimising the relationship – between the resilience agenda as part of the Community Plan.

²¹ Through their strategic relationship with Arup, Belfast City has received a city risk and asset audit, a climate change risk assessment and a study that will help it develop its strategy for creating child friendly neighbourhoods (Belfast City Council, 2019: 16).

Figure 4.1: The Relationship between the Belfast Resilience Strategy and the Community Plan, the Belfast Agenda (Belfast City Council, 2020: 11).



4.4 A Focused Agenda

The starting point for Belfast’s resilience journey was the city’s goal of building inclusive economic growth as set out in the Community Plan, The Belfast Agenda. Through the City Resilience Framework assessment and workshops with members of the Resilience and Sustainability Board, Belfast mapped a range of potential shocks and stresses for the city (see Figure 4.2). For Belfast, resilience thinking is considered a necessity. While each of the identified shocks and stresses represented a risk, it was recognised very early on in the process that it was the relationship between these risks, and what the impacts could be if one or more of these were to occur at the same time, that presented the biggest challenge for Belfast (Belfast City Council, 2020).

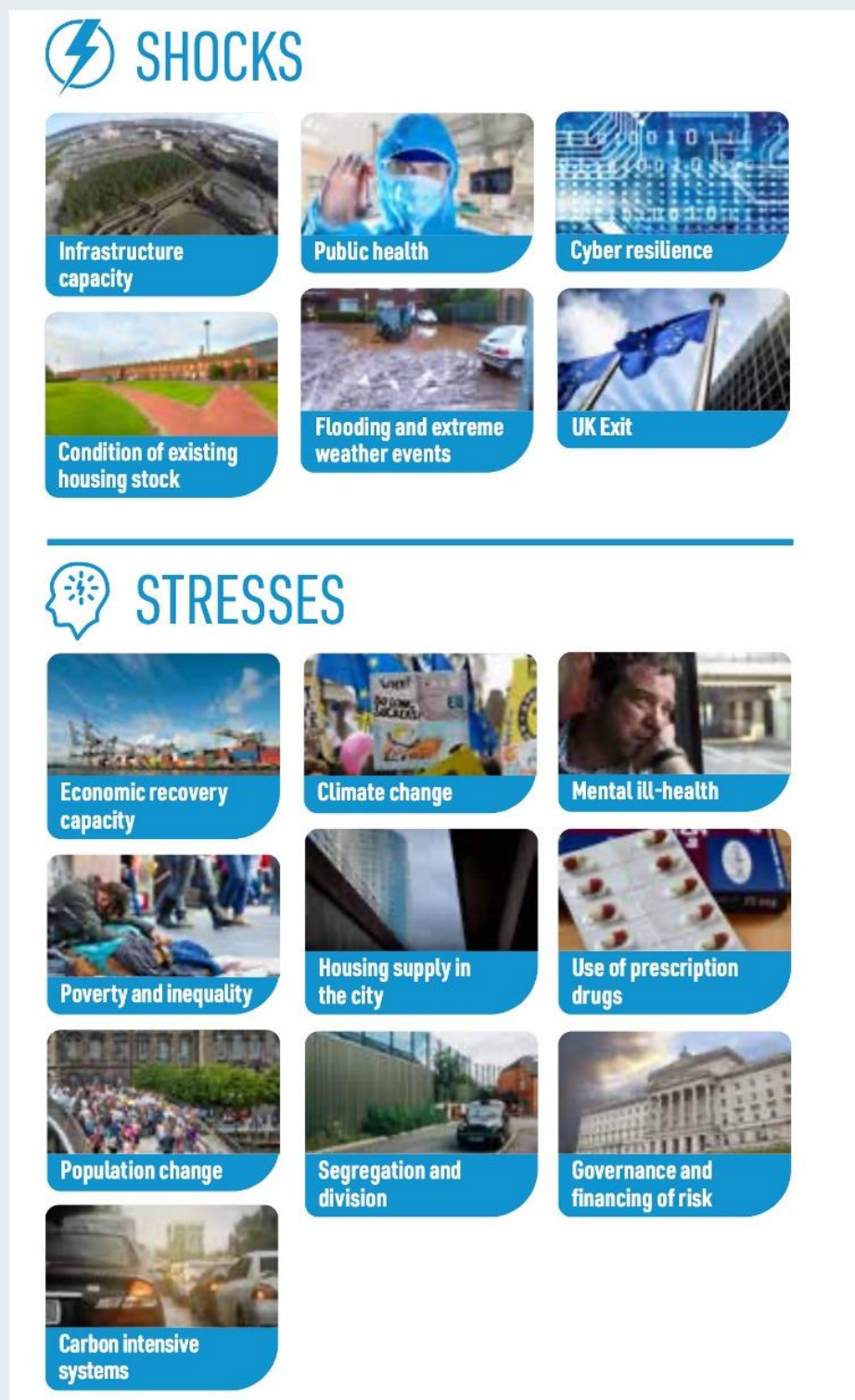
Having reviewed the shocks and stresses, and identified climate change as the obvious gap where little ground-work was being laid for adaptation and mitigation, Belfast’s resilience goal could be set:

“To transition Belfast to an inclusive, net-zero emissions, climate-resilient economy in a generation” (Belfast City Council, 2020: 9).

Belfast purposefully did not select a date for achievement of this goal; recognising that Northern Ireland is legally bound by the 2050 timeline as outlined in the Paris Agreement. From this goal, a number of levers were identified whose aim would be

to resolve a number of the risks at once. From the outset the Resilience and Sustainability Board wanted a programme that blended prioritisation with action.

Figure 4.2: Belfast City's Shocks and Stresses as Identified through Collaborative Processes (Belfast City Council, 2020: 9)



The levers are organised across three strategic focus areas – they are:

- Climate adaptation and mitigation;
- Participation of children and young people; and
- Connected net-zero emissions economy.

Taking this approach enables the city to apply a holistic and integrated approach to building urban resilience. The focus areas provide the Board’s membership with the relevant ‘hooks’ needed to keep them at the table. This was absent in the global financial crisis and recession of 2008-10.

Climate resilience

As noted in ‘Future-Proofed City: Belfast Resilience Assessment’, “The effects of climate change present the greatest economic, social and environmental risks to the city of Belfast, in this decade and beyond. The city’s future economic growth must therefore be inclusive, sustainable and low-carbon.” (2020a: 14). Belfast is a harbour city already at risk of flooding. It is highly car dependent which has implications for quality of air. The hard infrastructure required to accommodate cars and heavy goods vehicles have implications for surface run-off and biodiversity. The city is also heavily dependent on carbon-based energy and is a net importer of energy. With energy demands expected to increase globally over the coming decades, this raises issues for managing energy demand and energy security.

Key response actions identified include:

- New city-wide structures to collaborate on climate action: Belfast has established two permanent new structures to drive partnership and collaboration to build the city’s climate resilience and drive climate action. These are the aforementioned Resilience and Sustainability Board as part of the Community Planning Structures, and the Belfast Climate Commission which is a ‘think tank’ that ensures the right evidence and analysis is available to decision makers (see Section 4.5 for further details).
- Delivery of Recommendations in Belfast’s Mini Stern²²: A Net Zero Carbon Roadmap for Belfast.
- Climate change risk assessment: Arup have been commissioned to undertake a high level climate change risk assessment on the potential impact of climate change on the city’s infrastructure.
- Belfast City Council Climate Adaptation and Mitigation Plan: to be published by Belfast City Council in 2021 based on data from an internal sustainability review, an energy review and the development of climate adaptation priorities.

²² The Mini-Stern is an economic analysis of decarbonisation and provides the Belfast with a robust Net Zero Carbon Roadmap. It is a city-specific ‘take’ on the landmark Stern Review on the Economics of Climate Change that was published in 2006 by the economist, Nicholas Stern.

- **Belfast Harbour – Green Port:** Belfast Harbour’s ambition is to become one of the ‘greenest’ ports in the world, with the strategic goal of achieving net zero carbon emissions before 2030 through decarbonisation of operations and nature-based solutions.
- **Queen’s University Environmental Solutions Centre:** explore the feasibility of establishing an interdisciplinary citywide support organisation drawing on the model of Adaptation Scotland to provide advice and support to help public sector, businesses and communities understand what climate change will mean for them, and the best way to plan for its impact.
- **Sustainable District:** Belfast Linen Quarter BID, working collaboratively with city partners, will establish the city’s first ‘Sustainable District’, a core objective of which is to co-create a prosperous, inclusive, climate-resilient district founded on a circular, net zero-carbon economy.
- **Belfast Region City Deal:** The Digital Innovation Pillar of the Belfast Region City Deal prioritises resilience and sustainability – including energy transition, integrated transport solutions and building technology.
- **Collaborate with a range of organisations to plant one million trees in the next 15 years²³** – thus contributing to deliver of the city’s Open Spaces Strategy and Green and Blue Infrastructure Strategy;
- **Local Development Plan: A Critical Lever for Resilience:** The draft plan provides a 15-year framework to support the city’s ambitions including the promotion of a green and active place and building a smart, connected and resilient city.
- **Sustainability and Food:** a critical workstream to Belfast’s resilience that will examine the climate impacts and opportunities for an ongoing and city-wide programme of healthy and sustainable food.

Participation of Children and Young People

Belfast is a young city; 33% of the city’s population is aged 25 years and under. Building a child-friendly city is seen as critical to Belfast’s resilience and to attracting a skilled and talented workforce – thus contributing to the city’s economic resilience and mitigating any risk of population decline. Belfast is taking inspiration from cities such as Rotterdam and Vancouver who have placed a strong emphasis on making their urban environments attractive to families and retaining skilled workers, and from New Zealand and Wales where there is a strong emphasis placed on ‘future generations’. City design is also recognised as impacting on a person’s health and well-being.

This focus area is strongly linked to themes of ‘connectivity’ – where “walking, cycling and play can improve health and wellbeing of children and young people” – and climate resilience where “high-density traffic, poor air quality and a lack of

²³ <https://www.belfastcity.gov.uk/onemilliontrees>

public space can directly discourage people from being physically active” (Belfast City Council, 2020a: 18).

Drawing on Arup’s report, ‘Designing for Urban Childhoods’²⁴, and the key challenges and principles identified, key response actions identified include:

- A Permanent Platform for Involving Children and Young People on Climate Change: co-designed by children and young people and led by Belfast Climate Commission, this new platform will initially ensure youth involvement in the UN Climate Conference COP26²⁵. Quality of urban childhood: Belfast City Council will put in place a series of indicators to measure the quality of ‘urban childhood’ in Belfast.
- Ulster University Architects for Change Programme and MSc in Planning and City Resilience: a series of programmes that will deliver environmental and social sustainable practice including to deliver innovative concepts for design, planning, construction and management of climate resilient, net zero emission buildings and communities.
- Investing in multifunctional spaces and creating a playful city: Belfast City Council will invest in a network of city centre public realm play and multifunctional spaces, including permanent and temporary/pop-up play spaces, and work to establish Belfast as ‘A Playful City’ by 2023.
- Public transport: an ambition to provide all children and young people with access to free public transport in Belfast within the next decade.

Connected, Net-Zero Emissions Economy:

Connected cities are characterised by being ‘lived-in’, of having well-developed networks of communities and organisations, of having a strong multi-modal infrastructure system, and in having a rich tapestry of culture in-situ to attract a skilled workforce and foreign direct investment (FDI). Research undertaken as part of the Belfast Region City Deal recognised “the economic potential to be gained from a step change in investment in key infrastructure classes to boost growth in the region, and in turn enhance economic resilience” (Belfast City Council, 2020a: 23). There is a need to rethink how people travel within the city, how they access and consume services, how spaces are used and how and where interactions take place. This all has implications for climate resilience and the future sustainability of the city and its citizens.

Key response actions identified include:

- Sustainable Drainage: sustainable drainage is critical to any city’s climate resilience and meeting its existing and future growth.
- A Zero Emissions city bus fleet and electric vehicle infrastructure by 2030.

²⁴ <https://www.arup.com/perspectives/publications/research/section/cities-alive-designing-for-urban-childhoods>

²⁵ The 2021 United Nations Climate Change Conference will take place in November 2021 in Glasgow.

- Delivering Belfast's Net Zero Carbon Roadmap: Belfast's 'Mini Stern' identifies buildings and transport as key emitters of carbon. Housing organisations in the city will explore financial options required to meet the targets by 2030 and 2050 respectively and set interim milestones to report on progress on a five-yearly basis.
- A Bolder Vision for Belfast: Underpinned by four 'Visioning Principles' this blueprint delivers an ambitious and challenging framework for 13 'What Ifs?', transformational projects identified through stakeholder engagement, data and analysis.
- Investment in existing NIHE stock: part of a city-wide approach to decarbonisation and retrofit of existing stock.
- Developing a Hydrogen Eco System: City partners across energy, waste, housing, water and transport will develop a network of hydrogen powered infrastructure in this decade.
- Belfast Destination Hub - A Low Carbon Exemplar for the City: A demonstrator project whereby the Hub will be a cultural beacon for the city, an anchor for the wider Belfast experience and an area of orientation for visitors into Northern Ireland.
- Sustainable Tourism: A commitment to the development of a 10 year action plan for tourism in the city region; with an emphasis on sustainable tourism.
- Training and skills for an inclusive low-carbon economy: Inspired by the Canadian Academy for Sustainable Innovation, this training and skills programme will provide thousands of professionals with the skills, knowledge, and experience to manage the city's move to a sustainable future by 2050.
- Innovation and Inclusive Growth Commission: Through this collaborative partnership, the resulting long-term integrated growth plan aims to build a job-led transition to an inclusive net zero emissions economy.
- Fuel Poverty: In aiming to make the city more energy efficient and energy self-sufficient, the eradication of fuel poverty is a city-wide ambition.

For a full listing of the city's high level objectives on climate resilience see <https://www.belfastcity.gov.uk/belfastresilience>.

The range of actions proposed highlight the relationships between risks, and how taking an integrated approach to resilience planning can lead to a number of threats being addressed by one action. They demonstrate the value of both soft and hard interventions; that not all solutions require costly capital investment. Where capital investment is required, it is costly in terms of initial outlay – and this raises questions around the resourcing of resilience. They also clearly demonstrate that building resilience requires collaboration across a wide range of stakeholders – it is not something local government can do alone.

Of the priority actions listed within the current Strategy, 30 of these will 'disrupt' the status quo. While many of these actions may be at least 5+years away, the

groundwork needs to begin now. This includes conversations with citizens and business people. As the Resilience Assessment is now adopted, every home that is built from this point onwards, that is not built to a net zero emissions standard, becomes part of the problem rather than the solution. Delivering on resilience at a local level cannot happen without the relevant buy-in and supports from central government, whether that be the need to update building regulations or invest significantly in multi-modal options.

4.5 The Value of Collaboration

At the same time as the work of the Resilient Team within Belfast City Council was picking up pace and the City Resilience Framework was identifying shocks and stresses, Queens University Belfast (QUB) secured funding under the Economic and Social Research Council to establish the Place-based Climate Action Network (PCAN)²⁶. Its core objective is to operationalise the Paris Agreement, UK targets and individual city ambitions to deliver place-based impact by bringing together the research community and decision-makers in the public, private and third sectors.

The timing was excellent with the offering from PCAN complementing the strategic supports provided by Arup as outlined in Section 4.3 above. PCAN offered the Resilient Team a research and longitudinal analysis wing, a key output from which has been the Mini-Stern report, 'A Net Zero Carbon Roadmap for Belfast'. The report, launched on the same day as the Resilience Assessment, provides stark evidence to the extent of the climate emergency facing the city. For example, dividing the global carbon budget up by population gives Belfast a total carbon budget of 16million tonnes from 2020. Based only on the fuel and electricity used within its boundaries, Belfast currently emits c. 1.5million tonnes of carbon a year and, as such, would use up its carbon budget in just over 9 years. In terms of reducing emissions, the report concludes the majority of all emission reductions across the city must happen within the next decade. To meet these reductions, the report determines that the most cost-effective options lie with housing, public and commercial buildings, industry and transport. Focusing on these areas would generate energy savings of Stg£286million whilst also tackling other challenges such as fuel poverty, air quality, reducing congestion, and enhancing public health (Gouldson et al, 2020). The report reiterates the lever-effect; pulling one will address multiple challenges and risks.

The net-zero vision is very ambitious; it entails retrofitting every building and ensuring all new buildings are net zero from the outset. This includes, focusing on what gets built, where building happens and designing for water resilience. It involves a modal shift that gets all residents out of their cars and using public transport or active travel modes. It requires the city to become energy independent and generating home-grown energy.

²⁶ <https://pcancities.org.uk/>

In January 2020, this partnership led to the launch of the Belfast Climate Commission²⁷. This is one of three city-based climate commissions across the UK (Belfast, Edinburgh and Leeds), supported by PCAN. Working alongside existing city structures and programmes, the Commission has been established to translate climate policy into action ‘on the ground’ to bring about transformative change. Its work programme, which supports delivery of the Resilience Assessment, includes several sub-groups to focus on specific themes including climate finance and community empowerment. In August 2020, the first working group to be established by Belfast Climate Commission, the Community Climate Action Working Group (CCAWG) commenced an innovative participative research project on ‘Mapping Community Climate Action’. This research aims to explore different forms of community climate action being undertaken (conventional and unconventional) across the Belfast City Region in order to gain insights into possibilities for future collaboration²⁸.

PCAN is offering the Resilient Team the right expertise and specialisms it requires at this point in its journey to resilience.

4.6 Funding

The initial funding for the appointment of the Commissioner for Resilience came from the Rockefeller Foundation; the funding package including salary costs and a small research budget for a two-year period. It is worth noting that the benefits of being part of such a global network extend beyond the financial package; with Resilient Melbourne putting on record in 2019 that immediate values stemming from such networked efforts “is to connect local experiences to international agendas, learn from other cities’ experiences, and access technical and financial inputs”²⁹ – a benefit strongly acknowledged by Belfast.

Following the conclusion of the Rockefeller funding stream, the costs have been picked up by Belfast City Council. In terms of looking to the future, one possible scenario may be the creation of a co-funded model to ensure the longevity of a Resilient Team within Council. This would involve financial contributions coming from all city partners – Council, academia, private sector, etc. – to deliver on social equity and environmental solutions for the city.

In addition to financing the team responsible for design and delivery of the resilience assessment, there are also the costs associated with delivery of the various actions – from training programmes to new infrastructure projects. The initial outlays can be significant. A challenge for Belfast, and indeed many cities across the globe, is that the topic of resilience does not fit neatly within any one single Government Department. Where it doesn’t exist already, a key starting point

²⁷ <https://www.pcanities.org.uk/news/belfast-climate-commission-launched>

²⁸ <https://pcanities.org.uk/news/mapping-community-climate-action-belfast-city-region>

²⁹ <https://theconversation.com/what-next-after-100-resilient-cities-funding-ends-116734>

for many countries would be the establishment of a central government Department for Climate Change.

4.7 Lessons Emerging

While still at the start of its resilience journey, the experiences of Belfast City Council, together with a range of strategic stakeholders, has demonstrated the multi-disciplinary nature of resilience as a concept, and the emphasis that needs to be placed on strengthening the capabilities of a city's social and ecological systems to adapt to existing and future growth. Through the workings of the office of the Commissioner for Resilience, Belfast has adopted a holistic and action-oriented approach to transforming a well-embedded system into a fundamentally new one with an associated degree of urgency to redress identified vulnerabilities and risks. It is an approach that also acknowledges the interdependencies between global challenges and local responses and actions.

For Belfast, a core emphasis is being placed on climate risk; with climate change being an area where little was happening in terms of adaptation and mitigation. Through Belfast City Council's collaborative workings with Arup and Queens University Belfast, the inter-dependencies and connectedness between identified action points – and the time committed by local leaders in understanding these inter-relationships – has been a defining element of the city's resilience journey. Having identified housing and transport as the two sectors which offer the greatest emissions saving potential, a central challenge for the city and its stakeholders is securing the finances required to undertake the carbon reduction, retrofits and cost-effective measures required.

Recognising that resilience is not the responsibility of any one agency, Belfast's resilience journey is both enabled and driven by the Resilience and Sustainability Board and the Belfast Climate Commission. These multi-agency partnerships recognise the need for strong place-based leadership in constructing a sustainable and secure future, particularly for children and young people.

This case study on Belfast City's journey to developing a resilience strategy raises some questions, the answers to which may be pertinent to any other city embarking on a resilience agenda.

- 1) If resources are available to bring on board a strategic partner, at what stage do you make an appointment? At the start of the process before you are aware of where this journey will take you? Or after the identification of the shocks and stresses which will now inform your strategy and highlight the type of specialisms you require?

Under 100RC, the strategic partner was there from the outset. Cities didn't get to select who they wanted to work with based on local knowledge or the specialisms required.

- 2) The 100RC programme supported the development of the resilience assessment, and resourced the appointment of a CRO to drive this process as well as ancillary supports from agencies such as Arup. While it has been

argued that 100RC has been successful in driving institutional change in urban governance (Fastenrath et al, 2019), no monies were made available for implementation of the resulting strategy.

This raises questions for cities in terms of (a) how they manage expectations – both locally and nationally; and (b) how can real buy-in be achieved if there is no clear pathway for progressing from plan to action.

- 3) Cities operate to a myriad of plans and strategies. If not clearly aligned to a statutory plan or strategy from the outset, where does the resilience strategy ‘fit’?

Belfast’s resilience assessment has been strongly aligned to the Community Plan, the Belfast Agenda and, while the resilience assessment is not a statutory document in and of itself, this alignment, together with one of the Community Plan sub-boards being dedicated to delivery of the plan, ensures it has legitimacy. As cities in Ireland currently review their County Development Plans and Local Economic and Community Plans (LECPs) to meet requirements under the NPF and RSES, it has been suggested that this may be an opportune time for Irish cities to embed any proposed resilience plan in these statutory documents.

Chapter 5:
Insights From Other Cities on a
Resilience Journey

The truly resilient cities of the 21st century will not simply manage risk or deal with challenges. They will evolve and become stronger through creativity, adaptability and flexibility. By enabling the capacity and ingenuity of all of their citizens, these cities will use every disaster, crisis or challenge to recover in a stronger, smarter and fairer way (Bristol City Council, 2016: 8)

This chapter considers the learnings from two global cities, Bristol and Milan, who, under the 100 Resilient Cities (100RC) programme³⁰, have developed resilience strategies in response to potential shocks and stresses facing their communities, economies and environments. This analysis is based on an interview with a member of the city's resilient team and secondary research.

- Bristol – one of the first grouping of cities to be selected to take part in 100RC and where delivery of the Resilience Strategy sat with a Directly Elected Mayor who, shortly after launch in December 2016, didn't feel it went far enough on social resilience issues; leading to the Bristol One City Plan, launched in January 2019, with the central aim to “create a city that is fair, healthy and sustainable”; and
- Milan – a city experiencing exceptional growth and change in its urban landscape and economy and whose engagement in the 100RC was informed by the need for a new pathway to address emerging challenges related to climate change, energy use and low carbon transport.

5.1 BRISTOL

While Bristol would be regarded by many as a prosperous city with, for example, an established reputation in innovation across the high-tech industrial sectors, it also suffers from significant social, economic and racial divisions (Hambleton, 2020). Bristol's Resilience Strategy aimed to tackle some of the major issues facing the city including traffic congestion, affordable housing, poor air quality and child poverty. In designing the resilience strategy, it was Bristol's intent that it be a 'living document' – to be updated regularly to reflect changes in circumstances and the emergence of new or evolving shocks and stresses.

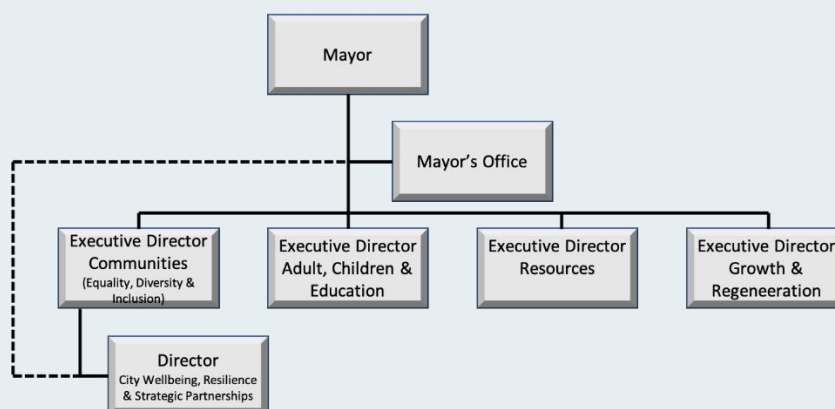
³⁰ As of 2020, this programme is now known as the Resilient Cities Network.

From the outset, delivering on city resilience was recognised as being the responsibility of the city, its businesses, its research community and its citizens rather than City Council alone. It would build on already existing strong green credentials across the city and the green priorities of the city's first Directly Elected Mayor³¹. In 2015, Bristol was European Green Capital. With its strong commitment to civic engagement, it was also important to the Council that the strategy have a strong social focus, and that the processes of priority identification and subsequent implementation were inclusive of civil society.

5.1.1 Leadership, Governance and Strategic Partnerships

In 2014, Bristol was one of thirty-three successful cities that bid to join the 100RC network. Work commenced in February 2015 on the development of the resilience strategy following the appointment of the city's first Chief Resilience Officer (CRO). This would build on the success of the city's year as European Green Capital³². As a Bristol citizen, the CRO felt strongly that the process adopted in devising the strategy should be open and inclusive, and reflective of the city's strong history in citizen engagement. From the beginning, the CRO reported to the Future City Director who, in turn, reported to the City Director. This ensured that the CRO had good reach across all four city council departments (People, Place, Neighbourhoods and Change) rather than being siloed under any one directorate.

Figure 5.1: Bristol City Council Structure



³¹ Bristol's first Directly Elected Mayor was George Ferguson, who served in office from November 2012 to May 2016. Bristol's decision to introduce a mayoral form of governance followed a referendum in May 2012. Of the ten cities that held referenda, only Bristol voted 'yes'.

³² Also in 2015.

During the Pre Resilience Assessment process, the purpose of which was to identify a number of focus areas for further research and Development, a Resilience ‘Sounding Board’ was set up by Council. This involved a select group of high-profile stakeholders from the universities, private, public and third sectors, each of whom brought their own expertise and experiences to the table together with a familiarity to resilience topics such as infrastructure, planning, climate change, disaster management and transport. Its purpose, as such, was to provide diverse perspectives and to critically challenge one another and the political leadership of the city in both the development and implementation of the strategy. In finalising the strategy, the Sounding Board noted that the listed actions were but “seeds of change, that along with many others will help our city adapt, survive and flourish in the face of future uncertainty” (Bristol City Council, 2016: 9).

The governance of the project was further supported by “a robust analysis of available data to review our shocks, stresses, strengths and weaknesses” (Bristol City Council, 2016: 18); an approach also undertaken by Belfast.

As with a number of other 100RC, Bristol benefitted from strategic supports provided by Arup, and employed the City Resilience Framework in the identification of their shocks and stresses. In addition, the process of developing the resilience strategy drew together strategic partners and stakeholders from across the city and region to work together “to explore innovative ways in which co-benefits can be delivered through collective inquiry and collaboration” (Bristol City Council, 2015: 5).

Bristol is one of the few cities in the UK with a Directly Elected Mayor (DEM). In terms of ownership of the resilience strategy, the Mayor’s City Office was recognised as being the most appropriate ‘home’ for the Strategy. In an interesting turn of events, a new Mayor was elected shortly before the launch of the resilience strategy in 2016. While supportive of the concept of the strategy, Mayor Marvin Rees (2016-now) and the new Labour leadership believed a much sharper focus was required on social resilience and just transition issues, and the need to tackle inequality in the city (Hambleton, 2020). Building on the Bristol Resilience Strategy, the Bristol One City Approach (see Section 5.1.3) was launched in January 2019, the central aim of which “is to create a city that is fair, healthy and sustainable” (Hambleton, 2020: 121).

5.1.2 A Focused Agenda

In defining its priorities, the Bristol Resilience Strategy firstly laid out what it saw as the resilience paradoxes facing the city (many of which will resonate with cities across the island of Ireland); namely:

- 1) People: Communities are diverse, but inequality threatens cohesion;
- 2) Places: Built environment is ‘greened’ but not yet transformed;
- 3) Organisations: Civil society is engaged, but not connected;
- 4) Prosperity and Worth: The city is economically successful, but not equally flourishing; and

- 5) Regional to Global: The city is focused on strengthening local self-sufficiency but continues to be dependent on national and global systems.

Responding to these paradoxes, the resilience strategy is underpinned by five visionary pillars that describe the outcomes that the city hopes to achieve.

- Fair: Every person living in Bristol has the assets and opportunities to enjoy a good quality of life;
- Liveable: The city centre and neighbourhoods are great places for people of all ages to live, work, learn and play;
- Sustainable: The city and region prosper within environmental limits through adopting new behaviours and technology;
- Agile: Bristol citizens and leaders make effective decisions based on shared priorities and real-time information; and
- Connected: A strong network of local communities and organisations promote trust, cooperation and shared action across the city.

Supporting each of the above goals, the strategy outlines 42 innovative and disruptive actions to support this vision. Initiatives included, by way of example, are outlined in Table 5.1. As the Strategy was being finalised in 2016, consideration had already turned to identifying and securing additional resources; the funding from 100RC for their Chief Resilience Officer was due to end at the beginning of February 2017. While funds were secured from the City Office, this was a short-term measure and the post was vacated in mid-2018.

Table 5.1 Bristol Resilience Disruptive Actions (adapted from Bristol Resilience Strategy, 2016).

People	Places	Organisations	Prosperity and Worth	Regional to Global
Tackling street homelessness	New models of housing delivery	SevernNet circular economy plan	City metrics and SDGS	Resilience Impact Assessment
Votes for 16 yr olds	Legible City	Child friendly city	Open data	Bristol is Open
Cultural engagement for social cohesion	Bristol Transport Plan	City knowledge exchange platform	Protecting and valuing green space	Climate Strategy and Energy Framework
Participatory City	Climate Change Adaptation Plan		Active and healthy ageing	

The city has engaged in EU programmes under Urbact (Resilient Europe³³) and Horizon 2020 (REPLICATE – RENaissance of PLaces with Innovative Citizenship And Technologies³⁴) to name but two to secure funds to progress the resilience strategy.

5.1.3 The Bristol One City Approach

As noted in Section 5.1.1 above, the 2016 mayoral election led to a new Mayor taking office, Marvin Rees. A significant part of his pre-election manifesto focused on creating a Bristol City Office that was removed from the council chamber and which would unite the various realms of civic leadership (see Figure 5.2) who were committed to the city's progress (socially, economically, environmentally, culturally). The central idea is for these various interests to speak with one voice. Rees's election was to set the stage for "a radical shift towards a much more collaborative approach to urban governance in Bristol" (Hambleton, 2020: 108). His first step was to initiate a programme of inclusive City Gatherings of civic leaders – the first being held two months after the election. Two are held per year and the eleventh City Gathering took place virtually in December 2020 with over 280 participants. They have come to play a key role in "stimulating the co-creation of

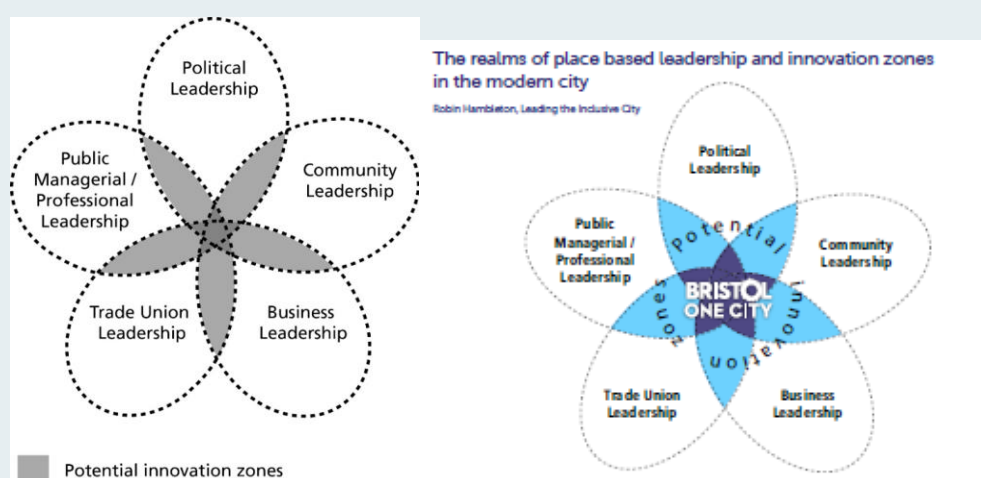
³³ <https://urbact.eu/resilient-europe>

³⁴ <https://replicate-project.eu/>

new ideas, in identifying issues for priority attention and in building social networks and civic capacity” (Hambleton, 2020: 118).

Next, Mayor Rees created an ‘innovation zone’ just outside his office in City Hall, where all civic leaders were invited to work on activities relating to the City Office agenda. It has also become a space from where issues raised at the City Gatherings could be addressed.

Figure 5.2: The Five Realms of Civic Leadership – and their application in Bristol (Hambleton, 2015; Bristol One City Plan 2020³⁵)



It was through the interactions at these two ‘spaces’ that led to a decision being made in December 2017 at a City Gathering – one year exactly after the launch of the Resilience Strategy – to develop the Bristol One City Plan. Over the next twelve months, civic leaders from all five realms worked together to develop the One City Plan. A key focus of the process was to bring together, in one document, the “chaos of plans and strategies” that existed for the city – not only at Council level, but across academia, transport, business, etc. This included the Resilience Strategy; with the Chief Resilience Officer working closely with other leaders on the environment theme.

The resulting Bristol One City Plan was launched at a City Gathering in January 2019. A City Board is overseeing its delivery and six cross-sector boards with responsibility for delivery across the main themes, namely: Connectivity, Economy, Environment, Health and Well-being, Homes and Communities, and Learning and Skills. The structures operate to a principle of adaptability. In response to COVID-19, the Economy Board began meeting weekly, and at the City Gathering in June 2020

³⁵ https://www.bristolonecity.com/wp-content/uploads/2020/01/One-City-Plan_2020.pdf

launched 'A One City Economic Renewal Strategy' (Hambleton, 2020: 126). There are initial indications that in 2021 a new Culture Board will be established – recognising the diversity of the city and responding to the large Black Lives Matters protests that took place in Bristol during Summer 2020.

The Plan is updated annually. The third iteration of the plan will be launched at a City Gathering in March 2021. Embedded in the principles of the SDGs, a core focus of the 2020 Plan has been on climate change, food security and period poverty:

- Climate Change: Bristol's Advisory Committee on Climate Change, the second in the country, was formed to provide expert guidance and advice to partners on climate change;
- Feeding Bristol: a collaborative civic initiative, involving over 120 organisations, focused on feeding school-going children over the summer holiday period; and
- The Period Friendly Bristol Initiative: focusing on period stigma and the development of a city-wide donation and distribution network of free sanitary products across community centres, GP surgeries, leisure centres etc. (Hambleton, 2020)

With other priorities including:

- Living Wage City: Designation of the city as a Living Wage City by the Living Wage Foundation;
- SDGs: Working with the Cabot Institute to undertake the first UK Voluntary Local Review – setting out how the city is progressing against delivering the SDGs (Bristol One City, 2020).

Delivery of priority actions as outlined in the Plan is partly resourced through the redirection of ongoing spending of civic partners to address One City Plan priorities, and partly through a new City Fund. Established in 2019 with a pot of £10 million, the fund is a mix of both public and private monies. The Fund awards finance via repayable loans and giving grants via a bidding process.

5.2 MILAN

The commitment by Milan to develop its resilience came into being with the city being accepted into the Rockefeller 100 Resilient Cities (100RC) programme in 2015. Commencement of Milan's resilience journey was then delayed due to mayoral elections in 2016³⁶, and wouldn't launch proper until 2017 and the appointment of a Chief Resilience Officer (CRO) towards the end of that year.

³⁶ Milan's acceptance onto the 100RC programme occurred under the leadership of Mayoral Giuliano Pisapia. However, Mayor Pisapia announced he would not seek re-election in 2016. Following elections Mayor Giuseppe 'Beppe' Sala was elected and at time of writing was still in office (with elections to be held in 2021). This transition in mayor delayed the start of the 100RC programme.

In late 2018, a preliminary resilience assessment was completed with the support of the 100RC network. The ensuing strategy took one year to develop and draft, which was circulated in January 2020. This concluded that the city's foci should be on three pillars, each with three goals:

- 1) Efficient and Participated Procedures for A Resilient and Sustainable Urban Development
 - Goal 1: Institutionalising resilience in the decision-making structures of the city and encouraging the exchange of good practices;
 - Goal 2: Identification of operational and financial instruments for urban regeneration; and
 - Goal 3: Promoting a circular and resilient economic system involving different public and private actors on an urban scale.

- 2) A Public and Private Space – Liveable, Comfortable and Adaptive at the Service of Inhabitants
 - Goal 1: Acquire, process and use local climate data to implement adaptive solutions;
 - Goal 2: Promoting and implementing green in the city; and
 - Goal 3: Promoting resilient regeneration of public space.

- 3) Inclusive, Aware and Proactive Communities
 - Goal 1: Promoting training and raising awareness of the community on the issues of resilience and active citizenship;
 - Goal 2: Supporting the most vulnerable and facilitating their integration into society; and
 - Goal 3: Promote measures to ensure the security of the community and institutions.

The three pillars, and related actions, are the 'answers' and solutions the City Resilience Department has identified in order to face challenges related to shocks and stresses identified through the Preliminary Resilience Assessment.

The role of the City Resilience Department is to educate and influence local authority departments in the context of the stated pillars. It acts as a resource, particularly a training and information resource, for the council departments.

5.2.1 Leadership, Governance and Strategic Partnerships

Under the 100RC programme, there was a financial commitment to the role of CRO and the Project Team from 2017-2019. This has now been extended to 2021 to align with the Mayoral term. A deputy supports the CRO in their work, and a small staff based on interns. The Resilient, or Project, Team were Initially located within a

general service department, reflecting that the Council was unsure of how the concept of resilience would be used or embedded within council working at the every outset of the process. As the Council commenced work on its spatial plan, Milan 2030, the Resilient Team moved to the Urban Planning Department. This gave the Team the opportunity to examine the role and purpose of resilience in a plan under development, and provided a concrete mechanism under which to apply the concept to policy. Indeed, a key objective and strategy for the city's masterplan is to be 'A green, liveable and resilient city'. This includes the development of a new urban forest strategy, the re-opening of the Navigli (a system of canals running through the city), and the creation of twenty new parks. Through the input of the resilience team, the resulting spatial plan puts a strong emphasis on sustainability, resilience and quality of life – with the 'neighbourhood' being the centre of change. As the Milan 2030 plan was nearing completion in late 2019, the Resilient Team moved to another department, this time the new dedicated Environment Transition Department.

The structural location and level of authority of the Resilient Team is reflected in the goals set out in the draft resilience strategy. Its objective is to influence and to train. Under the Mayoral Mandate, there is a strong emphasis placed on citizen engagement and the use of participatory processes in the co-design of the strategy's priorities. Capital budgets are held within the departments, and funding for resilience projects must come from the department.

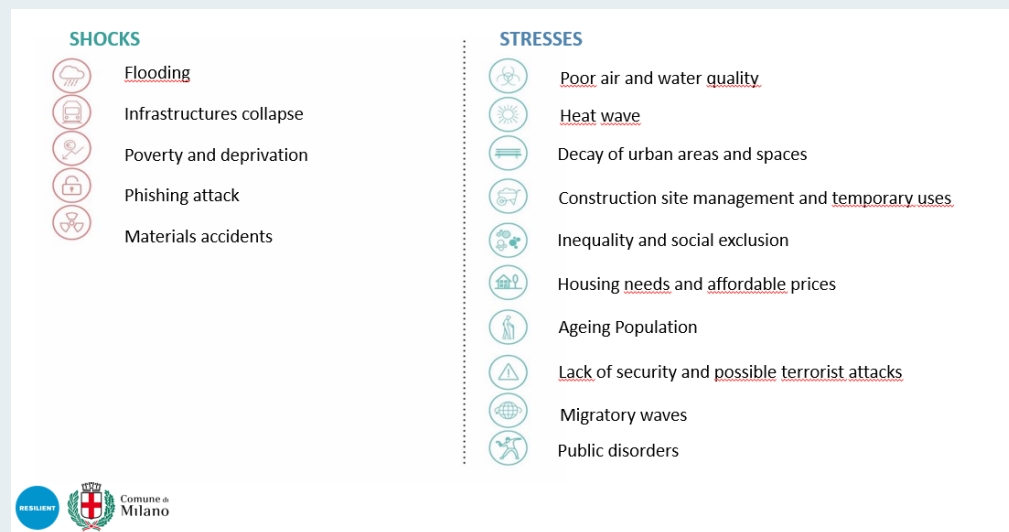
As with a number of other 100RC, Milan has been supported in all stages of the resilience process by Arup. Other strategic partnerships that have proven to be a critical resource in helping the office achieve its goals include its relationship with professional bodies – in particular, an association of architects and an association of engineers – and the local universities. These relationships allow access to various forms of analysis (e.g. climate and hydrological), placing their goals on an evidence-based footing.

5.2.2 A Focused Agenda

The starting point for Milan's resilience journey was the 100RC preliminary resilience assessment. As outlined in Figure 5.3, this led to the identification of the city's potential shocks and stresses. An analysis of these directed the assessment towards some key discovery areas, which then led to the goal setting (itemised above). The discovery areas were:

- Milan City of Water – Infrastructure & Energy | Heritage & Future Services
- Living Milan – Social Housing | Housing Solutions | Training & Work
- Cool Milan – Climate Adaptation | Liveability & Quality of Life | Agriculture
- Circular Milan – Resources | Waste | Food Policy | Innovation | Productivity
- Safer Milan – Security | Risk Management | Digitalisation
- Next-US Milan – Future trends & Infrastructure

Figure 5.3: Shocks and Stresses of Milan, 2018



The draft resilience strategy was completed in January 2020 with actions relating to urban planning, circular economy, advanced urban manufacturing, energy, transit, community/social justice, green schools and digitalisation. The diverse range of actions highlights the need for a multi-functional and multi-disciplinary approach to building resilience, and the key role played by local government. At this time, the strategy made no reference to pandemics as a potential shock. With the arrival of COVID-19, the draft is currently being reworked.

While a non-statutory document, a core strength of the strategy is that it provides the Council and other strategic city stakeholders with a key way of looking at challenges – the “lens of resilience” - both in terms of governance and design innovation. It is acknowledged that embedding new approaches takes time.

In parallel to the development of the resilience strategy and Milan 2030, work has also been underway in developing a climate and air plan – with a particular emphasis on adaptation and mitigation. This was a commitment under Milan’s membership of the C40 network; the delivery of which was aligned to the resilience work programme.

5.3 Lessons Emerging

There are a number of takeaways from these short overviews of both Bristol's and Milan's experiences of developing their resilient strategies.

- Any resilience strategy should be a living document – not static. The shocks and stresses when first identified are defined at a moment in time and, it could be argued, are biased by those engaged in the process. There is a strong case, therefore, for updating the shocks and stresses every two years at least – new risks can emerge and others can evolve, escalate or be addressed.
- Building trust and understanding between all stakeholders is integral to the success of any resilience programme.
- As happened in Bristol, there is a strong case for any resilience strategy to address the chaos of plans and strategies that can exist for a city by bringing the core elements of each together into one document, thus presenting a joined-up, holistic approach to resilience planning. Such an approach has previously been adopted in Ireland with the 'One Plan' for the regeneration of Derry/Londonderry³⁷ (2013).
- As the focus of the plan or strategy adapts, so too should the focus and make-up of the thematic or cross-sector boards established to deliver on the established priorities and proposed solutions.
- Local government has a key role to play in the activation and strategising around resilience. As stewards of their administrative areas, local authorities have a core role to play in place-shaping, building economic resilience and advancing social justice. Through the principle of subsidiarity, they are the most appropriate scale at which to promote sustainable development and mobilise key stakeholders in creating the right conditions for a 'living city'.
- Resilience must be institutionalised. This can occur in two ways. The first, institutional transformation, seeks to "disrupt 'silo-thinking' in public and private sectors and though greater emphasis on community participation" (Fastenrath et al, 2019: 2). Any institutional arrangements created as part of the process to design and/or implement a resilience strategy should outlive any CRO or Mayor. The second, and lighter touch approach, focuses on embedding resilience terminology in various documents and strategies adopted by city stakeholders.
- As cities adapted to COVID-19, the myriad of initiatives that were implemented, for example, extension of footpaths in response to social distancing

³⁷ Developed by the Ilex Urban Regeneration Company (URC), the "Regeneration Plan for Derry~Londonderry 2020: One City. One Plan. One Voice" – the One Plan – was uniquely developed on the basis of a proactive and inclusive cross-sectoral partnership between the private, community/ voluntary, and public sectors. A strong emphasis was placed on aligning policy and resources in the delivery of the One Plan through collaborative working. The plan presented a set of interconnected projects that would help reorientate the City towards a new trajectory of inclusive and transformative economic growth and build on the resilience already demonstrated by the city during the Troubles and the economic crash of 2008.

requirements, improved public realm and pedestrianisation schemes, emergence of parklets and taking businesses into the streets should now be considered as ongoing actions for inclusion in resilience planning.

- Stakeholder engagement and building strategic partnerships with key city agencies ensures a city-wide 'ownership' of the strategy, and this is essential to its successful implementation. The strategy should not be considered a local council initiative.
- It is incumbent on cities that are part of 100RC to share their experiences – positive and negative – both in terms of process, practice and experiences.

Chapter 6:
A Resilient Cities Agenda—Policies,
Processes and Practices

This chapter considers the current emphasis of the resilience agenda in Ireland, emerging priorities over the short to medium term, and the role of local government in both its design and delivery. It summarises the conversations held with a number of serving and retired public servants in Ireland and Northern Ireland over the months of November and December 2020. In addition, it draws upon the perspectives shared by advisors to, or representatives from, resilience offices in Belfast, Bristol and Milan (as outlined in Chapters 4 and 5).

The key themes addressed during the course of the semi-structured interviews were informed by both the literature and policy reviews (see Chapters 2 and 3). These included:

- Defining resilience;
- The focus of resilience programmes;
- The role of central and local government in the design and delivery of resilience strategies;
- The capacity of local government, as currently structured and mandated, to deliver on resilience; and
- The role of citizen and stakeholder engagement, and the ‘timing’ of such engagement.

A total of 14 interviews were held (see Annex 2). The twelve interviewees from cities across the island of Ireland represent a range of local government departments – from planning, economic development, parks development, and community response, providing a rich understanding of perspectives held within local authorities across the island of Ireland. Interviewees were identified through the All Ireland Smart Cities Forum. In some cases, this led to a snowball effect, with interviewees recommending others whose perspectives and insights should be sought. These advices were followed through to the extent possible in the short window available for interviews. Given the small sample size, the decision was made at the outset that all interview responses would be anonymised.

The perspectives as shared from across the island of Ireland are largely considered under the same thematic headings as employed in Chapters 4 and 5. This is to facilitate consideration of the tools, barriers and opportunities for building resilient cities and to draw out learnings on a range of process and operational matters such as governance, strategic partnerships and networking, citizen engagement, and focus.

6.1 Leadership

Local authorities are currently striving to build “*stable communities*” in terms of physical, social and economic development, supported by emerging government policies around compact cities and effective regional development. The term ‘resilience’ is a relatively new term in local government on the island of Ireland, certainly in the context of its current association with climate mitigation and adaptation, and natural disaster risk management. The conversations with local authority service directors suggest that they have a relatively fixed mandate, and they manage the problems that are in front of them at any given time (e.g., homelessness, congestion, flooding, wind damage). This tallies well with the findings of research undertaken by the Local Government Management Agency (LGMA) on the range of initiatives being employed by local government in response to climate change where they conclude that “local authorities have shown that they can effectively respond to climate change impacts being felt as they happen at a community level through flood, storm and drought responses in recent years” (LGMA, 2020a: 66). This work is undertaken within a known set of boundaries of budget and the balance of central and local government decision making. It is within this space that they contend that they most effectively meet their responsibilities under the 1985 European Charter of Local Self-Government.

To a large extent, the cities noted that resilience building is at the core of their work and is captured primarily under the umbrella term of ‘sustainable development’. Each of the councils spoken to referred to the challenges posed by the centralised nature of decision-making and financial allocations in addressing local needs. They also spoke to the additional powers afforded them under the Reform of Public Administration (RPA) in Northern Ireland in 2014, and the Irish Local Government Reform Act, 2014 which, they believe, has strengthened their ability to respond to shocks such as COVID-19.

Having these additional powers has proved critical as central and local government worked together during the current COVID-19 pandemic to develop innovative ways of providing their services. In May 2020, the LGMA surveyed local authorities in Ireland to gain an insight into how they had to adapt their working and service delivery models to the ‘lockdown’ imposed in March 2020. For local government in particular, as “the closest level of government to citizens”, they have been “challenged to develop and implement innovative solutions” to the way they operate (LGMA, 2020: 2), and their resulting efforts to create stability have been quite impressive. All local authorities were, for example, tasked by Government with providing a local response to meet the needs of those restricted to their homes, especially those aged over 70 years, with a particular emphasis on combatting social exclusion and ensuring they had access to essential items. Some examples of the approaches taken include:

- “Reopening the City” – which saw Dublin City Council working in close collaboration with an Gardai Síochána, Failte Ireland and the National Transport Authority (NTA), supported by volunteer groups;
- “Moving to the Street” – which saw Cork City Council work closely with business in Princess Street to move businesses outdoors; thus, giving them the best chance of staying open during the COVID-19 restrictions. This included being

agile in their response times, waiving licence fees, and providing financial supports; and

- The use by central government of the Local Enterprise Offices (LEOs) within the local authorities to distribute the COVID Restart Grant.

More generally, and not directly related to COVID-19, further examples referenced included the development of a shared service unit on age-friendly planning and development, and a growing programme of activity in climate change and digitalisation. These types of collaborative action would not be considered uncommon, particularly where the councils find that they are not necessarily the budget holder or decision maker. Rather, in many of the issues local government face (e.g., transport, coastal erosion, flooding, economic growth, disenfranchised citizens, changing demographics), they have such a strong vested interest they position themselves as the focal point for action. This is important as international models of city resilience firmly place local government at the centre of large stakeholder groups.

With local government increasingly viewing its work programmes through the lens of the SDGs, the councils surveyed as part of this study believe there is a growing commitment to building resilience nationally. Local authority departments are moving out of their 'silos' and increasingly working together in multi-disciplinary teams to ensure the future sustainability of the city as a place where people want to live, work and socialise. There is a strong recognition that the road ahead is not easy, that the behavioural changes required will take time – and will undoubtedly meet resistance. All interviewees strongly asserted that leadership is key to the process; with the local authority needing to lead by example.

From the interviews, it is quite clear that climate resilience is undoubtedly of increasing importance to local authorities. There is, although possibly not at the speed required, a shift away from the pervasive reactionary response that would have existed in councils to disabling events such as flooding or landslides. It was suggested that a reason for this is that the population in general do not have this as a high enough priority, pointing to the lack of importance of climate action in the last elections. This tallies with Ireland's reputation as a "climate laggard" (Devaney et al, 2020), the result of "haphazard, conflicting, unambitious and poorly implemented climate policies" (Torney et al, 2020 quoted in Devaney et al, 2020). In Ireland, the four regional CAROs (Climate Action Regional Offices), established in 2018, are well-placed to provide support to local authorities in the development of their adaptation strategies and, following adoption of the Climate Action and Low Carbon Development (Amendment) Bill 2020 (see Chapter 3), their Climate Action Plans. The CAROs are also currently delivering training in climate change to all local authority staff. Challenges such as Brexit and COVID-19 have brought about an increased urgency across local government in building socio-economic resilience. Central to this will be delivering on the compact growth agenda and creating 'living' cities. Cities located in the Southern Regional Assembly area, for example, noted the concept of the 10-minute city/town as having a role to play in achieving urban resilience. This won't happen overnight – but it has implications for how current and future infrastructure is planned today.

6.2 Governance

Four main points for the governance of a resilient city emerge from the interviews. These are that:

- 1) Resilience is informed by geography/spatial context;
- 2) Resilient cities are ‘living cities’;
- 3) Cities are better able to develop resilience the more they are in control of their own resources and decision making; and
- 4) Any domain specific resilience effort must have a corresponding social awareness and commitment to act.

These are reflective of key governance principles identified by ICLEI – Local Governments for Sustainability in 2019 to guide and inform resilient and sustainable development (see Table 6.1). These principles build on a decade of discussion, debate and case studies as part of ICLEI’s annual ‘Resilient Cities Congress’. They emphasise the importance of multi-level governance and cross-disciplinary collaboration in framing responses to shocks, stresses and strains and strengthening both horizontal and vertical coordination to ensure alignment of key administrative and financial resources (ICLEI, 2019).

Table 6.1 Key Governance Principles Guiding a Resilient and Sustainable Future (ICLEI, 2019).

1.	Create opportunities for regular resilience dialogues	Involving different levels of government, public and private sectors, and representatives from different stakeholder groups – e.g. transport, health, etc. – and community members
2.	Local context is key	Implementation of global goals should be adapted to specificities and needs of individual areas and their communities
3.	Give preference to integrated actions	This will yield cross-cutting benefits
4.	Make the business case	Clearly show the economic value of the local resilience initiatives
5.	Resilience planning is often experimental	This involves experimental action with flexible policy and investment mechanism and knowledge-sharing between governments and partners on both successes and failures

6.	Turn disasters into opportunities	Raise awareness and motivate stakeholder engagement in resilience planning
7.	Leave time for trust-building	Holistic approaches depend on the support and ownership of multiple stakeholders; and cultivating this takes time
8.	Information is not knowledge	Further supports are needed to curate and manage the wealth of data and tools available to guide local decision-making and future scenario-planning
9.	Plan for the unexpected	The effects of shocks and stresses are increasingly unexpected, but inclusive, good governance practices can foster institutions and societies that are more resilient and ready to respond to unexpected new challenges
10.	Report progress locally and globally	This should cover successes, failures, barriers, gaps in order to inspire others and replicate good practice.

From discussions with a selection of the cities on the island of Ireland, and the case studies and vignettes covering Belfast, Bristol and Milan, aspects of these governance principals can be seen at play across each city. The Bristol One City Plan could be considered as best practice in encapsulating all ten principles as outlined below; albeit, it has had the benefit of learning from its long-established focus on the green agenda and the (perceived) shortcomings of the 100RC resilience strategy. All three case studies have placed a strong emphasis on building trust, understanding that is the bedrock of effective and innovative action. They further recognise that local context is key, that resilience planning is largely experimental, and the importance of regular dialogue across all stakeholders. Belfast has been particularly effective in recognising the importance of integrated actions, appreciating that in pulling one lever, many more are unlocked and resulting actions can have multiple benefits.

With respect to context, even when local authorities are addressing problems of a similar nature, for example sustainable transport, the solution has to take into account local considerations, such as natural geography, population density, legacy infrastructure and so on. Getting to the ‘right solutions’ are dependent not only on tapping into local knowledge but on gaining access to the wealth of data that exists.

Resilient cities are, by definition, ‘living cities’. This infers that resilient cities have a basic critical mass of people living in the urban core, with access to a diverse range of facilities (services, spaces, etc.), and offering sustainable employment. The recent initiative by the Mayor of Paris, the “15-minute city”, centred on the ideal of self-sufficient neighbourhoods aims to fulfil six social functions: living, working,

supplying, caring, learning and enjoying³⁸. An argument has been put forward that city suburbs, or neighbourhoods, have been shown to be more resilient due to people being closer to their employment, open spaces, and community support, notwithstanding the efforts made by councils to deliver services. The application of such a model across the island of Ireland's metropolitan areas of regional growth centres would, as highlighted above, take cognisance of a place's context and functionality.

An argument was also put forward that resilience is better served if resilient cities are connected. The network analogy also emerged in conversations about the impact of one city's action on a nearby city or region, and the (inter)dependency of one city/region on another. Limerick and Clare are a case in point. From an impact perspective, it is expected that Limerick's planned flood protection will cause difficulties along the North Shannon estuary, the South Clare coast. From a dependency point of view, the economic co-dependency of Limerick City and Shannon is obvious. This raises questions around the scale at which a resilience strategy is developed and how it can be effectively governed.

A strong argument was made that cities are better able to build resilience the more they are in control of their own resources and decision making i.e., operating to the principle of subsidiarity. As it currently stands, cities on the island of Ireland are highly restricted financially and to the extent that they can make decisions independent of central government influence – direct or indirect. For example, while the 2021 budget for Cork City Council is in excess of €220million, with the majority directed to fixed costs relating to staff and contracts, only a very small proportion is available for 'discretionary spend'. In Northern Ireland, however, a game changer may be the City Deals announced for both the Belfast Region (see Section 4.4.) and Derry City and Strabane District Council. These multi-million City Deals are bespoke packages of funding and decision-making powers negotiated between Westminster and the relevant local authorities, with the aim of harnessing additional inward investment, creating new jobs and accelerating inclusive economic growth.

In terms of decision-making, cities often need to refer to state bodies, be it central government (e.g., for decisions on social housing), or state agencies such as the NTA or the Office of Public Works (OPW). While the arguments in favour of centralisation for critical mass and expertise are sound, in the context of resilience planning there is a balance that needs to be further thought out. The pending move towards a Directly Elected Mayor (DEM) in Limerick City and County, with an enhanced basket of powers, including statutory consultation rights across all Government Departments, and a higher level of financial autonomy, will require a fundamental review of the relationship between central and local government. It will, as a result, prove to be an important 'test-case' of the principle of subsidiarity, as embedded in the Europe Charter of Local Self-Government.

³⁸ <https://www.bbc.com/worklife/article/20201214-how-15-minute-cities-will-change-the-way-we-socialise>

6.3 Place-Based Leadership

A point of consensus from all the international cities interviewed, which have resilience offices, is that any resilient city programme will be dependent on the ability of the city to facilitate the working together of a variety of different groups, both public and private. In Milan, this entailed advice on relationship building to sharing of information and motivation. In Bristol, the emphasis was more on co-design and collaboration with the five realms of civic leadership as defined by a local academic, Prof. Robin Hambleton. Interviewees from across the island of Ireland couldn't disagree with these approaches or advice given, when any real effort to address large and complex solutions such as a sustainable transport system, a zero emissions city, or an equitable city requires the buy-in of all stakeholders as 'strategic partners' and place-based leaders. Importantly, respondents noted that further consideration must be given to alignment between siloed local authorities departments. Building resilience also requires interaction with a diverse grouping of external organisations, ranging from government departments to transport and energy agencies, the Environmental Protection Agency (EPA) to educational institutes, and commercial associations to community and voluntary groups (i.e., the Quadruple Helix model).

Those cities consulted offer many examples of where local authorities facilitate such collaborative efforts. The Limerick Digital Leaders Network³⁹ is a case in point. Established in 2016, this is a voluntary group of diverse stakeholders from across the city with a shared aim of advancing the social and economic fabric of Limerick. In both Cork and Dublin, strategic partnerships have been established to advance each city's smart agenda – through Cork Smart Gateway⁴⁰ and Smart Dublin⁴¹ respectively. In Derry/Londonderry, the city is working towards becoming a member of Sustainable Food Places as it embarks of a series of food security initiatives aimed at building resilience in an integrated way, including supporting people to tackle climate change hands-on by growing their own food and learning about how their food choices affect the environment⁴².

Coupled with collaboration is the advice of creating initiatives around evidence and data. Common frameworks have been criticised for how they portray a normative approach which is not context, or place, specific. This frustration was also voiced by those local authorities interviewed, arguing that initiatives should be based in evidence. This includes basic data to data portals and city dashboards. This raises questions around access to data and its precision. It is interesting that both Belfast and Milan attribute their success, in part, to their early engagement with data and its role in aiding them to identify and prioritise efforts; while both Belfast and Bristol

³⁹ <https://www.limerick.ie/smart-limerick/programme-9-smart-limerick-networks/limerick-digital-leaders-network-dln>

⁴⁰ <http://www.corksmartgateway.ie/>

⁴¹ <https://smartdublin.ie/>

⁴² <https://www.derrydaily.net/2020/08/17/climate-action-vision-for-derry-being-made-reality-thanks-to-national-lottery-funding/>

have established strong partnerships with local universities⁴³ to provide data analysis.

6.4 Engagement

Currently citizen engagement by local authorities is typically achieved via (a) a range of consultation platforms, for example Dún Laoghaire-Rathdown County Council's consultation hub and Community Planning Partnership Boards in both Belfast City Council and Derry City and Strabane District Council, and (b) their respective relationships with Public Participation Networks (PPN) such as the Galway City Community Network. The cities contend that this form of engagement allows citizens to comment on topics such as local authority strategies and planned initiatives such as Local Area Plans. From a local authority standpoint, this current engagement is normal and workable, and underpins present-day efforts to develop stable communities.

For engagement to be effective, there must be a balance between, on the one hand, top-down approaches that hollow-out public participation and, on the other, bottom-up approaches where the agenda is firmly set by city stakeholders and civic leadership. This is essential to ensure stakeholder buy-in. When considering a potential resilient city initiative, and how the enactment of major projects affects different groups in different ways, the interviews highlight that these forms of engagement may be found wanting. Some argue that their limitation is that they avoid a “*heart to heart*” conversation with citizens, that they don't address the compromises that will inevitably have to be made as part of resilience planning, e.g., coastal access versus erosion protection. Others, who argue for greater autonomy for local authorities also claim that this form of engagement is not sufficient to capture citizen input. They see engagement on a continuum between the current passive model and a scenario of greater local authority autonomy via the DEM. In this scenario, the mayor has significantly more control over resources and decision making. Any potential mayor must stand on a platform, indicating the priorities and compromises that they stand for, and upon which they will ultimately be measured by the electorate. Again, the pending DEM elections in Limerick City and County, expected in Autumn 2021, will prove to be an important laboratory in the design of a citizen engagement model that will both unleash the potential of a place while ensuring a ‘joined-up-ness’ in the delivery of policies.

⁴³ In March 2019, the first Bristol Forum was held where scholars studying the city shared their research findings and insight with a view to improving public policy making, strengthening the Bristol One City Plan, and linking scholars with a variety of civic agencies (Hambleton, 2020).

6.5 A Focused Agenda

With respect to agenda setting, interviewees welcome the opportunity to learn more about resilient processes from the approaches taken by other cities such as Belfast, Bristol and Milan. This starts with creating mechanisms that allow goals to be set collectively, to be seen as mutually owned and where the resilience function becomes a vehicle to achieve these shared goals. This is particularly important for local government (internally) as resilience programmes will be cross-departmental, and it is the departments which will fund – directly or indirectly – the programme.

City respondents also acknowledged that the process of building resilient cities at local government level requires legitimacy. To be both multi-functional and multi-disciplinary, it must ‘sit’ at senior management level. In Belfast, the Commissioner for Resilience reports directly to the Chief Executive, and chairs one of the four, statute regulated, boards created to support the delivery of the Community Plan, The Belfast Agenda. This structure is the basis for strong inter-departmental relationships and, therefore, collective goal setting. In addition, the board also has external participation from the Northern Ireland Housing Executive (NIHE), the Utility Regulator, Translink, and others. In Bristol, the One City Plan which has many of the traits of a resilience strategy, is being delivered by six thematic boards whose membership is broad-based. The boards take a holistic and integrated approach to delivery – not only focusing on their own priority actions but also supporting the work programmes of the other boards. In contrast, the Milan resilience function was set up as a project and, by definition, can be terminated at any given time. The Chief Resilience Officer has line management responsibility and views the primary role of the office to educate and influence. These two scenarios are mirrored in Irish smart city programmes; whereby each of the city representatives have line management responsibility and are dependent on the strength of their sponsorship, and the culture of the organisation to create collective goals.

6.6 Irish Cities Participation in International Networks

There are a number of global networks whose role it is to shape the debate on urban resilience and adaptation by supporting cities in future-proofing their communities and critical infrastructure and driving resilience practice shared via campaigns, training, and community-based action. Five such global networks were identified and are summarised in Annex 4. There are at least 19 Irish signatories to the principles set out by Global Covenant of Mayors (out of over 10,300 in total), where there is no obligatory active participation. Outside of Belfast’s engagement in the 100RC and Cork City Council’s membership of ICLEI, Irish cities do not participate in any other active networks.

The three cities of Belfast, Bristol and Milan all used the City Resilience Network, 100RC, to help kick-start their resilience programmes. This network provided funding to create a resilience office, and provide pre-resilience assessment and consultancy assistance at an early stage.

Outside of this core group of global networks that support cities in their resilience journeys, the interviews flagged other types of networks which are supporting cities

in their international networking and sustainable development. The Intelligent Cities Challenge⁴⁴, for example, is a European Commission initiative bringing together 130 cities to achieve intelligent, socially responsible and sustainable growth through advanced technologies. Both Cork City and Derry/Londonderry are successful applicants to this programme; and over the next 2.5 years will receive high quality, tailored guidance and capability building tools to drive policy goals that will lead to smart, sustainable growth. Another network referenced was the Green City Accord⁴⁵, another European Commission initiative launched at the European Week of City and Regions in October 2020. The ‘movement’ is aimed at European mayors committed to making cities cleaner and healthier; with cities being asked to commit to addressing five areas of environmental management: air, water, nature and biodiversity, circular economy and waste, and noise.

A challenge for cities on the island of Ireland, as expressed in the interviews, is establishing which, if any, of these various networks offers the range and type of supports required by them at any particular point in time. The number of networks is growing, and the differentials between them is blurring – particularly as some of the networks come together to form new networks (e.g. ICLEI and the Resilient Cities Network as membership-based global networks in their own right, coming together to establish Making Cities Resilient 2030 - another membership-based global network).

Recognising that such networks are not the ‘only way in’ to progress a resilience agenda, joining networks is usually a sign of a city wishing to learn about a topic it feels it wants to advance, acknowledging a limited knowledge and a need for capacity building and peer-to-peer sharing and support. From the limited information available from cities on the island of Ireland, however, it is not hard to see why they are not as engaged in these global networks as one would expect – there are numerous global networks and 2020 has seen the establishment of many more. There appears at first sight to be an overlap in their purpose and focus, and indeed, a fuzziness in the boundaries of where one ends and another begins. Those that are politically based also pose challenges for Ireland where Mayors or Cathaoirleach only serve 1-year terms of office. With many local authorities not having European Units, there is a lack of capacity internally within councils to research the offerings of each and establish which, if any, would offer a ‘good fit’. While, in this context, it could be argued that it is difficult to ascertain the value of a city’s participation in such international networks, there may be opportunities via the Irish Regions European Office⁴⁶ (IREO) to promote and/or enhance Irish participation. Through its networking function, for example, the IREO plays a key role in representing stakeholders’ interests by participating in collaborative value-added activity including relevant European networks, associations and partnerships. Low participation of Irish cities is also interpreted as a timing issue, which will be addressed, in Ireland’s case at least, with the pending Climate Action and Low

⁴⁴ <https://www.intelligentcitieschallenge.eu/>

⁴⁵ https://ec.europa.eu/environment/topics/urban-environment/green-city-accord_en

⁴⁶ <https://www.ireo.eu/>

Carbon Development (Amendment) Bill 2020 which places an obligation on local authorities to prepare climate action plans.

6.7 The Principles for Resilient Cities

Drawing from both the primary and secondary research conducted for this scoping paper, some key principles for building resilient cities are presented below. Further research is required to verify these and adapt them as required – noting that this paper focuses on a small sample size of case study cities, the survey pool is limiting, and that cities will be commencing their resilience journeys from different starting points.

- 1. Open data plays a key role in identifying and understanding current shocks, stresses and strains facing the city, and the inter-connectedness between them.**

A key starting point for a resilience framework is for a city or place to know and understand the current and potential shocks it may face, and the cumulative effect of the various stresses and strains it is under. This highlights the need for open data that underlines the vulnerabilities and assets of the area. Data, and in particular real-time data, must be made accessible in ways that maximise public benefit. Accessing useful open data can be problematic; e.g., ensuring the availability of continuous, timely and high quality data requires significant resources and commitment. However, cities do realise the benefits and there are increasing examples of local authorities putting in place programmes to design and publish open data portals and city dashboards. For resilience efforts, this data will be augmented with analysis by data analysts employed by the city or academic bodies, so as to provide usable and actionable information. Maynooth University's Building City Dashboards programme, working with both Cork City Council and Dublin City Council is an example in action⁴⁷.

- 2. Cities must commit to being open and transparent about the “who, what, where, when, and why” of resilience.**

As argued by Meerow and Newell (2019) and increasingly reflected in the thinking and actions of cities with a very strong social equity focus to their resilience programmes (e.g., Bristol and Melbourne), the 5 'Ws' of urban resilience must be considered critically in operationalising and mapping programmes of resilience. A risk assessment should be undertaken using one of the already established resilience frameworks (See Annex 3) – or a variant of.

Any assessment process should be based on participatory processes. Effort needs to be put in place in order that the shocks and stressors identified are reflective of local risks, and are not only a manifestation of central government priorities. While climate action may be the ultimate national goal, this needs to be balanced with

⁴⁷ <https://dashboards.maynoothuniversity.ie/>

other local priorities. The interviews would strongly suggest that any resulting initiative should be two-pronged. The first would be to address the potential shock and stressors and the second to address the inevitable social impact that ensues with large shocks, such as COVID-19, or long-term stressors, such as changing demographic profiles.

3. Participatory processes should be as inclusive as possible and should harness the role of local leaders in facilitating collaboration and driving public service innovation.

Drawing on the work of Hambleton (2015, 2020), new civic leadership involves five overlapping realms of place-based leadership – each bringing a legitimacy to the concept of resilience and the process being embarked upon: political leadership, public managerial/professional leadership, community leadership, business leadership and trade union leadership.

Cities are complex, and so strong leadership is key to ensuring the right responses at the right time to current risks, while also building in resilience to future shocks and stresses. Responses must be context specific and employ a place-based approach. There is no ‘one-size-fits-all’ solution for cities as they plan for an inclusive and sustainable future. Every domain-specific resilience effort must include a corresponding social effort.

The Belfast and Bristol models are strong positive evidence of this principle in action.

4. Adopt the Principle of Subsidiarity.

The principle that decision-making powers on public policy should rest as close as possible to where those policies are being delivered, is viewed as highly important. So much so, the view is that the degree to which a city can be successful in a resilience initiative is directly related to the autonomy it has in accessing resources and having the authority or mandate to make strategic decisions.

Both Ireland and the UK’s model of government is very centralised; thus, impacting on the mandate and financial resourcing of local government and their capacity to be innovative in addressing local/regional issues. Building resilient cities requires a rebalancing of power; with cities having the autonomy to make strategic investment decisions that will serve the best interests of the city and region over the long-term. The DEM elections in Limerick City and County in 2021 could be the game-changer required in the rebalancing of power. At the time of writing, the report of the Implementation Advisory Group, established to consider a directly elected mayor with executive functions for Limerick City & County, had just been published⁴⁸. One of many proposals made in this report regarding the transfer of powers includes a recommendation that the DEM would be given overarching powers to convene stakeholders in Limerick in relation to a particular policy agenda. This would include initiating a resilience programme.

⁴⁸ <https://www.gov.ie/en/organisation-information/f3b96-plans-for-a-directly-elected-mayor-with-executive-functions-for-limerick-city-and-county/>

5. Create Liveable Cities.

The COVID-19 impact on cities across the island of Ireland has shown that ‘living cities’ have more resilience potential than hollowed-out urban cores. Living cities are communities which, to a large extent, are self-sufficient. Citizens have access to localised support, local facilities and local employment. Living cities ensure the financial, operational, socio-economic and environmental sustainability of cities. While this is certainly aspirational, it should be a principle in any future initiative.

This was borne out during the March 2020 lockdown when there was a significant increase in calls for assistance to local authorities and other agencies regarding access to essential services and more generally, overall wellbeing. The resulting response and renewed pride in place has enhanced the calls for greater investment in “living cities” or “living communities.”

Chapter 7:
Reflections—Building Long-Term
Resilient and Sustainable Cities on
The Island of Ireland

In the past decade in particular, there has been a notable shift in the understanding of resilience to not only ‘bounce-back’ but to also ‘bounce-forward’ (Fastenrath et al, 2019); and in bouncing forward to ‘build back better’ by “seeking to advance a community or place to a better situation as part of or following, recovery” (*Ibid*, p.3). With this evolution cities are developing strategies to address resilience issues. As noted by Fastenrath et al (2019), more and more cities are developing strategies and action frameworks to “increase their resilience to a diversity of environmental, social and economic challenges” (2019: 1). The effectiveness of these strategies rely on:

- Being integrated into other sustainability agendas;
- Recognising the importance of ‘place’ and spatial planning;
- Accepting its limitations and identifying it as a ‘living’ document;
- Understanding its risks, its vulnerabilities;
- Having access to open data and relevant information.

An Integrated Approach

The success of resilience strategies, frameworks or check-lists is dependent on their being integrated into, and aligned with, other sustainability agendas. A means, by governments, to coalesce stakeholders at all levels is to design efforts around the SDGs, recognising that actions focused on climate mitigation and adaptation can also lead to improvements in air and water quality, the enhancement of an area’s biodiversity, the resilience of its economy, and so on. As argued by Meerow et al., (2016: 46) resilience strategies are strongly shaped by “who defines the agenda, whose resilience is being prioritised and who benefits or loses as a result”. This is best illustrated by the vignette on Bristol’s resilience strategy whereby the initial Mayor’s focus on the green agenda resulted in a resilience strategy that many felt didn’t speak adequately to the social inequalities facing the city; while the approach adopted to the development of the One City Plan best exemplifies the new standard of co-creation and wider citizen/stakeholder engagement needed in building sustainable resilience paradigms

The Role of Spatial Planning

The previous chapters speak strongly to the importance of ‘place’ in resilience building; with successful place-making centring on utilising local knowledge to identify need, opportunity and assets in creating liveable places (Arefi, 2014), and contributing to economic competitiveness and sustainability (Markusen and Gadwa, 2010). To be effective, place-making strategies and activities must demonstrate

foresight while also being adaptable. In the words of Coaffee (2013a), they must also be robust – even resilient.

Accepting the Limitations

The success of any resilience programme entails understanding its limitations, and recognising it as a ‘living’ document. The shocks, stresses and strains faced by a city can change over time, even suddenly. Milan, for example, postponed the launch of their strategy in Summer 2020 to take account of global health pandemics. This was in response to the unforeseen shock of COVID-19. Following publication of their resilience strategy at the end of 2016, Bristol has since moved away from the oversight of the 100RC, as they felt that their goal and focus on equality (social resilience) was not to the fore of the Network’s priorities. There was also the challenge of having a strategy with no clear sense of how its actions could be financially delivered.

Understanding the Risks

The concept of resilience, as it applies to spatial planning, environmental protection and conservation, health and well-being, economic growth, and social justice, is increasingly used as a risk framing approach that pulls together, and explores the intricacies between, the “multiple, contingent and relational dynamics of change” (Wilkinson, 2012: 323) across policy and practice.

A core value of the 100RC programme is the understanding that a place must first understand its risks, its vulnerabilities before it can begin to plan a resilience response. The 100RC programme further highlights the importance of a multi-level governance approach that operates to the quadruple helix (i.e. government-private-academia-community). While Belfast would have availed of the 100RC network supports at an early stage, they very quickly also built up other strategic partnerships via the city’s Community Plan, Queens University Belfast and the PCAN Network. This access to key leaders from a range of sectors, and their understanding of local and regional issues, would lead to a more rooted and holistic understanding of the complex issues facing the city. This local knowledge and associated analysis was equally, if not more, important than the professional consultancy offered (and availed of) at the outset of the process

Access to Open Data and Information

A key tool in pursuing integrated resilience policy and practice is information, and access to open data, followed closely by the co-creation of knowledge via collaborative networks involving stakeholders from the public, private and community sectors together with academia. This is essential in initiating transformative change. Researchers from the University of Melbourne, for example, who have an ongoing research programme with Resilient Melbourne, contend that urban resilience is in effect “transformational innovation policy” centred on the interactions “between grassroots-driven (bottom-up) and policy driven (top-down)” agendas (Fastenrath et al, 2019: 8). Through these interactions, the resulting resilience strategy actions are viewed as “pilot projects” with the potential to “improve social relations, policy making and planning” (*Ibid*, p. 6). From the case studies of Belfast, Bristol and Milan, it is clear that quantitative data, together with mainly qualitative frameworks such as the City Resilience Framework

employed by Arup, play a fundamental role in identifying current and potential shocks and stresses – the essential building blocks of any resilience strategy. Away from the formal resilience programmes, Scotland’s Rural College developed a Towns Vulnerability Index in 2011 in response to the then shock of the global economic downturn. It monitored the challenges and opportunities facing Scotland’s towns resulting from continuing economic uncertainty, population ageing, changing housing demands, moves to a low carbon economy and public sector funding and job cuts. As places strive to deal with continual change and its impacts, and move away from static plans, tools such as those outlined above must be embraced.

7.1. Readiness of Irish Cities

At its simplest, resilience planning equals change – and adapting to change can be a great challenge. In building urban resilience, it involves transforming how we think about, plan for, and act upon the pressing needs of cities and towns in a long-term, holistic and interactive manner. In particular, it requires a new model of citizen engagement that involves transitioning from fear of change to new shared responsibilities between the city and its citizens. This includes both empowering citizens and considering them as a valuable asset for building urban resilience.

Across the island of Ireland, cities are by international standards small and varied in scale. Readiness around resilience thinking and action is weak and under-developed, with approaches to climate, economic, social and environmental resilience siloed and segregated across Directorates at both central and local government level. It could also be argued that the resilience agenda has become too ensconced in climate change – to the detriment of wider social and economic challenges. Yet, the sort of changes impacting on cities varies greatly from place to place, and includes not only the effects of climate change and related environmental change but also social and economic change and challenges in the form of globalisation, poverty, social exclusion, the erosion of social support structures, and spatial change and development (Fourniere et al, 2017). More recently, the COVID-19 emergency has brought into focus the quality of urban living and urban design, in particular transport mobility, the public realm and green infrastructure (Taylor, 2020⁴⁹). The pandemic undoubtedly raises further questions on the readiness of Irish cities to build resilience; not, least, as argued by Norton (2020)⁵⁰, around the localised shocks and stresses that have arisen as a direct result of the pandemic, and whether our cities and towns can pre-plan for similar events in the future.

Ireland has committed to both the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement (COP 21). However, Ireland has missed its 2020 target and international experts claim our plans to reduce CO₂ emissions fall way short if we wish to meet our 2030 target. Given this backdrop,

⁴⁹ https://www.ipi.ie/sites/default/files/accordion-files/resilient_urban_design_050620_1_1.pdf

⁵⁰ https://www.ipi.ie/sites/default/files/accordion-files/ipi_urban_design_cpd_cnorton_050620_final_2_0.pdf

we would expect to see cities – and their citizens – embedded in any climate action planning. For example, transport was responsible for 40%, and residential properties for 24% of energy-related CO₂ emissions in Ireland in 2018 (SEAI⁵¹). With these figures, it would not be unreasonable to expect that cities are key in both the design and delivery of any national climate action plan. From the interviews with Irish public servants, it was strongly impressed that climate action can, too often, be a siloed-issue, and is not always high on the radar of cities as they develop their housing, economic or tourism strategies by way of example. As stated earlier, one response from a local authority representative noted that the dominance (or not) of climate change on the city agenda could be correlated to whether climate action is an important election issue. The question arises, should some form of intervention be enacted to incentivise cities to set and deliver targets, and in parallel, to set expectations from cities by citizens? This will be extensively addressed in the near future as the recent Climate Action and Low Carbon Development (Amendment) Bill 2020 places a statutory obligation on local authorities to draft climate action plans. In the interim, it is important to note that a number of local authorities are already leading by example. Cork County Council has a draft climate adaptation plan already in place, the delivery of which will be supported by climate action and biodiversity action plans (LGMA, 2020a). Similarly, Derry City and Strabane District Council was the first council in Northern Ireland to adopt its Climate Adaptation Plan in 2020, with the Council members also signing up to a Climate Change Emergency Pledge⁵².

The interviews clearly demonstrate that Irish cities place a strong focus on community resilience. They see it as their responsibility to improve society within the boundaries of their remit. The issues that they face are as important as climate action and economic development, and any future resilience initiative needs to balance all these needs.

7.2. Future Investigations

There is no one single model to which a resilience strategy, framework, plan or check-list should be developed. Its embeddedness in responding to the particular needs and challenges of a place make it so. In saying that, there is a compelling need to better understand the inter-relationships between resilience and the following factors that can shape sustainable places:

1. Definition of a living city in an island of Ireland context

‘Living cities’ are still highly conceptual, suggesting research into the definition of a living city is warranted. As we have argued that resilience is local, perhaps this also means that there are many versions of living cities on the island of Ireland, based on

⁵¹ <https://www.seai.ie/data-and-insights/seai-statistics/key-statistics/co2/#:~:text=High%20emissions%20from%20transport,it%20was%20responsible%20for%2040%25.>

⁵² <http://meetings.derrycityandstrabanedistrict.com/documents/s31063/Appendix%202%20DCSDC%20Climate%20Change%20Pledge%202020%20Action%20Plan.pdf>

local services, local facilities and local employment. Community services today are acquired through a blend of local and central government, volunteer organisations and privately purchased. An evidence based approach may confirm or suggest another model.

Similarly, observations of cities as they react to COVID-19 has led local councils to have a conceptual understanding of how best to design their respective cities. Dublin's reaction to a centre without people and Cork's focus on suitable housing are starting points to help us understand the needs of citizens, and the type of local facilities required.

Lastly, cities across the island of Ireland have, for some time, been hollowed out. Retail parks are now part of geography limiting the attractiveness of cities as destinations. More importantly, traditional work, such as manufacturing has moved out of the cities and is now centred in industrial estates. This leaves the cities, as in the case of Dublin City centre, focusing on tourism, students, transient work and offices. We suggest an important piece of future work would be to determine what traditional and new forms of employment should and could be relocated in cities. Knowledge based "new economy" industries such as advanced manufacturing and creatives, for example, are found to be more innovative and adaptable to different spatial settings (Martin and Sunley, 2015). Within Milan's draft resilience strategy, the 'Manifattura Milano' aims to improve the city's economic attractiveness and grow the number of enterprises engaged in digital and advanced urban manufacturing and the craft/creative sectors. These sectors generate and absorb new innovations at a faster rate than other sectors. They attract highly skilled human capital which, in turn, stimulates growth of many service and cultural industries in the wider regional economy (Martin and Sunley, 2015).

2. Who are the actors?

At the outset, there is a need to understand who are the actors involved in such change processes and why; while this is likely to vary across cities, Meerow et al (2016) have identified a series of fundamental questions which could form the basis for such interrogation – the questions centring on the 5 Ws – Who? What? When? Where? Why? Applying this cross-examination to those cities that have already taken a course of action will provide crucial insights into the process and outcomes, and the potential trade-offs that may be required.

3. The inter-relationships between local and central government

There are issues of scale when building resilience – whether it is for the benefit of the country, the region, the city or the town/village. Scalar responses to climate, socio-economic and environmental resilience are inter-linked. Local responses to climate change, for example, cannot be considered in isolation of national or indeed international policy. While there is widespread agreement that national policies are required, their implementation needs to be funnelled through local government to the population, with the relevant local discretions, based on good quality open data and local knowledge, and financial resourcing.

There is a need for further research into the inter-relationships between local and central government in the development of resilient strategies, to the extent that these relationships may vary according to the type of resilience being planned or

discussed (climate v. economic, economic v. environmental, etc.), and the vertical 'scaling-up' of both governance and actions.

4. City scope and the inter-relationships between cities

During the interviews the topic of the interplay between cities arose, as one cities action can impact on an adjacent region. It was suggested that resilience building might be better served if we were to consider city regions, incorporating highly interdependent counties, such as Limerick and Clare. This suggests that research into the boundaries and interaction of a resilient city(s) is warranted. What is the critical mass necessary for resilience planning and how do adjacent resilience plans interact?

5. Models of governance for an Irish context

Further investigation is warranted into the impacts of different models of governance and decision-making on the outcomes of resilience strategies.

6. The variances, if any, between building urban resilience and rural resilience

For the island of Ireland, the variances, if any, between building urban resilience and rural resilience need to be considered and understood. This point is particularly pertinent in the current pick-up being experienced by many rural communities as people's travel and work movements adapt to COVID-19 restrictions and people re-evaluate their current work-life balances and place a greater emphasis on quality of life. Are such shifts temporary or could they signal a much-needed revitalisation of rural communities across the island of Ireland?

Appendices

ANNEX 1: Introducing the Research Team

The International Centre for Local and Regional Development (ICLRD)

The International Centre for Local and Regional Development (ICLRD) is a North-South-U.S. partnership. It was formally established in 2006 to explore and expand the contribution that spatial planning and the development of physical, social and economic infrastructure can make to peace and reconciliation on the island of Ireland, and elsewhere. The ICLRDR has developed out of a unique collaboration between academics and spatial planning specialists, with current partners including the National Institute for Regional and Spatial Analysis (NIRSA) at Maynooth University, the Belfast School of Architecture and the Built Environment at Ulster University and the National Center for Smart Growth at University of Maryland.

A central objective of the ICLRDR is to strengthen the policy and operational linkages between central, regional and local policy makers and among officials and practitioners involved in spatial planning and social and economic development across the island of Ireland. It does this through action research, policy advice and publications; professional facilitation and education and capacity building programmes that assist local governments and communities to translate policy into 'on the ground' action; and active outreach and networking that includes conferences, workshops and international co-operation and exchanges to identify best practices. Further information on the work of the ICLRDR is available at www.iclrd.org

Innovation Value Institute (IVI)

The Innovation Value Institute (IVI) was founded in 2006 by Maynooth University to develop and enhance a global standard for IT management and Digital Transformation. Using an open innovation approach, we bring together a diverse community of academia, enterprises, public sector to shape Digital Enterprises and Value Chains. Our approach is anchored in advancing Enterprise Capabilities that are built on more than a decade of expertise in the development of the IT-Capability Maturity Framework.

IVI's mission is to research, develop and disseminate empirically proven and industry validated best practice for Digital Transformation through a unique open innovation and collaboration between leading academic and industry practitioners. For further information see <https://ivi.ie/>

Lero: the Science Foundation Ireland Research Centre for Software

Lero is the Science Foundation Ireland Research Centre for Software, with a vision of establishing Ireland as a location synonymous with high-quality software research and development. Lero brings together expert teams from universities and institutes of technology across Ireland in a co-ordinated centre of research excellence with a strong industry focus. Its research spans a wide range of application domains from driverless cars to artificial intelligence, cybersecurity, fintech, govtech, smart communities, agtech and healthtech. For further information see <https://lero.ie/>

ANNEX 2: Schedule of Interviews

Table A2.1. Resilience Conversations on the island of Ireland

Date	City	No. of Interviewees
30 Nov 2020	Belfast City Council	2
23 Nov 2020	Cork City Council	2
27 Nov 2020		
1 Dec 2020	Derry City and Strabane District Council	1
	Dublin City Council	2
23 Nov 2020	Dún Laoghaire Rathdown County Council	2
23 Nov 2020	Limerick City and County Council	1
27 Nov 2020	Secretary General (retired)	1
4 Dec 2020	Chairperson, Implementation Advisory Group for Directly Elected Mayor of Limerick Project	1

Table A2.2. International Resilience Conversations

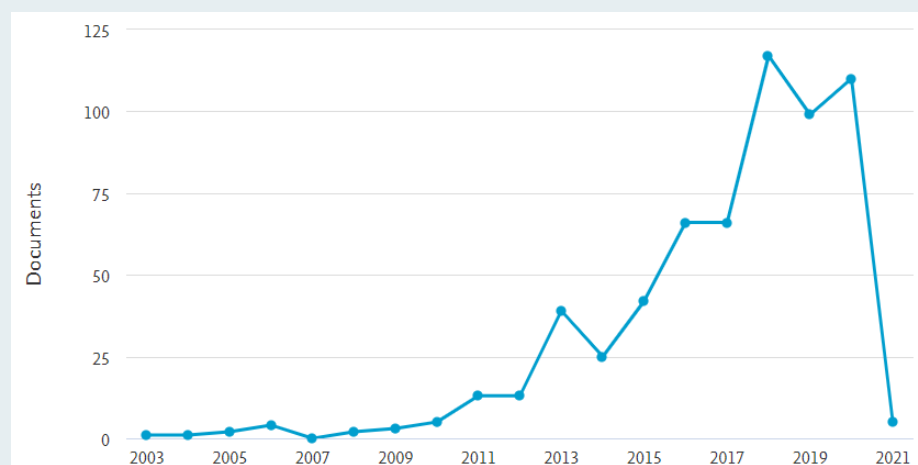
Date	City	No. of Interviewees
30 Nov 2020	Milan	1
4 Dec 2020	Bristol	1

ANNEX 3: Literature Review

The intent of this literature review is to elicit from literature the current thinking on city resilience, in order to inform a discussion on any possible future Island of Ireland initiatives. The primary focus is on frameworks and their use as resilience assessments. To enhance any future discussion, we also extract commentary on governance, as this informs the management of initiatives, and critiques, as these suggest limitations to any given framework.

It must be recognised that resilience literature is primarily directed at resilience to climate events and natural disasters. While these may not be entirely relevant in an Island of Ireland context, the structure, the approach to management of resilience initiatives is transferrable and can inform a discussion of resilient Irish cities. The academic literature was found on the Scopus Database, and the grey literature was found through Google searches. The interest in the topic of city resilience has grown significantly in last number of years, with over 50% of all over publication coming since the beginning of 2017.

Figure A3.1: Documents per year with “City Resilience” in Title, Abstract or Keywords, from the Scopus Database



In part the rising interest reflects the positive reaction to:

- The UN Sustainable Development Goals;
- The New Urban Agenda;
- The Sendai Framework for Disaster Risk Reduction, and
- The Paris Agreement to achieve climate and disaster resilient within cities.

A3.1 City Resilience Definition

Patel and Nosal (2016) in work for the UN describe how the more common definitions of city resilience are derived from ecology which emphasises the transformation of a given system into a fundamentally new one following a certain degree of stress. They assert that resilience is both an active process, used to function despite the day-to-day risks and stresses that define a fragile city and a collection of latent properties that can be called upon during an acute shock. They continue by claiming that resilience is improved by measures that reduce exposure and vulnerability, whereby human agency can mitigate the economic and human costs of a natural shock or stress. From this perspective then, resilience seeks to not only restore functionality but also correct existing social, political, and economic structures that may have increased exposure and constrained capacity to cope with the crisis. The Patel and Nosal's working definition for resilience is:

The ability to activate protective qualities and processes at the individual, community, institutional and systems level to engage with hazards or stressors and cooperate with each other in order to maintain or recover functionality and prosper while adapting to a new equilibrium and minimizing the accumulation of pre-existing or additional risks and vulnerabilities.

Pirlone and colleagues (Pirlone et al. 2020) focus on the relationship between sustainability and resilience. They claim that urban sustainability predates urban resilience, as a reference point for the development of communities and urban areas in the 1980s and 1990s. In this context the widely accepted definition of sustainability is from the Brundtland Commission, which has defined sustainability as:

The development that meets the needs of current generations without compromising the ability of future generations to meet their own needs.

Urban resilience emerged in the 2000s with a focus on the response of systems (differentiated in environmental, social, and economic systems) to both extreme disturbances and persistent stress. They point out that increasing resilience of a system makes that system more sustainable but increasing the sustainability of a system does not necessarily make it more resilient.

Croese et al. (2020) would argue that, broadly, resilience refers to the ability to withstand shocks and stresses and to adjust to changing conditions (such as climate/environmental change), while urban resilience incorporates the need to manage the multiple risks and challenges that arise from rapid urbanisation and greater global connectedness, ranging from deindustrialisation to terrorist attacks, and that particularly affect the poor and most vulnerable in society.

As urban centres continue to grow and grapple with challenges such as climate change and, more recently, the global pandemic, COVID-19, resilience has become a favoured concept of governments both nationally and locally. It is widely regarded as dynamic and multi-disciplinary, thus offering "multiple pathways to resilience" (Newell et al, 2016: 39). Building resilience has become a key objective of

collaborative working for local and regional stakeholders, with a particular focus being on place-based solutions. This recognises the inestimable role of natural assets and strong leadership in both informing and enabling local responses to global challenges. Donoghue, for example, contends that the starting point for a resilience framework is to focus on “what individual units (individuals, households, communities, etc.) can do to adapt within crisis conditions” (2020: 2). Such an approach is reflected in the National Planning Framework (NPF), *Ireland 2040*, the Regional Economic and Spatial Strategies (RSES) of the three regional assemblies and, more recently, in the government’s response to COVID-19, *Resilient and Recovery 2020-2021: Plan for Living with COVID-19*, all of which emphasise the role of communities and counties in being at the centre of solutions to stresses and shocks (*ibid*, 2020).

While the term resilient city has its origins in dealing with natural disasters, its use now extends to a number of independent but interacting resilient domains (Ostadtaghizadeh et al., 2015; Cohen et al., 2019; Pirlone et al. 2019):

- Social resilience;
- Economic resilience;
- Community capital;
- Institutional resilience;
- Infrastructure resilience; and
- Environmental resilience.

The seminal article by Merrow et al. (2016) provides a detailed overview of the various definitions of resilience, and the subject areas from which they have emerged, it is the new definition of urban resilience put forward by Merrow et al that is adopted for the purposes of this scoping paper. As outlined in Chapter 1, that definition is

Urban resilience refers to the ability of an urban system – and all its constituent socio-ecological and socio-technical networks across temporal and spatial scales – to maintain or rapidly return to desired functions in the face of a disturbance, to adapt to change, and to quickly transform systems that limit current or future adaptive capacity.

This is reflective of the definition adopted by the 100RC programme, of which a number of the cities referenced in this paper are part. They define 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 experience⁵³.

A3.2 Resilient City Frameworks

A3.2.1 Resilience Qualities

The purpose of resilience frameworks is to support the implementation of resilience initiatives. They should support coordinating the efforts of numerous government departments, adopting flexible, and adaptive processes to accommodate changing circumstances, and allocating resources to preventive measures in anticipation of uncertain future threats (Croese et al, 2020). In nearly all frameworks, and accompanying assessments, the authors first describe a set of values, often referred to as qualities or principles. An early summary of qualities was presented by Godschalk (2003) who, based on a review of assessment at that point in time, concluded that resilient systems should have the following qualities

- **Redundant**—with a number of functionally similar components so that the entire system does not fail when one component fails;
- **Diverse**—with a number of functionally different components in order to protect the system against various threats;
- **Efficient**—with a positive ratio of energy supplied to energy delivered by a dynamic system;
- **Autonomous**—with the capability to operate independently of outside control;
- **Strong**—with the power to resist attack or other outside force;
- **Interdependent**—with system components connected so that they support each other;
- **Adaptable**—with the capacity to learn from experience and the flexibility to change; and
- **Collaborative**—with multiple opportunities and incentives for broad stakeholder participation.

These qualities, more or less, are still considered the fundamentals today. For example, the Resilient Cities Network’s assessment, arguably the most prominent

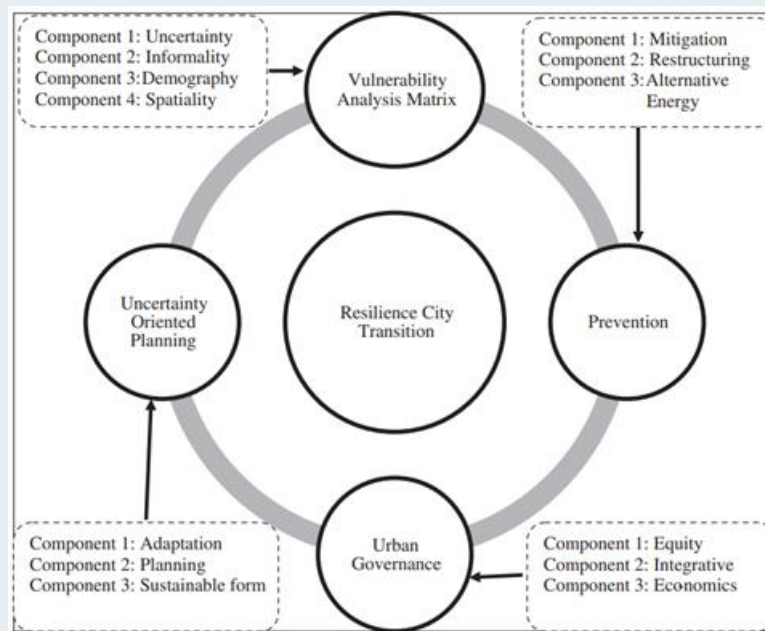
⁵³ <https://www.rockefellerfoundation.org/wp-content/uploads/City-Resilience-Framework-2015.pdf>

assessment, is built on the qualities of: *Reflective; Robust; Redundant; Flexible; Resourceful; Inclusive; and Integrated.*

A3.2.2 Academic Frameworks

Academic frameworks are presented as conceptual work in support of the design of resilience readiness assessments and action plans. Academic models can often be useful with the questions they pose and solutions they offer. Two examples are described here. The first is the work of Jabareen, (2013), whose framework (Figure A3.2) is presented with four concepts, suggesting cities move toward a desired position in each concept. The model is static but does suggest a path for cities to achieve resilience.

Figure A3.2: Resilient City Planning Framework (Jabareen, 2013)



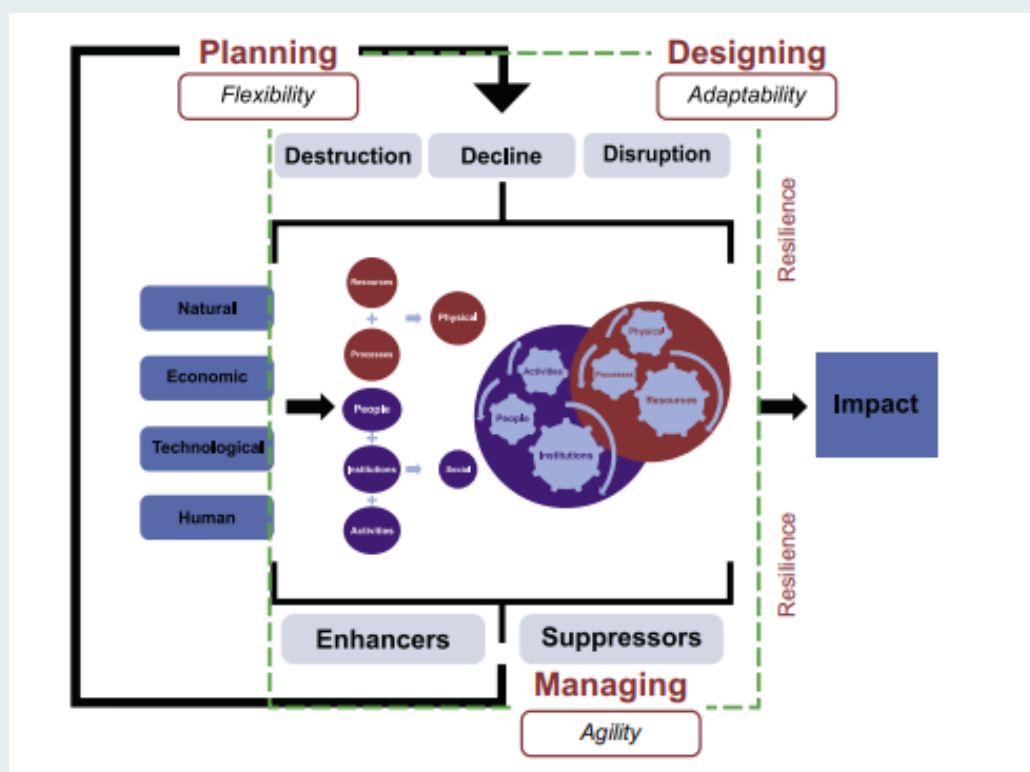
The path to the desired position can be navigated by asking specific question in each concept (Table A3.1).

Table A3.1: Resilient City Framework – Key Questions (Jabareen, 2013)

<i>Concept 1: Urban vulnerability matrix analysis</i>	
<i>Concept 2: Uncertainty oriented planning</i>	
C1: Adaptation	C1: What adaptation measures are taken to reduce risks and cope with future uncertainties?
C2: Planning	C2: How do planning methods cope with uncertainties?
C3: Sustainable	C3: What are characteristics of the existing and planned urban form typologies?
<i>Concept 3: Urban governance</i>	
C1: Equity	C1: Who participates in decision-making and planning regarding environmental and uncertainty issues?
C2: Integrative	C2: Is the urban governance approach integrating institutional, legal, social, economic, and environmental aspects?
C3: Eco-economics	C3: what is the nature of the existing and planned ecological economy?
<i>Concept 4: Prevention</i>	
C1: Mitigation	C1: What mitigation measures are taken to reduce risks and to prepare the city for future environmental hazards?
C2: Restructuring	C2: What are the proposed or planned spatial, physical, and economic restructuring policies that aim to face the environmental hazards and uncertainties?
C3: Alternative energy	C3: How does the city address the energy sector and whether it proposes strategies to reduce energy consumption and to use new alternative and cleaner energy sources?

A more action orientated framework is offer by Desouza and Flanery, (2013) depicted in Figure A3.3. Their assertion is that cities can be reduced to its physical and social components for analytical purposes. Physical components comprise of physical resources (i.e. the ingredients) and processes (i.e. organized collection of signalling tools to process and distribute the ingredients) within a city's boundaries and control, and those that the city interacts with. Social components represent the human elements that reside within a city permanently or those that flow into, and/or interact with a city (Pickett et al., 2001). Three types of elements make up the social sphere – people (individuals), institutions (organised collection of individuals working together to achieve a common goal), and activities (tasks that individuals and institutions design, invent, implement, and utilise). These core components and their interactions are depicted in the centre of the visual framework.

Figure A3.3: Resilient Cities (Desouza and Flanery, 2013)



Context is taken into account in a generic sense. Desouza and Flanery claim that cities need to identify the 'stressor' or signal disruptor that they want to be resilient against, stating the four broad categories of natural, technological, economic, and human. Their claim is that damage caused by stressors can be described in three way. The first **destruction** which is the permanent loss or incapacitation of any component of a city or the network links that connect the various components. The second is **decline**, a gradual obsolescence of a component thereby making it less

capable of functioning or surviving in its environment. Declines are caused due to lack of investments into a component to keep it relevant and current, and/or the inclusion of new components of a superior quality that can also achieve a given goal. The third is **disruption**, where there is temporary loss of availability of a component or an inability of a given component to function.

Cities, through their components, plans, and people can influence the impacts of stressors. **Enhancers** and **suppressors** mediate the impact of stressors on a city, and its components. An enhancer is anything that increases the intensity and/or duration of the stressor on the components of a city (positive feedback) thereby increasing the overall impact. A suppressor, on the other hand, is anything that reduces the intensity and/or duration of the stressor (negative feedback) on the components of a city. Interventions to influence resilience in cities

With this as a backdrop the framework suggests there are three types of actions a city (urban planners, policy maker and citizens) can make. These can be described as **planning** where the primary motivation is to build more capacity for resilience. This is seen as a collaborative process, where success will be based on: a) full diversity of interests represented by participants; b) interdependence of participants; and c) face-to-face authentic dialogue. The focus in planning is flexibility, depending on openness and consensus. The second action type is **designing**, i.e., to build things that are adaptable. The final action type is **managing**, i.e., a set of decisions and actions taken during times of normalcy and in times of crises that impact the current, and future, state of the various components of a city. The framework suggests that the focus needs to be on agility, i.e., the ability of a system to sense changes in the environment, use this information to assess impacts on itself and future aspirations, and make proactive changes to counter the impending stressors on itself (if it cannot alter the stressor's course).

A3.2.3 Frameworks in Use

For the purposes of this report, we define “frameworks in use” are frameworks which are presented as usable assessment packages. They represent the most common frameworks in practice. Many frameworks and assessments have been developed. For example, Sharifi and Yamagata (2016) included twenty-nine when they presented a set of principles and indicators that can be used for developing an urban resilience assessment tool. Ostadtaghizadeh et al. (2015) identified a separate ten framework focusing on community disaster resilience.

As it is not practical to archive and describe all models so we rely on the recent work of Cardoso et al. (2020) who published a new framework (the Resilience Assessment Framework) grounded in the analysis of existing frameworks. This set of frameworks is representative of the more prominent frameworks in use, and offer an understanding of framework structure and use. These frameworks are:

- Local Governments for Sustainability (ICLEI) 2010;
- UN-Habitat City Resilience Profiling Tool (UN-Habitat CRPT) 2013;
- Rockefeller and Arup 2014;

- World Bank 2015;
- United Nations Office for Disaster Risk Reduction (UNDRR, former UNISDR) 2017; and
- U.S. Environmental Protection Agency (EPA, 2017).

The rest of this Annex describes each of these frameworks and the Resilience Assessment framework.

A3.2.3.1 *Local Governments for Sustainability (ICLEI, 2010)*

Focus: Action orientated framework for adapting to climate change

Principles for Working on Climate Change Adaptation:

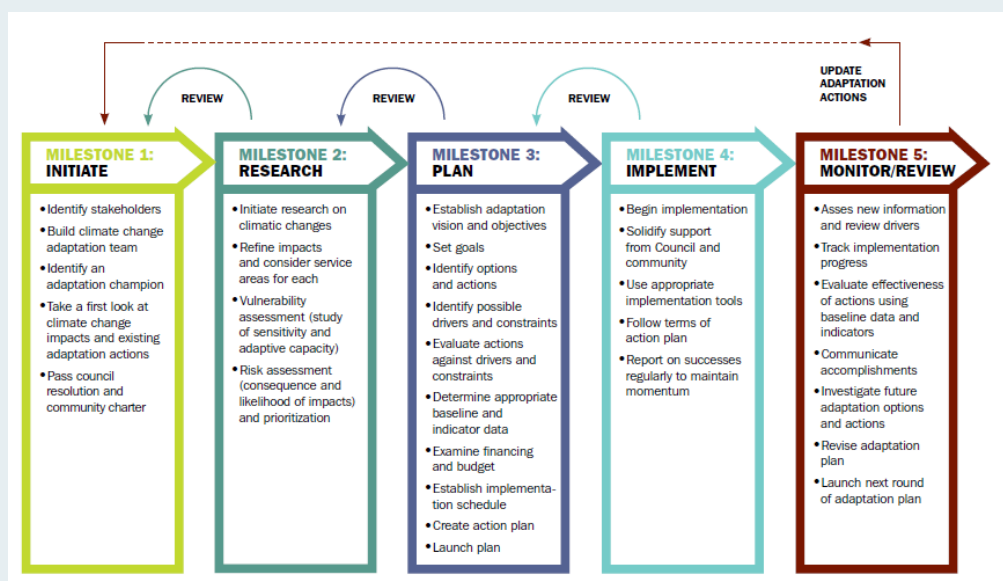
- Balance of immediate and long-term needs;
- Interaction must be supplemented with action: Acknowledge that the complexity and transboundary nature of climate change impacts means that many stakeholders will need to act to develop a truly holistic response to those impacts, yet the coordination of such a large number of actors can be daunting;
- Commitment to act in the face of uncertainty; and
- Recognising existing work.

The authors recognise that climate adaptation planning can be initiated at different levels

- Single departments;
- City;
- Community; and
- Hybrid.

Figure A3.4 outlines the five milestones for climate adaptation and outlines how to implement each one.

Figure A3.4: Milestone Framework (ICLEI, 2010)



The framework document develops each milestone with implementation guides and case studies

A3.2.3.2 UN-Habitat City Resilience Profiling Tool (UN-Habitat CRPT, 2013)

Focus: Action orientated framework for Sub-Saharan Africa small cities and communities.

“The City Resilience Action Planning (CityRAP) Tool aims to enable local governments of small to intermediate sized cities, or neighbourhoods / districts of bigger cities or metropolitan areas, to plan and undertake practical actions to strengthen the resilience of their cities. It targets local governments with limited experience in risk reduction and resilience planning and an urban population size of maximum 250,000 people.”

The 5 pillars of urban resilience are:

1. **Urban Governance:** the processes and structures that allow all local actors participating in the decision-making process and influencing public policies and strategies for improved urban planning, management and development
2. **Urban Planning and Environment:** all aspects related to planning and design of the urban space, the quality of the natural environment (air, water, soil), public/green spaces and climate change
3. **Resilient Infrastructure and Basic Services:** ensuring equal access to infrastructure and basic services is crucial to meet vital needs of the urban population and to allow a city to function and develop properly

4. **Urban Economy and Society:** the processes, mechanisms and activities that allow cities to become drivers of socio-economic development in a country or region, by creating jobs, increasing households' income, generating investments, reducing social tensions and crime, increasing equality and inclusion, promoting social mix, and enhancing security and safety, among other aspects.
5. **Urban Disaster Risk Management:** the ability of the local government and communities, in terms of capacity, knowledge, processes and systems in place, to prevent, anticipate, respond to, and recover rapidly from the impacts of natural or man-made threats in the city.

This framework is highly action orientated, presented as a description of the process UN-Habitat personnel would take in developing a resilience plan (called a framework) for cities. It walks its audience through four implementation phases in considerable detail (see Figure A3.5). Its final phase (phase 4) includes a self-assessment for cities, with 74 questions. Table A3.2 describes the assessment pillars, themes and gives one example question from each theme.

Figure A3.5: City Resilience Action Planning (CityRAP0 Framework (UN-HABITAT, 2013))



Table A3.2: UN-Habitat Self-Assessment structure and sample questions

Pillar 1: Urban Governance	
Theme: Organisational Capacity	Example question: Does your municipal department have enough skilled staff to carry out its daily responsibilities?
Theme: Governance Structure	Do you believe that the current municipal structure allows each department to effectively carry out its work?
Theme: Municipal Finance	In your opinion, in case of a cut in central government transfers, could the municipality ensure the delivery of its basic functions/ responsibilities solely based on local revenue?
Theme: Participation & Civil Society	To what extent does the municipality undertake participatory planning processes where residents are consulted on their needs and ideas?
Pillar 2: Urban Planning and Environment	
Theme: Planning Information Systems	Does your department efficiently gather information for planning purposes
Theme; Urban Planning and Land Management	Do you think that existing urban plans take into consideration future city growth and identify expansion areas?
Theme: Building Codes	Do you consider the quality of existing housing in your city, how vulnerable is it to natural hazards such as floods, cyclones, earthquakes, etc.?
Theme: Public Spaces	Do you think that the city has enough public spaces to ensure adequate quality of life, circulation of people and vehicles, access to services and recreational activities, etc.?
Theme: Informal Settlements	Does upgrading of informal settlements result in security of tenure?
Theme: Environmental Management	Is the municipality undertaking any efforts for greening the city?
Pillar3 : Resilient Infrastructure and Basic Services	
Theme: Health and Education Facilities	Do health and education facilities in the city have enough qualified personnel?
Theme: Water Drainage and Sanitation	To your knowledge, are existing drainage and sanitation facilities (drainage channels, latrines, toilets, wastewater management facilities, sewerage system, etc.) adequately designed to withstand heavy rains or flooding?
Theme: Waste management	Do you think the solid waste disposal site of the city is well located, adequately designed and effectively managed?
Theme: Energy	How often do you experience power cuts?
Theme: Transport and Communications	In your estimation, what proportion of city residents has access to radio or TV on a daily basis?

Pillar 4: Urban Economy and Society	
Theme: Urban Economy	Is the municipality supporting small and medium enterprises (SMEs) and microcredit mechanisms (i.e. the provision of small loans or microloans)?
Theme: Urban Safety	Which statement best describes the situation of your city in relation to crime and safety?
Theme: Food Security	How would you characterise access to food in your city?
Theme: Public Health	Does your city have a public health strategy?
Pillar 5: Urban Disaster Risk Management	
Theme: Risk Awareness and Knowledge	In your opinion, how aware are residents of your city of the natural hazards and risks they are exposed to?
Theme: Preparedness and Response	How efficient are the coordination mechanisms of your municipality with other government institutions in preparing for and responding to disasters?
Theme: Recovery and Reconstruction	How capable is your city to re-establish basic service delivery in the aftermath of a disaster?
Theme: Prevention	Does your municipality enforce any regulation (e.g. zoning law) that prevents the construction of housing and infrastructure in areas exposed to hazards?
Theme: Adaptation	Does your municipality promote built or non-built adaptation solutions (e.g. adaptive architecture, risk sensitive planning, etc.) that improve the capacity to cope with the effects of climate change?
Theme: Mitigation	To your knowledge, is the municipality doing enough to reduce carbon emissions?

A3.2.3.3 Resilience Framework (Rockefeller Foundation & Arup, 2014)

Focus: General assessment, e.g. resource shortages, natural hazards, and conflict.

“The City Resilience Framework responds to this challenge by providing an accessible, evidence-based articulation of city resilience.”

The qualities of resilient systems are:

- 1. Reflective:** accepting of the inherent and ever-increasing uncertainty and change in today’s world. They have mechanisms to continuously evolve, and will modify standards or norms based on emerging evidence, rather than seeking permanent solutions based on the status quo;
- 2. Robust:** include well-conceived, constructed and managed physical assets, so that they can withstand the impacts of hazard events without significant damage or loss of function;

3. **Redundant:** spare capacity purposely created within systems so that they can accommodate disruption, extreme pressures or surges in demand;
4. **Flexible:** systems can change, evolve and adapt in response to changing circumstances.
5. **Resourceful:** implies that people and institutions are able to rapidly find different ways to achieve their goals or meet their needs during a shock or when under stress;
6. **Inclusive:** emphasises the need for broad consultation and engagement of communities, including the most vulnerable groups; and
7. **Integrated:** Integration and alignment between city systems promotes consistency in decision-making and ensures that all investments are mutually supportive to a common outcome.

Categories & Performance Indicators of a Resilient City

Category 1 – Health and Wellbeing

1. **Minimal human vulnerability:** indicated by the extent to which everyone's basic needs are met.
2. **Diverse livelihoods and employment:** facilitated by access to finance, ability to accrue savings, skills training, business support and social welfare.
3. **Adequate safeguards to human life and health:** relying on integrated health facilities and services, and responsive emergency services.

Category 2 – Economy & Society

1. **Collective identity and mutual support:** observed as active community engagement, strong social networks and social integration.
2. **Social stability and security:** including law enforcement, crime prevention, justice, and emergency management.
3. **Availability of financial resources and contingency funds:** observed as sound financial management, diverse revenue streams, the ability to attract business investment, adequate investment, and emergency funds.

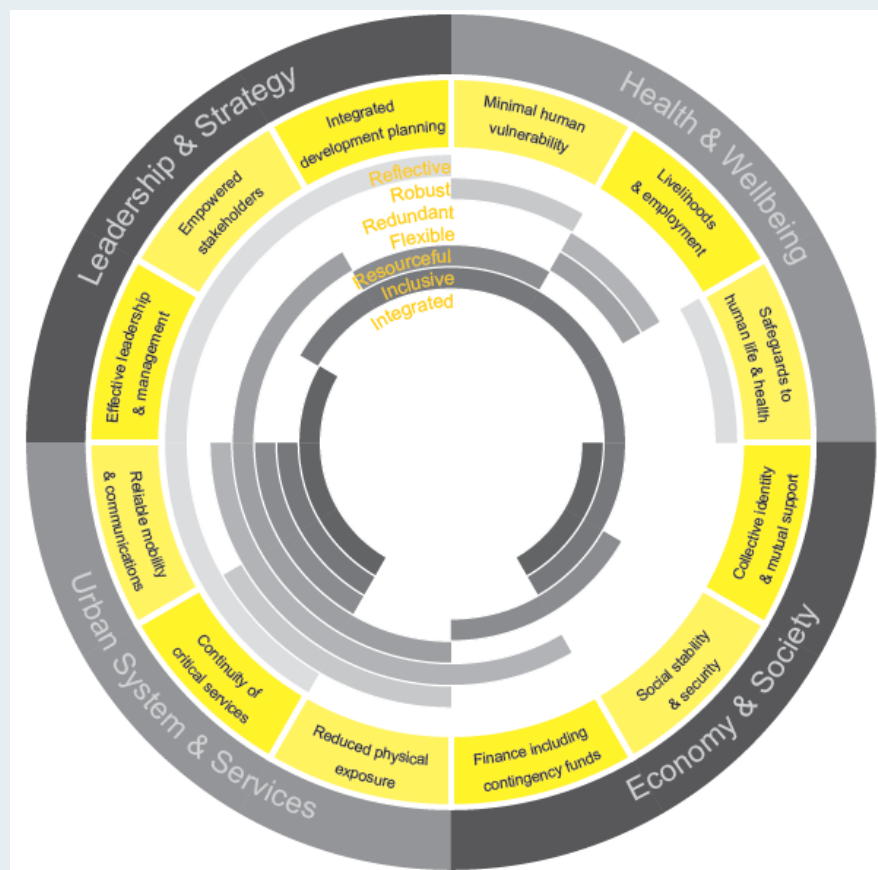
Category 3 – Urban Systems & Services

1. **Reduced physical exposure and vulnerability:** indicated by environmental stewardship; appropriate infrastructure; effective land use planning; and enforcement of planning regulations.
2. **Continuity of critical services:** indicated by diverse provision and active management; maintenance of ecosystems and infrastructure; and contingency planning
3. **Reliable communications and mobility:** indicated by diverse and affordable multi-modal transport systems and ICT networks; and contingency planning.

Category 4 – Leadership & Strategy

1. **Effective leadership and management:** involving government, business and civil society, and indicated by trusted individuals; multi-stakeholder consultation; and evidence-based decision-making.
2. **Empowered stakeholders:** indicated by education for all, and access to up-to-date information and knowledge to enable people and organisations to take appropriate action.
3. **Integrated development planning:** indicated by the presence of a city vision; an integrated development strategy; and plans that are regularly reviewed and updated by cross-departmental working groups.

Figure A3.6: City Resilience Network Framework (Rockefeller Foundation & Arup, 2014)



A3.2.3.4 World Bank CityStrength Resilient Cities Program (Lynch, 2018)

Focus: General assessment & action orientation.

“The CityStrength Diagnostic is structured around sectoral modules that cover topics within the city and metropolitan area purview. Because cities depend on a complex network of infrastructure, institutions, and information, the CityStrength Diagnostic first evaluates sectoral resilience and then brings together the findings to identify interlinkages that determine the resilience of the city holistically.”

The Qualities of Urban Resilience are:

1. **Robust:** robust systems include well-conceived, -constructed and -managed physical assets so that they can withstand the impacts of shocks without significant damage or loss of function;
2. **Redundant:** a redundant network or system has a belt and braces approach, which includes spare capacity or back-up to accommodate disruption, extreme pressures, or surges in demand;
3. **Reflective:** resilient urban systems examine, learn, and evolve based on their past experiences and new information, modifying standards or norms based on emerging evidence rather than seeking permanent solutions based on the status quo;
4. **Coordinated:** coordination between city systems and agencies means that knowledge is shared, planning is collaborative and strategic, and decision-making is based on investments that are mutually supportive toward a common outcome; and
5. **Inclusive:** being inclusive recognizes that risk is perceived differently by different stakeholders and that shocks and stresses mostly affect the most vulnerable

The assessment is structured around sectoral modules that cover topics within the city and metropolitan area purview

Table A3.3: Sectoral modules associated with the CityStrength assessment (Lynch, 2018)

1) Urban Development	10) Information and Communication Technology
2) Community and Social Dimensions	11) Local Economy
3) Disaster Risk Management	12) Logistics and Supply Chain
4) Building Regulations	13) Municipal Finance
5) Cultural heritage	14) Passenger transportation
6) Education	15) Solid Waste
7) Energy	16) Stormwater and Flood Plain
8) Environment	17) Water & Sanitation
9) Health	

Each module is presented within a similar template as depicted in the examples in Table A3.4. The template offers numerous questions, which collectively provide a qualitative measure of city resilience with respect to the module. Each of the 17 module templates contains 10 to 20 questions (United Nations Office for Disaster Risk Reduction (UNDRR); Developed with the support of USAID, European Commission, IBM and AECOM).

Table A3.4: Example entries in the CityStrength assessment (Lynch, 2018)**Urban Development**

TOPIC	Institutional Capacity
GUIDING QUESTION	Does the city's planning department draw on expertise and knowledge of the private sector, research institutions and the civil society for development of land-use plans? Which sectors and departments within the city collaborate during development and/or reviewing of such plans?
APPLICABLE RESILIENCE QUALITY	Coordinated
EXPLANATION OF RESILIENCE QUALITY	A collaborative planning process informed by specialized knowledge and expertise can enhance the applicability, coordination, and quality of landuse plans. By including different stakeholders in the planning process the city engenders ownership of the plan.

Community and Social Dimensions

TOPIC	Access
GUIDING QUESTION	Do all segments of the population have access to basic services (transportation, water, sanitation, energy) and social services (education, healthcare, and community facilities) at an affordable price?
APPLICABLE RESILIENCE QUALITY	Inclusive
RELATIONSHIP TO RESILIENCE QUALITY	Equitable provision of basic services is essential for minimizing human vulnerabilities. Once basic needs are met, people can construct buffers for overcoming unforeseen disturbances. When governments are not able to provide affordable basic services, the poor often end up paying for high price alternatives

Disaster Risk Management

TOPIC	Institutional Capacity
GUIDING QUESTION	Does the city have a policy and legislative framework that mandates the establishment of a DRM structure and functions for carrying out risk management activities?
APPLICABLE RESILIENCE QUALITY	Robust
EXPLANATION	A policy and legislative framework that mandates the establishment of a DRM structure allows for legally binding assignment of roles and responsibilities that gives weight to DRM activities and increases accountability of assigned DRM actors.

A3.2.3.5 *Disaster Resilience Scorecard for Cities (UNDRR)*

Focus: General assessment, e.g. resource shortages, natural hazards, and conflict.

“To support reporting and implementation of the Sendai Framework for Disaster Risk Reduction: 2015-2030”

“To assist countries and local governments in monitoring and reviewing progress and challenges in the implementation of the Sendai Framework.”

“To enable the development of a local disaster risk reduction strategy (resilience action plans).”

The qualities are [Based on the Ten Essentials for Making Cities Resilient]:

- 1) Organise for disaster resilience;
- 2) Identify, understand and use current and future risk scenarios;
- 3) Strengthen financial capability resilience;
- 4) Pursue resilient urban development and design;
- 5) Safeguard natural buffers to enhance the protective functions offered by natural capital;
- 6) Strengthen institutional capacity for resilience;
- 7) Understand and strengthen societal capacity;
- 8) Increase infrastructure resilience;
- 9) Ensure effective disaster response; and
- 10) Expedite recover and build back better.

The assessment scores at two levels. Level 1 is described as “intentionally simple and crude,” to be treated as prompts. Level 2 is described as “large”

Level 1: Preliminary level, responding to key Sendai Framework targets and indicators, and with some critical sub-questions. This approach is suggested for use in a 1 to 2 day city multi-stakeholder workshop. In total there are 47 questions / indicators, each with a 0 – 3 score;

Level 2: Detailed assessment. This approach is a multi-stakeholder exercise that may take 1 – 4 months and can be a basis for a detailed city resilience action plan. The detailed assessment includes 117 indicator criteria, each with a score of 0 – 5. Note that the criterion in the detailed assessment may serve as helpful discussion prompts for a preliminary level workshop.

As the assessment is very large, we show here only a sample of the assessment. The full assessments can be found on

<https://www.unisdr.org/campaign/resilientcities/toolkit/article/disaster-resilience-scorecard-for-cities>

Sample Quality: Organise for Resilience

Preliminary Assessment

Table A3.5 Sample indicative scales from the Disaster Resilience Scorecard for Cities (UNDRR)

Question / Assessment Area	Indicative measurement scale
<p>Does the city master plan (or relevant strategy/plan) include and implement disaster risk reduction approaches in line with the Sendai Framework?</p> <p>By 'plan' we typically mean some form of city wide plan, cross cutting strategy or vision. This could be a spatial plan, an infrastructure plan or an environmental or sustainability plan, providing it complies with the criteria from Sendai Framework paragraph 27 (b).</p> <p>Alternatively, if a city has a stand-alone disaster risk reduction plan / policy / strategy in place in line with the national strategies this can also demonstrate compliance. For compliance the plan should have coverage across all of the ten essentials</p>	<p>3 – Fully integrated DDR plan, full Sendai Framework compliance and coverage across all of the Ten Essentials.</p> <p>2 – Stand-alone DDR plan complying with Sendai Framework and addressing all of the Ten Essentials.</p> <p>1 – Plans offering partial compliance with Sendai Framework and covering some of the Ten Essentials.</p> <p>0 – No plans / compliance.</p>

Detailed Assessment

Subject / Issue: 1.1.Plan Making

1.1.1 Risk consideration in Plan Making

Question / Assessment Area	Indicative measurement scale
<p>To what extent are risk factors considered within the City Vision / Strategic Plan?</p>	<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. 0 – Risks are not considered in the plan.</p>

1.1.2 Consultation in Plan Making

Question / Assessment Area	Indicative measurement scale
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>

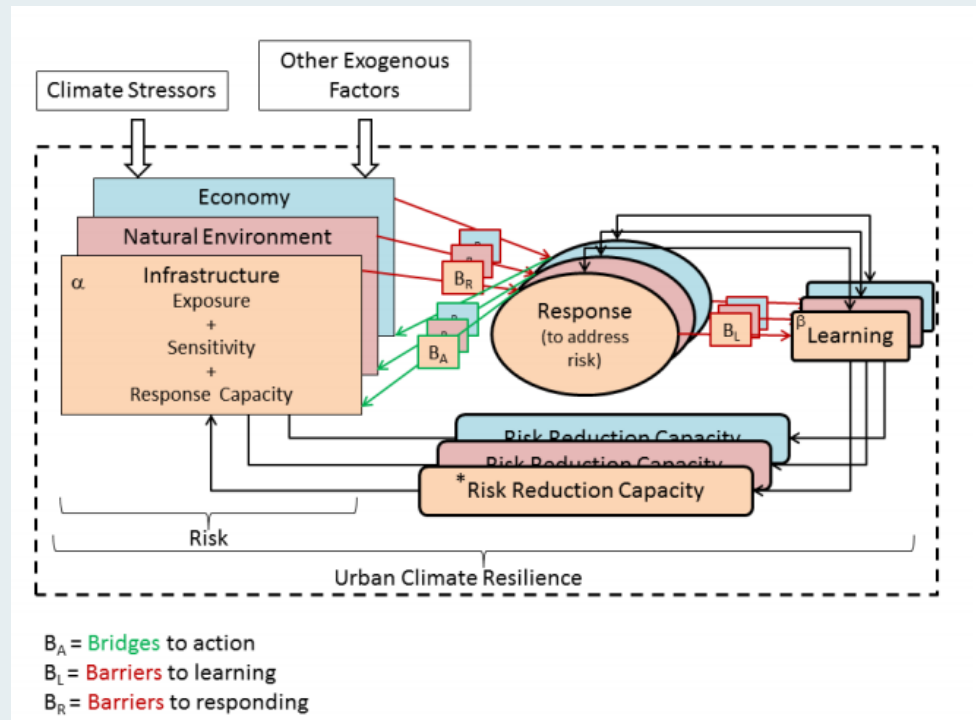
1.1.3 Review of strategic plans

Question / Assessment Area	Indicative measurement scale
Is the city strategic plan reviewed on a regular basis?	<p>5 – The plan has already been reviewed and there is a published commitment to review the plan at least every 3 years. The plan update process (including capturing lessons learned) is detailed in the plan and stakeholders are clear how they can inform the plan update process.</p> <p>4 – The plan has already been reviewed and there is a published commitment to review the plan at least every 3 years. Clear processes have been instigated to capture lessons learnt and to ensure these lessons inform plan updates.</p> <p>3 – The plan has already been reviewed and updated and there is a published commitment to ongoing / regular review (at least every 3 years).</p> <p>2 – No review has taken place but there is a commitment to undertake a review every 5 years.</p> <p>1 – No review has happened yet, but a review is assumed. No timescale has been set out. The commitment to review is not published.</p> <p>0 – No review has been undertaken and there are no plans to undertake a review.</p>

A3.2.3.6 US Environment Protection Agency (EPA, 2017)

Focus: Evaluating Urban Resilience to Climate Change: A Multi-Sector Approach

Figure A3.7: EPA Urban Climate Resilience Framework (EPA, 2017)



In the framework described in Figure A3.7, the left-hand side focuses on anticipated future climate events and system responses. Included here are the potential exposures to climate change, both gradual and extreme, the potential sensitivity of sectors and systems to those exposures, and the theoretical capability to respond to anticipated climate changes (response capacity, also referred to as adaptive capacity in the climate change literature). The right side of the framework reflects actual responses to real-world experiences of extreme weather events or gradual changes in climate (whether by a community or through observations of other communities and their experiences). Barriers to action and bridges to better-than-anticipated responses are identified based on reflections after an event has occurred. The framework is meant to be applied iteratively through time to capture the forward-looking, dynamic aspect of climate change and planning.

The EPA developed a four-step process to establish qualitative indicators (i.e., questions) best suited to determine climate resilience:

Step 1: Identify Climatic Changes/Events of Concern;

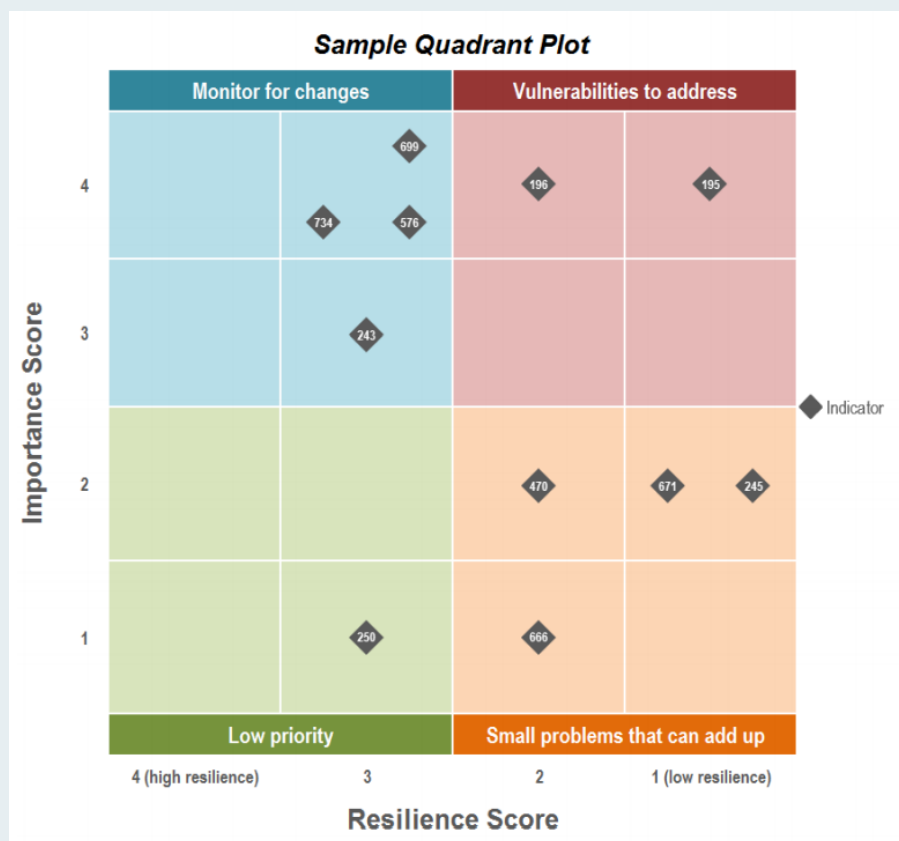
Step 2: Discuss Related Climate Stressors;

Step 3: Discuss Urban Services Potentially Exposed to Drought and Urban Sectors; Potentially Responsible for Managing the Sensitivities of These Services; and

Step 4: Evaluate the Ability to Reduce Exposure/Sensitivity, Enhance Response Capacity, and Learn

The results are presented visually, as in Figure A3.8.

Figure A3.8: Visualisation of EPA Assessment Score (EPA, 2017)



A3.2.3.7 Resilience Assessment Framework (Cardosa, 2020)

Focus: climate change with a focus on water

In terms of qualities, none are stated; rather it implicitly builds on the strengths of the prominent frameworks it references.

Table A3.6: Resilience Assessment Framework Dimensions and Criterion (Cardosa et al., 2020)

Framework Dimensions

Dimension: Organisational	Dimension: Functional
Objective / Criterion	Objective / Criterion
<i>Collective engagement & Awareness</i>	<i>Service Planning and Risk Management</i>
Citizens and Communities' engagement	Strategic Planning
Citizens and Communities' training	Resilience engaged service
	Risk management
	Reliable service
	Flexible service
<i>Leadership and Management</i>	<i>Autonomous Service</i>
Government decision-making and finance	Service importance to the city
Coordination and communications with stakeholders	Service inter-dependency with other service considering CC
Resilience engaged city	
<i>City Preparedness</i>	<i>Service Preparedness</i>
City Preparedness for disaster response	Service Preparedness for disaster response
City Preparedness for CC	Service Preparedness for CC
City Preparedness for recovery and build back	Service Preparedness for recovery and build back
Availability and access to basic services	

Dimension: Spatial	Dimension: Physical
Objective / Criterion	Objective / Criterion
<i>Spatial Risk Management</i>	<i>Safe Infrastructure</i>
General hazard and exposure mapping	Infrastructure assets criticality and protection
Hazard and exposure for CC	Infrastructure assets robustness
Resilient urban development	
Impacts of climate-related event	
Provision or Protective Infrastructure and ecosystem services	<i>Autonomous and Flexible Infrastructure</i>
Protective infrastructures and ecosystem services	Infrastructure assets importance to and dependency on other services
Dependency and autonomy regarding other service considering CC	Infrastructure assets autonomy
	Infrastructure assets redundancy
	<i>Infrastructure Preparedness</i>
	Contribution to city resilience
	Infrastructure assets exposure to CC
	Preparedness for CC
	Preparedness for recovery and build back

A3.2.4 Maturity Frameworks

Maturity frameworks are a special case. Not alone do they allow measurement of the concept, they also characterise the measure along a scale of maturity. This allows users to define their current status and to also describe positions along the scale, enabling them to set goals. The value of the two maturity frameworks described here is how the authors describe improvement in resilience capability as maturity grows.

The first of these is the work of Gimenez and colleagues (Gimenez et al., 2017) who developed a maturity model for the involvement of stakeholders in the city resilience building process. The maturity model consists of five maturity stages — unrecognised, initial, formalised, supportive, and proactive — that lead to improvements in city resilience by involving the different stakeholders in the city resilience building process. In addition, the maturity model provides a number of

policies that local governments need to carry out in each maturity stage in order to foster four resilience principles (collaboration and networking, awareness and commitment, learning, and training and preparedness) identified in the literature for involving stakeholders in building resilient cities.

The same authors (Hernantes et al., 2019) later developed a more general framework, the Resilience Maturity Model (RMM) that provides cities with a roadmap for operationalising the resilience-building process. In this case the maturity stages are: starting; moderate; advanced; robust; and vertebrate. The categories to measure maturity that they deem to be important are; stakeholders; leadership and governance; preparedness; infrastructure & resources; and cooperation.

A3.2.5 Framework implementation

The frameworks in use presented above are mainly action orientated with detailed implementation steps. The exceptions are the City Resilience Network framework and the Resilience Assessment Framework. However, our understanding is that the initial 100 cities of the City Resilience Network framework were brought through an implementation process with Arup, the authors of the framework. As these are the most relevant in an Irish context, we include the following work of Laeni et al., (2019) who describe the process the city of Bangkok used to apply the City Resilience Network framework. This process is depicted in Figure A3.9.

The implementation was completed over two phases. The first phase involved exploratory data collection, including stakeholder consultation and preliminary resilience assessment to identify key policy areas for the resilience strategy. The stakeholder consultation mainly included academia, government, NGOs, and businesses. The government officials involved were mainly from the city administration. The second phase involved the development and selection of resilience initiatives and programmes. This involved, mainly policy officials, experts and consultants in different working teams identifying and selecting policy interventions for the city strategy. In addition, international collaboration with experts and consultants from other countries in the context of the 100RC Programme was also evidenced in the development of the resilience priorities and initiatives

Figure A3.9: Bangkok Resilience Strategy formulation process (BMA, 2017:31, Cited by Laeni et al., 2019)



A3.2.6 Governance

Commentary on governance is extracted as this may inform a conversation on the management of any possible future resilience. A good reference point is the work of Lomba-Fernández et al, (2020), who claim that the complex challenges of integrating critical infrastructure in city climate resilience strategies can be overcome with sound governance, with respect to clarity of stakeholders' roles, and appropriate processes and instruments.

They first assert that there are three modes of governance. Which in summary are:

- **Hierarchical** where the authority is exercised by the state actors in a top-down direction, by command and control via instruments like regulation and legislation;
- **Market** where the direction of authority is circular as a result of a competition and negotiation among market actors. Main stakeholders are market participants, state and non-state, and seek mainly material profit;
- **Network** where the authority is shared and exercised in a horizontal direction looking for the benefit of all the participants; and

- **Community** characterized by a bottom-up approach and usually appears at the local level. It shares features with the network mode of governance but emphasizes the leverage role of communities.

The stakeholders are specified as; all levels of government; local authority staff; emergency services; critical infrastructure; sectorial experts; academia, citizens; media; public and private companies; non-state actors such as business, networks and communities; other municipalities and city networks; and environmental agencies. The supporting processes, necessary to fulfil the governance function are categorised as:

- **Knowledge generation** and integration to identify, generate and include knowledge;
- **Conflict resolution** as climate resilience strategies coexist with other strategies, not being always well-integrated; and
- **Monitoring and evaluating** to understand impact to provide a basis for change.

The processes typically associated are tabulated in Table A3.7

Table A3.7: Instruments associated with modes of governance (Lomba-Fernández et al., 2020)

Mode of Governance	Instrument	Example
Hierarchical	Regulation and laws; Incentives.	Bonuses for the reduction of greenhouse gas emissions: reduction of municipal taxes for low-emission vehicles in San Sebastian (Spain)
Market	Supply and demand; Advisory boards. Coordination bodies.	At the city level, the implementation of measures such as green purchasing criteria.
Network	Self-Regulation; Negotiated agreements; Codes of practice; Consultation processes. Voluntary programmes.	San Sebastian (Spain) CC Strategy includes the analysis of the CIs interdependencies. The strategy has involved different agents in the development process.
Community	Open public deliberation. Educational campaigns to inform local participants. Direct democracy and voluntary uptake via civic commitment. Experiments; Urban labs.	San Sebastian Council organized participative sessions with citizens to discuss and introduce the city CC strategy.

A more comprehensive list of critical characteristics is offered by Sharifi and Yamagata (2016) when providing a set of principles and indicators for resilience assessments. These act as a resilience initiative management checklist:

Table A3.8: Criteria related to governance and institutions (Sharifi and Yamagata 2016)

Asset	Criterion
Leadership and participation	<p>Strong leadership; Stability of leadership and political stability; Shared, updated, and integrated planning vision (long term); Transparency, accountability, corruption etc.; Multi-stakeholder planning and decision making; Decentralized responsibilities and resources</p>
Management of resources	<p>Efficient management of resources (funds, staff, etc.)</p> <p>Skilled personnel and emergency practitioners</p> <p>Population with emergency response and recovery skills (first aid, etc)</p> <p>Redundant capacity in terms of personnel</p>
Contingency, emergency, and recovery planning	<p>Integration of risk reduction and resilience into development plans and policies; Existence of climate change and environmental policy and plans</p> <p>Understanding risk patterns and trends; Continuous and updated risk assessment; scenario making for different kind of infrastructure and services (costs, losses, etc); Emergency planning and existence of emergency operation center that integrates different agencies and organisations; Availability and update of contingency plans (e.g. post-storm traffic management); Availability of mitigation plan</p> <p>Early warning, evacuation plan, and access to evacuation information</p> <p>Inclusion of transient population (tourists, etc.) in emergency planning</p> <p>Inclusion of disaster resilience and lessons learned in the recovery plan</p> <p>Speed of recovery and restoration; Ongoing process of revising and monitoring plans and assessments; Standardized, updated, and integrated databases for action planning, monitoring and evaluation purposes</p>

Collaboration	Cross-sector collaboration (alignment of aims) and partnership among organisations; MOUs and MOAs with neighbouring communities and agencies within the broader region; Knowledge and information transfer and best practice sharing (inter and intra city)
R&D	Innovation and technology update Research (funds, facilities) on risks and academy-society collaborations
Regulations/enforcement	Availability and enforcement of legislations (policing, crime, building code, environmental law, business law etc.) Management of informal settlements
Education and training	Behavioural issues and demand management; Education (from elementary or secondary school), training, and communication; Drills and exercises Education and training for all linguistic groups; and all groups generally Capacity building and enhancing awareness; dissemination of data and assessment results; Incentives for encouraging mitigation and adaptation (including self-mobilization, self-organisation, etc)

Another interesting governance concept was found in the literature. This is governance by experiment and is essentially a continuous learn by doing process (e.g. Buckeley and Broto, 2013; Fastenrath and Coenen, 2020). Experiments serve to reconfigure capacities, resources and agency of actors in urban by providing a space in which to negotiate problem definitions and understandings, claims to resources, authority or dominant ideologies, experiments restructure the local institutions and through that have the potential to contribute to deep-structural change, that is, sustainability transitions.

A3.2.7 Critiques of Frameworks

This section outlines a number of criticisms that have been levelled against resilience frameworks. Leitner et al., (2018), for example, reflects on a number of recent critics focusing on

- The tendency of urban resilience that strongly resonate with neoliberal global urbanist agendas or reinforce neoliberal norms, ranging from financial markets to subjectification;
- The tendency for urban resilience to transposes an ecological conception onto cities, thereby promoting “traits such as growth, competition and self-

organisation” as natural. This in turn displaces questions of socio-spatial inequalities, making resilience ill-suited to promoting “emancipatory social change desired by groups that have employed the term; and

- The tendency for resilience thinking to emphasis on the need to manage and adapt to current shocks and stresses, rather than seeking to redress or rework existing political and economic formations that are complicit in their production.

Croese et al (2020) and Meerow et al., (2019) similarly assert that there are inconsistencies and contestations related to the increasing private sector involvement in urban development planning and governance, and urban resilience agenda policies often fail to adequately address social equity issues. They also assert that assessments are typically designed by and for national governments, suggesting that are could be more focused on planning, monitoring, and implementation at the local level.

With respect the usability of assessments, Patel and Nosal (2016: 1) find three limitations with assessments:

- 1) They rest heavily within the natural disaster and risk reduction literature, notwithstanding various reports, programmes and tools that have added political, social and economic elements to the debate to supplement these existing frameworks;
- 2) They are based on a theory of change, rather than evidence; and
- 3) They are inductive rather than independently derived. Empirical data is overwhelmingly concentrated in the vulnerability and risk literature rather than resilience literature.

ANNEX 4 – City Networks

B1 Resilient Cities Network (Formally 100 Resilient Cities)

<https://resilientcitiesnetwork.org/>

The Resilient Cities Network is the:

world's leading urban resilience network. We bring together global knowledge, practice, partnerships, and funding to empower our members to build safe and equitable cities for all.

It consists of member cities and Chief Resilience Officers (CROs) from the 100 Resilient Cities programme. Its origins are in the Rockefeller Foundation in 2013, which provided investment to cities to employ a CRO, develop a resilient strategy, access pro-bono services from private sector and NGO partners and exchange ideas through the global network of CROs. Between 2020 and 2022, it is expected that the network will grow by up to ten new cities, working to protect vulnerable communities from climate change and other urban challenges.

Governance - there is a Board of Directors chaired by an independent and neutral chair with a maximum of eleven members. They are responsible for directing the activities of the Network guided by the Global Steering Committee and for appointing the Executive Director and overseeing the Network strategy, budget and performance. The Board serves for a three-year term.

The Global Steering Committee (GSC) represents member cities at the regional and global levels, and provides the platform for a city-led network. The GSC sets the principles and policy of the network as directly driven by and responsive to the needs of the member cities.

There is a team in four regional hubs (Europe, Mexico, Singapore) that provide expertise.

B2 C40 Cities

<https://www.c40.org/>

The C40 Cities

connects 97 of the world's greatest cities to take bold climate action, leading the way towards a healthier and more sustainable future. Representing 700+ million citizens and one quarter of the global economy, mayors of the C40 cities are committed to delivering on the most ambitious goals of the Paris Agreement at the local level, as well as to cleaning the air we breathe.

Networks

C40 Cities has 16 networks that cover the mitigation, adaptation and sustainability topics which are priorities to member cities and with the potential for the greatest climate impact. Through the networks, city practitioners learn from and inspire each other and they showcase their solutions. Networks also help cities to engage with technical experts and undertake collective actions.

Programmes

C40 Cities offers member cities services through its Programme model. Programmes are designed to supplement and deepen the effectiveness of C40 networks, ensuring that city officials working together are able to draw upon a holistic range of support services to address the key barriers to city climate action.

Membership

97 cities representing 700+ million citizens and one quarter of the global economy.

B3 8 80 Cities

<https://www.880cities.org/>

8 80 Cities is a Canadian non-profit organisation

Vision

We exist to create safe and happy cities that prioritize people's well-being. We believe that if everything we do in our public spaces is great for an 8 year old and an 80 year old, then it will be great for all people.

Mission

8 80 Cities improves the quality of life for people in cities by bringing citizens together to enhance mobility and public space so that together we can create more vibrant, healthy, and equitable communities.

Services

Unconventional engagement- Their goal is to help create resilient communities where people are actively engaged and fairly represented in their city. Traditional methods of public tend to attract a narrow segment of the population. They focus on playful, imaginative, and approachable engagement activities that attract a wide range of stakeholders.

Idea labs- Half day and full day interactive session that guide teams through a process to generate new ideas and doable projects.

Open Street Planning- 'Open Streets' are community-based programmes that temporarily open selected streets to people, by closing them to cars. Streets

become places where people of all ages, abilities, and backgrounds can come out and improve their health

B4 Global Covenant of Mayors

<https://www.globalcovenantofmayors.org/>

The Global Covenant of Mayors for Climate & Energy formally brings together the European Union's Covenant of Mayors and the Compact of Mayors – the world's two primary initiatives of cities and local governments – to advance city-level transition to a low emission and climate-resilient economy, and to demonstrate the global impact of local action.

Their claim is that it is the largest global alliance for city climate leadership, built upon the commitment of over 10,000 cities and local governments. These cities hail from 6 continents and 138 countries. In total, they represent more than 800 million people. The Covenant is Co-chaired by Michael Bloomberg, former mayor of New York City and Frans Timmermans, European Commission Executive Vice President for the European Green Deal.

The Covenant provide information and offer research to their members.

Membership- 10,510 cities from 6 continents and 138 countries.

Member cities in the island of Ireland are Dublin, Cork County, Fingal County Council, South Dublin County Council, Dun Laoghaire Rathdown County Council, Limerick County, Tipperary County Council, Kilkenny County Council, Waterford, Carlow County Council, Roscommon County Council, Cork City Council, Kerry County Council as well as a number of towns.

B5 Local Government for Sustainability

<https://www.iclei.org/en/Home.html>

The ICLEI is a

global network of more than 1,750 local and regional governments committed to sustainable urban development. Active in 100+ countries, we influence sustainability policy and drive local action for low emission, nature-based, equitable, resilient and circular development.

The network's team of experts helps cities, towns and regions anticipate and respond to complex challenges, from rapid urbanisation and climate change to ecosystem degradation and inequity. Members confront these challenges by incorporating sustainability into day-to-day operations and policy. The network invest in the capacity and knowledge needed to design solutions and make decisions informed by data, scientific evidence and local realities and pressures.

Members and the team of experts work together through peer exchange, partnerships and capacity building. In addition, the network creates alliances with international organisations, national governments, academic and financial institutions, civil society and the private sector.

The network works at different levels, building connections across local, regional, national and global actors and policies. It creates systems change, developing integrated solutions among 5 interconnected development pathways:

- Low emission development pathway;
- Nature based development pathway;
- Circular economy pathway;
- Resilient development pathway; and
- Equitable and people-centred development pathway.

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