

RESILIENCE AND SUSTAINABLE DEVELOPMENT: CONCEPTUAL AND PROGRAMME LINKAGES AND POTENTIAL NEXT STEPS IN BRISTOL

A Challenge Paper – November 2016

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The Challenge: With forthcoming discussions about use in Bristol of the United Nations Sustainable Development Goals (SDGs), and the publication of the City Council's 50 year Resilience Strategy, it is important to ask what are the conceptual, and potential programmatic, linkages between sustainability and resilience? Could there be a risk that for some the two concepts are so closely connected that for all intents and purposes they amount to the same thing and can therefore be used interchangeably? Or, on a programmatic basis, if a city is substantively addressing resilience, does that mean that sustainability is also being effectively dealt with? More specifically, in Bristol, where a Resilience Strategy is to be used as a framework to respond to economic, social and environmental challenges, how might the SDGs also be used to inform and drive policies and actions to address those challenges? This paper provides a basis for addressing these questions. It identifies: ways in which the SDGs and associated targets could inform future development of the Resilience Strategy; a series of issues and challenges relating to implementation of the SDGs that will need to be addressed regardless of the way in which they are adopted or used in Bristol; and, finally, a range of questions relevant to the future development of the Resilience Strategy.

1 Introduction

This paper examines the relationships between resilience and sustainable development, with particular emphasis on Bristol's 50 year Resilience Strategy (RS) and potential local adoption or use of the UN's Sustainable Development Goals (SDGs).

Section 2 of the paper provides some context, with a brief outline of some of the key environmental and social challenges facing the world. Section 3 explains the nature of current resilience and sustainable development programmes, and outlines their recent development. It also reports briefly on the nature and main outputs of the Schumacher Institute's Converge Project. Section 4 sets out some comments and concerns relating to the SDGs and their potential implementation. Section 5 looks at the conceptual linkages between resilience and sustainability from a systems perspective. Section 6 presents the results of some initial mapping between RS goals and actions and the SDGs and associated targets, and makes a series of observations. Section 7 pulls together the threads by focusing on how use of the SDGs and associated targets might be approached in Bristol, and on how the 50 year RS might be developed.

2 Context: limits, boundaries and inequalities

Rising concerns about social injustice and breaching ecological limits and boundaries provide the key context for an examination of the relationships between resilience and sustainable development. As the Converge Project points out, there is a clear need to focus on how we ensure

that planetary boundaries are respected while securing an equal sharing of the benefits and burdens of resource use¹.

2a Limits and Boundaries

There is now a significant literature on ecological limits and planetary boundaries. Jackson and Webster have recently reviewed the Club of Rome's 1972 report on the Limits to Growth and the subsequent debate². The original report set out the dynamic nature of our dependency on physical resources and on ecological systems. It illustrated the processes of 'overshoot and collapse' that can occur when these limits are approached and suggested that, without a shift in direction, adverse consequences would become obvious "within the next century". Jackson and Webster conclude that:

"there is unsettling evidence that society is still following the 'standard run' of the original study – in which overshoot leads to an eventual collapse of production and living standards. Detailed recent studies suggests that production of some key resources may only be decades away. Certain other limits to growth – less visible in the 1972 report – present equally pressing challenges to modern society. We highlight, in particular, recent work on our proximity to 'planetary boundaries' ...

The work on proximity to planetary boundaries has been highlighted in the Converge Project³ and more recently, for example, by Ian Angus⁴. Angus provides a cogent overview of the way scientific understanding of our earth system has radically changed over the past three decades, leading to the suggestion that another geological epoch, the Anthropocene Era, has begun, characterised by active human interference in the processes that govern the geological evolution of the planet and heightened risk of deleterious or even catastrophic environmental changes.

The concept of planetary boundaries was introduced in 2009 by Rockström and colleagues⁵. The concept includes a set of nine boundaries for critical processes that regulate the functioning of the earth system. These relate to climate change, ocean acidification, ozone depletion, novel entities (e.g. chemical pollution), aerosol loading, biosphere integrity, biochemical flows (nitrogen and phosphorus cycles), freshwater use and land-system change. Crossing these boundaries could generate abrupt or irreversible changes on a colossal scale. Respecting them reduces the risks to human society of catastrophic change. According to Steffen and colleagues⁶, we have now breached at least four of the boundaries (climate change, biosphere integrity, biochemical flows and land-system use). Rockström adds that two are in the high risk zone (biosphere integrity and interference with the nitrogen and phosphorous cycles), while the other two are in the danger zone (climate change and land use change)⁷.

¹ Parker J, Roderick I and Archer, A. 'Recommendations for EU and national governments to integrate the concept of convergence into current strategies.' CONVERGE Deliverable 41, 2013, Schumacher Institute

² Jackson T and Webster R, 'Limits Revisited: A Review of the Limits to Growth Debate', April 2016, <http://limits2growth.org.uk/revisited>.

³ Fortnam M, Cornell S, and Parker J, 'Convergence: how can it be part of the pathway to sustainability?' CONVERGE Discussion Paper 1, 2010, Department of Earth Sciences, University of Bristol.

⁴ Angus I, 'Facing the Anthropocene: fossil capitalism and the crisis of the earth system', Monthly Review Press, 2016.

⁵ Rockström J, et al, 'A safe operating space for humanity', Nature 461, pp.472-475, 2009.

⁶ Steffen W, et al, 'Planetary Boundaries: Guiding human development on a changing planet', Science, 13 February 2015: Vol. 347 no. 6223.

⁷ Rockström J, 'Bounding the Planetary Future: Why we need a Great Transition', A Great Transition Initiative Essay, April 2015.

2b Inequalities

Alongside these profound concerns about planetary limits and boundaries, there is an increasing awareness of the persistent and severe inequalities that characterise our societies. Jacobs and Mazzucato point out, for example, that inequality between the richest groups and the rest of society has now grown to levels not seen since the 19th century⁸. These inequalities, and associated feelings of disempowerment, disenfranchisement and disconnectedness, have been tellingly exposed and highlighted by the EU referendum on 23 June 2016 and the USA Presidential election on 8 November 2016.

Commentators point to a range of factors leading to persistent and severe inequalities. In a UK context, the RSA's Inclusive Growth Commission, for example, points to four: the contraction or disappearance of traditional industries that provided large-scale employment in South Wales, the Midlands, the North and parts of Scotland; the legacy of deindustrialisation and economic restructuring in the 1980s; the recent further dramatic restructuring of our economies and labour markets (e.g. resulting in the proliferation of temporary work and zero hour contracts); and the 'economisation' of our society, as institutions, activities, behaviour and outcomes became increasingly defined in terms of their economic value⁹.

Despite its comparative success and vibrancy, Bristol has significant levels of poverty and inequality, with 42 areas in the city being among the 10% most deprived in the country and six areas in the most 1% most deprived. The council's draft Corporate Strategy highlights that 16% of our residents are living in deprivation and that 53 areas are in the 10% most deprived in relation to education, skills and training, with south Bristol particularly affected¹⁰. It further points out that within Bristol there is a considerable inequalities gap in the percentage of children living in low income families, and life expectancy has a persistent gap between the most and least deprived areas (an estimated gap of 9.6 years for men and 7 years for women).

Bristol's public sector also faces extremely hard times. Against a back-drop of a rapidly growing population, it is experiencing an increasing demand for social care, transport and education services, made much more difficult by an anticipated budget gap of around £90 million over the next five years¹¹.

The enormity of the environmental and social challenges to be addressed in resilience and sustainable development programmes should be clear for all to see.

3 The Nature and Development of Resilience and Sustainable Development Programmes

This section provides an introduction to the nature and development of resilience and sustainable development programmes, with a focus on implementation in the UK and Bristol. It covers: the

⁸ Jacobs M and Mazzucato M, 'Rethinking Capitalism: Economics and Policy for Sustainable and Inclusive Growth', Wiley Blackwell, 2016.

⁹ Inclusive Growth Commission, 'Emerging Findings', RSA, September 2016.

¹⁰ Bristol City Council, 'Corporate Strategy: 2017-2022', Consultation Draft, 2016.

¹¹ Bristol City Council, 'Corporate Strategy: 2017-2022', Consultation Draft, 2016

100RC Network and the City's Resilience Strategy; the Prepare for Change project and the Bristol Resilience Network; the SDGs and implementation in the UK; guidance on implementation of the SDGs; UK Stakeholders for Sustainable Development (UKSSD) and the Bristol SDG Alliance; and potential use of Converge Project outputs.

3a Resilience: the 100RC Network and the City's Resilience Strategy

Bristol is part of the 100 Resilient Cities (100RC) network, pioneered and funded by the Rockefeller Foundation (100RC) to help cities around the world become more resilient to physical, social and economic challenges¹². 100RC has funded a City Council Resilience Officer post for two years, and provided resources and support for preparing a strategy. Support has also come from the UK Government Office for Science Foresight 'Future of Cities' Team.

All 100RC member cities have used the same working definition of urban resilience:

Urban resilience is the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt and grow no matter what kinds of chronic stresses and acute shocks they experience.

Stresses are described as chronic conditions which weaken the fabric of a city on a daily or cyclical basis (e.g. high unemployment, health inequalities, inefficient public transport systems, endemic violence, and chronic food or water shortages) and shocks are sudden, sharp events such as terrorist attacks, fires, floods, earthquakes, and disease outbreaks.

Taking the "broadest possible view of resilience", the City Council is about to publish a 50 year Resilience Strategy (RS), setting out a vision, qualities, paradoxes, pillars, goals and initial actions¹³. The RS has been co-created with the involvement of a diverse Sounding Board and engagement with 1600 local people. Although acknowledging that it is "just a start", the RS seeks to provide "a framework to embed resilience in every day decision-making", and a "compass to find transformational actions".

The vision is that:

By 2066 Bristol is a flourishing, welcoming city which inspires confidence in local and global investors, and our success is shared by all. Our neighbourhoods are affordable, attractive, healthy and well-connected places where people of all ages and backgrounds trust and help each other. Our infrastructure and services are flexibly designed and managed to cope with uncertainty.

The RS seeks to pay due regard to what it describes as the 7 qualities of resilient systems: resourcefulness (repurpose resources); redundancy (back-up capacity); inclusivity (broad involvement); reflectivity (able to learn); robustness (limits spread of failure); flexibility (alternative strategies); and being integrated (systems work together).

¹² <http://www.100resilientcities.org/about-us#/- Yz4zMDE0MTloZz4yJnQ%2FYQ%3D%3D/>.

¹³ Bristol City Council, 'Bristol Resilience Strategy', Draft Strategy Document <https://democracy.bristol.gov.uk/documents/s8158/10%20-%20Bristol%20Resilience%20Strategy%20-%20draft%20strategy%20document.pdf>

It also seeks to address five key “tensions or paradoxes that articulate Bristol’s challenges at different city scales”:

- People: communities are diverse but inequality threatens cohesion
- Places: built environment is ‘greened’ but not yet transformed
- Organisation: civic society is engaged but not connected
- Prosperity and worth: the city is economically successful but not equally flourishing
- Regional to global: the city is focused on strengthening local self-sufficiency but continues to be dependent on national and global systems.

The RS develops five pillars to describe the outcomes that it hopes to achieve over the course of the coming decades. These five pillars are supported by goals over the next 50 years, “demonstrating the direction of travel for the city”. See the Annex, Box 1, for the pillars and goals.

The RS then sets out “a collection of some – but by no means all – of the pattern disrupters (i.e. actions) that will challenge business as usual in the city to put us on a more resilient trajectory for the future”. The RS notes that “we are committed to delivering, catalysing or scaling these in the short to medium term” (defined as 1-2 and 2-5 years respectively). These actions are set out in Table 2 in the Annex. Note that single actions often relate to more than one resilience pillar, and that no attempt is made in the RS to link individual actions to specific goals.

Finally, it should be noted that the RS is referred to several times in the City Council’s draft Corporate Strategy, which states that we will have a “new strategic focus on building resilience in the council and the city”, so that it is able to cope with shocks and chronic stresses. The Corporate Strategy highlights that:

Bristol’s resilience work is looking forward 50 years to 2066 ... to develop a shared vision of the future and a direction of travel. By developing an ambitious, long-term direction for the city, Bristol can rise to the global and local challenges that we face. Working backwards from a 50 year future to the present, we aim to unlock creativity and innovation and be confident that we are taking appropriately bold and ambitious steps in the short term.¹⁴

3b Resilience: Prepare for Change and the Bristol Resilience Network

Prepare for Change (P4C) is a service provided by the Schumacher Institute¹⁵ for people working in organisations who need a strategic perspective. It presents future challenges and how changes might affect the communities in which businesses operate and the markets they serve and in which the public and third sectors deliver services.

P4C collects world-wide opinions, forecasts and predictions about complex global issues and relates these to the ‘here and now’, identifying the threats and opportunities. The service combines ‘horizon scanning’ with regular themed workshops to think through the systemic consequences of all types of change.

¹⁴ Bristol City Council, ‘Draft Corporate Strategy: 2017-2022’, 2016, p8.

¹⁵ <http://www.schumacherinstitute.org.uk/projects/prepare-for-change/>.

The Schumacher Institute also co-chairs the Bristol Resilience Network (BRN) with the Environment Agency. This was established as in 2014, as an action group of the Bristol Green Capital Partnership. The BRN hosts bi-monthly meetings to explore how understanding and action on resilience can be increased in the city.

The BRN has published 'The Business Resilience Handbook' to help those who own or manage small and medium sized enterprises (SMEs) to build the resilience of their businesses. It prompts businesses to think about potential vulnerabilities, dependencies and impacts, and encourages them to create a resilience plan. It also focuses on longer term drivers of change, how businesses might survive and thrive, and ways of working with others in 'resilience circles'¹⁶.

3c The SDGs and Implementation in the UK

In September 2015, 193 Member States attending the United Nations (UN) Sustainable Development Summit in New York adopted a new global development framework: '*Transforming our World: the 2030 Agenda for Sustainable Development*'. The Agenda consists of 17 Global Goals and 169 targets, which commit all signatory countries to tackle issues as diverse and deep-rooted as gender inequality, climate change, access to quality education and the promotion of peaceful and inclusive societies. The SDGs officially came into force on 1 January 2016 and there is a moral imperative on the UK to move forward with implementing the Goals at home and by supporting other countries to achieve them overseas. See the Annex, Box 2, for the full list of SDGs.

It should be highlighted that the UN sees the 2030 Agenda as being of unprecedented scope and significance. It considers that the SDGs "reflect the complexity of the ongoing challenge of tackling insecurity, poverty and environmental degradation across the world". It acknowledges that solving such intrinsically universal problems will require coordinated action from all 193 signatory nations, including the UK.

However, the UK Government's approach to implementation of the SDGs has been criticised by the House of Commons International Development Committee (IDC)¹⁷. The IDC considers that the:

Government's response to domestic implementation of the SDGs has so far been insufficient. We remain to be convinced that responsibility for domestic implementation should lie with the Secretary of State for International Development, who already faces a substantial challenge in working to support international implementation of the Goals. Engagement of government departments will be central to the success of domestic implementation, which also has an impact on making progress on the goals globally. As such, we are particularly concerned that the SDGs have not been included in the 2015–2020 Single Departmental Plans of all government departments, which indicates a worrying lack of engagement in the SDGs across Government. Departments should be assigned specific responsibilities for making progress on the SDGs to ensure ownership and clear lines of accountability and these should be laid out clearly in each department's Single Departmental Plan, with specific references to relevant SDGs. [Italics added]

¹⁶ Bristol Resilience Network, 'The Business Resilience Handbook', 2015.

¹⁷ International Development Committee, 'UK Implementation of the Sustainable Development Goals', HC103, 8 June 2016.

The IDC adds that:

We are deeply concerned at the lack of a strategic and comprehensive approach to implementation of the Goals. Without this, it is likely that *areas of deep incoherence across government policy could develop and progress made by certain departments could be easily undermined by the policies and actions of others*. It also reflects a worrying absence of commitment to ensure proper implementation of the SDGs across-Government. *The Government should identify a formal mechanism for relevant Secretaries of State or responsible Ministers to come together regularly to discuss the implementation of the SDGs at the highest political level. The Government should also commit to producing a regular report on policy coherence for sustainable development ...*

Although we welcome the Minister's announcement that the Government will produce a report outlining the international and domestic approach to implementation of the SDGs by the end of the year, we are disappointed at the reluctance to call it an implementation plan. *The Government's report must equate to a substantive cross-government plan for implementation of the SDGs.* [Italics added]

In its response to the IDC's concerns, the Government states¹⁸ that it "partially agrees" and makes the following points:

- The Secretary of State for International Development will continue to lead implementation, supported by the Minister for the Cabinet Office on domestic implementation.
- While the Government agrees that all departments are central to successful domestic implementation of the Goals, it disagrees that each Single Departmental Plan (SDP) should be urgently reviewed with the specific references to the Goals by number. The Government's manifesto sets out the policy areas through which the UK will make its contribution to implementation of the Goals and Single Departmental Plans reflect all of the manifesto commitments.
- The Government is already taking a coordinated approach across Whitehall to implementing the Goals. There are a number of existing and robust mechanisms to facilitate inter-departmental Ministerial discussions on the implementation of the Goals. The Government disagrees that a substantive cross-government plan for implementation should be produced.

As highlighted by the Centre for Sustainable Prosperity at Surrey University (CUSP)¹⁹, it is clear that the Government "does not intend to use the SDGs as a lever or framework for changing UK domestic policy. Instead it appears to have adopted the approach of simply planning to construct a retrospective review designed to show the extent to which existing policy is advancing the Goals".²⁰

3d SDGs: Guidance on Implementation

The UN has made a concerted effort to engage the private sector in the negotiation, agreement and implementation of the SDGs, for example, through the UN Global Compact (UNGC), which supports companies to implement universal sustainability principles and achieve UN goals. The UNGC has recently released guidance on the SDGs for businesses²¹. Similarly, the new Business and

¹⁸ International Development Committee, 'UK Implementation of Sustainable Development Goals: Government Response ...', HC673, September 2016.

¹⁹ <http://www.parliament.uk/business/committees/committees-a-z/commons-select/environmental-audit-committee/inquiries/parliament-2015/sustainable-development-goals-in-uk-16-17/>.

²⁰ CUSP, 'SDGs in the UK – Environmental Audit Commission Inquiry Submission', 2016.

²¹ UN Global Compact, 'Making Global Goals Local Business: A New Era for Responsible Business', 2016

Sustainable Development Commission, which aims “to inspire business leaders to seize upon sustainable development as the greatest economic opportunity of a lifetime, and to accelerate the world's shift to inclusive growth”, has published a baseline report on the SDGs²², and plans to issue a major new report in 2017 which will “articulate and quantify the compelling economic case for business to achieve the Sustainable Development Goals”²³.

Local authorities also feature prominently in the Agenda 2030 outcome document, particularly in relation to Goal 11 on sustainable and inclusive cities. The United Cities and Local Government (UCLG) – a global network of cities, local and regional governments - has produced a useful resource for all local governments, showing how each of the goals relates to local government in practice, and showing how authorities might practically work towards them²⁴. The UK Local Government Association (LGA) points out that local authorities have a key role in the planning, implementation and monitoring of the SDGs, but points to the need for adequate powers and resourcing²⁵. It also highlights that partnership working will be key and that approaches to performance monitoring should take account of recent learning of what works well within local government.

Advice on a method for identifying the priorities for implementing the SDGs comes from the Stakeholder Forum for a Sustainable Future (SFSF)²⁶. In this method, specialist assessors score each target against three criteria – applicability, implementability and transformational impact. The scores for targets are then aggregated to produce a score for each SDG. According to the SFSF's initial assessment, the three highest scoring SDGs are 12 (sustainable consumption and production), 7 (energy) and 13 (combatting climate change). It points out that these SDGs have most potential for economic transformation and changes in patterns of behaviour. The SFSF encourage others to use the method to undertake their own assessment. They also note that even within lower scoring goals there are targets that score high and hold significant challenges.

The UK SDG gap analysis project at Newcastle University also contains helpful guidance for those looking to implement the SDGs in the UK²⁷. This ongoing project takes the current agreed SDG indicators²⁸ for targets applicable to the UK domestic context (excluding goal 17 because of its focus on *global* partnership and means of implementation), and then searches for, and garners expert evaluation of, commensurable indicators. The key findings to date are:

- approximately 170 of the SDG indicators are applicable (in the widest sense) to the UK domestic context

²² Business and Sustainable Development Commission, ‘Business and the SDGs – A Baseline’, April 2016.

²³ <http://businesscommission.org/>.

²⁴ UCLG, ‘The Sustainable Development Goals: What Local Governments Need to Know’, 2015.

²⁵ LGA, ‘Written Evidence to the Environmental Audit Committee’, 2016.

²⁶ Stakeholder Forum, ‘Universal Sustainable Development Goals: Understanding the Transformational Challenge for Developed Countries’, May 2015.

²⁷ Long G, ‘Measuring up to the SDGs in the UK’, evidence to the Environmental Audit Commission, 2016, and ‘Measuring up to the SDGs in the UK: an analysis of UK data availability and current performance’, Initial Findings, 2016.

²⁸ The indicator framework was developed by the Inter-Agency and Expert Group on SDG Indicators and was agreed to as a practical starting point at the 47th session of the UN Statistical Commission held in March 2016. The list includes 230 indicators on which general agreement has been reached. The total number of indicators listed in the final indicator proposal is 241. However, since nine indicators repeat under two or three different targets, the actual total number of individual indicators in the list is 230.

- identical metrics or commensurable UK data are available for roughly 70% of these SDG indicators
- where UK data is available, areas can be identified where UK performance and progress do not reflect, at first sight, the ambition of the applicable SDG target
- such areas are present within all goals, supporting the case for wide-ranging UK reporting and policy responses

3e UK Stakeholders for Sustainable Development (UKSSD) and the Bristol SDG Alliance

UKSSD is a group that supports public, private and voluntary organisations working towards sustainable development in the UK. Its mission includes: “providing thought leadership on the benefits for the UK resulting from action for sustainable development and the implementation of the Sustainable Development Goals.”²⁹

In its evidence to the House of Commons Environmental Audit Committee³⁰, the UKSSD argues for a multi-stakeholder, holistic approach that pays close regard to the need for policy coherence (to avoid one policy undermining another) and to phased delivery. Like the SFSF, it suggests that phasing be based on the SDGs or targets that require most urgent action and have potential to be most transformational. It also calls for regular, transparent and inclusive reporting mechanisms, and stronger and more formal mechanisms for engaging stakeholders. It suggests that qualitative targets need translation into numeric targets and points out that new data (building on the Newcastle project) will be required to measure progress.

In Bristol, the SDG Alliance advocates “the use of the SDGs to create a sustainable city-region that will be a beacon within the UK”³¹. It brings together the Bristol Green Capital Partnership (BGCP) and the South West International Development Network, including various charities, volunteer groups, academics, businesses and consultants in the area that work on global development, as well as representatives from other city organisations.

The Alliance’s objectives are to use the SDGs:

- to drive the policy framework for long-term city-region development and resilience;
- to monitor progress and enable the city-region to hold itself to account; and
- to clearly connect community and city-level action to national and global challenges.

The Alliance sees the SDGs as a “whole city” framework for responding to economic, social and environmental challenges, and a means to build on the Green Capital legacy.

In its evidence to the Environmental Audit Committee, the Alliance draws attention to how the SDGs are already being used in practice in Bristol, including university research and the categorisation of volunteering projects.

²⁹ <http://ukssd.co.uk/about/who-we-are-2/>.

³⁰ UKSSD, Evidence to the Environmental Audit Committee, September 2016.

³¹ Bristol Green Capital Partnership and Bristol SDG Alliance, Evidence to the Environmental Audit Committee, October 2016.

In particular, the Alliance notes that “Bristol’s 50-year Resilience Strategy presents an opportunity to use the SDGs as frame for the future direction of travel for the city, proposing that they are used to develop a set of new city metrics to evaluate projects and programmes across different organisations and policy areas”.

The Alliance also calls for an evidence-based assessment of city priorities to inform how the SDG framework – and how to communicate it to city populations – might best evolve, observing that the level of action needed to meet each individual Goal in Bristol is likely to vary. It also notes that even in the UK – with a well-developed statistical system – local data disaggregation is likely to be insufficient at present to monitor progress on some targets and indicators at a city level.

The Alliance is also concerned that, beyond the international development community, awareness and understanding of the SDGs is limited. As such, “raising the public profile of the Goals in Bristol is therefore an important first initial step, as well pursuing as broader and deeper engagement on the SDGs with key city stakeholders”. The Bristol SDG Alliance intend to work with UKSSD to plan an event in the city that will contribute to this, probably in early 2017. The event will also provide an opportunity to discuss priorities for implementation of the SDGs in Bristol.

3f Potential Use of Converge Project Outputs

The Schumacher Institute led Converge Project was a large-scale interdisciplinary research project, undertaken between 2009 and 2013, and funded by the European Union with 9 partners across 5 countries. The research was inspired by the concept of ‘Contraction and Convergence’ (C&C)TM, a suggested way to stabilise atmospheric concentrations of greenhouse gasses while promoting social equity. The project focused on the idea of equity in the light of biological planetary limits (an extended version of C&C) and applied it to the various sustainability challenges and initiatives the world is witnessing.

The Converge Project provided valuable input into early discussions in Bristol about the SDGs³² and helped inform preparation of the ‘Bristol Declaration’ in May 2013. This sets out seven areas for consideration in implementing the SDGs, focusing on both equity and biophysical planetary limits³³.

The outputs from Converge Project are potentially relevant to resilience and SDG programmes in various ways. In particular:

- The Converge ‘Quadrant Model’ provides a straightforward way of mapping where initiatives or programmes lie on two axes relating to equity and limits³⁴. Most human activity is in the bottom left quadrant of this model – where resource use is increasing outside planetary boundaries and there are increasing inequalities. The desire is to shift to the top right quadrant where we remain within planetary limits and equity is increasing.

³² Roderick A, ‘From the MDGs to the SDGs: The High and Low Politics of Global Development Indicators’, paper produced to support the CONVERGE project workshop “Equity within Limits”, held in Bristol on the 30th Nov 2012, and ‘SDGs and Cities: Focusing Development Narratives on Cities’, paper produced to support the CONVERGE project workshop “Bristol and the Sustainable Development Goals”, 26th April 2013.

³³ Converge, ‘The Bristol Declaration’, May 2013.

³⁴ Roderick I, and the CONVERGE Project Team, ‘Report on how ranking of degree of convergence may be undertaken – calculating a convergence baseline’, CONVERGE Deliverable 16, 2013.

- The Converge ‘Mapping System’ provides a more detailed way of evaluating how an initiative or organisation is managing to address the imperatives of both living within planetary limits and boundaries and sharing resources and benefits more equitably. The mapping system defines scales that enable scoring against equity and limits axes, and illustrative actions that might be taken to improve scores to bring them into better balance³⁵.
- Reviews, assessments³⁶ and recommendations³⁷ for the use of measurements and indicators.
- Reviews and guidance on community engagement³⁸ and running convergence workshops³⁹.

4 The SDGs: Comments and Concerns

Initiatives that seek to use or implement the SDGs need to be aware of, and address, key comments and concerns about the goals. These include: an inherent contradiction within the SDGs; the likelihood of policy incoherence in national implementation; some gaps and omissions; the risks of over-reliance on quantitative indicators; and challenges of public presentation. This section considers each of these in turn. Some questions are then raised about the implications for potential use or implementation of the SDGs in Bristol.

4a An Inherent Contradiction

Hickel has argued that the SDGs “lock in the global development agenda for the next 15 years around a failing economic model that requires urgent and deep structural changes”⁴⁰. He adds that the language of the UN’s 2030 Agenda signals awareness that something about our economic system has gone terribly awry, yet “the core of the SDG programme for development and poverty reduction relies precisely on the old model of industrial growth”. More specifically, SDG target 8.1 calls for 7% annual GDP growth in least developed countries and target 8.2 “for higher levels of economic productivity across the board”. In contrast, SDG 12 is about ensuring sustainable consumption and production patterns. For Hickel, this amounts to calling for both more and less at the same time, leading him to ask: “How can they expect to succeed with such a profound contradiction at their root?”⁴¹

³⁵ See Converge, ‘Policy Brief and Recommendations’, Converge Deliverable 34, for an overview and annex with scoring scales, and Vadovics E, Milton S and the Converge Team, ‘Case Studies (‘Initiatives’) illustrating Contraction and Convergence’, Converge Deliverable 33, 2012, for examples of the use of the mapping system.

³⁶ Roderick I and the CONVERGE Project Team, ‘Report on how ranking of degree of convergence may be undertaken – calculating a convergence baseline’, CONVERGE Deliverable 16, 2013, and Koca D, Sverdrop H and the Converge Project Team, ‘Analytical Report of Existing Sustainable Development Indicator Frameworks’, CONVERGE Deliverable 17, 2010.

³⁷ Parker J, Roderick I, Archer A and the CONVERGE Project Team, ‘Recommendations for EU and national governments to integrate the concept of convergence into current strategies.’ CONVERGE Deliverable 41, Section 4.4, 2013.

³⁸ Callaghan E and the CONVERGE Project Team, ‘Understanding Community Engagements and Social Movements for CONVERGENCE: Critical Elements and Useful Mechanisms for Success’, CONVERGE Deliverable 30, 2013.

³⁹ Kristinsdottir S.M., Ragnarsdottir K.V., Davidsdottir, B. and the CONVERGE Project Team, ‘The Convergence Process: a Resource for Communities wishing to Engage in Convergence’, CONVERGE Deliverable 33, 2012.

⁴⁰ Hickel J, ‘Five Reasons to Think Twice about the UN’s Sustainable Development Goals’, 2015, <http://blogs.lse.ac.uk/southasia/2015/09/23/five-reasons-to-think-twice-about-the-uns-sustainable-development-goals/>.

⁴¹ Hickel continues his criticisms of the risks of lock in to the old model of industrial growth by arguing that: economic growth does not reduce poverty (even “under best-case scenarios ... the poorest 60% of humanity receive on 5% of all

For the GreenHouse think tank, this means that:

Crucially, the economic growth goal (SDG 8) should be tackled in conjunction with the goal for sustainable consumption and production (SDG 12), otherwise there is a risk that these will be pulling in conflicting directions. Economic growth should be seen in a wider sense than simply GDP growth (which is unlikely to be compatible with sustainable consumption and production), and should emphasise qualitative growth in health and well-being, and decent work for all (SDGs 3 and 8, respectively).⁴²

And for the CUSP:

All of the Goals are relevant to the UK, but some appear more relevant than others. We would particularly highlight Goal 12 – “ensure sustainable consumption and production patterns” - because the SDGs must be understood in the context of the interconnectedness of the global economy. The pervasiveness of international trade means that decisions made in the UK have impacts globally. The kinds of goods UK consumers purchase and the ways in which UK companies choose to produce their goods affect the daily lives of many millions of people around the world.⁴³

4b *The Likelihood of Policy Incoherence in Implementation*

The UKSSD has highlighted that:

Integration and indivisibility (of the SDGs) require countries to take a holistic approach to development and explicitly acknowledge the consequences of one policy action on other policy issues. The SDGs emphasise this through the prominence given to the concept of policy coherence, i.e. that policies across Government have to reinforce rather than undermine one another.⁴⁴

As referred to in 3c above, the IDC has drawn attention to the need for Government to pay closer attention to this issue. In its response, the Government stated that it will continue to work to ensure coherence of policies that affect developing countries⁴⁵, but in essence sidestepped the issue of policy coherence in implementation in the UK.

This is perhaps not surprising. As the UKSSD points out:

... there are a significant number of instances where Government policies seem to be working against each other and the achievement of the SDGs. For instance, the Government’s decision in the Spending Review 2015 to reduce subsidies for renewable energy while increasing tax breaks for the oil and gas industry in the North Sea seemed to be contradictory both to the Government’s stated aim to move the UK to a low carbon energy society and the achievement of SDG 7 on energy and SDG 13 on climate change.

new income generated by global growth”); and the SDGs offer little by way of solutions to many of the biggest known drivers of global poverty, including “the unfair trade regime of the World Trade Organisation, or the many bilateral trade and investment agreements that liberalise global markets at the expense of the poor”.

⁴² ‘Written Evidence Submitted by GreenHouse Think Tank’, evidence to the Environmental Audit Committee, September 2016.

⁴³ CUSP, ‘SDGs in the UK Inquiry’, evidence to the Environment Audit Committee, September 2016.

⁴⁴ UKSSD, Evidence to the Environmental Audit Committee, September 2016.

⁴⁵ International Development Committee, ‘UK Implementation of Sustainable Development Goals: Government Response ...’, HC673, September 2016.

The UKSSD goes on to provide more detail on 16 areas of potential policy incoherence in Annex A of its evidence to the Environment Audit Committee.

4c *Some Gaps and Omissions in the SDGs*

In its recent analysis of potential indicators for sustainable prosperity, the CUSP makes a number of important observations about gaps and omissions in the SDGs, focussing on a range of unquantifiable issues relating to different human needs⁴⁶. These include:

- indirect influences on mental health, such as civic participation, whether people perceive that their neighbours can be trusted and if they have close relationships (missing from SDG 3);
- actions that promote cultural and artistic dimensions of wellbeing (missing from SDG 3);
- full encapsulation of the concept of decent work, including working poverty rates, working time, job satisfaction or fulfilment (missing from SDG 8);

This raises a wider question of whether a more systematic consideration of fundamental human needs should be undertaken when considering how to take forward programmes relating to resilience and/or sustainable development? This question was also raised in the Converge Project, which draws attention to the work of Max-Neef, who identified 9 fundamental human needs: subsistence, protection, affection, understanding, participation, recreation, creation, identity and freedom. The Converge Project drew up a 36 cell matrix of examples of satisfiers for those needs⁴⁷.

4d *The Risks of Over-Reliance on the Use of Quantitative Indicators*

It is also necessary to inject a word of caution about the risks of over-reliance on the use of quantitative indicators. As noted in 3d above, the UK SDG gap analysis project at Newcastle University has already found that identical metrics or commensurable UK data are available for roughly 70% of SDG indicators. And as reported in 3e, the Bristol SDG Alliance has highlighted that Bristol's 50-year Resilience Strategy presents an opportunity to use the SDGs to inform the development of a set of new city metrics to evaluate projects and programmes.

A number of pieces of work should prove useful when thinking about a set of new city metrics:

- The first, from the Converge Project (as noted in 3f above), critically assesses issues associated with measurement and indicators, including different types of information and what they measure, data integrity and interpretation, and recommends use of a systems approach to identifying indicators that enable progress towards a desired state to be identified (based on an "improved DPSIR loop" that focuses on Driving forces, Pressures, States, Impacts, and Responses)⁴⁸.

⁴⁶ Jones A et al, 'Indicators for Sustainable Prosperity? Challenges and Potential for Indicator Use in Political Processes', CUSP Working Paper No. 3, October 2016.

⁴⁷ Roderick I and the CONVERGE Project Team, 'Report on how ranking of degree of convergence may be undertaken – calculating a convergence baseline', CONVERGE Deliverable 16, 2013, p30. See also the 'Happy City Index' report, 2016, which consider five wellbeing domains – Work, Health, Education, Place and Community.

⁴⁸ Roderick I and the CONVERGE Project Team, 'Report on how ranking of degree of convergence may be undertaken – calculating a convergence baseline', CONVERGE Deliverable 16, 2013, Section 7.1.

- The second, from the CUSP, reviews key critiques of indicators and their political use, including issues with simplification, quantification, interpretation, complexity and immeasurability. CUSP conclude that indicators could have a useful but limited role, that they force clarity and rigour that exposes priorities and political beliefs, and that they can create a platform for debate and new understandings⁴⁹.
- The third, from the World Council on City Data (WCCD), is a new international standard and certification system, ISO 37120, published in May 2014. ISO 37120 defines and establishes definitions and methodologies for a set of indicators to steer and measure the performance of city services and quality of life. WCCD states that the standard includes a comprehensive set of 100 indicators — of which 46 are core — that measures a city's social, economic, and environmental performance⁵⁰.
- The fourth, from Happy City, is the Happy City Index (HCI), which has been designed to monitor a city's progress, defined as success in providing the conditions that create 'sustainable wellbeing'. The HCI consists of 'City Maps' (to provide an instant picture of how major cities across England are doing) and 'City Scorecards' (based on over 60 indicators across 5 well-being domains)⁵¹.

4e The Challenges of Public Presentation

The UKSSD draws attention to the need for "a simpler, high-level presentation of performance ... to raise awareness and support from the general public"⁵².

It adds that:

When aggregating performance data to make it more understandable to a broad audience, it is critical that the methodology and raw data used to produce aggregates remains accessible. The Government should commit to produce annual reporting on the SDGs in two formats: one comprehensive target-by-target document, including the raw data underpinning it and one high-level report to summarise performance in an accessible way. Only a combination of detailed data and high-level narrative will make reporting on SDG performance truly transparent – for experts and laypeople alike.

The CUSP makes a similar point: "To achieve maximum impact the ONS and Government should consider developing single headline indicators for the themes that are most important. Thus there could be a 'country that works for everyone' indicator, based on equality, a health indicator, and so on"⁵³. It points to a New Economics Foundation report⁵⁴ which describes the kind of approach that could be adopted.

Although acknowledging the role that headline indicators could play in aiding communication, the Newcastle University UK SDG gap analysis suggests that its study:

⁴⁹ Jones A et al, 'Indicators for Sustainable Prosperity? Challenges and Potential for Indicator Use in Political Processes', CUSP Working Paper No. 3, October 2016.

⁵⁰ See the World Council on City Data at <http://www.dataforcities.org/wccd/>.

⁵¹ Happy City, 'Happy City Index', 2016.

⁵² UKSSD, Evidence to the Environmental Audit Committee, September 2016.

⁵³ CUSP, 'SDGs in the UK Inquiry', evidence to the Environment Audit Committee, September 2016.

⁵⁴ New Economics Foundation, 'Five Headline Indicators of National Success', October 2015.

offers a set of countervailing reasons against such an exercise. Much of the normative power and relevance of the SDG agenda lies in the detail ... An early or unsophisticated move to a headline set of indicators, furthermore, risks “leaving behind” disadvantaged groups, and also risks missing interlinked problems and solutions, so hampering policy coherence.⁵⁵

4f Implications for Potential Use or Implementation of the SDGs in Bristol.

As set out in 3e above, the first objective of the Bristol SDG Alliance is to use the SDGs to “drive the policy framework for long-term city-region development and resilience”, and the Alliance sees the SDGs as a “whole city” framework for responding to economic, social and environmental challenges.

It is the contention of this paper that there are good reasons for making a “friendly challenge” to this objective and aspiration, with the aim of prompting reflection and discussion about the most appropriate and effective way of using the SDGs in Bristol.

These reasons arise in part from the comments and concerns above, but also from the observation that the 50 year RS is already set to provide a “whole city” framework for addressing economic, social and environmental challenges. It should be noted, in particular, that the Council’s draft Corporate Strategy refers to the “new strategic focus on building resilience in the council and the city”, and to its role in “developing an ambitious, long-term direction for the city”, which will enable Bristol to “rise to the global and local challenges that we face” (see section 3a above).

In this context, it is difficult to see how the SDGs might be used in Bristol as a “whole city” framework to respond to economic, social and environmental challenges. Nonetheless, there might be other ways to meet the SDG Alliance objective to use the SDGs to “drive the policy framework for long-term city-region development and resilience”. Perhaps these ways could include using the SDGs and associated targets to inform development of the RS, not only with regard to a new set of city metrics to evaluate projects and programmes (see 3e and 4d above), but also to review and develop its goals, and to guide and prompt the identification and development of appropriate actions?

The rest of this paper provides a basis for addressing this question by exploring the linkages between resilience and sustainability from systems and programmatic perspectives, including through mapping RS goals and actions and the SDGs and associated targets.

5 Resilience and Sustainability: Conceptual Linkages

This section provides an overview of the conceptual linkages between resilience and sustainability, based on consideration of: the social-ecological systems perspective than underpins both concepts; the consequent importance of the idea of adaptive governance; the potential for conflicts between measures to address resilience and sustainability; arguments for retaining the specificity of the two concepts; and the use of the ‘proximity grid’ and the need to consider the idea of ‘convergent resilience’.

⁵⁵ Long G, ‘Measuring up to the SDGs in the UK’, evidence to the Environmental Audit Commission, 2016

5a A Social-Ecological Systems Perspective

In a paper on resilience for the World Summit on Sustainable Development in 2002, Folke and colleagues write that the goal of sustainable development is “to create and maintain prosperous social, economic, and ecological systems” and that “these systems are intimately linked as humanity depends on services of ecosystems for its wealth and security”. Moreover, they point out, when human action renders ecosystems unable to provide these services, it has consequences for human livelihoods, vulnerability, and security, representing a loss of resilience⁵⁶.

Folke and colleagues go on to focus on the insights from research about the essential role of resilience for the prosperous development of society. They write that: “A growing number of case studies have revealed the tight connection between resilience, diversity and sustainability of social-ecological systems.”

More recently, Elmqvist highlights that cities are increasingly “becoming the central nexus of the relationship between people and nature, where cities dominate demands for ecosystem services and are main sources of global environmental impacts”⁵⁷. As such, a social-ecological approach will increasingly be necessary in order to succeed in enhancing human well-being in urban areas in the face of new and complex challenges.

Elmqvist points out that cities can never become fully self-sufficient, so cannot be considered “sustainable” without acknowledging and accounting for their dependence on ecosystems, resources and populations from other regions around the world. Hence, a more appropriate conceptualization of urban sustainability is one that incorporates a complex social-ecological systems perspective of urban areas and their global hinterlands, and one that recognizes that urban areas are embedded in, and are significant parts of, the operation of the biosphere. As such, the focus should not just be on sustainability goals or aspirations, but also on resilience and transformations as components of the urbanization process. In other words, we need to consider both resilience and sustainability as key attributes of effectively functioning socio-ecological systems.

The importance of geographic scale is discussed further below in section 5e on the proximity grid and ‘convergent resilience’.

5b Adaptive Governance

A further consequence of adopting a socio-ecological systems perspective is a need to shift from policies that aspire to control change, to those that manage the capacity of social-ecological systems to cope with, adapt to, and shape change. Folke and colleagues argue that management that uses rigid control mechanisms to harden the condition of social-ecological systems can erode resilience and promote collapse. They point to many examples of management that suppressed natural disturbance regimes or altered slowly-changing ecological variables, leading to disastrous

⁵⁶ Folke C et al, ‘Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations’, Scientific Background Paper on Resilience for the process of The World Summit on Sustainable Development on behalf of The Environmental Advisory Council to the Swedish Government, 2002.

⁵⁷ Elmqvist T, ‘On Urban Social-Ecological Systems, Sustainability and Resilience- Implications for SDGs and Development of Indicators’, ICSU and Diversitas, 2014

changes in soils, waters, landscape configurations or biodiversity that did not appear until long after the ecosystems were first managed.

In contrast, according to Folke and colleagues, management that builds resilience can sustain social-ecological systems in the face of surprise, unpredictability, and complexity. Resilience-building management is flexible and open to learning. It attends to slowly-changing, fundamental variables that create memory, legacy, diversity, and the capacity to innovate in both social and ecological components of the system. It also conserves and nurtures the diverse elements that are necessary to reorganize and adapt to novel, unexpected, and transformative circumstances.

For Folke and colleagues, it follows that policy should highlight the interrelationships between the biosphere and the prosperous development of society. They argue that although most people appreciate that development is ultimately dependent on the processes of the biosphere, we have tended to take the support capacity of ecosystems for granted. However the erosion of nature's support capacity leads to vulnerability. Policy should strengthen the perception of humanity and nature as interdependent and stimulate development that enhances resilience in social-ecological systems. More recently, Folke and colleagues have referred to this approach as 'Biosphere Stewardship'⁵⁸.

Folke and colleagues also argue that policy should create space for flexible and innovative collaboration towards sustainability, with open institutions that allow for learning and the building of adaptive capacity. Policy frameworks are needed that create action platforms for adaptive management processes and flexible multi-level governance that can learn, generate knowledge and cope with change. Such systems create a diversity of management options of significance for responding to uncertainty and surprise⁵⁹.

For Pisano, this approach to adaptive governance – of “managing for resilience” - enhances the likelihood of sustaining desirable pathways for development, and exposes the strong need for the governance of sustainable development to embrace resilience thinking⁶⁰.

5c *The Potential for Conflicts between Measures to Address Resilience and Sustainability*

Although resilience and sustainability can be seen as closely connected attributes of effectively functioning socio-ecological systems, there is a need to ensure that measures to achieve them are not at odds with each other.

MacPhearson highlights that: “Sustainable city initiatives are often those that maximize efficiency, minimize energy, and reduce redundancy and material use. Yet, redundancy is one of the hallmarks

⁵⁸ Folke C, Biggs R, Norström A V, Reyers B, and Rockström J, 'Social-ecological resilience and biosphere-based sustainability science', *Ecology and Society* 21(3):41, 2016.

⁵⁹ The Resilience Alliance has produced an overview comparing the key features of conventional and adaptive governance. See 'Assessing resilience in social-ecological systems', *Workbook for practitioners*. 2010

⁶⁰ Pisano U, 'Resilience and Sustainability: Theory of Resilience, Systems Thinking and Adaptive Governance, ESDN Quarterly Report No 26, September 2012.

of a resilient system”⁶¹. He adds that careful assessment will often be needed and gives the example of urban density:

In the sustainability discourse dense urban centers are the key to a sustainable future, and yet, the more dense our urban settlements, the more socially and economically vulnerable they may be to disturbance whether it is coastal flooding, disease outbreaks, political unrest, or economic disturbances. The tight connectivity within dense urban systems — dense in population, but also infrastructure, social ties, and biogeochemical and economic flows — can contribute to resilience, or increase vulnerability. We must be careful not to assume density is positive or negative, but carefully consider, probably on a case-by-case basis, how urban planning, governance, and management for both resilience and sustainable futures can ensure resilience goals that overlap and support sustainability goals.

Elmqvist also points out that too strong an emphasis on efficiency (maximising outputs) can erode resilience through a deliberate reduction in redundancy and connectivity. The loss of redundancy and connectivity might create vulnerabilities in the urban system as a result of an increased dependence on a few resource sources and the entire system might become unstable having insufficient overlap in functions⁶². For Elmqvist, this has large consequences for the institutional structure and governance of resources and represent challenges in urban planning.

Walker and Salt point out that connectivity can be a double-edged sword, arguing that resilient systems would ‘consist of modular components’⁶³. They state: “In resilient systems, everything is not necessarily connected to everything else. Over connected systems are susceptible to shocks and they are rapidly transmitted through the system. A resilient system opposes such a trend; it would maintain or create a degree of modularity.”

Pisano uses another example of the tensions that can arise. He points to the ways in which climate change adaptation responses (SDG 13) run the risk of reducing system resilience if not carefully conceived and implemented. Drawing on the work of Adger and colleagues, he provides an overview of 9 studies of adaptation responses with both positive and negative effects on resilience⁶⁴. For Pisano, this shows that there are definite trade-offs between policy objectives focussed on “efficient and effective” adaptation (narrowly defined) and those strategies which seek to retain resilience by investing in the underlying capacity to adapt both to climate and to other stresses that affect social–ecological systems.

5d The Need to Retain the Specificity of the Two Concepts

McPhearson warns us that many cities around the world are using the concept of resilience “as a replacement for sustainability, which it is not. Resilience and sustainability need to be linked, but

⁶¹ McPhearson T, ‘The Rise of Resilience: Linking Resilience and Sustainability on City Planning’, 2014, <http://www.thenatureofcities.com/2014/06/08/the-rise-of-resilience-linking-resilience-and-sustainability-in-city-planning/>

⁶² Elmqvist T, ‘On Urban Social-Ecological Systems, Sustainability and Resilience- Implications for SDGs and Development of Indicators’, ICSU and Diversitas, 2014.

⁶³ Walker B and Salt D, ‘Resilience Thinking: Sustaining Ecosystems and People in a Changing World’, 2006.

⁶⁴ Pisano U, ‘Resilience and Sustainability: Theory of Resilience, Systems Thinking and Adaptive Governance, ESDN Quarterly Report No 26, September 2012, Box 4.1.

with care and clarity”⁶⁵. For McPhearson, “the large overlap in the meaning of resilience and sustainability threatens to make both concepts weak. I fear we are quickly losing hold of the specificity of these influential concepts, and therefore the power of the resilience approach to improve human wellbeing in urban contexts”.

MacPhearson also makes the important point that “resilience needs to be linked to sustainability so that the resilience we are trying to plan and design for actually helps us move towards desired future sustainable systems states, and not undesirable ones. Current resilience planning and management efforts may just as likely be locking our urban systems into undesirable trajectories, away from sustainability”. For McPhearson, “harnessing resilience to reinforce system dynamics that promote sustainability is key to achieving future desired sustainability states”.

Elmqvist takes this perspective a step further:

My view is that we may accept that the concepts are quite similar when addressing the global scale, but we may give them a distinctly different meaning when addressing other scales. At regional and local scales resilience could more be seen as an approach (non-normative process) to meet the challenges of sustainable development (normative goal). Treating resilience as non-normative at these scales is preferable since knowledge about the components of resilience could be used to either build or erode resilience depending on whether a transformation is desirable or not in a specific context⁶⁶.

This raises an intriguing question in the context of the discussion about the potential use of the SDGs in Bristol (section 4e): rather than use a set of specific resilience goals would it be more appropriate to look at how the SDGs might be most effectively used within the RS? This question is returned to in section 7a below.

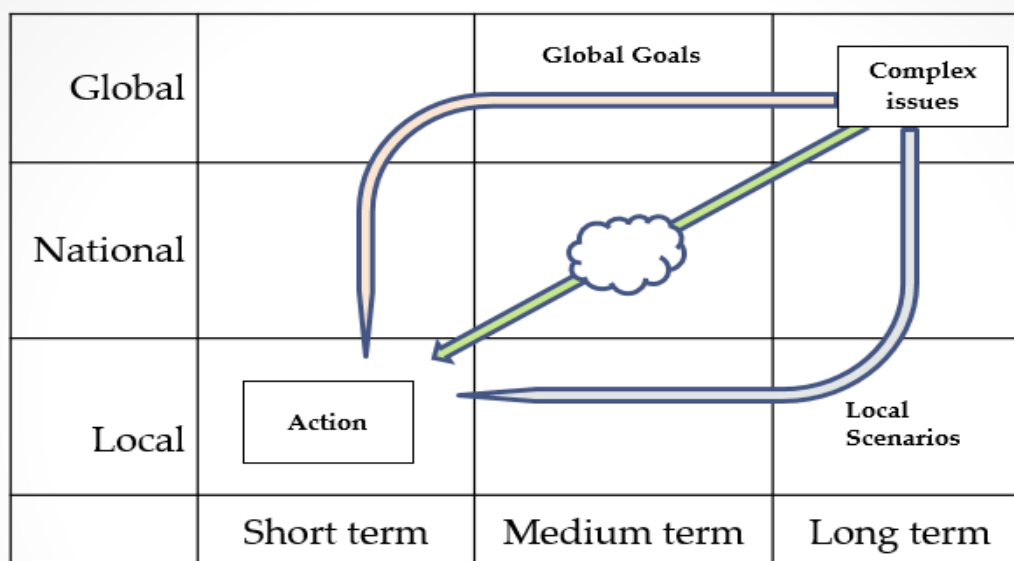
Elmqvist goes on to highlight that urban sustainability and resilience thinking, and policies derived from this thinking, must, to a much greater extent, address scales and consider urban dependence and impacts on distant populations and ecosystems. For Elmqvist, there is an apparent danger of applying too narrow an urban scale for these types of policies, since, for example, building (desired) resilience in one city may likely lead to erosion of resilience or create undesired resilience elsewhere.

⁶⁵ McPhearson T, ‘The Rise of Resilience: Linking Resilience and Sustainability on City Planning’, 2014, <http://www.thenatureofcities.com/2014/06/08/the-rise-of-resilience-linking-resilience-and-sustainability-in-city-planning/>

⁶⁶ Elmqvist T, ‘Urban Sustainability and Resilience: Why we need to focus on scales’, March 2013, <http://www.thenatureofcities.com/2013/03/27/urban-sustainability-and-resilience-why-we-need-to-focus-on-scales/>. See also Elmqvist T, ‘On Urban Social-Ecological Systems, Sustainability and Resilience- Implications for SDGs and Development of Indicators’, ICSU and Diversitas, 2014.

5e The Proximity Grid and ‘Convergent Resilience’

The question of scale also informs thinking within the Schumacher Institute’s Converge Project. This uses the ‘proximity grid’ to introduce clarity into thinking about both geographic scale and time⁶⁷.



The proximity grid

The proximity grid enables us to visualise the different scales of place and time, and to explore different ways to shift from global, long term thinking to local, short term thinking. So, for example, informed by global long term challenges, the UN’s SDGs provide global scale medium term goals that take us to 2030. The UK Government’s contested approach to implementing the SDGs (see 3c and 4b above) represents national action, arguably with too much focus on, and selectivity concerning, short-term actions. Discussion about the use of the SDGs in Bristol will allow the emergence of ideas for local action, shaped by the UN’s global medium term goals, and mediated by concerns about the UK Government’s approach on the national scale. In addition, as suggested in section 4f above, that discussion could also consider how the SDGs and associated targets might be used to inform development of the RS. The RS derives from a different route to thinking about global medium and long-term issues, facilitated by Bristol’s involvement in the international 100RC initiative. This is likely to complicate but enrich short term planning for specific activities (see section 7 below).

In the light of the proximity grid, the Convergence project has suggested that perhaps the phrase “Think globally, act locally” should be extended to “Think globally and long term, act locally and now”. In addition, it suggests that it is important to “extend our localness to the global in the present” to arrive at what it calls “convergent resilience”. This involves putting in place processes to help other communities across the world to improve their resilience at the same time as improving our own.

⁶⁷ Roderick I, ‘Convergence Principles and Policy Making’, unpublished Schumacher Institute paper.

6 Resilience and Sustainability: Mapping the Programmatic Linkages

Having considered the conceptual linkages between resilience and sustainability, it is now time to look at the programme linkages, particularly between the goals and actions in Bristol's 50 year RS, and the SDGs and their associated targets. This is done by: outlining some commentaries on key references to resilience in the SDGs; mapping the RS goals to the SDGs; mapping the RS actions to the SDGs and associated targets; and mapping the SDGs and targets to resilience actions.

6a Commentaries on References to Resilience in the SDGs

Various organisations have already drawn attention to the way in which the concept of resilience has been, or could be, used in some of the SDGs.

Interpeace⁶⁸, established by the United Nations to develop innovative solutions to build peace, highlights that implementation of the SDGs should help to “mainstream peace in international policy, with all signatories committing to ‘promote peaceful and inclusive societies’ under Goal 16”. According to Interpeace, peacebuilding evidence shows that a resilience approach is likely to aid implementation of SDG 16 (peaceful and inclusive societies), because it helps shift focus away from “fault-lines for fragility” to “endogenous assets, capacities and strengths”. For Interpeace, this focus on “endogenous capacities for peace” offers a “convening power” that enables people to more willingly participate in consultations and dialogue leading to programme and policy design.

Interpeace go on to point out that:

The language of resilience, has indeed been used with some frequency in the Agenda for Sustainable Development, specifically in framing Goals 1 and 11, 13 and 14. However, resilience was *not* referred to in Goal 16 in relation to peaceful societies, where the aspiration to make societies resilient to violent conflict – or more ambitiously: “resilient *for* peace” – might perhaps have been particularly important. The value of this language, if framed by the understanding of resilience for peace ..., is that it should safeguard against reducing the broader peace goal to a checklist of externally imposed or top-down indicators. Applying the concept of “Resilience for peace” to Goal 16 can help highlight the importance of endogenous capacities and agency of local actors, alongside the need for effective institutions to ensure not only that the goal is met, but also *sustained over time*.

The UN Office for Disaster Risk Reduction (UNISDR) makes similar points about the importance of resilience⁶⁹. After identifying the way in which 25 targets relate to disaster reduction in 10 of the 17 SDGs, the UNISDR concludes that building resilience will be fundamental to achieving the SDGs. Amongst a range of opportunities for building resilience, UNISDR draws attention to the benefits of cross fertilisation between stakeholders working on the SDGs and on resilience.

6b Mapping the RS Goals to the SDGs

Table 1 in the Annex contains an initial mapping of the pillars and goals in Bristol's 50 year RS to the SDGs. This leads to four main observations:

⁶⁸ Interpeace, ‘Strengthening Peace through Resilience in the 2030 Agenda for Sustainable Development’, Policy Brief.

⁶⁹ UNISDR, ‘Disaster Risk Reduction and Resilience in the 2030n Agenda for Sustainable Development’, a reflection paper, October 2015.

- I. The RS pillar of ‘sustainable’ is narrowly defined. It is about prospering within environmental limits through adopting new behaviours and technology, and addresses only 3 specific goals. This compares with the very broad definition of ‘sustainable’ evident from the 17 SDGs (which is more akin to prospering “within limits and with equity”).
- II. From a preliminary ‘read across’, the RS goals appear not to cover all the SDGs. In particular, there appears to be no explicit reference in the RS goals to sustainable consumption and production patterns (SDG 12), climate change adaptation (SDG 13), and marine resources (SDG 14). The lack of reference to climate change adaptation in the RS goals is perhaps surprising as RS actions 17 and 40 address this issue.
- III. Some of the RS goals are narrowly and specifically defined compared with the SDGs that they map to. In particular, there is an RS goal on child poverty, but not on other aspects of poverty.
- IV. Some of the RS goals are broad and non-specific, so it is not entirely clear whether, and if so, to what extent, they might map to specific SDGs. For example, for the purposes of this exercise, it has been assumed that the RS goal of ‘develop new partnerships to co-create and scale up city solutions’ could map to the SDGs about food and agriculture (SDG 2), economy and employment (SDG 8) and cities and human settlements (SDG 11).

It is not clear from the RS whether, and if so how, the goals might be developed in the future. The potential for achieving greater alignment between the two sets of goals is therefore unknown at this stage, but could perhaps provide an appropriate and fruitful topic for discussion.

6c Mapping the RS Actions to the SDGs and Targets

Table 2 in the Annex contains an initial mapping of the RS actions to the SDGs and associated targets. This leads to the following observations:

- V. Three actions make explicit reference to SDGs: Bristol Green Capital Partnership (action 21); city metrics for flourishing (action 28); and adaptation and resilience framework (action 40). This provides a clear basis for a conversation about the relationship between the RS and implementation of the SDGs.
- VI. Nearly all actions link to one or more SDG targets – in other words, there is a substantial read across from RS actions to SDG targets. Only one action (cultural engagement to build social cohesion – action 2) is not linked to a SDG target. Note that this action addresses the sort of gaps and omissions in the SDGs identified in 4c above.
- VII. Some actions notably link to several SDGs and targets e.g. community based action (action 8), transformative leadership (action 25), 100RC Post Industrial Group (action 34) and Urban Integrative Diagnostics (action 34).
- VIII. Some actions are broadly conceived, so may relate to numerous SDGs and targets depending on their focus for implementation e.g. social action volunteering (action 4), Green and Black (action 7), City Office (action 22) and Family Friendly City (action 23).
- IX. Not all links made in the table between RS actions and SDG targets are necessarily clearly established in practice, but could provide an opportunity for discussion about how an action develops. For example, discussion about repurposing neighbourhood partnerships (action 11) could benefit by taking into account the intention of targets about participatory human settlement planning and management (target 11.3) and participatory decision-making (16.7).

- X. Some actions link to SDG targets, but only address the target partially e.g. action 1 is about tackling street homelessness, but the linked SDG target is about access for all to adequate, safe and affordable housing.
- XI. The point about the narrow definition of the RS pillar of ‘sustainable’ (see I above) is reinforced e.g. transformative leadership (action 25) is potentially linked to 4 SDGs but not considered in the RS to link to the sustainable pillar.

An important general point emerges, which is that there appears to be considerable scope for linked SDG targets to be taken into account in discussion about how RS actions are developed and implemented. In particular, this point could apply to the actions referred to in observations V, VII, VIII, IX and X.

6d Mapping the SDGs and Targets to Resilience Actions

Table 3 in the Annex contains an initial mapping of the SDGs and associated targets to resilience actions. This ‘reverse perspective’ leads to the following observations:

- XII. Some SDG targets are linked to a significant number of RS actions e.g. economic diversity and innovation (target 8.2), social, economic and political inclusion (target 10.2), transport (target 11.2), inclusive and sustainable urbanisation (target 11.3), human and institutional capacity on climate change mitigation and adaptation (target 13.3) and participatory decision-making (target 16.7). This emergent ‘bunching’ of actions around specific targets appears to reflect the priorities for action within the RS.
- XIII. Some SDGs and targets appear not to be addressed by current RS actions. This includes the SDGs on gender equality (SDG 5) and marine resources (SDG 14), and, for example, targets on poverty (1.2 and 1.3), food and agriculture (2.3), health and well-being (3.6), education (4.5), water (6.3 and 6.5), energy (7.1), economy and employment (8.8 and 8.9), inequality (10.1 and 10.4), sustainable consumption and production (12.4, 12.6 and 12.8) and terrestrial ecosystems (15.9).
- XIV. Some targets are only linked with one RS action, and would not be achieved by that action alone. This includes, but is not confined to, targets on hunger, nutrition and sustainable food production (2.1, 2.2 and 2.4), substance abuse and pollution (3.5 and 3.9), education and skills (4.3, 4.4 and 4.7), water and sanitation (6.4 and 6.6), and economics and employment (8.4, 8.5 and 8.6).

The important point here is that a substantial number of SDG targets are not currently addressed by RS actions, or are only linked with one action, which may not alone be sufficient to achieve the target. In principle, therefore, there is considerable scope for SDG targets to be used to stimulate and guide further discussion and identification of appropriate actions for inclusion in development of the RS.

7 Key Points for Discussion and Potential Next Steps

This final section provides an overview of key discussion points and potential next steps. It focuses on how use of the SDGs and associated targets might be approached in Bristol, and on potential development of the 50 year RS.

7a Potential Use of the SDGs and Targets in Bristol

This paper has outlined the close conceptual and programme linkages between resilience and sustainable development. The conceptual linkages were addressed in Section 5 from a systems perspective. The programmatic linkages were addressed in Section 6 with a particular emphasis on Bristol's 50 year RS and potential local adoption or use of the SDGs and associated targets.

The close linkages and connectedness do not mean that sustainability and resilience amount to the same thing, or that they can be used interchangeably. Indeed, as outlined in section 5c, care is needed to ensure that measures to achieve either sustainability or resilience are not at odds with one another. Section 5d explains why we need to retain the specificity of the two concepts.

Understanding of the close connectedness, tempered by these important caveats, provides the context for addressing key questions about the most appropriate ways of using the SDGs in Bristol.

As observed in section 4f, it is difficult to see how the SDGs might be used as a “whole city” framework to respond to economic, social and environmental challenges, when the RS is already set to fulfil that role. However, it is important to ask:

- Are there are other ways to meet the Bristol SDG Alliance objective to use the SDGs to “drive the policy framework for long-term city-region development and resilience”?
- Could these ways include using the SDGs and associated targets to inform development of the RS, not only with regard to a new set of city metrics to evaluate projects and programmes, but also to review and develop its goals, and to guide and prompt the identification and implementation of appropriate actions?

This paper sets out the basis for suggesting positive responses to these questions, at least in-principle. Whether the answers to these questions are “yes” in practice depends in large part on the views of those involved in the Bristol SDG Alliance and in development of the 50 year RS.

It is also suggested that any discussion with and between these stakeholders about these questions should take account of insights from the conceptual and programmatic linkages between resilience and sustainability. In particular, these include:

- the question about the appropriateness in-principle of using ‘resilience goals’ (section 5d);
- the observations on the current RS goals (section 6b); and
- the various ways in which the SDGs and targets might be used to stimulate and guide further discussion about the development and implementation (section 6c), and identification (section 6d), of appropriate actions in the RS.

This paper has also identified a series of issues or challenges that will need to be addressed, regardless of the way in which the SDGs are adopted or used in Bristol. These include thinking through:

- whether there are specific SDGs and targets that should be prioritised (see sections 3d and 3e);
- how to overcome the inherent contradiction in the SDGs around economic growth and increased productivity, and sustainable consumption and production (section 4a);

- how to move forward effectively in the context of policy coherence in implementation of the SDGs at a national level (section 4b);
- how to address gaps and omissions in the SDGs, particularly relating to human needs (section 4c);
- how to avoid the risks of over-reliance on the use of quantitative indicators (section 4d);
- how to meet the challenges of public presentation (section 4e); and
- how to ensure that measures to achieve sustainability targets are not at odds with resilience (section 5c).

7b Potential Further Development of the RS

It should be evident from this paper that the RS has adopted an admirably broad view of resilience and a welcome focus on transformative actions (section 3a and Table 2). A range of features of the RS also indicate that its preparation has been informed by a systems perspective, including references to the 7 qualities of resilience, the 5 tensions or paradoxes and its explicit consideration of scales of place and time (section 3a).

Nonetheless, as outlined in section 7a, this paper has suggested that the RS would benefit from careful assessment of the ways in which the SDGs and associated targets could inform its further development, not only with regard to a new set of city metrics to evaluate projects and programmes, but also to review and develop its goals, and to guide and prompt the identification, development and implementation of appropriate actions.

In addition, the following questions relevant to future development of the RS arise from this paper:

- Does the RS pay sufficient regard to the City's current assets, capacities and strengths, and ways of protecting or enhancing them? Should the RS pay greater regard to coping mechanisms and crisis management⁷⁰, in addition to the current focus on adaptation and transformation? It is notable that the P4C 'Business Resilience Handbook' places more emphasis on coping mechanisms and crisis management than the RS (see sections 3a and 3b).
- Does the RS pay sufficient regard to the City region's socio-ecological systems and the ecosystem services it provides (section 5a)? Could the RS do more to highlight the interdependencies of nature and humanity (section 5b)? Could the RS do more to provide actions that relate to living within planetary limits and boundaries (sections 2 and 3f)?
- Does the RS pay sufficient regard to the need for flexible, adaptive, multi-level governance (section 5b), particularly with regard to the City Council's own decision processes (and its relationship with the City Office and potential relationships with Neighbourhood Partnerships – RS actions 22 and 11)?
- Does the RS pay sufficient regard to fundamental human needs and the ways in which they can be met (section 4c)?
- Does the RS pay sufficient regard to the need for economic transformation (section 4a)⁷¹? It is notable that Bristol's Mayor, Marvin Rees, has recently written that: "The prevailing capitalist

⁷⁰ See for example, Sellberg MM, Wilkinson C, and Peterson GD, 'Resilience assessment: a useful approach to navigate urban sustainability challenges'. *Ecology and Society*, 20(1): 43, 2015, for an account of the way discussion about the use of the Resilience Assessment Workbook can lead to a focus on ways of addressing crisis management.

⁷¹ There is a considerable recent literature on 'new economy' initiatives, the emergence of new economic models, and ways of encouraging businesses to adopt genuinely sustainable goals and practices. See, for example: Goff C,

model has had its uses. But as we confront the fact that our political economic challenges must move from merely getting us ‘stuff’ to delivering individual health, social cohesion and environmentally sustainable development, it is vital that we revisit the dominant model. And the scale of the economic reinvention we should pursue should be commensurate with the extent to which we believe the dominant model is either unable to meet the challenge of the world as it is, or is actually harming us.”⁷²

- Does the RS pay sufficient regard to the need for a transformation to a sustainable and resilient food system? Rockström, for example, highlights the food system as one of the three critical transformations that are required⁷³.
- Does the RS pay sufficient regard to the local authority planning function? Is there a need to build on action 40 in the RS to address more fundamental concerns about the way in which the planning system is failing to deliver sustainable development⁷⁴?

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‘Creating Good City Economies in the UK’, Friends Provident Foundation, 2016; Volans, ‘Breakthrough Business Models’, commissioned by the Business and Sustainable Development Commission, September 2016; and Hurth V et al, ‘Reforming Marketing for Sustainability: Towards a Framework for Evolved Markets’, Friends of the Earth Big Ideas.

⁷² See the Mayor’s Foreword in Goff C, ‘Creating Good City Economies in the UK’, Friends Provident Foundation, 2016.

⁷³ Rockström J, ‘Bounding the Planetary Future: Why We Need a Great Transition’, A Great Transition Initiative Essay, April 2015.

⁷⁴ TCPA, ‘A Crisis of Place: Are we Delivering Sustainable Development through Local Plans?’, 2016.

ANNEX: BOXES AND TABLES

BOX 1: BRISTOL RESILIENCE STRATEGY – PILLARS AND GOALS

Fair - Every person living in Bristol has the assets and opportunities to enjoy a good quality of life. Goals, by 2066 Bristolians will:

- Be providing opportunities for all to close the education gap
- Provide affordable housing for all
- Be free from child poverty
- Be free from health inequality
- Deliver a fair income ratio in the city between highest and lowest incomes

Liveable - The city centre and neighbourhoods are great places for people of all ages to live, work, learn and play. Goals, by 2066 Bristolians will:

- Benefit, across the whole city, from the multi-functional value of green infrastructure and the natural environment
- Live in an age-friendly city, with all ages able to access all necessary services within a 20 minute journey by a sustainable mode of transport
- Achieve clean air for Bristol

Sustainable - The city and region prosper within environmental limits through adopting new behaviours and technology. Goals, by 2066 Bristolians will:

- Develop a zero waste city
- Live in a carbon neutral city
- Live in a circular city

Agile - Bristol citizens and leaders make effective decisions based on shared priorities and real time information. Goals, by 2066 Bristolians will:

- Be using city data to reduce inequality
- Develop new partnerships to co-create and scale up city solutions
- Deliver local bonds and place-based investment to transform the city

Connected - A strong network of local communities promotes trust, cooperation and shared action across the city. Goals, by 2066 Bristolians will:

- Be living by a city charter for shared values
- Benefit from city-wide community cohesion
- Design and deliver services by self-organised communities

BOX 2: THE UN SUSTAINABLE DEVELOPMENT GOALS

Goal 1. End poverty in all its forms everywhere

Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Goal 3. Ensure healthy lives and promote well-being for all at all ages

Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Goal 5. Achieve gender equality and empower all women and girls

Goal 6. Ensure availability and sustainable management of water and sanitation for all

Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all

Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Goal 10. Reduce inequality within and among countries

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable

Goal 12. Ensure sustainable consumption and production patterns

Goal 13. Take urgent action to combat climate change and its impacts

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development.

TABLE 1: INITIAL MAPPING OF RESILIENCE PILLARS AND GOALS TO SDGS		
RESILIENCE PILLARS	RESILIENCE GOALS (by 2066)	SDGS
Fair	Provide opportunities for all to close the education gap	4 Education
	Provide affordable housing for all	11 Cities and settlements
	To be free from child poverty	1 Poverty
	To be free from health inequality	3 Health and well-being
	To deliver a fair income ratio between highest and lowest incomes	8 Economy and employment 10 Inequality
Liveable	Benefit, across the whole city, from the multi-functional value of green infrastructure and the natural environment	11 Cities and settlements 15 Terrestrial ecosystems
	Live in an age-friendly city, with all ages able to access all necessary services within a 20 minute journey by a sustainable mode of transport	11 Cities and settlements
	Achieve clean air for Bristol	3 Health and well-being 11 Cities and settlements
Sustainable	Develop a zero waste city	8 Economy and employment
	Live in a carbon neutral city	7 Energy
	Live in a circular city	8 Economy and employment 9 Infrastructure and industry
Agile	Be using city data to reduce inequality	11 Cities and human settlements
	Develop new partnerships to co-create and scale up city solutions	2 Food and agriculture 8 Economy and employment 11 Cities and human settlements
	Deliver local bonds and place-based investment to transform the city	8 Economy and employment 9 Infrastructure and industry
Connected	Be living by a city charter for shared values	5 Gender equality 10 Inequality 16 Peaceful and inclusive societies
	Benefit from city-wide community cohesion	16 Peaceful and inclusive societies
	Design and deliver services by self-organised communities	11 Cities and human settlements

TABLE 2: INITIAL MAPPING OF RESILIENCE ACTIONS TO SDGS AND TARGETS				
RESILIENCE ACTION	TIMESCALE	RESILIENCE PILLAR	SDG	SDG TARGET
1 Tackling street homelessness – City Office strategic plan	Short-medium term	Fair, liveable, connected	11 Cities and settlements	11.1 By 2030, ensure access for all to adequate, safe and affordable housing
2 Cultural engagement to build social cohesion – city council with Mescaldis	Short-term	Fair, liveable, connected	16 Peaceful and inclusive societies	None
3 Votes for 16 year olds – ask for devolved responsibility for local elections	Long-term	Fair, agile, connected	16 Peaceful and inclusive societies	16.7 ensure responsive, inclusive, participatory and representative decision-making at all levels
4 Social action volunteering – addressing key city challenges	Short-medium term	Fair, liveable, sustainable, agile and connected	16 Peaceful and inclusive societies Potentially numerous depending on challenges addressed	None Potentially numerous
5 Citizen data engagement – city council will build capacity of partners/citizens to use data	Medium-term	Liveable, agile	11 Cities and settlements	11.3 By 2030, enhance inclusive and sustainable urbanisation and capacities for participatory, integrated and sustainable human settlement planning and management ...
6 Participatory city – empower local people to invent projects	Medium-term	Liveable, sustainable, agile	11 Cities and settlements	11.3 By 2030, enhance inclusive and sustainable urbanisation and capacities for participatory, integrated and sustainable human settlement planning and management ...
7 Green and black – BAME ambassadors raise environmental awareness in communities and catalyse projects	Medium-term	Fair, sustainable	16 Peaceful and inclusive societies Potentially 2 food and agriculture, 6 water, 7 energy, 11 cities, 12	16.7 ensure responsive, inclusive, participatory and representative decision-making at all levels Potentially numerous dependent on projects

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			consumption and production, 13 climate change, 14 marine, 15 terrestrial ecosystems	
8 Community-based adaptation – build capacity in vulnerable and marginalised communities	Short-term	Fair, liveable, connected	1 End poverty 10 Reduce inequality 11 Cities and settlements	1.5 By 2030, build the resilience of the poor and those in vulnerable situations ... 10.2 By 2030, empower and promote the social, economic and political inclusion of all ... 11.3 By 2030, enhance inclusive and sustainable urbanisation and capacities for participatory, integrated and sustainable human settlement planning and management ...
9 New models of housing delivery	Short-medium term	Fair, liveable, agile	11 Cities and settlements	11.1 By 2030, ensure access for all to adequate, safe and affordable housing
10 Free bus travel for under 16s	Medium-term	Fair, liveable, sustainable	11 Cities and settlements	11.2 By 2030, provide access to safe, affordable, accessible transport systems for all
11 Repurpose neighbourhood partnerships – improve representativeness and channel funding	Medium-term	Fair, liveable, connected	11 Cities and settlements 16 Peaceful and inclusive societies	11.3 By 2030, enhance inclusive and sustainable urbanisation and capacities for participatory, integrated and sustainable human settlement planning and management ... 16.7 ensure responsive, inclusive, participatory and representative decision-making at all levels
12 Legible city – improve information for transport choices	Short-medium term	Fair, liveable and connected	11 Cities and settlements	11.2 By 2030, provide access to safe, affordable, accessible transport systems for all
13 20 year transport strategy [TAKE ACCOUNT OF COOP PROPOSALS 2P20]	Medium term	Fair, liveable, sustainable, agile	11 Cities and settlements	11.2 By 2030, provide access to safe, affordable, accessible transport systems for all
14 Clean air city – citizen led policies and actions	Medium term	Liveable, sustainable, agile	3 Health and well-being	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

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			11 Cities and settlements	11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality ...
15 Climate change adaptation plan – a plan to future proof the city	Short term	Liveability, sustainability, agile	9 Resilient infrastructure and sustainable industrialisation 11 Cities and settlements 13 Climate change	9.1 Develop quality, reliable, sustainable and resilient infrastructure ... 11.5 By 2030, significantly reduce the number of deaths and the number of people affected ... caused by disasters ... 13.1 ... adaptive capacity ... 13.2 ... integrate into strategies ... 13.3 ... human and institutional capacities ...
16 City financing structure – blend public and private spending on projects to improve local resilience	Medium term	Fair, liveable, agile	1 End poverty 8 Economy and employment 13 Climate change	1.5 By 2030, build the resilience of the poor and those in vulnerable situations ... 8.3 Encourage growth of SMEs 13.3 ... human and institutional capacities ..
17 Manage our future flood risk – strategy for adaptive programme to meet tidal floods	Medium term	Liveable, sustainable, agile	11 Cities and settlements 13 Climate change	11.5 By 2030, significantly reduce the number of deaths and the number of people affected ... caused by disasters ... 13.1 ... adaptive capacity
18 My wild rainwater street – improving local biodiversity and sustainable drainage	Medium term	Liveability, sustainable, connected	6 Water and sanitation 15 Terrestrial ecosystems	6.6 By 2020, protect and restore water-related ecosystems ... 15.1 By 2020, ... sustainable use of terrestrial and inland freshwater ecosystems and their services .. 15.5 Urgent and significant action to reduce degradation of natural habitat, halt the loss of biodiversity ...
19 Bristol manifesto for race equality – values, vision, a call for action and timelines	Short term	Fair, connected	10 Reduce inequality 16 Peaceful and inclusive societies	10.2 By 2030, empower and promote the social, economic and political inclusion of all ... 10.3 ensure equal opportunity and reduce inequalities of outcome ... 16.7 ensure responsive, inclusive, participatory and representative decision-making at all levels

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20 City knowledge exchange platform – connecting knowledge, project ideas and funding	Long term	Sustainable, agile, connected	11 Cities and settlements	11.3 By 2030, enhance inclusive and sustainable urbanisation and capacities for participatory, integrated and sustainable human settlement planning and management ...
21 Bristol Green Capital Partnership – range of sustainability projects, including SDGs as a framework for city development	Short term	Liveability, sustainable, connected	1-16 as relevant to UK cities	Potentially numerous
22 City Office – shared approach to strategic leadership and delivery of targeted projects	Medium term	Fair, agile, connected	Various dependent on priorities. Likely to include 10 reduce inequalities, 11 cities and settlements and 16 peaceful and inclusive societies	Potentially numerous eg 10.3 ensure equal opportunity and reduce inequalities of outcome ...
23 Family friendly city – focus on rights and needs of children and young people	Short-term	Fair, liveable, connected	Various dependent on scope, eg 2 food, 3 health and well-being, 4 education, 5 gender equality, 10 reduce inequalities and 16 peaceful and inclusive societies	Potentially numerous
24 University of Bristol – new city campus – focus on world leading research	Medium term	Liveable, agile, connected	4 Education 9 Resilient infrastructure Various dependent on scope of research	4.3 By 2030, ensure equal access 4.7 By 2030, ensure all learners acquire knowledge and skills needed to promote sustainable development 9.5 enhance scientific research ... Potentially numerous others
25 Transformative leadership - - enabling leaders to adapt and affect change – pilot on food sector	Short-term	Fair, liveable, agile, connected	2 Food and agriculture	2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices

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			12 Sustainable consumption and production 13 Climate change 16 Peaceful and inclusive societies	12.3 By 2030, half per capita global food waste at retail and consumer level, and reduce food losses along production and supply chains ... 13.3 Improve ... human and institutional capacity on climate change mitigation, adaptation ... 16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels
26 SevernNet circular economy plan – businesses and community enterprises developing initiatives on linkages, waste elimination and new models of enterprise/sharing economy	Medium-long term	Sustainable, agile, connected	8 Economy and employment 9 Resilient infrastructure and sustainable industrialisation 12 Sustainable consumption and production	8.4 ... resource efficiency ... sustainable production .. 9.4 ... retrofit industries to make them sustainable ... 12.5 By 2030, substantially reduce waste generation ...
27 Meaningful experience of work – City office priority re young people	Medium term	Fair, agile, connected	4 Education 8 Economy and employment	4.4 By 2030, increase ... the number of youth ... who have skills .. for employment, decent jobs and entrepreneurship 8.5 By 2030, achieve full and productive employment and decent work for all women and men ...
28 City metrics for flourishing – new set of high level city metrics – aligned with SDGs – support evaluation of projects and programmes	Medium term	Fair, liveable, sustainable, agile, connected	1-16 as relevant to UK cities	Numerous, as relevant to UK cities
29 Engine Shed 2 – hub for collaboration to promote sustainable economic growth – space for business incubation ..	Short-term	Agile, connected	8 Economy and employment 12 Sustainable consumption and production	8.2 achieve higher levels of productivity .. through diversification .. and innovation ... 8.3 promote development oriented policies ... and growth of micro, small and medium sized enterprises ... 12.2 By 2030, achieve sustainable management and efficient use of natural resources

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30 Protecting and valuing green space – valuation analysis to inform future investment decisions	Medium term	Liveability, sustainable, agile	11 Cities and settlements	11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces ...
31 Young future Bristol – equipping with digital skills	Short-medium term	Fair, agile	8 Economy and employment 11 Cities and settlements	8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training 11.3 By 2030, enhance inclusive and sustainable urbanisation and capacities for participatory, integrated and sustainable human settlement planning and management ...
32 Open data platform – open Bristol data to citizens and businesses to address challenges and promote innovation	Short-term	Agile, connected	8 Economy and employment 11 Cities and settlements	8.2 achieve higher levels of productivity .. through diversification .. and innovation ... 11.3 By 2030, enhance inclusive and sustainable urbanisation and capacities for participatory, integrated and sustainable human settlement planning and management ...
33 Natural capital trust – projects to enhance quality of environment and provide ecosystem services	Medium term	Fair, liveable, sustainable	15 Terrestrial ecosystems	15.1 By 2020, ... sustainable use of terrestrial and inland freshwater ecosystems and their services ..
34 100RC Post Industrial Group – next economy – work with other cities to share best practice and develop innovative approaches	Medium term	Sustainable, connected	8 Economy and employment 12 Sustainable consumption and production	8.2 achieve higher levels of productivity .. through diversification .. and innovation ... 8.3 promote development oriented policies ... and growth of micro, small and medium sized enterprises ... 8.4 improve resource efficiency ... and decouple economic growth from environmental degradation ... 12.2 By 2030, achieve sustainable management and efficient use of natural resources 12.7 promote public procurement policies that are sustainable ...

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35 Urban integrated diagnostics – investigate challenges in mobility and accessibility, health and happiness, equality and inclusion, and dependency on fossil fuels	Short-term	Fair, liveable, sustainable, connected	2 Food and agriculture 3 Health and well-being 10 Reduce inequality 11 Cities and settlements 16 Peaceful and inclusive societies	2.1 By 2030, end hunger and ensure access by all ... to safe, nutritious and sufficient food .. 2.2 by 2030, end all forms of malnutrition ... 3.5 strengthen prevention and treatment of substance abuse ... 10.2 By 2030, empower and promote the social, economic and political inclusion of all ... 11.2 By 2030, provide access to safe, affordable, accessible transport systems for all 11.3 By 2030, enhance inclusive and sustainable urbanisation and capacities for participatory, integrated and sustainable human settlement planning and management ... 16.1 significantly reduce all forms of violence ...
36 Resilience impact assessment – develop assessment process for how resilience is embedded into city and regional projects	Short term	Fair, liveable, sustainable, agile, connected	1-16 as relevant to UK cities	Potentially numerous
37 Resilience and west of England devolution deal – funding and powers re transport, investment, skills training, business support, housing and strategic planning	Medium term	Fair, liveable, connected	Potentially numerous	Potentially numerous
38 British Standard on city resilience – workshop to inform development of the good practice standard	Short-term	Agile, connected	1-16 as relevant to UK cities	Potentially numerous
39 Climate strategy and energy framework – low	Medium-long term	Sustainable, agile, connected	7 Energy	7.2 increase substantially the share of renewable energy

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carbon plan to reach 80% carbon reduction by 2050				7.3 double the global rate of improvement in energy efficiency by 2030
40 Adaptation and resilience framework for the Bristol Avon catchment – integrate adaptation actions in spatial planning, including addressing relevant SDGs	Medium term	Sustainable, agile, connected	Potentially numerous, including 6 Water and sanitation, 8 Economy and employment, 9 Resilient infrastructure, 11 Cities and human settlements, 12 Sustainable consumption and production, 13 Climate change, 14 marine environment	Potentially numerous eg 6.4 By 2030, substantially increase water-use efficiency ...

TABLE 3: INITIAL MAPPING OF SDGS AND TARGETS TO RESILIENCE ACTIONS

[Note: a range of cross-cutting resilience actions could apply to various SDG targets, depending on the initiatives undertaken in the actions. Cross-cutting actions include: 4 Social action volunteering, 7 Green and black, 21 Green Capital Partnership, 22 City Office, 23 Family friendly city, 24 University of Bristol new city campus, 28 City metrics, 35 Urban integrated diagnostics, 36 Resilience impact assessment, 38 British Standard on city resilience and 40 Adaptation and resilience framework for the Bristol Avon catchment. See Table 2 above for details]

SDG	SDG TARGET	SPECIFIC RESILIENCE ACTIONS
1 End poverty	1.5 By 2030, build the resilience of the poor and those in vulnerable situations ...	8 Community-based adaptation 16 City financing structure
2 Food and agriculture	2.1 By 2030, end hunger and ensure access by all ... to safe, nutritious and sufficient food ..	35 Urban integrated diagnostics
	2.2 by 2030, end all forms of malnutrition ...	35 Urban integrated diagnostics
	2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices	25 Transformative leadership
3 Health and well-being	3.5 strengthen prevention and treatment of substance abuse ...	35 Urban integrated diagnostics
	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	14 Clean air city ,
4 Education	4.3 By 2030, ensure equal access	24 University of Bristol – new city campus
	4.4 By 2030, increase ... the number of youth ... who have skills .. for employment, decent jobs and entrepreneurship	27 Meaningful experience of work

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	4.7 By 2030, ensure all learners acquire knowledge and skills needed to promote sustainable development	24 University of Bristol – new city campus
6 Water and sanitation	6.4 By 2030, substantially increase water-use efficiency ...	40 Adaptation and resilience framework for the Bristol Avon catchment
	6.6 By 2020, protect and restore water-related ecosystems ...	18 My wild rainwater street
7 Energy	7.2 increase substantially the share of renewable energy	39 Climate strategy and energy framework
	7.3 double the global rate of improvement in energy efficiency by 2030	39 Climate strategy and energy framework
8 Economy and employment	8.2 achieve higher levels of productivity .. through diversification .. and innovation ...	29 Engine Shed 2 32 Open data platform 34 100RC Post Industrial Group – next economy
	8.3 promote development oriented policies ... and growth of micro, small and medium sized enterprises ...	29 Engine Shed 2 34 100RC Post Industrial Group – next economy
	8.4 ... resource efficiency ... sustainable production ..	26 SevernNet circular economy plan
	8.5 By 2030, achieve full and productive employment and decent work for all women and men ...	27 Meaningful experience of work

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	8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training	31 Young future Bristol
9 Resilient infrastructure and sustainable industrialisation	9.1 Develop quality, reliable, sustainable and resilient infrastructure ...	15 Climate change adaption plan
	9.4 ... retrofit industries to make them sustainable ...	26 SevernNet circular economy plan
	9.5 enhance scientific research ...	24 University of Bristol – new city campus
10 Reduce inequality	10.2 By 2030, empower and promote the social, economic and political inclusion of all ...	8 Community based adaptation 19 Bristol manifesto for race equality 35 Urban integrated diagnostics
	10.3 ensure equal opportunity and reduce inequalities of outcome ...	19 Bristol manifesto for race equality 22 City Office
11 Cities and human settlements	11.1 By 2030, ensure access for all to adequate, safe and affordable housing	1 Tackling street homelessness 9 New models of housing delivery
	11.2 By 2030, provide access to safe, affordable, accessible transport systems for all	10 Free bus travel for under 16s 12 Legible city 13 20 year transport strategy 35 Urban integrated diagnostics
	11.3 By 2030, enhance inclusive and sustainable urbanisation and capacities for participatory, integrated and sustainable human settlement planning and management ...	5 Citizen data engagement 6 Participatory city 8 Community-based adaptation 11 Repurpose neighbourhood partnerships 20 City knowledge exchange platform 31 Young future Bristol

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		32 Open data platform 35 Urban integrated diagnostics
	11.5 By 2030, significantly reduce the number of deaths and the number of people affected ... caused by disasters ...	15 Climate change adaptation plan 17 Manage our future flood risk
	11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality ...	14 Clean air city
	11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces	30 Protecting and valuing green space
12 Sustainable consumption and production	12.2 By 2030, achieve sustainable management and efficient use of natural resources	29 Engine Shed 2 34 100RC Post Industrial Group – next economy
	12.3 By 2030, half per capita global food waste at retail and consumer level, and reduce food losses along production and supply chains ...	25 Transformative leadership
	12.5 By 2030, substantially reduce waste generation ...	26 SevernNet circular economy plan
	12.7 promote public procurement policies that are sustainable ...	34 100RC Post Industrial Group – next economy
13 Climate change	13.1 ... adaptive capacity ...	15 Climate change adaptation plan 17 Manage our future flood risk
	13.2 ... integrate into strategies ...	15 Climate change adaptation plan
	13.3 ... human and institutional capacities ...	15 Climate change adaptation plan 16 City financing structure 25 Transformative leadership

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15 Terrestrial ecosystems	15.1 By 2020, ... sustainable use of terrestrial and inland freshwater ecosystems and their services ..	18 My wild rainwater street 33 Natural capital trust
	15.5 Urgent and significant action to reduce degradation of natural habitat, halt the loss of biodiversity ...	18 My wild rainwater street
16 Peaceful and inclusive societies	None?	2 Cultural engagement to build social cohesion 4 Social action volunteering
	16.1 significantly reduce all forms of violence ...	35 Urban integrated diagnostics
	16.7 ensure responsive, inclusive, participatory and representative decision-making at all levels	3 Votes for 16 year olds 7 Green and black 11 Repurpose neighbourhood partnerships 19 Bristol manifesto for race equality 25 Transformative leadership