

Towards a Smart Southern Region



SMART REGION FRAMEWORK FOR THE SOUTHERN REGIONAL ASSEMBLY

Report 1: Smart Region Consultation

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Abbreviations

AEC	Atlantic Economic Corridor
AISCF	All Ireland Smart Cities Forum
BIM	Building Information Modelling
CAROs	Climate Action Regional Offices
CCS	Carbon Capture and Storage
CLLD	Community-Led Local Development
CDPs	County Development Plans
DCC	Digital Cities Challenge
DHLGH	Department of Housing, Local Government and Heritage
DJEI	Department of Jobs, Enterprise and Innovation
DRCD	Department of Rural and Community Development
ECIU	European Consortium of Universities
EI	Enterprise Ireland
EPA	Environmental Protection Agency
ERDF	European Regional Development Fund
EU	European Union
H2020	Horizon 2020
HEIs	Higher Education Institutes
ICC	Intelligent Cities Challenge
ICLRD	International Centre for Local and Regional Development
ICT	Information and Communication Technologies
IDA	Industrial Development Authority
IoT	Internet of Things
LAPs	Local Area Plans
LCCC	Limerick City and County Council
MANs	Metropolitan Area Networks
MU	Maynooth University
NBP	National Broadband Plan
NDP	National Development Plan
NPF	National Planning Framework
NSO	National Strategic Objective
NTA	National Transport Authority
NTNU	Norwegian University of Science and Technology
NZEB	Nearly Zero-Energy Buildings
ORED	Offshore Renewal Energy Development Plan
PPNs	Public Partnership Networks
R&I	Research and Innovation
RPO	Regional Policy Objective
RSES	Regional Spatial and Economic Strategy
S3	Smart Specialisation Strategy
SDGs	Sustainable Development Goals
SRA	Southern Regional Assembly
SuDS	Sustainable Urban Drainage Systems
3CEA	Three Counties Energy Agency
TII	Transport Infrastructure Ireland
UN	United Nations
WDC	Western Development Commission

List of Figures

Figure 1.1	The Southern Regional Assembly Area	14
Figure 1.2	Smart City Concepts	17
Figure 1.3	The Three Core Pillars of the RSES for the Southern Region	18
Figure 2.1	The EY smart cities framework shows that smart cuts across all aspects of urban development	22
Figure 3.1	Programme Phases of the Intelligent Cities Challenge	27
Figure 3.2	Next Generation EU Flagships for Investment and Reform	27
Figure 4.1	The UN Sustainable Development Goals	30
Figure 4.2	'Smart' Regional Priorities Objectives for the Southern Regional Assembly Area	31
Figure 4.3	Estimated Number of Co-Working hubs, as of September 2020 & Number of Remote Workable Private Sector Jobs, as of Q2 2020, in the Southern Region	32
Figure 4.4	Innovation 2020: Positioning of Priority Areas	34
Figure 5.1	The key Dimensions of a Smart Region for the Southern Region of Ireland	38
Figure 5.2	The Three Thematic Pillars of the RSES	40

List of Tables

Table 4.1	Sampling of Digital Strategies across the Southern Region	36
Table 5.1	The Role of Technology and Data in Delivering a Smart 'Green', 'Liveable' and 'Creative/Innovation' Region	47
Table 5.2	Sampling of Initiatives demonstrating value to technology and data to regional management	48



Table of Contents

List of Figures	4
List of Tables	4
EXECUTIVE SUMMARY	7

CHAPTER 1: INTRODUCTION..... 13

1.1 Purpose of Report.....	14
1.2 Defining Smart Regions.....	15
1.3 Report Methodology.....	17
1.4 This Report.....	18

1

CHAPTER 2: SMART REGIONS – A LITERATURE SYNOPSIS 19

2.1 The Evolution of the Smart City	19
2.2 Smart Cities Driving a Smart Region.....	20
2.2.1 A Scalar Challenge?.....	21
2.3 The Principles of the Smart Region	21
2.4 A Smart Region in the Southern Regional Assembly Area.....	22

2

CHAPTER 3: EU SMART CITIES AND SMART REGION PROGRAMMES – AN OVERVIEW ... 23

3.1 A Supportive EU Policy Environment	23
3.2 Strong Place-Based Leadership	24
3.3 A Strong Funding Environment.....	25
3.3.1 EU Smart Cities Information System (SCIS)	25
3.3.2 EU Digital Cities Challenge	26
3.3.3 EU Intelligent Cities Challenge	26
3.4 Conclusion	28

3

CHAPTER 4: SMART AND SUSTAINABLE REGIONS – THE ROLE OF POLICY 29

4.1 Building Sustainable Places – A Global Agenda.....	29
4.2 A New Policy Environment – Planning, Placemaking and the Smart Region	30
4.2.1 National Policy.....	30
4.2.2 Regional Policy	31
4.2.3 Local Policy	33
4.3 Promoting the Digital (Smart) Economy.....	33
4.3.1 The Digital Green Economy	34
4.4 Local Authority Digital Strategies	35
4.5 Conclusion	36

4

CHAPTER 5: DEFINING THE KEY ELEMENTS OF A SMART REGION FOR THE SOUTHERN REGIONAL – A STAKEHOLDER PERSPECTIVE..... 37

5.1 Emerging Smart Region Characteristics	37
5.1.1 Place-Making (Layer 1).....	39
5.1.2 Engagement and Subsidiarity (Layer 2).....	42
5.1.3 Collaboration (Layer 3).....	44

5

5.1.4	Connected (Layer 4).....	46
5.1.5	Technology and Data (Layer 5).....	47
5.1.6	Smart Region Governance (Layer 6).....	49
5.2	Opportunities and Barriers	51
5.3	A Smart Southern Region Framework	52

5

CHAPTER 6: CONCLUSION..... 53

6.1	Emerging Liveable Region	54
6.2	Emerging Creative Region	54
6.3	Emerging Green Region.....	54
6.4	Emerging Smart Region.....	55
6.5	Summary	55

ANNEX 1	The Research Team.....	57
ANNEX 2	Schedule of Interviews.....	58
ANNEX 3	Digital Cities Challenge.....	59

REFERENCES	60
ENDNOTES	62



Executive Summary

There is a growing recognition of the value in expanding the concept of ‘smart places’ beyond the realm of the city to include a broader regional dimension. While the narrative surrounding smart regions is still evolving, there is growing evidence to suggest that any smart region framework must be embedded in ‘place’, be informed by the presence of smart cities and/or smart towns and adopt a set of key priorities that address real-life challenges and opportunities. A core objective of the Regional Spatial and Economic Strategy (RSES) adopted by the Southern Regional Assembly (SRA) in January 2020 is to enable the sustainable, inclusive, and resilient growth of the Southern Region (SR). It recognises that smart specialisation, as one component, is a pathway to smart cities – and by extension, that smart regions are competitive, innovative, and productive regional economies. The Assembly contends that key to achieving this vision is for all locations, urban and rural, to collaborate on smart region initiatives. Within the RSES, Regional Policy Objective (RPO) 134, focused on Smart Cities and Smart Region,

“ *seeks to build on Smart Cities and Smart Region Initiatives in Cork, Limerick and Waterford, such as the All Ireland Smart Cities Forum, and seek to extend such initiatives to towns, villages and rural areas to support a Smart Region (SRA, 2020: 157).* ”

In March 2021, Maynooth University (MU) together with its research partner, the International Centre for Local and Regional Development (ICLRD), were appointed by the SRA (as partners on the Interreg Europe funded COES3ION project) to provide a smart region definition and framework to facilitate smart cities driving a smart region. The GIS expertise required to support the delivery of this programme was provided by Limerick City and County Council (LCCC). At the core of the output of this research programme is (a) defining a smart region generally, and as it applies to the SR, and (b) the development of a smart region maturity framework. Together, this will enable the region, and its sub-regions, to:

1. Understand what a smart region is;
2. Describe their own level of maturity;
3. Set plans for improvement; and
4. Measure improvement.

A Literature Synopsis

There is growing awareness of the concepts of the ‘smart city’, ‘smart village’ and, increasingly, the ‘smart region’ – largely due to the infiltration of digital technologies into everyday life, including service provision. In the 1990s and early 2000s, technology was viewed as playing a key role in improving quality of life, and cities were quick to adopt the ‘smart’ label. It was quickly recognised, however, that this technology-driven approach to smartness was flawed, and that the emphasis needed to be on addressing place-based challenges through a citizen centric model, first and foremostly.

At its simplest, a smart region can be defined as one that employs modern technology to save time and money of people who live there (Kodym and Unucka, 2017). As we expand on this, and introduce a geo-spatial layer, a smart region involves both smart cities (urban) alongside non-urban or rural areas as an integral part of its strategic programme and interventions (Misra and Ojo, 2020). It is increasingly acknowledged to be more than a singular focus on technology, big data, industry clusters (Aalto *et al.*, 2016; Hershey *et al.*, 2019) instead requiring a ‘sufficient degree’ of social and institutional density, whereby people and their active engagement is central to the process (Prada, 2017; Bauer *et al.*, 2019).

The inter-relationship and inter-reliance between the concepts of ‘smart regions’ and ‘sustainability’ is growing in prominence; with Sutriadi (2018), for example, explaining a smart region as an innovation of sustainable planning and the need to adapt to changing economic, societal and environmental circumstances in order to achieve harmonisation between development and environmental conservation/management. Similarly, the European Consortium of Universities (ECIU) developed a white paper on smart regions, arguing that there is a role for technological solutions to the challenges facing communities, namely in the areas of: Energy and sustainability; Circular economy; Transport and mobility; and Resilient communities. The ECIU goes on to argue that delivery of these solutions requires both human capital and a commitment to co-creation; and that universities should be at the centre of the process, not least given their role in civic engagement and the promotion of societal development and well-being.

The 'smart region' as a concept is still evolving and developing. Despite this, it is clear that the smart region is centred on a geographic area ('place') and brought to life through a collaborative ecosystem based on the quadruple helix model - defined by the Southern Regional Assembly as "Eolas Comhroinnte Obair le Cheile/Shared Knowledge Working Together" and involving government/public sector, industry/ business, academia, and citizens. There is a growing appreciation for the value of participatory processes and active ('smart') citizenship - with an increasing propensity towards co-creation of new knowledge based on their own areas of expertise and lived experiences (Markkula and Kune, 2015: 9).

Defining a Smart Region

While there is no unique definition of a smart region, smart regions as a concept play a key role in developing new growth dynamics, based on bottom-up entrepreneurship and innovation. As a starting point for this programme, the general definition of a smart region proposed by Matern *et al* was adopted. This contends that cities cannot be examined in isolation of their diverse surrounds and that the transition from a 'region' to a 'smart region' is enabled by societal innovation, whereby diverse urban-rural areas

“ *are spatially reframed by digital technologies and the respective social practices in a variety of fields (citizenship, governance, economy, environment, mobility, infrastructure) on a discursive, implemental and regulative level. The concept of smart regions follows a relational and social constructivist understanding of spaces and emphasises an integrated approach towards the social (re)construction of smart regions by actors and their networks (2020: 2064).*

The value of this as a general working definition, and a starting point for defining a smart region as it applies to the Southern Region (SR), is that while it acknowledges the driving role played by cities in the evolution of smart places, it recognises that innovation and 'smartness' can also emanate from rural areas and the entrepreneurialism of community.

The EU as a Driver and Enabler of Smart Regions

A key investment priority of the *EU Regional Development and Cohesion Policy 2021-2027*, is that of building **A Smarter Europe** through innovation, digitisation, economic transformation, and support to small and medium-sized businesses. Even prior to this, there has been a growing swath of EU policy that while not directly focused on smart regions does draw out key dimensions and priorities for any smart region framework. The EU's New Leipzig Charter (2020) for example focuses on the need for cities to establish integrated and sustainable urban development strategies through complex networks and partnerships, where towns and cities will have to cooperate and coordinate their policies with their surrounding areas. The same approach is relevant to building a smart and sustainable region.

Smart regions do not emerge overnight. They hinge on both formal and informal processes - being informed by policy from the EU to local level, strong leadership, adequate resourcing, and a flexibility in governance that enables opportunities to be grabbed as they arise. The promotion of smart regions is reflective of a place-based approach to development. Across OECD countries regional revitalisation is associated with factors linked to local geographies, whereby stakeholders, from all governance tiers, harness local resources and invest in enabling places to realise their development potential (Vodden *et al.*, 2015; Steinführer *et al.*, 2016). Building on the literature, this requires the adoption of place-based approaches that focus on local assets and potentiality, where regional stakeholders work to identify, harness, and invest in the distinctive features of places, thereby enabling them to develop more sustainably in their own right and to contribute to summative regional growth.

The Role of Policy

At a global level, the UN Sustainable Development Goals (SDGs) are a set of 17 agreed goals for a sustainable future to be achieved internationally by 2030. The broad objective of these Goals - from making cities sustainable, resilient, and safe to promoting sustainable agriculture - are central to placemaking and building sustainable and vibrant communities. Towards a Sustainable Europe by 2030 is the EU-wide framework for the application of the SDGs; emphasising the urgency of an ecological transition, coupled with social protection, and the need for all sectors and all tiers of government to play their respective and collective parts in delivering on the SDGs, noting the importance of policy coherence and partnership approaches.

At a national policy level, Ireland's National Planning Framework (NPF) and National Development Plan (NDP) – or Project Ireland 2040 – embraces and promotes the concept of place-making and undertakes to support initiatives focused on smart and sustainable urban growth. This includes enhancing regional connectivity and competitiveness, improving environmental sustainability, and building a fairer, more equal Ireland, all the while acknowledging that this must be done in alignment with the SDGs. Regionally, the Regional Spatial and Economic Strategy (RSES) for the SR commits to 'Developing Smart Cities and a Smart Region'. Significantly, it recognises that a smart city is much more than the use of technology. **Rather, it means smarter provision of services and use of utilities; it means a more integrated and responsive city administration; and meeting the needs of all cohorts of the population.** Regionally, the Eastern Economic Corridor and the Atlantic Economic Corridor (AEC) provide strategic opportunities for collaboration that will drive regional economic growth. Within the AEC, the potential of enterprise hubs to regenerate towns and give rise to effective balanced development is being jointly researched by Ireland's three Regional Assemblies.

Similarly, the potential of networked towns as a mechanism to drive economic growth is being investigated locally. Specifically, a focus is being placed on the existing Southwest network of Tralee, Killarney, and Killorglin (known as the Kerry Triangle); and the potential networks in the Mid-West (Galway, Ennis-Shannon and Limerick) and the South-East (Waterford, Carlow and Kilkenny). Their advancement is being taken forward through the next iteration of the County Development Plans (CDPs), at different stages of development, to ensure policy alignment with the NPF and RSES, while also reflecting the key policy priorities of national strategies in the areas of digital economy, net zero carbon, smart specialisation, regional jobs and, more recently, Ireland's Economic Recovery Plan.

A Smart Southern Region – A Stakeholders Perspective

Between March and June 2021, a total of 41 interviews were held with a range of stakeholders from across the Southern Region (SR); these included representatives from a range of local government departments, semi-state agencies, higher and further education, local elected representatives, the community sector, and private sector. Through the course of semi-structured interviews, key themes as identified through the literature and policy analysis were explored. These included:

- Perceptions of a smart region;
- The key themes/priorities of a smart region – and specifically a Smart Southern Region (SSR);
- The role of different stakeholders in the design and delivery of smart regions; and
- Opportunities and barriers to implementation of a smart region framework for the SR.

Despite their being mixed feelings on the usefulness of terms such as 'smart' and the concept of a 'region' in Ireland being perceived as traditionally weak, the image of a vibrant smart region that emerged was one where there is a high quality of life, strong social cohesion, connected communities, and high interaction between citizens and local government, recently boosted by the lead role played by local authorities in the COVID-19 community response. A synergy in key priorities also emerged – with a strong focus highlighted in the areas of mobility, environment/climate, culture and creativity and wellbeing.

An analysis of the interviews led to the identification of six core dimensions of a SSR, namely: (1) Place/Place-making, (2) Engagement and Subsidiarity, (3) Collaboration, (4) Connectedness, (5) Data and Technology, and (6) Governance.

In addition, the consultation phase led to the tabling of several opportunities and barriers to progressing the smart region concept in such a large and diverse area as the SR. Barriers included, for example, the lack of shared understanding as to what the term 'smart' means, and the absence of a national strategy for the advancement of technology to improve public services, other than the National Broadband Plan (NBP). This is not to say that the beginnings of a smart region are not already in place – they are. **Opportunities lie in mapping what is already happening and how this can be further elaborated upon and scaled-up.** As the SRA develops a smart region framework, some key values noted by the interviewees included:

1. **Actors:** the need to define the roles of everyone involved; this includes for the SRA itself. The SRA is also able to bring all players in a specific sector to the table as needed; with, for example, many of the utility or infrastructure providers having regional offices or already strong links to the RSES process.
2. **Priorities:** the smart region must have a clearly defined focus and set of objectives; it will fail if it tries to be an expert at everything.

3. **Strategies:** there is no appetite for a further suite of smart region strategies; ideally, the smart region framework should form part of the RSES implementation structures currently being defined.
4. **Learning:** a core concept of any smart region should be as a learning region, as is the case in the SR who view the creation of an inclusive and learning region as central to the region's sustainable growth. The suggestion is to build on the already very successful Learning City initiatives where the smart region should be developed as a living lab and idea exchange observatory.

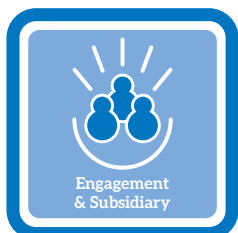
Conclusion

It is evident that an emergent smart region is well underway in the SR as referenced by the interviewees over the period March-June 2021. Many local authorities in the Southern Region and/or community-based initiatives were tabled as having a very strong smart component – not only technology based – that will inform the future sustainable and integrated liveable, green, and creative transformation of the region as a whole, and its component settlements – from smart cities to smart villages.

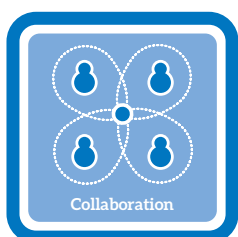
Based on the literature review of smart regions, an analysis of EU policy and programmes and the perspectives of a diverse range of regional stakeholders on a smart region's core dimensions, a few key principles will inform a SSR; namely:



1. **Place:** Communities of place, their endogenous asset-base and the inter-relationships between urban centres and surroundings hinterlands will inform a smart region's direction of travel - strongly aligned to the three thematic pillars adopted by the SRA as part of the RSES process, namely: A Green Region; a Liveable Region; and a Creative and Innovative Region;



2. **Engagement & Subsidiarity:** The values of people, and how this both informs, and leads to the co-creation of, smarter and more sustainable places, is central to the process of developing a smart region;



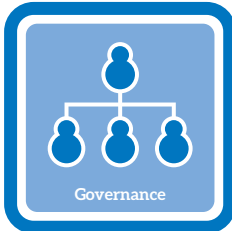
3. **Collaboration:** Working collaboratively through co-creation processes (a 'network of networks') in the co-design of solutions and services that operate to the Quadruple Helix Model and address local/regional need;



4. **Connectivity:** There is a dual focus to connectivity – (a) connecting places (urban and rural) and ensuring the necessary infrastructure and support services and utilities are in-situ to support the development of place, and (b) connectivity, coherence, and alignment of policies on a cross-sectoral basis, particularly as they relate to climate and environment – the global challenges of our time;



5. **Data and Technology:** The role of data and technology in building a smart region must be facilitated to enhance efficiency of service provision and generate innovation while also ensuring that clear guidelines are put in place around ethics and its enabling role; and



6. **Governance:** There is a key role for regional assemblies as facilitators of change; ensuring clarity of purpose and effective multi-disciplinary collaboration in both the co-production and co-implementation of the smart region.

In defining a smart region as it would apply to the SR, the analysis of literature, policy and perspectives shared by a range of regional stakeholders clearly illustrates that an emphasis must be posited on; namely: place, people, collaboration, co-design, sustainability, quality of life, resilience, technology, and innovation. An initial bespoke smart region definition for the Southern Region could, for example, read as:

*A smart region
working in collaboration and
leveraging technology and
open data to co-create vibrant,
sustainable and liveable communities
to enhance public services*

This emerging definition will be considered in Report 2 considering international approaches to a smart region, and will be further refined in Report 3, following analysis of the smart region maturity model that has emerged for the SR.

everything
is
connected

Chapter 1: Introduction



There is a growing recognition of the value in expanding the concept of ‘smart places’ beyond the realm of the city to include a broader regional dimension. While the narrative surrounding smart regions is still evolving, case studies to date (see Report 2 in this series) highlight the importance of any smart region framework being firmly embedded in ‘place’ and having a strong territorial grounding. More often than not, the emergence of a smart region framework is strongly shaped and informed by the presence of smart cities and the key priorities they address through a ‘smart’ programme. As the economic, social, and environmental ecosystems of metropolitan urban areas come under cumulative stress, technology is increasingly being used as a solution to these issues and their impact on ‘place’.

Global trends such as urbanisation¹, climate change, biodiversity loss, digitalisation, mobility and changing demographics are dramatically transforming society, presenting both socio-economic and environmental challenges. At the level of the city, these challenges “include a rapid and rampant process of economic growth and restructuring that often leaves some places as ‘winners’ and others as ‘losers’, the continuing pressures of urbanisation and demographic change, the call for the development of sustainable forms of urban transportation and infrastructure, the need to provide more secure and affordable homes, and the rising tide of local accountability as communities seek greater involvement and participation in local decision-making” (Strange, 2018: 13). The impact of such trends also has implications for sustainable and effective regional

development as promoted, in the case of Ireland, through the National Planning Framework (NPF) – Ireland 2040, and the three Regional Spatial and Economic Strategies (RSES) of the Regional Assemblies. To become more stable and sustainable, there is a growing need to adopt local and regional solutions to these global challenges.

The concept of a smart city, and increasingly a smart region, has become intertwined with that of sustainable development, with digitalisation, big data, and Internet of Things (IoT) playing a strong role (Joshi *et al*, 2016). This is encapsulated within the United Nations Sustainable Development Goals (SDGs) where Goal 11 focuses on “Make cities inclusive, safe, resilient and sustainable”.

Over the past decade, the concept of “smart” has evolved to mean sustainable and liveable places (Joshi *et al*, 2016). A McKinsey Global Institute Report published in 2018 argues that “As cities get smarter, they are becoming more liveable and more responsive”, with municipal leaders realising “that smart-city strategies start with people, not technology” (Woetzel *et al*, 2018).

As smart cities enter this new phase of thinking, it is timely to begin thinking about – and planning for – smart regions. While what we know about smart regions is largely based upon our understanding of smart cities, the evolving nature of the underpinning principles of smart cities to include placemaking, quality of life, liveability, and citizen engagement ensure that future strategies for smart regions will be based on smart sustainable policies and integrated decision-making with a variety of stakeholders.

1. The 21st Century is already being defined as the urban age (Soja and Kanai, 2010). In 2018, it was estimated that 55% of the world’s population lived in urban areas; by 2050, this is expected to increase to 68% (UN DESA, 2018) and by 2100 to 85% (European Commission, 2019).

1.1. Purpose of Report

In March 2021, Maynooth University (MU) together with its research partner, the International Centre for Local and Regional Development (ICLRD), were appointed by the Southern Regional Assembly (SRA) to provide a smart region definition and framework to facilitate smart cities driving a smart region. GIS expertise was provided by Limerick City and County Council (see Annex 1 for research team details). Established in 2015, the SRA is committed to developing a region that is economically strong, inclusive, connected, climate-resilient and sustainable and, as part of this work programme will consider the role of smart initiatives in contributing to this vision. In the context of the rest of Ireland, the Southern Region (SR) represents over 40% of Ireland's total landmass and one third of the national population. With three of the country's five cities – Cork, Limerick, and Waterford – and a network of large towns, the region has a strong urban structure.

The SR, made up of ten local authority areas (see Figure 1.1), has a strong established baseline in smart city initiatives – drawing on innovations in the metropolitan areas of Waterford, Cork, and Limerick. The last 3-4 years has given rise to a growing number of smart town programmes; some of which are emerging as exemplars for the rest of Ireland. Extending these initiatives to the other towns, villages and rural areas across the Region is key to building a 'Smart and Sustainable Southern Region'.

A core objective of the Regional Spatial and Economic Strategy (RSES) adopted by the SRA in January 2020 is to enable the sustainable, inclusive, and resilient growth of the Southern Region. It recognises that smart specialisation, as one component, is a pathway to smart cities – and by extension, that smart regions are competitive, innovative, and productive regional economies. The Assembly contends that key to achieving this vision is for all locations, urban and rural, to collaborate on smart region initiatives. Within the RSES, Regional Policy Objective (RPO) 134, focused on Smart Cities and Smart Region,

“ seeks to build on Smart Cities and Smart Region Initiatives in Cork, Limerick and Waterford, such as the All Ireland Smart Cities Forum, and seek to extend such initiatives to towns, villages and rural areas to support a Smart Region (SRA, 2020: 157).

In addition to supporting the SRA in the delivery of its regional priorities, this research programme also contributes to the Interreg Europe-funded COHES3ION

Project¹. This inter-regional project, to which SRA is a partner, is focused on improving the performance and impact in terms of delivery of innovation by Research and Innovation (R&I) actors of Smart Specialisation Strategy (S3) and linked European Regional Development Fund (ERDF) Regional Operational Programmes. Of relevance to this work programme is COHES3ION's focus on the identification of smart priorities – those complementarities and synergies between different levels of territory, in terms of priority or niche opportunities, allowing for further specialisation of specific territories across a range of scales, including the region.

COHES3ION
Interreg Europe

Figure 1.1. The Southern Regional Assembly Area



(Source: <http://www.southernassembly.ie/the-assembly>, accessed 12 June 2021).

A key focus of the new Territorial Cohesion programme (2021-27) is 'A Smarter Europe' with a strong emphasis on innovative, digitalisation & smart economic transformation building on place-based strengths & potentials. This requires a strengthened interconnectedness between regional socio-economic development, environmental management and spatial planning practice and policy. There is a growing recognition that every type of region is facing industrial transition – as a result of changes to traditional manufacturing, digitalisation and technological advancements, climate change and, more recently, COVID-19 and its impact on retail trends – and thus have distinct needs.

Meeting these needs over the next decade will require greater collaboration via the quadruple helix model or, as referred to in the RSES, Eolas Comhroinnta Obair le Cheile

/ Shared Knowledge Working Together². The Quadruple Helix Model involves a collaborative partnership between academia, community, public agencies, and the private sector to harness local and regional opportunities and endogenous assets in a smart and sustainable manner that not only diversifies the local/regional asset base and nurtures industry and technology clusters, but which also creates places that are adaptable with a strong transversal skills-base (Creamer, Connolly & Riveria, 2021).

At the core of the output of this research programme is (a) defining a smart region generally, and as it applies to the SRA, and (b) the development of a smart region maturity framework. Together, this will enable the region, and its sub-regions, to:

1. Understand what a smart region is;
2. Describe their own level of maturity;
3. Set plans for improvement; and
4. Measure improvement.

1.2. Defining Smart Regions

While there is no unique definition of a smart region, smart regions as a concept play a key role in developing new growth dynamics, based on bottom-up entrepreneurship and innovation. The rapid development of digital technologies is resulting in terms such as 'smart cities', 'smart society' and 'smart regions' becoming more and more popular in the modern changing world (Bauer *et al*, 2019). As contended by Ó Brolcháin *et al*, "Smart regions are the logical extension of the smart city concept" (2018: 1); recognising that cities do not exist in isolation and **that for a region to become 'smarter' it needs to consider the opportunities, benefits and challenges that smart technologies can offer**. Increasingly, such regions are a mechanism for examining the spatial interlinkages between urban and rural areas and demonstrating their capacity to transform societies in priority areas such as energy transition, digital growth, circular economy, agri-food, or industrial modernisation. At their core is a smart city with a key role to play in both enabling and driving a smart region.

For the purposes of this work programme, we adopt the general definition of a smart region proposed by Matern *et al* which argues that cities cannot be examined in isolation of their diverse surrounds and that the transition from a region to a smart region is enabled by societal innovation, whereby diverse urban-rural areas.

“ are spatially reframed by digital technologies and the respective social practices in a variety of fields (citizenship, governance, economy, environment, mobility, infrastructure) on a discursive, implemental and regulative level. The concept of smart regions follows a relational and social constructivist understanding of spaces and emphasises an integrated approach towards the social (re)construction of smart regions by actors and their networks (2020: 2064).

The value of this as a general working definition, and a starting point for defining a smart region as it applies to the SR, is that while it acknowledges the driving role played by cities in the evolution of smart places, it recognises that innovation and 'smartness' can also emanate from rural areas and the entrepreneurialism of community.



² Eolas Comhroinnté Obair le Cheile / Shared Knowledge Working Together is defined within the RSES of the Southern Regional Assembly as "the collective regional approach to development of a competitive knowledge-based society where a framework of the four pillars of higher education, industry, government and civic society work together to harness their collective resources, knowledge and skills" (2020: 196).



1.3. Report Methodology

A three-phase methodology was adopted to deliver this programme of work, incorporating both primary and secondary research.

1

Work Package (WP) 1 – Smart Region Consultation

This work package involved a mixed methods approach, utilising both primary and secondary/desk-based research. Via semi-structured interviews, a broad range of regional stakeholders were consulted on what constitutes a smart region, and current initiatives under way that would lend to future branding of the SR as a smart region. Interviewees included representatives of Local Government, Higher and Further Education Bodies (incl. research centres), business/industry representative bodies, semi-state bodies and community groups (See Annex 2 for details). As part of this WP, the identification of smart initiatives and actions at various scales and driven by a diverse range of stakeholders across the region's Local Authorities commenced. This data gathering involved drawing from resources such as the emerging digital strategies, EU programmes such as the EU's Intelligent Cities Challenge (ICC) in which Cork City was a recent successful applicant, third level smart innovation programmes, and initiatives supported under the Smart Towns and Villages programmes at an EU and national level. The identification and analysis of smart initiatives was undertaken using the key concepts of the smart city as outlined in Figure 1.2. below.



2

Work Package (WP) 2 – Smart Regions Good Practice Research

This work package considered the workings of different smart regions in practice; with a particular focus being placed on governance arrangements, stakeholders involved, thematic focus, and its place-based impacts. Examples of smart regions across Europe and elsewhere to be considered as part of this phase were identified via the interviews as part of WP 1, and through an international literature review. The resulting report identified the common themes, and transferable learnings and actions that have the potential to develop and brand the Southern Region's proposition as a Smart Region.



Figure 1.2. Smart City Concepts

(Source: Southern Regional Assembly, 2020: 156).



3

Work Package 3 – A Framework Report to Assist Stakeholder Initiatives in Pursuit of a Smart Region

Building on the findings and key learnings from WP 1 and 2, this work stream and resulting report defines what a smart region is in the context of the SR, and the core principles both underpinning and nurturing its growth. At the core of this work package was the development of a Smart Region Maturity Framework which will aid the SSR and all its citizens in: (1) Understanding what a smart region is; (2) Describing their own level of maturity; (3) Setting plans for improvement; and (4) Measuring improvement.

A second core component of this WP was to develop a baseline Smart Mapping Tool, a cloud-based tool that will capture smart activity across the region. With the support of Limerick City and County Council, the research team captured the details of several diverse smart activities and mapped these. Every effort was made to align these to the SRA's strategic regional priorities. Over time, there is the potential to add images, videos, and PDFs to this tool to improve its interactivity. The intention is to embed the smart mapping tool on the SRA website – thus providing the public and regional stakeholders with a means to interactively track the progress of smart initiatives across the region. All data collected by the smart mapping tool can also be exported in a variety of formats at any stage for use in SRA internal GIS systems or shared with other organisations.

Across the three core Work Packages, consideration will be given to what are the key issues generally impacting the success of delivery of a smart region, and more specifically the Southern Region achieving its objective of becoming a smart region.

1.4. This Report

The core outputs across the three work packages are:

- **Report 1:** Providing a synopsis of the regional consultations and perceptions of what is a smart region, and the endogenous potential upon which the SRA can build and brand itself as a smart region;
- **Report 2:** An understanding of smart regions based on an analysis of the focus and operations of smart regions across Europe and elsewhere, and a literature and policy analysis;
- **Workshop:** Undertaking a smart regional maturity framework exercise as part of WP 3, which will be reviewed through a validation workshop with a number of key regional stakeholders (including interviewees), a draft framework will be developed. This will identify the main pillars of a smart region; and
- **Report 3:** Presenting a final smart region framework for the Southern Region.
- **The Smart Mapping Tool (SMT):** A regularly updated GIS mapping tool to catalogue smart assets and projects across the region.

This document represents Report 1 – Smart Region Consultation. It considers what is a smart region, and how such a region could harness advancements in technological innovation and digitalisation to effectively deliver on the SR regional priority goals. The position was developed from an understanding of the aspirations of a wide regional stakeholder group.

This report also informs future research and policy thinking on smart and sustainable regions, both in the SR but also across the island of Ireland. It considers a smart region model for the SR in terms of scale, theme, operation, and governance, building on smart initiatives already under way – not least in the metropolitan cities of Waterford, Cork, and Limerick. It contemplates what the high-level goals often associated with smart cities and regions mean in practice, and how such goals can support the SR in progressing as a Green Region, a Liveable Region and a Creative and Innovative Region, the three core pillars of the RSES.

Figure 1.3. The Three Core Pillars of the RSES for the Southern Region



CHAPTER 2: SMART REGIONS – A LITERATURE SYNOPSIS



There is growing awareness of the concepts of the ‘smart city’, ‘smart village’ and, increasingly, the ‘smart region’ – largely due to the infiltration of digital technologies into everyday life, including service provision. In the 1990s and early 2000s, technology was viewed as playing a key role in improving quality of life, and cities were quick to adopt the ‘smart’ label. It was quickly recognised, however, that this technology-driven approach to smartness was flawed, and that the emphasis needed to be on addressing place-based challenges through a citizen centric model, first and foremostly. As argued by Markkula and Kune, while hard and soft infrastructure have a role to play, the ‘smartness’ comes from

“ *the capacity (of individuals, organisations and regions) to understand and process knowledge, create new knowledge, and translate this knowledge into practice (2015: 8).* ”

The smart city concept is increasingly emerging as an international trend in urban developmentⁱⁱ and place management. Smart technologies, for example, such as data analytics and cybersecurity, underpin a city’s infrastructure “including transport and utilities, which ultimately serve its social and economic goals” (EY, 2016: 6). Unsurprisingly then, that being **‘smart’ is considered an integral component of being both sustainable and resilient.**

From a review of the literature, it is clear that while smart cities are growing in number, smart regions are only beginning to emerge (Ó Brolcháin *et al.*, 2018); and

those smart regions that do exist have been informed – if not actually driven – by the presence of a smart city. So, what is a ‘smart city’? This is increasingly problematic to answer. There is no one unique or standardised answer to this question. It means different things to different people, depending on the scenario under consideration, the discipline from which they come, the organisation or sector within which they work, etc. As argued by Townsend, “It may take its place alongside the handful of international cognates – vaguely evocative terms like “sustainability” and “globalization” – that no one bothers to translate because there’s no consensus about what they actually mean” while at the same time recognising that “The broad view is important” and that “there really is something going on here” (2014: 15). What is clear is that it means more – and entails more – than just employing technology to solve a problem.

2.1. The Evolution of the Smart City

The malleable concept of a smart city has evolved significantly since its initial adoption in urban management parlance in the mid-2000s as “on the one hand, new and repurposed technologies started to be more systematically targeted at urban issues and activities as potential new market opportunities and, on the other, city administrations seeking greater efficiencies and more effective answers to urban problems started to turn to potential technical solutions and to formulate and adopt smart city agendas and initiatives” (Kitchin, 2016: 2). This is not to say cities were not using technologies prior to this – they were. The past decade, however, has represented a significant step-change in the use of ICTs in the management of cities – with the concept now closely aligned to how “advances in

technology and data could allow us to plan and run our cities better” (Future Cities Catapult, 2017: 4); a perspective strongly echoed by the European Commission³.

While smart cities initially emerged as a marketing concept from global technology companies that saw an opportunity to sell digital transformation and new technology into big city systems, today’s smart city goes far beyond digital technologies and the use of information and communication technologies (ICT) for better resource use and less emissions. Rather, it has come to embrace a more interactive and responsive city administration (smart governance), active engagement with citizens (smart people), meeting the needs of an ageing population (smart health), smarter urban transport networks (Smart mobility), upgraded water supply and waste disposal facilities and more efficient ways to light and heat buildings (smart infrastructure).

Similarly, as the focus turns to smart regions, it is increasingly recognised that “a smart region now is something more than just big data, technological connections and efficiency; it is also creating an interpersonal relations between a region and its people” (Bauer *et al*, 2019: 1). How a smart region is defined very much depends on the ‘lens’ through which it is being examined. For this study, a socio-spatial perspective⁴ is being adopted – considering it in terms of the geography it covers and the societal innovation and benefits that accrue.

2.2. Smart Cities Driving a Smart Region

As a relatively new concept, there is very little literature to draw from as we try to better understand the concept of the smart region, particularly at the scale of what is being proposed for the Southern Region of Ireland. According to Matern *et al*, “What we know about smart regions is largely based upon debates on smart cities” (2020: 2061). While there are flaws with this approach, it is valuable research such as this that will lead to proper conceptualisations of a smart region emerging.

As noted by Kitchin *et al* (2018), “Regardless of whether cities have formulated and are implementing smart city visions, missions and policies, all cities of scale utilise a number of smart city technologies (e.g., intelligent transport systems, urban control rooms, smart grids, sensor networks, building management systems, urban informatics) to manage city services and infrastructures and to govern urban life” (p.1). The same could therefore be argued of smart regions. Similar to the concept of the ‘smart city’, there remains a fuzziness in the definition of what is a ‘smart region’ – let alone any consensus around

an optimum scale or its governance. Current research and analysis on smart regions are largely couched in economics, with a strong emphasis on growth, innovation, and policy strategies (Matern *et al*, 2020; Calzada, 2013); a position reflected in Report 2 of this series whereby the concept of the smart region is shown to be closely affiliated to innovation ecosystems or arcs of innovation, and to the ‘Smart Region as a Service’ model. This explains the strong association that exists between the concept of smart regions and smart specialisation. O’Brolchain *et al* (2018) outline how the concept of the smart region is emerging because of the EU’s programme for research and innovation strategies for smart specialisation (RIS3). As the focus shifts towards the potential of the smart region in regional development policy and practice, in building on each region’s strengths and potentiality – which inevitably still involves a strong economic component – a number of scenarios have been tabled to define, refine, and explain this evolving concept.

At its simplest Kodym and Unucka (2017) define a smart region as one that employs modern technology to save time and money of people who live thereⁱⁱⁱ.

Misra and Ojo (2020) contend that a smart region, in principle, means the inclusion of smart cities (urban) alongside non-urban or rural areas as an integral part of the strategic interventions. They argue that e-governance, given the key role it has played over the years in bridging the digital-divide between urban and rural areas, is an integral component of the smart region.

Other commentators, including Aalto *et al* (2016) and Hershey *et al* (2019) believe that the concept of a smart region is morphing away from a largely singular focus on big data, industry clusters and technological connections to also building “interpersonal relations between a region and its people” (Bauer *et al*, 2019: 1).

Similarly, Parada (2017; quoted in Matern *et al*, 2020) asserts that the creation of smart regions requires a ‘sufficient degree’ of social and institutional density, that people and their active engagement is central to the process.

Others still have considered the concept of a smart region from a specific issue or challenge; for example, wildfire risk management (Tedim *et al*, 2016; quoted in Matern *et al*, 2020) and land consumption and sustainability (Garcia-Ayllon, 2018; quoted in Matern *et al*, 2020).

Taking this a step further, Sutriadi (2018) explains a smart region as an innovation of sustainable planning at the regional level that promotes knowledge-based

3. According to the European Commission, a smart city “is a place where traditional networks and services are made more efficient with the use of digital and telecommunication technologies for the benefit of its inhabitants and business” (see https://ec.europa.eu/info/eu-regional-and-urban-development/topics/cities-and-urban-development/city-initiatives/smart-cities_en).

4. The term socio-spatial emphasises how built environments and the people and societies that occupy them interact (see <https://study.com/academy/answer/what-does-socio-spatial-mean.html#:~:text=The%20term%20socio%20spatial%20emphasizes,societies%20that%20occupy%20them%20interact>).

development through human capital and the willingness of citizens to adapt to changing economic, societal, and environmental circumstances in order to achieve harmonisation between development and environmental conservation/management. **Strong spatial planning policy at all levels of the planning system is thus central to the success of the smart region.**

The concept of smart regions has also been explored from a sectoral perspective. In 2019, the European Consortium of Universities (ECIU) developed a white paper on smart regions, arguing that low-urbanised regions face numerous challenges – different to smart cities – and in response, identified four key topics for smart regions^{iv}. These are specific areas in need of technological solutions, and where digitalisation has a role to play; namely: Energy and sustainability; Circular economy; Transport and mobility; and Resilient communities. Delivery requires both human capital and a commitment to co-creation. The ECIU believes that the university should be at the centre of the process, not least given their role in civic engagement and the promotion of societal development and well-being.

2.2.1. A Scalar Challenge?

In considering the role of smart cities in driving a smart region, there is also an argument that consideration should also be given to the role of smart villages. In some respects, the smart villages movement has leap-frogged the growth of smart regions – and indeed, the smart city initiative – by very early-on placing a strong emphasis on the inclusion of community-led local development (CLLD) principles in its smart programmes. This may be attributable to scale, and its operating to a more clearly defined spatial area. Across the EU, the emergence of the smart villages is closely associated with the **Cork 2.0 Declaration for a Better Life in Rural Areas (2016)**, which highlighted the need to overcome the digital divide between rural and urban areas through improved connectivity and digitalisation. The concept gained further traction in 2017 as a result of the European Commission’s publication, EU Action for Smart Villages. While discussed further in Section 3.1, this defined smart villages as ‘those (local communities) that use digital technologies and innovations in their daily life, thus improving its quality, improving the standard of public services and ensuring better use of resources’^v. More recently, the **Bled Declaration (2018)** called for further action to digitalise rural areas by means of smart villages and enhanced access to broadband.

Implementing smart initiatives, irrespective of scale, is a complex process – involving a multifarious set of challenges and associated tasks, a diverse range of stakeholders, and politics. Figure 2.1. highlights how ‘smart’ cuts across all aspects of urban development, reiterating that technology is but one – albeit very important – component that sits alongside data analytics, planning, and governance. It

draws out the multi-dimension and cross-sectoral focus and inter-agency aspects of smart programmes, and the multiple stakeholders involved. While this framework was developed with smart cities in mind, it is equally applicable to smart towns and villages, and to smart regions.

2.3. The Principles of the Smart Region

At its most ideological, the smart region is centred on a geographic area (‘place’) and brought to life through a collaborative ecosystem based on the quadruple helix model i.e., involving government/public sector, industry/business, academia, and citizens. There is a growing appreciation for the value of participatory processes and active (‘smart’) citizenship – with an increasing propensity towards co-creation of new knowledge based on their own areas of expertise and lived experiences (Markkula and Kune, 2015: 9).

Through their research into smart regions and the development of regional innovation ecosystems, Markkula and Kune (2015: 9) have identified seven principles or characteristics of a smart region, each bringing a different exploration focus. They are:

1. **Actors:** How does the cooperation between universities, industry, and public administration function in the region?
2. **Structures:** Structures, networks, research groups, and jointly steered organisations emerge at the interfaces of collaboration. What is their status?
3. **Premises:** What premises are available for physical, virtual, and social development?
4. **New organisations:** New actors often represent hybrids that integrate elements from different institutions, such as science parks and corporate and technology incubators. Have new actors emerged in the region?
5. **Knowledge and Technology Transfer and Co-creation:** How do the different innovation, invention, and patent services within universities and research institutes, knowledge-intensive business services (KIBS), incubators, and investor organisation’s function?
6. **Policies:** Are new financing instruments, collaboration support, intellectual property right measures, and reforms, taxation or regulation, in place?
7. **Participation:** What role does the knowledge base and expertise of engaged citizens play in making the regional innovation ecosystem smarter?

As argued by Matern *et al* (2020), smart regions ought to be understood as relational phenomena that are neither purely urban nor rural. As a result, a perspective that artificially separates smart cities and smart regions is inadequate as it dismisses the diversity and heterogeneity

of smart regions. Irrespective of the scale, what is undeniable is that policies for smart (resilient and sustainable) places should focus on understanding the evolving challenges and needs, “anticipating demands and risks; and then using technology to provide some effective and affordable solutions” (EY, 2016: 6).

Figure 2.1. The EY smart cities framework shows that smart cuts across all aspects of urban development



(Source: EY, 2016: 7)

2.4. A Smart Region in the Southern Region

As outlined in Chapter 1, we adopt the general definition of a smart region proposed by Matern *et al* (2020) as a starting point in defining a Smart Southern Region (see p.4). This definition argues that cities cannot be examined in isolation of their diverse surrounds and **that the transition from a region to a smart region is enabled by societal innovation**. It acknowledges the inter-play and value-added brought by both urban-rural areas whilst specifically acknowledging the driving role played by cities in the evolution of smart places. It recognises the importance of a place-based approach that builds on a region’s strengths; that place matters. Equally important, it acknowledges the importance of citizens and positions people to the fore of the process – both in terms of design and development via the quadruple helix model.

This definition is a starting point for defining a smart region as it applies to the SR. As a working definition, it will be supplemented by the perspectives offered by a diverse range of consultees from across the region on the current challenges and opportunities within the region as it strives to become smart, sustainable, and resilient. Through the consultation process (see Chapter 5), a value platform identifying key concepts, themes and priorities for a Smart Southern Region (SSR) emerge. These key

dimensions will feed into an initial bespoke smart region definition for the SR. This working definition will be refined in Reports 2 and 3 (*International Approaches to a Smart Region and Smart Region Maturity Framework for the Southern Region* respectively).



CHAPTER 3: EU SMART CITIES & SMART REGION PROGRAMMES – AN OVERVIEW



In May 2021, under the Portuguese Presidency of the European Union (EU), the European Regions for Smart Communities summit was held over one week to discuss how to involve national, regional and local citizens and stakeholders in co-promoting smarter small cities, towns, villages and regions for a better tomorrow. The European Union has been a long-term proponent of the concept of smart regions – building on the success of the smart cities' movement and its exponential adoption by city managers, the business community and academia over the past decade. In 2013 the Commission for Education, Youth, Culture and Research (EDUC Commission) of the European Union's Committee of the Regions held the International Conference on Pioneering Europe 2020 Smart Regions. The purpose of this event was to discuss how research and innovation can foster the development of 'smart regions' across Europe. The event involved representatives from city/regional councils in Europe meeting with experts from industry and universities to exchange knowledge about instruments and projects that support the growth of smart regions. Key to these discussions was the value of lifelong learning and learning cities in building collaboration on an inter-governmental, cross-disciplinary and multi-sectoral basis.

Smart regions do not emerge overnight. They hinge on both formal and informal processes – being informed by policy from the EU to local level, strong leadership, adequate resourcing and a flexibility in governance that enables opportunities to be grabbed as they arise.

3.1. A Supportive EU Policy Environment

The EU Urban Agenda (launched in 2016^{vii}) is highly relevant to the development of the smart regions as a polycentric urban network that promotes liveability, the circular economy, social inclusion and a just ecological transition. The evolving EU Action for Smart Villages (launched in 2017^{viii}) affords opportunities for towns and villages across the region to consolidate community-led local development and to further embrace digital connectivity and information communications technology (ICT) in advancing local economic development. According to the EU Action Plan, Smart Villages are “communities in rural areas that use innovative solutions to improve their resilience, building on local strengths and opportunities. They rely on a participatory approach to develop and implement their strategy to improve their economic, social and/or environmental conditions, in particular by mobilising solutions offered by digital technologies” (European Network for Rural Development, 2019: 2).

The EU's New Leipzig Charter: The transformative power of cities for the common good, adopted in November 2020^{ix} provides a key policy framework for sustainable urban development in Europe. The Charter highlights that cities need to establish integrated and sustainable urban development strategies and ensure their implementation for the city, from its functional areas to its neighbourhoods. The Charter acknowledges the three spatial dimensions of European Cities, noting that sustainable and resilient urban development generally takes place “within a regional or metropolitan context and relies on a complex network of functional interdependencies and partnerships” and

that “In order to adapt urban policies to people’s daily lives, towns and cities need to cooperate and coordinate their policies and instruments with their surrounding suburban and rural areas on policies for housing, commercial areas, mobility, services, green and blue infrastructure, material flows, local and regional food systems and energy supply, among others” (2020: 3).

The strategic direction of any smart region programme in the SR must also be cognisant of the investment priorities of the EU Regional Development and Cohesion Policy 2021-2027, namely:

- **A Smarter Europe**, through innovation, digitisation, economic transformation and support to small and medium-sized businesses;
- **A Greener, Carbon Free Europe**, implementing the Paris Agreement and investing in energy transition, renewables and the fight against climate change;
- **A More Connected Europe**, with strategic transport and digital networks;
- **A More Social Europe**, delivering on the European Pillar of Social Rights and supporting quality employment, education, skills, social inclusion and equal access to healthcare; and
- **A Europe Closer to Citizens**, by supporting locally led development strategies and sustainable urban development across the EU.

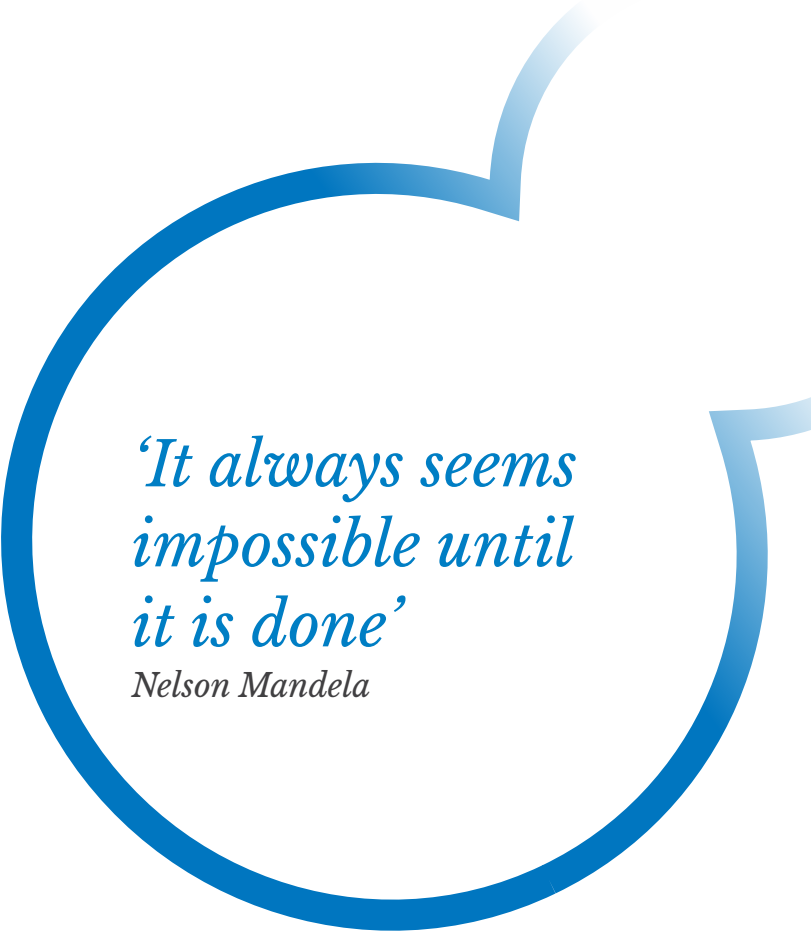
Specific objectives under the priority of ‘A Smarter Europe’ highlight a recurring emphasis of core ‘smart’ themes, namely: technology and digitalisation, smart specialisation, research and innovation (R&I) and economic growth and competitiveness. Importantly, it also emphasises benefits to citizens and governments, the potential of SMEs, which are in the main endogenous to the region, and industrial transition as economies and communities grapple with the implications of the Fourth Industrial Revolution and automation.

3.2. Strong Place-Based Leadership

Places matter. As contended by Barca in his seminal 2009 report, development is “place-based and highly contingent on context” (Barca *et al.*, 2012: 139) – social, cultural and institutional. Successful place-making is a process that acknowledges the history of place – its past – in building a future. There are growing examples of local governments undertaking place-making to build liveable places that are valued by communities, businesses, and visitors alike (Arefi, 2014). As such, place-making is a collective undertaking (Friedmann, 2010), with planning (planners) and citizens at the centre.

The promotion of smart regions is reflective of a place-based approach to development. Across OECD countries regional

revitalisation is associated with factors linked to local geographies, whereby stakeholders, from all governance tiers, harness local resources and invest in enabling places to realise their development potential (Vodden *et al.*, 2015; Steinführer *et al.*, 2016: 2). This requires the adoption of place-based approaches that focus on local assets and potentiality, and where regional stakeholders work to identify, harness, and invest in the distinctive features of places, thereby enabling them to develop more sustainably in their own right and to contribute to summative regional growth. In practice, this implies promoting approaches that are not spatially bounded, but are instead cognisant and embracing of the totality of relationships between towns and countryside and which promote collaboration over competition – including inter-urban collaboration (Pike *et al.*, 2013; Noguera and Freshwater, 2016; OECD, 2018).



‘It always seems impossible until it is done’

Nelson Mandela

3.3. A Strong Funding Environment

3.3.1. EU Smart Cities Information System (SCIS)

Funded through the Horizon 2020 (H2020) research and innovation programme, the Smart Cities and Communities lighthouse projects aim to bring together cities, industry, and citizens to demonstrate solutions and business models that can be scaled up and replicated, and that lead to measurable benefits in energy and resource efficiency, new markets, and new jobs. Since 2014, a total of 12 projects have been funded involving EU cities – all responding to the same challenges facing EU cities; that is to ensure secure, affordable, and clean energy, smart electro-mobility and smart tools and services. A core focus of these lighthouse projects has been to demonstrate an economic viability, thus ensuring their replication potential in other cities. Of the 12 projects, three include a partner city from across the island of Ireland – with 2 of these involving a partner from the SR.

Case Study 1: +CityxChange

+CityxChange (Positive City Exchange) is a smart city project led by the Norwegian University of Science and Technology (NTNU) in association with the Lighthouse Cities, Trondheim, Kommune and **Limerick** (via Limerick City and County Council). The project recognises that to have well-functioning cities, they must improve how they utilise their resources and how they engage with technologies in different ways. A smart city will use digital technologies to enhance performance and wellbeing, to reduce costs and resource consumption and to engage more effectively and actively with its citizens. The cities involved are developing feasible and realistic demonstration projects in climate-friendly and sustainable urban environments.

Limerick City and County Council together with expert partners will develop solutions for buildings located in the Georgian Innovation District to help generate more energy than they consume and allow for the excess energy to be returned to the grid. Several buildings forming a Positive Energy Block, will be the first to become part of a new renewable energy management structure which will allow for the two-way flow of energy. For more information, see <https://cityxchange.eu/>

Case Study 2: GrowSmarter – transforming cities for a smart, sustainable Europe

In a rapidly urbanising world, cities need to become smarter to respond to citizen needs and to reduce their environmental footprint. GrowSmarter brought together cities and industry to integrate and demonstrate '12 smart city solutions' in energy, infrastructure, and transport, and to provide other cities with valuable insights on how they work in practice and opportunities for replication. The idea was to create a ready market for these smart solutions to support growth and the transition to a smart, sustainable Europe.

As a follower city within GrowSmarter, works with Stockholm, Cologne and Barcelona to: (1) Encourage sustainable economic development; (2) Facilitate job creation; (3) Increase citizen involvement and participation; (4) Increase resource efficiency; (5) Improve quality of life and services; and (6) Provide an attractive environment for all. For further details on this project see: <https://grow-smarter.eu/home/>



3.3.2. EU Digital Cities Challenge

In October 2017, the European Commission (DG GROW and DG REGIO) and the Committee of the Regions launched the Digital Cities Challenge (DCC). The initiative involved 41 European cities working to develop and implement policies for economic growth while harnessing the benefits of advanced technologies. The island of Ireland was represented by two 'Fellow Cities', namely Derry City and Cork City. Between 2017-2019, the Digital Cities Challenge programme explored how cities could realise their potential to become smart cities and compete in the digital age in terms of the efficient use of technologies and instigating transformative policies that can address related challenges.

This learning, and associated roadmap of activities, contributed towards the drafting of a city-wide Digital Strategy with the goal of enabling a more digitally mature, resilient, and competitive city with an enhanced quality of life and a supportive business ecosystem.

The structure of the DCC programme consisted of three types of city:

- Mentor City (x6);
- Challenge Cities (x20) – those who were funded in support of their strategy development; and
- Fellow Cities (x20) – those who participated in the programme but received no funding. This category included both Cork City and Derry City.

The DCC programme was a facilitated process, covering four phases:

1. Self-assessment built around the digital city framework;
2. Vision development;
3. Strategy; and
4. Roadmap.

For each phase, cities were provided with templates and access to an expert for advice (see Annex 3 for details of self-assessment criteria). Between each phase, cities attended a general meeting where they presented progress and networked with other cities. The vision, strategy and roadmap were to be developed in collaboration with a broad city stakeholder group. Cork City's Digital Strategy is a direct output of this DCC process.

3.3.3. EU Intelligent Cities Challenge

The Intelligent Cities Challenge (ICC) is a European Commission initiative bringing together 136 cities to achieve intelligent, socially responsible, and sustainable growth through advanced technologies. The two-and-a-half-year programme, running from July 2020 to November 2022 builds on the previous success of the

Digital Cities Challenge (DCC), which helped EU cities to develop a strategic vision and roadmap for their digital transformations. In overcoming the difficulties of the COVID-19 pandemic, ICC cities are eager to become engines of economic recovery by creating new business opportunities, advancing sustainable developments, and enhancing their cities both digitally and socially.

The challenge reflects key EU initiatives and will be based on five themes:

- Citizen participation and digitisation of public administration;
- Green economy and local green deals;
- Upskilling and reskilling;
- Green and digital transition in tourism; and
- Supply chains, logistics and economics of mobility.

As with the DCC, the intent is to have a cluster of Mentor Cities supporting Core Cities. The support the programme offers cities includes:

- Support access to external funding resources;
- Commissioning of research and development activities so that the public sector can participate as early adopters of innovative solutions; and
- Provide open data platform support.

Figure 3.1., taken from the programme's website, shows the intended phases of the programme.

The ICC is part of a wider EU support system that recognises the importance of delivering on the promises made by the European Green Deal, the European Climate Pact, the European Industrial Strategy, and the Recovery Plan for Europe to name but a few. As this programme pre-dates COVID-19, it has had to adapt to a fluid EU policy space – not least in terms of recovery and resilience planning. This has only, however, re-enforced the main purpose of the programme; that being to build an economy that works for everyone and a Europe that is fit for the digital age. Collaborative working is an integral component of this ambition; with ICC arguing that European cities will emerge stronger if they build up their innovative local ecosystems by bringing together public and private stakeholders to address the huge societal, economic, and environmental challenges.

To date, the ICC has offered significant support to help the participating cities to plan for and implement large scale sustainable change which focuses on stakeholder mobilisation, access to finance and European Financial Instruments and collaboration with other cities which include more advanced mentor cities. The ICC has already, for example, highlighted flagship areas for future investment and reform based on the European Green Deal, the European Climate Pact, the European Industrial

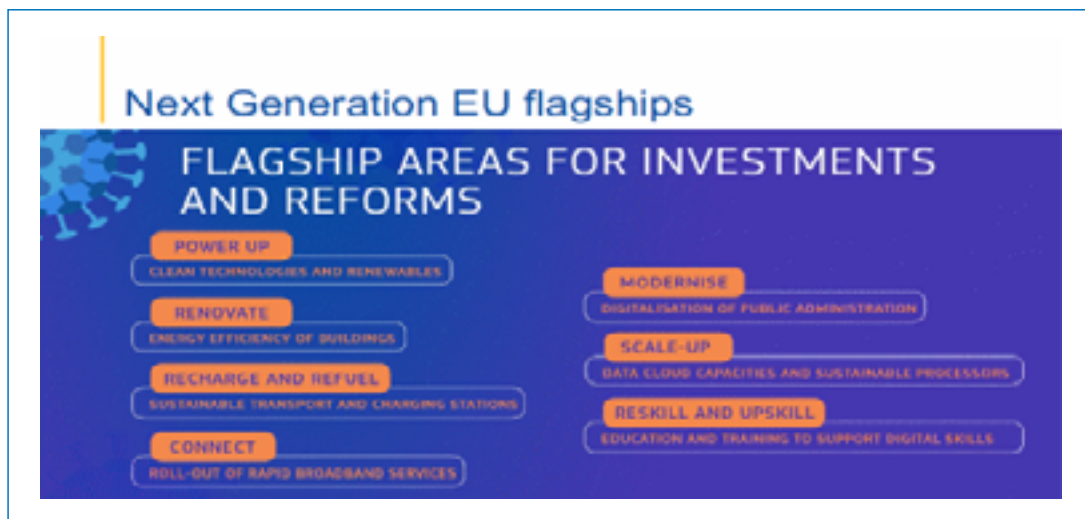
Strategy, and so on (see Figure 3.2). In addition to receiving tailored expert advice, the ICC offers participating cities regular networking opportunities and community gatherings, access to training, online toolboxes, and guidance from the ICC mentor cities.

Figure 3.1. Programme Phases of the Intelligent Cities Challenge



(Source : <https://www.intelligentcitieschallenge.eu/sites/default/files/2021-03/ICC-Advisory-board-1st%20meeting-presentation.pdf>)

Figure 3.2. Next Generation EU Flagships for Investment and Reform



(Source : <https://www.intelligentcitieschallenge.eu/sites/default/files/2021-03/ICC-Advisory-board-1st%20meeting-presentation.pdf>)

As with the DCC, Cork City and Derry City are the only two cities on the island of Ireland that were successful in their application to join ICC. Further details on the ICC programme are available at: <https://www.intelligentcitieschallenge.eu/>

Case Study: The Role of Digital Cities Challenge and Intelligent Cities Challenge in progressing Cork City's Smart Agenda.

Cork is an ambitious city dedicated to inclusive, resilient, and sustainable development. The potential for digital tools and a smart city approach to support these goals is well understood and can only be realised by taking a coordinated approach across the city.

In 2018, Cork City Council embarked on a journey to create a collaborative and inclusive Digital Strategy to help guide the development of a more digitally enabled smart, sustainable and inclusive city. At the inception of this strategy's development, it was determined that the methodology employed needed to prioritise collaboration but also be robust, externally validated, transparent and use open standards. To this end, Cork City Council identified an opportunity and successfully applied to participate in the European Commission's Digital Cities Challenge Programme (DCC). The framework and tools of the DCC provided Cork with a robust methodology to identify the digital transformation potential for the city. It also provided a peer review framework with other cities who were participating in the programme. Over 130 city stakeholders were engaged in the development of the digital strategy as part of the digital maturity city assessment or as part of one of three collaborative workshops in which the vision, ambitions and roadmap for the strategy were developed. The DCC methodology provided Cork City Council with the tools and guidance to develop a co-created digital strategy for the city.

Following the success of the DCC, Cork City Council successfully applied to be a core city in the European Commission's Intelligent Cities Challenge (ICC) programme. Since October 2020, Cork City Council's participation in the ICC is focused on the theme of 'Digitisation of Services and Citizen Participation'. The ICC programme supports the progression of several activities included in Cork City's Digital Strategy, Building a Connected City – A Digital Strategy for Cork City, published in early 2021. Cork's participation in the ICC seeks to advance actions in the areas of Open Data and Citizen Engagement.

3.4. Conclusion

Increasingly, the EU smart agenda is a key component of other EU programmes such as the European Green Deal, the European Climate Pact, and the European Industrial Strategy – rather than being a stand-alone framework. There is learning in this approach for the SR as it commences its smart region journey; namely:

- 1. Place-Based:** Whether focused on cities or villages, EU programmes with a strong 'smart' component recognise the value-added of taking a place-based approach that works with the local asset-base and harnesses its potentiality to build resilience and advance local economic development;
- 2. Collaboration:** Central to the EU's smart programme, is collaboration, illustrating how citizens, the business community, government agencies and academia can help create smarter and more sustainable communities through co-creation and co-production; and
- 3. Open Innovation and Knowledge-Sharing:** In their very design, the EU's approach to building 'smart' encourages places to share their knowledge, data, learning and experiences of embracing technology and digitisation in designing and trialling new and innovative solutions; demonstrating that there is much that local (and regional) authorities can tackle on their own.



CHAPTER 4: SMART AND SUSTAINABLE REGIONS – THE ROLE OF POLICY



Building and maintaining a smart region is not a stand-alone policy issue. It is deeply intertwined with policies as they relate to strategic spatial planning, regional development, smart specialisation, and regeneration and revitalisation. In Chapters 2 and 3, the ‘boundary spanning’ role of ‘smart’ programmes across these key policy areas has been evidenced.

Taking regional development as an example, its evolution over recent decades is marked, to varying degrees, by:

- An increased emphasis on the potential of place, both soft and hard infrastructure and quality-of-life factors;
- Acknowledged territorial differentiation (avoidance of a one-size-fits-all approach);
- Greater participation by local actors;
- Investments (rather than subsidies);
- More systematic institutional collaboration – including on a cross boundary/cross border/inter-jurisdictional basis; and
- An operational focus on collaborative partnership and decentralised governance.

Collaborative approaches – spatially and in respect of governance – are hallmarks of what has been termed ‘new regionalism’ (Daniels *et al.*, 2019). It implies collaboration between sectors, between towns and between town and countryside so that all geographies benefit from pooling their territorial assets and, thus, maximise their potential. New regionalism also implies focusing on strategic investments, rather than on expecting subsidies or creating dependencies. It advocates approaches to local

economic development that capitalise on local assets and are strongly evidence based.

As this evolution continues in response to global challenges such as climate change and changing demographics, local and regional authorities are progressively focused on the application of the United Nations Sustainable Development Goals (SDGs).

4.1. Building Sustainable Places – A Global Agenda

The UN Sustainable Development Goals (SDGs) are a set of 17 agreed global goals for a sustainable future to be achieved internationally by 2030 (see Figure 4.1). Ireland became a signatory to the SDGs in 2015, but as noted by the OECD,

“*National governments alone cannot achieve the ambitious goals of the 2030 Agenda – but cities and regions can contribute to achieving the Sustainable Development Goals (SDGs)*”^{ix}.

Taking such a territorial approach, local and regional authorities across Ireland are actively becoming SDG Champions, acknowledging the role of local government in the promotion and achievement of the goals. There is growing evidence of City and County Councils across Ireland using the SDGs to design and implement their strategies and plans and engage stakeholders in policy making. The broad objective of these Goals – from making

cities sustainable, resilient, and safe to promoting sustainable agriculture, providing access to affordable, reliable, and sustainable energies, the sustainable management of water and promoting sustainable and inclusive economic growth – key components of any smart region – are central to placemaking and building sustainable and vibrant communities. Taking this a step further, the *Programme for Government (2020)* seeks local authority alignment to the SDGs when drafting development plans (Government of Ireland, 2020: 119).

Figure 4.1. The UN Sustainable Development Goals



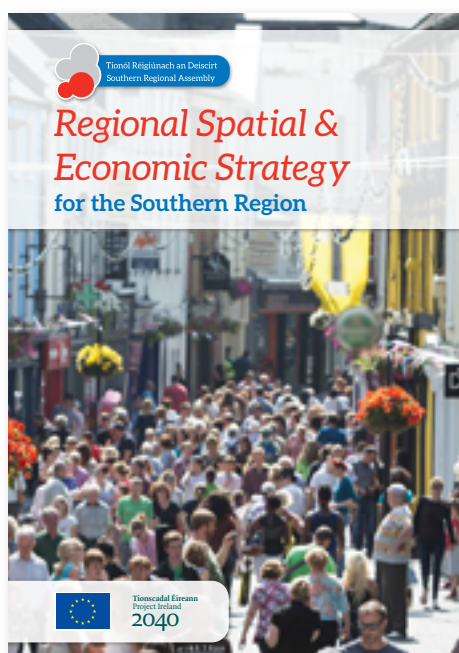
Towards a Sustainable Europe by 2030 is the EU-wide framework for the application of the SDGs. It emphasises the urgency of an ecological transition, coupled with social protection. It envisions the policy foundations for a sustainable future as: moving from a linear to a circular economy; ensuring sustainability from farm to fork; future-proofing energy, buildings, and mobility; and ensuring a socially fair transition. The EU calls on all sectors and all tiers of government, including regional government, to play their respective and collective parts in delivering on the SDGs, noting the importance of policy coherence and partnership approaches.

4.2. A New Policy Environment – Planning, Placemaking and the Smart Region

Planning policy and practice at all tiers – local area, county, region, and State is – increasingly cognisant of sustainability imperatives and of promoting place-making approaches that harness the distinctive spatial features of an area, or indeed region, and enable sets of actors to coalesce around these assets to achieve shared goals.

4.2.1. National Policy

Ireland's *National Planning Framework (NPF)* and *National Development Plan (NDP)* – or *Ireland 2040* – is the government's long-term overarching strategy to make Ireland a better country. The NPF embraces and promotes the concept of place-making, and it emphasises the linkages between planning and well-being/quality of life. Importantly for this work programme, the Framework is committed to supporting initiatives focused on smart and sustainable urban growth, enhancing regional connectivity and competitiveness, improving environmental sustainability, and building a fairer, more equal Ireland, all the while acknowledging that this must be done in a way that builds on the potentiality of place while nurturing well-being and quality of life. One of the ten National Strategic Outcomes (NSOs) is focused on 'A Strong Economy Supported by Enterprise, Innovation and Skills'; this includes a commitment to supporting entrepreneurialism and building competitive



clusters; sustaining talent and boosting human capital in all regions; and digital and data innovation. Central to the achievement of this strategic outcome is continued investment in Education and Training, implementation of the National Broadband Plan (NBP), promotion of Ireland as a sustainable international destination for ICT infrastructures such as data centres and associated economic activities and advocating for Ireland's cities as demonstrators of 5G information and communications technology (Government of Ireland, 2018: 144-145). This strategic goal also recognises the value added to be gained from digitalisation across Rural Ireland; benefits including

“ innovative solutions for environmental concerns, circular economy application to agricultural waste, promotion of local products supported by technology and ICT, implementing and taking full benefit of smart specialisation agri-food projects, tourism and cultural activities (p.145).

4.2.2. Regional Policy

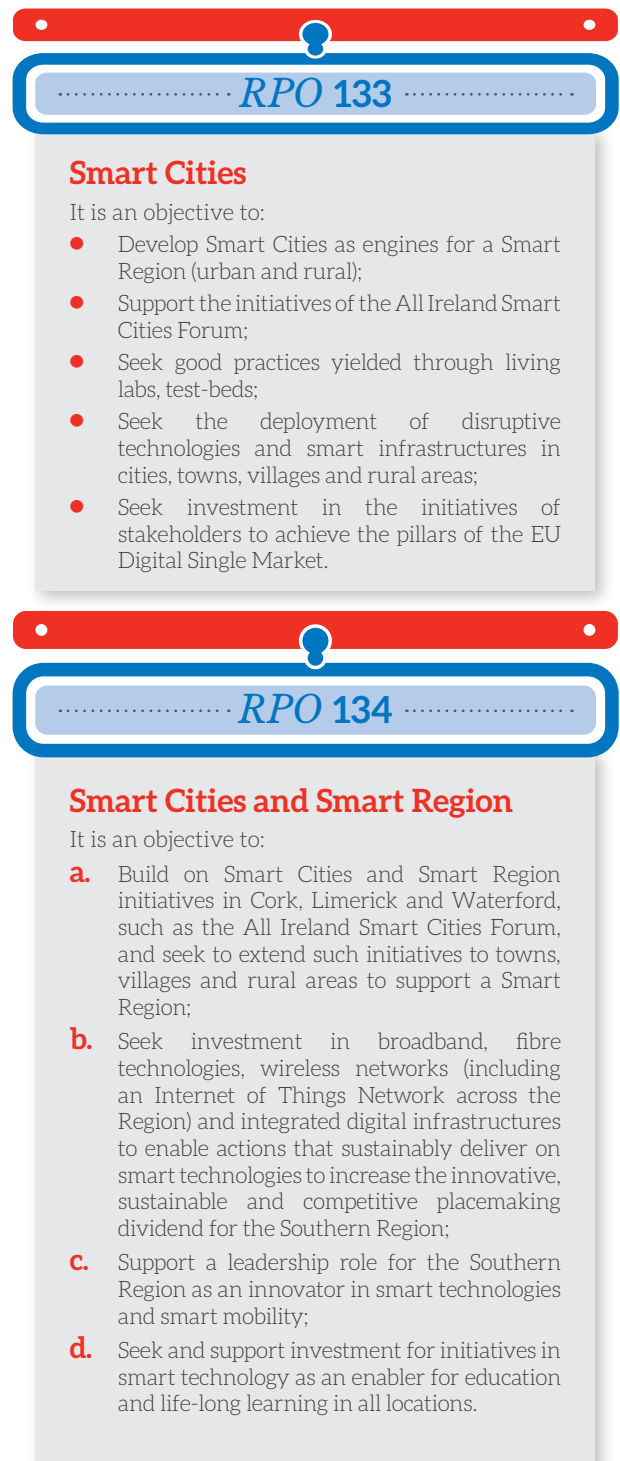
In the absence of a national policy framework relating to smart regions (or smart cities), the main tool available to the Southern Regional Assembly (SRA) in advocating for a smart region is the Regional Spatial and Economic Strategy (RSES), adopted in January 2020 as an implementing strategy for the NPF. A secondary tool is the policy emanating from both EU and national smart specialisation strategies (S3) which emphasise the key role of regions in developing new growth dynamics that are based on bottom-up entrepreneurship and innovation.

With respect to the RSES, its core objective is to deliver a dual-track strategy “that builds on the cities, metropolitan areas as significantly scaled engines of growth, and supports opportunities for sustainable competitive advantage by repositioning the Region’s strong network of towns, villages and rural areas in an imaginative and smart manner” (Southern Regional Assembly, 2020: 12). In laying the groundworks for the scale of change envisaged for the region (both in terms of population and employment growth), the RSES aims to build the Region as one of Europe’s most Creative, Innovative, Greenest and Liveable Regions. The concept of a ‘smart region’ and ‘learning region’ is a recognised enabler of delivering on these three pillars – building on existing learning partnerships and higher education institutions.

Of relevance to this study is Section 6.2.1 of the RSES, ‘Developing Smart Cities and a Smart Region’. Significantly, it recognises that a smart city is much more than the use

of technology. Rather, it means smarter provision of services and use of utilities; it means a more integrated and responsive city administration; and meeting the needs of all cohorts of the population (p.156). Regional Policy Objectives 133 and 134 focus on ‘Smart Cities’ and ‘Smart Cities and Smart Region’ respectively (see Figure 4.2); with smart cities viewed as engines for a smart region that spans both urban and rural areas and where the value of trialling and deploying disruptive technologies in test-beds and living labs across the region is embraced.

Figure 4.2. ‘Smart’ Regional Policy Objectives for the Southern Region

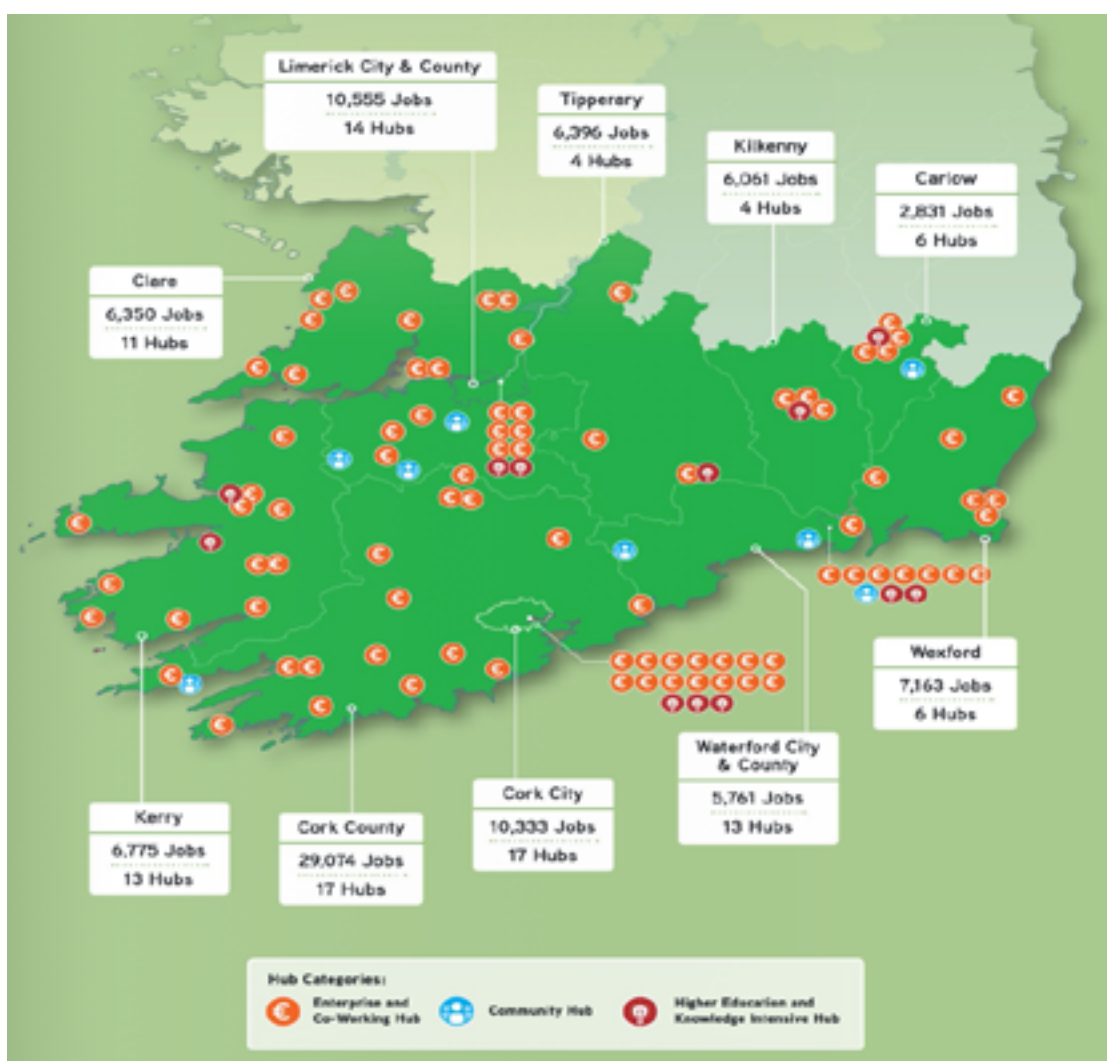


(Source: RSES for the Southern Region, 2020: 156-157).

Two geographically larger regional economic initiatives support growth in the SR. The first is the newly established Atlantic Economic Corridor (AEC), stretching from Kerry to Donegal, which “has the potential to act as a key enabler for the regional growth objectives” (2018: 41). The second is the extended Eastern Economic Corridor, currently operating between Belfast and Dublin with more recent linkages to the Rosslare Europort – a critical post-Brexit link to Europe.

The AEC is already home to a strong culture of enterprise and innovation, involving ambitious start-ups, established multinationals and Irish owned firms expanding to global markets⁴. This long-term programme is centred on not only developing the business and innovation culture but also in encouraging investment in infrastructure and connectivity and untapping the latent potential of the region – not least, its digital, creative, and cultural potential. Since its recognition within the NPF, the AEC has been the focus of a number of spin-out initiatives such as the Atlantic Digital Corridor (proposition) and the AEC Enterprise Hubs Project. The latter is a three-year project to create an interconnected community network from the 101 hubs identified as either operating or in development. Ireland’s three regional assemblies⁵ have collaborated in researching the need for Co-Working hubs. Figure 4.3 shows the result of this analysis for the Southern Region.

Figure 4.3. Estimated Number of Co-Working hubs, as of September 2020 & Number of Remote Workable Private Sector Jobs, as of Q2 2020, in the Southern Region



(Source: <https://www.southernassembly.ie/news/news-article/regional-co-working-analysis>, accessed 17 August 2021).

The Dublin-Belfast Economic Corridor⁶ (DBEC) contains close to one third of the population on the island, and one in ten businesses. It’s extension to Rosslare, a goal of the RSES, will complete Ireland’s only designated Euroroute and further connect this significant critical mass and greatly ease logistic issues resulting from Brexit.

5. Ireland is divided into three Regional Assembly areas: The Eastern and Midlands Regional Assembly, the Northern and Western Regional Assembly and the Southern Regional Assembly.

6. See <https://www.dbec.info/>

4.2.3. Local Policy

Within the Southern Region (SR), the RSES highlights the importance of networked towns as a mechanism to drive economic growth. Specifically, they highlight the existing Southwest network of Tralee, Killarney, and Killorglin (known as the Kerry triangle); and the potential network in the Mid-West (Galway, Ennis-Shannon and Limerick) and the South-East (Waterford, Carlow and Kilkenny).

At a local authority level, a review of all current County Development Plans (CDPs) across Ireland to ensure alignment with the NPF and RSES is underway. As noted by O'Connell (2020), the review of the CDPs has come "at a challenging and unprecedented time where the recovery of our economy, rebuilding of our society, renewing of our communities and responding to the wide-ranging challenges we now face, is critical for our county and indeed our country post-pandemic", not least in terms of advancing the greening and digital transition of the economy. For the SR's constituent local authorities, the review process is, in many respects, a journey back in time. With many of the existing CDPs dating back to 2013/2014, there is no reference to concepts such as 'smart cities', 'smart towns', 'smart villages', 'digitalisation', 'placemaking' or 'online' services. Where the term 'smart' does appear, it focuses almost solely on Central Government's smart economy and smarter travel policy of the day (2009 respectively). The core focus of these CDPs was rebuilding the economy post-recession, following the 2008 global financial crash, and striving to square this with the then broad understanding of sustainable and balanced development. The digital economy was an emerging concept at this time and so depending on when the CDPs were published, the potential of digitisation and e-working, together with the then investment in MANs (Metropolitan Area Networks), was only becoming evident. In terms of economic competitiveness, broadband connectivity was emerging as a key infrastructure in growing the knowledge economy, transforming the modus operandi of traditional industries, and altering the way in which work is organised.

Jump forward to 2021 and the publication by many local authorities of Issues Papers and draft City and County Development Plans as part of this review process, terms such as 'smart', 'placemaking', 'digitisation', 'innovation', 'sustainable' and 'online' are strongly featured. They capture well the reality that we are living in an era of accelerating technological change and that places and businesses alike must innovate to survive. The Issues Papers as a whole speak to the challenges of the day – climate change and biodiversity loss; the changing role and function of our urban cores and the need to re-imagine and repurpose our towns and villages; the challenge of changing demographics, dispersed settlement patterns and residential vacancy in the urban core; the need for

high quality digital connectivity in both urban and rural settings; the sustainable use of our water sources and utilities; the need to move towards a low-carbon economy and society; the associated need to upskill, reskill and develop transversal skills through a greater emphasis on lifelong learning, and the importance of quality urban design to not only attract investors but to also contribute to quality of life and overall wellbeing.

These challenges are not particular to Ireland or the SR; they are global challenges. But they require local solutions that are appropriate to the local – or regional – context; depending on the scale at which redress is required. The actions required do not sit in isolation; they must respond to both global and EU targets, particularly around Greenhouse Gas Emissions (GHG) and the switch to renewable energies. Whether urban or rural focused, the Issues Papers drew heavily on the SDGs –

from the promotion to more sustainable agriculture and farm to fork programmes, to making cities more sustainable and resilient and building on current smart city initiatives.

As the local authorities begin to release draft CDPs for consultation, these core issues remain to the fore, with the emphasis now on agreeing policies on how each council area will take a place-based response. Wexford County Council, for example, have within their draft development plan the intent to refurbish and retrofit both occupied and vacant residential buildings using smart technologies and energy efficiency and micro renewable systems. Waterford County Council have noted their intent to require new residential housing to be climate resilient utilising such measures as SuDS, green roofs, rain gardens and photo-voltaics (PV cells). Similarly, retrofitting of existing building stock will be promoted through measures such as water retention, micro-generation, increased energy efficiency heating and cooling, and NZEB (nearly zero energy building). Cork City Council commit to utilising 'smart' in its future transport and mobility plans, adopting circular economy principles and generating renewable/clean energies. It also commits to delivering on the Cork Digital City, recognising Cork Smart Gateway as a key collaborative partnership in achieving this goal.

4.3. Promoting the Digital (Smart) Economy

'Smart' has been a key feature of Irish Government Policy since 2008 with the publication of *Building Ireland's Smart Economy – A Framework for Sustainable Economic Renewal*. This was followed by *Smarter Travel: A Sustainable Transport Future, A New Transport Policy for Ireland (2009)* and *Innovation Ireland: Report of Innovation Task Force (2010)*. With advancements in digitalisation, the *National Digital Strategy* was launched in July 2013, focusing on

digital engagement and how Ireland can benefit from a digitally engaged society. The expected second iteration has yet to materialise – despite a public consultation process concluding in 2018. *Innovation 2020* (2015) builds on *Research Prioritisation, Smart Specialisation Strategy* (2012) and is Ireland’s five-year strategy on research and development, science, and technology. It highlights priority areas of growth for the Irish economy, with a strong emphasis on technological advancements and ICT (see Figure 4.4.).

Enterprise 2025 Renewed (2018^{xi}) builds on the NPF and the aligned National Development Plan 2018-2027 (NDP) and is a key instrument to realising the potential of Ireland’s regions. It recognises that connectedness and digitisation play a key role in positioning Ireland to the forefront in disruptive technologies while high speed broadband infrastructure is critical to realising enterprise opportunities and to ensuring that all regions can engage in the digital economy. A core priority is to “realise the full potential of our regions through investments in place-making – developing places that are attractive for business investment and for people to live and work” (p.vii).

Future Jobs Ireland 2019^{xii} is emphatic in its assertion that “Technology continues to herald new ways of doing business and new economic opportunities” and that this presents both challenges and opportunities (Government of Ireland, 2019: 1). Emerging and evolving “cutting edge technological areas such as Artificial Intelligence, Augmented and Virtual Reality, Data Analytics, the Internet of Things and blockchain” must be exploited to facilitate and help companies “co-innovate and develop solutions in application areas such as MarineTech, Connected and Autonomous Vehicles, Advanced Manufacturing, AgriFoodTech, and Smart Cities” (*Ibid*, p.1).

Figure 4.4. Innovation 2020: Positioning of Priority Areas



(Source: Interdepartmental Committee on Science, Technology and Innovation, 2015: 24).

The Programme for Government 2020, *Our Shared Future*^{xiii}, speaks to various components of the smart agenda – without specifically having a section committed to the advancement of smart villages, smart cities, and smart regions. These include smart grids, smart meters, smart finance, smart working facilities, and climate-smart cultivation methods.

More recently, in a synopsis of *Ireland’s Economic Recovery Plan 2021*, drafted by Dr. Séan O’Riordain, the commitment by Government to ramping up the digital transformation agenda is noted. Specifically, the Plan highlights the state’s commitment to the establishment of a number of European Digital Innovation Hubs that “will have a particular focus on supporting SMEs in their digitalisation journey and will facilitate a broad uptake of artificial Intelligence, High Performance Computing and Cybersecurity as well

as advanced Digital Skills and other digital technologies by industry” (2021: 5). These hubs, strategically placed, have the potential to support economic clustering and smart specialisation, and research and innovation as well as promote continued growth in emerging sectors such as cleantech, connected and autonomous vehicles, and renewable energies.

4.3.1. The Digital Green Economy

Climate disruption is already having diverse and wide-ranging impacts on Ireland’s environment, society, economic and natural resources. *Ireland’s Climate Action Plan*^{xiv} is “committed to achieving a net zero carbon energy systems objective for Irish society and in the process, create a resilient, vibrant and sustainable country” (Government of Ireland, 2019a: 8). In line with the 2014

Offshore Renewable Energy Development Plan (ORED), the NPF commits to exploring the potential of technological advancements to accelerate commercial application, development, and deployment of the marine renewable energy sector. The emergence and rapid growth in the Marine Renewable Energy sector will, according to the Expert Group on Future Skills Needs (DJEI, 2015) be driven by European targets for generating renewable energy.

More recently, the Expert Group on Future Skills Needs published *Digital Transformation: Assessing the Impact of Digitalisation on Ireland's Workforce^{xv}*, a study examining the impacts of the adoption of digital technologies over the years 2018 to 2023. The report finds that all sectors (excluding financial services and real estate) will be employing more people in 2023 than they do currently, but that the adoption of digital technologies will lead to a slowdown in employment growth. While the existing national skills architecture is well-positioned to respond to the impacts of increased digitalisation, it will result in lifelong learning becoming essential as job roles change. The Expert Group on Future Skills Needs (2020) in their 2020 report on the skills required by the Built Environment sector over the next decade further considers the impact of digitalisation on Ireland's economy. This report focuses on the skills needed to deliver on ambitions around housing, infrastructural development, and climate change mitigation - not least as required under the NPF. It notes that the digitalisation of the built environment sector has been a priority for several years as a means of boosting productivity; with key disruptors including smart sensors, virtual and augmented reality, renewable and alternative energy supply, and Building Information Modelling (BIM) techniques. These, together with recent regulations around Nearly Zero-Energy Buildings (NZEB), create a need for additional upskilling and retraining to allow the sector to respond to these trends. The adoption of smart construction techniques, and development of smart

buildings, will play a key role in advancing the smart region concept while also addressing climate adaptation targets. The challenge will be keeping pace with the potential of technological advancements

4.4. Local Authority Digital Strategies

Smart, or digital strategies, which take a broad view of the local authorities' role in using technology to develop its own capability, develop new public services and support enterprise is a very recent development. Two events saw the emergence of such digital strategies. In 2016, the All-Ireland Smart Cities Forum was created by Prof Brian Donnellan of Maynooth University, with representation from all the cities on the island of Ireland. Its focus is to support cities to understand and implement new technology for public services. Then, in 2018 the Department of Rural and Community Development (DRCD) directed all local authorities to develop and implement a local digital strategy. The DRCD commissioned Indecon Economic Consultant to facilitate the country wide implementation.

From a SR perspective, Limerick City and County Council were the first to publish a digital strategy in 2016, having created the role of Head of Digital Strategy in 2015. Both Clare County Council and Waterford City & County Council published digital strategies in 2018, following the DRCD directive. Cork City engaged with the EU Digital Cities Challenge (see Section 3.3) between 2018 and 2020 and published their strategy in early 2021. Cork County published its strategy in 2020. Through fieldwork engagement as part of this programme, an understanding of Carlow County Council's, Kerry County Council's and Waterford County Council's digital strategies, which are under internal review, is emerging. Other councils within the region have strategies in development or unpublished. Table 4.1 shows the focus of each known strategy.



Table 4.1. Sampling of Digital Strategies across the Southern Region

	Carlow CC	Clare CC	Cork City CC	Cork County CC	Limerick CCC	Kerry CC	Tipperary CC	Waterford CC
Engagement	✓	✓	✓	✓	✓	✓	✓	✓
Digital Skills	✓	✓	✓	✓	✓	✓	✓	✓
Digital Economy	✓	✓	✓	✓	✓	✓	✓	✓
Digital Infrastructure	✓	✓	✓	✓	✓	✓	✓	✓
Digital Council	✓	✓	✓	✓	✓	✓		✓
Open Data		✓	✓	✓	✓		✓	
Data Analysis		✓	✓	✓	✓	✓	✓	
Smart City		✓	✓	✓	✓			✓
Climate Action			✓					
Research & Development	✓		✓		✓		✓	
Governance / leadership	✓	✓	✓	✓	✓	✓	✓	✓

Legend

Engagement	Engagement with citizens, community, enterprise, public institutions and academia.
Digital Skills	Developing citizen and enterprise skills.
Digital Economy	Developing local enterprise.
Digital Infrastructure	Facilitating the implementation of ICT Infrastructure, e.g., broadband, Wi-Fi, fibre
Digital Council	Improving internal use of technology and enabling access to the authority through technology.
Open Data	Publishing public data so that it can be used for community and commercial ends
Data Analysis	Using data for problem solving and planning
Smart City	Implementing city wide technology. E.g., environmental or flood monitoring
Climate Action	Supporting enterprise to address climate sustainability
Research & Development	Engaged in longer term planning
Governance / leadership	Coordination of a smart agenda

4.5. Conclusion

Similar to the EU level, and at the date of publication of this report, there is no national policy on smart cities or smart regions. Rather, the core components – and indeed, drivers – for a smart region is spread across a chaos of plans and strategies and a diverse range of policies, from regional development to enterprise development to regional job programmes to climate adaptation measures. This ad-hoc approach lacks coherency and so it falls to agencies such as the SRA to engage systematically with key regional stakeholders on mapping the asset-base and potentiality of the region, while also recognising the key smart initiatives already under way and utilising the knowledge and experience stemming from these to inform a region-wide approach to being resilient, sustainable, and smarter. Given the urgency surrounding many of the global challenges we face and matching this with the pace of technological advancements underway, there is a growing need to join-the-dots. To be effective, any smart region initiative must be integrated into an overall spatial framework that not only takes a long-term perspective, but which recognises that the nature of problems to be solved or opportunities to be harnessed will vary in scope, geography, and other local conditions.

CHAPTER 5: DEFINING THE KEY ELEMENTS OF A SMART REGION FOR THE SOUTHERN REGION – A STAKEHOLDER PERSPECTIVE



5.1 Emerging Smart Region Characteristics

The following is a description of the smart region priorities and characteristics that emerged from the interviews conducted as part of this programme of work. All interviews were held virtually via Zoom or MS Teams. The dimensions of a smart region, as identified through these semi-structured interviews, form a hierarchy, as depicted in Figure 5.1.

The key themes addressed during the semi-structured interviews were informed by both the literature and policy reviews.

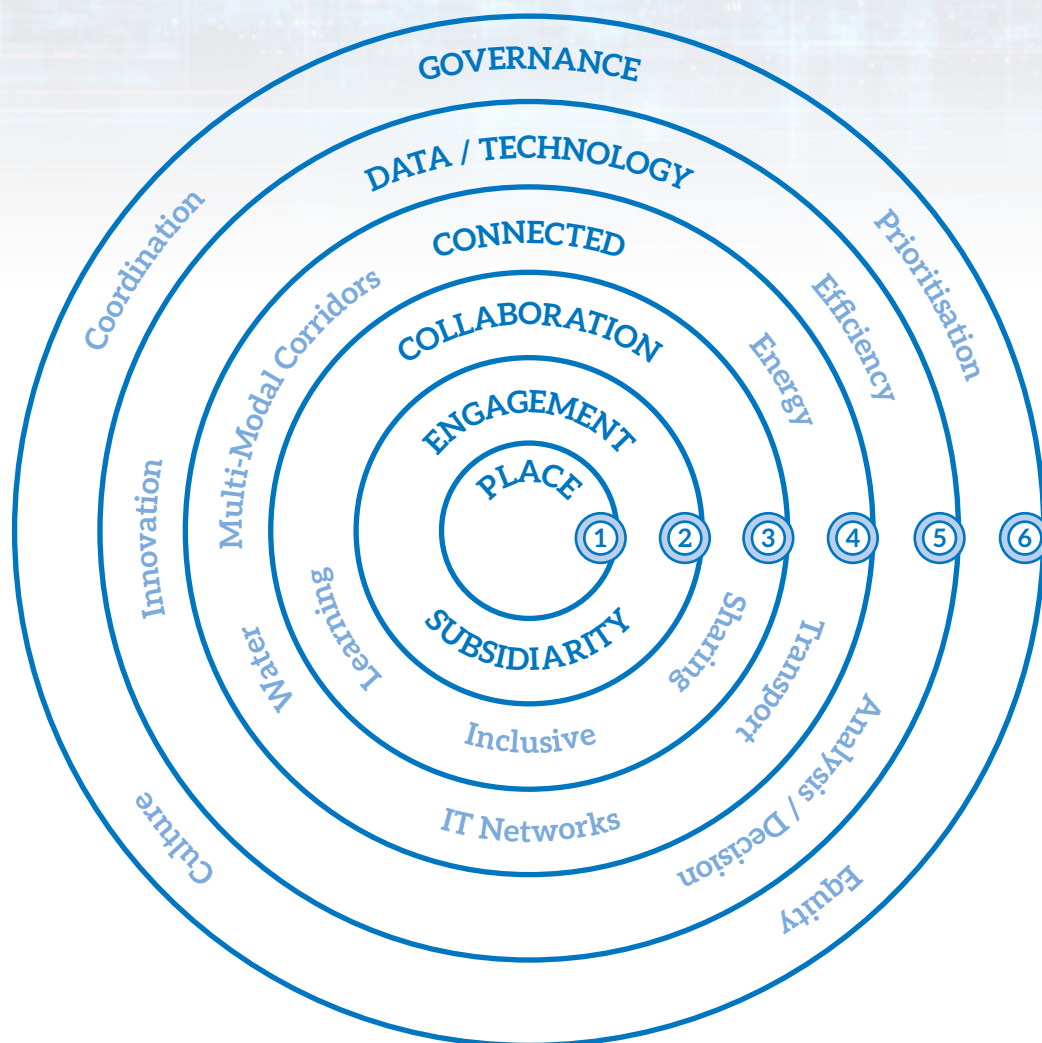
These included:

- Perceptions of a smart region;
- Value of designations such as ‘smart’;
- The key themes/priorities of a smart region;
- Alignment to SR RSES Pillars and eleven Strategic Regional Policy Objectives;
- The role of different stakeholders in the design and delivery of smart regions (working to the Quadruple Helix model involving government-business/industry-academia-community/voluntary sector);
- The role of the citizen;
- Opportunities and barriers to implementation of a smart region framework; and
- The desired outcomes.

A total of 41 interviews were held – representing a range of stakeholders from across the Southern Region of Ireland (see Annex 2). These included representatives from a range of local government departments – economic development, planning, housing, digital and IT services, and community development; higher and further education; local elected representatives, community sector; enterprise sector. Interviewees were identified in consultation with the SRA and All Ireland Smart Cities Forum^{xvi} (AISCf) members. In some cases, this led to a snowball effect, with interviewees recommending others whose perspective and insights should be sought. These advices were followed through to the extent possible in the time available. All interviews have been anonymised.

The image of a vibrant smart region that emerged was one where there is a high quality of life, strong social cohesion, connected communities, high interaction between citizens and local government, and a focus on mobility, environment, creativity, and wellbeing. There was a unanimous belief that a smart region led to, or enabled, a sense of place (Layer 1), where citizens realised a quality of life. Quality of life is believed to be dependent on access to opportunity, and high-quality facilities and services. It is believed to manifest itself in a sense of pride in where we live and the community to which we belong.

Figure 5.1. The key Dimensions of a Smart Region for the Southern Region of Ireland



(Source: Authors – based on interviewee feedback⁷)

There was a strong belief that **a sense of place is brought about by active participation and citizen engagement in local and regional decision making** (Layer 2). There are limitations to the current models of engagement which digitalisation has the potential to redress; as evidenced during the COVID-19 pandemic and the online solutions employed to ensure consultations at local authority level could proceed as planned. In optimising the benefit of engagement, it was felt that more decision-making needs be pushed down as close as possible to those who are affected by the decisions – the principle of subsidiarity.

Layer 3 develops the concept of engagement to where all stakeholders actively collaborate. This is a classic quadruple helix concept of meaningful collaboration between government and state bodies, citizens, academia, and private organisations. The belief is that these collaborations must be equitable and beneficial to all contributors. These collaborations are also seen as a place to learn and share – and ideally co-create and co-produce solutions.

Layer 4 represents the practical connectedness of physical locations in a region. In the most part it refers to infrastructure and related services and utilities, such as power, roads, transport, water, sewage, and broadband. These infrastructures and services are the fundamentals in providing access to opportunity and building resilience.

Layer 5 represents the classic definition of ‘smart’. Its premise is that if we collect and analyse data, we can understand, through this evidence-base, where we are with any given priority (e.g., carbon emissions, air quality, tourism carrying capacity, etc.); thus, allowing us to plan for the near and far future, and to measure progress. This layer also represents the need to develop technology (and non) based solutions to address identified priorities.

Finally, Layer 6 represents governance, the leadership and management of the system to optimise benefit for the region. It involves the development and operation of a set of processes, policies and institutions that regulate the way that issues are prioritised, and how resources and services are managed.

7. Developed by MU/ICLRD on behalf of the SRA as part of the Interreg Europe Cohes3ion project in pursuit of a Smart Southern Region Framework.



5.1.1. Place-Making (Layer 1)

The overwhelming opinion of those interviewed is that a smart region must have a sense of place and identity. It must offer a high quality of life – that goes beyond the working environment to include housing, transport, and access to amenities. It includes high quality designed public realm, culture and creative offerings, lifelong learning possibilities, and recreational options.

As defined by the stakeholders interviewed, the concept of place-making is strongly aligned to the three thematic pillars adopted by the SRA as part of the RSES process, namely:

- A Green Region;
- A Liveable Region; and
- A Creative and Innovative Region (see Figure 5.2.).

It was noted that local government activities are already transitioning into these areas; and this will only be strengthened with the emphasis coming from the EU on the green and digital transition as part of the EU Green Deal and the COVID-19 Recovery and Resilience programme.

While all three pillars are viewed as having a key role to play in place-making, respondents were keen to point out that **without the 'liveable' component, the technology component becomes pointless.**

“A smart region must be liveable, creative – not exclude people”

The opinions also reflect the issues that Irish towns and communities face and strongly suggest that any smart action plan must address these issues. Central to good place-making is recognising that everyone is at a different starting point in their 'smart' journey – and that each place is enabled to progress at the pace that works best for it and its citizens.



Figure 5.2. The Three Thematic Pillars of the RSES for the Southern Region



(Source: RSES for the Southern Region, 2020)

Reflective of the State’s blueprint to transform rural Ireland^{xvii}, Irish towns and villages are striving to repurpose themselves, by providing (enhanced) economic opportunity, services, and amenities; and strongly advocating the quality of life opportunities they present.

Throughout the interviews, this was captured and reflected in several different ways:

- “A smart region requires a place-based approach – playing to strengths and assets of the region;”
- “Quality of life in small towns which are struggling;”
- “If you don’t have a liveable town, it doesn’t matter how much tech you throw at it – it’s not attractive;”

- “Town centre first;”
- “When people are out and about – a sense of an active community;”
- “Local venture development;”
- “Feeling of busyness.”

Traditionally, the concept of a region in Ireland has been weak; in many respects “bedevilled by an inability to commit to second tier cities” and “the intense rivalry between places”. The RSES for the SR area dovetails with the NPF with respect to its commitment to the development of second tier cities, and the emphasis on place-making, quality-of-life, well-being, and the importance of ameliorating and preventing climate disruption. Its advocacy of compact

growth and sustainable communities is reflected in the County Development Plans (CDPs) of its constituent local authorities – and specifically the emerging draft CDPs and associated Issues Papers. Planning is increasingly cognisant of the SDGs and sustainability imperatives, and of promoting place-making, whereby distinctive spatial features are harnessed, and stakeholders are enabled to achieve shared goals.





5.1.2. Engagement and Subsidiarity (Layer 2)

Engagement

There was an understanding from the interviewees that engagement is a fundamental pillar of a smart region.

Throughout the interviews, engagement was expressed in a few different ways:

Citizen engagement

“a smart place listens and interacts with the people living and working in it;”

“need to engage early/earlier in the process, get good feedback.”

Civic contribution

“Most of the problems we have, we need to solve them ourselves”;

“The best sensors out there are people”;

“Understand where interest points are outside of vested interests”.

Stakeholder input to decision making – the quadruple helix of meaningful collaboration between state bodies, public institutions, citizens, academia, and private organisations

“Max return when adopt a citizen centric approach”.

“Opportunity to bring much bigger range of stakeholders together”

Based on their respective experiences, the regional stakeholder understands engagement as one of the primary “smart” building blocks. Essential to this is the language/vocabulary we use – “we need to shape to the citizen”. Terms such as ‘smart’ are difficult to explain on the one hand and comprehend/ visualise on the other. In addition, smart policies need to be balanced with more encouragement of diversity, social networks, and cross-sector innovation. Such engagement has often proven to result in more successful innovation (Greenhalgh *et al.*, 2004; Hartley, 2005).

Citizen engagement is mostly managed through walk-ins (to local authority offices), on-line portals (i.e., mylimerick.ie; fixmystreet.ie); public participation networks (PPNs); or project based focused activity. Based on the experience of the interviewees, citizen engagement is essential in that projects are far more likely to succeed where active participation is encouraged. On the downside, participatory



processes are viewed as highly resource-sapping. For example, the engagement efforts of Carlow County Council to engage on *Project Carlow 2040* is reflective of the scale of resources and manhours that need to be invested to make such initiatives a success – and ensure wider community ownership. It meant targeting groups and spending evenings and weekends attending and presenting at meetings. This is not recognised as a sustainable model of engagement. It was suggested that general engagement exercises have little effect – newsletters, flyer drops, etc. – intimating that engagement processes need to be bespoke and designed around specific projects.

Civic contributions are exemplified by the Clare Sports Partnership which provides social and wellbeing activities in community and sports hall throughout the county, and the Burren Programme, an agri-environmental programme which aims to conserve and support the heritage, environment, and communities of the Burren. Civic contribution will always be helped with greater funding, but according to the interviewees it is often a question of flexibility, such as meeting peoples’ needs within the window of time available to them.

In terms of the inter-relationship between place-making and engagement, Dingle in County Kerry is an exemplary example of such an approach working well. Central to its success has been local place-based leadership working to a strategic vision that is very clear on what the community wants to achieve over the short to medium term. A number of the projects to date have had a strong sustainable – and digital – component to them. By starting with the “*low hanging fruit*”, they have succeeded in bringing more people on board through the Dingle Peninsula 2030 Initiative by “*demonstrating what is possible*” from the ground up. In leading by example, challenges around scalability and transferability are broken down.

Subsidiarity

Subsidiarity – whereby decision-making powers on public policy rest as close as possible to where those policies are being delivered – as embedded in the Europe Charter of Local Self-Government is viewed as highly important. It is a natural parallel, if not extension, to the need for strong engagement.

The success or not of a smart region is for many linked to the degree of autonomy or mandate to make decisions that exists within the region.

“I don’t think there’s an issue with developing policy at a local level. The problem is when we want to implement larger projects;”

“Not bound by administrative boundaries”;

“Policy should be designed closer to its implementation”.

The Irish public policy structure is not set up to operate to the principle of subsidiarity. Most policy and funding decisions are the gift of central government – yet most ‘smart’ initiatives happen locally. This has challenges for embedding the ‘smart’ agenda, and its benefits, in national policy and funding streams. However, the pending move towards a Directly Elected Mayor (DEM) in Limerick City and County, with an enhanced suite of powers, including statutory consultation rights across all Government Departments and a higher level of financial autonomy, could result in the transformation needed to ensure citizen engagement lies at the heart of decision making.





5.1.3. Collaboration (Layer 3)

In discussing the potential for the SR to become a smart region, it became clear that the interviewees could perceive the many benefits that could accrue from working within a regional structure. At the same time, there was an understanding of the difficulties that can arise from working within a local authority structure. Collaboration is complex, and there is a prevailing sense that unless properly resourced, its success is not guaranteed.

“We strive for cohesive collaboration”

The prevailing attitude is that the development of a smart region must benefit all. There are many divisions already in existence across society, and they tend to correlate. For example, low digital education correlates with increasing social isolation and reduced employment opportunities. History has shown that development programmes often amplify these divides rather than reduce them. One statement proffered on this opinion was that a poorly thought-through process of collaboration “can disenfranchise more than franchise.” The sense is that

“It is smart when it includes all,”

and there is

“equality of opportunity.”

There was a positive attitude to a smart region in that it offers a higher potential by bringing people together, and it will be at its most successful when very strong relationships are in place.

“Dispersed locations contribute to the economy,”

“Looking at the collective – not individual”

“It is a region when synergies and scale are exploited.”



Currently, as would be expected, there is significant collaboration between local authorities and other agencies. The principle is practical and borne from experience. Collaboration is based on practical projects, be they tourism, water treatment, environmental management; where there is an obvious and mutual gain for all involved. A strong case was made for collaborating on “small projects” initially – particularly with community groups.

“Scale and likelihood of success is important to securing buy-in”

In a sense, **the smart region was visualised as being a dynamic network of networks that change with evolving priorities.** A given town may collaborate with another set of towns on a tourism project and yet another set of towns on flood protection. At another time, it will collaborate with different groupings of towns on tourism projects, and so on. Within the SR, these core dimensions of a successful smart region – networking, sharing strengths and collaborating on projects between towns and cities – are reflected in a number of Regional Policy Objectives (RPOs) within the RSES; for example, ‘Collaboration Between Metropolitan Areas’ (RPO 6), ‘Collaboration/Partnership’ (RPO 28), ‘Inter-Urban Networks as Regional Drivers of Collaboration and Growth’ (RPO 30), and ‘Rural Partnership Models’ (RPO 47). Successful collaboration depends on such networks and programmes being forged and supported at Local Authority level.

At this point in time, it is the strong suggestion from those interviewed that collaboration be better managed in terms of both oversight and capturing key lessons, such that the benefits of scale, sharing and learning can be realised.

Currently, there would not be a strong understanding by any given local authority of all other local authorities’ priorities or projects being undertaken. This may lead to similar efforts being undertaken (repetition) and low levels of sharing.

There is also the opinion that not all potential collaborators are afforded the opportunity – or take up the prospect – to participate fully. For example, it was strongly reflected that the higher education and research centres could play a greater role in ‘smart’ programmes, solving current real-world issues and helping plan for the future. The mechanisms to enhance these collaborative partnerships appear to be ad-hoc and too-often based on personal relationships. Further discussion centred on the need to strengthen academic-Industry collaborations and career progression pathways (including Lifelong Learning) and student placements across industry that are deemed meaningful and supportive of the entrepreneurial ecosystem. This aspiration fits with RPO 63 of the RSES which advocates for the development of regional skills, training infrastructure and life-long learning, RPO 186 which promotes the further development of the SR as a Learning Region, RPO 187 which facilitates a collaborative approach to regional skills development, aligned to the needs and opportunities of regional economies and RPO 189 which calls for greater investment in higher and further education in support of creating a diversity of skills and education and enabling access to job opportunities for citizens (RSES for the Southern Region, 2020: 121, 198).

A final important point made in the context of collaboration was the **growing need to recognise that community can be more than participants – they can be idea generators.**





5.1.4. Connected (Layer 4)

Layer 4 reflects the need to for smart regions to be connected spaces, bringing together urban and rural areas to play to their respective strengths and remove any sense of peripherality or of being a 'lagging' region. Such connected spaces have a strong infrastructural base in place upon which to build services. The term 'smart', derived from smart cities, is primarily associated with information and communication technology (ICT) – see Section 5.1.5 below. For example, a recent definition of a smart city is a multi-dimensional mix of human, infrastructural, social, and entrepreneurial capital that are merged, coordinated, and integrated using new technologies to address social, economic, and environmental problems involving multi-actor, multi-sector and multi-level perspectives.

This definition fits well with the opinion of the interviewees on *"building on the positives out of technology"*, and certainly access to broadband across the region is seen as a high priority. The current coronavirus pandemic has highlighted the benefits of broadband with many people working from home, widely dispersed where broadband is available. Conversely, there has been much frustration in locations without good broadband service – this deficit being one of the arguments to implement digital hubs.

In parallel with ICT and the concept of 'smart', when its goal is to enable a sense of space, there needs to be other strong infrastructure in place. Within the interviews, water, sewage, and transport were viewed as priorities. A common theme emerged of repurposing towns, that they *"had been built for a different purpose"* and that a more concerted effort was needed on a cross-agency basis to *"make them more attractive to people – highlighting access to services and security"*. While such a concept is recognised as a new (old) form of living, and towns need to be redesigned to attract people to live in the centre, the practical reality is that it is far easier to build estates on the edge of town (greenfield sites) due to access to water and wastewater infrastructure.

Inter-regional and intra-regional transport issues effect our ease of connecting people and goods across regions and between cities, towns, villages, and rural areas. The National Transport Agency (NTA), Transport Infrastructure Ireland (TII) and their stakeholders including the Local Authorities are addressing connectivity deficits through a range of initiatives that include delivery of multi-modal transport infrastructure and strengthened sustainable mobility, public transport and actions for lower carbon transport



emissions under the National Development Plan (NDP), Connecting Ireland Rural Mobility Plan, the Metropolitan Transport Strategies for Cork, Limerick-Shannon and Waterford, and local transport plans for key towns and other settlements across the region. Reflective of recent research by Ernest and Young (2020^{xviii}), the development of new business models in response to COVID-19 and ongoing changes in mobility behaviour for a myriad of reasons (from climate change to digitalization and electrification of urban transport systems to the emergence of hybrid working models) offer enormous opportunities to accelerate change in future mobility.



5.1.5. Technology and Data (Layer 5)

A fundamental of 'smart', as understood by the interviewees, is the power of technology and data. Technology is viewed as an enabler. Through data collection, collation, analysis, and visualisation, it is the basis for evidence-based problem solving and innovation. Table 5.1. demonstrates how both can support the delivery of the SRA's three thematic pillars.

During the interviews, three forms of data/technology applications were discussed - with each being recognised as being at a relatively immature level.

- 1. Efficiency** - the use of technology to improve efficiency, such as integrated ticketing application, and on-line services (e.g., planning applications). Many view this category as using technology to make their lives easier.
- 2. Analysis / Decision** - having access to data to allow decisions to be made - "I know the number of tourist beds in the region, but I don't know how many in my locality."
- 3. Innovation** - This refers to technology enabled projects that solve problems or are designed to develop new services. Opportunities for the SR in this area include in the bioeconomy, drone technology, and renewable energies to name but a few.



Table 5.1. The Role of Technology and Data in Delivering a Smart 'Green', 'Liveable' and 'Creative & Innovative' Region

Technology and Data		
The Green Region	The Liveable Region	The Creative & Innovative Region
Smarter travel / E-vehicles / Active travel/ smart parking	Pedestrianisation & movement counters	Research Centres/R&D
Air quality sensors	Public Transport Corridors	Learning City/Region ⁸
Energy efficiency in buildings	Ten Minute/Fifteen Minute cities and towns	Demonstrator village
Link to SDGs	Digital connectivity	Digital connectivity
New ways of working - reducing carbon footprint	Access to broadband	

Evidence Informed/Better Quality Decisions

The increasing amount of data provides a promising basis for successful regional management (see Table 5.2). By generating and compiling large quantities of data, the region can improve processes and put into action options to create value for its citizens. The current trend is towards open data, that is, to publish public data in new reusable streams and datasets, encouraging its ecosystem (i.e., citizens, private companies, and social organisations) to create new and innovative services. Notwithstanding this trend and the potential benefits of data, publishing data in a reliable and continuous manner has proven difficult world-wide.

8. Currently Cork City and Limerick City and County hold a UNESCO Learning City Status. It is an objective of the SRA to extend this to Waterford City, effectively creating a regional knowledge triangle.

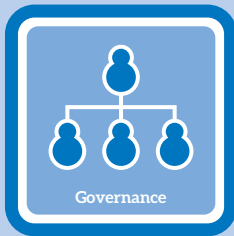
Table 5.2. Sampling of Initiatives Demonstrating Value of Technology and Data to Regional Management

Cork City	Public EMPOWER Project	An INTERREG Europe project involving the Southern Regional Assembly and Cork City Council as partners which aims to reduce carbon emissions by dynamically monitoring energy efficiency in buildings ⁹ . Cork City Council has installed energy monitoring equipment into 8 social housing units as part of the EMPOWER project. A weather station will measure several parameters including wind speed, wind directions, temp., humidity, air pressure, and rainfall. Inside the house gas and electricity consumption, energy generated by the boiler, air temperature, air pressure and humidity will be measured.
Limerick	+CityxChange	A European supported project to co-create positive energy districts, with Integrated planning and design, a common energy market & Community xChange; see Section 3.3.1 for further details.
Kerry	Smart Dingle	Selected as the Irish representative in the new EU ‘Smart Rural 21’ project. The overall aim is to promote and inspire villages/rural towns to develop and implement smart village approaches and strategies across Europe.
Waterford	Smart Bring Banks Project	Following a proof of concept in 2020, this project aims in 2022 to fit a sensor into 69 bring centres across the city and county. Contributing to the new EU targets of 70% recycling by 2025 (increasing to 75% by 2030), the sensors will measure bring centre capacity. The data generated will be used in two ways: the development of a dashboard to assist the collection contractor and local authority in operating an efficient collection schedule, and a user-friendly App for the public, detailing capacity at a facility based on ‘real-time’ information.
Carlow, Kilkenny, Wexford	Housing 4.0 Energy	The Interreg North-West Europe project Housing 4.0 Energy (H4.OE) aims to develop a market for small, affordable near-zero energy homes (NZEHS) by adapting and applying new digital technologies, thus stimulating both consumer and supplier interest. The Irish H4.OE pilot, overseen by 3 Counties Energy Agency (3CEA), will be located in South-East of Ireland (Carlow, Kilkenny and Wexford), with each region committing to the delivery of four zero energy homes (ZEHs) each.

Importantly, during this research phase the term ‘smart city’ was often replaced by the term ‘entrepreneurial city’ or ‘sustainable city’. Interviewees spoke to the importance of ‘ambition’, ‘confidence’, ‘having a hunger or swagger’ and ‘the edginess of the city’ – re-emphasising that while technology and data is an essential component of the smart city or region, it is but one element.



⁹. Other key stakeholders include the Department of Housing Local Government and Heritage (DHLGH) and the Three Counties Energy Agency (3CEA).



5.1.6 Smart Region Governance (Layer 6)

According to one interviewee, smart regions are defined as “the coordination in the adoption of new technology..... and coordinated with all interested parties moving in the same direction”. In essence the interviewee was highlighting the importance of governance as a building block for a smart region. Governance generally refers to the means for achieving direction, control, and coordination of wholly or partially autonomous individuals or organisations on behalf of interests to which they jointly contribute (Lynn *et al.*, 2000: 235). Public governance can be defined

“as regimes of laws, administrative rules, judicial rulings, and practices that constrain, prescribe, and enable government activity, where such activity is broadly defined as the production and delivery of publicly supported goods and services” (Lynn *et al.*, 2000).

While governance structures can be quite generic, governance, in the context of smart places, must consider the specific context (Ruhlandt, 2018). In an Irish context, the interviewees highlighted the crucial role of the local authority in achieving good governance. It was noted that across a range of sectors, policy is normally directed from central government, while implementation is the responsibility of local authorities. Similarly, funding which is necessary for implementation is increasingly directed through local authorities, particularly Exchequer funding.

A summary of the expected outcomes from a governance structure includes ensuring:

- Clarity of purpose;
- Aligning objectives;
- A broad inclusive participation;
- A forum of equals; and
- Equality in benefits.

Some examples of good governance structures were described in the interviews which may provide the basis for future standard governance structures.

Innovate Limerick is a special purpose company set up by Limerick City and County Council (LCCC). It is owned 75%



by LCCC and 25% by Enterprise Ireland (EI). The board is made up of entrepreneurs, elected members, academia, and public institutes. It is *“a melting point for ideas and when economic projects come our way, we discuss who is going to make it happen.”*

Limerick Digital Leaders Network was established in December 2016, consisting of stakeholders, and thought leaders from leading organisations that commit on a voluntary basis to work together and support the development of Smart Limerick City Region. The network includes members from public and private organisations, small and large commercial enterprises, academic institutions and research centres, community and voluntary organisations and local development companies.

Cork Gateway Steering Group was established in 2015 to guide and progress the activities of the Cork Smart Gateway. The steering group has evolved since then and now consists of representatives from Cork City Council, Cork County Council, Munster Technological University, University College Cork, and Tyndall National Institute. Industry is also represented on the steering group through the local industry cluster of Energy Cork and IT@Cork and by Cork Chamber of Commerce.

Limerick Charter. After the amalgamation of Limerick City and County Councils in 2014, the significant agencies (Local Authority, University of Limerick, Limerick Institute of Technology, Enterprise Ireland, and IDA Ireland) signed up to a charter that would work together for the betterment of Limerick. *“That stopped all the bickering and infighting, and suddenly everybody was wearing a green jersey”.*

Kilkenny’s ‘Smart Villages.’ Kilkenny LEADER Partnership is a non-profit, independent, community-led, local development organisation, led by a voluntary Board of Directors from community and voluntary groups, social partners, local government, and state bodies. The smart village initiative aims to help small business, community activists and groups to plan for their future. It wants community groups, activists, and small business to work together, and to think laterally to future proof by looking at transport, community facilities, their local food supply chain, the environment, and sustainability.

IRD Duhallow is a community-based integrated rural development company that was established in 1989. Working with state agencies, local authorities and communities, the main objective of IRD Duhallow is to establish and to support initiatives directed towards the generation of enterprise for the benefit and welfare of communities in Duhallow who may be deprived for a myriad of reasons – including depopulation, lack of training and poor infrastructure.

From the interviewees’ perspective, governance structures should also reflect a culture or attitude. For example, it was suggested that governance assemblies should be

“forward thinking – not just what problems it has but what opportunities – how best to apply its resources”.

Any progression of a smart region concept, including building awareness of its potential, for the SR should be aligned to the RSES and its implementation structures once finalised. In particular, because of the challenges around identity beyond the county administration boundary, building awareness of a SSR in alignment with the RSES implementation is suggested by the interviewees to be an effective way forward. Such an approach coordinates with the three Strategic Planning Areas – and will, it was suggested, gain buy-in to the smart region.

At the same time, it must take account of the specialities already well established in a few counties – without limiting innovation or the growth of that sector to one geographic area. The governance structures must ensure that the specialisms/learnings in one county or sub-region adds value to the region as a whole.

The recent publication ‘Regional Approach for development of a Smart Specialisation Strategy in the Southern Region’, developed by Bable Consultancy as part of the EU Cohesion Project, will be an important tool in not only progressing smart specialisation within and across the region but in demonstrating the value-added of the S3 approach.

“We need different elements of the region working together for a set purpose”

“The smart region must have intent, coordination”

“Multiple layers of networks”



5.2. Opportunities and Barriers

Throughout the consultation phase, a number of opportunities and barriers to progressing the smart region concept in such a large and diverse area as the SR were highlighted. This is not to say that the beginnings of such a smart region are not in place – they are (see Chapter 6). Rather, it is to ensure that the landscape as presented takes account of several contentions tabled:

‘Smart’ is a buzz word – There is little or no understanding of the term ‘smart’ across a number of sectors. Before progressing with a ‘smart region’ brand, there is a need to build up a common understanding of the term.

‘Smart’ is Local – while the focus is on smart regions, a number of those interviewed firmly believe that the ‘smart’ component of a smart region takes place at the local level; and that the role of local government in any smart region process must reflect this.

A ‘Missing’ National Platform – there is no national strategy for the advancement of technology to improve public services, other than the National Broadband Plan (NBP). This is a fundamental and necessary infrastructure but a smart agenda, enabling a sense of place (locally and regionally), would be better served by a broader technology strategy.

The Role of Innovation Districts – The role of innovation districts within a smart region was met with a mixed response. For those who thought such districts have merit, there were two main reasons for this: (1) as spaces where industry and local/regional government can interact in a mutually beneficial way – ideally with academia also involved, and (2) as places or zones that are developed with a core focus or ‘smart’ area of expertise; for example, in connected and autonomous vehicles or hydro-electricity generation or drone technology, etc. And it is this very proposal on ‘specialisation’ that resulted in another cohort of respondents querying if this was a ‘smart’ approach or one that would negatively impact competitive advantage and result in further ‘lagging regions’ emerging.

‘Smart’ is dependent on a culture of entrepreneurship – The OECD find that, while Ireland is a successful generator of high-growth firms and its SMEs are innovative, business dynamics and start-up rates are relatively low and Irish SMEs are not very active in international markets, and SME productivity growth is stagnant^{xix}.

This was echoed by the local authority interviewees who expressed a frustration at what, in their opinion, is a low level of access to entrepreneurial related training for SMEs, particularly in the adoption of technology as an enabler of a competitive advantage. It is felt that a cultural change is necessary, driven by central government, on the use of technology within local and central government. There

are several practical dimensions to this. For example, the higher and further education sectors have a key role to play in addressing this through:

1. Enhanced engagement with industry, and development of courses in partnership with industry. These include on-line short module qualification (micro-credentials) as well as full-time 3-4 year programmes;
 2. Working in partnership with local authorities and industry on the establishment of living labs or a ‘demonstrator village’; whereby new technologies can be trialled, and the tangible benefits clearly visible.
- There is an increasing need to see ‘smart’ at work.**

These recommendations can be supported by strengthened commitments to delivering on priorities for innovation, talent and disruptive technologies through Enterprise 2025 Renewed at the national, regional, sub-regional and local level.

The initiatives of Enterprise Ireland, Regional Enterprise Plans, Regional Skills Forums, and associated Learning Cities and Lifelong Learning initiatives are opportunities to support skills development and technological innovation in our enterprise sectors. Multi-agency collaboration occurs through such forums and the need for technology training and innovation needs to be elevated in actions agreed.

Strengthened funding to the higher and further education, training and skills sectors, which will help actions towards recommendations (1) and (2) above, are supported by RSES RPO 63 Skills and Talent, RPO 75 Anticipating Economic Structural Change, RPOs 186-190 addressing lifelong learning, skills, education and training and the Learning Region Action Plan for the Southern Region.

A Crowded Landscape – Ireland is small. Ireland’s cities are small by international standards. Yet, we are served by a ‘chaos’ of agencies, both statutory and non-statutory, formal, and informal working on key issues that increasingly have a strong digitalisation/technology focus – from mobility, energy, climate change, low-carbon/decarbonisation, environmental management, air/water quality, etc.

The region will be better served with a good governance structure that brings stakeholders together, encourages collaboration and ensure that learnings are shared, perhaps taking a lead for the Climate Action Regional Offices (CAROs). This requires significant relationship and trust building. It has implications for where the smart team – or equivalent – within the local authority sits in terms of having that holistic view and the oversight of what is happening within county administration boundaries and being able to share that with their counterparts across local and regional government.

5.3. A Smart Southern Region Framework

As the SRA develops a smart region framework, some key principles noted by the interviewees included:

1. **Actors:** the need to define the roles of everyone involved; this includes for the SRA itself. The SRA is also able to bring all players in a specific sector to the table as needed; with, for example, many of the utility or infrastructure providers having regional offices or already strong links to the RSES process.
2. **Priorities:** the smart region must have a clearly defined focus and set of objectives; it will fail if it tries to be an expert at everything.
3. **Strategies:** there is no appetite for a further suite of smart region strategies; ideally, the smart region framework should form part of the RSES implementation structures currently being defined.
4. **Learning:** a core concept of any smart region should be as a learning region, as is the case in the SR who view the creation of an inclusive and learning region as central to the region's sustainable growth. The suggestion is to build on the already very successful Learning City initiatives where the smart region should be developed as a living lab and idea exchange observatory.

The issue of identity was a recurring theme in all interviews; with respondents noting that it is very difficult for regional stakeholders to have a 'shared identity' given the scale and diversity of the SR. The closest many came to sharing a 'regional identity' was in the context of the old Regional Authority boundaries, which in turn align with the current Strategic Planning Areas (NUTS III) areas within the SR. The interviewees spoke often of the challenge of *"undervaluing that connection to place.... that liveable, social, community connectivity"*, contending that this sense of identity not only informs good governance but the overall sense of place and place-making. A collaborative and coordinated approach to developing a Smart Southern Region (SSR) will play a key role in nurturing a shared identity for the SR; with this regional identity evolving (and strengthening) with the implementation of the RSES.



CHAPTER 6: CONCLUSION



The notion of a smart region is, by and large, an extrapolation of a smart city. However, the concepts of smart regions (and smart villages) have taken a step beyond that of smart cities. We have come to understand that the transition from a 'region' to a 'smart region' is enabled by societal innovation. The inter-play and value-added brought by both urban-rural areas, whilst specifically acknowledging the driving role played by cities in the evolution of smart places, is acknowledged. The importance of a place-based approach that builds on a region's strengths - that place matters - is also recognised. Equally important is the participation of citizens. **Smart regions place people to the fore** - both in terms of design and development via the quadruple helix model.

The smart region is centred on a geographic area ('place') and brought to life through a collaborative ecosystem involving government/public sector, industry/business, academia, and citizens (i.e., the aforementioned quadruple helix model). Of particular importance is the engagement of all citizens with a strong focus on 'smart' citizenship, partly defined by the co-creation of new knowledge based on individuals' areas of expertise and lived experiences.

These developments are now reflected in policy. *The EU Urban Agenda (2016)* promotes regions within the context of liveability, the circular economy, social inclusion, and a just ecological transition. *The EU Action for Smart Villages (2017)* affords opportunities for towns and villages across the region to consolidate community-led local development and to further embrace digital connectivity and information communications technology (ICT) in advancing local economic development. At a national level, the potential of technology and digitalisation is further

reflected in the National Planning Framework (NPF), the National Development Plan (NDP), the government's commitment to the roll-out of the National Broadband Plan (NBP) and the emerging Smart Specialisation (S3) Strategy (and parallel national innovation strategy).

Within the SR the SRA have specified in their objectives their intent to build on Smart Cities and Smart Region initiatives and to extend such initiatives to towns, villages, and rural areas (RPO 134). They aim to develop Smart Cities as engines for a Smart Region (urban and rural), building on good practices yielded through living labs, test-beds, and to seek the deployment of disruptive technologies and smart infrastructures in cities, towns, villages and rural areas (RPO 133).

The exercise of interviewing a range of stakeholders from across the Southern Region of Ireland reinforced these views. The framework, as presented in Chapter 5 and which reflects the thoughts of the interviewees, develops from a motivation to create a sense of place and identity. Secondly, it places citizen engagement, civic contribution and stakeholder input to decision making as a critical element. It also encourages decision making to be as close as possible to those affected. The framework then addresses connection of communities through IT and other infrastructure, necessary to build sustainable places. It then considers how technology may support and deliver current, while also developing future, public services.

Based on the literature review of smart regions, an analysis of EU policy and programmes and the perspectives of a diverse range of regional stakeholders, several key principles will inform a SSR; namely:

1. **'Place':** Communities of place, their endogenous asset-base and the inter-relationships between urban centres and surroundings hinterlands will inform a smart region's direction of travel;
2. **Engagement & Subsidiarity:** The values of people, and how this both informs and leads to the co-creation of smarter and more sustainable places, is central to the process of developing a smart region;
3. **Collaboration:** Working collaboratively through co-creation processes in the co-design of solutions and services that address local/regional need;
4. **Connectivity:** There is a dual focus to connectivity – (a) connecting places and ensuring the necessary infrastructure and support services and utilities are in-situ to support the development of place, and (b) connectivity, coherence, and alignment of policies on a cross-sectoral basis, particularly as they relate to climate and environment – the global challenges of our time;
5. **Data and Technology:** The role of data and technology in building a smart region must be facilitated to enhance efficiency of service provision and generate innovation while also ensuring that clear guidelines are put in place around ethics and its enabling role; and
6. **Governance:** There is a key role for regional assemblies as facilitators of change; ensuring effective multi-disciplinary collaboration is undertaken in both the co-production and co-implementation of the smart region.

6.1 Emerging Liveable Region

A smart region places a strong emphasis on its community, and ensuring community buy-in to the priorities that drive the regional agenda. The process of becoming a smart region must be citizen centric. Dingle, for example, was profiled as a leading example of how the community can be an enabler, a co-designer and implementer of not only the smart agenda but of the culture change often required to ensure the process is effective. The region benefits from strong Public Participation Networks (PPNs) and their active engagement in pursuing sustainable development.

COVID-19 resulted in a (re)growth in volunteerism, bringing benefits to the community at large through inter-agency collaboration. It brought to the fore issues such as social isolation and IT poverty – both for those working and schooling at home. The PPNs have ensured that issues are being addressed from the bottom-up, and linked

to 'place', quality of life and community wellbeing. Such bottom-up relationships are built on trust – and this takes time to nurture.

6.2. Emerging Creative Region

The greatest assets of any region are its people, their individual creativity, skill, and talent (Fleming, 2007). Ireland already is world-renowned for its rich cultural heritage and has a well-established global reputation as a 'green island'.

Every local authority now has a culture and creativity team with a core role to play in place-making, thanks to the support of Creative Ireland. Creative Ireland is a culture and wellbeing programme that inspires and transforms people, places, and communities through creativity. Noting concerns around climate change, for example, resulted in Creative Ireland developing policies around how creativity can change thinking about this global challenge.

Creative and cultural expression has been highlighted as a key component of a smart region, offering a mechanism to engage with, and visualise issues as they arise. Creativity is the first step in innovation and, increasingly, the creative sector recognises digital and technology as key tools of their trade.

City of Culture designation brings both economic and social impacts - as experienced by both Cork and Limerick in the past fifteen years. Culture and creativity are also an essential component of 'place'; with our cities and market towns often having a very long history in theatre and culture. There are growing opportunities, through Creative Ireland in particular, to harness the potential of culture to explore the history and heritage of our coastal communities, mountains, Gaeltacht, etc. Culture has the power to impart a sense of confidence in place, and make one fall in love with a city, a town, a village – or a region.

6.3. Emerging Green Region

Pursuing a green transformation programme requires innovation, including new technologies and methodologies, behaviour change and ensuring a just transition. Member States, regions and local communities all have a role to play, but the impacts of the transition will be territorially differentiated (European Commission, 2020: 8^{xx}).

The SR is already a well-established 'test-bed' for renewable energies and smart mobility; with opportunities emerging for investigations into off-shore wind energy, drone technology, and carbon capture and storage (CCS) to name but a few. Increasingly, we see the concepts of 'energy' and 'green' coming together, often with the aid of digitalisation and technology, to strengthen resilience and address global challenges.

A Creativity and Climate Change workshop in November 2020 explored how creative community-based projects can activate positive behavioural change and provide participants with a sense of urgency and engagement in a topic which can sometimes seem overwhelming^{xxi}. We see similar alignments of the green agenda and creatives elsewhere. In 2019, a writer and theatre producer was tasked with adding creativity into how the Glasgow City Region would adapt to the impacts of climate change; ensuring that transformative cultural shifts as well as dramatic technological and infrastructural changes enabled the region to deal with the present and future impacts of the climate crisis^{xxii}.

6.4. Emerging Smart Region

The SR Local Authorities, as with others across Ireland, are undergoing a 'smart' transformation. While this has been a relatively slow process over recent years, the potential of a digital transition has come to the fore during COVID-19 when local government had to re-imagine the way it both protected its staff and continued to deliver its services in an effective and efficient manner. In a very short period, internal innovations resulted in services being moved online; this included consultation activities around County Development Plans (CDPs) and Local Area Plans (LAPs). Not all 'smart' actions required a technology or digital element either; streets were given over to pedestrianisation and active travel – rather than the car. Parking spaces were redesigned as parklets. This re-imagining of spaces has had multiple benefits and brought local authorities into closer collaboration with other regional stakeholders – from health, education, safety, climate/biodiversity, and environmental protection agencies.

There is a rich tapestry of higher and further education bodies in the region, together with emerging innovation hubs supporting digital enterprise and employment. There is a growing – and potentially greater – role for Higher Education Institutions (HEIs) who, historically, have not played a strong role in strategic regional development. The growing emphasis on the civic university and a commitment to engaging (a) in learning beyond the University's campus; (b) in discovery which is mutually beneficial beyond the academic community; and (c) in enhanced service delivery that directly benefits the wider public – regionally and nationally, is ensuring that academia is embracing the role laid out for it in the quadruple helix model and as enablers of a region's latent potential. This includes its talent-base.

The SR is enabled by the presence of two international airports (Shannon and Cork), a number of regional airports and its port network – all of which rely heavily on a digital infrastructure to keep them operational. In addition, a key digital infrastructure focus for all counties

within the SR is the roll-out of the *National Broadband Plan* (NBP). But other priorities include the development of Artificial Intelligence (AI) and IoT technologies to support industry development and service delivery. These include unleashing the potential presented by 5G and LoRaWAN hybrid networks.

The Smart Mapping Tool (SMT), a cloud-based tool developed by the SRA as part of this programme of work, is a 'live' platform documenting good practice in smart initiatives across the region. While a key output of stakeholder engagement capturing smart activity across the region, this is a valuable tool for stakeholders committed to the growth of the SSR; providing public and regional stakeholders with a means to interactively track the progress of smart initiatives across the region. It will play an integral role in measuring progress in the roll-out of the smart region, and in illustrating the diversity of activity that is critical to a successful smart region. The SMT has been designed to align with the three pillars of the RSES.

6.5. Summary

It is evident that an emergent smart region is well underway in the SR as referenced by the interviewees over the period March-June 2021. Many local authorities in the SR and/or community-based initiatives were tabled as having a very strong smart component – not only technology based – that will inform the future sustainable and integrated liveable, green, and creative transformation of the region as a whole, and its component settlements – from smart cities to smart villages.

In defining a smart region as it would apply to the SR, the analysis of literature, policy and perspectives shared by a range of regional stakeholders clearly illustrates that an emphasis must be posited on: place, people, collaboration, co-design, sustainability, quality of life, resilience, technology, and innovation. An initial bespoke smart region definition for the SR could, for example, read as:

“ A smart region working in collaboration, leveraging technology and open data to co-create vibrant, sustainable and liveable cities, towns and communities.

This emerging definition will be considered in Report 2 considering international approaches to a smart region, and will be further refined in Report 3, following analysis of the smart region maturity model that has emerged for the SR.



ANNEX 1: The Research Team

Office of Engagement and Innovation, Maynooth University

The Office of Engagement and Innovation was created to build and maintain a strategic research and innovation partnership with a range of external institutions, including enterprise, public sector, and civic organisations. The goals of the Office are (a) to facilitate the smooth participation of Maynooth University staff members in external collaborations and projects such bodies through the development of strategic partnerships, including research, education, and contracts and (b) to ensure effective supports in place for staff to collaborate and partner with a diverse range of external agencies.

The International Centre for Local and Regional Development (ICLRD)

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

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

School of Business, Maynooth University

The School of Business in Maynooth University primarily provides challenging and engaging undergraduate and postgraduate degree programmes which encourage students and participants to develop critical capabilities that will help shape the workplaces and practices of the future. The school creates new knowledge, products and services that underpin sustainable economic growth. It partners with practitioners and businesses, not only to ensure that our offerings are relevant, but also so they can develop new insights into ways of improving the performance of organisations and the people who work for them. It develops socially responsible managers and leaders and ethical businesses, and it develops insights which can be shared with businesses, organisations, professionals, and society.

ANNEX 2: Schedule of Interviews

Date	Agency	No. of Consultees
29 March 2021	Clare County Council	X1
29 March 2021 1 April 2021 (2-part interview)	Limerick City and County Council	X3
30 March 2021	Cork Smart Gateway	X4 (one by virtual input)
30 March 2021	IT@Cork	X1
1 April 2021	Cork City Council	X2
6 April 2021	Carlow County Council	X2
7 April 2021	Tipperary County Council	X1
7 April 2021	Kerry County Council	X1
7 April 2021	Creative Ireland	X1
8 April 2021	Cork County Council / SW Regional Enterprise Plan	X1
14 April 2021	Wexford County Council	X1
14 April 2021	University College Cork: School of Medicine	X1
14 April 2021	University of Limerick: School of Medicine	X1
19 April 2021	Environmental Protection Agency	X1
22 April 2021	RDI Hub, Kerry	X1
27 April 2021	Kerry PPN	X1
27 April 2021	Mary Immaculate College, Limerick	X1
27 April 2021	Waterford City and County Council	X3
28 April 2021	Dingle Hub	X1
30 April 2021 11 May 2021 (separate interviews)	National Transport Authority	X2
4 May 2021	Kilkenny LEADER	X1
6 May 2021	Waterford Cultural Quarter	X1
7 May 2021	Waterford Institute of Technology	X1
13 May 2021	Walton institute, WIT	X1
14 May 2021	Elected Representatives Wexford County Council/SRA Cork City Council/SRA	X2
14 May 2021	Rikon Institute	X1
17 May 2021	Elected Representatives Cork County Council/SRA Waterford City and County Council/SRA	X2
9 June 2021	Innovate Limerick / Limerick LEO	X1
10 June 2021	South-East Enterprise Office / Waterford LEO	X1

ANNEX 3: Digital Cities Challenge

Self -Assessment Criteria (& example questions)

Governance and Leadership

- Example: Availability of digital strategy
- Example: Existence of a monitoring framework for the implementation of the city digital strategy

Finance

- Example: Grants / tax incentives provided at city level to support digital start-ups in last 12 months

Infrastructure

- Digital infrastructure example: % of households with broadband internet at home
- Non-digital infrastructure example: Availability of integrated mobility platform to travel across transport modes

Support Services

- Example: # of innovations labs / accelerators

Digital Skillset

- Example: # of employees in digital companies

Digital Competencies of Companies

- Example: % of Irish SMEs with internet website

Open Data

- Example: Availability of open datasets

Community

- Ecosystem collaboration example: Number of ICT clusters and number of ICT companies joined as cluster member in any cluster organised/formed in the city
- Networking example: Number of meet ups on digital topics and/or for digital companies in the last five years

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ENDNOTES

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