

---

**FUTURE PROOFED CITY**  
**BELFAST**  
**RESILIENCE**  
**STRATEGY**

---

**Draft strategy for consultation**



**RESILIENT**

**BELFAST**

# CITY FACTS: BELFAST



**BELFAST  
POPULATION**

**341,900**  
2018 MID-YEAR ESTIMATE

BELFAST  
ACCOUNTS FOR

**18%**

OF THE  
POPULATION

AND ALMOST

**30%**

OF ALL JOBS IN NI



**13**

COMPLETED  
RESIDENTIAL  
UNITS IN CITY

2018

**£565**

FULLTIME  
MEDIAN GROSS  
WEEKLY PAY  
2018



**35%** AGED 25  
OR UNDER



**44%**

HOUSEHOLD WASTE  
RECYCLED AND  
COMPOSTED



**11,500** STREET  
TREES



**77.3%** OF THE POPULATION LIVE  
WITHIN WALKING DISTANCE  
OF A PARK OR PLAY AREA

**9.2°C**



AVERAGE  
ANNUAL  
TEMPERATURE

**68%**



OF HOUSEHOLDS HAVE ACCESS  
TO ONE OR MORE CARS



**53%**

OF ALL JOURNEYS  
TAKEN BY CAR



**29%**

OF ALL JOURNEYS  
TAKEN BY FOOT

**2%**



JOURNEYS PER PERSON BY BIKE

**15.9%**

OF POPULATION  
AGED 16-64  
HAVE NO  
QUALIFICATIONS

**35.2%**

OF THE WORKING  
AGE POPULATION IS  
EDUCATED TO NVQ  
LEVEL 4 AND ABOVE



**80%**

OF BUSINESSES ARE  
MICRO (0-9 EMPLOYEES)



**21%**

OF THOSE CLAIMING  
UNEMPLOYMENT  
BENEFITS ARE AGED  
18-24

---

**FUTURE PROOFED CITY**  
**BELFAST**  
RESILIENCE  
STRATEGY

---

Draft strategy for consultation





# FOREWORD FROM THE COMMISSIONER FOR RESILIENCE

**Several statements of fact surprised me when I was preparing this Resilience Strategy for Belfast. Perhaps most of all, was the prediction from the Intergovernmental Panel on Climate Change in late 2018, that there is just twelve years to take action necessary to prevent global warming beyond 1.5 degrees, and to possibly avert the worst impacts of climate change. Worryingly, some scientists believe that this predicted time line is actually too generous.**

When reading the World Economic Forum 2019 Global Risks Report, one statistic stood out- that 'spending on disaster recovery is almost nine times higher than on prevention'. That surely must be one of the strongest arguments for a city to 'get ahead', to put prevention of shocks as a core priority in terms of investment. For Belfast, this should provide a salutary warning, particularly when there is so much recent data on the probability of shocks to come, and considering what we already know about the city's ability to finance infrastructure.

Throughout this strategy, I have presented a series of potential shocks and stresses for the city of Belfast. Each one by itself represents a risk to the city. However, it is the relationship between these risks- the scenarios that may emerge if several occur at once - that presents the greatest challenge for Belfast.

I have made several conclusions about Belfast today, and in the future.

**"To put it starkly, Northern Ireland is not prepared for the impacts of climate change. As its capital city, the risks to Belfast are profound."**

I was surprised by the lack of city-wide preparedness as recently as 2018 - when several other UK and global cities had collaborative structures and budgets in place to adapt to and mitigate impacts. This is compounded by a lack of robust regional policy on climate adaptation and mitigation, and missed opportunities from central government to drive progress.

Belfast is more vulnerable today because of its lack of preparedness, because of underinvestment in key aspects of its infrastructure, and because of its dependence on carbon. Each of these factors make resilience to climate change more challenging. The divisions in the city - spatial divisions and social

ones - weaken its capacity to adapt to and respond to shocks, but importantly also absorb resources that could be spent preparing the city for the future.

The human side - the scale of mental ill-health, the prevalence of prescription drug taking, poverty and inequality across the city require a particular and sustained focus. Individuals and communities are much more exposed to risk if they are less healthy and do not possess the additional financial capacity to respond when a shock occurs.

Belfast must learn to adapt more quickly to change. It must develop a city-wide collective approach to managing risks and must improve how it plans and acts for the long-term. This strategy contains several proposals to improve the governance and management of risk across the city.

I have suggested three 'multiple problem solvers' - levers which can respond to and resolve several risks at once. An urgent, well-resourced and sustained focus on each one - on children, on climate and on connectivity, at a city wide level will have a material impact on Belfast's preparedness for the century ahead. I have recommended a single goal to make Belfast resilient to the challenges it might face in these decades - to transition to low carbon, climate-resilient economy.

If Belfast can transition to low carbon (or net zero carbon) economy in the next thirty years, and do it in an equitable way, it will secure its long-term future. If it does not, it will spend much more on disaster recovery, it will fail to meet its Belfast Agenda priorities and worse still, it could ultimately become a smaller, poorer city.

Engaging with people and organisations when putting this strategy together, has convinced me that Belfast has the capacity, the will and the creativity to meet these challenges. The next decade will present a major test, which I am confident the city will meet.



*Grainia Long*

**Grainia Long**  
Commissioner for Resilience  
January 2020

# CONTENTS

|                          |           |
|--------------------------|-----------|
| <b>EXECUTIVE SUMMARY</b> | <b>11</b> |
|--------------------------|-----------|



|  |           |
|--|-----------|
| <b>CONTEXT</b>   | <b>10</b> |
| Delivering the Belfast Agenda                          | 11        |
| What is urban resilience?                              | 12        |
| Characteristics of a resilient Belfast                 | 13        |
| Resilience challenges in this decade                   | 14        |
| Methodology  | 16        |
| Case Study in Urban Resilience: Fire at Bank Buildings | 18        |



|  |           |
|--|-----------|
| <b>STRESSES AND SHOCKS FOR BELFAST IN 2020</b>             | <b>20</b> |
| Economic recovery capacity: inequality and competitiveness | 22        |
| Population change  | 28        |
| Infrastructure capacity                                    | 30        |
| Condition of existing NI Housing Executive stock           | 34        |
| Climate change   | 36        |
| Flooding and extreme weather events                        | 39        |
| Dependency on fossil fuels and carbon intensive systems    | 41        |
| Prevalence of car use                                      | 44        |
| Housing supply in the city                                 | 46        |
| Segregation and division                                   | 48        |
| Mental health and use of prescription drugs                | 50        |
| UK Exit  | 52        |
| Cyber resilience   | 54        |
| Governance and financing of risk                           | 57        |

|                        |           |
|------------------------|-----------|
| <b>RESILIENCE GOAL</b> | <b>60</b> |
|------------------------|-----------|

# 3 AREAS OF FOCUS 62

|  |    |                                       |    |
|--|----|---------------------------------------|----|
| Delivery of UN Sustainable Development Goals | 64 | Case study: Climate resilience        | 69 |
| Legend key                                   | 65 | Case study: Children and young people | 74 |
|  |    | Case study: Connectivity              | 78 |



**Climate resilience**

Building a low carbon economy adapting to, and mitigating climate change across the city.

**Page: 66**




**Children and young people**

Giving our youth an active urban childhood, focused on wellbeing, in the best city in Europe to grow up

**Page: 70**



**Connectivity**

Creating connections and connecting people, sustainable transport and infrastructure in ways that achieve our economic, social and environmental goals

**Page: 75**

# 4 NEXT STEPS 79

|                                   |    |
|-----------------------------------|----|
| How we will deliver this strategy | 80 |
| Belfast resilience consultation   | 81 |



# SOURCES OF INSPIRATION 82

|              |    |
|--------------|----|
| Bibliography | 83 |
|--------------|----|

# APPENDICES 86

# EXECUTIVE SUMMARY



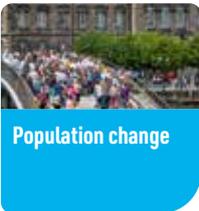
# EXECUTIVE SUMMARY

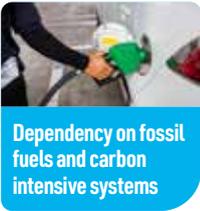
- Urban resilience is the capacity of cities to survive, adapt, and develop no matter what kinds of chronic stresses and acute shocks they experience.
- Belfast has been a member of 100 Resilient Cities, working globally to reduce vulnerabilities, taking a targeted approach to issues which pose the greatest risk to the city, its economy and its people. In 2019, the network reported that \$25.4bn has been spent in member cities to make them better prepared for the future.
- In developing the strategy, we followed a well - established methodology, including use of the City Resilience Framework to map a range of shocks (acute risks) and stresses (chronic risks) for the city of Belfast.
- These shocks and stresses make the city more vulnerable and could weaken our capacity to resist and recover from future challenges.
- At its heart, this strategy aims to deliver the city’s goal of inclusive economic growth, as set out in the Belfast Agenda.

## STRESSES

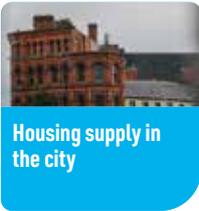


- 

Economic recovery capacity: inequality and competitiveness
- 

Population change
- 

Dependency on fossil fuels and carbon intensive systems
- 

Prevalence of car use
- 

Housing supply in the city
- 

Segregation and division
- 

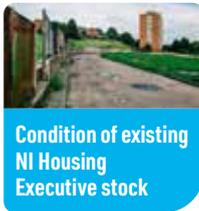
Mental health and use of prescription drugs
- 

Governance and financing of risk

## SHOCKS



- 

Infrastructure capacity
- 

Condition of existing NI Housing Executive stock
- 

Climate change
- 

Flooding and extreme weather events
- 

UK Exit
- 

Cyber resilience

**OUR GOAL** To transition Belfast to an inclusive, low-carbon, climate-resilient economy in a generation.

We then identified a series of levers, aimed at resolving several of these risks at once.

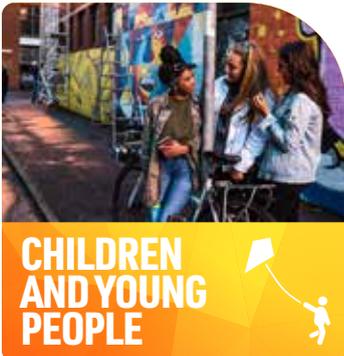
A strategic focus on each of these areas will build the city’s resilience, over time. They are:

## AREAS OF FOCUS





**CLIMATE RESILIENCE**



**CHILDREN AND YOUNG PEOPLE**



**CONNECTIVITY**

This strategy includes 38 priorities for partners across the city to take action to prepare the city for this

century. This includes an important focus on how we manage and finance risk as a city.



1

# CONTEXT

# DELIVERING THE BELFAST AGENDA

## The Belfast Agenda vision for 2035

“Belfast will be a city re-imagined and resurgent. A great place to live and work for everyone. Beautiful, well connected and culturally vibrant, it will be a sustainable city shared and loved by its citizens, free from the legacy of conflict. A compassionate city offering opportunities for everyone. A confident and successful city energising a dynamic and prosperous city region. A magnet for talent and business and admired around the world. A city people dream to visit.”

The Belfast Agenda commits the city to the appointment of a Commissioner for Resilience to work with partners to develop a strategy to take a targeted approach to addressing those issues which pose the greatest risk to the city, its economy and its people.

Since 2018, Belfast has been a member of 100 Resilient Cities, funded by the Rockefeller Foundation. 100RC is



global network of cities, all focused on identifying and reducing urban threats - either immediate shocks or systemic vulnerabilities. It comprises Belfast's biggest global network to date. Since the establishment of the 'Resilient Belfast' team, Belfast is working alongside cities like Barcelona, Sydney, Cape Town and San Francisco to solve urban problems, and strengthen the fabric of the city. This work has culminated in the production of this draft 'resilience strategy', which includes a range of commitments to de-risk the city, making us more adaptable, prepared for the unpredictable and increasingly our capacity to thrive. This Strategy will help the city to mediate any risks in the Belfast Agenda.

This draft Resilience Strategy is one of several documents that aim to deliver the Belfast Agenda and its core objective of inclusive growth.



# WHAT IS URBAN RESILIENCE?

**Urban resilience is the capacity of cities to survive, adapt, and develop no matter what kinds of chronic stresses and acute shocks they experience.**

Being a resilient city does not mean the city is without risk - urban resilience refers to cities that are exceptional at predicting, managing and responding to risk. Resilient cities are highly adaptive.

Working alongside 100 cities globally Belfast has been learning the benefits of a focus on preparing for immediate and longer term risks.

Our vision in the Belfast Agenda could be undermined, if we do not learn to adapt to and cope with shocks, such as floods or cyber attacks. Our systemic stresses, such as prevalence of mental ill-health or exposure to climate related weather events, could be amplified in times of crises if not well-managed.

**“Belfast’s capacity to withstand and embrace disruption and change in the coming decades is critical to its economic, social and environmental future.”**

Belfast’s economic resilience is a good case in point. The capacity of a city to respond to economic shocks is a strong indicator of its resilience.

**“Building Belfast’s economic resilience - its ability to adapt to and cope with economic shocks - is essential.”**

Resilience thinking is not a luxury but a necessity for cities. It is about putting in place holistic and integrated measures to enable cities to adapt, survive, and thrive regardless of the stresses or shocks they face.

Singapore Resilience Strategy

Belfast’s capacity to respond to the recession of 2008-10 has been weak - demonstrated by its low levels of productivity since 2007 and when compared with other cities, it has shown weak levels of ‘good growth’ since the financial crash.

Furthermore, the impact of economic growth has traditionally been unevenly spread throughout the city, prompting a city-wide focus on ‘inclusive growth’ in the Belfast Agenda. Building Belfast’s economic resilience - its ability to adapt to and cope with economic shocks - is essential.

This may mean building new forms of capacity to take on different types of pressures, to withstand them and recover from them.

Whether impacted by an adverse weather event or an economic recession, the following systems all determine how a city bounces back.

## The seven qualities of a resilient city



### Reflective

Using past experiences to inform future decisions



### Resourceful

Recognising alternative ways to use resources



### Inclusive

Prioritise broad consultation to create a sense of shared ownership in decision making



### Integrated

Bring together a range of distinct systems and institutions



### Robust

Well-conceived, constructed and managed systems



### Redundant

Spare capacity purposefully created to accommodate disruption



### Flexible

Willingness, ability to adopt alternative strategies in response to changing circumstances

# CHARACTERISTICS OF A RESILIENT BELFAST

1



We will be **risk aware** - with a strong understanding of exposures that (1) make us vulnerable (2) could knock us off course



We will ensure there is **capacity 'in the system'** to respond to shocks



We will **de-risk investment** by improving our management of risks at a city level



We will have **collective agreement at a policy level** on the 'top risks' and coherence around a plan!



We will **integrate networks** so we are better able to withstand shocks



We will include resilience indicators in how we **measure the performance of our city**



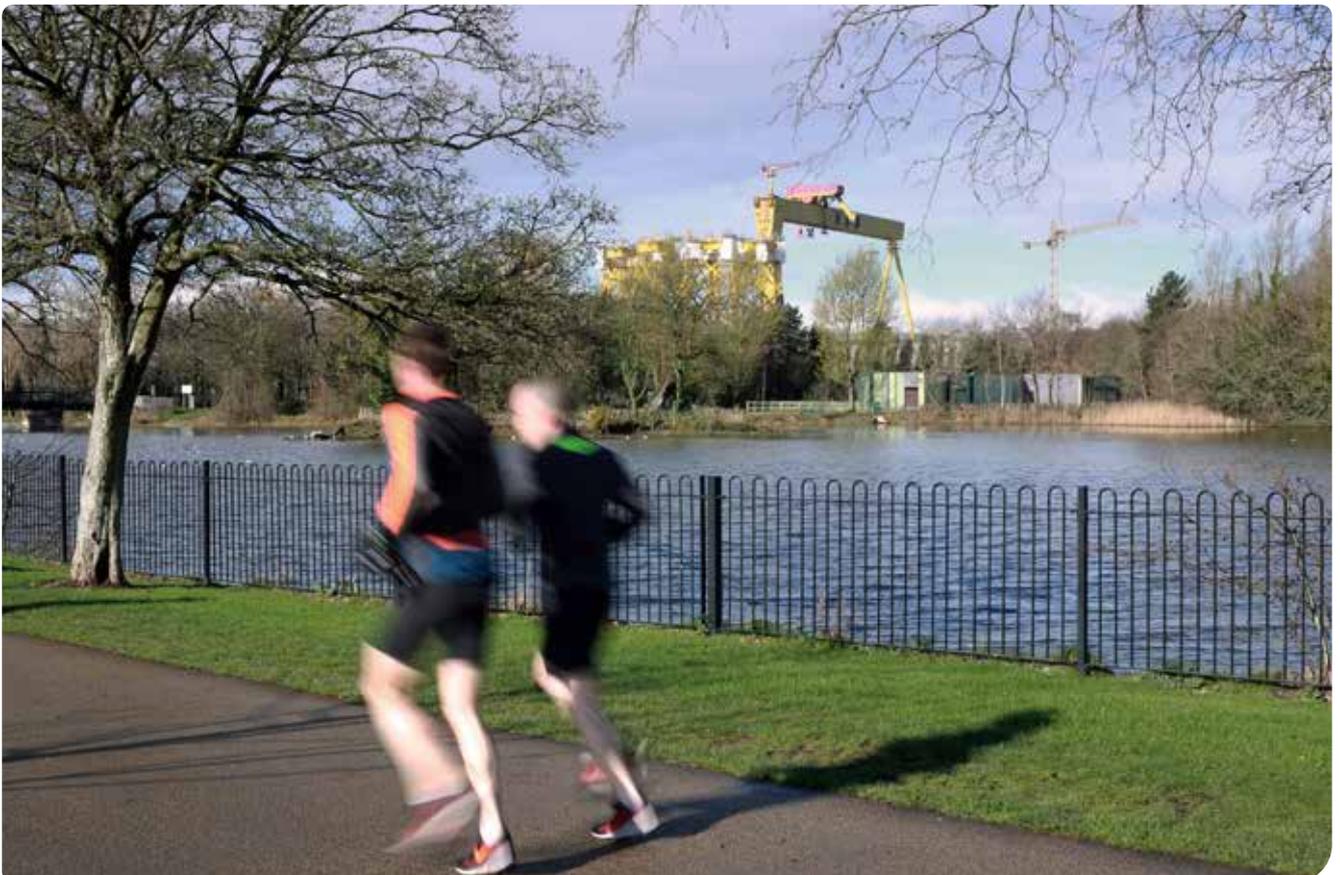
We will demonstrate **strong resistance to shock** - often through resilient infrastructure - i.e. integrated into all capital projects



We will **demonstrate improved learning** from shocks



We will develop **multiple problem solvers** - approaches that solve several problems at once



# RESILIENCE CHALLENGES IN THIS DECADE



## 2018

### Fire at Bank Buildings

On 28 August a fire destroyed Bank Buildings, a listed building in the heart of Belfast City Centre. 14 businesses within the cordon were unable to reopen for over four months. Pedestrian and vehicle access across the City Centre was affected causing a significant drop in footfall in the area.



## 2017/18

### Major storms

Ex-Hurricane Ophelia in 2017, Storms Ali, Callum and Desmond in 2018

There were a range of storms bringing high winds in 2017 and 2018 and causing electricity outages and damage to infrastructure. Schools, businesses and public services were affected.



## 2014

### Coastal flooding

The threat of tidal inundation to Belfast City Centre and over 4000 homes across the City led to the deployment of 45,000 sandbags and the pre-planned closure of basements and businesses in the Harbour area. Millions of pounds of damage was caused to infrastructure around the coastline of NI.



## 2012/13

### Flag protests and civil unrest

Following a vote to change the number of days the Union Flag is flown at Belfast City Hall, there followed a period of almost daily protests. There were resulting impacts for the performance of the local economy.



## 2012

### Flooding

Flooding occurs on an annual basis affecting properties and infrastructure. There was significant flooding in 2012, 2009, 2008 and 2005 with thousands of homes being internally flooded.



## 2010/11

### The big freeze

Five weeks of extremely low temperatures led to widespread impacts on infrastructure including homes, schools and businesses. Frozen pipes cracked during the thaw causing so many leaks that mains water supplies were significantly depleted. 40,000 premises lost water supplies and over 60,000 premises became subject to rotational supplies.



# METHODOLOGY

**A well-established methodology - adopted by 100 cities globally - was used to develop this strategy, and build the city's resilience capacity.**

The City Resilience Framework (CRF) was developed by our strategic partner ARUP and helps identify the complex and interdependent issues that contribute to a resilient city. The CRF is used by all partners in the 100RC network and facilitates cooperation between cities. Our relationship with ARUP has led to the development of a city risk and asset audit, a climate change risk assessment and a study that will help us to develop our strategy for child friendly neighbourhoods.

A number of steps in working towards our goals and vision were put in place. Each step carefully considered and carried out as we:

Mapped our city's vulnerability and risk against potential actions.



Engaged with partner citywide in Belfast to gather evidence and formulate possible solutions.



Commissioned a city risk and asset audit by Arup to quantify and identify shocks and stresses.



Accessed and analysed multiple data sources to inform decisions, test assumptions and steer our initial conclusions. This also involved commissioning our own studies.



Informed our thinking by requesting from Arup a Climate Change Risk Assessment and a study on developing our strategy for child friendly neighbourhoods.

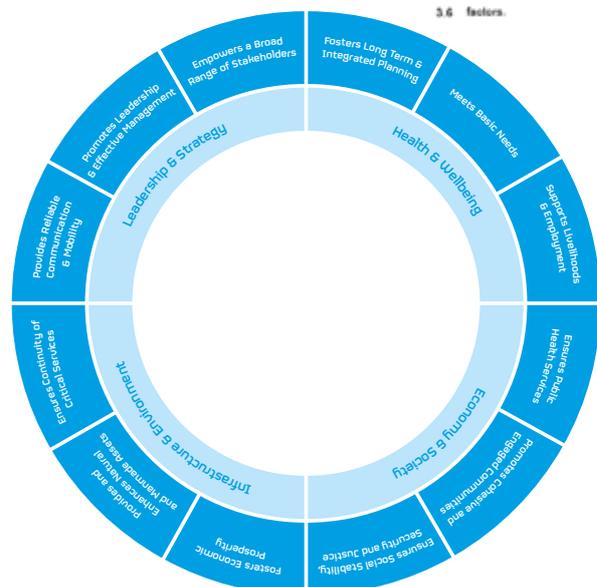


Engaged across our city over three months on our strategic areas of focus to engage and attract feedback.

With these six steps, we have embarked on the next stage of the journey towards a resilient Belfast.

## STEP 1

### City Resilience Framework identified areas of city resilience



\*Enlarged version available on pg86

## STEP 2

### Citywide engagement

- 18 workshops involving 547 people
- 35 focus groups involving 480 people
- 140 people interviewed on a one-to-one basis

## STEP 3

### Review of city assets and risks

- City assets
- Perceptions
- City risks
- Strengths

## STEP 4

### Data analysis

|   |  |  |  |
|---|--|--|--|
| <ul style="list-style-type: none"> <li><b>Spaces to play for children</b></li> <li><b>Economic</b><br/>Vulnerabilities, cyber, exclusion, inequalities, automation of industry, business start-ups</li> <li><b>Population change</b></li> <li><b>Poverty</b><br/>Children and young people</li> <li><b>Connectivity</b><br/>Economic corridor, digital, physical</li> </ul> | <ul style="list-style-type: none"> <li><b>Transport</b><br/>Cheaper, cleaner, integrated, greener</li> <li><b>Housing</b></li> <li><b>Segregation</b><br/>Housing, education system, division</li> <li><b>Civic pride</b><br/>One city, city story</li> <li><b>Health</b><br/>Dependence on prescription drugs, mental health, nutrition, obesity</li> </ul> | <ul style="list-style-type: none"> <li><b>Risk of returning to violence</b></li> <li><b>Climate change</b><br/>Extreme weather and air quality</li> <li><b>Prevalence of cars</b></li> <li><b>Infrastructure</b><br/>Investment and capacity</li> <li><b>City centre</b><br/>Retail, housing, dereliction</li> <li><b>UK Exit</b><br/>Impact on Belfast</li> </ul> | <ul style="list-style-type: none"> <li><b>Financing the city</b><br/>City revenue</li> <li><b>Politics</b><br/>Leadership, decision making structures</li> <li><b>Fossil fuel dependency</b></li> <li><b>Cyber threat</b></li> </ul> |
|---|--|--|--|

## STEP 7

### Citywide consultation on a draft strategy



## STEP 6

### Identified multiple problem solvers

These shocks and stresses make the city more vulnerable and could weaken our capacity to resist and recover from future challenges.

- Climate resilience
- Children and young people
- Connectivity

## STEP 5

### Agreed our resilience goal

To transition Belfast to an inclusive, low-carbon, climate-resilient economy in a generation.



# CASE STUDY IN URBAN RESILIENCE

1



## Fire at Bank Buildings, August 2018

**Belfast experienced an acute shock in 2018 when a culturally historic building, known as Bank Buildings which housed Primark, a global retail chain, was severely damaged by a fire that started on 28 August 2018 and continued to burn for three days. Located right in the heart of the city centre on a major junction, the fire tested multiple aspects of the city's resilience.**

One hundred firefighters successfully prevented the fire from spreading to nearby businesses, shops and restaurants, and no one was killed or injured. However, a significant proportion of the building's internal structure was burnt away, either collapsed or was severely damaged with the external facades subject to further damage. In the immediate weeks following the fire, the building's physical fabric remained very vulnerable and posed a threat to public health and safety.

On engineering advice, a safety cordon was established to protect the public. While the cordon closed 22 business in close proximity, the impact was felt much further across the City Centre. The cordon effectively created four cul-de-sacs in the heart of the central retail district in which footfall significantly reduced. Anecdotal evidence from local traders reported decreases in sales levels between 20% and 70% amongst the hardest hit areas. There

was considerable concern that the continuation of the situation would lead to fundamental long-term changes in consumer habits within the city centre.

Pedestrians, buses and vehicles had to be rerouted in response to the cordon. This significantly added to the impact on footfall, and to pressures already being felt by the retail sector during a challenging year. The cordon acted as a barrier and restricted pedestrian and vehicular access through Castle Place junction, and as a result pedestrians were required to undertake significant diversions using alternative, longer routes to navigate the City Centre. In addition, buses were unable to penetrate into the centre of the City and were subject to significant delays and revised timetabling.

The building was a Category B1 Listed Building located within the City Centre Conservation Area. Immense in size, it was within metres of other buildings close by. Major challenges existed for the owner to assess the damage to the building and make decisions regarding the building's future. In late October, Primark successfully applied to the City Council for listed building consent to take down, record and assess for restoration purposes the uppermost parts of the building. By the following April, a series of ballast-filled shipping containers had been erected around the building to enable the commencement of a long-term restoration project.

For the City Council, the immediate primary concern from the beginning was the safety of people in the city, and to reduce as much as possible the impact on businesses and trade. It established a City Recovery Group made up of partners across the city to coordinate the city's recovery efforts. It held clinics with businesses directly affected, and held ongoing conversations with businesses through the Business Improvement Districts (BIDs) in the city. A #YourBelfast media campaign in the immediate weeks following the fire aimed to remind people that Belfast was open for business.

A 'Rewards App' was developed to encourage people to spend in the local area and a 'yellow dot' trail guided pedestrians around the cordon to sustain footfall in the city. A major revitalization programme was undertaken to 'light up' the city at Christmas via a series of installations to encourage people to spend time in the city. A combination of cultural events and playful installations, dressing up city streets impacted by pedestrianisation worked in combination to give the city centre an energized feel in the busy retail period.

In the New Year, the ongoing pedestrianisation of the area was taken as an opportunity to provide a pop-up play park for children, with seating areas, planters and art to help make the area attractive.



## Conclusion

A fire in a building of its size and central proximity amounted to a major shock for the city. It posed significant challenges to the city's resilience. It tested the city's economic resilience and emphasised the importance of strong and supportive citywide networks. It prompted a debate on the role of heritage in the city. Poignantly, the sight of a burnt-out building in the city centre reminded many people of a time when Belfast experienced regular security alerts and fires. It highlighted the city's exposure to retail risks, and reminded decision makers in the city of the importance of an 'experience economy' and how critical it is that we build a vibrant city centre where people work, live and play. Perhaps most tellingly of all, the sight of children playing in a pop-up park next to the Bank Buildings appeared to inspire the public of the importance of play in the city. The park's removal, following the reduction of the cordon has prompted important debate about the importance of play in our city.

An aerial photograph of a city, likely Belfast, is shown on the left side of the page. A large, curved blue overlay covers the right side of the image, containing the text. The number '2' is centered in a white circle at the top of the blue area.

# 2

## STRESSES AND SHOCKS FOR BELFAST IN 2020

This strategy does not attempt to comprise a final comprehensive list of all the risks that Belfast faces. Like other global cities, it represents the starting point to build our resilience and will be updated to reflect new challenges and opportunities.

### **What is a stress?**

A stress is a slowly moving phenomenon that weakens the fabric of a city.

### **What is a shock?**

A shock is a sudden, sharp event that can immediately disrupt a city.

# STRESSES



**Economic recovery capacity: inequality and competitiveness**

Page 22



**Population change**

Page 28



**Dependency on fossil fuels and carbon intensive systems**

Page 41



**Prevalence of car use**

Page 44



**Housing supply in city**

Page 46



**Segregation and division**

Page 48



**Mental health and use of prescription drugs**

Page 50



**Governance and financing of risk**

Page 57

# SHOCKS



**Infrastructure capacity**

Page 30



**Condition of existing NI Housing Executive stock**

Page 34



**Climate change**

Page 36



**Flooding and extreme weather events**

Page 39



**UK Exit**

Page 52



**Cyber resilience**

Page 54

# ECONOMIC RECOVERY CAPACITY: INEQUALITY AND COMPETITIVENESS



**Economic resilience refers to a city's resistance to and recovery from an economic shock. Improving resilience therefore includes a focus on the vulnerabilities that either make an economic shock more likely, or that exacerbate a crisis.**

Following the global financial crash, policy makers began to pay greater attention to the cost of crisis in a city- sometimes referred to as 'GDP at Risk', which can profoundly damage long-term economic development. The OECD, for example, has developed a set of indicators to help cities help policy makers detect vulnerabilities early on and monitor country-specific risks. Like several other cities, Belfast has made economic resilience a core priority, committing the city in the Belfast Agenda to 'to take a targeted approach to addressing those issues which pose the greatest risk to the city and its economy.'

As a city with important economic relationships globally, Belfast is susceptible to global economic trends and headwinds. Our focus on economic resilience seeks to ensure (1) strong resistance - when economic shocks happen, we are prepared and can ensure the shock has a temporary impact; and (2) have with greater capacity to adapt and recover, and to maintain progress towards our inclusive growth ambitions.

## Resilience to what?

The World Economic Forum Global Risks Report is a credible and often cited source of information on immediate and longer term risks faced by cities and states globally. Published annually, it allows for tracking of risks over time.

In 2019, the report identified immediate risks emerging from geopolitical relationships - with increasingly state centred politics, and hardening of divisions- politically, and economically. As seems likely, this could increase trade tensions globally, while also weakening collective responses to emerging global challenges.

Global growth appears to have peaked, and WEF and IMF forecasts suggest a gradual slowdown in the coming years. The global debt burden, which is significantly higher than before the global financial crisis, at around 225% of GDP.

Geopolitical tensions mean that trade and investment relationships are more difficult and more complex. The report predicts that 'Against this backdrop, it is likely to become more difficult to make collective progress on other global challenges - from protecting the environment to responding to the ethical challenges of the Fourth Industrial Revolution.

## Global Financial Risks and Belfast

Environmental risks dominate the results of our the WEF Global Risks Perception Survey (GRPS). In 2019, they accounted for three of the top five risks by likelihood and four by impact. Extreme weather was the risk of greatest concern, but respondents were increasingly worried about environmental policy failure.

For Belfast, proactively managing the impact of these global risks locally is challenging, but essential. The impacts for Belfast could be:

- A potential slow-down of growth in investment and Foreign Direct Investment in the city, if property funds look outside of the UK due to uncertainties arising from the impact of UK Exit from the EU.
- Increased costs for businesses and potential major shocks for industry depending on the nature of UK withdrawal for the EU.
- Supply chain shocks - in particular costs associated with accessing supplies depending on the nature of UK withdrawal from the EU.

- Currency volatility and its impact on exports.
- A global slow-down could choke off the slow recovery being experienced by the city since the financial crash.
- Slowdown in scale of transition to low carbon technologies thereby reducing potential to take advantage of opportunities to be gained.

As a city with significant exposure to the impact of the UK's exit from the European Union, and with underlying existing economic vulnerabilities, Belfast must prioritise how it builds resistance to economic risks, as quickly as possible.

This draft strategy and the establishment of an Innovation and Inclusive Growth Commission is aimed at institutionalising an approach to managing long term economic risks thus boosting the city's economic resilience.

# Belfast's existing economic resilience

In 2018, the UK Core Cities Network commissioned Cambridge Econometrics to investigate the economic resilience of cities. In preparing this strategy, through our membership of the Core Cities network, we supplemented this study to include an assessment of Belfast's economic resilience, including relative to other core cities. The study concluded that:

**“ Belfast requires a series of measures to strengthen its resistance to, and recovery from, economic shocks.”**

Belfast had lower resistance and lower recovery capacity than the Core City average measured against twelve other UK cities. Its recovery capacity has been particularly low, being rated as the weakest of all the cities except Liverpool. This is despite the data showing that Belfast's resistance is strengthened somewhat by the share of public services in the city's economic output.

This finding underscores that the policy levers required for economic resilience are different to those that focus on economic growth. The high dependency on the public sector as a contributor to the city's economy has a positive impact on the city's resistance to shocks;

however, it can also have a negative impact on the city's ability to develop sustainably.

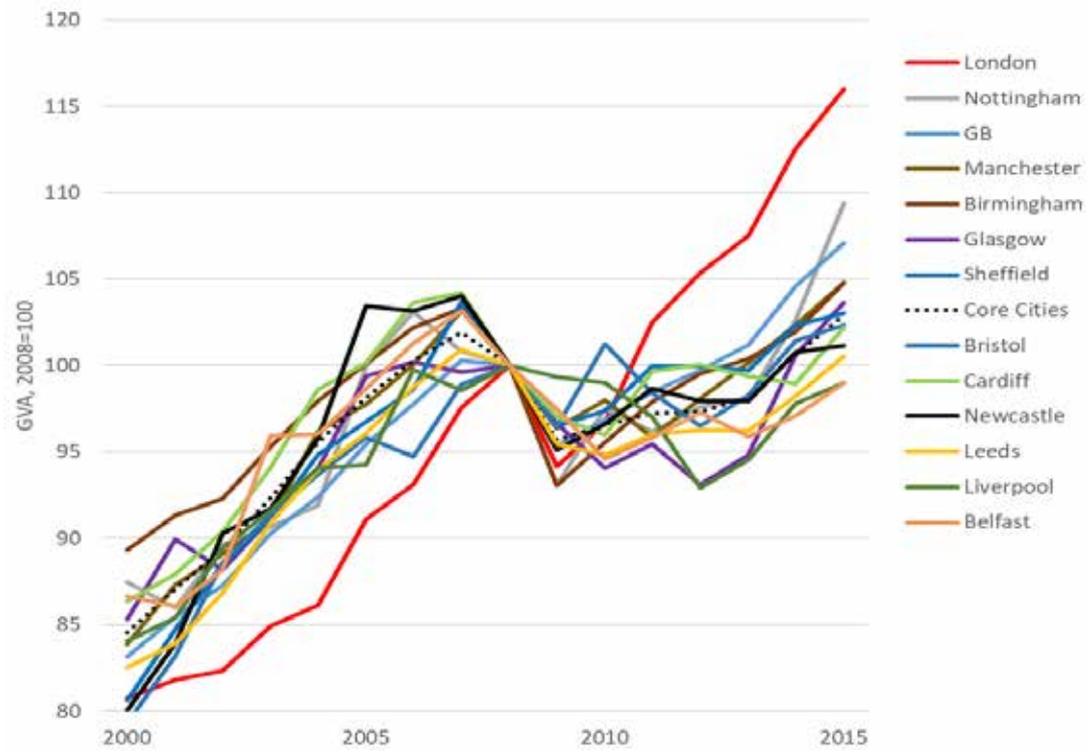
Belfast requires a series of measures to strengthen its resistance and recovery to economic shocks. This is particularly important because the way cities recover from shocks can have permanent impacts on their long term economy. For example, if people who are economically inactive fail to feel the benefits of a return to growth, this can result in a widening of income inequality further reducing resistance to the next shock.

## Factors affecting Belfast's economic resilience

Despite its importance, there is no single global standard or set of indicators for measuring economic resilience.

In this section we examine two particular aspects of Belfast's economic resilience - income inequality and competitiveness and recommend the development of a series of indicators to measure the city's economic resilience in the future.

Core cities compare Belfast with the GB average



2

**Income inequality - a tale of two cities**

High levels of poverty and income inequality can severely reduce a city’s resilience. At a household or individual level, lack of access to additional resources in times of unpredictability means much greater vulnerability in a crisis. Substantial research now exists to show the disproportionately adverse impact of climate related shocks on poorer neighbourhoods, for example, following periods of economic shock, people without jobs and on fixed low incomes often do not benefit from a return to growth as quickly as wealthier households.

Belfast’s resistance to and recovery from shocks, and its wider resilience will therefore be determined by the success of its achievements to drive inclusive growth.

The draft Local Development Plan describes the social context in Belfast as ‘a tale of two cities’,

“Belfast is home to some of the most affluent communities in NI, however it is also home to some of the most deprived communities.”

There is a need for the LDP to increase equality of opportunity and contribute to the breakdown of the physical and psychological aspects of division.’

This assertion is based on a range of data sources- including the Income Deprivation Domain (in The Northern Ireland Deprivation Measures), which identifies the proportion of the population living in households whose equivalised income is below 60% of the NI median. Belfast is split into 174 spatial areas known as Super Output Areas (SOAs). Belfast contains two of the ten most deprived SOAs in NI - and 4 out of the 10 least deprived, in terms of income.

**Gross disposable household income**



2 - Stresses and shocks

A 2016 NICVA study on income inequality found that 'it is possible to say that Belfast is the most unequal part of NI, as it has a high proportion of people in the bottom of the income distribution (25%) and a high proportion at the top (18%).'

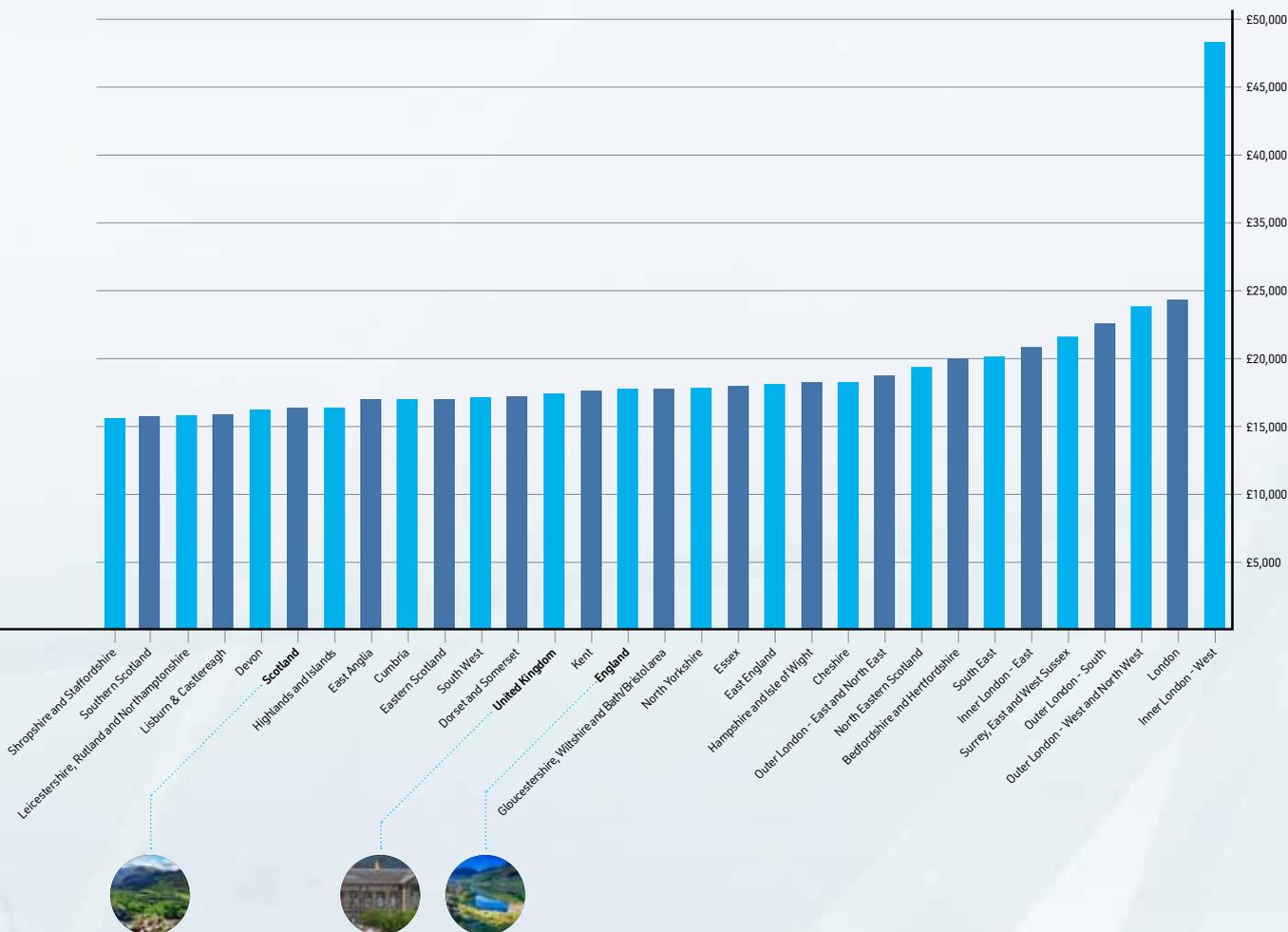
While income and wealth inequality in Belfast is high, the city also compares poorly to others in terms of absolute levels of income. Twenty-one of the top 20% most deprived SOA's in NI are in Belfast. However, 14 of these have remained in the top 20% since 2005. Even more notable is the fact that a number of SOA's moved out of the top 20% in the 2010 measures and then re-entered again in the latest 2017 measures.

While income inequality clearly requires a sustained focus, there is an equally strong argument for a greater understanding of the impact of wealth inequality. Wealth inequality rarely receives as much policy attention as income inequality, yet the gap between public and private capital is a strong driver of divisions in society. It is not clear whether a single city study into wealth inequality has been done in Belfast.

**"While overall private wealth has increased in the UK, public wealth has waned and the gap between both has widened."**

Data on economic performance confirms the benefits to be gained from reduced wealth and income inequality, and less division generally. Economic activity has close correlations with levels of trust - economies with high levels of trust, have higher levels of trade and activity that adds economic value. There is a case for a focus on community wealth and asset based welfare to find ways to reduce wealth inequalities in the city.

Coupled with political polarization, inequality erodes a country's social fabric in an economically damaging way: as cohesion and trust diminish, economic performance is likely to follow.



**Belfast city's competitiveness**

A recent study of the city's competitiveness (Bakertilly Mooney Moore 2019) identified a number of areas of vulnerability for the city of Belfast, and summarised them in the graphic below. Importantly, the study found that Belfast's decline relative to other cities is due to their resurgence, i.e. other cities' out-performing Belfast.

| Theme   | Current average ranking | Three year change | Five year change |
|---|-------------------------|-------------------|------------------|
|  Productivity                          | 4/12                    | →                 | →                |
|  Population and demography             | 9/12                    | →                 | ↓                |
|  Sustainable and inclusive growth      | 6/12                    | →                 | ↓                |
|  Quality of life                       | 6/12                    | →                 | ↑                |
|  Physical knowledge and infrastructure | 5/12                    | ↓                 | ↓                |

**The study concluded the following:**

- Belfast's demographic profile is impacting its competitiveness and its ability to achieve its city objectives. Belfast has a smaller labour pool which is growing slower than its competitors. Retaining the city's population and replacing those who leave is a major challenge. These factors may potentially impact the city's attractiveness to investors and is at odds with the performance of other cities.
- Belfast has a significant skills challenge. It has too few highly skilled workers and too many with no qualifications. While the figures are improving, it lags significantly behind other UK and European cities. This is impacting of the city's competitiveness and the prosperity of its citizens, creating inequalities within the Belfast economy and making the achievement of inclusive growth more challenging. While a range of initiatives have been delivered to improve the skills base, significant issues remain and while much of the policy responsibility sits with the NI Executive, initiatives such as the Belfast Region City Deal present an opportunity for the City to play a bigger role, over both the short term and the long term.

- Belfast (and NI as a whole) still has the largest proportion of economically inactive of all UK cities (and regions). As well as the implications for the individuals affected, it also results in a drag on the local economy's performance and competitiveness. To improve Belfast's competitiveness this is an area which must be addressed.
- While there is a sense of an emerging entrepreneurial ecosystem, supported by a buoyant knowledge economy and a growing private sector, key indicators still highlight that Belfast lags behind its peers in relation to creating and growing successful businesses. Providing a supportive environment which is conducive to business creation will be key to improving Belfast's competitiveness. This is also a key focus of the Belfast Region City Deal, which presents a significant opportunity to provide further foundations to support enterprise, innovation and entrepreneurship
- Belfast has momentum across a range of indicator, it has also dropped down the rankings across others - namely in Broadband provision. There is evidence that other cities are seeking to enhance their competitiveness by investing in policy areas that have made Belfast successful. This poses a threat to Belfast and may take away from Belfast's competitive offer. The city should not rest on its laurels and should seek to build on its strengths to maintain and enhance advantages where they exist.

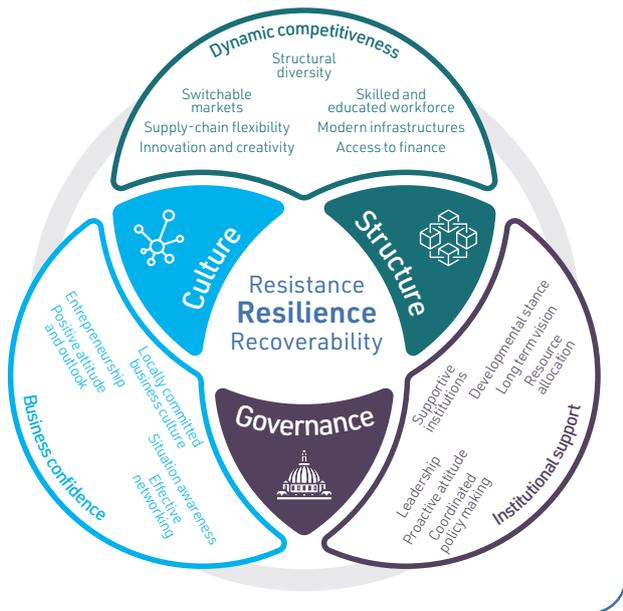
The Belfast Agenda, the city's community plan, sets out a series measures aimed at reducing and removing some of Belfast's economic challenges- in particular through a sustained focus on population growth, jobs creation and development. This pro-growth approach is underpinned by a focus on inclusive growth, reducing inequality over time. This mirrors the approach taken by a number of global cities with similar challenges, and assuming the right policy levers are applied, could be transformative for the city of Belfast.

Encouragingly, the potential for greater resilience is intrinsic to the ambitions within the Belfast Agenda. Their realisation could address a number of challenges for the city referenced in this document, such as providing critical mass to maintain or support services and infrastructure.



## Building our economic resilience

Building economic resilience for sustainable growth requires an integrated and simultaneous focus on several aspects of the city’s economy. The Cambridge Econometrics Study produced the following helpful Venn diagram:



## Indicators to measure and strengthen economic resilience

This strategy proposes the agreement of a citywide series of indicators to measure Belfast’s economic resistance and recovery capacity. These may include the following:

- 1 ..... Levels of private and household debt
- 2 ..... Flexibility of labour market
- 3 ..... Skills among working age population
- 4 ..... Ratio of FDI and indigenous investment
- 5 ..... Public Sector as a contributor to economic output
- 6 ..... Export Intensity
- 7 ..... Income and wealth inequality
- 8 ..... Employment and economic activity
- 9 ..... Integrated local economic networks
- 10 ..... Presence of strong economic strategy and leadership
- 11 ..... Levels of trust
- 12 ..... Dependence on carbon

## Conclusion

The financial crash and global recession of the previous decade exposed Belfast’s weak recovery capacity. To better prepare for future economic cycles, a sustained focus on economic resilience, as part of a wider inclusive growth strategy is required. Many global cities, are now placing a particular emphasis on economic resilience and Belfast can learn from

existing global practice. This strategy recommends that we commence this work by (1) identifying and agreeing a series of city-wide indicators to measure economic resilience (2) making it a core aspect of the work of the Innovation and Inclusive Growth Commission.

# POPULATION CHANGE



**Resilient cities are those with thriving populations - well planned levels of sustainable development, to match cities' long term ambitions. Belfast's economic resilience is therefore dependent on sustainable levels of population growth, particularly among its younger and its working age populations.**

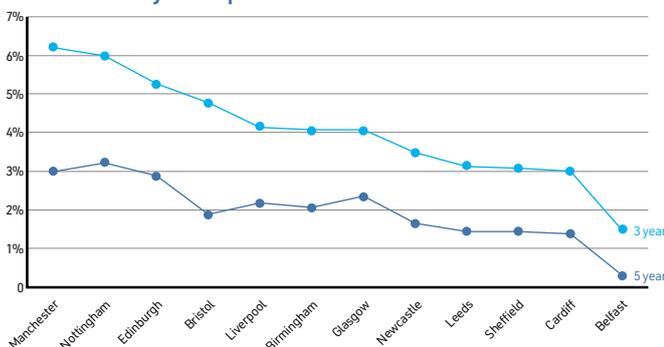
Population projections are important because they give us a perspective on how the future might look, if certain trends continue. However, because they are trend-based, they cannot take account of policy changes which might occur, and the impacts of these interventions. Most cities globally are planned on this basis - population projections are developed centrally based on past trends, however, local planning policies aim to change these trends over time.

This strategy uses population projections because they provide critically important information on how past trends might impact on the future. However, as this section concludes, future policies will determine whether these projections are realised.

In 2018, Belfast had a population of 341,877 making it, by this measure, one of the largest cities in the UK overall. It has a lower population than the Scottish capital Edinburgh (518,000) but has a similar population to the Welsh capital Cardiff (364,248), Newcastle (300,196) and Nottingham (331,069).

As part of Belfast's competitiveness study, the city's projected population growth rates was compared with 12 others. The study found that Belfast had the lowest projected population growth rate for the next three and five years.

### Three and five year Population Growth rates



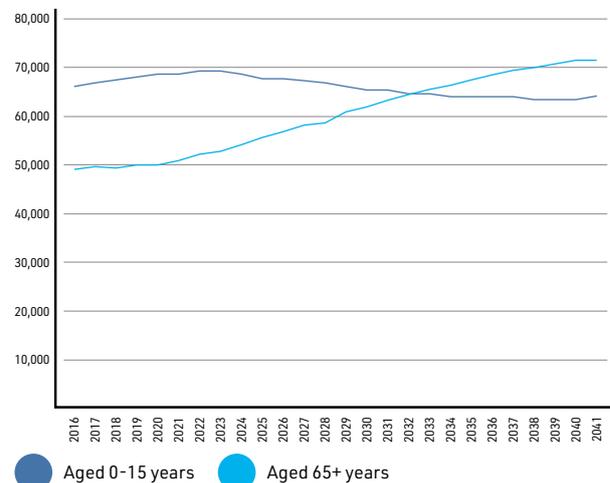
When data on growth in working age population was compared, Belfast has one of the lowest labour pools of the twelve cities. Perhaps most worrying of all, Belfast has seen relatively low growth in its working age population since 2013 (0.8%) and a decline since 2015 (-0.2%) which leaves it ranked lowest of the 12 comparator cities.

## An Aging Population

Over the decade mid-2016 to mid-2026, the population of children (i.e. those aged 0 to 15 years) in Belfast is expected to grow by just 2.4%.

Furthermore, over the same decade, the population in Belfast aged over 65 is projected to increase by 15.2%. In 2033, the number of older people aged 65+ in Belfast will surpass the number of children under 15. Each of these trends presents distinct challenges for the city- and for its economic resilience in particular.

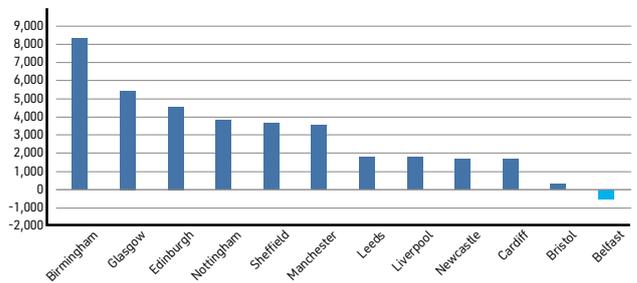
### Children 0-15 and older people 65+



## Migration and people leaving our city

Migration flows are a strong indicator of how a city is perceived internationally. Belfast has recently realised negative net migration - i.e. more people leaving than arriving. This is highly unusual. When ranked alongside twelve other UK cities as part of the Belfast Competitiveness Study, Belfast was unique in this respect.

Net International Migration, 2017



## Conclusion

Official population projections for Belfast demonstrate the challenges faced by the city. However, it is important to stress that a focus on projections alone can mask the drivers that led us to the present position. Resilient cities are highly reflective and adaptive - they plan for sustainable development based on a sophisticated understanding of the relationship between economic and social trends, on what has succeeded or failed in the past and what has worked elsewhere.

Growing its population - and in particular the number of young people and working age people is critical to

the city's economic resilience. For this reason, the policy goals in the Belfast Agenda - 'to be home to an additional 66,000 people', and underpinned by its draft Local Development Plan Strategy are crucial to the city's future economic resilience.

Many other cities globally have demonstrated the capacity of local planning policies to reverse or shift population trends and it is essential that decision makers in Belfast do the same. Given the impact of Belfast for the regional economy, there is a strong case for pursuit of these policies to receive regional priority.



# INFRASTRUCTURE CAPACITY



**The issue of the city's infrastructure emerged as a major theme in the workshops, focus groups and data analysis undertaken to develop this strategy. Existing infrastructure has been adversely impacted by a period of underinvestment, which is having a negative impact on the city's economic and climate resilience.**

To inform the development of this strategy, our strategic partner Arup undertook a high level assessment of the city's assets.

The study identified key areas for intervention to improve infrastructure provision within the local authority area, and these findings were borne out in our consultation and engagement sessions with stakeholders:

- Enhanced connectivity across the River Lagan through a series of bridges.
- Extended public transport network, particularly through BRT Phase 2 and improved walking and cycling networks.
- Significant pressure on waste water treatment capacity in the city and implications for growth potential.
- Targeted enhanced digital connectivity, particularly in locations of target growth sector investments.

Belfast City Council commissioned the Belfast Infrastructure Study to identify the range of infrastructure challenges in the city. The outcome of the study will continue to inform this strategy, both in terms of future versions and implementation. Recognising that the Infrastructure Study remains ongoing, this strategy has prioritised two particular areas of infrastructure risk to the city - waste water treatment capacity and conditions of existing Northern Ireland Housing Executive stock.



## Waste water treatment capacity

**A fit for purpose wastewater and drainage system is a critical asset to any city. It mitigates the effects of flooding, enables climate resilience and contributes to public health and the economy.**

Connection to drainage and wastewater infrastructure is a condition of planning consent for development and therefore underpins sustainable economic development in every city. Furthermore, the capacity of a city's drainage system has a direct impact on prevalence of surface level flooding. Put simply, a fit-for-purpose drainage and wastewater system with sustainable levels of investment is critical for a city's economic, social and climate resilience.

Significant investment has been necessary for several years to improve the drainage and wastewater assets that serve Belfast. In 2015, the Living with Water Programme Board was initiated to develop a Strategic Drainage Infrastructure Plan for Belfast. This aims to provide integrated sustainable solutions which will alleviate the risk of flooding, enhance the living environment and sustain economic growth. The board, which operates as a collaboration between organisations, has been working to set out:

- The scale of flood risk to Belfast.
- The deterioration of Belfast Lough's water quality due to pollution from diffused sources, including agriculture, and from sewerage system overflows and Waste Water Treatment Works discharges.
- The scale of investment needed.
- The potential wider benefits of the proposed approach to investment planning.

Belfast's wastewater treatment system faces a number of significant issues, which could impact on the city's resilience - in particular its ability to adapt to, and mitigate climate change. Capacity risks can also impact on economic resilience, given the relationship between infrastructure and the health of the economy.

Northern Ireland Water publishes information on wastewater systems which are operating at or near capacity. Its August 2019 online report stated that Belfast Waste Water Treatment Works is predicted to reach capacity in 2021. Furthermore, it reported that 'In addition to the wastewater treatment works (WwTW), wastewater network capacity issues are emerging due to sewer network modelling activities being undertaken at Belfast (Glenmachan sub catchment), Kinnegar (Sydenham sub catchment), Newtownbreda, Whitehouse, Dunmurry. As a result of this, new connections are being declined in parts of the catchment.' The issue was further emphasised by

the Chair of Northern Ireland Water in the company's 2018/19 Annual Report which referred to the potential adverse impact of underfunding for economic development across Northern Ireland.

The capacity issues identified above represent a substantial risk to the city's resilience. Out of sewer flooding, inefficient operation of the existing system and treatment works with inadequate storm storage capacity all present challenges to the operation of the city and could inhibit the scale and nature of future development, at a time when housebuilding at scale is required. These risks are heightened over time as the system continues to deteriorate and as our climate changes.



### How a resilient city values water

Belfast currently has ready access to a plentiful supply of drinking water. However, all cities building their climate resilience should be aware of the potential for water shortages. The Climate Change Risk Assessment for Northern Ireland has identified the potential risks to humans and to agriculture and wildlife from drought. These factors, combined with the lack of capacity in our wastewater treatment system, suggests a strong case for a city-wide focus on valuing our water supply and on water conservation.



## Conclusion

Belfast is one of hundreds of cities globally that face the competing challenges of driving sustainable economic development and population growth, delivering city centre densification while preparing for a changing climate and rapid decarbonisation. The UK National Infrastructure Commission has rightly recognised these significant challenges, as have global institutions such as the World Bank and the World Economic Forum. Infrastructure is increasingly understood as a key growth driver in cities. This can sometimes result in perceived tensions between infrastructure planning and economic growth strategy. It should not be the case. Competitive, resilient cities have shown that sustainable and inclusive economic growth is possible when infrastructure planning enables growth. Lack of infrastructure capacity should not hinder or dictate economic strategy - to do so would expose a city to a range of risks, and ultimately weaken its resilience. On this basis, investment in Belfast's infrastructure capacity will be a major determinant of the city's resilience, and its capacity to transition to a low carbon economy. This will require reconsideration of how infrastructure is funded in the future. It is almost certain to necessitate new funding models to better plan for growth capacity and climate resilience in the coming years.

# CONDITION OF EXISTING NI HOUSING EXECUTIVE STOCK



## Condition of existing social housing

The Northern Ireland Housing Executive is the strategic housing authority for NI and its housing stock in Belfast numbers almost 26,000 units. Investment in, and maintenance of existing stock is a core priority for any landlord, however it has wider impacts for the city. A well maintained social housing stock ensures the long-term health and wellbeing of its population. It enhances social capital and if well planned, can have a significant positive impact on reduction of carbon emissions in a city.

**“Well maintained social housing stock ensures the long-term health and wellbeing of its population.”**

Northern Ireland Housing Executive stock in Belfast has traditionally benefited from significant ongoing investment, and therefore until relatively recently has been able to maintain its stock condition. However, a number of studies have recently shown that the condition of NIHE stock has deteriorated, arguably to a point where it represents a risk to the wider city.

In 2014, the Department for Social Development and the NIHE jointly commissioned Savills to undertake an Asset Commission to understand the scale and nature of investment required in the NIHE stock. Savills carried out a comprehensive exercise to assess the current and future repairs and maintenance liabilities of NIHE’s properties and related assets. Savills found:

- The stock has deteriorated during the last 5 years... projections of costs moving forward have therefore increased and will continue to do so without sufficient investment.

- Just under 44% of the stock (37,974 units) is in asset groups with an average net present value (“NPV”) per unit which is negative [i.e. the rental income collected from these properties is not sufficient to maintain the properties and service residents over the next 30 years]’.
- The total cost at today’s prices [of the investment required in the NIHE stock] is £6.7bn.
- There is significant investment [circa £1.5bn] required during the next 5 years. In addition to the financial challenge this presents, there is also a significant practical challenge in terms of the capacity of the market to deliver such a large programme...a 3 year lead in time is likely to be required before the levels of investment identified can be delivered on the ground and current investment programmes are concluded’. This “delay” will result in an increase in liability [from £1.5bn] in the 5 years that follow...’.

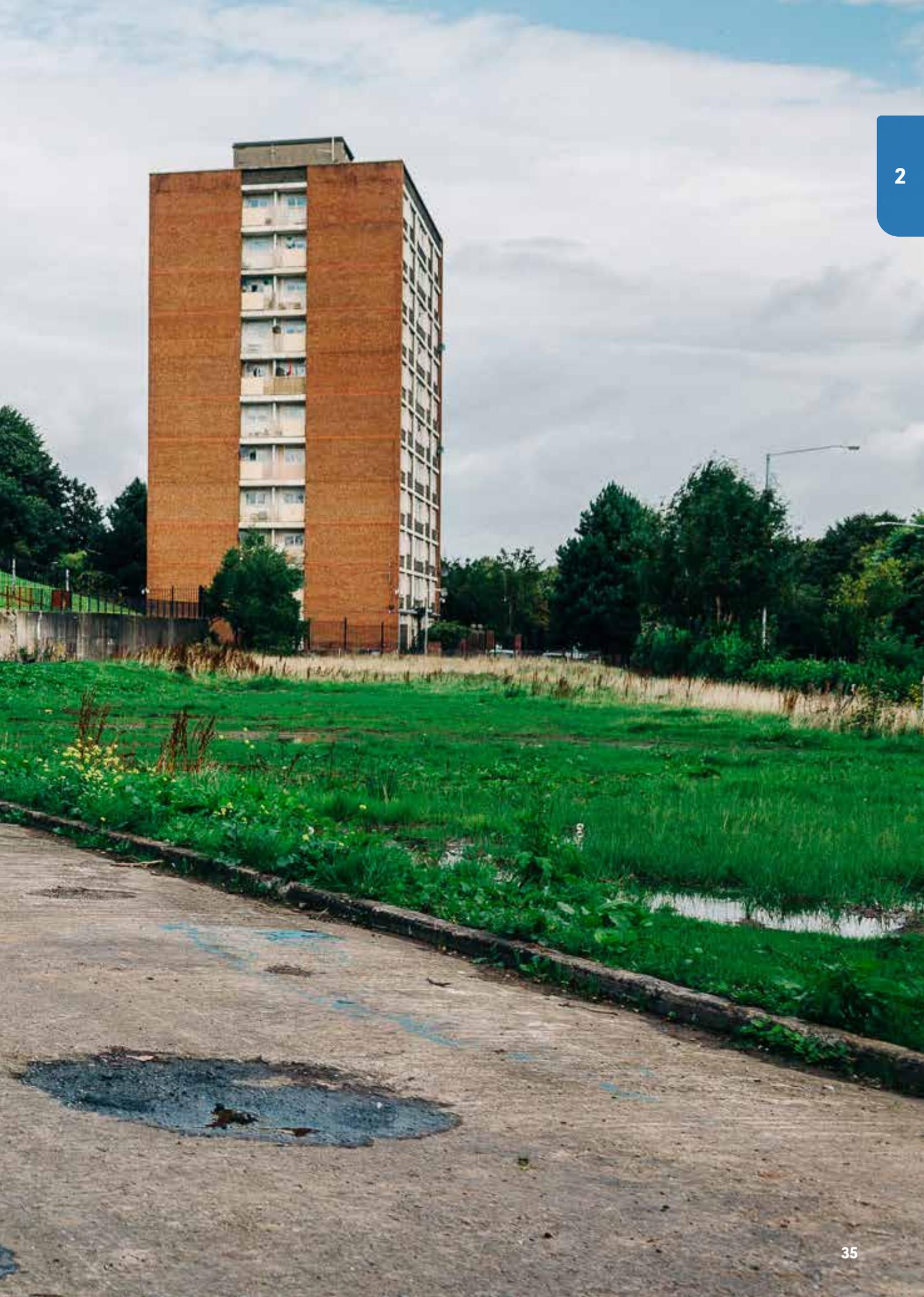
Worryingly, the 2014 report predicted that ‘The situation has worsened since 2009, and is likely to worsen again in the next five years in the absence of increased investment (made at the right time in the right place) combined with the application of modern asset management principles.’

Five years on, it appears that these warnings were prescient - the step change required to improve stock conditions has not occurred, so much so that the NIHE has publicly acknowledged that it may have to de-invest in homes. This would amount to a significant and adverse challenge to the city of Belfast, which requires a continual and ongoing supply of good quality social housing to meet its social and economic needs. Furthermore, the current condition of NIHE properties could make decarbonisation a much more significant challenge for the city.

## Conclusion

The Northern Ireland Housing Executive has commented publicly on these risks in 2019 - highlighting again a funding deficit of approximately £1bn for its entire stock, and potential future consequences, which could include de-investment in homes and developments. The implications of

de-investment in social housing at a time of existing housing stress, income deprivation and climate related challenges represent a significant and urgent risk to the city.



# CLIMATE CHANGE



2

Climate change presents a grave risk to the planet, and as such, its effects on cities will be profound, and many will be permanent. How we design cities, how we live in them and enjoy our city lives will change significantly in the decades to come. Work on this strategy had just commenced in 2018, when the IPCC produced its seminal report which concluded that global warming should not go above 1.5 degrees beyond pre-industrial levels. The report recommended significant acceleration in global efforts to reduce carbon, and was instrumental in shaping the UK government's decision to set a net zero carbon target for the UK by 2050.

In preparing this strategy, climate change was the predominant issue raised by stakeholders in our focus groups and workshops. Children and young people across Belfast raised it as a priority issue for them.

Lack of preparation for climate change emerged as a major feature of discussion in our workshops and focus groups. This was echoed in Northern Ireland Climate Change Risk Assessment, which found:

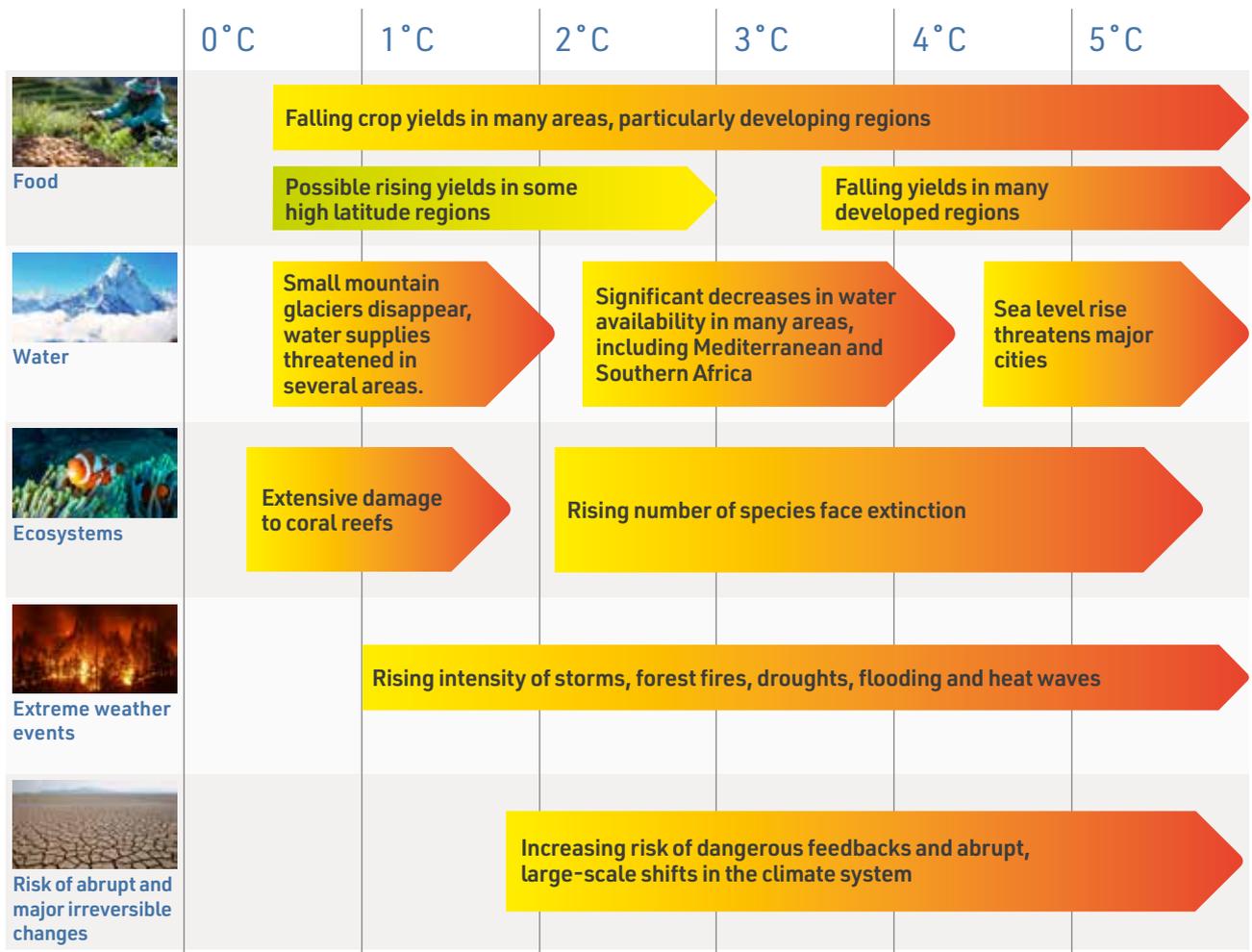
'There is no published account of what has been achieved by efforts in recent years to improve the resilience of infrastructure systems in Northern Ireland to flood risk.'

Most sectors do not report on the resilience of their assets, networks and services. This is particularly the case with the non-regulated sectors and for local infrastructure, especially minor road networks and highways.

Few sectors systematically describe the disruption that has been caused by flooding, and the actions that have been taken as a result.

## Global temperature change

Relative to pre-industrial



## Assessing climate risks to Belfast

While no comprehensive city-wide risk assessment has yet to be undertaken, the Climate Change Risk Assessment undertaken at a Northern Ireland level, is relevant, and we would expect that the risks identified below are likely applicable to Belfast. It found that

- Climate change poses risks to Northern Ireland's soils, farming, freshwater resources, natural carbon stores, marine ecosystems, wildlife and habitats. It argued that more action is needed to build resilience to these risks. It also highlighted that more evidence is needed to fully understand other climate change risks that are likely to be important for Northern Ireland's natural environment, including potential changes in agricultural and forestry productivity and land suitability and impacts on freshwater and marine ecosystems.
- Infrastructure in Northern Ireland is exposed to a range of climate hazards. Impacts on some assets have the potential to cascade on to others as part of interdependent networks. Flooding poses the greatest long-term risk to infrastructure performance from climate change, but the growing risks from heat, water scarcity and slope instability caused by severe weather could be significant.
- The CCRA Evidence Report suggests that there are potential health benefits from warmer winters in Northern Ireland, but more action is needed to manage current risks to people from cold temperatures through addressing fuel poverty. There are several risks that might be important for Northern Ireland but there is not enough evidence to assess to what extent adaptation action is already underway to manage the risks. Such areas include risks to communities from flooding and sea level rise, extreme weather impacts on the healthcare system, risks to building fabric from moisture, risks to culturally valued buildings, and risks to health from overheating buildings, poor air quality and pathogens. For these risks, more research in Northern Ireland is urgently needed.
- Flooding and extreme weather events which damage assets and disrupt business operations pose the greatest climate change risks to businesses in Northern Ireland now and in the future. This could be compounded by a lack of adaptive capacity.
- Climate change will impact upon on water security, agricultural production and economic resources around the world. These impacts can in turn exacerbate risks from conflict, migration, and humanitarian crises abroad, with implications for the UK. The main risks arising for the UK from climate change overseas are through impacts on the food system, economic interests abroad, and increased demand for humanitarian aid.
- The high-level climate risk assessment undertaken by Arup to inform this strategy concluded that Belfast is already suffering as a result of climate hazards- that extreme weather is impacting Belfast's infrastructure and this impact is likely to significantly increase in the future. The vulnerability of existing infrastructure will be exacerbated with changing climate risk and is likely to involve more periods of extreme heat and winter rainfall. It recommended a comprehensive climate risk assessment is undertaken to inform a future Climate Plan for the city.

The significance of the risks outlined are obvious, and a future comprehensive risk assessment is required to better understand the detailed and precise impacts expected for Belfast at a local level, to enable effective mitigation and adaptation planning.

## The importance of science based targets

Assessing climate risks to Belfast comprehensively has been difficult because of lack of available data and analysis. Unsurprisingly therefore, this strategy recommends that considerable work is undertaken swiftly, to understand the scale and nature of climate related risks, to inform how to make Belfast climate resilient. Research is also required to ensure science based targets inform our ambitions for decarbonisation.

Risk assessment is not just important to enable the city to prepare for climate change, it is critical to understanding economic risks. The Glasgow City Region's Risk Assessment identified that the annual economic cost of climate change in Glasgow City Region is estimated to be £400 million each year by the 2050s; around 1% of current GVA . Given Belfast's existing level of economic resilience, the city can ill-afford to be unprepared for an equivalent level of GVA at risk.

## An inclusive approach to climate planning

As the Committee on Climate Change noted, 'Low income households are particularly susceptible to climate change impacts, though they might also benefit the most from the positive implications of climate change. Northern Ireland has the highest proportion of properties at risk of flooding that are in deprived areas (27%).' For this reason, it is critical that climate adaptation and mitigation targets are genuinely inclusive and aim to ensure the most vulnerable are protected, and that the economic benefits from decarbonisation are felt by those most impacted by fuel poverty. A core aim of any climate mitigation plan must be a significant reduction, or virtual elimination of fuel poverty.

Furthermore, given the level of interest in the issue of climate change by the city's children and young people, it is critical that city-wide climate planning is participative and includes their voices and opinions on the future of their city.



## Developing a climate plan for Belfast

Cities that are climate resilient- ready for the impact of climate change- are those which have developed a comprehensive approach in an integrated and joined-up way. The Community Planning Partnership model for Belfast is the right model through which to build a city-wide collaboration of agencies and organisations to help plan the city's preparedness for climate change and to drive decarbonisation.

Its Resilience and Sustainability board will work collaboratively to ensure the following:

- A single adaptation and mitigation plan is developed, using comprehensive risk assessment and science based targets to ensure robust commitments, including targets for arriving at net zero carbon as a city, and agreeing a carbon budget.
- That adaptation strategies are joined up with emergency planning structures in the city, and with Northern Ireland wide targets and strategies and with city region strategies
- That future strategic developments in the city are informed by climate adaptation and mitigation targets
- That the recommendations from the Committee on Climate Change regarding Northern Ireland's emissions are heeded; for example, to significantly improve levels of tree planting; to find ways to incentivise transition to low-carbon heating of homes and retrofit of housing stock; more rapid deployment of electric vehicles, tighter conventional vehicles standards, and transport behaviour change.
- Fundamentally, a city-wide climate adaptation and mitigation plan, developed in partnership with the city's statutory community partners and others should result in a comprehensive series of commitments to prepare for climate change and decarbonise. This should inform and influence decisions on strategic developments in the city. As the Committee on Climate Change notes 'The cost-effective path to decarbonisation in Northern Ireland requires action across all sectors of the economy and a joined-up approach.'

## Conclusion

Climate change represents the biggest medium term risk to the city of Belfast - to its people and its economy. Given our levels of economic resilience, the scale and nature of spatial division in the city, levels of fuel poverty and deprivation, Belfast's resilience is dependent on how we prepare. A step change is now required across a range of city partners to develop a comprehensive climate adaptation and mitigation

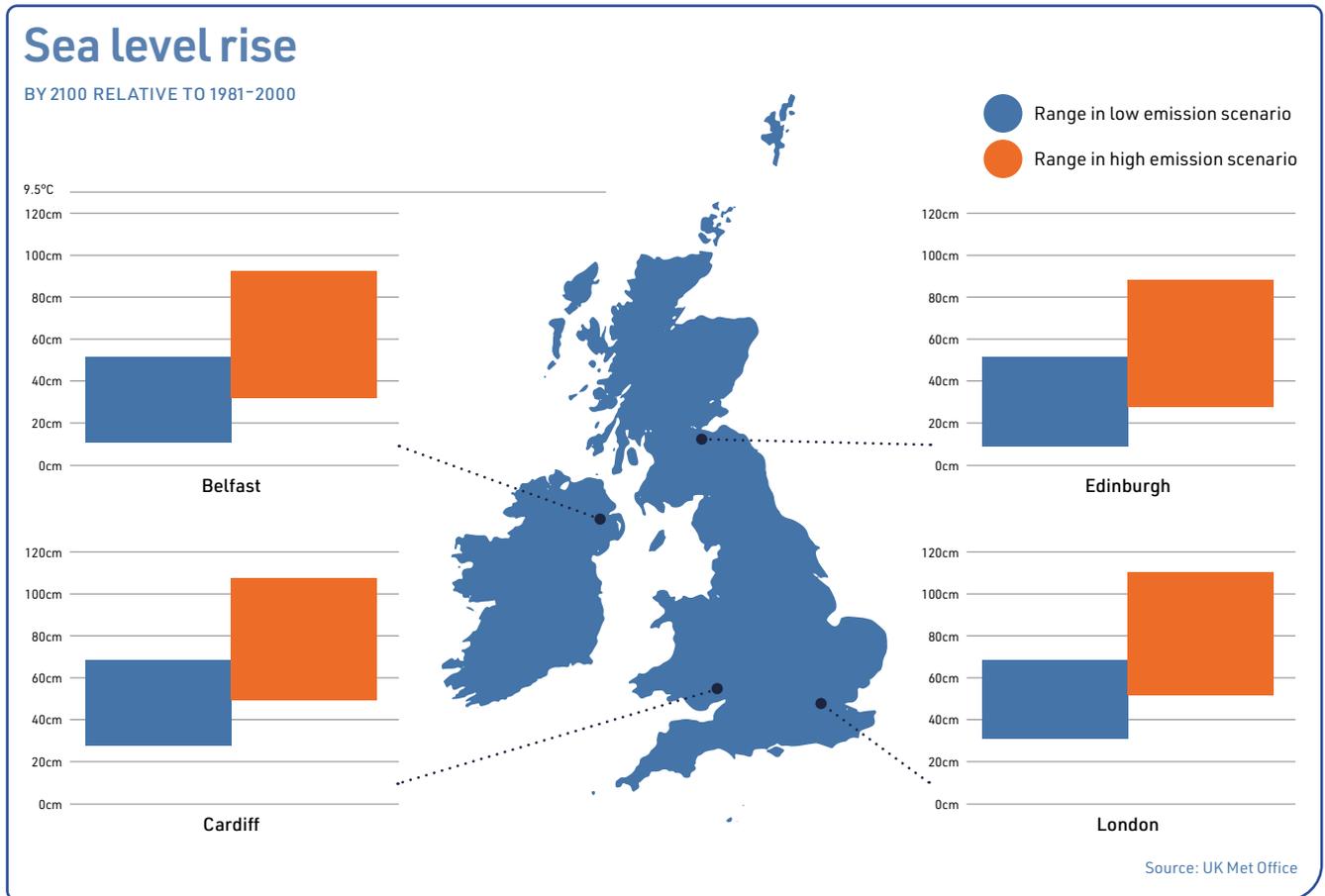
plan, which will include science based targets and aim to achieve an inclusive approach to decarbonisation. While the net effects of climate change are not sufficiently understood, it is highly likely that there will be economic upsides to decarbonisation, and therefore this is a once in a generation opportunity to radically reduce fuel poverty and help drive inclusive growth.

# FLOODING AND EXTREME WEATHER EVENTS



**To be a resilient city Belfast must be able to withstand the impact of flooding and extreme weather events.**

The effect of climate change will be profound and with ongoing risk management and risk assessment, Belfast will be resilient in understanding potential impacts, infrastructure preparedness and economic consequences.

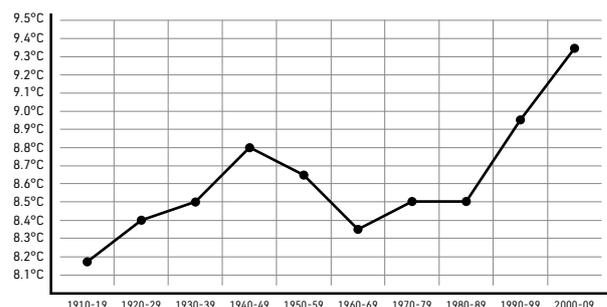


## Changes to our weather

Climate change is causing many extreme weather events to become more intense and frequent, such as heat waves, droughts, and floods. The image below shows the trend in temperatures in NI since 1910.

Cities are already responding to the financial impact of extreme weather events. The Glasgow City Region has estimated that the cost of four typical weather events between 2012 and 2017 cost the city region £44.5m.

NI mean temperatures



## Flood risk in Belfast

Belfast is located within the River Lagan catchment and at the mouth of Belfast Lough. It is a city with very close proximity to water, and where water resilience is critical to the operation of the city. Belfast makes up a large proportion of the geographical area estimated to be at "Significant risk of flooding in NI."

Several tributary rivers flow from the hills surrounding Belfast, into the city to the River Lagan and Belfast Lough, all of which have the potential to flood during periods of heavy prolonged rainfall.

Belfast is therefore at risk of flooding from a number of sources including tidal (the sea), fluvial (rivers) and surface water (pluvial) unable to drain away quickly into the combined storm and sewerage network, much of which was built in the late 19th and early 20th century.

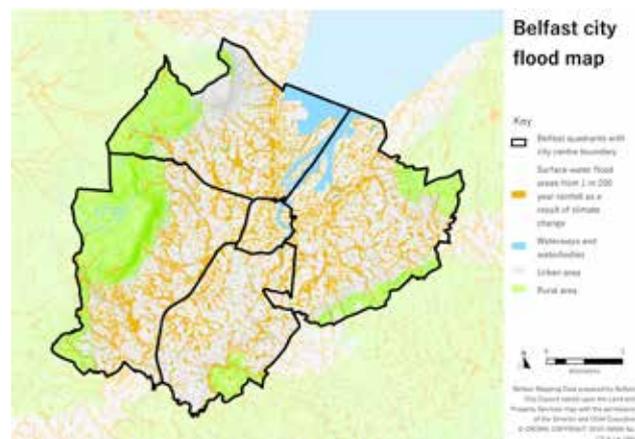
The fact that Belfast has a combined network means there is additional pressure on the system every time the city experiences heavy downfalls. As the city grows, additional pressure on the capacity of the network could increase the risk of flooding.

Belfast has a history of flood events and major damages are caused by both fluvial and pluvial events. The five highest tidal surges have been recorded since 1994, most recently in early January 2014.

Coastal and pluvial flood risks are both sensitive to climate change. The impact of climate change causing sea level rise will increase the number of properties at risk of tidal flooding in the city to over 3,400 (2,640 Residential and 770 Commercial) by 2065 and over 7,900 (6,050 Residential and 1,860 Commercial) by 2115.

The Belfast Tidal Flood Alleviation Scheme is a landmark project that will provide a long term approach to tidal flood risk management for Belfast. Much of the city centre is between 1m to 2m below extreme tide levels, so a weather event of magnitude would cause serious disruption to the local economy, the transport network, and the social fabric of the city.

To understand the risks associated with climate change, Arup undertook a high-level risk assessment of existing city infrastructure. The study looked to three points in the future (2040, 2060 and 2080) for four key climate hazards: sea level rise, extreme heat, drought and extreme cold. The two key hazards with the biggest projected impact for Belfast are (1) sea level rise and flooding and (2) extreme heat. Arup found that many assets in the city are already at risk of flooding which is projected to be exacerbated by sea level rise and an increase in winter rainfall. The planned new flood defenses will provide some protection but residual risk is projected to remain.



## Conclusion

The forthcoming tidal flood alleviation scheme provides a mitigation against worsening flood levels in the future, therefore it is expected to provide some improvement to the city's overall climate resilience. However, there remains significant work ahead to ensure the city's existing infrastructure is climate resilient. Sea level rises and flood risk, coupled with extreme heat will have significant implications for

the city's infrastructure, as with many other cities. Evidence from cities globally has demonstrated the negative impact this can have on the local economy, the transport network and the social fabric of a city. Belfast must therefore carefully plan the future of its infrastructure to ensure climate resilience is prioritised.



# DEPENDENCY ON FOSSIL FUELS AND CARBON INTENSIVE SYSTEMS

**Belfast is a net importer of energy, relying heavily on traditional coal, gas and oil to heat and power homes and buildings in the city and on petrol and diesel for virtually all of its transport needs. A third of the domestic sector rely exclusively on oil for space heating.**

This heavy fossil fuel reliance, generating high levels of demand for what is an expensive form of energy, presents a significant challenge to the city's long-term resilience.

**“Balancing security of energy supply for economic growth with a supply of affordable energy so all households can live in healthy warm environments with environmentally sound sources of energy.”**

Belfast's dependence on energy will increase. The IEA has previously projected that energy demand in cities globally will increase by 57% by 2030 - energy demand and energy security therefore represent a major challenge for all global cities- including Belfast. This makes the transition to low carbon sources of energy an even greater priority for the city.

The so-called 'energy trilemma' is a well-known phenomenon within cities. It relates to balancing security of energy supply for sustainable economic growth with a supply of affordable energy so all households can live in healthy warm environments with environmentally sound sources of energy in response to a changing climate.

A 2017 Northern Ireland Affairs Committee report on the electricity sector is blunt in its assessment that NI has struggled to achieve this balance. It called for an urgent update of the Strategic Energy Framework - the policy framework on energy, to give certainty to investors, and enable long term policy clarity and planning for energy. It also recommended a permanent advisory body on energy.

Belfast is a net importer of electricity. The security of this supply is considered both on a Northern Ireland basis and an All Island basis. SONI (the Northern Ireland Transmission System Operator) jointly (with the Republic of Ireland Transmission System Operator, Eirgrid) annually published a Generator Capacity Statement and Annual 10 year Transmission Forecast Statement. These consider the expected electricity demand and the level of generation capacity that will be required in Northern Ireland and on the whole island over the next ten years. Within this they consider a number of realistic scenarios.

Their current statement highlights that current capacity needs are met however some scenarios indicate further capacity is needed for 2025. The need for a second North South Interconnector to increase security of supply is also highlighted.

Generators are provided clear information on how they are compensated within the current single electricity market on the Island of Ireland. This design includes capacity auctions for generation capacity four years in advance of the need. However generators also require long-term policy clarification from the NI Executive to provide further surety and reduce their risk leading to reduction in costs for consumers going forward.

Belfast is also a net importer of gas. The security of supply for gas is considered on a Northern Ireland basis by the Gas market Operator within Northern Ireland.

Nevertheless, NI has a good story to tell when it comes to renewable energy. For the 12 month period April 2018 to March 2019, 38.6% of total electricity consumption in NI was generated from renewable sources. Work is on-going to increase this value however as demand increases through possible new load from heat and transport a step change in the level of renewable generation is required in the next decade if net zero carbon targets are to be met and is dependent on an enabling policy environment, which will not be in place until a new Strategic Energy Framework is implemented in 2020 or later.

## Belfast's big energy bill

Analysis conducted by ESRC Centre for Climate Change Economics and Policy at the University of Leeds has concluded the following:

- Belfast spent a total of £552 million in 2018 on all of its energy and fuel bills.
- That means that 4.7% of everything that is earned leaves the area to pay the energy bill.
- If it invested in all of the profitable energy efficiency and low carbon options, total energy bills would be cut by £105 million a year.
- Households in the area would save £46 million a year from their energy bill.
- Belfast's industry could cut its fuel costs by £9 million a year.
- This would mean the area's carbon emissions would fall by 23.0% over and above what is already expected.



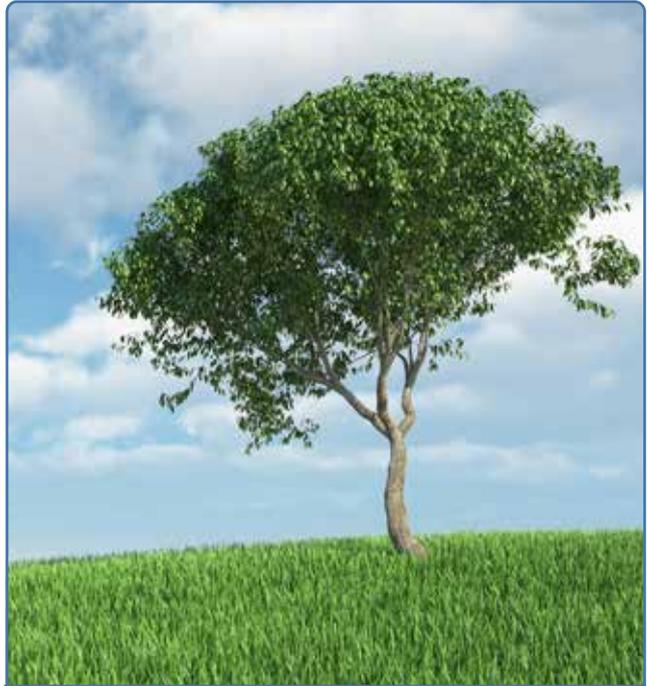
## Waste and the circular economy

In January 2018, as part of its national climate mitigation and adaptation policy, China banned the import of foreign waste, including almost 9 million tons of plastic scrap, to reduce pollution and strain on its national environmental systems.

This ban exposed poor resilience in the domestic recycling capacity of many states that had traditionally exported to China. Plastic waste built up in the United Kingdom, Canada and several European states. In the first half of 2018 the United States sent 30% of the plastic that would previously have gone to China to landfill. According to the World Economic Forum, 'as the impact of environmental risks increases, it will become increasingly difficult to treat those risks as externalities that can be ignored or shipped out. Domestic and coordinated international action will be needed to internalize and mitigate the impact of human activity on natural systems.'

Successful cities manage the impact of growth sustainably and ensure that it does not limit the quality of life of future generations. Waste management is therefore a key factor in the resilience of the city. Belfast City Council is prioritising the management of urban waste, to create a quality materials product with the aim of supporting jobs via a circular economy.

The council's forthcoming Corporate Plan from 2020 to 2024 will prioritise new waste collection arrangements under the 10 Year Waste Framework Strategy. Through the Resourceful Belfast programme, the Council aims to maximise economic potential by creating social enterprises; and will develop a strategy which will ensure waste is managed effectively and investigate the economic potential of the circular economy to increase skills, jobs and inclusive growth.



## Risk to health and enjoyment of the city: air quality

The quality of urban air is a critical factor in the quality of life enjoyed by city residents, as well as a key health determinant. The World Health Organisation describes air pollution as 'the largest environmental risk factor for ill health' and estimates that in 2012 around 1 in 8 deaths were attributed to exposure to air pollution, and this is echoed by the UK Clean Air Strategy, published in early 2019.

### Cities that have been successful in enhancing air quality have tended to take a multi-faceted approach:

1. Setting evidence-based targets for reduction in harmful levels of pollutants- often exceeding national level targets
2. Dramatic reduction in fossil fuel dependent road transport and in combustion of fossil fuels- a sustained modal shift in travel and transport
3. Providing clear and easy to access public information on air quality levels, to enable informed decision making by the public on their travel routes
4. Well-resourced public education campaigns to help individuals and organisations understand how they could reduce their contribution to air pollution
5. Excellent partnerships between city government, health policy makers and innovators to identify new solutions to a systemic problem.

## Belfast Smart Cities Urban Health Programme

The Urban Healthy Living pilot was funded by UK Space Agency's 'Space for Smarter Government Programme' which adapts satellite-enabled air pollution monitoring to support public health programmes and healthcare delivery in an urban setting.



The project demonstrated the use of a space-enabled technology for traffic related air pollution monitoring and aimed to spur innovative interventions in healthy living and disease prevention. Using a blend of technology, the project produced air pollution models that were visualised on 3D maps, making complex information accessible. UHL also prototyped a routing map that could allow clinical patients to better self-manage their respiratory conditions by selecting the routes and modes of transport that limit their exposure to pollutants.

The project's research led to some important conclusions which are highly relevant for policy makers and city planners; that air pollution hovers long after traffic dissipates, and that weather is a determining factor. Those with COPD and asthma are much more severely affected by air pollution levels, and air pollution is increasingly linked with non-respiratory diseases including diabetes and reduced cognitive function.

## Conclusion

Belfast's economy is a high-carbon one- which will impact its resilience in the coming decades, as other cities transition to low-carbon futures. The speed and means of Belfast's energy transition will be critical to its economic future. However a timely and well managed transition has the potential to significantly boost inclusive growth in the city, to create jobs and to reduce fuel poverty.

When work commenced to prepare a resilience strategy in 2018, there were no formal citywide structures or plans in place across Belfast with either a focus on climate mitigation or climate adaptation. Data on the potential implications of climate change is still not held centrally (i.e. at a city wide level).



# PREVALENCE OF CAR USE



**Resilient cities are connected cities - they are places where value is placed on using the most sustainable means available to travel, so that the city is improved, not inhibited by the movement of people.**

The means by which a city's residents travel, has increasingly become a critical indicator of a city's resilience. Transport planning is now accepted globally as one of the main drivers of health, well-being and sustainable economic growth in a city.

**“Transport and travel policy has the potential to transform a city.”**

Residents routinely connect travel or transport with their perceptions of satisfaction with their city, and transport infrastructure is a key factor determining investor sentiment. Put simply, transport and travel policy has the potential to transform a city.

Belfast shares many of the challenges faced by other modern global cities- a legacy of critical infrastructure in need of significant investment, coupled with the need for new and modern modes of public transport and remaining high levels of preference for the car among many residents. These changes are set against a backdrop of UK targets to reduce CO2 emissions, and growing public concern regarding air pollution generally.

Practical changes in recent years have led to improvements. Developments have been made to the Metro Bus Network which has led to higher frequency services in core corridors.

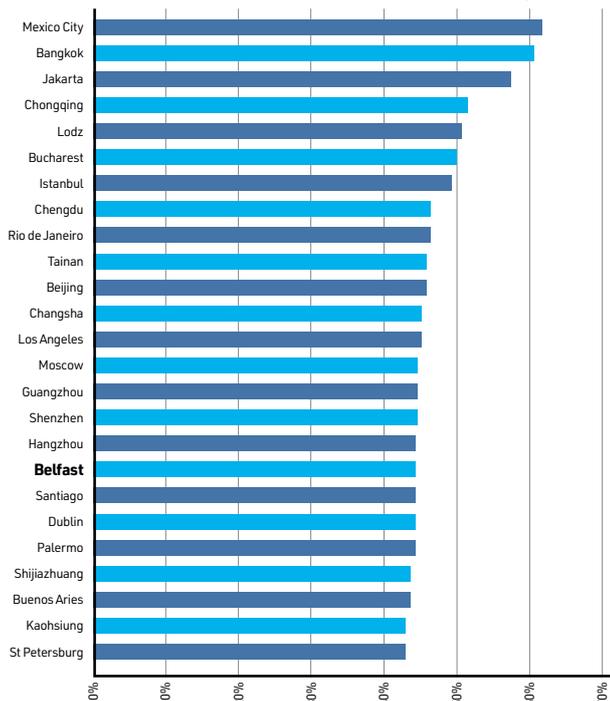
The commencement of the Belfast Rapid Transit (BRT) network in 2018 has made a transformational and positive improvement to the transport network in the city.

Numbers of passengers using the Glider have increased by 30% since its commencement and this will serve as an example of the importance of strategic and long-term investment in public transport, to drive inclusive economic growth and social outcomes across the city.

The Belfast Agenda - the community plan for the entire city makes important commitments regarding connectivity and sustainability. Belfast City Centre Regeneration and Investment Strategy has 'create a green centre, accessible to cyclists and walkers' as a core principle.

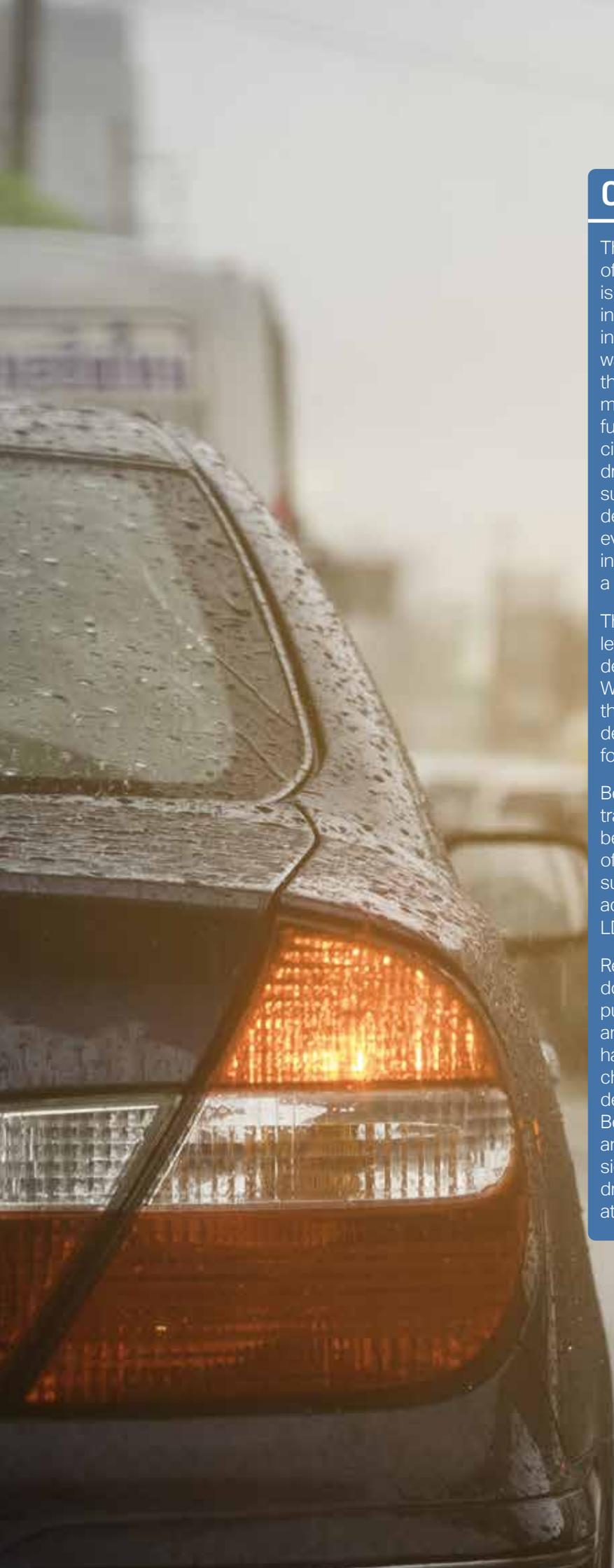


**TomTom traffic index top 25 global congested cities**  
Increase in travel times compared with free flowing traffic



## How prevalent is car use in Belfast?

- Belfast remains a car oriented city with 68% of households having access to at least 1 car.
- 53% of journeys made in Belfast between 2015-17 were car journeys, and just 11% were by public transport. This compares poorly to other similar UK and global cities.
- Relatively few households were close to a train station. 60% said it would take them 44 or more minutes or that it was not feasible to walk.
- Belfast's daytime population increases by 25% to accommodate people who travel to Belfast to work.
- Congestion levels in Belfast place the city in the TomTom Traffic Index Top 25 Global Congested Cities.



## Conclusion

The fact that the car remains the predominant feature of Belfast's transport infrastructure and network is a major risk factor for the city, and increasingly inhibits its resilience. While the city's transport infrastructure is functioning successfully in lots of ways, the prevalence of road infrastructure in the city, the numbers of daily car journeys and their impact on movement in the city and the dependency on fossil fuels for car use present major challenges for the city as it transitions to a low carbon economy. The draft LDP Technical Supplement makes the point succinctly, 'Belfast is a city that has historically been dependent on the private car and the streetscape has evolved to cater to these demands, resulting in road infrastructure that is over sized, over complicated and a barrier to non-motorised accessibility'.

The policy framework for transport at the city level, the Belfast Metropolitan Transport Plan was developed in 2004 for implementation to 2015. While many aspects of the plan remain relevant, there is a strong case, as Belfast sets targets for decarbonisation, to refresh the city's policy ambitions for sustainable transport.

Belfast's future resilience is dependent on its transition to a low carbon economy. This will only be possible with a material shift in the balance of its travel choices away from cars and towards sustainable public transport, walking and cycling as advocated in the approach to future growth in the LDP.

Research from cities across Europe, where the dominant mode of transport is walking, cycling or public transport demonstrates the health benefits and the transformational impact modal shift can have on peoples' satisfaction with their city. A step change in sustainable forms of transport would deliver two major city objectives at once- making Belfast a city that attracts and retains young people, and encourage them to live in the city centre. It would significantly increase the city's climate resilience and drive decarbonisation, making Belfast a much more attractive city in which to live.

# HOUSING SUPPLY IN THE CITY



**Economically resilient cities tend to have vibrant city centres, which act as economic drivers for the rest of the city, while also being a focal point for culture, tourism and connectivity. Climate resilient cities are increasingly investing in greater levels of densification within city centres to reduce urban sprawl and remove dependency on carbon intensive forms of travel.**

Belfast's city centre has experienced a revival in recent years with increased investment and regeneration. The development of a Regeneration and Investment Strategy has made the city centre an area of strategic focus, and has resulted in masterplanning of strategic sites in the city, e.g. Belfast Inner North West, and the Linen Quarter. Importantly, targets to increase the 'rates base', are intended to enable further investment in the city. Furthermore the city council established a City Centre Investment Fund to identify strategic opportunities to develop the city. This has boosted Belfast's economic resilience and made it much more capable of being prepared for shocks in the future.

A step change in the city's resilience would be achieved by the development of residential housing at scale in the city core. Prioritised as an area of focus in the Belfast

Agenda, the city's community plan, a new generation of housebuilding would transform Belfast City Centre and complement existing ongoing regeneration and development.

Progress in recent years in this area has been too slow with just 13 new homes completed in the city in 2018. This pace of completions significantly undermines Belfast's competitiveness and reduces opportunities for sustainable economic growth. Thriving cities need a ready supply of people living in the city core to contribute to a mixed economy and to make the city an attractive place to visit and invest.

While the existing economic headwinds for Belfast make large-scale residential development challenging, land values in Belfast are competitive, relative to other UK city centres. The right housing product at the right point in the economic cycle could prove successful. Examples from other cities include creative use of public subsidy (land or finance) through joint ventures with private or social partners to build at scale. Financial models might include borrowing against future receipts to fund a greater number of products, including shared ownership or 'key worker' housing.





## Social and affordable housing need

Lack of supply in the city core represents just one of several city-wide housing challenges. Social housing comprises almost 25% of all housing in the city, and therefore plays an important role in the city's economy, and contributes to the health and well-being of the population. However, housing need in Belfast has been consistently high in recent years, impacting the economic resilience of the city, with significant social consequences. At March 2019 there were 10,747 applicants on the waiting list for Belfast with 8,011 households in housing stress. The 2019 Northern Ireland Housing Executive Investment Plan proposes a 'new build requirement' of 4421 social homes from 2018-23 and intermediate housing demand of 550 for the decade from 2019.

Thriving, successful and inclusive cities require effective housing systems, that provide safe, decent and affordable housing for everyone. Belfast has a strong history of high quality, well-managed social housing provision. The city's future economic and climate resilience is therefore dependent on a supply of social and affordable housing, to ensure genuinely inclusive growth.

## Conclusion

Significant success has been achieved in making Belfast city centre an attractive investment proposition and this has yielded results for the local economy and the city more generally. However the city's future economic resilience and sustainable levels of growth require a permanent city centre population. Housebuilding at scale, which gives priority to good design and includes family housing is critical to the economic resilience of the city.

A new generation of homes should include a mix of tenures to accommodate households on a range of incomes. Lessons should be learned from other cities that have successfully applied cross-subsidy models to build social, affordable, shared ownership and key-worker housing alongside market rent and market sale.

Furthermore, smart and low-carbon housing respectful of the city's existing built heritage which encourages and incentivises use of public transport, would have additional benefits to the city including reduced air pollution.

# SEGREGATION AND DIVISION



**The signing of the Belfast/Good Friday Agreement in 1998 was a milestone in the city's history. Since then, the creation of new institutions, implementation of key aspects of the peace agreement and dramatic reductions in conflict related violence in the city have created the conditions for a for a more resilient Belfast. As the draft 2019 Good Relations Strategy for Belfast City Council sets out, 'we have come a long way as a city over the past 20 years...but there is much more to be done'.**



## Existing levels of segregation in Belfast

It is important to state that conflict is no longer the overriding risk factor for Belfast. However, the legacy of conflict has manifested in division, which continues to directly impact on the city and to undermine its urban resilience.

- Division between communities remains prevalent with low levels of trust and high levels of residential, educational, physical and social segregation in many areas.
- Belfast contains the highest number of interface areas in the region where segregation remains high. Inter-community tensions are reducing but continuing. There are estimated to be around 97 security barriers and forms of defensive architecture across residential areas in Belfast.
- Many people within our society still think of Belfast in binary terms - of a society made up of two communities; Catholic and Protestant. In many ways this binary view and its influence on public service decision making has accentuated division in our society by duplicating services and hampering the connectivity between people and communities. (GR Strategy).
- Physical and psychological barriers between communities make travel around parts of the city difficult. This has resulted in people avoiding certain areas perceived to be unsafe.

In developing this strategy, the issue of division emerged repeatedly as a perceived inhibitor to the city's resilience. In our stakeholder engagement, many individuals contended that until Belfast was truly a connected city, we would continue to be vulnerable to many risks.

**"We have come a long way as a city over the past 20 years...but there is much more to be done."**

The data bears this out. Several studies exist that demonstrate that conflict in cities significantly lowers their overall resilience to key risks- such as climate-related impacts, or food security. The existence of conflict or the threat of conflict exacerbates shocks and stresses, often making them more complex or expensive to solve.

If the residents of Belfast continue to think, travel and live in a binary way- the city's ability to respond to significant risks is weakened considerably.

The provision of parallel services adds to the cost of public services, reducing capacity in the system to respond to unexpected shocks.

Crisis management tends to be less effective when systems are disjointed or separate. Resilience requires integrated systems and cities, where a single decision is rolled out universally and speedily.

When cities are well networked, capacity can be shared - sometimes human capacity- e.g. moving people across cities during times of extreme weather events.

This is made more difficult and sometimes more expensive in cities where residential segregation is prevalent.

Lack of trust between communities, particularly those living in close proximity, means they are less likely to support each other - this adds to a city's vulnerability in times of crisis.



## Conclusion

Belfast's resilience is weakened because unlike other cities, it is not a socially cohesive unit. Yet cohesion and integration are critical in a crisis. Furthermore, separation reduces efficiency and wastes resources. For example, thousands of additional journeys are taken in Belfast each day because of its separate education system. In such a carbon intensive and car oriented city, this significantly adds to our CO2 emissions and makes responding to climate change more difficult, and potentially more expensive.

Climate change will present profound risks to all cities globally, during this century. Cities that can build their capacity to maintain essential services, recover from shocks and continually adapt are more likely to survive. Divided cities will be much more exposed to risk.

It is not a coincidence that Belfast's Resilience Strategy and its Good Relations Strategy have both prioritised 'connectedness' as a major problem to be solved. If Belfast is to thrive in the face of unexpected challenges, it must do so as a united, socially cohesive city.

# MENTAL HEALTH AND USE OF PRESCRIPTION DRUGS



**A healthy city is a resilient city. An abundance of data now exists that proves that cities that invest heavily and consistently in health and wellbeing of their populations - particularly in their children and young people - feel the benefits beyond social impacts, but also on their economic performance over the longer term. The Belfast Agenda rightly prioritises the reduction in health inequalities and encouragingly, the city's community planning structures are focusing attention on a range of health related urban 'problems' for example on reducing avoidable winter deaths.**

We have identified the issue of mental ill-health and use of prescription drugs as a major challenge for Belfast because of the regularity in which it emerged in our discussions with city partners. In fact, the issue of mental ill-health was one of the most talked about issues by stakeholders across the entire development of this strategy. It was just as likely to emerge in discussions on the economy as it was in discussions on societal challenges. Perhaps this should not be a surprise.

There is now a growing body of research examining the impact of cities on levels of anxiety and mental health. In 2019, Europe's first 'Urban Psychology Summit' was held to explore the links between urban renewal policy choices and serious mental and physical health impacts. Four key findings emerged. Firstly, that experience of place determines much of our development and wellbeing, and we should not separate the policies for one from the other; secondly, the discipline of psychology is missing from public policy debates and decisions at a city level; thirdly, that cities have the unique potential to support the development of a positive shared identity for its population; and finally that given rapidly rising urbanisation and worsening mental health, a stronger focus should be urgently placed on understanding more about the psychological impact of place upon people, and people upon place.

This emerging research suggests that Belfast is not alone in experiencing increased levels of anxiety and mental-ill health among its population. In developing this strategy, stakeholders repeatedly emphasised their perception of a prevalence of mental illness across all age groups, and that prescription drugs are playing a role in making some people less healthy, rather than more so.

**"A growing number of young children presenting with anxiety, stress and in some cases trauma."**

These two areas of focus featured overwhelmingly in our conversations with health and social care professionals.

Data on dispensing of medical prescriptions paints a worrying picture of the health and well-being of the population. In 2018, for a city with a population of 341,900 people, 8 million prescriptions were dispensed- an average of 23 prescriptions per person across the city. This figure is 9% higher than in 2012.

Drugs related deaths are also on the increase- in 2017, 136 people died as a result of drug taking, an increase of 60% on the decade before. Men are much more likely than women to die as a result of drug taking. Health outcomes for drug related mortality, male life expectancy at birth and teenage births were much worse than the NI average. The gap is also widening between the most deprived and least deprived areas of Belfast in relation to drug related mortality, smoking during pregnancy and respiratory admissions.

## Conclusion

Belfast is already a World Health Organisation Healthy City, and considerable progress continues to be made to improve health outcomes for its population. Because of the dominance of the issue of mental ill-health and prescription drug use in our workshops, and what the data suggests, we have highlighted the issue as a major challenge. Furthermore, there is a strong case for better understanding the impact of cities and indeed of place on our mental health, and greater involvement of the discipline of psychology in how we design, plan and manage our city. Since urban resilience requires cities to predict problems which may emerge in the future, it is strongly recommended that decision makers working at a city-level in Belfast give time and attention to understanding the impact of the city on its residents mental health.



## Belfast's mental health challenges

Data on mental health points to a significant challenge for the city and its people.

NI has a suicide rate of 27.3 per 100,000 for men and 9.2 for women. The comparison to England is stark where the rate is 14.0 for men and 4.6 for women, with 307 deaths by suicide in NI in 2018. Since the 1990s the absolute number of deaths from suicide in NI have doubled (in 1993 there were 151, now the figure is 307). In Scotland since 1993 they have dropped by around a third (in 1993 912 deaths now 680). Belfast Health trust has the highest overall suicide rate of any trust in NI. (Source: NISRA/Samaritans UK).

Anecdotal evidence from our conversations with practitioners across the city would suggest that people are presenting to health and social care services with anxiety, stress or more serious forms of mental-ill health at an increasingly younger age. One organisation reported that a recent review of their case files demonstrated a growing number of young children presenting with anxiety, stress and in some cases trauma. One to one conversations with mental health practitioners confirmed their view that Belfast is experiencing growing levels of mental ill-health, and a small number suggested further work is required to understand the relationship between today's presentations and the conflict.

# UK EXIT



**At the time of writing, the nature of the UK's withdrawal from the European Union remain unclear. Future negotiations on the UK's trading relationship will have enormous implications for Belfast's economy and for the wider region.**

A number of studies have been undertaken to assess the future impact of UK Exit on NI, however there is no published central government assessment of the potential impacts of UK Exit for the city of Belfast or for similar UK cities. Belfast City Council's Brexit Committee has overseen the undertaking of an internal audit 'On the potential impact of Brexit - Day One Preparedness' to ensure readiness in relation to impacts for Council services.

Earlier this year, a previously confidential study undertaken by the UK government detailing 142 areas of life in NI that will be impacted by Brexit was published by the House of Commons Exiting the EU Select Committee. The document is instructive in outlining the range of policy and practice areas - beyond trade and customs checks - that would be affected by a managed UK Exit. Furthermore, it highlights the scale and nature of formal and informal cooperation between the two jurisdictions on the island of Ireland, some of which may be impacted by a managed exit, and some adversely impacted by an unmanaged exit (i.e. departure without a deal).

**It is extremely likely that a disorderly withdrawal by the UK from the EU, or unsuccessful future trade negotiations would represent both a short-term shock to the city, and have longer term implications for the operation of the economy.**

## Conclusion

The UK's decision to leave the EU has much broader and longer-term implications for the city of Belfast. Significant re-framing of our relationship with cities in Europe is required; work to sustain levels of investment in a new trading landscape will also take time; and its funding relationships with key EU bodies requires careful planning into the future. For these reasons, UK Exit from the EU will remain a significant area of focus and of risk management for the city.



# CYBER RESILIENCE



**A resilient city is reliant on its digital infrastructure, data and associated cyber security. As cities increase their digital dependency their exposure to attack grows. A resilient Belfast will be able to deliver its essential services in the event of any breach.**

As Belfast grows, and becomes increasingly reliant on a digital eco-system to achieve its ambitions, its ability to mitigate and manage data and cyber security risks will be essential. Experience from other cities with a sophisticated data infrastructure shows that as cities increase their digital dependency, their exposure to attacks also grows (McKinsey, 2018). A smart Belfast must therefore be a secure and resilient Belfast. Being a cyber-resilient city means more than just being secure- it means being capable of delivering essential services in the event of a breach.

A security breach has the potential to disrupt the city; however, cyber-crime has increasingly affected communities and individual households too. Cyber-crime knows no borders and while authorities have experienced increasing levels of sophistication in mode of attack in recent years, low-level basic opportunistic attacks remain prevalent.

**“Being a cyber-resilient city means more than just being secure - it means being capable of delivering essential services in the event of a breach.”**

A significant cyber incident can affect the functions of the city - organisations and the public need to consider the impact which a major incident will have, what measures are needed and how to recover. Cyber security planning should be part of routine risk management and should be embedded in the structures and objectives of every organisation and business.

The National Cyber Security Centre, which is part of GCHQ, is a well-established source of information regarding escalating volumes and types of threat. While this is extremely valuable at a national level, at a city level more work is required to develop more cross-sector plans to future proof our digital environment.

## Development of digital infrastructure and connectivity

Secure digital infrastructure is critical to the fabric of any modern city- to support its social and economic goals. In recent years, Belfast has improved its digital connectedness - however it must retain this advantage through (1) a strategic approach to the development of a smart/digital city (2) sustained investment in the growth of its digital infrastructure (3) significant focus on the security and resilience of our digital infrastructure assets.

A number of key reports have recently made a similar case. Matrix, the Northern Ireland Science Industry Panel, formed a sub panel of experts in the Digital ICT sector to look at the opportunities within the sector and produce a capability assessment and foresight study into NI's Digital Information and Communications Technology sector. Its 2016 report made a number of significant recommendations that - while focused at a NI level - remain highly relevant to driving Belfast's economic resilience:

- Develop and deliver a coordinated Digital Strategy to bring together the key stakeholders and initiatives required to transform NI into a fully digitized and Smart society and appoint a Chief Digital Officer to build a digital society.
- Develop a 3-5-10 year Skills Investment Plan for the Digital ICT sector.
- Ensure that NI has an exemplar digital infrastructure within and between urban areas to secure NI as an exemplar smart, connected region.
- Provide an integrated, agile platform, based on open standards which expose appropriate data and service APIs to nurture the development of an innovative ecosystem.
- Ensure that the cyber security sector is supported and developed.

Belfast is well placed to build its cyber resilience, in part due to the development of cyber security expertise in the city. CSIT, the Centre for Secure Information Technologies at Queen's University is recognised for its world class research, and its work to enable new value and venture creation and ensure an entrepreneurial approach in the area of cyber security. It facilitates 'NI Cyber' a cluster of companies based in Northern Ireland that are developing world-leading cyber security technologies for customers worldwide.

Belfast City Council has prioritised a ‘smart cities’ approach to digitising and connecting the city, to achieve its economic and social ambitions, and in turn contributing to the city’s resilience. Smart Belfast brings together our universities, businesses, local government and citizens to collaborate, innovate and experiment using cutting-edge technologies and data science.

The Matrix report was instrumental in informing the Belfast Region City Deal Innovation and Digital Pillar, which will deliver a number of its recommendations at a city-region level.

- The Regional Innovators Network (RIN) will create a unified environment in which the districts across the Belfast City Region are able to work together to develop and deliver a response to the regional needs for spaces within which entrepreneurs and SMEs can develop new products and services, and work with the larger businesses in the region.
- The Infrastructure Enabling Fund (IEF) will support the deployment of advanced and resilient connectivity infrastructure across the Belfast region.
- The Smart District & Regional Testbed Network consists of key locations across the Belfast Region that will act as hubs for development of advanced digital and physical infrastructure and will foster early adoption of new digital products and services at large scale.
- The Digital Innovation Platform and Partnership (DIPP) is a shared physical and digital environment where academic research community, tech entrepreneurs and industrial partners will come together to address key challenges in business and society through the application of the Internet of Things (IoT) and data science.



### Belfast’s objectives to ensure cyber and digital resilience should be:

- To make Belfast unattractive to cyber criminals - through resilience and recovery.
- To build an eco-system of supported city partners.
- To build a pipeline of skills and education.

Belfast Region City Deal is a ‘once in an generation’ opportunity to build Belfast’s resilience by increasing its digital connectivity.

#### The Infrastructure Enabling Fund (IEF) will:

- Support the deployment of advanced and resilient connectivity infrastructure across the Belfast Region.
- Catalyse digital innovation towards increased productivity and inclusive economic growth.
- Manage the deployment of advanced wireless and fibre network infrastructure over the lifetime of the City Deal comprising of 4G LTE, Wi-Fi, IoT, optical and 5G technologies.
- Develop next-generation infrastructure to support the provision of a range of connectivity services, and will be critical for businesses within the Belfast region to catalyse their growth by having access to the latest communication technologies.
- Provide high value sectors in the City Region with the digital infrastructure needed to test the application of new and emerging digital technology and solutions.

This will provide a significant boost to our economic resilience. Critically, the Digital and Innovation Pillar of the City Deal will be implemented in an integrated way- to ensure that the outputs and outcomes arising from the City Deal are directed and driving inclusive economic growth in the City Region. However, it places even greater emphasis on the importance of secure and resilient infrastructure.

### Conclusion

There is no single coordinating body for the identification and management of cyber risk at a city level. While some individual organisations have developed cyber resilience plans to varying degrees of sophistication, this remains ad hoc, and with very little support for small organisations, and little focus on business continuity following a potential cyber or digital attack. Furthermore, there has been no single published account of the potential cost implications of a cyber-security threat to the city.

Protecting the city from cyber threats should be considered the collective responsibility of senior leaders across the city. This strategy advocates closer working relationships across organisations in Belfast- with academia and the private sector - sharing threat information and good practice and collaborating to make it more difficult for cyber threats to succeed.



# THE GOVERNANCE AND FINANCING OF RISK IN THE CITY



**Stable governance is an essential prerequisite for any resilient city. Compared to some global cities where decision-making is marred by conflict or corruption, Belfast has well-defined political and administrative structures, underpinned by law, and with modern modes of accountability.**

However, the complexity of challenges faced by cities demands a governance in which comprehensive policy reform, supported by strategic long-term financing is the norm, and whereby the relationship between central and local government is mature and collaborative. These characteristics are not sufficiently in place in Northern Ireland, which leads to significant implications for its regional capital.

The 2019 competitiveness study commissioned by Belfast City Council made a number of prescient comments regarding growth in the city. 'It is difficult to quantify the impact that NI's governance structures (and indeed lack thereof) have on Belfast's competitiveness but it is evident that other competitor cities, with a larger arsenal of policy levers, have delivered faster growth across key competitiveness areas.

This section examines the particular characteristics of governance in Belfast and makes some observations intended to improve the governance and financing of risk.

- Governance in NI is more regionally centralised than other parts of the UK. From a city perspective, this is particularly relevant, as resilient cities require robust urban policy- with clear strategic objectives and the levers to deliver them. In NI, a much greater range of responsibilities sits at central government level when compared with powers of local authorities in England, Scotland and Wales. Strategy and delivery is spread across a range of arm's length bodies, usually working to a regional remit. Further devolution of powers from central government to local government has been slow, and inhibits real partnership and collaboration between central and local government, which is often necessary to unlock external investment at a city level. The draft Programme for Government (2016-2021) contains just one proactive 'city policy' - an ambition to strengthen Belfast as the regional economic driver but is not accompanied by a tangible plan. The draft PfG outcomes are lacking indicators at a city level, and no single government department or body has responsibility for cities. In short, urban policy in NI is immature and ill-developed. This, coupled with a highly centralised system of governance, and a fragmented spread of powers and obligations across arm's length bodies, makes the building of Belfast's long term resilience more challenging.
- Lack of urban policy has been compounded by the long-term absence of Executive Government in Northern Ireland. A recent publication by the Institute of Government examined some of the implications for NI of governing without ministers. It noted the work of the Northern Ireland Civil Service in carrying out departmental functions and running public services on a day-to-day basis. However, it was definitive in its assessment that long term public sector reform is virtually impossible without Ministers, pointed to a growing list of outstanding policy decisions and concluded that it is the people of NI who suffer the consequences of a lack of political leadership.
- The length of the suspension hampered long term reform, precisely at the point when it was needed. Several of the 'shocks and stresses' identified in this strategy have emerged or been accelerated due to lack of public service reform in NI or due to how services and infrastructure are financed (see below). Tackling these issues will require long term vision, collaboration between central and local government and the private and NGO sectors, and a shift in risk appetite to enable untried policy reform to commence. The UK's decision to leave the EU requires systemic, cross government planning of the long-term implications of a reformed relationship with the European Union and the long-term trading relationship between NI and the rest of the world. Other parts of the UK have commenced this work- without Ministers, it is virtually impossible to make meaningful progress. Without ministers, substantive decisions on how NI transitions to a low-carbon economy have not commenced, whereas regions and cities elsewhere are gaining competitive advantage from large scale investment in innovation.
- However, it should be noted that policy reform, even when ministers are in place, is often difficult. As the IoG notes, 'the politics of NI and its distinctive constitutional arrangements militate against effective policy making on long-term issues. These particular characteristics of NI's governance potentially weaken our resilience to stresses over the long term and may incentivise 'shorttermism'. There is therefore a strong case for reviewing and

reforming how difficult, complex and contentious decisions are made - at a regional and a city level. Some regions and cities have identified new structures, such as citizens assemblies to make recommendations to government on contentious issues. In other instances, independent commissions are established to focus on a particular complex issue. In the long term, when ministers are returned, new structures to aid and advise them through difficult policy decisions, and preferably with a strong civic voice, are needed. Lessons should be learned from other countries that have prioritised the development of a vibrant policy community and strong civic participation.

- Despite the difficulties associated with power sharing and following the suspension of the Northern Ireland Executive, political parties continue to work together effectively at local government level. Councils across NI have been developing and delivering community plans - critical documents to inspire and drive cross agency collaboration at a city-wide level. In Belfast, the Community Planning Partnership has taken strong ownership of 'Belfast Agenda', and meaningful collaboration is taking place across agencies on issues relevant to the city. For example, the 'Living Here' board is currently progressing a cross-agency project to reduce winter deaths in the city. This sharing of risk and reward has also been seen working very effectively across local councils in the Belfast city region, working collaboratively with universities and colleges to successfully bid for a Belfast City Regional Deal, which could leverage £1bn in funding across the city region.
- The affordability of building resilience is a major challenge for the city, though Belfast is not alone in struggling to finance future risks. In its 2019 Risk Report, the World Economic Forum warns that 'Robust risk financing strategies will be required, both to fund investment in adaptation and to pay for recovery when floods occur'.

However, as has been documented, some of the risks to the city of Belfast are not currently solvable at a city-level, because governance and finance is centrally held. The city is reliant on NI central government to develop funding models for infrastructure. If Belfast is to succeed in meeting those highly complex challenges, the city and the NI Executive must work in partnership to find new forms and models of finance as other cities have done. Councils are increasingly reliant on the district rate for their funding, and this should be reflected in the decisions they take on future financial structures.

- Improvements to how government is financed should include reform of the existing 'short-termism' applied to financing at a regional

level. Unlike in the UK where three-to-five year spending rounds are the norm, NI departmental allocations are chiefly managed on an annual basis. This has obvious implications for how major programmes are designed and delivered.

- However, perhaps most challenging and importantly of all are the decisions to be made in how major long term infrastructure is funded. This must be a major area of priority for a new Executive and must include local government as a partner in the process. The Institute of Government report makes an interesting, if controversial, point regarding the level of regard shown to value for money in NI. It points to examples of where NI has continually extracted finance from the UK taxpayer or the EU and suggests this readiness to accept external funding disincentives difficult decisions from being taken. Whatever the reasons for not having well planned financial models in place, as levels of infrastructure investment increasingly become a chronic risk for the city, decisions must be taken on how best to make up the shortfall, while also building in resilience for the future. This is a major risk for the future, and must be tackled urgently.
- The development of this strategy has identified a number of areas of risk which could be dealt with effectively at a city level. Stronger city-wide economic levers would be beneficial in enabling the city to plan for its future. The RSA's City Growth Commission concluded that 'innovative, competitive and resilient economies are built on stable institutions that engender trust between trading partners, encourage investment in infrastructure and public services, and build socially productive communities'. This is a complex area and will require collaboration across central and local government and agencies, e.g. The Department of Infrastructure, Belfast City Council, Northern Ireland Water, Translink etc. At the very least, agencies and organisations in Belfast should work together to arrive at a single figure for the cost of building the necessary infrastructure to make the city resilient for this century, and identify the 'GDP at Risk' figure of not funding it effectively. They should then work together with the NI Civil Service to explore and identify new financial models that would encourage investment in long term infrastructure and other necessary capital projects, in a coordinated and joined up way.
- Thinking beyond NI's internal partnerships, the decision of the UK to leave the EU re-emphasises the importance of 'city to city diplomacy' for Belfast. The quality of its relationships with other cities in Europe and globally will be a key determinant of its potential to attract investment, encourage trade and build partnerships. Its membership of Eurocities, and of the 100 Resilient Cities

network is important, and so too is its 'sister cities' programme, however this work must be brought to the fore as a core driver of its growth strategy. There is sufficient global research, from the OECD and elsewhere to make the case for a focus on cities to be driven by central government. A new Northern Ireland Executive should take greater responsibility for the future of its cities and design a new form of governance to drive collaboration between NICS, Belfast City Council and agencies across the city. This should inspire a renewed focus on how cities have enormous potential to be engines of sustainable growth and places for innovation, creativity and well-being.

## Conclusion

Governing a post-conflict city with continued high levels of segregation is a daily challenge, and therefore continuity of stable local government in this context should be considered a success. However, Belfast's governance needs to be increasingly designed for future challenges- and for dealing with complex challenges that are taxing all cities, such as climate change, energy transition and creating a low-carbon economy. There is a strong case for reviewing and enhancing the powers and obligations of local government to ensure they are fit for purpose given the complex challenges ahead.

Robust urban policy is needed at Northern Ireland Executive level if Belfast is genuinely to be a driver for sustainable economic growth not just at city level, but at city region level.

Long term financial planning and new financial models for funding city infrastructure are critical if Belfast is to be genuinely resilient to climate change and to future economic cycles. A review of investment opportunities should be undertaken to explore opportunities for funding infrastructure at a city level, potential partnering with local government and new accountability frameworks.

Agencies and organisations in Belfast should work together to arrive at a single figure for the cost of building the necessary infrastructure to make the city resilient for this century, and identify the 'GDP at Risk' figure of not funding it effectively. They should then work together to explore and identify new financial models that would encourage investment in long term infrastructure and other necessary capital projects, in a coordinated and joined up way.



A BIGGER  
MESSAGE  
THAN M...

WE STAND  
FOR  
WHAT WE  
STAND  
ON

ECT  
ENCE OF  
CT  
ANGE  
UST

SYST  
CHA  
NOT

ET.

IT'S GETTING  
HOT IN HERE  
SO TAKE OFF ALL  
YOUR COATS

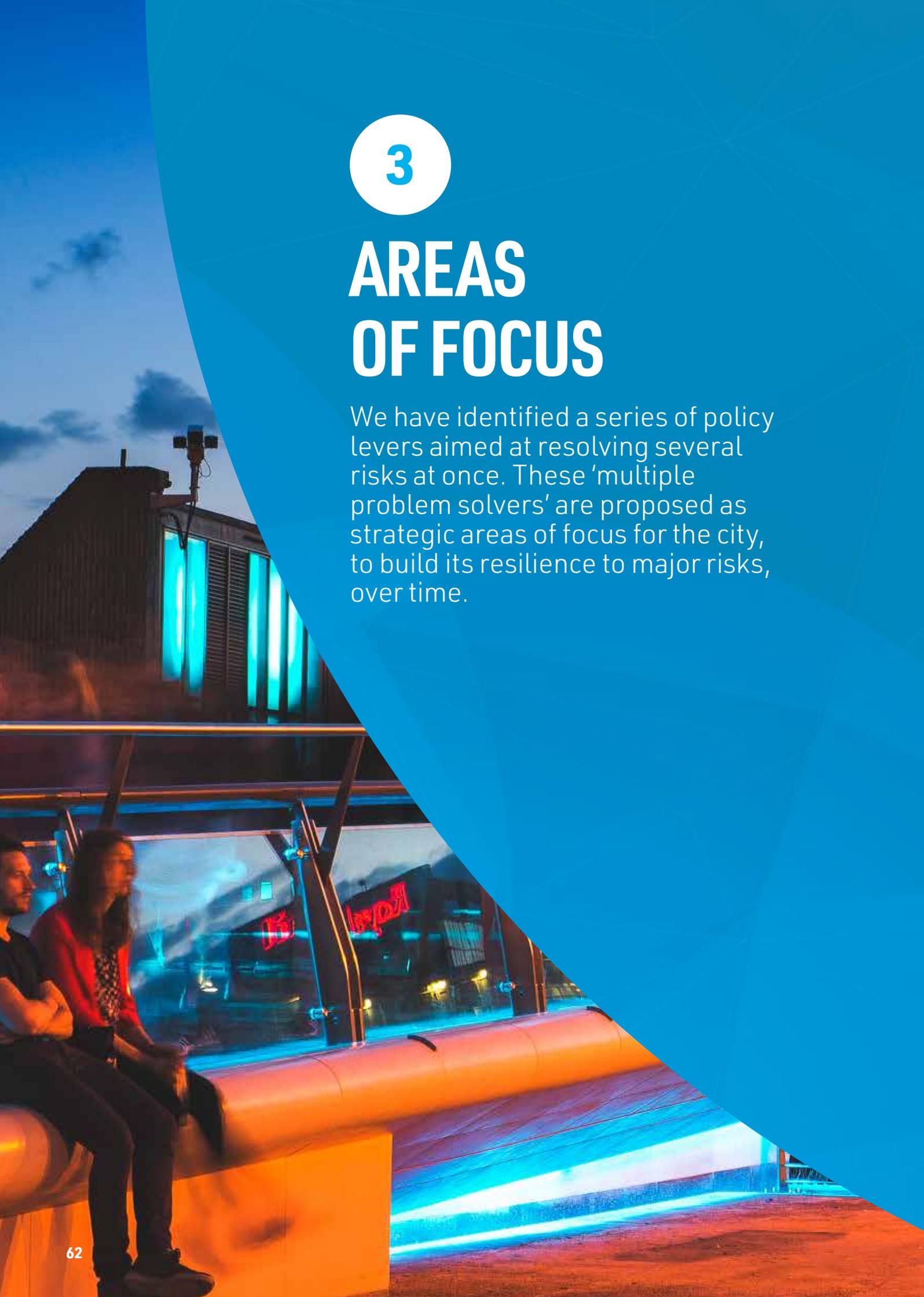
#FRIDAY  
YOUTH S...

# RESILIENCE GOAL



Our goal is to transition Belfast to an inclusive, low-carbon, climate-resilient economy in a generation.





# 3

## AREAS OF FOCUS

We have identified a series of policy levers aimed at resolving several risks at once. These 'multiple problem solvers' are proposed as strategic areas of focus for the city, to build its resilience to major risks, over time.

# AREAS OF FOCUS



**CLIMATE RESILIENCE** 

Page 66



**CHILDREN AND YOUNG PEOPLE** 

Page 70



**CONNECTIVITY** 

Page 75



# DELIVERY OF UN SUSTAINABLE DEVELOPMENT GOALS



**Belfast's Resilience Strategy has been informed by, and is aligned with the UN Sustainable Development Goals.**

The 2030 Agenda for Sustainable Development is an historic global agreement to eradicate extreme poverty, fight inequality and injustice and leave no one behind. Agreed by world leaders at the UN in 2015, the 17 Sustainable Development Goals (SDGs) succeed

the Millennium Development Goals (MDGs). The SDGs are universal with all signatories- including the UK- expected to contribute to them internationally and deliver them domestically.

**Belfast's Resilience Strategy contributes to the delivery of these important global goals.**



|  |   |                                       |   |   |
|--|---|---------------------------------------|---|---|
| <b>United Nations: Sustainable Development Goals</b> |   |                                       |   |   |
| <b>1</b><br><br>No poverty                           | <b>2</b><br><br>Zero hunger                             |                                       |   |   |
| <b>3</b><br><br>Good health and well-being           | <b>4</b><br><br>Quality education                       | <b>5</b><br><br>Gender equality       | <b>6</b><br><br>Clean water and sanitation              | <b>7</b><br><br>Affordable and clean energy             |
| <b>8</b><br><br>Decent work and economic growth      | <b>9</b><br><br>Industry, innovation and infrastructure | <b>10</b><br><br>Reduced inequalities | <b>11</b><br><br>Sustainable cities and communities     | <b>12</b><br><br>Responsible consumption and production |
| <b>13</b><br><br>Climate action                      | <b>14</b><br><br>Life below water                       | <b>15</b><br><br>Life on land         | <b>16</b><br><br>Peace, justice and strong institutions | <b>17</b><br><br>Partnerships for the goals             |

# LEGEND KEY



| Area of focus             | Programme | United Nations: Sustainable Development Goal | Quality of resilience |
|---------------------------|-----------|--|-----------------------|
| Climate resilience        | 1         | No poverty                                   | Reflective            |
| Children and young people | 2         | Zero hunger                                  | Resourceful           |
| Connectivity              | 3         | Good health and well-being                   | Inclusive             |
|                           | 4         | Quality education                            | Integrated            |
|                           | 5         | Gender equality                              | Robust                |
|                           | 6         | Clean water and sanitation                   | Redundant             |
|                           | 7         | Affordable and clean energy                  | Flexible              |
|                           | 8         | Decent work and economic growth              |                       |
|                           | 9         | Industry, innovation and infrastructure      |                       |
|                           | 10        | Reduced inequalities                         |                       |
|                           | 11        | Sustainable cities and communities           |                       |
|                           | 12        | Responsible consumption and production       |                       |
|                           | 13        | Climate action                               |                       |
|                           | 14        | Life below water                             |                       |
|                           | 15        | Life on land                                 |                       |
|                           | 16        | Peace, justice and strong institutions       |                       |
|                           |           | Partnerships for the goals                   |                       |

# CLIMATE RESILIENCE



**The implications of climate change present the single biggest long-term economic risk to the city of Belfast. Our future economic growth must therefore be inclusive, sustainable and low-carbon.**

- Belfast to be 'climate ready' i.e. prepared for changes to the city's weather, to our water, and to our biodiversity arising from climate change. To prevent economic shocks arising from climate change. To build community resilience to respond to the impacts of climate change. To transition to a low-carbon economy.
- Belfast is facing a climate crisis. A harbour city, and already an area of significant flood risk, our proximity to water and the increasing presence of water in our city as the climate warms is a significant risk. Pockets of poor air pollution and our dependence on cars as a form of transport, coupled with the prevalence of hard infrastructure throughout the city highlight a series of interconnected challenges, which if left unchecked will leave the city exposed.
- Our ability to respond to a changing climate will fundamentally impact on the city's economic prosperity in the years to come. The prevalence of extreme weather events will require additional city resources; the design, development and location of future developments will be impacted by climate events and our attractiveness as a destination to live work and enjoy will all be impacted by our ability to prepare for, respond and absorb climate related shocks and stresses.
- The Intergovernmental Panel on Climate Change (IPCC) warned in 2018 that cities have twelve years to make rapid, far-reaching and unprecedented changes in all aspects of society in order to limit global warming to 1.5°C. Belfast must heed that warning and make climate resilience an urgent and strategic focus for the entire city.
- Furthermore, our dependence on energy will increase. The IEA has previously projected that energy demand in cities globally will increase by 57% by 2030 - managing energy demand and energy security therefore represent a major challenge for all global cities - including Belfast. Informed by our conversations with a multitude of stakeholders and our analysis of data we have identified the following high-level objectives for a city-wide focus on climate resilience.

### 1 Resilience and Sustainability Board



We will start by establishing a new Resilience and Sustainability Board - a permanent part of our Community Planning structures for the city. The Belfast Resilience and Sustainability Board will bring together key agencies and organisations focused on preparing for climate change. Its immediate objective will be to develop a Climate Adaptation and Mitigation Plan for Belfast.

### 2 Mini Stern



Belfast City Council is a key partner in the work of the Place Based Climate Action Network (P-CAN) Belfast Climate Commission with Queen's University. In early 2020, we will have produced and launched a so-called 'Mini Stern', following the model pioneered by Leeds University, to present an economic case for decarbonisation and enable us to prioritise our investment in the right way.

### 3 Climate change risk assessment



We have commissioned Arup (our 100 Resilient Cities strategic partner) to undertake a high level climate change risk assessment- to provide us with an assessment of the potential impact of climate change on the city's infrastructure. This work will inform Phase One of the strategy, and we will consider other additional methods of risk assessment in due course.

### 4 Climate resilient infrastructure



We will develop a fundamental understanding of the climate impacts on existing and forthcoming infrastructure, with a view to ensuring that forthcoming development in the city does not add to our risk exposure.

### 5 Carbon Budget



By end of 2021, we will have agreed a Carbon Budget for Belfast - an agreed definition of what counts towards our 'carbon footprint', a target for the amount of carbon the city will produce, and an agreed date to become a Net Zero Carbon City.

### 6 City-wide support organisation



We will explore the feasibility of establishing a city-wide support organisation drawing on the on 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.

### 7 Low Carbon Economic Areas



We will consider how to establish 'Low Carbon Economic Areas' across the city to act as 'test beds' for new low-carbon technologies and ensure integration with delivery of Belfast City Deal priorities.

### 8 Training and skills for an inclusive low-carbon economy



Working with its education partners, Belfast City Council will explore the development of a major programme of training and skills for a generation of professionals to lead our transition to an inclusive low-carbon economy. Inspired by the Canadian Academy for Sustainable Innovation, we will aim to set a target to provide thousands of professionals with the skills, knowledge, and experience to manage our move to a sustainable future by 2050.

**9 Air quality**



Recognising the critical importance of good air quality to the health of our residents, Belfast City Council will (1) consider ways to enhance air quality monitoring in the city - including for nitrogen dioxide and fine particulate matter (2) set out our own ambitions on air quality in a new Air Quality Plan to be written in 2020 in light of evidence and to take account of any new government standards (3) drive systemic change away from carbon intensive high polluting forms of transport to sustainable, clean modes of travel.

**10 Asset management strategy**



Belfast City Council will review its asset management strategy so that all built assets maximise opportunities for efficiency in the use of energy and natural resources.

**11 Belfast Region City Deal**



We will build sustainable development priorities into our City Deal implementation to ensure climate resilience is built in to delivery outcomes. In establishing a 'Smart District' for the city, we will set ambitious targets for decarbonisation, health and well-being.

**12 Green Business Network**



Belfast City Council will support the establishment of a Green Business Network - an ecosystem of local businesses who make climate adaptation and mitigation a core priority. The council will work with business in developing the skills and training required.

**13 One million trees**



Belfast City Council will work with a range of organisations with aim of planting one million trees in the next fifteen years. This is Aligned with our Open Spaces Strategy, and Green and Blue Infrastructure Strategy, where forestation and tree-planting are emphasised as a core part of building our climate resilience.

**14 Planning policies for climate resilience**



Belfast's draft Local Development Plan provides the statutory framework for ensuring that land-use in Belfast delivers a climate resilient city. As the LDP progresses, Belfast City Council will develop a series of planning policies that drive the city's objectives on climate resilience and that accelerate decarbonisation.

**15 Green Policy for Festivals**



Delivering a culturally vibrant Belfast through our Culture Strategy, we will design and implement a 'Green Policy for Festivals' in Belfast.

**16 City's food needs**



In developing this strategy, we have had insufficient time to look in detail at the city's food needs into the future, however this is a priority for strategy implementation. Working with partners across the city, a workstream examining the climate impacts and opportunities for an ongoing and city wide programme of healthy and sustainable food will be critical to Belfast's resilience.

# CASE STUDY: CLIMATE RESILIENCE

3



## Cape Town: water resilience and avoiding day zero

**Cape Town made international headlines in 2017 when they faced the prospect of an imminent “Day Zero”, a scenario in which the city government would have to turn off the water distribution networks to conserve water, in response to experiencing the driest three-year period since the 1930’s. The city’s normal recourse was to increase water restrictions but more action was needed.**

Capetonians mobilised to take remarkable action. Lawns and water sensitive plants were replaced with less water reliant alternatives. Residents invested in water saving devices such as low-flow taps and shower heads. Community organisations developed their own response strategies. Some corporations went off-grid, turning to groundwater or desalination. The local government worked tirelessly with businesses to share information, hear concerns, plan and became much better at partnering. This collective response would eventually drive down water consumption by over 50%. Day Zero was called off in 2018 and later removed as a possibility for 2019.

Positively, behaviours have changed permanently as residents’ water-saving and efficiency behaviours

endured, even as restrictions were gradually lessened. Water consumption is unlikely to ever return to pre-drought levels. Cape Town’s achievement is evidence of the positive impact that partnering with residents and stakeholders at all levels can have on a city’s governance and operations.

# CHILDREN AND YOUNG PEOPLE



**To put children and young people at the heart of their own city - to make Belfast a playful city, and the best place in Europe to grow up. To give every child in the city, the best possible, healthiest urban childhood.**

35% of Belfast's population is aged 25 and under. Young people are a major asset for the city, especially given the shocks and stresses outlined in earlier, e.g. the risk of population decline, outward migration, and how we build our economic resilience.

A young population provides Belfast with a bright economic future in a range of ways - not least as a source of future talent. If young people are properly involved in the decisions that affect their lives, they could also help to shape a transformed sustainable economy for the city.

If we fail to provide children and young people with an excellent experience of their city, they will choose to live elsewhere, compounding existing stresses. A goal that puts children and young people at the heart of our city means fundamentally rethinking how we plan, design and manage the city.

**“Designing a city in the best interests of children is critical to Belfast's resilience.”**

Building a child-friendly city is also critical to attracting today's skilled and talented workforce to the city, particularly those with children. Cities like Rotterdam and Vancouver have taken ambitious steps to make urban environments attractive to families, retaining skilled workers and driving the local economy.



We have been inspired and encouraged by action taken in New Zealand - particularly Christchurch - and in Wales where there is a strong policy focus on 'Future Generations', and by Medellin in Colombia, which has invested in a Children and Young Persons' 'Unit' in the City Government.

A city's design has an immense impact on the health and well-being of children. Sustainable healthy cities are also child-friendly cities. Designing a city in the best interests of children is therefore critical to Belfast's resilience.

The physical environment in which children live is a key determinant of their health, behaviour and development. Research and practice from other cities shows that a strategic focus on connectivity - walking, cycling and play - can improve the health and well-being of children and young people. Conversely, high-density traffic, poor air quality and a lack of public space can directly discourage people from being physically active, in turn, impacting on their health prospects. Child-centred urban planning is critical to achieving Belfast Agenda priorities on inclusive growth, and importantly to achieving a step change in differences in life expectancy.

Designing our city for children has advantages beyond the child. There are several global studies that show that how a child plays has direct positive influence on adult behaviour; prompting more use of public outdoor space by adults and greater social interaction. Furthermore, greater use of shared public space by children inspires greater intergenerational connections, reducing isolation and promoting mix within and across communities.

**“A focus on child-friendly urban design could be a powerful tool in improving relations across the city.”**

The prevalence of cars - is considered one of the biggest barriers to child-friendliness and a key factor barrier to independent mobility for children. Less independent mobility for children means reduced access to and experience of the city and fewer possibilities to take advantage of the city's opportunities. Urban design therefore plays a critical role in ensure equal access to the city for all age groups.

In developing this strategy, we have adopted the seven key principles developed by Arup in its **Designing for Urban Childhoods** report:

- 1 The quality of life experienced by urban populations, and particularly by children, will determine our global future.
- 2 Child-friendly urban planning is a vital part of creating inclusive cities that work better for everyone.
- 3 Focusing on the needs of children can help act as a unifying theme for the promotion of progressive ideas and ambitious actions.
- 4 Children's infrastructure can help to enhance the economic value and long-term viability of the urban environment.
- 5 Providing multifunctional, playable space - beyond the playground - can enable everyday freedoms and create a public realm for all ages to enjoy together.
- 6 Interventions at the neighbourhood scale offer the greatest potential to create a children's infrastructure network that allows safe and enjoyable journeys.
- 7 Decision makers should be opportunistic and strategic, and integrate child-friendly thinking into all aspects of city making.

**"With children projected to make up the majority of the world's urban population by 2030, the quality of life experienced by children in our cities will in many ways determine our global future."**

Arup, Design for Urban Childhoods

## A 'Design for Life' for Children

In its design guide for urban childhoods, Arup identifies the five core challenges of urban childhoods: traffic and pollution; high-rise living and urban sprawl; crime, social fears and risk aversion; isolation and intolerance; and inadequate and unequal access to the city. These challenges have informed our priority areas for action, and will continue to shape how we go forward.

Children's infrastructure is the network of spaces, streets, nature points and routes which make up the key features of a child-friendly city. They help to deliver a more inclusive, playful and resilient public realm. Arup's 'Urban Childhoods' guidance emphasises that a key focus area for children's infrastructure are the streets and the spaces in front of people's homes. The document references that on average, these spaces make up at least 25% of a city's space and have the greatest potential to encourage everyday freedoms and social interaction.

In practical terms, this means that children's infrastructure is about much more than playgrounds - and should focus on an intergenerational and multifunctional public realm that families and communities can enjoy together. Furthermore, practice from other cities shows that resilient cities tend to enhance a child's connection to nature through green and healthy environments. They influence and impact a child's everyday journeys, including through routes to and from school or to and from community facilities such as youth centres, parks, leisure and recreation areas.



### 17 Children and young people shape their city



We will ensure children and young people shape their city- and their Resilience Strategy, so this draft strategy is just the first step. We are committed to ensuring a participative approach to arriving at our final strategy - we invite children and young people to participate in shaping the final recommendations, and look forward to a dynamic and productive conversation!

### 18 A conversation on climate



In developing a series of actions on climate resilience, and in partnership with Queen's University and the Place Based Climate Action Network (P-CAN) we will host a series of conversations with children and young people, in their communities, to find out their priorities for a climate resilient city. These conversations will inform the Council's climate planning and the city-wide Climate Adaptation and Mitigation Plan.

### 19 Planning policy for a child friendly Belfast



Belfast City Council will use its strategic planning powers to improve children's development, health and access to opportunities. We will recognise the fundamental importance of independence and play; of 'everyday freedoms' near home, and of the built environment in shaping a child's development and prospects.

### 20 Quality of urban childhood



Working with partners across the city, Belfast City Council will put in place a series of indicators to measure the quality of 'urban childhood' in Belfast. This will include measuring the amount of time children spend playing outdoors, their level of contact with nature and their ability to get around independently. These will inform decisions by organisations working across Belfast to improve urban childhoods and urban resilience more generally'.

### 21 Safe independent mobility of children



Relevant city partners will work together to identify a network of safe roads, crossings, and routes to the city centre and between communities that support cycling and walking, support independent mobility among children in an age-appropriate way, reduce pollution and encourage social interaction. We will identify measures to increase both actual and perceived safety, for example through traffic calming, active travel networks and multifunctional spaces. This will involve ongoing public consultation to identify public perceptions of the best routes across the city.

### 22 A Playful City



Belfast City Council will work to establish Belfast as 'A Playful City' by 2023, our designated year of culture, by bringing together the goals within its City Regeneration Strategy, its Cultural Strategy and its Resilience Strategy.

**23 City centre public realm play spaces**



Working with its city partners, Belfast City Council will invest in a network of city centre public realm play spaces. This should include permanent spaces in the city centre and a network of temporary/pop-up play spaces across the city. This should include multifunctional use of space and re-use of existing infrastructure such as schoolyards, community hubs and carparks for community activities after hours.

**24 Mental ill-health**



The prevalence of mental ill-health among young people, and in particular lack of access to preventative services emerged as a concern at a community level. The Belfast Agenda Living Here Board has identified integrated early intervention as a core theme of focus and this will be a priority action area.

**25 Young People and Inclusive Economic Growth**



Belfast City Council's draft Inclusive Growth Strategy commits the Council to action in relation to key cohorts of young people, aimed at ensuring their inclusion in local economic growth. The council will identify ways to actively engage our young people in achieving the growth strategy.

**26 Children's experience of their city**



The issue of children's experience of their city emerged as a key theme in our workshops and focus groups. Data in this area is relatively scarce and a key part of the next stage of our work will be to work directly with children to understand their experiences of their city.

**27 Public transport**



To achieve our priorities on climate resilience, city connectivity and urban childhoods, it is recommended that city partners should agree to an ambition to provide all children and young people have access to free public transport in Belfast - by an agreed year in the next decade. In achieving this goal we will enable a number of our objectives.

# CASE STUDY: CHILDREN AND YOUNG PEOPLE



## Paris: OASIS Schoolyards: battling heat and building resilience

**The densest capital in Europe, Paris has only 14.5m<sup>2</sup> of green space per inhabitant. This increases both the urban heat island effect and the risk of storm water flooding. With space at a premium the city had to consider existing assets it could leverage to tackle its resilience challenges of heat waves, flooding, declining social cohesion, and limited green space.**

In 2017, the Paris Resilience Strategy envisioned the renovation of the city's network of 761 schools into green islands or "oases" of cooler temperatures and community solidarity. In 2018, Project OASIS (Openness, Adaptation, Sensitisation, Innovation and Social Ties) brought together twelve city departments to begin a pilot with three schools participating. After extensive engagement with pupils, parents and the education community, renovation work began which included replacing asphalt with porous material, improving storm water drainage, increasing green space, modernizing water management, installing cooling fountains and water sprayers and creating natural and artificial shade structures. The project gained European recognition winning the 2019 Urban Innovation Actions award and a further €5m of EU-co funding.

Paris aims to scale this concept to approximately 700 schools by 2050. The Oases are expected to decrease average surface temperatures by 10%, reduce daytime air temperatures up to 3oC and increase water absorption capacity from 4 to 16mm. These new breathing spaces at the heart of neighbourhoods, designed by users, will improve the living environment, cope with the climate emergency, and reinforce social cohesion.

# CONNECTIVITY



3

**Resilient cities are well connected cities. Our vision of Belfast is as an inter-connected city, with secure, resilient infrastructure that meets its economic, social and environmental goals. A city that values sustainable forms of transport.**

Connected cities have well-developed networks of people, communities, industries and institutions all working collaboratively towards common goals. Investment in resilient infrastructure is critical to ensuring and enabling inclusive growth - connecting people and communities with markets, and with affordable easy access to high quality jobs and services. Resilient infrastructure is essential for place-making, good relations and building healthy and sustainable cities. Industrial strategy requires reliable, accessible and competitively-priced infrastructure to attract foreign direct investment and to create jobs.

**“It has never been more important for a city-region to be connected and have high levels of connectivity. Investment in infrastructure must facilitate and enable the growth of those businesses and sectors which have the potential to close the productivity gap.”**

Belfast has made huge strides since the Belfast/ Good Friday agreement towards being a connected city. However, much more progress is required to build ‘one city’, where our connections reduce our vulnerabilities and strengthen our capacity to withstand risks. The potential to be gained from an ‘infrastructure revolution’ for the city was highlighted in the Belfast Region Infrastructure Investment Framework - commissioned by the Belfast Region City Deal partners as part of their work to present a case to the UK Treasury for investment in the City Region. The Framework 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.

This requires a shift in mindset - so that infrastructure is understood as vital to our economic and social interests, and responsibility for building, maintaining and investing in infrastructure goes beyond central government to a range of partners across the city.

It also requires a transformation in how we move around our city. Car dependency is undermining our resilience- by requiring more and more hard infrastructure that builds our exposure to climate risks rather than reducing them. Belfast must make a strategic shift away from the car as the predominant mode of transport, and this will in turn boost our climate resilience, and make our city a healthier, cleaner more enjoyable Belfast.

**“Strategic city-wide focus on connectivity has the potential to boost Belfast’s resilience - its capacity to withstand shocks and adapt to future risks.”**

The Good Relations Strategy for the city makes similar and important commitments on the need for a genuinely connected city, ‘...The way we have done things in the past needs to adapt to help us reach the ambitions we have set ourselves in the Belfast Agenda. We need social innovation; changing the way we plan, deliver and consume services and how and where we access them, how we travel within the city, how we educate our young people, how we view and use local spaces, and how we interact with one another across the city. These are all critical to achieving these ambitions.’



This strategy seeks to complement and underpin delivery of the Good Relations Strategy. The following recommendations are aimed at supporting the strategy in practice.

**28 Innovation and Inclusive Growth Commission**



To integrate several 'once in a generation' projects for the city, and ensure we achieve maximum economic benefit for all, we have established an Innovation and Inclusive Growth Commission. This collaboration between Belfast City Council, Belfast Harbour, Queen's University, Ulster University and several other city partners aims to develop an integrated, inclusive and long term growth plan for the city.

**29 Transition to a low-carbon economy**



Dependence on carbon is a significant risk for Belfast's economy- in particular since the cost of carbon is due to increase in the coming decades. Critical to Belfast's economic resilience will be its ability to transition to a low-carbon economy. The Growth Strategy, to be developed by the Innovation and Inclusive Growth Commission, will include substantive targets for decarbonisation of the city's economy'

**30 Monitor economic resilience**



Belfast will develop a set of indicators to monitor and measure its economic resilience, and build its resistance to, and recovery from economic shocks. This will be taken forward by the Innovation and Inclusive Growth Commission, and should include an important emphasis on community wealth.

**31 Sustainable transport plan**



Through partnership working across Local and Central Government, we will develop an ambitious and long-term sustainable transport plan for Belfast, to make transport safe and enjoyable, to help businesses and to encourage sustainable accessibility across the city, including integrated walking and cycling networks.

We will address barriers to movement and create a network of safe, pedestrian priority, clean and green streets linking quality open spaces and greenways across the city. We will develop cycle, pedestrian and public transport networks that will support ongoing initiatives to reduce traffic and less sustainable forms of travel, both into and within Belfast.

**32 City energy plan**



Complementing our ambitions for a low carbon economy, a city energy plan is essential to (1) outline how Belfast City Council will manage and meet its energy demands sustainably and (2) set ambitions for low-carbon energy demand and supply for the city. The plan will be developed with city partners through the Community Planning Partnership Board.

**33 Fuel Poverty**



As we transition to a low carbon economy, we are aiming to make the city more energy efficient and energy self-sufficient. We should therefore agree the eradication of fuel poverty as a city-wide ambition.

**34 Investment in existing NIHE stock**



Investment solutions to improve NIHE stock will be critical to the city’s resilience. It is important that these solutions are part of a wider city-wide approach to decarbonisation and retrofit of existing stock, as is taking place in other cities, with similar resilience challenges’

**37 Resilient drainage infrastructure**



Development of resilient drainage infrastructure will be critical to reducing exposure to flooding in the city in the decades to come. Collaboration across agencies will be critical to its success.

**35 Cyber security**



Protecting the city from cyber threats will be the collective responsibility of senior leaders across the city. Inspired by practice in Atlanta in the U.S., and The Hague in Europe, the City Council will convene a network of statutory, private and independent organisations to share threat and recovery information, and identify network improvements to build resilience. This group will consider ways to better understand the scale and nature of cyber security risks at a city level.

**38 Belfast Risk Assessment**



Belfast’s Community Planning Partnership Board will produce a ‘Belfast Risk Assessment’ every two years, a public document aimed at building knowledge and insight into the risks facing the city. Developed through its Resilience Board, the document will outline the agreed strategic risks to the city, put actions in place to mitigate and manage, and will encourage debate to enable businesses, communities and households to plan for long term risks.

**36 Resilient waste water infrastructure**



Investment in the development of fit-for-purpose resilient waste water infrastructure is critical to the city’s economic growth and achievement of its social and environmental goals. Equally importantly therefore is that decisions are made to resolve the investment challenge associated with existing under-capacity, and new financial models may need to be found for the future. However, it is also critically important that pressures on Belfast’s waste water treatment are reduced for the future. A significant and city-wide programme of water conservation could play an important role in boosting Belfast’s water resilience.

# CASE STUDY: CONNECTIVITY



## Melbourne: Melbourne Urban Forest: bringing a city together to enhance its natural assets

**With a rapidly growing population anticipated to reach 8million by 2051, metropolitan Melbourne's urban footprint is both expanding outward and becoming denser shrinking the city's green space, intensifying the urban heat island and contributing to flooding and run off during storms.**

Resilient Melbourne in partnership with The Nature Conservancy developed a comprehensive urban forestry strategy: Living Melbourne: Our Metropolitan Urban Forest which seeks to ameliorate the shocks and stresses associated with extreme heat, fire and flooding. With the help of private sector engagement to map canopy cover in the city, the Living Melbourne Strategy set a goal of increasing all sub-regional canopy cover levels by 20-30% by 2050. With this goal set, the Resilient Melbourne team along with Melbourne's 32 councils developed a cohesive roadmap for improving biodiversity and urban forest cover.

Implementation of the urban forest strategy, estimated to cost AUS\$570M, is expected to bring economic benefits currently valued at AUS\$4.95 billion per year, a figure expected to rise as the canopy cover increases.

Nature is an immensely valuable asset for driving urban resilience. Exposure to nature reduces stress and the incidence of mental illness while also strengthening community bonds by providing spaces to congregate and enjoy physical activities thus also addressing public health and social inequality.

4

# NEXT STEPS

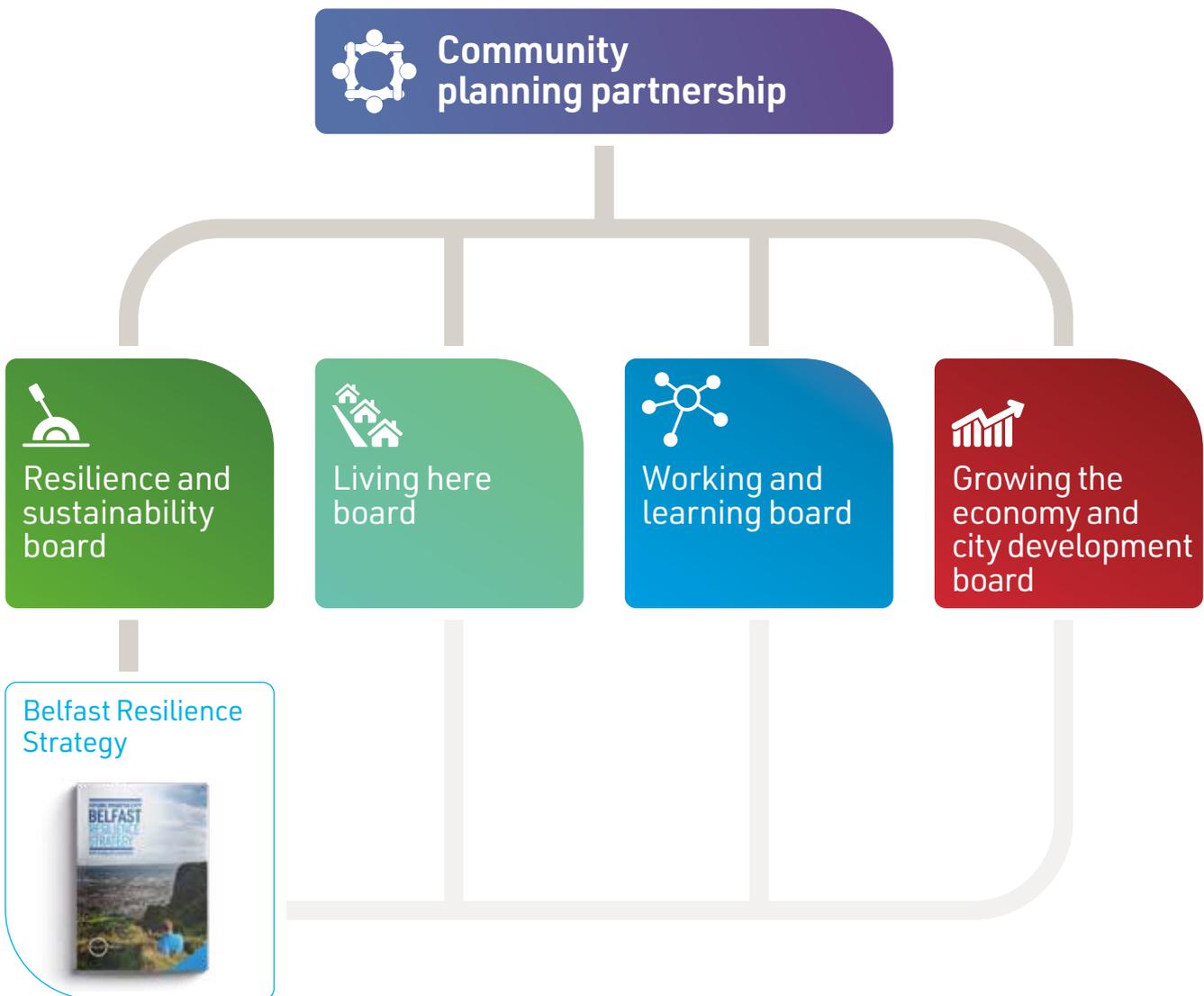
4



# HOW WE WILL DELIVER THIS STRATEGY

Oversight for this strategy will rest with a new board, the resilience and sustainability board which is made up of a range of partners from across the city, as part of Belfast's established Community Planning Framework.

Individual city partners will take responsibility for delivery of key aspects of the strategy.



# BELFAST RESILIENCE CONSULTATION

The Belfast Resilience consultation process seeks to achieve three key things:

- We will **engage** with you in an ongoing conversation to prepare Belfast for the future
- We will **enable** you to contribute to building a more resilient Belfast
- We will **educate** about the risks facing Belfast, and the opportunities to address those risks

## Belfast resilience consultation principles

We will be **inclusive**.

We will be inclusive by reaching out to everyone—regardless of how much experience you have of resilience, or how often you have contributed to public consultations. If you don't feel comfortable engaging using formal ways, we'll try to find a way that works best for you.

We will be inclusive by making our consultation process as interactive and creative as possible, using simple techniques that give everyone the opportunity to contribute to reducing vulnerabilities in our city.

We will **listen**.

We will listen carefully to your views and incorporate them into the Belfast Resilience Strategy or into our implementation phase where possible.

## What we will do

- Citizen Space Survey - we will create a survey which you can complete online through Belfast City Council's website which will be available for 3 months.
- Resilience Events - in the first and final weeks of the consultation we will host events to raise awareness and remind you about the consultation and what we mean by a Resilient Belfast.
- Social Media - we will create a space where your views can be heard through social media such as Twitter, and Facebook.
- Neighbourhoods - we will hold local events in a number of communities where you can meet us and discuss your views about Resilience in Belfast.
- We will work through our partner organisations to reach out as widely as possible through their networks and contacts.
- We will hold sessions for people from a range of backgrounds, experiences and choices.
- We will particularly seek the participation of children and young people due to the central importance paid to them in the strategy.
- We will engage with thematic stakeholders including the business community, voluntary and community sector, and the arts and culture sector through established networks and umbrella bodies.
- At the very end, we will produce an easy to read document that summarises what you have told us.

# SOURCES OF INSPIRATION



# SOURCES OF INSPIRATION: BIBLIOGRAPHY

**EU Exit, Long-term Economic Analysis (November 2018).**

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/760484/28\\_November\\_EU\\_Exit\\_-\\_Long-term\\_economic\\_analysis\\_\\_1\\_.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/760484/28_November_EU_Exit_-_Long-term_economic_analysis__1_.pdf)

**The Economics of Low Carbon Cities, A Mini-Stern Review for the Leeds City Region (2019).** Andy Gouldson, Niall Kerr, Corrado Topi, Ellie Dawkins, Johan Kuylentierna, Richard Pearce.

<https://www.sei.org/publications/the-economics-of-low-carbon-cities-a-mini-stern-review-for-the-leeds-city-region/>

**Matrix Digital ICT Report Foresight and Horizon Scanning (2016).**

<https://matrixni.org/wp-content/uploads/2016/03/2016-Matrix-Digital-ICT-Report.pdf>

**Using a Resilience Lens to make a more Resilient Economy, Greater Manchester (2019).** Tom Lindsay, John White, Alex Ryan Reviewer: Braulio Eduardo Morera.

**Analysing Baseline Data Around Peace Walls (4): Who are the people? (2017)** Cathy Gormley-Heenan, Duncan Morrow, Jonny Byrne, Michael Rosato and Sally Cook.

<https://www.community-relations.org.uk/publications/analysing-baseline-data-around-peace-walls-4-who-are-people-0>

**Analysing Baseline Data on Peace Walls (5): Exploring the Socio-economic, education and employment factors** Institute for Research in Social Sciences (IRiSS) (2017). Jonny Byrne, Cathy Gormley-Heenan, Duncan Morrow, Michael Rosato and Sally Cook.

<https://www.community-relations.org.uk/publications/analysing-baseline-data-peace-walls-5-exploring-socio-economic-education-and-employment>

**Analysing Baseline Data on Peace Walls (6): Implications for policy (2017).** Duncan Morrow, Cathy Gormley-Heenan, Jonny Byrne, Michael Rosato and Sally Cook

<https://www.community-relations.org.uk/publications/analysing-baseline-data-peace-walls-6-implications-policy>

**Belfast Region City Deal - Industrial Strategic Framework (2018).**

[https://minutes3.belfastcity.gov.uk/documents/s72693/Appendix%20%20BRCD\\_Industrial%20Strategic%20Framework.pdf](https://minutes3.belfastcity.gov.uk/documents/s72693/Appendix%20%20BRCD_Industrial%20Strategic%20Framework.pdf)

**Sectarianism in Northern Ireland: A Review (2018).**

[https://www.ulster.ac.uk/\\_data/assets/pdf\\_file/0016/410227/A-Review-Addressing-Sectarianism-in-Northern-Ireland\\_FINAL.pdf](https://www.ulster.ac.uk/_data/assets/pdf_file/0016/410227/A-Review-Addressing-Sectarianism-in-Northern-Ireland_FINAL.pdf)

**AI in the UK: ready, willing and able? Select Committee on Artificial Intelligence, House of Lords (2018).**

<https://publications.parliament.uk/pa/ld201719/ldselect/ldai/100/10002.htm>

**DSD/NIHE Asset Commission Summary Report (2015).** Department for Social Development and the Northern Ireland Housing Executive.

**Attitudes to Peace Walls, Research Report to the Office of the First and Deputy First Minister (2012).**

<https://www.ark.ac.uk/peacewalls2012/peacewalls2012.pdf>

**Carbon Accounts and the Scope for Low Carbon Development Belfast, Can Do Cities (2019).**

<http://www.candocities.org/sites/default/files/Belfast.pdf>

**Belfast Infrastructure Study, Belfast City Council, ARUP (2018).**

**The UK's EU Withdrawal Agreement, Briefing Paper 08453 (2018).**

<https://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-8453>

**Business on a Connected Island (2018).**

<https://www.bl.uk/collection-items/cbisc-business-on-a-connected-island-2018>

**Child Centred Resilience Framework (2016).**

<https://www.arup.com/perspectives/publications/research/section/child-centred-urban-resilience-framework>

**Cities, Prosperity and Influence. The role of city diplomacy in shaping soft power in the 21st century,** Jo Beall and David Adam (2017).

[https://www.britishcouncil.org/sites/default/files/g229\\_cities\\_paper.pdf](https://www.britishcouncil.org/sites/default/files/g229_cities_paper.pdf)

**Cities Alive, Designing for Urban Childhoods (2017).**

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

**Powers to Grow: City Finance and Governance (2014).**

<https://www.thersa.org/discover/publications-and-articles/reports/powers-to-grow-city-finance-and-governance>

**People Powered Money, Designing, Developing & Delivering Community Currencies (2015).**

<https://neweconomics.org/2015/05/people-powered-money>

**Cost to make Dwellings in Northern Ireland more Energy Efficient (2019).**

[https://www.nihe.gov.uk/index/corporate/housing\\_research/house\\_condition\\_survey.htm](https://www.nihe.gov.uk/index/corporate/housing_research/house_condition_survey.htm)

**City Resilience Profiling Tool, UN Habitat (2018).**

<http://urbanresiliencehub.org/wp-content/uploads/2018/02/CRPT-Guide.pdf>

**Do councils have a duty to consider climate change? Ends report 530 (2019).**

**Domestic Consumer Insight Tracker 2018/19. Utility Regulator (2019).**

<https://www.uregni.gov.uk/sites/uregni/files/media-files/Domestic%20Consumer%20Insight%20Tracker%202018%20Summary%20Final.pdf>

**Draft Good Relations Strategy (2018).**

**Draft Northern Ireland Children and Young people Strategic Partnership, Plan 2019-2021 (2019).**

**Economic Resilience: A new set of vulnerability indicators for OECD countries (2015).**

[https://www.oecd-ilibrary.org/economics/economic-resilience-a-new-set-of-vulnerability-indicators-for-oecd-countries\\_5jrxhgjw54r8-en](https://www.oecd-ilibrary.org/economics/economic-resilience-a-new-set-of-vulnerability-indicators-for-oecd-countries_5jrxhgjw54r8-en)

**Why Local Authorities should Prepare Food Brexit Plans, Tim Langa, Erik Millstoneb, Tony Lewisc & Gary McFarlaned (2018).**

<https://www.reading.ac.uk/foodlaw/pdf/2018-Food-Research-Brexit-LAs.pdf>

**Our Resilient Glasgow, A City Strategy (2016).**

[https://www.understandingglasgow.com/assets/0003/7198/Our\\_Resilient\\_Glasgow\\_Strategy.pdf](https://www.understandingglasgow.com/assets/0003/7198/Our_Resilient_Glasgow_Strategy.pdf)

**Electricity Sector in Northern Ireland, third report of session 2016-17 (2017).**

<https://publications.parliament.uk/pa/cm201617/cmselect/cmniaf/51/51.pdf>

**House Conditioning Survey, main report, Northern Ireland Housing Executive (2016).**

<https://www.nihe.gov.uk/Working-With-Us/Research/House-Condition-Survey>

**The Rise of Innovation Districts: A New Geography of Innovation in America, Bruce Katz and Julie Wagner, Introducing Innovation Districts (2014).**

<https://www.brookings.edu/wp-content/uploads/2016/07/InnovationDistricts1.pdf>

**This is a Crisis Facing up to the Age of Environmental Breakdown, Laurie Laybourn-Langton, Lesley Rankin and Darren Baxter (2019).**

<https://www.ippr.org/files/2019-02/this-is-a-crisis-feb19.pdf>

**Next Generation Northern Ireland, British Council (2018).**

[https://www.britishcouncil.org/sites/default/files/next\\_generation\\_ireland\\_northern\\_ireland\\_2018\\_report\\_final\\_web\\_v2.pdf](https://www.britishcouncil.org/sites/default/files/next_generation_ireland_northern_ireland_2018_report_final_web_v2.pdf)

**Removing Peace Walls and Public Policy Brief (1): the challenge of definition and design Cathy Gormley-Heenan, Duncan Morrow and Jonny Byrne (2015).**

[http://uir.ulster.ac.uk/32566/1/Policy\\_Brief\\_1\\_\(2015\).pdf](http://uir.ulster.ac.uk/32566/1/Policy_Brief_1_(2015).pdf)

**Local Development Plan, Belfast, technical supplement 9, flood risk (2018).**

<https://www.belfastcity.gov.uk/buildingcontrol-environment/Planning/ldp-plan-strategy.aspx>

**Leading Cities, global review of city leadership, Elizabeth Rapoport, Michele Acuito, Leonora Grcheva (2019).**

<http://discovery.ucl.ac.uk/10069076/1/Leading-Cities.pdf>

**Manchester City Council's Climate Change Delivery Plan 2010 - 2020, The Council's contribution to Manchester - A Certain Future.**

[https://secure.manchester.gov.uk/info/500002/council\\_policies\\_and\\_strategies/3833/climate\\_change/3](https://secure.manchester.gov.uk/info/500002/council_policies_and_strategies/3833/climate_change/3)

**Resilient Medellin, a strategy for our future (2017).**

<https://www.100resilientcities.org/wp-content/uploads/2017/07/Medellin-English-PDF.pdf>

**National Climate Projections, UKCP18, Jason A. Lowe, Dan Bernie, Philip Bett, Lucy Bricheno, Simon Brown, Daley Calvert, Robin Clark, Karen Eagle, Tamsin Edwards, Giorgia Fosser, Fai Fung, Laila Gohar, Peter Good, Jonathan Gregory, Glen Harris, Tom Howard, Neil Kaye, Elizabeth Kendon, Justin Krijnen, Paul Maisey, Ruth McDonald, Rachel McInnes, Carol McSweeney, John F.B. Mitchell, James Murphy, Matthew Palmer, Chris Roberts, Jon Rostron, David Sexton, Hazel Thornton, Jon Tinker, Simon Tucker, Kuniko Yamazaki, and Stephen Belcher, (2018).**

<https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/index>

**Mission-Oriented Innovation Policy, Challenges and Opportunities, Mariana Mazzucato (2017).**

<https://www.ucl.ac.uk/bartlett/public-purpose/publications/2018/jan/mission-oriented-innovation-policy-challenges-and-opportunities>

**Northern Ireland Climate Change Adaptation Programme (2014).**

<https://www.daera-ni.gov.uk/sites/default/files/publications/daera/Northern%20Ireland%20Climate%20Change%20Adaptation%20Programme.pdf>

**2019 Energy Across the Authority, more examples of how local authorities are taking advantage of energy opportunities (2019).**

<https://www.apse.org.uk/apse/index.cfm/local-authority-energy-collaboration/apse-energy-publications/energy-across-the-authority-2019/>

**Making Cities in Conflict Areas more Resilient, A conceptual iteration using climate resilience and security for policies in practice, Michel Rademaker, Karlijn Jans, Paul Verhagen, Aster Boeschoten, Hannes Rõõs & Stephan Slingerland (2018).**

[https://www.clingendael.org/sites/default/files/2018-05/Paper\\_Making\\_cities\\_in\\_conflict\\_areas\\_more\\_resilient\\_0.pdf](https://www.clingendael.org/sites/default/files/2018-05/Paper_Making_cities_in_conflict_areas_more_resilient_0.pdf)

**The Paris Agreement (2018).**

<https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

**Northern Ireland Peace Monitoring Report, number four, Robin Wilson (2016).**

<https://www.community-relations.org.uk/sites/crc/files/media-files/NIPMR-Final-2016.pdf>

**The Challenge of Peace Building and Conflict Transformation: A Case Study of Northern Ireland, Kyiv-Mohyla Law and Politics Journal., (2), 117-128 (2016).**

[https://pure.qub.ac.uk/portal/files/112387464/Peace\\_Building\\_and\\_Conflict\\_Transformation.pdf](https://pure.qub.ac.uk/portal/files/112387464/Peace_Building_and_Conflict_Transformation.pdf)

**The Political Declaration on the Framework for Future EU-UK Relations, briefing paper 08454, (2018).**

<https://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-8454#fullreport>

**CEOs' Curbed Confidence Spells Caution, 22nd annual global CEO survey (2019).**

<https://www.pwc.com/gx/en/ceo-agenda/ceosurvey/2019/gx.html>

**Planning for Spatial Reconciliation, Civic place-making in a divided society, draft one, Sterrett, K., Morrissey, M, Gaffikin, F, Karelse, C, Mulholland, C, (2015).**

**Reducing Emissions in Northern Ireland, committee on climate change (2019).**

<https://www.theccc.org.uk/publication/reducing-emissions-in-northern-ireland/>

**NS Live Case Series 2017, the Vejle resilience strategy, Jonas Kroustrup, Rachel Calleja (2017).**

<https://www.pgionline.com/wp-content/uploads/2017/08/Vejle-2017.pdf>

**The Resilience of a London Great Estate: urban development, adaptive capacity and the politics of Stewardship, Juliet Patricia Davis (2018).**

<https://www.tandfonline.com/doi/full/10.1080/17549175.2017.1360378>

**Resilient DC, A Strategy to Thrive in the Face of Change (2019).**

<https://resilient.dc.gov/>

**Resilient Cities Research Project, a Grosvenor report (2014).**

<https://www.resiliencefirst.co.uk/our-work/resources/resilient-cities-grosvenor-research-report>

**Rethinking the Smart City, Democratizing Urban Technology (2018).**

<https://www.urenio.org/2018/10/04/rethinking-smart-city-democratizing-technology/>

**National Development Plan, project Ireland 2040 (2018).**

<https://www.gov.ie/en/policy-information/07e507-national-development-plan-2018-2027/>

**Impacts, the Future of Global Real Estate, Savills (2019).**

[https://www.savills.com/impacts/Savills\\_Impacts\\_2019\\_download.pdf](https://www.savills.com/impacts/Savills_Impacts_2019_download.pdf)

**Smart City Resilience: Digitally empowering cities to survive, adapt, and thrive (2017).**

<https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/smart-city-resilience-digitally-empowering-cities-to-survive-adapt-and-thrive>

**The State of Ireland 2019, A review of housing and infrastructure in Ireland (2019).**

<http://engineersireland.ie/communications/state-of-ireland-2019.aspx#>

**The Rise of Innovation Districts: A New Geography of Innovation in America, Bruce Katz and Julie Wagner (2014).**

<https://www.brookings.edu/essay/rise-of-innovation-districts/>

**The Global Outlook, Speech given by Mark Carney Governor of the Bank of England (2019).**

<https://www.bankofengland.co.uk/-/media/boe/files/speech/2019/the-global-outlook-speech-by-mark-carney.pdf?la=en&hash=6725EA590D46F11FBDF4744E4E90158D4BCECE>

**Electrifying Montréal, Transportation electrification strategy 2016-2020 (2016).**

[http://ville.montreal.qc.ca/pls/portal/docs/PAGE/PROJ\\_URBAINS\\_FR/MEDIA/DOCUMENTS/TRANSPORTATION\\_ELECTRIFICATION\\_STRATEGY\\_2016\\_2020\\_.PDF](http://ville.montreal.qc.ca/pls/portal/docs/PAGE/PROJ_URBAINS_FR/MEDIA/DOCUMENTS/TRANSPORTATION_ELECTRIFICATION_STRATEGY_2016_2020_.PDF)

**Visit Belfast business plan 2019/2020 (2019).**

**Waking up in a Different Country: Brexit and Northern Ireland Cathy Gormley-Heenan, Arthur Aughey and Paula Devine (2017).**

<https://www.ark.ac.uk/publications/updates/update116.pdf>

**The Global Risks Report 2019, 14th Edition, World Economic Forum (2019).**

[http://www3.weforum.org/docs/WEF\\_Global\\_Risks\\_Report\\_2019.pdf](http://www3.weforum.org/docs/WEF_Global_Risks_Report_2019.pdf)

**Supporting Wellbeing and Resilience in Belfast 2018-2021, making life better together (2018).**

<https://www.makinglifebettertogether.com/wellbeing-resilience/>

**World Happiness Report, John Helliwell, Richard Layard and Jeffrey Sachs (2017).**

<https://s3.amazonaws.com/happiness-report/2017/HR17.pdf>

**Agile Cities, preparing for the Fourth Industrial Revolution, World Economic Forum (2018).**

[http://www3.weforum.org/docs/WP\\_Global\\_Future\\_Council\\_Cities\\_Urbanization\\_report\\_2018.pdf](http://www3.weforum.org/docs/WP_Global_Future_Council_Cities_Urbanization_report_2018.pdf)

**Governing without Ministers: Northern Ireland Since the Fall of the Power Sharing Executive, Institute for Government, (September 2019).**

<https://www.instituteforgovernment.org.uk/publications/governing-without-ministers-northern-ireland>

**EirGrid Group All-Island Generation Capacity Statement (2019-2028).**

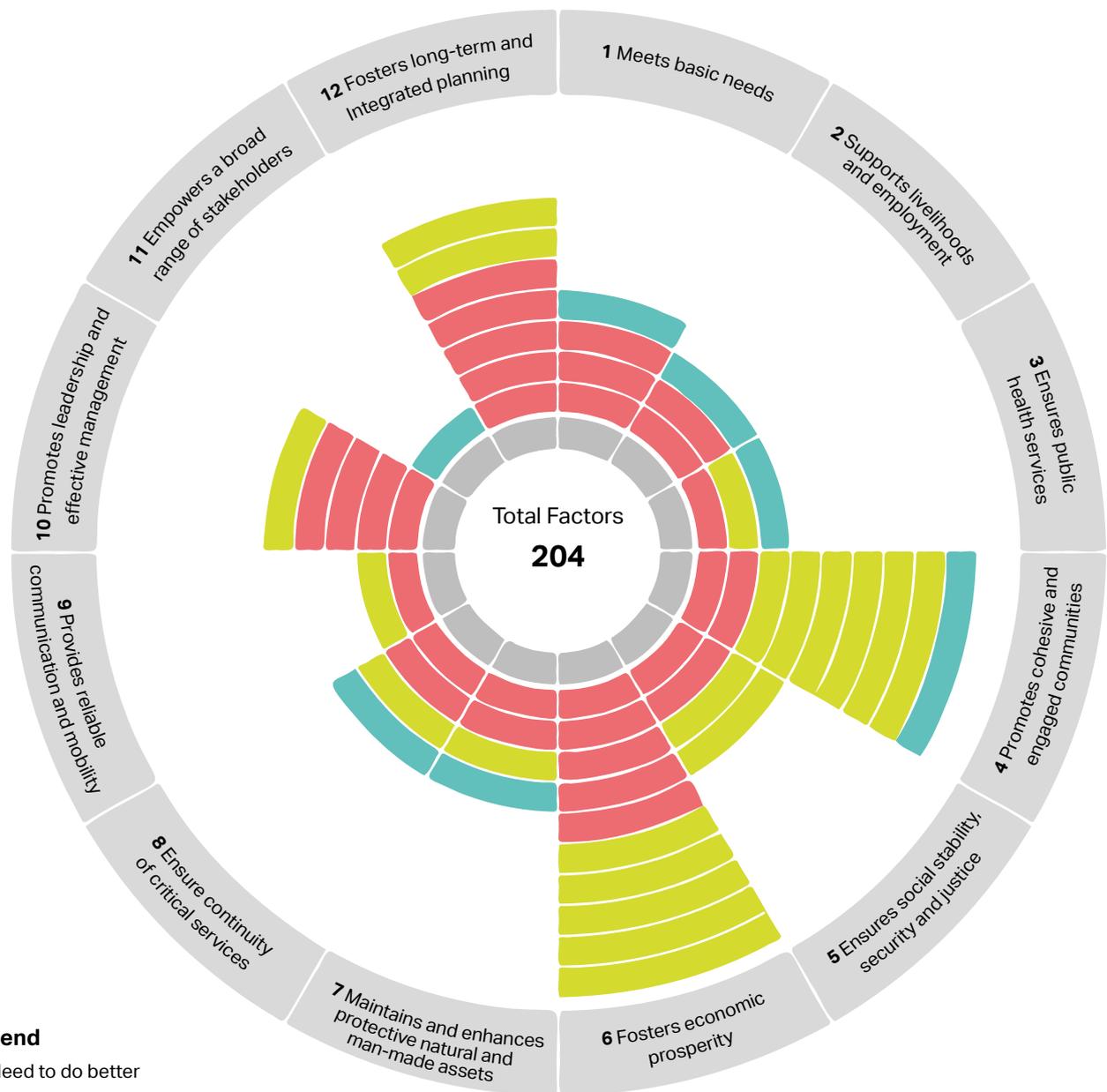
<http://www.soni.ltd.uk/media/documents/EirGrid-Group-All-Island-Generation-Capacity-Statement-2019-2028.pdf>

**Northern Ireland Gas Capacity Statement (2019-20 to 2028-29).**

<http://gmo-ni.com/assets/documents/Transparency/NI-Gas-Capacity-Statement/Northern-Ireland-Gas-Capacity-Statement-2019-20-to-2028-29.pdf>

# City Resilience Framework

## identified areas of city resilience



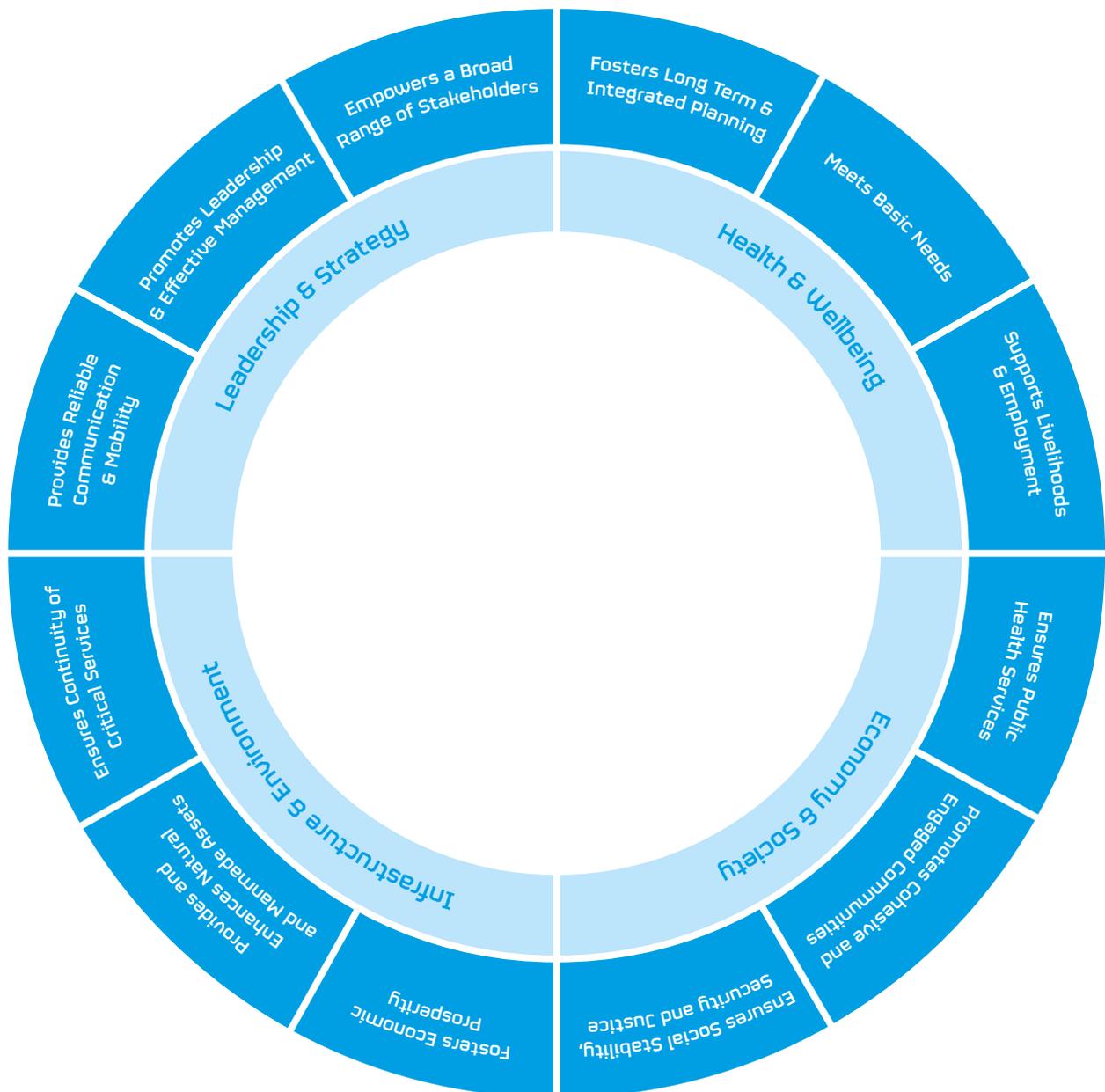
**Legend**

- Need to do better
- Doing well, but can improve
- Area of strength

Each segment represents 3.6 factors

# City Resilience Framework

identified areas of city resilience



**Belfast City Council**  
City Hall  
Donegall Square South  
Belfast  
BT1 5GS

 [www.belfastcity.gov.uk/resilientbelfast](http://www.belfastcity.gov.uk/resilientbelfast)

 [resilient@belfastcity.gov.uk](mailto:resilient@belfastcity.gov.uk)

 028 9050 2091

 @belfastcc

 @belfastcitycouncil

 Belfast City Council



**Belfast**  
City Council