Resilient Urban Landscape Approach

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ABSTRACT

This thesis examines the evolution of landscape's role within global sustainability agendas, with urban landscapes as its central focus. Despite the widespread adoption of landscape principles in regional policy, the concept remains conspicuously absent from global sustainability narratives. This disconnection contrasts with successful local-scale integration, where urban projects employing green infrastructure and nature-based solutions demonstrate effective reconciliation through transformative landscape interventions.

Sustainability challenges require new forms of knowledge production and decision-making. This research argues for drawing deeper insights from professional landscape intervention practice, policy implementation, and critical reflection on urban landscape projects. Whilst transdisciplinary sustainability research has evolved considerably, it traditionally privileges ecological metrics over phenomenological dimensions. Addressing this limitation requires context-sensitive approaches to intervention, retrofitting policies through lessons learned from planning, designing, and governing landscapes.

The thesis develops an original methodological contribution comprising two interrelated constructs. First, the Resilient Urban Landscape (RUL) approach emerges from systematic review of landscape governance literature. It proposes six attributes considered essential for building resilient urban landscapes. The RUL approach functions as an analytical lens for filtering and aligning diverse knowledge forms towards landscape quality objectives. This is operationalised through the Knowledge Alignment (KA) matrix, a tool adapted from strategic planning to benchmark knowledge forms against these six attributes.

Second, empirical application of the RUL approach generates the Transformative Urban Landscape Knowledge (TULK) framework. This framework synthesises aligned initiatives, tools, processes, and attitudes within a unified professional model. It functions simultaneously as repository and reflexive guide for built environment transformative professionals.

The research demonstrates a methodological shift from prescriptive toolkits towards attitude-driven approaches. It concludes that enhanced interprofessional collaboration, incorporating ethical frameworks and sustainability objectives, is critical for effective urban landscape interventions.

TABLE OF CONTENTS

GLOSSARY OF TERMS

Author Specific Abbreviations

KA matrix (Knowledge Alignment matrix): Strategic tool benchmarking knowledge forms against six RUL approach attributes across policy, practice, and professional domains.

RUL approach (Resilient Urban Landscape approach): Integrative methodology articulating six attributes essential for developing resilient urban landscapes; functions as analytical lens for aligning diverse knowledge forms.

TULK framework (Transformative Urban Landscape Knowledge framework): Repository and reflexive guide synthesising RUL-aligned initiatives, tools, and attitudes for built environment transformative professionals.

Author's interpretation of Core Terms

Built environment transformative professionals: Landscape architects, urban planners, architects, and engineers operating as reflective practitioners, activist academics, or institutional innovators.

Frontrunners: Practitioners catalysing sustainability transitions across disciplinary silos (Loorbach, 2010).

Institutional Landscape Capacity: Organisational ability to embed landscape-led thinking into policy and long-term urban management.

Professional Capability Development: Process of expanding practical knowledge to navigate transdisciplinary urban challenges.

Knowledge Co-Creation: Integrated process of co-design, co-production, and co-dissemination amongst academics, professionals, policymakers, and communities (Mauser et al., 2013).

Professional tacit knowledge: Experiential professional expertise acquired through practice, difficult to codify (Eraut, 2000).

Transcalarity: Capacity to integrate knowledge across geographical scales and governance levels.

Transformative knowledge: Reflexive knowledge promoting systemic change through professional collaboration.

Organisations and Institutions

Acronym	Full Name
Barcelona City Council	Barcelona City Council
CoE	Council of Europe
EC	European Commission
EDI	Equality, Diversity, and Inclusion (Framework for participant selection)
EIB	European Investment Bank
ELC	European Landscape Convention
EU	European Union
FAO	Food and Agriculture Organisation
Global Landscapes Forum	International platform for landscape-based sustainability collaboration
HPF	UN-Habitat Professional Forum
IALE	International Association for Landscape Ecology
ICOMOS	International Council on Monuments and Sites
IFLA	International Federation of Landscape Architects
IGC	International GeoDesign Collaborative
IMPUQV	Institut Municipal de Paisatge Urbà i la Qualitat de Vida
ISGlobal	Institut de Salut Global de Barcelona
ISHS	International Society for Horticultural Science
ISOCARP	International Society of City and Regional Planners
ISUH	International Society for Urban Health
IUCN	International Union for Conservation of Nature
IUCN WCPA	World Commission on Protected Areas
IUFRO	International Union of Forest Research Organisations
LALI	Landscape Architecture Latin Initiative
LI	Landscape Institute
OCPM	Office de consultation publique de Montréal
UIA	International Union of Architects / Union Internationale des Architectes
UN	United Nations
UNDP	United Nations Development Programme
UNEA5	United Nations Environment Assembly 5
UNEP	United Nations Environment Programme
UNESCO	UN Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
UN-Habitat	United Nations Human Settlements Programme
UPC-Barcelona Tech	Universitat Politècnica de Catalunya – BarcelonaTech
WAPPP	World Association of Public–Private Partnerships
WFEO	World Federation of Engineering Organisations
WHO	World Health Organisation
WSSD	World Summit on Sustainable Development
WWF	World Wildlife Fund

Technical and Thematic Acronyms

Abbreviation	Full Term / Description
ACM	**Adaptive Co-management** – Governance approach combining adaptive management and stakeholder participation.
ANT	**Actor–Network Theory** – Latour's model describing how human and non-human actors shape social and material networks.
CAS	**Complex Adaptive System** – Dynamic system (e.g., city) capable of self -organisation and adaptation to changing environments.
CBD	**Convention on Biological Diversity** – International treaty promoting biodiversity conservation (UN, 1992).
CCS	**Carbon Capture and Storage** – Climate mitigation technology capturing CO_2 emissions.
CDCPP	**Council of Europe Steering Committee for Culture, Heritage and Landscape** – Supervises implementation of ELC.
CDS	**City Development Strategy** – Framework integrating sustainability and urban planning at municipal level.
CRI	**Climate Resilience Indicator** – Metric assessing capacity to adapt to climate impacts.
EDI	**Equality, Diversity, and Inclusion**: The ethical framework used in research to ensure diverse participant selection and mitigate bias.
ELC	**European Landscape Convention** – Council of Europe treaty (2000) promoting democratic landscape governance.
ESG	**Environmental, Social, and Governance**: Institutional criteria/evaluation framework used to evaluate the sustainability and ethical impact of projects.
GGI	**Global Green Infrastructure** – International framework integrating GI into climate adaptation policies.
GIAHS	**Globally Important Agricultural Heritage Systems** (FAO Programme linking heritage and sustainability).

GIS	**Geographic Information System** – Digital mapping tool for spatial analysis in landscape studies.
GI	**Green Infrastructure** – Planned network of natural and semi-natural areas enhancing ecosystem services and resilience.
HUL	**Historic Urban Landscape** – UNESCO Recommendation (2011) integrating heritage conservation with sustainable urban development.
ICH	**Intangible Cultural Heritage** – UNESCO framework for safeguarding living heritage.
ILA	**International Landscape Architects** – Professional network advocating for landscape quality.
ILM	**Integrated Landscape Management** – Approach coordinating land, water, and resource management across sectors and scales.
IMA	**Integrated Management Approach** – Holistic planning integrating sectors, actors, and scales.
ISHS	**International Society for Horticultural Science** – Global network for plant science and sustainable production.
LTER	**Long-term Ecological Research** – Research network studying ecosystem change and resilience.
NBS	**Nature-based Solutions**: Actions to protect, sustainably manage, and restore natural or modified ecosystems to address societal challenges.
OOP	**Object-oriented Philosophy** – Philosophical approach rejecting anthropocentrism (Bryant, Harman, Latour).
PA	**Protected Area** – IUCN category for land or marine areas designated for conservation.
PPP	**Public–Private Partnerships** – Cooperative arrangements between public and private sectors.
RQ1 / RQ2 / RQ3	**Research Questions 1–3** defined in the thesis: landscape principles alignment, evaluation of municipal policies, and strategies bridging theory–practice gaps.
SDG11	**Sustainable Development Goal 11** – Sustainable Cities and Communities (UN 2030 Agenda).

SEA	**Strategic Environmental Assessment** – Policy tool to evaluate environmental effects of plans/programmes.
SECI	**Socialisation–Externalisation–Combination–Internalisation Model** – Nonaka (1994) knowledge creation framework.
SES	**Socio-ecological System**: An integrated concept viewing urban landscapes as systems shaped by social and ecological interactions.
SLM	**Sustainable Land Management** – Framework for managing land use while maintaining ecosystem functions.
SUDs	**Sustainable Urban Drainage Systems**: Water management practices mimicking natural processes to handle surface water runoff.
UGI	**Urban Green Infrastructure** – Network of green spaces providing ecological, social, and climatic benefits in urban areas.
UGI / GI	**Urban Green Infrastructure / Green Infrastructure** – Core to the RUL analytical framework.
UNDRR	**United Nations Office for Disaster Risk Reduction** – Global authority on resilience and risk management.

LIST OF FIGURES

LIST OF TABLES

CHAPTERS

Chapter 1 – Introduction

1.1 Introduction

We are living through multiple, interconnected crises. Climate change, rapid urbanisation, biodiversity loss, and social inequality converge most acutely in our cities, placing growing pressure on the environments in which most of the world's population now lives.

As naturalist and broadcaster David Attenborough articulated in his influential work *Life on Earth* (1981), which shaped public understanding of environmental responsibility:

> *"The fact is that no species has ever had such wholesale control over everything on earth, living or dead, as we now have. Whether we like it or not, that lays upon us an awesome responsibility. In our hands now lies our future and all other living creatures with whom we share the earth."* (Attenborough, 1981, p.308).

Policy frameworks at the international, national, and local levels have attempted to respond to these crises. Yet there is a persistent sense that these frameworks are not working in an integrated way, or in tandem with one another. Something is being lost between the ambition of global agendas and their operationalisation on the ground.

This thesis sets out to understand why that dislocation exists and what might be done to overcome it. The objective, developed in more detail in Section 1.4, is to investigate whether a new theoretical model – or an adaptation of existing ones – could better align landscape governance with the sustainability goals of global agendas and the desired landscape quality across scales.

To this end, the research draws upon complementary evidentiary streams: an analysis of international policy frameworks implementing landscape governance and their respective municipal operationalisations; semi-structured interviews with built environment professionals across institutional, governance, academia, and practice-based contexts; and examination of award-winning landscape projects. Collectively, these sources facilitate a multi-scalar, many-voiced approach to the central inquiry, without predetermined notions about its eventual revelation.

What emerges – tentatively and through investigative site-specific cases – is that the impediments to effective urban landscape transformation may be less technical than

coordinative. Indeed, the way practitioners, academics, and institutions co-produce and manage these systems (or fail to do so) appears more pivotal to the field than has been acknowledged.

1.2 Research Context: Urban Landscape Transformation and Climate Change

1.2.1 The Urgency of Urban Landscape Transformation

Urban areas face acute pressures from what Latour (Latour, 2013, p.3) terms 'the new climate regime', representing both the primary source of anthropogenic emissions and the concentrated location of vulnerable populations and infrastructure. As indicated by the United Nations (2015) over half the global population now resides in urban areas, with projections suggesting this will reach 68% by 2050. These announcements indicate consequences that call for urban transformation that can address multifaceted challenges, ranging from frequent extreme climate events to long-term global phenomena such as mass migration to cities and wars involving intentional cultural destruction (Sassen, 2012). The continuing migration of the global population towards cities is a dominant trend, making urban landscapes the future clustered habitat of humankind (Florida, 2012, p.12). These densely populated environments experience amplified climate impacts through urban heat island effects, increased flood vulnerability, and degraded air quality, whilst simultaneously contributing disproportionately to greenhouse gas emissions (Field et al., 2014). The transformation of urban landscapes would therefore appear central to any meaningful climate response, requiring approaches that integrate environmental, social, and governance dimensions. Therefore, this study explores the role of integrating sustainable design (including strategic planning) with governance and management practices in adapting to and mitigating climate change (Holling, 1973) in urban environments. This study explores the evolving approach in urban preservation and transformation, particularly in the post-Second World War context, in which city growth has increasingly been framed around heritage preservation. These urban transformations are linked to contemporary concepts. The European Landscape Convention (Council of Europe, 2000) recognises that change is intrinsic to all landscapes, requiring governance approaches that guide rather than prevent transformation. This stresses the need to handle the complicated interplay between governance and design to achieve zero-carbon landscapes that also meet landscape quality objectives (Council of Europe, 2000a; The World Bank, 2017).

The scale and pace of required transformation challenge the traditional disciplinary boundaries. Landscape, situated at the intersection of natural and cultural systems, offers a conceptual lens through which to address these interconnected challenges. However, as established in preliminary research for this thesis, current governance structures remain fragmented across sectoral knowledge silos, dividing insights amongst natural sciences, social sciences, design disciplines, and planning frameworks (Cervera et al., 2022). This fragmentation creates institutional rigidity that prevents cross-cutting concepts like landscape and resilience from gaining traction precisely because they defy conventional categorisation. A revised understanding of the city as a complex adaptive system (CAS) and its landscape as the perceived processes of the socio-ecological system (SES) embraces preparedness as a learning capacity to be integrated into strategic thinking and design (Walker and Salt, 2006, p.119). The scale of this challenge is reflected in public discourse, but it carries a specific urgency for the built environment disciplines. The 'awesome responsibility' implications are most profound for the disciplines responsible for shaping our physical world.

1.2.2 The Disconnect Between Global Frameworks and Local Implementation

International non-governmental organisations (INGOs) including the International Union for Conservation of Nature (IUCN) and the International Council on Monuments and Sites (ICOMOS) have been central in developing landscape governance approaches, establishing criteria for landscape protection as natural capital and cultural heritage, respectively. Professional international non-governmental organisations (INGOs) such as the International Federation of Landscape Architects (IFLA), International Union of Architects (UIA), and International Society of City and Regional Planners (ISOCARP), represent more than mere advocacy mechanisms. They increasingly need to embody a deontological stance (Fry, 2011), asserting that the built environment disciplines have a moral and professional duty to act as transformative agents. By doing so, they provide the necessary coordination mechanisms for bridging global frameworks to local scales. These frameworks increasingly recognise landscape as an integrative concept capable of bridging environmental protection, cultural heritage, and social equity.

However, a systemic gap exists between global recommendations and local implementation. International policy frameworks often prove either too general or too specific for meaningful local application, whilst, as Lazarus, (2009) argues, local administrations consistently prioritise

immediate objectives over long-term sustainability, driven by the need for short-term political credit.

This scalar mismatch generates critical implementation gaps. Global instruments establish ambitious targets yet struggle to account for local specificities, cultural contexts, and governance capacities (Ritchie, 2008). Municipal governments, facing immediate pressures from constituents and limited resources, lack systematic mechanisms to translate international principles into contextually appropriate interventions (Lingens, 2023). The result appears to be a persistent disconnect where well-intentioned global frameworks struggle to catalyse the local transformations they envision, whilst innovative local practices remain isolated rather than systematically scaled or transferred.

This effort to bridge fragmented approaches is not merely a methodological concern but is central to defining the study's overarching objective. The research critically examines prevailing paradigms such as 'urban heritage preservation' and 'transformation for growth,' arguing for their adaptation in response to contemporary climate imperatives. With the increase of extreme weather conditions on a global scale, as Seto et al., (2013) demonstrate, institutional and governance barriers, rather than technological and scientific limitations, represent the main obstacles to achieving urban sustainability. This initial approach promotes the conception of cities as CASs capable of responding to new climatic conditions through more flexible and integrated transformation strategies. The concepts integrated into the Spatial Dimension of Eco-social Systems (SES) are constantly evolving, which allows SES to become a flexible concept open to new ideas (Folke et al., 2004; Partelow, 2018). This involves overcoming the real-world dichotomy between theory and practice, design and management, and the theoretical dichotomy between landscape and sustainability (Benson and Roe, 2007; Scott, 2017), proposing new forms of urban governance that point towards the landscape quality of urban environments (Kail et al., 2019).

In this context, research requires a first moment of reflection to recognise the evolution of the concepts that have shaped the conservation and contemporary development of urban landscapes (Rega and Bonifazi, 2020). However, recognition is only the starting point to more specifically identify integrative strategies for adaptive transformations of these landscapes that emphasise the introduction of nature and public participation within a framework of landscape quality as a driver of sustainable development. Thus, the thesis seeks to identify common points between the concepts of landscape and resilience. Both concepts point towards a transversal,

multidisciplinary, and complex shift in the relationship between culture and nature, moving from conservation-oriented perspectives towards relationships oriented towards use and symbiotic coexistence (Gambino et al., 2013). This perspective requires recognising that institutional and governance barriers, rather than technological and scientific limitations, represent the main obstacles to achieving urban sustainability (Seto et al., 2013). Therefore, it is necessary to identify and overcome those barriers and integrate the recognition of sustainable design, planning, and management processes in the built urban environment. As suggested by Rega and Bonifazi (2020), the relationship between design and governance must be mutual and complementary, where design serves to emphasise the physical and spatial dimensions of sustainability, whilst governance provides the legal and institutional frame necessary to implement these solutions. In this sense, the thesis supports a holistic approach that allows time and temporality to be assimilated in the interaction between governance and design, as proposed in Kail et al. (2019).

1.2.3 Fragmentation of Knowledge Systems

As argued by Golhasany and Harvey (2023), a fundamental challenge underlying implementation gaps is the fragmentation of knowledge systems – academic research, professional practice, and institutional governance evolving independently, each developing distinct vocabularies, priorities, and testing mechanisms. With the increasing impact of local and global environmental issues, Shahzad et al. (2020) suggest it has become integral to adopt approaches to urbanisation that incorporate all kinds of knowledge as assets to an evolving process. As Reid and Polanyi (1959) contend, knowledge should not be understood as a static collection of facts but as a dynamic process, continuously evolving through experience and participation.

There is a widely noted tendency for academic scholarship to advance theoretical understanding whilst remaining disconnected from practical application. As Eraut (2000) argues, professional practice generates a distinct form of knowledge – the personal expertise and 'know-how' that practitioners acquire through experience, which is often difficult to codify or express in purely formal terms. Such professional tacit knowledge, accumulated through design and implementation, rarely benefits from systematic mechanisms for its capture and transfer. Meanwhile, as Edwards and Bulkeley (2018) demonstrate, institutional governance operates within political and administrative constraints that may not align with either academic insights or professional innovations.

This fragmentation may be particularly acute in landscape governance, which requires integration across multiple disciplines, scales, and temporal horizons. Urban planners, landscape architects, ecologists, social scientists, engineers, and policymakers each bring essential expertise, yet rarely appear to operate within frameworks enabling systematic coordination. This absence of shared language, common objectives, and coordination mechanisms may mean that knowledge remains siloed, professional innovations go unrecognised, and institutional capacity fails to develop cumulatively. As the literature review in Chapter 2 reveals, it is precisely this kind of structural inflexibility that risks rendering knowledge systems fragile, limiting both knowledge growth and implementation capacity.

This fragmentation also extends to the mechanisms through which knowledge is organised and disseminated. Traditional approaches have tended to rely on prescriptive toolkits – standardised methods and instruments applied uniformly across contexts. However, the dynamic nature of urban landscape challenges raises the question of whether moving beyond static tools towards more adaptive attitudes and processes might better respond to local specificities whilst maintaining alignment with global sustainability objectives. This research therefore sets out to investigate whether such a shift – from tools to attitudes – might enable more effective knowledge integration across professional domains.

> *"As bureaucracies accumulate power, they become immune to their own mistakes. Instead of changing their stories to fit reality, they can change reality to fit their stories." (Harari, 2016, p.218)*

1.2.4 Systemic Coordination versus Individual Agency

Current approaches to urban landscape transformation often privilege individual expertise – the star designer, the visionary planner, the innovative mayor – over systematic coordination mechanisms. Whilst individual agency matters, it is worth asking whether this emphasis might obscure the collective processes. One possibility is that innovations in urban landscape governance may draw as much from collaboration across professional domains as from any single source of expertise: academic researchers informing policy frameworks, design professionals implementing innovative approaches, institutional actors facilitating cross-sectoral coordination, and community stakeholders contributing local knowledge.

This raises a central question for the research: might effective urban landscape transformation depend as much on the coordination of diverse professional profiles across disciplinary boundaries as on expertise operating within them? This aligns with the transition management

framework proposed by Loorbach (2010), which suggests that long-term shifts require a shift from individualistic leadership to systemic 'arenas' of collaboration. Rather than focusing on exceptional projects in isolation, this research investigates the specific knowledge integration mechanisms that allow these diverse professional profiles to function as a unified transformative force. If effective change arises, at least in part, through collaboration across disciplines, then a key task becomes identifying the attitudes, processes, and tools that might facilitate such coordination.

This points towards systematic investigation of meaningful scale urban projects (de Solà-Morales, 2008) and the governance structures, professional practices, and knowledge integration mechanisms that may support transformative outcomes.

Professional international non-governmental organisations (INGOs) such as IFLA, UIA, and ISOCARP, with their vertical membership structures bridging global to local scales, represent potential coordination mechanisms that remain systematically underexplored as instruments of governmentality. According to Foucault's theory of governmentality (Foucault et al., 1991), one can reflect on – and therefore design – the processes by which professional practices and institutions govern individuals through subtle and often decentralised forms of power.

> *"I would like to undertake something which I would term a history of 'governmentality'. By this word I mean three things:*
>
> *The ensemble formed by the institutions, procedures, analyses and reflections, the calculations and tactics that allow the exercise of this very specific albeit complex form of power, which has as its target population, as its principal form of knowledge political economy, and as its essential technical means apparatuses of security.*
>
> *The tendency which, over a long period and throughout the West, has steadily led towards the pre-eminence over all other forms (sovereignty, discipline, etc.) of this type of power which may be termed government, resulting, on the one hand, in the formation of a whole series of specific governmental apparatuses, and, on the other, in the development of a whole complex of savoirs.*
>
> *The process, or rather the result of the process, through which the state of justice of the Middle Ages, transformed into the administrative state during the fifteenth and sixteenth centuries, gradually becomes 'governmentalised'." (Foucault, 1978, p.102–103)*

1.3 Researcher Positionality and Disciplinary Perspective

1.3.1 Landscape as Integrative Concept

In recent decades, landscape has gained prominence in the international arena through policies such as the European Landscape Convention (ELC) promoted by the Council of Europe (Council of Europe, 2000a) and open to international ratification. The ELC advocates democratic governance of the landscape and claims its direct contribution to sustainable development through its continuous planning, design and managing (Council of Europe, 2000, p.3).

Consistent with this view, this research understands landscape as the dynamic interface between human and natural systems. This conceptualisation allows the research to position landscape architecture not as a siloed discipline, but as an integrative stance towards urban transformation. While the tools of this inquiry are rooted in the professional practice of different traditional professions, the research adopts 'landscape thinking' as its primary framework. Following Orff's (2016) articulation of landscape architecture as a field uniquely positioned to bridge environmental science, social equity, design innovation, and governance frameworks, the research treats landscape as a conceptual anchor capable of integrating knowledge across conventional disciplinary boundaries.

In *Toward an urban ecology*, Orff (2016) asserts that "landscape architecture is not just a discipline, it is a stance – a stance of activism," arguing that the profession must move beyond the picturesque to "jointly conceptualise the physical and social" by interweaving 'science, policy, people, and art.

This activist stance necessitates a broader definition of the medium itself. Following Berque (1994), Antrop (2005), and Krampe (2017) the research conceptualises landscape infrastructure as a multidimensional construct. It comprises not only physical elements but also the cultural, ecological, institutional, and political dynamics that shape them. By viewing infrastructure through this expanded lens, the research treats landscape as an underlying governance infrastructure; a strategic platform capable of integrating fragmented systems into a coherent urban strategy.

It provides a framework for addressing interconnected challenges that cannot be resolved through single-discipline approaches, operating at a "manageable scale of thought and action, which scales down to the unit of individual behaviour and up to the frame of regional politics"

(Orff, 2016). This integrative stance informs both the research methodology and its objectives. Rather than advocating for landscape architecture as a protected professional territory, this research investigates how landscape governance can facilitate coordination amongst a diverse ecosystem of built environment practitioners. These 'frontrunners' (Loorbach, 2010), comprising landscape architects, urban planners, architects, and engineers, are collectively termed 'built environment transformative professionals' throughout this research and function as the basal agents within the transition arena.

In this context, landscape is not merely a physical site but a strategic interface between human and natural systems. It provides the integrative framework necessary to address interconnected challenges that exceed the scope of single-discipline approaches, serving as the common ground where the professional tacit knowledge (Eraut, 2000) of diverse actors is synthesised into transformative action. It reinforces the idea of landscape as an 'anchor' for knowledge integration.

The central question is not which discipline leads, but how landscape thinking, with its emphasis on systems, relationships, and multi-scalar dynamics, can inform collaborative structures that enable professionals to work effectively together. This is fundamental because, as Batty (2012) observes, cities function as biological rather than mechanical systems. If urban environments are the products of evolutionary processes rather than 'grand design,' then landscape – as an open, adaptive interface – is the only framework capable of hosting such complexity.

> *"In short, cities are more like biological than mechanical systems and the rise of the sciences of complexity which has changed the direction of systems theory from top-down to bottom-up is one that treats such systems as open, based more on the product of evolutionary processes than one of grand design."* (Batty, 2012, p.1)

1.3.2 Positioning the Researcher

The researcher brings an eclectic professional trajectory spanning distinct but interconnected roles: part-time professor of landscape and urbanism at university level, executive director of the Barcelona International Landscape Biennale, long-term volunteer for international professional non-governmental organisations, and practising landscape architect with projects across multiple scales. As a hybrid professional operating between Barcelona and international contexts, my native proficiency in Catalan and Spanish, combined with professional fluency in English and French, allowed me to design a research project that transcends linguistic silos.

This multilingual positionality was fundamental in accessing the shared professional language of landscape across diverse cultural contexts. Also, this positioning privileges a unique vantage point from which to observe how award-winning innovations often fail to translate into municipal or international policy due to fragmented knowledge systems and the absence of shared coordination mechanisms.

This positioning provides both advantages and limitations for the research. The advantages include access to diverse knowledge sources – such as academic scholarship, exemplary international projects, professional practice insights, and institutional governance perspectives – as well as access to key people, facilitated by personal credibility within the field. This proximity also grants direct observation of how knowledge circulates, or fails to circulate, between these domains. The limitations include potential biases towards European contexts (Barcelona as institutional base, predominantly European case studies), professional assumptions embedded in practice experience, and the challenge of maintaining critical distance from familiar frameworks and networks.

The seven-year research process has required navigating between these professional identities whilst developing the academic rigour appropriate to doctoral inquiry. The Biennale directorship provided access to international exemplary projects (from New York's High Line and Brooklyn Bridge Park to Tangshan quarry or Auckland Waterfront) and opportunities to engage with leading practitioners across diverse contexts. Volunteering with professional bodies and United Nations agencies revealed the complexities of global professional networks and policy frameworks, whilst simultaneously raising questions about how professional innovations could be captured systematically, evaluated, and transferred across contexts. University teaching highlighted gaps in how built environment education prepares future professionals for collaborative governance, whilst practice experience revealed the constraints professionals face when attempting to implement innovative approaches within existing institutional structures.

This research emerges from the productive tensions between these roles, seeking to develop frameworks that can simultaneously inform academic scholarship, professional practice, and institutional governance. The eclectic trajectory has enabled mobilisation of prior professional knowledge and networks whilst maintaining the critical distance necessary for rigorous academic inquiry.

1.3.3 Acknowledging Scope and Limitations

The research focuses specifically on urban landscapes in Global North contexts, examining three cities (Barcelona, Birmingham, Montreal) with relatively similar governance structures, professional frameworks, and resource contexts. This geographical focus reflects both pragmatic constraints (language capabilities, institutional access, time limitations) and substantive decisions about where the research could make meaningful contributions. However, this choice introduces important limitations. The European Landscape Convention, which significantly influences the research's theoretical framework, carries Eurocentric assumptions about landscape values, governance structures, and professional agency. Those may not translate to Global South contexts where governance capacities, resource constraints, and cultural contexts differ fundamentally; nevertheless, the European vision was a reference for democratic values embedded in urban form and landscapes and thus remains inspirational.

Cities in the Global South face challenges, characterised by informal settlements, acute climate vulnerabilities, limited institutional capacity, survival-oriented planning priorities; that are not adequately represented in the research sample. The framework developed through this research requires testing in diverse geographical contexts to assess whether its assumptions about professional coordination, institutional capacity, and stakeholder engagement apply beyond the relatively privileged contexts examined. These limitations are acknowledged not as weaknesses but as boundaries defining the research scope whilst simultaneously indicating essential directions for future investigation that could enhance the framework's global applicability.

1.4 Research Aim

The overarching aim of this research is to develop an integrative methodology for aligning landscape governance approaches with global sustainability agendas, addressing fragmentation between academic knowledge, professional practice, and institutional implementation **across** multiple scales to enhance urban landscape transformation capacity in the context of climate change. The thesis is grounded in the concept of transcalarity, with particular attention to the intermediate scale as the optimal bridge between global frameworks and local implementation, addressing the systematic undervaluation of ordinary urban environments in sustainability agendas.

This aim responds to the identified challenges of fragmented knowledge systems, scalar implementation gaps, and absence of systematic coordination mechanisms between

professional domains. The framework has been developed and refined through systematic application across the empirical phases of this research; further testing and validation in diverse contexts, particularly in the Global South, is proposed as a necessary next step.

1.5 Research Objectives

To achieve this aim, the research pursues five interconnected objectives:

Objective 1: Synthesise landscape governance approaches and global sustainability frameworks

Through systematic review of academic literature and policy documents, identify convergence points, persistent gaps, and potential mechanisms for integrating landscape governance approaches with international sustainability agendas including the Sustainable Development Goals and New Urban Agenda.

Objective 2: Develop an analytical framework for evaluating landscape governance alignment and understanding how governance frameworks, municipal policies, and professional practices align with landscape governance principles, facilitating cross-case comparison whilst preserving contextual specificity.

Objective 3: Investigate municipal implementation of landscape governance approaches. Examine how cities with distinct governance structures implement landscape governance principles through policy frameworks and institutional structures, identifying barriers, enablers, and coordination mechanisms.

Objective 4: Identify professional practices and tools supporting urban landscape transformation.

Through analysis of award-winning landscape projects and professional practice documentation, examine the tools, processes, and attitudes employed by built environment transformative professionals in delivering resilient urban landscape interventions, identifying how professional tacit knowledge is captured and transferred across disciplinary boundaries.

Objective 5: Synthesise findings into actionable strategies for built environment transformative professionals.

Integrate insights from literature review, policy analysis, city case studies, and professional practice to propose systematic strategies addressing identified gaps in urban landscape

governance, with a view to contributing towards a stable and widely accepted normative framework for urban landscape transformation.

1.6 Research Questions

Three overarching research questions structure the investigation. As the research progresses through successive stages of data collection and analysis, these questions are progressively refined and given greater precision, moving from broad conceptual inquiry towards specific empirical findings.

RQ1: How do landscape principles and landscape governance approaches align with global sustainability agendas to promote resilience and urban quality in the context of climate change?

This question addresses the integration gap between landscape governance approaches and international sustainability frameworks. Despite convergence around core principles (adaptivity, multifunctionality, multi-scalar thinking, participatory processes), landscape has failed to achieve recognition as a transversal organising principle in overarching sustainability frameworks. RQ1 investigates whether sufficient common ground exists to enable systematic integration and what mechanisms might facilitate alignment.

RQ2: What synergies between governance approaches and planning/design tools contribute to transformative knowledge generation and cross-disciplinary collaboration in resilient urban landscapes?

This question responds to epistemological barriers and sectoral fragmentation identified in the literature. Fragmentation of knowledge systems undermines holistic landscape approaches, with governance structures trapped in sectoral silos. RQ2 investigates how governance in municipal policies and design strategies could contribute for their capacity to implement resilient urban landscape.

RQ3: What implementation strategies bridge the theory-practice gap in sustainable urban landscape interventions whilst facilitating the integration of knowledge across theory, practice, and governance?

This question addresses the undervaluation of ordinary urban environments whilst synthesising across all identified gaps. Ordinary urban environments remain systematically excluded from international sustainability frameworks. RQ3 investigates implementation strategies that could

make integrated approaches systematic practice rather than isolated innovations, particularly in ordinary urban contexts, thereby enabling transformative knowledge creation.

1.7 Thesis Structure

The thesis is organised into eight chapters that systematically develop and test the integrative methodology:

Chapter 1: Introduction establishes the research context, positioning, aim, objectives, and research questions, situating the investigation within urgent climate challenges facing urban landscapes.

Chapter 2: Literature Review and Conceptual Framework synthesise academic literature, policy documents, and the researcher's exploratory publications to identify five interconnected knowledge gaps (epistemological barriers, landscape governance integration deficit, undervaluation of ordinary environments, scalar implementation gaps, design-governance integration deficits). The chapter develops the conceptual foundation for the research methodology through systematic review of philosophical foundations, landscape terminology, and landscape governance approaches, concluding with articulation of the Resilient Urban Landscape (RUL) approach as an integrative framework responding to identified gaps.

Chapter 3: Methodology details the research design, justifying interpretive-constructivist philosophy underpinning qualitative multi-case study methodology. The chapter explains development of the Knowledge Alignment (KA) matrix as an analytical tool operationalising the RUL approach, enabling systematic comparison of heterogeneous evidence (policy documents, municipal plans, interview data, project examples) against common criteria whilst preserving contextual complexity. The methodology chapter establishes the three-phase empirical investigation (thematic landscape management approaches, city case studies, award-winning project studies) and explains data collection and analysis procedures.

Chapter 4: Thematic landscape management approaches applied to international policy frameworks. Analysis applies the KA matrix to five international policy frameworks (IUCN Protected Landscapes, UNESCO Historic Urban Landscape Recommendation, European Landscape Convention, UNEP ecosystem approaches, UN-Habitat urban resilience frameworks), assessing alignment with RUL approach attributes. Policy review analysis reveals convergence around process-based adaptive management, multi-scalar governance structures,

and collaborative stakeholder engagement, whilst exposing systematic implementation gaps and absence of coordination mechanisms between academic research, professional practice, and institutional implementation.

Chapter 5: City case studies examine landscape governance implementation in Barcelona, Birmingham and Montreal through policy document analysis and semi-structured interviews with nine built environment transformative professionals (municipal officials, academic researchers, practitioners). Cross-case analysis reveals that departmental silos and limited cross-sectoral coordination constrain implementation regardless of governance structure, whilst successful innovations (Barcelona Superblocks, Birmingham green infrastructure, Montreal participatory frameworks) emerged through collaboration across professional domains rather than isolated initiatives.

Chapter 6: Professional Practice Analysis investigates tacit professional knowledge through analysis of 32 Rosa Barba Prize finalist projects and interviews with reflective practitioners, activist academics and institutional innovators. Results organised into six thematic categories (actor identification, landscape reading, collective vision development, professional capability building, institutional capacity building, policy co-creation) identify tools, methods and approaches that effectively integrate landscape governance principles in practice.

Chapter 7: Discussion and Synthesis integrate findings across empirical chapters, demonstrating that systematic application of the RUL approach methodology reveals six interconnected strategies addressing identified knowledge gaps. The chapter articulates an integrative framework as the principal research output, comprising four attitude-based strategies (Reaching Out, Reading and Drafting, Imagining and Interrogating, Lessons Learned) and two process-based strategies (Professional Capability Development, Institutional Capacity Building). Critical synthesis reveals that transformation requires interprofessional coordination over solo expertise.

Chapter 8: Conclusions returns to the research aim and questions, summarises key findings, identifies novel contributions to knowledge, discusses implications for professional advocacy and practice, acknowledges limitations including Eurocentric bias and Global South testing needs, reflects on unanswered elements (EDI considerations, ethical complexities, failures as lessons) and proposes future research directions including further testing and validation in diverse contexts and potential development of an International Convention on Urban Landscapes.

Chapter 2 – Literature Review and Conceptual Framework Development

Chapter 2 is the literature review chapter which establishes the theoretical and empirical foundations for this research through three complementary review processes:

- Academic literature review (Sections 2.1–2.2) examines scholarly research on terminology and philosophical foundations for understanding urban landscapes.
- Exploratory research synthesis (Section 2.3) integrates preliminary findings from the author's investigations.
- Preliminary policy document review (Section 2.4) analyses international conventions, recommendations and landscape governance frameworks from UN agencies and advisory bodies.

These integrated reviews constitute the thesis literature mapping process, enabling identification of critical gaps in knowledge (Section 2.5) and establishing the foundation for an integrative analytical framework that guides the research questions and methodology (Section 2.6).

2.1 Terminology and Conceptual Definitions

The increasing complexity of cities in the Global North throughout the 20th century gave rise to a progressive development of a specialised academic literature focused on urban phenomena, which aimed to describe them to better understand the dynamics already unfolding in cities. There is now a contemporary consensus amongst historians and urban studies scholars around two key statements: first, that cities are worth studying as objects of inquiry in their own right; and second, that understanding their complex systems requires expertise drawn from many different disciplines.

Central to this multidisciplinary effort is the question of terminology. The words and concepts used to describe urban phenomena are not merely descriptive labels – they reflect underlying theoretical assumptions, characterise disciplinary silos and ultimately, from the very language employed, shape research frameworks whilst directly influencing policy and governance decisions. Imprecise or contested terminology can obscure the very complexity it seeks to address. It is for this reason that Chapter 2 begins by examining terminology to situate the research thematically within urban landscapes, before integrating empirical findings, normative

frameworks and international conventions. This literature mapping process is fundamental to identifying critical gaps in knowledge and establishing the analytical foundations that guide the research questions and methodology of this thesis.

"These various trends are coming together in a new approach to cities, urban science, which draws on existing research traditions and recent developments in urban economics, economic geography, labour economics, urban sociology, urban ecology, spatial data analysis and network science." (Ortman et al., 2020, p.24)

The growth of different disciplinary perspectives on urban issues in the last century has led to a range of terms to describe them. Some of the most common, aside from 'urban studies', are 'townscapes,' 'cityscapes,' 'place,' and 'site'. Even the term 'urban metabolism' has been used in divergent yet related ways. Although these terms are often used interchangeably, the literature underlying them points to their meaningful differences and the distinct urban phenomena they identify.

Bowen (2010) distinguishes seven subfields that make up the field of urban studies: (1) urban sociology, (2) urban geography, (3) urban economics, (4) housing and neighbourhood development, (5) environmental studies, (6) urban governance, politics and administration and (7) urban planning, design and architecture. Although there is no standardisation, those are fundamental subfields to urban studies, shaping its context and internal framework.

Even so, the article is disputed an eighth foundational subfield to the discipline of History has been added (Harris and Smith, 2011). The significance here is in the weight of European urban discourse, where history as a serious research tool has long played an important part in using the past in comparative analysis towards critical thinking.

For the thesis, eight subfields of urban studies that stem from classical disciplines focused on urban areas are considered as a model to configure the elements that constituted the main approaches specifically targeting landscape in the urban context. The research recognises the city as a system aligned with this chapter's first strategy. Furthermore, urban studies are related to a diversity of landscape approaches. The relationship between each urban studies field is connected to the contemporary understanding of landscapes according to the definition of the ELC. Consequently, different nuances of landscapes in the urban context have been recognised and shaped over time. For this thesis, there is a need to distinguish the emphasis conveyed by terminology for each of them, as summarised in Figure 1.

To construct a critical review on urban landscape terminology, the sources have been organised into four thematic categories – Cityscapes (A), Townscapes (B), Sites (C), and Places (D) – that correspond to distinct conceptual genealogies within the overlapping fields of landscape, architecture, geography, and urban theory. This organisation responds to a need not only to clarify the multiplicity of terms in circulation but also to understand their disciplinary lineages and epistemological underpinnings. Rather than applying a conventional chronological approach, this review is structured around key conceptual frameworks that reflect how the city has been imagined, theorised, and designed as a landscape. The following section presents a conceptual framework for understanding these evolving terminologies.

Each category, Cityscapes, Townscapes, Sites and Places, comprises three sub-sections that map specific shifts in meaning, contextual use, and theoretical development. Taken together, they form a personal cartography of urban landscape discourses – one that is attentive to visual, morphological, ecological, and experiential dimensions.

Figure 1. This diagram illustrates how the key research terms identified from the current state of the art in the research relate to different branches within the field of Urban Studies. (Source: the author)

The first category, Cityscapes (A), approaches the city visually. It brings together sources in which the city is primarily approached through sight and representational aesthetics. This includes a genealogical inquiry into the term 'cityscape' itself. Referenced by many authors (Antrop, 2013; Roger, 1978), the term is to be traced back to the 17th-century Dutch painting where the urban skyline became a pictorial motif associated with cultural identity. This pictorial origin, links city to environment. The subcategory A1, reveals the early interrelation between the image of the city and emerging notions of the urban as a subject worthy of contemplation. Subcategory A2 moves forward to examine how such visual traditions were reinterpreted

throughout the twentieth century in urban planning, particularly in post-war Europe. Here, the cityscape becomes a tool of critique. The abstraction of modernist urbanism leads to reintroduce symbolic readings of urban form. The final subcategory, A3, investigates contemporary applications of aesthetic frameworks in design practice. This includes considering the 'imageability' of the city, a concept developed by Kevin Lynch (1960)whose work on mental maps and urban legibility established how citizens perceive and navigate urban environments through paths, edges, districts, nodes, and landmarks. An image that in contemporary times is informed by environmental perception, and the renaturalisation of urban design. In contrast, the second category, Townscapes (B), shifts the focus from visual representation to morphological. It assembles a body of literature anchored in recognising formal spatial structures. That engages with the urban landscape as a morphological problem, rooted in traditions of urbanism concerned with continuity, scale, and human experience. Subcategory B1 revisits the British notion of the 'townscape'. Particularly, it focuses on the term as articulated in the post-war work of Gordon Cullen and others. Townscapes are understood as urban environment that is rendered legible through a sequence of spatial episodes. Rather than a static image, the townscape is framed as an experiential narrative, advocating for design principles that emphasise sensory richness and place-based coherence. Subcategory B2 turns to urban morphology, especially as developed by M.R.G. Conzen (Whitehand, 2007) and the Central European historico-geographical tradition, to analyse the persistent patterns that structure the city over time. Conzen's concepts of plan unit, morphological period, and fixation line provide the foundational vocabulary for understanding the landscape as an evolving palimpsest, where historical layers provide the basis for a contextual understanding of urban form. Finally, B3 focuses on typo-morphological approaches, especially from the Italian and Catalan schools, that systematise the relationship between building types, open space, and collective form. In these readings, the urban landscape is not an abstract surface but a legible entity shaped by deep formal logics.

The third category, Sites (C), represents a shift from the formal to the operative. Here, the urban landscape is conceptualised as a site of intervention – an interface between material conditions, historical strata, and future possibilities. Subcategory C1 explores the rise of site – specificity in landscape architecture and architecture, particularly in reaction to modernist universalism. Influenced by postmodern and critical theory, this perspective asserts that every site carries latent narratives that must be read and interpreted rather than erased. Subcategory C2 builds on this by reframing the site as an ecological and infrastructural interface, informed by systems

thinking, metabolism, and territorial approaches. The site becomes a dynamic medium where flows, networks, and processes intersect – linking local materialities to larger scales of planning and environmental governance. Finally, C3 explores how the site functions as a space of translation in design practice: not merely a container of constraints but a catalyst for transformation. Here, the landscape becomes projective, capable of synthesising spatial, historical, and ecological information into speculative design strategies. This category corroborates a conceptual evolution from the site as a fixed point to the site as a medium of negotiation and performance.

The final category, Places (D), draws from human geography, anthropology, and phenomenology to emphasise the lived, emotional, and social dimensions of the urban landscape. Place, in this sense, is not only a physical location. Place as opposed to site is situated as relational experience (Selman, 2012). Subcategory D1 engages with phenomenological perspectives on the 'sense of place'. Emphasising embodied experience, memory, and perception (Massey, 1991), a new understanding emerges. These readings underline the affective and symbolic layers through which communities relate to their environments. Subcategory D2 considers place as a socially constructed and politically contested entity, shaped by collective practices, narratives, and exclusions. This includes literature on memory, identity, and the role of everyday users in producing meaning in space. Lastly, D3 examines the notion of placemaking through the lens of everyday urbanism, drawing on the 'ordinary landscape' tradition established by J.B. Jackson and Meinig (1979) and Jackson (1985), who argued that landscapes created by the routine lives of ordinary people deserve scholarly attention equal to monumental sites. Placemaking, as advanced by Project for Public Spaces and theorists including Arnstein (1969) on citizen participation and Whyte (1979) on social life in urban spaces, emphasises collaborative processes where communities actively shape public spaces to reflect their needs, values, and aspirations. Ordinary practices such as walking, gathering, and caring contribute to the ongoing redefinition of landscape. This perspective challenges top-down notions of landscape design by highlighting informal, tactical, and often invisible processes of spatial production and Jackson (Jackson, 1985) who argued that landscapes created by the routine lives of ordinary people deserve scholarly attention equal to monumental sites.

Through this fourfold structure – Cityscapes, Townscapes, Sites, and Places – the literature review develops a personal framework for engaging with the complex terminology of urban

landscapes. Each category opens a different conceptual window onto the same object of study. Examining for a multidimensional reading of landscape through lexicon not only offers a link to diverse disciplines but also enriches the scope of the research.

2.2 Theoretical Foundations: Philosophical and Contextual Perspectives

The first section of Chapter 2 establishes the philosophical foundations announced in Chapter 1 as the research focus for understanding the preservation and transformation of urban landscapes in the face of climate change. It introduces three core strategies: (1) adopting a systems thinking approach that redefines cities as complex adaptive systems; (2) integrating theory and practice to bridge design and governance; and (3) proposing a shift beyond dualistic preservation/transformation models towards climate adaptation and mitigation.

To establish a comprehensive understanding of these complex dynamics, the following section presents a critical review of relevant literature, exploring key concepts that inform contemporary approaches to urban landscape governance.

The philosophical background to understanding landscape plays a significant role in the interaction between humans and the environment, which is constantly modified by uncontrollable natural forces and human-induced changes. This triggers the emergence of the Latourian new climate regime. Philosophical beliefs about existence also shape these interactions with cultural and natural landscapes (Gobster and Westphal, 2004). The new climate regime (Latour, 2014) challenges traditional urban design practices and much else. However, those practices lack a framework and articulation due to the fragmentation of knowledge between disciplines. Within this concern, the research promotes a paradigm evolution to integrate resilience and landscape to improve life and environmental conditions. Critiques around the division between nature and people in science have emerged since Alfred North Whitehead, the progenitor of process philosophy, argued that this separation leads to public misinterpretation of scientific knowledge (Whitehead, 1919; Descola, 1996).

Feminist voices such as Doreen Massey and Donna Haraway also critique the scientific bifurcation of nature and culture. Massey (1991) confronts the alienation of humans from the environment and reflects on how anchored this view is in the Western understanding of nature as an external object subject to humankind's exploitation. Massey and Haraway (1988)

challenged this Cartesian perspective, advocating for a more integrated view in anticipation of the object-oriented philosophy (OOP) as a branch of realism that rejects the anthropocentric view. Latour argues that our economic systems do not allow us to address the challenges of the climate crises. He claims a shift towards a relationally purposeful approach that combines scientific investigation and political activism to address these intricate problems. Latour articulates this thought into action through his Actor-Network Theory (ANT). ANT explains that individuals, collectives, new technologies, and non-living entities significantly control the course of events. This non-anthropocentric vision highlights how interactions shape networks, and networks shape developments (Latour, 2005).

This research embraces the networks and systemic vision, combining theory and practice through a holistic and systemic approach to knowledge and action. Three key strategies are proposed to articulate the thesis philosophy.

(1) The first strategy focuses on cities as the epitome of conflict between people and nature. Thus, moving away from the morphological and object-oriented perspective, the research embraces a Literature Review, Metabolic, systems-thinking approach.
(2) The second strategy is to investigate the connection between contemporary theory and practice, knowledge, and action by promoting a more integrated and participatory approach that challenges the limits of design and governance.
(3) The third and final strategy challenges the inherited dualistic approaches to examine their potential integration. From preserving natural and cultural elements in urban landscapes to transforming through resilience or landscape, dualities shape structures, action, and through that may be limiting transformation towards climate adaptation.

2.1.1 Strategy 1: Systems Thinking and Urban Landscape Analysis

2.1.1.1 Thinking through systems as a framework

While the traditional dichotomist perspective, which has dominated Western history, asserts that nature exists irrespective of society, contemporary authors argue that natural and human societies are intertwined and interact (see e.g., Descola, 1996). Our actions affect the environment and vice versa. Hence, biophysical and ecological processes can significantly affect how society is shaped.

In the beginning of the 19th century, Alexander von Humboldt inspired a revolution towards a processual epistemology of knowledge. His scientific findings contributed to the understanding

that the earth is a single system in which ecological processes take place. Earth is thus a dynamic entity, Gaia (Lovelock and Margulis, 1974), producing different-paced processes where ecosystems thrive interconnectedly. The notion of ecological processes as interrelated and structural supports of ecosystems that keep them active and functional is still the basis of environmental sciences (Wulf and Rodríguez Tapia, 2015). After Humboldt, more than 100 years passed before scientists finally comprehended and proved humans' role in this system.

George Perkins Marsh was one of the first to argue that human activity disrupts natural ecosystems (MacKinnon and Derickson, 2013). In the mid-19th century, he showed how ancient civilisations altered their landscapes and how overusing natural resources contributed to their rise and fall. The evolutive cyclic narrative for ecosystems, whether natural or cultural, is embedded in Marsh's foundation of the concept of panarchy. This idea gained traction with C.S. Holling and Lance Gunderson and was popularised in sustainable sciences to express the need to balance economic activity with ecosystem health (Holling, 2002). The hybrid nature of human and natural systems has since inspired significant research on resilience and adaptive management (Holling, 2002).

The environmental and sustainability movements originated from concepts and ideas that emerged in the 1960s. The first environmental science book raising questions about the negative repercussions of human activity on the environment is *The Silent Spring* (Carson, 1962). Carson identified the hazardous effects of chemical pesticides on biodiversity and, in general, on people and ecosystem health, bringing attention to the interconnectedness of natural systems. In time, these concepts, developed by many other authors, became the central pillars of modern conservation biology research because they emphasise biodiversity protection within cultural landscapes. However, Carson's shifts towards thinking in systems applied to biology can be traced almost simultaneously across disciplines through the foundational idea of a general systems theory in Von Bertalanffy et al. (1968). Before the publication of *Panarchy*, and in connection to Carson, Holling (Holling, 1973) introduced a new field in ecological resilience in the 1970s, integrating resilience thinking with the study of adaptive management and the dynamics of complex systems (Folke et al., 2004). Holling's (1973) research illustrated how biological systems are intertwined with social processes that shape society and defined resilience as an ecosystem's ability to maintain its structure following disturbance.

The United Nations (UN) conducted its first environmental summit in 1972. In this moment, the thinking on ecological systems initiated the development of environmental policies. In the

same way, adaptive management strategies aimed at improving our interactions with ecosystems encouraged resilience to future disruptions. Growth limits were investigated as a threat to the ecosystem's ability to maintain its structure. *The Limits of Growth* (Meadows et al., 1972), defines sustainability as a prospective thought. The World Commission on Environment and Development's 1987 declaration entitled *Our Common Future* provided the definitive critical conceptual definition for sustainable development written by the Brundtland Commission (Brundtland et al., 1987).

Over time, substitutes for growth have emerged. In *The Limits to Growth*, the authors suggested that in the future, man could undertake two structural changes that could flip the currently unfavourable situation around replacing today's growth society with a steady-state society and reframe today's growth economy with a non-growth economy (Meadows et al., 1972). Among others, Jackson (2009)has written about the limits of growth and the need for a new economic paradigm prioritising sustainability and well-being. Martinez-Alier (2012) has contributed to developing the degrowth movement and exploring ecological and social justice connections. Obviously, in the global context, the second gained traction as suitable over the first, moving in a few years to be a mainstream concept (Bott, 2014) while not within a unified philosophy around sustainable development but a constellation of approaches (Hopwood et al., 2005).

Degrowth should be noticed in the global framework for sustainable development as an alternative option. Collaborative work among states to deal with the persistent problems of species extinction, pollution, and resource depletion is limited (Baste and Watson, 2022; Meadows et al., 2006; Richardson et al., 2023). The poorer states, which have not yet achieved basic development, are more concerned about immediate problems like hunger and poverty. The pressing social urgencies render sustainable development a less pressing matter. This does not prevent the World Bank, through the International Monetary Fund, from promoting a sustainable development model in less developed countries through specific projects. In the same way, adaptive systems theory is particularly crucial to the built environment, where transformations are emerging at a growing scale (Batty, 2007). The United Nations Sustainable Development Agenda proposes a specific Sustainable Development Goal to encompass all the goals for Sustainable Cities, SDG11. The 2030 Sustainable Development Agenda dedicates one of the 17 Sustainable Development Goals (SDG) to the urban phenomenon SDG11, recognising its complex and interrelated nature towards what could be considered a systems thinking approach(United Nations, 2018).

2.1.1.2 Adaptive Systems in Cities as Research Focus

The urban context corroborates the research focus of reconciling natural and human development. The urban shift has led to uneven over both time and space urban expansion. This unbalances the relationship between cities and the natural environment (Grimm et al., 2008). This thesis explores strategies to address conflicting land uses in the urban environment. And the conflict emerges in the needs for nature conservation and performance and the densities the urban shift requires. Within this tension, ecological resilience and urban quality emerge as the critical missing links in efforts to reconnect urban areas with natural systems (Swyngedouw, 2006).

According to Batty (2007) we should see cities not as confined spaces but as systems of networks and interactions – fundamentally, as complex adaptive systems. Batty and Sengupta (2018) take this perspective, noting that urban planning has historically privileged top-down methods that are object-oriented and overlook the city's systemic nature. Therefore, the research aims to contribute to generating knowledge to deal better with urban matters through revised attitudes, processes and tools that operate in a system. In a mirrored manner to the resilience thinking proposed with the study of adaptive management and the dynamics of complex systems, Folke et al. (2004) proposed an adaptive approach to urban phenomena.

Cities as a complex adaptive system (CAS)

Cities as CAS respond to the challenges that result from the interdependence between elements composing the urban reality: economic system, social networks, infrastructure, heritage, and nature interact in feedback loops, just as Holling describes in his Heuristic model of panarchy and adaptive cycles across temporal and spatial scales (Holling et al., 2014). The exploitation, conservation, disturbance, and growth phase cross-scalar interactions might assist in visualising the adaptive capacities of cities to respond to disruptions and create the potential for resilience that might be key to facing climate change (Grimm et al., 2008).

Urban landscapes: from system's approach to social-ecological systems as complex adaptive systems

A systems-process approach to the urban landscape might be considered a link to explore the urban landscape from a different perspective. If landscapes can be understood as a manifestation of the interaction between social and ecological processes, a process-based approach could reinterpret urban landscapes as the process of how ecological processes shape the urban form (Benedict and McMahon, 2016). Strategy identification that uses ecological

processes to benefit urban landscapes and citizens lends itself to the more typical appearance of resilience and urban function (Ahern, 2011).

Embracing a systems approach implies reconsidering the city's complexity anchored among social, economic, and ecological systems. Beyond the ecological leverage shaping the urban, socio-ecological systems can be interpreted as CAS with significant interaction between the ecological and social components, which can create emergent feedback. Ostrom (2009) highlights those other factors, such as governance, culture and technology, which can influence socio-ecological systems such as cities. Understanding the organisation of the social, economic, and ecological systems intertwining at different times and scales may support the development of strategies to promote resilience by reducing vulnerability.

Imagining new strategies of leverage as essential to promoting the strengthening of adaptive capacity hints at the importance of governance in the new conceptualisation of the city. A comprehensive initiative must be taken to construct a strategic vision. This means the vision must be seen from a long-term, systems-based perspective. At different scales, projects, decisions and processes should be designed to provide a framework of action that allows flexibility and is adaptable to changing conditions (Gunder and Hillier, 2007).

2.1.1.3 Urban Landscape through the Perspective of Adaptive Systems Theory

Adaptive Systems Theory showcases the significance of managing relationships in each urban system (Ackoff, 1981). The theory offers a framework for comprehending the adaptability of urban systems. This might be critical to responding to the challenges of climate change in the urban environment. Therefore, a new perspective on managing the interconnections, promoting feedback loops between different components of the urban system, could improve city resilience. Furthermore, adaptive systems theory emphasises the value of interpreting the broader context of urban systems that integrate the environment (Prigogine and Nicolis, 1985). This concept could be linked to formulating the Landscape Urbanism approach to cities, which also entailed a holistic understanding of the urban phenomena as a complex, dynamic, and adaptive nature of urban systems (Borgström et al., 2006).

Adaptive Systems Theory and systems thinking address system complexity and interconnectedness with different focuses. Adaptive Systems Theory offers a broader perspective on systems, while systems thinking focuses on system behaviour, adaptive stress feedback loops, and controllable dynamics. The former emphasises identifying critical drivers of change, which is particularly relevant for understanding in this thesis.

Conclusively, the first strategy situates the city as a socio-ecological system. This vision challenges the outdated nature/culture divide. Drawing from systems ecology, and adaptive systems theory, urban resilience thinking is embraced. This led to the idea of cities as CAS, where governance must adapt to feedback loops and non-linear dynamics. This reframing is crucial for integrating resilience into landscape. The thesis seeks to embrace resilience vocabulary and logic that will be carried into the analysis of the Landscape Governance Models in section 2.4.

2.1.2 Strategy 2: Blurring Boundaries Between Governance and Design

The second strategy for approaching the philosophical background of the thesis is to investigate the boundaries between knowledge and action by promoting a more time-integrated and participatory approach that cuts across design and governance challenges. The theoretical and the practical worlds have always coexisted and interacted. Dating back to ancient Greek philosophy, the theory (theoretical knowledge) concept has been distinguished from that of praxis (practical action). Logically, the Western world has been built upon both for millennia and drawn from rational and empirical understandings. It was not until the 18th century that Wilhelm von Humboldt challenged the dichotomy between theory and practice through his renewed educational approach. The Humboldtian model considers practical experience to enrich theoretical knowledge, cultivating critical thinking. This holistic approach is crystallised in his Tableau Physique as the main instrument to combine empirical observations and analytical knowledge without any disciplinary restrictions (Humboldt, 1850). These tableaux were one of the first attempts to visualise the interconnections between natural phenomena in time and space and have ended up defining fields of study such as ecology beyond biology and Earth sciences, overcoming the disciplinary limits of geology, meteorology and physics.

Even with emphasising the holistic view of the Cosmos in his major work and the basal role of integrating research and instruction, the Humboldtian model of higher education did not permanently close the gap between theoretical science and applied practices (Ravetz, 1999). The Humboldtian colleges of Applied Sciences were established from 1810 to train a new kind of professional equipped with theoretical and practical knowledge to solve real-world problems. This development fit perfectly with the narrative of early capitalism, with its focus on productivity. Thus, the renewed educational system contributed to specialisation and the segregation of abstract knowledge without business connections (Wenger, 2008). The collaboration of researchers with community members or practitioners has strengthened since

the 1970s, facilitated by the increase in participatory action research(Bradbury, 2015; Reason and Bradbury, 2001). By including teachers and other practitioners in the research process, action research has been used, for instance, in education, to close the research gap (Noffke and Somekh, 2009). Collaboration between researchers and community members or practitioners is a critical component of participatory and action research, two practical methodologies. These methods have produced transformative knowledge that results in social change and improves people's lives (Hall, 2016).

Contemporary research cannot be conducted in isolation from social reality. The productivity narrative is now subordinated to the climate adaptation strategy of capitalism (Bradbury, 2015; Reason and Bradbury, 2001) This is the foundation of transformative knowledge, which is within the aims of the thesis philosophy, which aims to investigate practices in governance and planning/design of significant system projects to provide a reference for developing capacity and generating new knowledge.

Some authors have stressed that examining urban landscapes entails investigating how transformative knowledge is sometimes created, challenging the limits of design and governance (Moulaert and MacCallum, 2019).The limits between design and governance are locally bounded; thus, the fragility of theory is framed by the importance of context as a means for practice. By working within the local setting of urban landscapes, researchers and practitioners can create knowledge that applies to real-world issues. And then again, practice in context is limited by access to international scientific knowledge. Challenging traditional approaches to design and governance can help create new solutions better suited to the unique challenges of each unique urban landscape.

A direct antecedent to Landscape approaches among academics and researchers might be found in research by (Görg, 2005) research at the UFZ – Centre for Environmental Research Leipzig – Halle and in Ellen Fetzer's book *Research in Landscape Architecture* (2016) Fetzer notes that understanding landscape architecture as a coherent academic discipline demands more than a single perspective, and similarly the Le:Notre Institute platform, *Open Landscape Academy* engages in a call for a multidisciplinary approach focusing on democratic landscape transformation(LeNotre Institute, 2023).

2.1.2.1 Designing with Time: Temporal Dimensions of Urban Space

One tactic to challenge the blurred limits between design and governance is integrating vector time into design, which thus entails designing the governance of a process. The challenge of

creating landscapes that are responsive to the needs of their users and that can evolve within set parameters has driven the idea of time into the design process. Since the start of the 21st century, an increasing number of projects have been using the idea, referenced in the example of the Netherlands Zandmotor Beach, which contributes to building natural solutions to improve coastal protection along the Delfland coast (Brière et al., 2018). Process design was also embraced in the urban context to build sustainable urban landscapes for Rotterdam in the Water Sensitive Rotterdam project that adjusts to shifting social and environmental conditions (Willems et al., 2023a). According to Diedrich and Dahl (2016), informing the different phases of the meantime provides a framework for designers and planners to approach urban projects in a more incremental and participatory way while creating specialised knowledge. The ecological and social local context is central to producing various types of knowledge, from scientific, local to professional.

Nevertheless, one of the best examples of a participatory approach that blurs the lines between knowledge and action is the one theorised by Alexandre Chemetoff. Design and governance are integrated into the urban context of the Plan Guide for the Île de Nantes (Chemetoff, 2010). The project plan was created from 2000 to 2010 by integrating local stakeholders, neighbourhoods and associations (Diedrich and Dahl, 2016). The project has been referenced in various scientific articles for its emphasis on local knowledge, the strategy displayer for collaborative planning (e.g. Echaniz, 2022). It has also been recognised as best practice in a report after several joined workshops among the Montreal, Brussels and Lyon metropolitan areas for its context-specific design, adaptive governance and the integration of design and governance (Van Nuffelen, 2019).

2.1.2.2 Active Governance: Moving Beyond Static Policies

Investigating the integration of the time vector into governance was the other scope of interest to be targeted, in addition to process design. Governance implementing decisions in time is proposed to consider it through the thesis from a triple perspective: cultural, structural, and individual.

Social constructionism articulates a triple perspective of cultural, structural, and individual factors. This theory emphasises how social phenomena are created, institutionalised, and maintained through social interactions. These three viewpoints were chosen because they helped further explain how decision-making choices affect urban environments and how different layers of complexity conflict in governance decisions.

Governance by culture

When approaching urban landscape governance, the first consideration is contextual culture. Each city crystallises a different system of culture with unique values and practices, and the frameworks always influence decisions that affect them. This approach to governance is critical to multicultural communities where different communities coexist and have a say in democratic decision-making. Lefebvre et al. (1991) define context as an entity that includes local history, religions, language, and social norms. This allows the recognition of the power dynamics within each community, including the role of leaders and drivers of decision-making and transformation.

Understanding the local agent structure, potential power imbalances, and historical and cultural differences is demanding and, thus, differing timelines and priorities among developers and politicians. Governance by culture would thus be interpreted as the time and instruments to be deployed to understand the context, ground local knowledge, make good decision-making to aim for social and ecological justice and keep the commitments with the local in time, bringing governance at a higher level (Knierbein, 2021).

Governance by structure

Beyond the cultural context, governance as a structure of power determining dynamics of urban spaces has been the object of study. Michel Foucault's work is the most influential in this subject, influencing various fields, including city-making. In his book *Discipline and Punish,* Foucault (1977) portrays power as a universal entity that functions through social practices rather than as something that individuals or institutions have and use. In the context of city-making, Foucault's approach suggests that power relationships are conveyed through social and physical structures. Ultimately, the governance within those structures reflects social inequality affecting the condition of urban spaces.

Burcher and Miller (1991) detail the inception of the notion of 'governmentality' by Foucault, which refers to how power is exercised by administrating social life (Foucault et al., 1991). Tackling the relationship between regulation and management and the creation of space has developed specific literature on Foucault's ideas for studying urban spaces. Some contemporary authors draft the idea of a potential Landscape Governmentality (Foster, 2018) emphasising how specific new forms of governance were needed to complete urban plans and design practices to influence the shaping of political and economic forces driving city-making. Others consider the matter globally, exploring how the global economy displaces vulnerable

populations, with significant stress in urban areas (Sassen, 2012). Sassen's position follows Foucault's power relations analysis, emphasising how social institutions are used to exercise power, which causes other authors to integrate the importance of critical reflection on power in urban planning and design practices (Palermo, 2014).

Sustainable development has generated a positive context for environmental governance in which the notion of blurring the lines between knowledge and action thrives. The examination is focused on the search of integrated approach that tests the boundaries of design and governance (Kates et al., 2001). However, the main limitation of the integrative approaches seems to be the traditional silos between disciplines and sectors (Kabisch et al., 2017). Furthermore, context-specific and local knowledge is fundamental to engage with local communities and recognise their knowledge and perspectives (Rathwell et al., 2015).

Governance by drivers

The third layer of complexity of governance aims to recognise the personal level as an inflexion point for the landing of governance. While cultural context and structure offer inertia, conveying resilience, only personalities implementing a change or perspective can contribute to transformation in governance. Action in governance implies implementing updated contemporary theoretical frameworks, being awarded the latest international recommendations, and aiming at excellence through the revision of processes. Drivers in charge of governance reforms and implementing strategic decisions are significant for complex systems as they catalyse change. In the notion of "the new public governance", Osborne (2006) emphasises the value of strategic thinking in overcoming complex problems. He points to the need for leadership to activate and confront organisations in the public sector, which was recognised as transformational leadership or driver personalities.

Burns proposes the idea of ‘transformational leadership’ to contrast with ‘transactional leadership,’ which could be described as a constrained style of leadership based on rewards and performance (Bailey and Axelrod, 2001). This term is used within this thesis to refer to these drivers, developing a visionary, innovative, or ethical leadership triggering change within the urban system. Nevertheless, the value of those Transformative built environment professionals is always contextualised within the value of citizen participation in governance. The interaction of government and citizen collaboration is critical, as well as the interactions between professionals and decision-makers, which constitute the four essential elements in the search for local knowledge co-production (Osborne, 2006).

After the previous considerations, profiles are articulated among potential drivers as the working thesis for the research: reflective practitioners, activist academics and Institutional innovators. From a professional perspective, city-making history can be seen as a journey following the genealogies of thought of the 'doers '. As 'reflective practitioners', their role is fundamental in shaping the philosophical background of strategies 1 and 2, leading to the first vision.

The second vision focuses on recent history to frame how the ‘thinkers’ reconsider the city after World War II. Within this intellectual framework, the research develops a multifaceted strategy to understand and address the complex dynamics of urban landscapes, and the academy sustains a role in generating diverse approaches, terminologies, labels, and schools of thought that bias the posterior making. The thinkers are described as ‘activist academics’ aiming to trigger change through new wording that enables new visions.

The third vision is a tribute to the 'civil servants' in global institutions who, as ‘Institutional innovators', adapt historical and terminological knowledge to operate within the control of urban landscapes. Their role is crucial in achieving a contemporary sustainable urban landscape.

This thesis investigates the importance of influential professionals and personalities, identifying them in those three typologies for the research that brings change and integrates action in time and space in urban governance. According to Foster (2018) new forms of governance are required to elaborate urban plans and designs to further balance the political and economic forces that shape our cities. However, the proposition of process design cannot be implemented without the receptiveness of a transformational driver. Conversely, action in governance can be driven by leadership facilitating change within a complex system. The strategy of change is defined in time and space as designed governance in action, even if not recognised as design. The thesis argues that action can be integrated into governance *through* design thinking, which lies at the core of the history of design (Hilderbrand, 2019). Due to their professional expertise, charisma, international connections, or standing in the policy-making community, these individuals can frequently generate an impact on governance structures and high-positioned politicians and decision-makers.

Professionals in different positions within a structure play a crucial role in guiding innovative procedures to bridge the gap between global recommendations and local implementation.

Those personalities embedded in academia, town council civil servants or built environment professionals are vital in integrating design and governance. Thus, they could be recognised as the catalyst for change towards zero-carbon landscapes.

2.1.2.3 The Connector: How Transformative Knowledge Bridges Design and Governance

Within the paradigm of the capability approach, transformative knowledge assumes a critical role, anchored in the foundational findings articulated by Sen (1999) and subsequently refined by scholars like Martha Nussbaum (2012). The capability approach recognises that the well-being assessment could transcend traditional metrics centred on material resources.

Once again, the contradictions of the Cartesian philosophy emerge, with authors challenging quantification above the qualification. For instance, Sen (1999) and Nussbaum (2012) underscore the significance of individuals' capabilities in supporting the idea of capacity building and capability development. On one hand, the capability approach emphasises the importance of individuals' continuous education (Sen, 1999) while on the other Nussbaum's Capability Theory of Justice focuses on developing capabilities over access to resources (Nussbaum, 2012). This involves questioning assumptions underlying individual thinking and actions and considering new ways of understanding the world. Transformative Learning entails a deep critical reflection on life or professional experiences that results in shifts on an individual or collective level. Within this transformative knowledge framework, the two integral processes come to the forefront of this research: capacity building and capability development.

Capacity-building

Sustainable development brings a new perspective to Sen's notion of capacity-building. Leach and Scoones (2013) showcase how the systemic approach to capacity building integrates technology, environment, and society to achieve dynamic sustainability. Thus, aiming at sustainability entails building the capacity to equip organisations and individuals to participate in transformative processes of learning and acting. Transformative learning enables fresh insights and perspectives from business as usual to contribute to developing the conditions (Nussbaum, 2012; Sen, 1999). By enhancing the skills, knowledge, and resources required to address complex problems successfully, they contend that the conditions for transformative change (Leach and Scoones, 2013). By exposing people to fresh viewpoints, and new knowledge from various fields blurring classical siloes, knowledge co-creation can offer opportunities for transformative learning (Guridi et al., 2024). Therefore, challenging co-framing and building knowledge co-creation might be intergal as transformative learning

encourages people to evaluate their assumptions and beliefs critically (Interlaken, 2009). In a way, built environment transformative professionals should aim to create solutions that empower individuals within marginalised communities, enhancing their capabilities and improving their quality of life (Oosterlaken, 2009). Capacity building thus entails ethical considerations when driving planning, managing or design practices. For instance, in the context of the United Nations 2030 Agenda**,** capacity building is recognised as a process of enhancing international relationships with global southern countries through various forms of cooperation (Nussbaum, 2012). This understanding is reflected in successive international agreements: from the Rio+20 Conference to the SAMOA Pathway (Daly, 2023), enhanced capacity-building efforts in technology transfer, sustainable resource management, and climate resilience have been consistently emphasised. Mentions are in technology transfer, sustainable resource management, and climate resilience. These agreements call for collaborative efforts among governments, private, INGO and society to build systemic capacities. Despite significant efforts in mainstreaming capacity-building within development agendas, numerous challenges persist in its effective implementation. The operationalisation, however, appears challenging due to resource constraints, time-consuming restructuring processes, institutional gaps, disciplinary knowledge asymmetries, and a lack of transversal agents covering transformation and governance, design and accountability.

Capability development

Nussbaum (2012) reflects on the capabilities approach started by Sen (1999) to develop her framework for justice. In it, Sen argues that the ideal of justice should be measured by people's capabilities to function as equal members of society. This perspective has grown into contemporary governance in developing the notion of social justice. Developing the individual's capacity to function entails a collective evolution. Institutions involved in the co-creation process develop mechanisms for gathering, synthesising, and disseminating knowledge, enhancing their ability to harness collective intelligence and respond to complex challenges. Nussbaum's Capability Theory of Justice provides a transformative framework for reimagining governance and insisting on the interdisciplinary nature of urban design, bridging architecture, landscape architecture, urban planning, and social sciences (Wall and Timmerman, 2010).

Knowledge co-creation process

The thesis considers knowledge co-creation as integrated capability development and capacity building. The two processes enable different perspectives and are recognised as developing a

more holistic understanding of landscape dynamics. Mauser et al. (2013) propose three nuances of the process of the co-creation of knowledge:

1) Co-design, aiming at joined framing and research definition.

2) Co-production, as defined in integrated approaches, the development of a continuous exchange among stakeholders.

3) Co-dissemination, where the results are translated into publicly usable information. The openness of the discussion determines its application of transformative knowledge.

In the same direction, the literature review on knowledge creation pointed at the Socialisation, Externalisation, Combination and Internalisation (SECI) model proposed by Nonaka (1994) as enhancing participatory approaches in urban planning and thus relevant to the research and operationalised and empirically validated the model for the first time by (Farnese et al., 2019). The model describes four phases. The socialisation which involves experiential knowledge sharing through interactions among diverse stakeholders. Secondly, the externalisation phase involves articulating experiential knowledge into explicit forms, such as through documentation. Furthermore, the third phase, combination, integrates diverse knowledge sources to create new insights. Lastly, the internalisation phase emphasises applying newly created knowledge in practice, internalising it within organisational routines.

The discussion around the evolving towards an identification of human and non-human actors is present in the literature review and interviews. It emphasises the need for adaptive strategies that learn from science. Mauser et al. (2013) and Nonaka (1994) provide knowledge frameworks but diverge significantly in focus and outcomes. The model of Mauser et al. emphasises the co-creation of knowledge through actively engaging a wide range of stakeholders targeting common gain. In contrast, the SECI model produces knowledge that mostly targets an improved organisation's intellectual property.

2.1.3 Strategy 3: Towards a Climate-Oriented Urban Landscape Paradigm

The third strategy challenges the inherited dualistic approaches and encourages the dissolution of the pair dichotomies as a representation of reality. From preserving natural and cultural elements in urban landscapes to transforming the built environment through resilience and landscape, the dominant paradigm in the last 50 years has evolved, reflecting Kuhn's concept of a paradigm shift, but the cultural dualities prevail (Kuhn, 1962). The challenge is thus to find this common ground between resilience and landscape, thus avoiding the dichotomy grid in the

present paradigm. The inherited Cartesian Western philosophy defines most of the global structure that, at the same time, may limit transformation towards climate adaptation. Overcoming the dualistic vision of cultural heritage versus natural heritage seems appropriate within the established narrative of considering the city as a socio-ecological system (SES). Ashworth (2007) argues that it is more valuable to manage the way cities change and develop than to focus on categorising and labelling heritage buildings or sites in official lists. Cities are living, constantly changing systems, and their management should reflect that – rather than treating heritage as a fixed inventory of frozen objects.

Furthermore, the thesis promotes the notion of transformation towards climate adaptation, which includes overcoming the dichotomy of frameworks for transformation and preservation. This duality is now substituted as adaption or mitigation towards climate change, overruling the priorities of previous frameworks. Recent studies for natural and cultural preservation entail action and subtle transformation to confront the contextual transformations to survive. This is evident in both natural and cultural heritage contexts – for instance, the active interventions undertaken at the Great Barrier Reef, Australia, where conservation has moved beyond protection towards assisted transformation through coral gardening and the introduction of heat – resistant species to ensure the reef's survival. Similarly, in the cultural heritage context, Venice, Italy, exemplifies this shift, where rising sea levels have demanded strategic adaptations such as the MOSE flood barrier – subtly transforming the historic fabric of the city as a necessary condition for its long-term preservation. Both cases illustrate that the boundary between preservation and transformation is no longer a dichotomy, but rather a continuum shaped by the demands of climate adaptation. Embracing climate change could be thus interpreted as a game changer and silos breaker (Heritage Council, 2017).

2.1.3.1 Rethinking Preservation: The Rise of Climate Governance

Overcoming the dualistic vision of cultural and natural heritage is key to this research, and thus, precision in the terminology to refer to the setting of the urban landscape is critical.

Lofland (2017) describes cityscapes as the visual power of dominant groups through skylines, horizons, and landmark buildings. Townscapes generally focus on the structural layout of the urban form. Urban landscapes are viewed as SES where human and natural interactions shape the environment. Ultimately, urban metabolism describes how resources (like energy, water, and materials) flow through a city. Nevertheless, these terms frequently overlap in meaning and application, resulting in fluid definitions across the literature due to their interconnected themes

and contextual usage. The following section undertakes a specific literature review to establish the working definitions for this research.

This thesis suggests that the evolution of terms related to contemporary urban environments aligns with two global governance frameworks. The first governance framework focuses on cultural preservation. The creation of the UNESCO World Heritage Committee and its homonymous list influenced how cityscapes are marketed. The inherited dualistic approach, dissociating nature and culture, defined a culture towards preservation in the urban context. The second governance framework revolves around nature preservation and ecological concerns. Soon after, in 1992, the World Heritage Convention expanded its categories to include 'cultural landscapes,' reflecting this broader approach to landscape protection in international law (Brumann and Gfeller, 2022; Rössler, 2006). In the early 2000s, landscape ecology began to more explicitly connect with sustainability science, and the US approach to landscape ecology and sustainability sciences decisively raised the case for ecological protection. Recently, the concept of cultural landscapes was revised by the International Scientific Committee on Cultural Landscapes (ISCCL) of ICOMOS (International Council on Monuments and Sites) to reflect on the advances and shifts in the understanding, preservation, and management of cultural landscapes since the term was officially recognised in global heritage discourse about 30 years ago (Jacques and O'Donnell, 2021).

The two global governance frameworks are progressively blurred as new terms offer holistic definitions in landscapes and sustainability disciplines. The drafting of the European Landscape Convention (Council of Europe, 2000b) draws from world heritage cultural landscapes, migrating from the object-based approach to preservation, to a processual understanding of the interaction between humans and nature led by cultural geographers (Roger, 1978). As a counterpart to the European definition of landscape, leaning on cultural diversity, participation, and democracy as backbone elements to its implementation, the United States led another contributing aspect through the influence of Landscape Ecology and sustainability sciences (Pearson and Gorman, 2023). Alternatively, to both, *Is Landscape...? Essays on the Identity of Landscape* (Doherty and Waldheim, 2016) furthers this discourse by framing landscape as an open-ended question. This contemporary vision challenges traditional boundaries, and promotes innovative perspectives on its role in society, an approach this thesis seeks to align with.

2.3 Synthesis of Exploratory Research and Practice Experience

2.3.1 Key Learnings from own Exploratory Research: Bridging Practice and Academic Inquiry

The foundational phase of this research emerged from accumulated professional experience across multiple roles, including on-site designer, teacher, consultant, and content director of the Barcelona Biennial. This diverse practitioner knowledge, initially intuitive, required systematic transformation into academically rigorous insights, triggered by the enrolment in the PGR programme in BCU. Four exploratory publications crystallised during this transition, in the first years of research within the programme studies, each addressing critical disconnections between landscape practice, policy frameworks, and global sustainability agendas (Cervera, 2025; Cervera et al., 2022; Cervera and Mercadé-Aloy, 2024; Cervera, 2021). Rather than presenting these publications sequentially, this section synthesises their collective contributions to identify three fundamental gaps that shaped the research trajectory and informed the development of the thesis's core methodological contributions.

The first critical gap identified across the exploratory work concerns the persistent fragmentation of knowledge systems that undermines holistic landscape approaches. Current governance structures remain trapped in sectoral silos, dividing insights across natural sciences, social sciences, and the arts (Cervera et al., 2022). This compartmentalisation creates institutional rigidity that prevents cross-cutting concepts like landscape and resilience from gaining traction precisely because they defy conventional categorisation. As Harari (2016) observes, "As bureaucracies accumulate power, they become immune to their own mistakes. Instead of changing reality to fit their stories, they can change reality to fit their stories." Despite global calls for integration, most institutions – from universities to public administrations – operate within narrowly defined disciplinary boundaries, hindering the interconnected thinking required to address complex landscape challenges.

This fragmentation manifests particularly acutely in the disconnect between global frameworks and local implementation. International policy frameworks such as the Sustainable Development Goals establish aspirational targets yet struggle to account for local specificities (Cervera et al., 2022; Cervera, 2021). Global recommendations often prove either too general or too specific for meaningful local application, while local administrations prioritise immediate objectives over long-term sustainability (Dale, 2014; Edwards and Bulkeley, 2018).

This scalar mismatch generates a critical implementation gap between high-level political commitments and concrete territorial decisions. The exploratory research revealed existing governance frameworks with intended aspirations towards transdisciplinary collaboration even as initiatives like the European Landscape Convention (Déjeant-Pons, 2006)and the Sendai Framework advocate for integrative approaches. However, the 2030 Agenda's omission of landscape as a cross-cutting theme exemplifies how siloed thinking continues to limit collaborative potential across fields and institutions.

The second critical gap concerns the systematic undervaluing of ordinary urban environments within sustainability discourse. International policies predominantly focus on heritage ensembles and high-value landscapes, creating a problematic hierarchy that excludes most built environments from conservation and transformation agendas (Cervera, 2025). Since the Stockholm Declaration (Ostrom, 2010) conservation frameworks have privileged exceptional sites while most urban landscapes, while representing the main habitat of humankind, remain outside regulatory scope. This creates a disconnect between protected heritage and profit – driven development, often at the expense of inclusive, liveable everyday spaces. The research identified what might be termed an ethic and aesthetic deficit in sustainability frameworks, whereby the visual language of the SDGs effectively as branding but fails to provide a solid philosophical foundation for landscape-led strategies (Cervera, 2025). As the principle *Nulla ethica sine aesthetica* [There is no ethics without aesthetics] suggests, meaningful transformation requires beauty integrated with ethical dimensions, an integration largely absent from current sustainability discourse.

This neglect of everyday landscapes represents a missed opportunity for distributed, place-based climate action. As Ostrom (2010, p. 555) argues, "doing nothing until a global treaty is negotiated maximises the risk involved for everyone. Rather than only a global effort, it would be better to self-consciously adopt a polycentric approach to the problem of climate change in order to gain benefits at multiple scales as well as to encourage experimentation and learning from diverse policies adopted at multiple scales." The concentration on exceptional sites rather than ordinary environments undermines the potential for learning and adaptation across multiple scales, limiting the scope of climate response to centralised initiatives that struggle to address local contexts.

The third gap concerns the recognition of landscape itself as infrastructure, not merely physical, but as an underlying system of cultural, ecological, institutional, and political dynamics

(Cervera, 2025). This conceptual blind spot has profound implications for how sustainability challenges are framed and addressed. The exploratory work identified four interrelated yet under-recognised landscape infrastructures that operate interdependently yet lack coordination mechanisms. First, the collection, management, and interpretation of landscape data constitute fundamental resources for informed decision-making , yet despite advances in smart cities and big data, these developments have occurred largely disconnected from landscape concerns, focusing on isolated environmental indicators rather than integrated territorial understanding (Cervera, 2025). Second, built environment professionals – landscape architects, urban planners, ecologists, environmental engineers – form networks of specialised knowledge that enable adaptive governance, yet this expertise remains fragmented across professional silos, limiting its potential to bridge governmental and civil society perspectives (Cervera et al., 2022). Third, regulatory frameworks that position landscape as a coordination mechanism for spatial policies remain underdeveloped, with landscape notably absent from the 2030 Agenda despite efforts by professional organisations to establish its centrality. Initiatives like the proposed International Landscape Convention encountered funding challenges that derailed global coordination, relegating landscape governance to regional, disconnected efforts (Cervera, 2025). Fourth, active citizen involvement in landscape definition, protection, and transformation represents a vital yet underutilised infrastructure, with the ELC's recognition of landscape as lived and valued space (Council of Europe, 2021) acknowledged conceptually but lacking mechanisms for meaningful co-creation between diverse social actors.

These four infrastructures operate interdependently yet lack coordination mechanisms. The exploratory research in Barcelona (Cervera and Mercadé-Aloy, 2024) showed how localised efforts such as the Barcelona Landscape Charter's identification of urban landscape units independent of administrative boundaries, can generate integrated approaches. However, such examples remain exceptional rather than systemic, highlighting the need for frameworks that facilitate cross-infrastructure coordination.

Beyond identifying gaps, explored further in Section 2.5, the exploratory publications revealed positive trajectories and actionable insights that inform the thesis's methodological development. Analysis of International Rosa Barba Prize finalists indicated how landscape projects serve as focused interventions through which SDG indicators can be monitored and visualised in non-sectoral ways (Cervera, 2021). These projects deploy nature-based solutions, sustainable water management, and naturalisation strategies that simultaneously nurture

biodiversity and improve quality of life. Crucially, they succeed through interdisciplinary collaboration and community participation, positioning built environment transformative professionals as basal intermediaries between global frameworks and local realities. The ELC's approach to landscape as social and mental construct offers advantages over purely quantitative frameworks. This perspective enables long-term monitoring, active community participation in landscape definition and preservation, and recognition of everyday urban and rural landscapes. Despite measurement challenges, this inclusive vision supports essential for addressing climate emergencies while mitigating land use conflicts.

The Barcelona case study (Cervera and Mercadé-Aloy, 2024) illustrated how professional competitions and collaborative strategic processes generate critical reflection. This 'reflective practice' demonstrates that knowledge derived from design processes – what might be called 'research by design' – can function as a catalyst for moving from intuition to systematic inquiry. The challenge lies in making such knowledge transferable beyond specific contexts. When global conventions fail, regional and bottom-up approaches can maintain momentum. The IFLA's response to International Landscape Convention funding challenges – establishing five geographic landscape charters supporting national charter development – exemplifies adaptive strategy (Cervera et al., 2022). Similarly, the Montreal Design Summit's cross-disciplinary alliance model (Summit World Design, 2019) demonstrates how professional networks can advance sustainability agendas when formal political structures stall.

2.3.2 Foundations of the Research: From Professional Practice to Research Gaps

The previous reflections provided an overview of the contributions developed through publications published during the initial stages of the BCU doctoral programme. The key messages from these exploratory papers synthesise the learning from the early stages of this research, influencing the thesis itself. The current section distils those findings, exposing a lack of an integrative methodology capable of aligning diverse knowledge to promote landscape quality in resilient urban environments. Furthermore, the previous section identified a crucial gap in overarching conceptual frameworks designed to unite various initiatives, tools, instruments, processes, and attitudes within a shared professional space dedicated to bridging the persistent divide between theory and practice in urban landscape planning, design, and governance. This demonstrable void in the existing knowledge landscape triggered the development of the constructs presented in this thesis as the core contribution of the research, grounding the thesis's aim.

These publications collectively chart a progressive refinement of thought. It evolves from the practical application of sustainability principles through theoretical governance frameworks to tangible implementation strategies.

Firstly, the need for Integrative approaches that transcend disciplinary boundaries to address complex landscape challenges is addressed (Cervera et al., 2022); secondly the importance of recognising everyday landscapes as critical components of sustainable development, is highlighted (Cervera and Mercadé-Aloy, 2024); Thirdly, the fundamental role of publication is recognised as multi-scalar governance that connects global frameworks with local contexts (Cervera, 2025); and finally the conceptualisation of landscape as an abstract and material infrastructure, aligned to Bélanger's (2009) Landscape As Infrastructure, that supports social, ecological, and economic resilience.

These foundational elements underpin the thesis argument. Landscape is presented as a both tangible and intangible system underpinning socio territorial governance and management. This conceptual leap aligns with broader scientific discussions on infrastructural thinking. Consequently, this new lens reveals a dual makeup within landscape infrastructure, characterised by both formal and informal components. The thesis offers a corpus from which to explore in a systematic and thorough way the elements hinted in the parallel publications.

The "Landscape Policies as Infrastructure" section of the (2022) publication illuminates the role of regulatory frameworks in formally embedding landscape within governance. On the other hand, the conclusions of "The Hidden Landscape Infrastructure" chapter introduce alternative frameworks and systems that also function as landscape infrastructure, albeit without the binding nature of formal global policies (Cervera, 2025). Bridging these two corroborates how the tendency of urban policies to prioritise iconic sites over everyday landscapes points to a significant misalignment between high-level sustainability goals and the local realities where implementation is most critical. This gap is at the core of the thesis exploration.

Finally, two non-peer reviewed publications contribute to this theoretical framework with practical applications (Cervera and Mercadé-Aloy, 2024; IFLA, 2021). These examples illustrate how best practices in urban projects integrating green infrastructure (GI) and nature-based solutions (NbS), alongside strategic landscape planning, emerge as essential instruments bridging the global-local divide.

These publications collectively demonstrate that landscape functions as infrastructure – not only as physical green infrastructure but as an underlying system of cultural, ecological, institutional, and political dynamics operating across four interdependent systems: data, expertise, regulation, and participation.

This infrastructural conceptualisation emerged from professional practice yet requires validation through academic investigation: Do existing Landscape Governance Approaches recognise and operationalise this infrastructural dimension?

This critical question motivated the focused literature review that follows. Rather than surveying all urban landscape literature, Section 2.4 specifically traces the evolution of Landscape Governance Approaches to determine whether they provide mechanisms to coordinate the landscape infrastructures identified through professional practice. This targeted investigation establishes whether existing frameworks can support the integrative methodology this research requires.

2.4 Literature Review: Evolution of Landscape Governance Approaches

Having established through professional practice that landscape functions as infrastructure across four interdependent systems (data, expertise, regulation, and participation as seen in Section 2.3), this section examines whether and how Landscape Governance Approaches (LGA) in academic and policy literature have evolved to address this infrastructural dimension. The review is purposefully focused: it traces the genealogy of integrative governance frameworks that attempt to coordinate multiple systems, precisely the kind of coordination required for the landscape infrastructures identified through exploratory research. This investigation serves a specific research purpose: determining whether existing LGA frameworks provide adequate conceptual and operational tools for managing landscape as infrastructure, or whether gaps persist that require new methodological innovations. The review thus connects the practice – derived insights of Section 2.3 with the comprehensive gap analysis of Section 2.5.

The lexicon is crucial for interpreting urban landscapes in its contemporary studies, framework and challenges. Contemporary sustainable policy frameworks overlook the terms mentioned above, but the UN SDA, for example, does provide a global vision through its SDGs, addressing

environmental sustainability, social equity, and economic prosperity. The 2030 Agenda policy framework (United Nations, 2015b) captures these pressing challenges, using SDGs to set milestones, targets, and comparable indexes. Those key issues include inequality, environmental degradation, and rapid urbanisation. Nevertheless, its quantification fails to explicitly target qualitative and holistic approaches to simplify reality into a quantifiable model.

The literature review method is crucial for establishing the background, concepts, and relevant legislative and governance tools for landscape approaches. It involves systematically searching and synthesising existing literature on integrative landscape governance (Grant, 2009). The present research considers significant definitions and arguments of various landscape governance Approaches. The investigation sharpens the applications in different fields of knowledge to achieve integrative research and transdisciplinary knowledge production (Axelsson, 2012).

2.4.1 Bridging the Gap: When Planning/Design and Governance Miss Each Other

In urban sustainability, a significant gap separates landscape planning from global governance frameworks. Despite the scaling up of international policies promoting resilience, transformation, and preservation, reliance on outdated practices remains common. The old business-as-usual approach focuses on a product-oriented drift, for instance, and neglects uncertainty and open systems (Kahn, 2021).

The distance between global policy frameworks such as SDA and NUA and local decision-making is recognised as an enduring gap in academic literature (Lingens, 2023; Palermo, 2014; Wandersman, 2003). Leveraging experts' expertise could help. This thesis mobilises the knowledge of transformative built environment professionals to bridge the persistent gap between global policy recommendations and their local implementation, whilst promoting hybrid tools that combine governance and design as instruments of urban transformation.

To contribute to this linkage, the thesis examines the use of tools aligned with the Landscape Governance Approach (LGA) and Integrative Management Approach (IMA) in urban settings. Unlike much of the existing academic literature, its primary aim is not to establish an overarching definition of LGA and IMA, but rather to highlight the diversity of ideas representing these concepts and how they have evolved over time.

A potential roadmap for linking sustainable governance with strategic planning decisions, is proposed by Pertoldi (2020). It explores this theoretical framework regarding grassroots

contributions to the creation of resilient urban landscapes. This narrative brings to light the potential for knowledge gain through specific interventions. Nevertheless, a systematic review of the term coinciding with the rationale for the LGA is required to set the depth and scope of the research as presented in Table 1.

Table 1. LGA. Landscape Governance Approaches: (Source: the author)

APPROACH	MAIN AUTHORS
Ecosystems Approach to Human Health	Forget & Lebel, 2001 (4 components)
Ecosystem Approach	CBD, 2000 (12 principles) + Shepherd, 2004 (5 steps to practice)
Landscape Governance Approach	Görg, 2007 (9 aspects)
Ecosystem Landscape Approach	Axelsson, 2011 (5 attributes)
Historic Urban Landscape Approach	Bandarin, 2011
Landscape Approach	Sayer, 2013 (10 principles) IUCN Protected Landscape Approach
Integrated Landscape Initiative	Milder, 2014
Integrated Landscape Management	Freeman, 2015; Gurung et al., 2015
Integrated Landscape Approach	Reed, 2016; Eco agriculture Partners, 2019
Landscape Approach	Arts, 2017
ILM for SDG	Mann, 2018; García-Martín et al., 2016
Nexus Approach	Van Zanten, 2021
Integrated Landscape System Approach / NbS	Cohen-Shacham, 2019; Seddon, 2021 (4 principles; IUCN 8 criteria)
Urban Metabolism Approach	Bahers et al., 2022; Pistoni & Bonin, 2017; Amenta et al., 2022

2.4.2 Evolution of the Landscape Governance Approach

“landscape approaches” in academic research emerge from landscape geography, according to Antrop (2013) and Arts et al. (2017). The understanding of Landscape as an integrated view

unifying diverse branches of scientific knowledge and culture could be recognised in the approaches by Alexander Von Humboldt (1769–1859) in his systematic descriptions during naturalistic explorations and literary and historical prose sketches of Vidal de la Blache (1845–1918), as first precursors (Arrault, 2008; Wulf and Rodríguez Tapia, 2015).

Humboldt's approach (1850) is considered foundational to modern geography, while his Tableau Physiques (1847) are the most influential diagrams, still used nowadays as historical data for documenting environmental changes in space (Moret et al., 2019). Similarly, de la Blache fathered the notion of regional geography, identifying natural regions and describing their landscapes as emerging from the interactions between *milieu* [environment] and *genre de vie* [way of life] whilst conceptualising the *système Monde* [world system] far beyond regions and addressing a world communication network (Arrault, 2008). The broad scope of Humboldt's integrated knowledge legacy transcends disciplinary silos just as de la Blache's integrated intellectual narrative overarches socio-territorial scales. These particular and sophisticated approaches recognise the landscape's relational, transdisciplinary, and trans-scalar nature. They are integral to set the frameworks under which contemporary landscape approaches are currently developped, from landscape ecology to natural heritage governance and cultural geography to heritage conservation.

2.4.2.1 Phase 1: The Emergence of Landscape Approaches in Academia (1972–1992)

Following the First World War, aerial photography offered a fresh perspective on the landscape. Troll (1939) saw this new technique as an occasion to rethink the landscape and stated that the "interpretation of air photos is largely landscape ecology", effectively introducing the concept of "landscape ecology" (Cosgrove, 2010). Even so, it was not until 1972 that the Working Community for Landscape Ecological Research was established in the Netherlands "to rejuvenate the concept of the landscape and restore its role as a synthesising term" (Antrop, 2013) in a way reminiscent of Troll's original proposals. Following the First International Congress on Landscape Ecology held in Veldhoven, the Netherlands in 1981, Forman systematised and popularised landscape ecology in the United States, establishing its theoretical and methodological foundations (Forman and Godron, 1981). During this period, the term ‘landscape approach’ emerged in the 1980s, influenced by discussions around spatialisation in ecology and human ecological planning theory (Forman, 1999, 1995; McHarg, 1981) and the application of nature conservation strategies to spatial planning (Antrop, 2013). Noss (1983) pioneered using this term and emphasised the importance of measuring biodiversity at different

scales. Noss (1983) stressed the need for a regional landscape approach that integrates Forman's concepts of patches and structural components in landscape ecology. This article also critiqued the traditional neglect of interactions among landscape elements by ecologists, land managers, and planners. Noss (1983) marks a significant step towards future discussions on connectivity among protected areas for biodiversity conservation (Sayer, 2009).

In academic circles, the evolution of the term "Landscape approach" within landscape ecology has been characterised by Arts et al. (2017) through three phases of integration. Arts et al. (2017) note that the proliferation of terms related to similar initiatives, such as "ecology Approach," "integrated resource management," "participatory conservation," and "sustainable land management" can create analytical barriers (Reed et al., 2016). The literature review from this period focuses on terms that include “landscape,” reflecting a holistic view linking land to people and integrating sociology with biodiversity. Terms analysed include “Landscape Approach,” “Landscape Ecology Approach,” “Integrative Landscape Initiative,” “Integrative Landscape Approach,” “Integrative Landscape Management,” and “Sustainable Landscape Approach”.

The first phase of integration concentrated on connecting different spatial scales (Arts et al., 2017), a concept rooted in Geddes's regional approach. Many authors followed Noss’s lead, embracing a regional Landscape approach to include a network of connected, protected areas at a broader biogeographical scale (Daniels, 1994; Johnston et al., 1989; Naugle et al., 2001; Opdam, 2020).

The second phase is on conservation policy and planning for biodiversity (Arts et al., 2017). An early article by Saunders (1990) explains the role of indigenous communities in biodiversity conservation and emphasises the importance of involving communities in research, monitoring, and restoration. Resilience theory and the concept of social-ecological systems were also emerging during this period. Axelsson et al. (2012) differentiated resilience theory from landscape ecology. In their understanding, landscape ecology supports sustainability in landscapes, while resilience science navigates systems towards sustainability. Both concepts regulated conservation goals in developing countries, balancing conservation and local livelihoods (Sayer et al., 2013).

The third integration phase involved having people make decisions in landscape ecology. This helped bridge spatial-ecological knowledge with social and economic sciences, reflecting the interdisciplinary spirit of pioneers like Humboldt and de la Blache (Haines-Young and

Potschin, 2007). An ethical focus was on democratic participation and equitable outcomes in environmental governance, connecting the work of Lemos and Agrawal (2006) to global climate change and ecosystem degradation. Literature began to approach landscape approaches as hybrid governance strategies (Scherr et al., 2012), emphasising public participation in policy development and implementation (Lane and McDonald, 2005).

The merging of landscape and governance concepts was notably advanced by Görg (2005), who coined the term "Landscape Governance Approach" while exploring how landscape governance could define case studies with unique environmental governance characteristics. Görg initiated a fresh discussion on "landscape governance" to deal with the complex problems of the real, locally anchored world. Solutions must be cooperatively imagined with people of other disciplines and those living in a landscape (Arts et al., 2017). Therefore, landscape governance must also serve as a "politics of scale" when resolving conflicts anchored in different understandings of what a landscape should be. And so, we are compelled to move to a discussion on "governance," which is understood here as the shared entitlements and accountabilities of a traditional polity (a people) with a landscape, after which the natural sciences are called to provide an establishment of what the landscape ought to be as a basis for imagination and as a basis of conflict resolution (Arts et al., 2017; Sayer, 2009).

2.4.2.2 Phase 2: Towards Recognition of Landscape Approaches in Supranational Agencies and policy (1992–2007)

The preservation of landscapes aligns with protecting natural and cultural capital supported by international and supranational bodies such as the UN through sectoral agencies such as UNESCO or advisory bodies such as IUCN and ICOMOS (Antrop, 2013). Despite this, an adaptive and holistic understanding of the landscape, as developed in academic literature, still needs to be made visible in UN programmes and agencies. At a regional level, the European Landscape Convention (Council of Europe, 2000a) provides a standing reference. Even after 25 years, ELC is a reference for navigating landscape governance and heritage.

(Shuttleworth and Howard, 2025).

On a global scale, the cultural focus shift to landscape ecology. The United Nations Environment Programme (UNEP) has led the implementation of the environmental dimension of sustainable development within the UN. UNEP has identified global ecological threats since its establishment following the Stockholm Conference on the Human Environment (United Nations, 1972a). These issues are of international common interest and are related to landscape

ecology principles (Forman, 1995, p.16) a field of ecological study concerned with the interaction between natural and human systems, especially land uses.

Since its beginning, the United Nations Environment Programme has held Sustainable Development World Summits every 20 years in Rio in 1992 and again in Rio in 2012. These, together with the Johannesburg World Summit on Sustainable Development, held in 2002, have influenced the form of governance and the content of the conventions that rule global environmental governance.

The 1992 Earth Summit, formally the United Nations Conference on Environment and Development (UNCED), explicitly linked landscape approaches to sustainable development. The summit produced five key agreements. Those agreements form the pillars of global environmental governance: Agenda 21, the Rio Declaration, the Statement of Forest Principles, the UN Convention on Climate Change (UNFCCC), and the Convention on Biological Diversity (CBD). The last two, are legally binding instruments of global environmental governance (United Nations, 1992).

While the wording "Landscape Approach" is not explicitly mentioned in the summit's documents, Agenda 21 encourages integrated management systems, including landscape ecological planning (UNEP, 1992). This document suggests revising such systems to recognise the importance of landscape-level management in places such as forests and protected areas. The agenda 21 also points out integrated planning as a solution to issues such as soil loss and groundwater protection.

In the 1997, the Millennium Development Goals (MDGs) served as the direct predecessors to the Sustainable Development Goals (SDGs), addressing five critical global challenges: poverty, discrimination, illiteracy, hunger, disease, and environmental degradation. Whilst the MDGs made significant progress in promoting environmental stability, they failed to incorporate landscape approaches as an integrative framework for sustainable development (World Health Organization, 2015).

The contributive role of landscape approach initiatives to sustainable development became more apparent between 2002 and 2007. During this period, the WWF and IUCN used this approach to support conservation decision making (IUCN, 2005; WWF, 2002). One example is how the FAO recognised the landscape approach in its guidelines for sustainable forest management. The adoption of LGA highlighted its relevance to global initiatives as well as social and institutional issues (Wilkie et al., 2003).

In parallel, the International Union for Conservation of Nature (IUCN) published "The Protected Landscape approach: Linking Nature, Culture, and Community" in 2005. This report gave a clear definition of the "ecosystem approach". The ecosystem approach or "landscape approach" is an integrated management strategy. To unite all interest groups that were affected by powerful conservation projects, it sustainably uses them and shares benefits that flourish from within. The U.S. federal government issued a list of biodiversity "hotspots". Four of which are in California, one of the most ecologically diverse states in the nation. "Hotspots" are places where efforts at conserving endangered habitats shield species from going extinct in the next century (IUCN, 2005). More detail on this concept's practical applications can be found in the proceedings of the 2nd World Heritage Forests meeting (Singer, 2007), and IUCN (2004).

2.4.2.3 Phase 3: Towards a Standard Definition for Landscape Approaches (2007–2020)

In the last twenty years, landscape approaches have gained the attention of UN-related agencies, advisory bodies, and programme documents. Since Görg's (2005) definition, these approaches have been reinterpreted and linked to academic theories and international policies. Its dissemination serves as a tool to bridge different scales and sectoral visions. The landscape (governance) approach has been introduced to address societal relationships with nature without relying on a fixed spatial ontology, thus overcoming issues inherent in the sectoral approaches used in Climate Change and Biodiversity Conventions (Bürgi et al., 2017). This section distinguishes between frameworks that analyse governance processes about landscapes and those focusing on capabilities required for effective collaboration at the landscape level, as outlined by Arts et al. (2017), and moves towards strategic guidelines connecting to sustainable agendas.

Landscape Governance Model

The Landscape Governance Model is widely used by authors who work on case studies that try to bring conservation and development together (Brown et al., 2011; Naugle et al., 2001; Sunderland et al., 2007). Definitions of the 'landscape approach' vary widely, with many authors attempting to create a consensus definition to avoid ambiguity. This review focuses on terms containing "landscape", as detailed in **Table 1 LGA. Landscape Governance Approaches**. Note that this does not encompass all variations but aims to analyse the most cited definitions to find convergence and build a working definition for this research.

Sartori et al. (1984) recommend compiling existing definitions and extracting common characteristics. This allows definition of terms with "a modicum of discipline" (Marcus and

Colding, 2024). According to Görg (2005), landscape governance is part of environmental governance. Görg emphasises the social and cultural shaping of landscapes. Furthermore, he praises the interdisciplinary cooperation required for its making. In this approach, local or regional combinations come together to form environmental knowledge. He remarks that landscape governance is not only focused on preserving "untouched" landscapes but also addresses the transformation and sustainable use of landscapes.

Görg (2005) provides characteristics of landscape approaches to governance, which, while differing from landscape ecology in focusing on ethics and aesthetics, align in their multifunctionality and flexibility at various scales. Later definitions, such as those by DeFries and Rosenzweig (2010), emphasise a comprehensive approach incorporating spatial, temporal, and socioeconomic dimensions. Axelsson (2012) defines the landscape approach as encompassing natural resource management. The LGA is here oriented to ensuring land and water management. The inherent notion of limited resources and living resource management necessitates addressing conservation needs in an integrated and sustained manner.

Sayer (2009) developed *Ten Principles for a Landscape Approach to Reconciling Agriculture, Conservation, and Other Competing Land Uses*, which include adaptive management, multifunctionality, resilience, stakeholder interaction, and participatory monitoring. Integrating conservation and development goals has been underpinned by core principles, which have even made it to policy frameworks and academic circles (Axelsson, 2012). One such principle is to work at a landscape scale; another is to work across traditional sector boundaries. Instead of appearing to work in a series of "silos", conservationists now increasingly appear to be working in interdisciplinary, integrated, and multifactorial ways (Axelsson, 2012).

Kusters et al. (2018) and García-Martín et al. (2016) have developed these concepts, focusing on participatory methods for planning and managing landscapes. Freeman et al. (2015) envisioned landscape strategies as an ongoing and adaptable process. In 2016, Reed and his co-researchers defined integrated landscape strategies as addressing environmental, economic, social, and political issues across scales. Reed specialises in five key aspects: evaluating work, governing the process usefully, right sizing solutions, engaging people, and using the dynamic processes of nature-human and ecological (Reed et al., 2016).

The terminology related to the Landscape Approach can be problematic, partly due to inconsistent definitions and a lack of long-term monitoring. According to Reed et al. (2016) and Arts et al. (2017) important aspects of this approach include focusing on specific places,

multifunctionality, sustainability, shared governance, community involvement, collaborative planning, and working across different disciplines. Mann et al. (2018) align Integrated Landscape Management (ILM) with these principles, emphasising multifunctionality, landscape-scale planning, inter-sectoral cooperation, and participatory management (Figure 2).

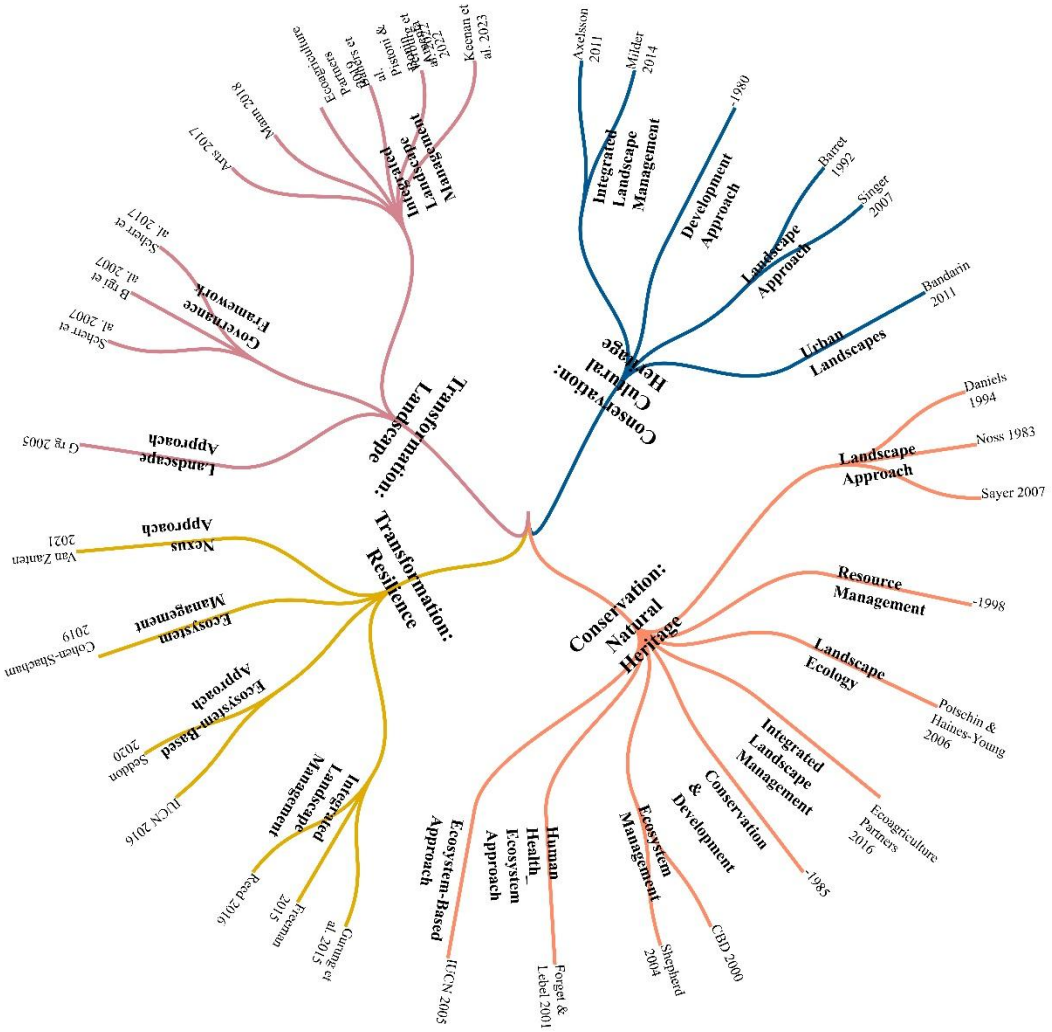

Figure 2. Based on the author's thesis literature review of the Landscape Governance Approach, this diagram illustrates the connections between relevant key Concepts and Sources (Source: the author).

Landscape Capability Model

The Landscape Capability Model assesses landscape governance capacities. The model, developed by the Wageningen Centre for Development Innovation (CDI), reflects on overcoming institutional barriers from academia. It observes power disparities and enhances mitigation through public-private dialogues, stakeholder harmonisation, and tailored

institutional mechanisms (Arts et al., 2017). The landscape capacity model includes five capacities (Bürgi et al., 2017; Sayer, 2009): understanding landscapes beyond natural characteristics, achieving internal coherence, building institutions, creating marketable values, and managing resources through endogenous systems. Furthermore, Bürgi et al. (2017) accentuate the interest of Integrated Landscape Approach to target SDGs, emphasising collaboration between scientists and stakeholders as means towards the framework. Their framework includes four pillars: understanding landscape functioning, exploring societal demands, generating transformation knowledge, and negotiating interventions(Bürgi et al., 2017).

Landscape approaches have been linked to the 2030 Sustainable Development Agenda, with organisations such as IUCN, IALE, FAO, and IUFRO adopting these terms (Arts et al., 2017; Bürgi et al., 2017). Achieving the SDG and responding to climate change require a unified effort from societies and stakeholders. An integrated landscape approach is one way of managing this cooperation. The Global Landscapes Forum, the world's largest knowledge-led platform on sustainable landscapes, uses an integrated landscape approach as a central tool for its members (Mbow Neely, 2015).

2.4.2.4 Phase 4: Towards the Operationalisation of Landscape Approaches (2007–2025)

While academia favours the operationalisation of landscape governance approaches through comprehensive case studies, the emergence of the question of power appears in the governance equation. The question of power is about the relationship between the state and the market and how legitimacy ultimately concerns political authority to undertake actual global governance (Kim et al., 2005).

In 2000, the UN promoted sustainable and socially responsible practices thanks to a non-binding agreement that encouraged stakeholders worldwide. The UN Global Compact initiative puts forth a framework based on ten principles. These principles cover four fundamental areas: human rights, labour standards, environmental protection, and anti-corruption. The three principles related to the environment derived from the Rio Declaration (Nations, 1992) are built on the "precautionary approach", disseminating greater environmental responsibility and adopting environmentally friendly technologies. Most importantly, under the Global Compact, businesses and firms are connected to UN agencies, generating potential for an international capability framework within a given environmental agenda.

The World Summit on Sustainable Development (WSSD), launched in 2002 in Johannesburg. The summit marked a further innovation in governance, multi-stakeholder integration and public-private partnership agreements (United Nations., 2002). In the same year, the 2012 Rio+20 Conference was the other major international event on sustainable development. It aimed to reconcile global economic and environmental goals and the 17 SDGs adopted by the UN General Assembly 2015. Despite its significance, documents from Rio+20, such as *The Future We Want* and the implementation of Agenda 21 (United Nations, 2012; United Nations Conference on Environment & Development, 1992), need to pay more attention to landscape approaches. These documents should integrate landscape approaches' transdisciplinary nature to ensure sustainable development.

The SDA 2030 was adopted in 2015 (United Nations, 2015a). The agenda outlines 17 SDGs which carry 169 targets without, however, addressing landscape approaches explicitly. While it does acknowledge this need for integrated approaches, a sectoral focus remains, causing it to miss out on an opportunity to leverage landscape approaches. Some scholars claim that a landscape approach could effectively unite various SDGs; they defend its capacity to achieve interconnected goals (Vianen et al., 2015).

Global NGOs and conservation organisations such as IUCN and WWF have integrated these approaches into their strategies. IUCN (2007), for example, has added landscape approaches to their glossary and initiatives, such as the "Landscapes and Livelihoods" programme, which addresses environmental conservation and poverty alleviation. Recent publications explore the economic implications of landscape approaches and the need to operationalise them (Freeman et al., 2015; Pistoni and Bonin, 2017).

2.4.3. Contemporary Landscape Governance Approaches to Urban Landscape: How Institutions Are Shaping Urban Futures

Operationalising NUA and the 2030 Agenda through Landscape Governance Approaches 2020–2030

Some authors studying case studies of the Landscape Approach perceive the 2030 Agenda as a complementary framework that was fundamental for the evolution of the Landscape Approach (Angelstam et al., 2019; Mann et al., 2018; Reed et al., 2015).

By 2015, Van Vianen et al. published an article that would open a line of research for the following years. They argue that the SDGs retain a sectoral focus while emphasising the convenience of integration across sustainable goals and targets. The authors recognise this

sectoral approach as lacking synergies and conclude that this might limit the agenda's effectiveness. The research finally calls for considering Integrated landscape approaches as their operationalisation offers significant potential as an implementing framework and tool for addressing interlinked and conflicting challenges (Van Vianen et al., 2015).

This recognition of the potential of landscape approaches to address interlinked and conflicting challenges should inspire the audience with the possibilities it opens. Additionally, the review recognises where the trio of goals could profit from adopting the way of thinking epitomised by landscape approaches, and how this thinking dovetails with the aims of the Aichi Biodiversity Targets and the SDGs. The Aichi Targets (UN, 1992)form part of the Strategic Plan for Biodiversity 2011–2020, adopted by the Parties to the Convention on Biological Diversity in Nagoya, Japan in 2010, comprising 20 ambitious targets collectively aimed at halting biodiversity loss and enhancing its benefits for people. This framework serves to identify why and in what manner LA, in theory and very often in practice, represents a superior way of doing stakeholder, policy, and science business when it comes to the transition to fulfilling the goals that landscapes are expected to accomplish (Bürgi et al., 2017; Reed et al., 2016).

Scientific resources concerning the integration of the Landscape Approach with the SDG highlight, that good scientific results can only be achieved with the consistent use of good scientific methods. From the Landscape Approach and SDG integration perspective, the most significant research has focused on applying landscape approaches to achieve the goals of the 2030 Agenda. The way forward seems to be the development of adequate experiments and in - depth scientific studies that use the concepts of the Landscape Approach as applied to various real-world situations (Freeman et al., 2015; Mann et al., 2018).

When looking at the landscape-scale application of the Landscape Approach, the research community recognises that even if the Approach was effective, this could not yet be shown – not because it is ineffective, but because it has not been adequately tested. If it were to be used in the Theory of Change, for example, then simple metrics could be tied to the outcomes of landscape management. Evidence of the effectiveness of the landscape approach remains limited, as much of the existing literature tends to draw broad parallels between landscape – scale processes and outcomes, without providing robust empirical demonstration of causal relationships or measurable impact.

Bürgi et al. (2017) charted a course for evidence-based knowledge to bridge the gap between theory and practice in the integrated landscape Approach. The framework they presented hinges on cooperation between scientists and stakeholders across cases. In their view, the Integrated Landscape Approach (ILA) should be the centrepiece for achieving sustainable development. Their advocacy also strives to show the need for a methodology to address the four stages of a learning cycle from which meaningful evidence can be derived and then applied for landscape management across various cases, as they look to do with the twelve case studies presented in the same special issue in *Landscape and Urban Planning* (Hersperger et al., 2020).

The four stages consist of the following: The first stage thoroughly analyses landscape functioning, producing a comprehensive, spatially explicit knowledge system of land use. The second stage uses this knowledge to explore future societal demands and implications for changes in landscape and environment. The third stage uses the knowledge of proper and improper land use to generate desirable futures for the landscape, particularly regarding environmental sustainability. The final stage is a reflective process that was continuously refined as efforts towards the transformation of specific landscapes progress.

Supporting the current trend, Angelstam et al. (2018, 2019) focus on using Long Term Ecological Research (LTER) platforms as evidence centres. They see these as proof-of-concept demonstrations for the landscape Approach put to work. They provide this by engaging over 80 initiatives globally that vary in scope. They are large experiments in the landscape Approach, with centres worldwide and attached to places where very different ecologies are at work (and probably with many different communities of species). LTERs are presented by the authors as a place-based transdisciplinary research infrastructure bottom-up networking and are recognised at the European level. By conceptualising them as an infrastructure, the quality standards of the initiatives aim to be quality-assured and harmonised (Angelstam et al., 2019). Also, a direct relation towards implementing policies such as the UN SDGs (2015) could be conceived by upscaling the existing LTSER infrastructure.

The landscape approach is notable for its inclusivity across the three vertices of the sustainable development triangle (equity, economic, and environmental). Unlike other sector-specific and institution-dimensional methods used previously, a landscape Approach attempts to achieve SDGs across all these dimensions simultaneously. There is consistent academic literature aiming at this purpose. By overviewing the state of the art of the conceptual integration between the Landscape Approach and the SDGs, this analysis temporarily excludes the proliferation of

landscape approaches bound to SDGs by a broader range of authors to address specific topics. The inception of a broad field of research steering the landscape approach in different directions within the sustainable agenda is worth mentioning.

However, to research this literature in the direction of SDG11, Sustainable Cities, the thesis to reaches out of the LGA terminology and investigate how the more contemporary tools are aligned with the Landscape Governance Approaches. Two main directions emerge in the literature review: one pointing to Nature-base Solutions and the second to Urban Metabolism.

Some authors claim that Nature-based solutions (NbS) are integrated management Approaches (Cohen-Shacham et al., 2019; Seddon et al., 2021). Conceptualised as governance frameworks rather than technical fixes, NbS align with Integrated Landscape System Approaches, emphasising local community consent and respect for cultural and ecological rights. NbS aims to provide measurable biodiversity benefits. The IUCN definition of NbS, which includes eight criteria, aligns with Sayer's principles of the LGA (Sayer et al., 2013a; Seddon et al., 2021). These criteria ensure that NbS effectively tackle societal challenges and are informed by scale (IUCN, 2021).

The spatial dimension of urban metabolism often needs more emphasis, focusing primarily on digital space models. While urban metabolism is valued for its political, economic, social, and governance insights, its application to physical urban landscapes must be explored (Bahers et al., 2022). Research suggests incorporating urban metabolism with urban design, addressing metropolitan scales, and restoring local material and energy cycles. Pistoni and Bonin (2017) highlight key urban locations where interventions can enhance spatial and local energy and material cycles for public benefit. The urban metabolism approach could be linked to the circular economy sustained in Regenerative territories at this minor scale (Amenta et al., 2022).

2.5 Identifying Gaps in Knowledge

The comprehensive review of philosophical foundations (Section 2.1), conceptual frameworks (Section 2.2), author's exploratory research (Section 2.3), and landscape governance approaches (Section 2.4) reveals five knowledge gaps that collectively define the research problem space, may be interpreted as pointing towards necessary methodological innovations Table 2.

These five gaps synthesise insights from both exploratory research (Section 2.3) and academic/policy literature review (Sections 2.1–2.4). The exploratory research identified three critical gaps through professional practice: knowledge system fragmentation (silos), undervaluation of ordinary urban environments (equity), and non-recognition of landscape as infrastructure (integration). The comprehensive literature review is consistent with and expands these three gaps while revealing two additional systemic failures: the scalar implementation gap between global frameworks and territorial realities, and the temporal gap in design-governance integration. Together, these five interconnected gaps represent a comprehensive diagnosis combining practice-based observation with theoretical analysis, defining the research problem space that the Section 2.6 addresses.

2.5.1 Epistemological Barriers and Disciplinary Fragmentation

Persistent epistemological barriers embedded within inherited frameworks continue shaping thinking both in academia and practice. The Cartesian dichotomy separating nature from culture, critiqued by Whitehead, Massey, Haraway, and Latour (Section 2.1), manifests beyond philosophical discourse into organisational structures of international institutions, professional organisations, academic disciplines, and professional specialisations. UN agencies remain divided along nature versus culture mandates (as seen in Section 2.3). ICOMOS versus IUCN as per advisory bodies, and UNESCO addressing cultural heritage while UNEP focuses on environmental protection, thus perpetuating sectoral fragmentation despite rhetorical commitments to integration. Institutions, funding mechanisms, professional training, and regulations perpetuate these divisions creating "conceptual lock-in" despite the climate change emergency demanding their dissolution. This barrier extends to the dualistic opposition between preservation and transformation paradigms. Despite systems thinking, resilience theory, and social-ecological frameworks gaining traction in scholarly discourse since the 1970s, their integration into operational governance structures remains incomplete. The challenge is not merely intellectual recognition but the cost of structural transformation: operationalising integrative thinking within institutions defined and designed around disciplinary boundaries.

2.5.2 Landscape Governance Integration Deficit in Global Sustainability Frameworks – integration gap

Landscape governance approaches remain systematically marginalised within international policy architecture. Despite convergence around core principles – adaptivity,

multifunctionality, multi-scalar thinking, participatory processes (emerging from review in section 2.4.) – landscape has failed to achieve recognition as a transversal organising principle in overarching sustainability frameworks. The 2030 Agenda's omission of landscape as a cross-cutting theme exemplifies this deficit: individual SDGs address landscape elements (SDG 11 on cities, SDG 15 on terrestrial ecosystems), yet no mechanism coordinates landscape-based implementation across goals. Individual policy instruments (UNESCO's HUL Recommendation, the European Landscape Convention, IUCN's Protected Landscapes) recognise landscape's integrative potential but operate in relative isolation, lacking coordination mechanisms. The International Landscape Convention initiative, which could have provided global coordination, encountered funding challenges that relegated landscape governance to fragmented regional efforts. The gap concerns understanding why landscape governance approaches remain peripheral despite their demonstrated capacity to bridge nature-culture divides and connect multiple scales of action. This reiterates the concern of overlooking landscape itself as infrastructure, already determined in Section 2.3.

2.5.3 Undervaluation of Ordinary Urban Environments in Sustainability Frameworks – equity gap

In the same direction, international policies predominantly focus on heritage objects, architectures and high-value landscapes, creating hierarchies that exclude most built environments from conservation and transformation agendas. This systematic targeting of isolated elements impoverishes natural and cultural heritage approaches by severing protected sites from the processes and systems that generated them. Since the Stockholm Declaration, conservation frameworks have privileged exceptional sites while most urban landscapes – representing humanity's primary habitat – remain outside regulatory scope, creating disconnects between protected heritage and profit-driven development at the expense of inclusive, liveable everyday spaces. This exclusion represents both ethical deficit (whose landscapes matter?) and strategic missed opportunity. As Ostrom (2010) argues, polycentric approaches operating at multiple scales offer advantages over centralised global initiatives. As concluded in Section 2.3, this should trigger systematic reconsideration of ordinary urban environments, as particularly regarding how nature-based solutions and urban green infrastructure can be meaningfully deployed in ordinary contexts rather than confined to showcase projects.

2.5.4 Scalar Implementation Gap Between Global Frameworks and Territorial Realities - scalar gap

Global instruments establish ambitious targets yet provide limited actionable guidance for specific contexts. International policy frameworks such as the SDGs establish aspirational targets yet struggle to account for local specificities. Global recommendations often prove either too general or too specific for meaningful local application, while local administrations prioritise immediate objectives over long-term sustainability. This scalar mismatch generates critical implementation gaps between high-level political commitments and concrete territorial decisions. The gap is not absence of global directives or local initiatives but insufficient bridging mechanisms in between scales. This includes the notion of Planning, Design and Governance missing each other already established in 2.4.1. The challenge involves identifying barriers – sectoral, administrative governance structures, professional education gaps, cross-disciplinary communication failures – and potential transformative built environment professionals, as claimed in Section 2.1.2.1. Drivers found among built environment professionals (reflective practitioners, activist academics, Institutional innovators) could enable scalar bridging.

2.5.5 Design-governance Integration Across Temporal Dimensions – temporal gap

Conventional approaches create artificial boundaries between design (conceived as product-oriented, spatial, and projective) and governance (understood as process-oriented, political, and regulatory) that limit adaptive capacity. This separation reflects deeper tensions between transformation and preservation paradigms, with design associated with change and governance with control. Contemporary challenges demand dissolving these boundaries as claimed in section 2.3. and as response to the global urgency. Climate adaptation requires simultaneously designing interventions and governing their evolution over time; landscape transformation demands integrating spatial design expertise with participatory governance processes. The gap concerns operationalising design-governance integration through incorporating time as explicit dimension. Strategic urban landscape documents, landscape charters, and quality objectives frameworks represent potential bridging mechanisms, yet their relationship to governance mechanisms and design practices remains under theorised. Academic literature often focuses on theoretical frameworks while overlooking knowledge embedded in professional practice and policy implementation, reflecting the progressive separation between academic research, professional practice, and policy domains.

Table 2. Five Knowledge Gaps and RUL approach Responses in Urban Landscape Governance

GAP	CORE DIAGNOSIS	STRUCTURAL FAILURE	RUL TOOL
SILOS	Cartesian nature-culture dichotomy institutionalised in academia, professional bodies and funding	Disciplinary fragmentation; preservation vs. transformation dualism	Quintuple Helix; Balance
INTEGRATION	Landscape governance marginalised in global frameworks; no cross-cutting mechanism in 2030 Agenda	HUL, ELC and IUCN instruments operate in isolation	Landscape as Transversal Organising Principle; Landscape as Infrastructure
EQUITY	Conservation privileges exceptional sites; ordinary urban environments excluded from agendas	Profit-driven development dominates unprotected landscapes	Inclusive Governance; NbS in Ordinary Contexts
SCALAR	Global frameworks too general for local application; insufficient bridging across scales	Planning, design and governance missing each other; professional education gaps	Place-based & Multi-scalar Approaches; transformative professionals
TEMPORAL	Artificial separation between spatial design (projective) and governance (regulatory/process)	Time dimension absent from frameworks; design-governance boundary limits climate adaptation	Adaptive Processes; Strategic Landscape Documents

2.6 Emergence of the Resilient Urban Landscape (RUL) Approach

The five interconnected gaps listed in section 2.5 reveal a demonstrable void in integrative frameworks capable of simultaneously: overcoming epistemological barriers (Gap 1), bridging global frameworks with territorial implementation (Gap 4), valuing ordinary urban environments as core to democratic expression (Gap 3), and connecting design with governance through scalar and temporal dimensions (Gap 2 and 5). Addressing this void requires frameworks that are epistemologically integrative, institutionally transversal, scalarly bridging, equitably applicable, and temporally adaptive. Section 2.6 demonstrates how these requirements inform research questions and methodological approach, leading to development of the Resilient Urban Landscape (RUL) approach.

2.6.1 From Gaps to Research Questions

The five interconnected gaps generate three overarching research questions structuring the investigation:

Research Question 1:

How do landscape principles and landscape governance approaches align with global sustainability agendas (i.e., New Urban Agenda and Sustainable Development Agenda 2030) to promote resilience and urban quality in the context of climate change?

This question addresses Gap 2 (landscape governance integration deficit) and Gap 4 (scalar implementation gap). Despite convergence around core principles, landscape governance approaches remain marginalised in global frameworks. Individual instruments (HUL Recommendation, ELC, IUCN Protected Landscapes) recognise landscape's integrative potential yet lack coordination mechanisms. RQ1 investigates whether sufficient common ground exists between landscape governance approaches and global sustainability agendas to support systematic integration, identifying synergies and contradictions that facilitate or impede alignment in addressing climate change through urban landscape transformation.

Research Question 2:

What synergies between governance approaches and planning/design tools contribute to transformative knowledge generation and cross-disciplinary collaboration in resilient urban landscapes?

This question responds to Gap 1 (epistemological barriers and sectoral fragmentation) and Gap 5 (design-governance integration). Fragmentation of knowledge systems undermines holistic landscape approaches, with governance structures trapped in sectoral silos. Conventional approaches create artificial boundaries between design and governance that limit adaptive capacity. RQ2 investigates how governance approaches might connect with planning and design tools to enable cross-disciplinary collaboration and knowledge co-creation processes (co-design, co-production, co-dissemination) that bridge inherited disciplinary divides and enable transformative knowledge generation.

Research Question 3:

What implementation strategies bridge the theory-practice gap in sustainable urban landscape interventions whilst facilitating the integration of knowledge across theory, practice, and governance?

This question addresses Gap 3 (undervaluation of ordinary urban environments) while synthesising across all gaps. Ordinary urban environments – representing humanity's primary habitat – remain systematically excluded from international sustainability frameworks. RQ3 investigates implementation strategies that could make integrated approaches systematic practice rather than isolated innovations, as remediation to gap 4 and 5, particularly in ordinary urban contexts, thereby closing the transformative knowledge loop from capacity building through capability development to concrete action.

2.6.2 Development of the RUL approach as Integrative Framework

This research deliberately expands the concept of resilience beyond its ecological origins. Whilst resilience thinking emerged from ecosystem science (Jackson, 1985), subsequent scholarship established that social-ecological systems require consideration of governance capacity alongside ecological dynamics (Folke et al., 2005; Walker and Salt, 2006). As Folke (2006, p.253) argues, resilience encompasses not only "the capacity to absorb shocks and still maintain function" but also "the capacity for renewal, re-organisation and development." This expansion, from ecological to socio-ecological to governance resilience, recognises that urban landscape transformation requires institutional flexibility and professional adaptive capacity, not merely ecosystem recovery.

The research establishes a direct, remedial relationship between the observed gaps and the search for conceptual mechanism or tools to help bridge those gaps. Drawing together theoretical insights from the academic literature review, the policy document review and the empirical findings from exploratory research, the five gaps described in section 2.5 are approached with the perspective offered by the two decades of professional practice in landscape architecture and urban design, setting the basis for the methodology adoption and emergence of the Resilient Urban Landscape (RUL) approach.

The five identified gaps serve as the diagnostic inventory of systemic failures within existing urban landscape planning, design and governance. Consequently, six RUL approach attributes are formulated not as independent theoretical concepts, but as prescriptive operational conceptual mechanisms explicitly designed to counteract these failures.

RUL approach inception is to be traced back to the recognition of a set of 6 common attributes in the academic literature review of diverse authors embracing landscape governance approaches and integrative landscape management approaches.

Table 3 benchmarks thirteen existing landscape governance approaches against the six RUL attributes, revealing systematic gaps that justify the development of an integrative framework.

Table 3. Table LGA. RUL approach. Landscape Governance approaches similar references benchmark against RUL approach (Source: the author)

RUL approach	Main Authors	Adaptive processes for knowledge creation	Place based in multiple scale	Towards a Quintuple Helix of Innovation Model	Conservation and Transformation	Ethics and Environmental rights	From Consultation to Co-production
ecosystems Approach to human health	Forget and Lebel, 2001 (4 components)	The biophysical setting environment, behavioural	Improving human health through		Building a bridge between human	Social factors	The need for a transdisciplinary cooperation
ecosystem Approach	(CBS, 2000) 12 principles + (Shepherd, 2004) 5 steps to practice	Appropriate spatial and temporal scales. Adaptive management over time.	Adaptive management over space	Determining the stakeholders and defining the ecosystem area	Balance between, conservation and use of biological diversity	Priority target of the ecosystem Approach.	Involve all relevant sectors of society and scientific disciplines
landscape governance Approach	(Görg, 2007) 9 aspects	Socially and culturally shaped	The local or regional scale	Landscape governance	Their transformation into unsustainable patterns of use	Multi-level politics and natural-spatial conditions	Inter-disciplinary collaboration
ecosystem landscape Approach	(Axelsson, 2011) 5 attributes	Integrative knowledge production	An area that matches management requirements	Multi-level stakeholder collaboration	Sustainability	World Heritage Contemporary Architecture	
historic urban landscape Approach	Bandarin, 2011	Regulatory systems	Multiple scales and stakeholders		Sustainability and the quality of urban life		Engage multiple stakeholders
landscape Approach	Sayer, 2013 10 principles	IUCN The Protected Landscape Approach	A common concern entry point	The interaction of multiple stakeholders	Resilience	Clarification of	To strengthened stakeholder capacity
integrated landscape initiative	(Milder, 2014)	Supporting adaptive	Support activities at this scale				Inter - sectoral coordination
integrated landscape management	(Freeman, 2015) (Gurung et al., 2015);	Multifunctionality			Sustainability	Cross-sectoral Approaches	Participation
integrated landscape Approach	Reed, 2016;(ecoagriculturapartners,2019)	Aichi target and SDG		Establish good governance	Embrace dynamic processes	Evolve from panacea solutions	Engage multiple stakeholders
landscape Approach	(Arts, 2017)	Multifunctionality	Place-based	Co-governance	Sustainability	Engaged society	Interdisciplinary work

ILM for SDG	(Mann, 2018) ;(García-Martínet.,2016)	Multifunctional land uses	Landscape scale	A nexus Approach to corporate sustainability	Social-ecological systems,	Inter-sectoral cooperation	Participatory
nexus Approach	(Van Zanten, 2021)	The nexus Approach introduced in this		Corporate sustainability	Resilience, sustainable		
integrated landscape system Approach NbS	(Cohen-Shacham, 2019) Seddon, 2021 4 principles; IUCN 8 criterion	NbS effectively address societal challenges	NbS are sustainable and mainstreamed jurisdictional	NbS	Biodiversity, climate change adaptation, mitigation	NbS are implemented with the	More holistic Approaches across science
Urban Metabolism Approach	(Bahers et al., 2022) ; (Pistoni & Bonin, 2017) ; (Amenta et al., 2022)	ILM integrating space: The territorial economic Approach	The spatially explicit modelling Approach	The governance and planning Approaches		The political Approach	The socioecological Approach

The further identification of those attributes in policy documents review and other experiences emerging from professional exploratory research is crystallised in the RUL approach conceptualisation as an integrative framework responding to the void identified through Section 2.5.

For instance, the Silos Gap necessitates the structural tool of the Quintuple Helix and the conceptual tool of Balance; the Scalar Gap mandates the bridging tool of Place-based/multi-scalar approaches; and the Temporal Gap requires the procedural tool of Adaptive Processes. Thus, the attributes are derived and justified entirely by their capacity to systematically remediate the specific deficiencies defined by the diagnostic gap analysis. Furthermore, the RUL approach synthesises the three primary knowledge sources distribute through chapter 2.

From academic literature (Sections 2.1– 2.2, 2.4.2), RUL draws epistemological foundations: systems thinking understanding cities as Complex Adaptive Systems (Holling's panarchy and resilience concepts), Latour's Actor-Network Theory enabling recognition of human and non-human actors, the genealogical investigation showing landscape approaches' progressive integration of spatial, temporal, social, and political dimensions, and landscape governance approaches (HUL's layered approach, ELC's participatory framework, IUCN's Protected Landscape co-management) providing operational examples of integrative mechanisms. From exploratory research (Section 2.3), it incorporates empirical insights about landscape functioning infrastructurally through four interrelated systems: data collection and management, professional expertise networks, regulatory frameworks, and participatory

mechanisms. Recognition that these infrastructures operate interdependently yet lack coordination mechanisms informs the RUL approach's emphasis on creating such coordination. From professional practice experience, it grounds theoretical abstractions in practical realities. Two decades of work across multiple roles – on-site designer, teacher, consultant, content director – provides experiential knowledge about challenges facing practitioners attempting integrated approaches: how designers confront governance constraints, how governance structures limit design innovation, how disciplinary silos impede collaboration, and how to translate exceptional projects into systematic practice.

2.6.3 Connecting Gaps and Strategies to RUL Attributes

Building upon this critical review of landscape governance approaches identifying four phases, this research proposes the RUL approach attributes as an original approach specifically adapted to urban contexts. The RUL approach framework is defined by six essential attributes: (1) Adaptive processes for knowledge creation in complex systems, (2) Place-based approaches operating at multiple scales, (3) A quintuple helix innovation model integrating university – industry – government public – environment, (4) Balance between conservation and transformation supporting sustainable development and system resilience, (5) Ethics and environmental rights principles, and (6) Evolution from consultation to co-production.

The selection of these six attributes directly aligns with the three key strategies established at the beginning of this chapter, 1.1, 1.2 and 1.3. Each strategy has informed the recognition of two complementary RUL approach attributes. Together, these attributes provide an integrated lens through which transformative action in urban landscapes is guided.

Strategy 1: Systems Thinking Approach to Urban Landscapes

This first strategy informs Adaptive processes for knowledge and Conservation and Transformation attributes. The discussion of cities as Complex Adaptive Systems (CAS) establishes why knowledge creation must be adaptive when dealing with urban complexity. As theorised in the review of adaptive systems theory, adopting adaptive processes for knowledge creation grants resilience in changing conditions and aligns with knowledge feedback loops. Holling's work on panarchy and resilience provides the theoretical foundation for this attribute. Conservation and Transformation understood as a complex system resilience, adapts to the constant flux between conservation and transformation phases in urban landscapes. Rather than attempting to preserve static conditions, this attribute recognises that resilient systems maintain fundamental functions while adapting to changing circumstances.

Strategy 2: Blurring Boundaries Between Governance and Design

This second strategy informs the Helix Model and the co-production attributes. The investigation demonstrates that effective urban landscape governance requires collaboration across sectors. The quintuple helix model provides a structured approach to developing this transdisciplinary collaboration. Furthermore, the examination of knowledge co-creation processes reveal the limitations of participation. From consultation to co-production, building on Mauser's three phases and Nonaka's SECI model, allows advancing beyond consultation towards genuine collaboration.

Strategy 3: Towards a Climate-Oriented Urban Landscape Paradigm

Finally, the third strategy informs Ethics rights and multiple scales as attributes. The dismantling of entrenched binaries examined in the introduction to chapter 3 (preservation/transformation, natural/cultural heritage) necessitates a new ethical framework. Ethics and Environmental rights are an attribute that aims to addresses questions of environmental justice, recognising diverse cultural values and ensuring equitable access to quality landscapes. In parallel, the exploration of terminology in section 2 of this chapter demonstrates the limitations of a single scale approach. The place-based in multiple scales attribute acknowledges that we must operate simultaneously at multiple scales. Transcalarity defines areas of direct control and broader influence, while addressing both local interventions and systemic impacts.

2.6.4 Basis for Methodological Approach bridging to Chapter 3

These five methodological requirements – bridging disciplines, connecting scales, integrating design-governance, attending to ordinary environments, and enabling transversal coordination – establish the basis for the specific methodological choices that Chapter 3 describes in detail.

The progression from Chapter 2 to Chapter 3 thus moves from establishing the conceptual and empirical foundations (literature review, exploratory research, gap identification), through developing the integrative framework (the RUL approach), to describing and justifying the specific methodological choices made to operationalise that framework in responding to the research questions. Chapter 3 demonstrates how these methodological requirements inform the selection, adaptation, and application of specific methods, maintaining the RUL approach's integrative character throughout the investigation.

This literature review reveals that whilst individual professional capabilities receive extensive scholarly attention – adaptive thinking, stakeholder engagement, integrative design – systematic coordination mechanisms between academic research, professional practice, and institutional implementation remain under-theorised. Scholarship focuses on what built environment transformative professionals should achieve rather than how collaboration across professional domains should occur. This gap manifests in the persistent separation between knowledge production contexts: academic research progresses independently from professional innovation, which evolves separately from institutional policy implementation. The research addresses this gap by examining coordination patterns across these three domains.

2.7 Key Findings: Five Knowledge Gaps and the RUL approach

Chapter 2 establishes a dual foundation: a philosophical stance through systems-thinking, theory-practice integration, and climate adaptation beyond preservation/transformation dualism; and a professional stance rooted in experience as designer, teacher, consultant, and Barcelona Biennial director. This trajectory crystallised into four exploratory publications revealing the fragility of fragmented landscape infrastructure and critical disconnections between practice, policy, and sustainability agendas.

The chapter integrates three knowledge sources – academic literature, policy documents, and professional research synthesis – to examine terminology around urban landscapes and landscape governance approaches (LGA). This reveals potential case studies whilst exposing interconnected knowledge gaps defining the research problem.

The central finding is systemic fragility: knowledge evolves faster than structures designed to organise, disseminate, and implement it. The five gaps expose knowledge systems (emerging from practice, policy, and academia) rendered fragile by rigidity, outdated dichotomies, disciplinary silos, and absence of scalar or temporal adaptability. This structural inflexibility limits knowledge growth and implementation. As thus discussed, improved planning, design, or governance cannot overcome barriers embedded in organisational structures themselves.

The Research Questions identify where structural innovations already exist or discover enabling drivers. The Resilient Urban Landscape (RUL) approach emerges as necessary

methodology – a filtering and integrating mechanism for knowledges – restoring structural adaptability across disconnected academic, professional, and policy domains.

Disconnection between these domains actively undermines capacity for climate-driven urban transformation. Reconnecting them requires redesigning the system itself. Chapter 3 sets a methodology for the RUL approach operationalisation, demonstrating how design thinking applied to knowledge structures is associated with the scalar, temporal, and epistemological flexibility climate adaptation demands.

Chapter 3 – Research Methodology

Chapter 3 establishes the methodological framework for this research. Grounded in interpretivist and constructivist paradigms, the research design emphasises knowledge co-creation through practice while maintaining systematic rigour. Central to this framework is Schön's (1983) concept of reflection-in-action, whereby the practitioner-researcher constructs knowledge dynamically within the practice context.

> *"When someone reflects-in -action, he becomes a researcher in the practice context. He is not dependent on the categories of established theory and technique but constructs a new theory of the unique case. His inquiry is not limited to a deliberation about means which depends on a prior agreement about ends. He does not keep means and ends separate but defines them interactively as he frames a problematic situation. He does not separate thinking from doing, ratiocinating his way to a decision which he must later convert to action. Because his experimenting is a kind of action, implementation is built into his inquiry."*
> *(Schön, 1983, p.68)*

3.1 Research Philosophy

3.1.1 Philosophical Foundations: Interpretivism and Constructivism

All knowledge creation is based on philosophical foundations about the nature of the being (ontology), the nature of knowledge (epistemology), and how we digest knowledge (methodology). Kuhn (1962) defined these bases to be acknowledged as universally significant scientific advancements offering temporary models for problems and solutions of a community of practitioners for a particular duration.

The research philosophy influences every stage of the research process, from data collection to analysis. In urban landscape research, constructivism is a commonly used research philosophy which emphasises the importance of social constructions and interpretations of reality. In contrast, interpretivism emphasises the subjective nature of social phenomena and the need for understanding and interpretation (Creswell, 2014). Both constructivism and interpretivism oppose positivism by advocating that reality is subjective. If reality is considered a social construct, a composite of multiple valid perspectives must be considered. In this line of thought, the subjective point of view of the researcher is unavoidable in the research since all contributions to the thesis are based on the professional life experiences identified in Chapter 1, including 20 years of practice in landscape architecture and urbanism.

This thesis is grounded in interpretivism and constructivism. Both intertwined paradigms which share epistemological foundations and emphasise the contextual and subjective nature of knowledge. Understanding how individuals and organisations construct meaning is central to this research. Hesse-Biber (2010) notes that constructivism emphasises the researcher's role in co-creating knowledge with participants. In parallel, interpretivism emphasises the importance of understanding the subjective experiences of both individuals and groups. Some academics contend that constructivism and interpretivism overlap in some areas (Bryman, 2016; Hesse-Biber, 2010), nevertheless, the research builds on subjective experiences and meaning-making in research, overcoming the subject versus object dichotomy, aligning aesthetics and beauty into the principles of landscape sustainability as claimed by Meyer (2015) in *Sustaining beauty manifesto* and co-creating transferable knowledge.

3.1.2 Knowledge Co-creation Through Practice

This research adopts the position that knowledge emerges not only through academic inquiry but through professional practice. This aligns with knowledge production through Schön's (1983) concept of reflective practice (Visser, 2010) which recognise that practitioners generate knowledge through problem-solving in context. The research philosophy also draws on (Haraway, 1988; Morton, 2010) that critique anthropocentric viewpoints, recognising that knowledge development is shaped by interactions within complex actor networks involving human and non-human entities. Communities of practice, formed through reflective practices and transformative actions within academic and urban institutions, contribute to ongoing transformations in how knowledge is generated and applied.

3.1.3 Researcher Positionality

The proposal is that knowledge stemming from practice might be recovered to benefit an assortment of government levels by supplying them with help to support their aims and their governing values (Ludwig and Sassen, 2022). The contribution of sectoral professionals to the global transformation towards sustainability is an essential contemporary discussion driven by academia (Havea and Mohanty, 2020) seconded by SDG17, which aims to strengthen the modes of implementation of a global partnership for sustainable development through collaboration with International Professional NGOs (ISOCARP, 2018; UIA, 2018; United Nations, 2015c). Establishing the role of the urban landscape as common ground for sectoral transformative built environment professionals in the fragmented international legislation and policy regarding landscape and sustainability was fundamental, while identifying fundamental

tools, methodologies, and forms of practice, reflection, and action developed by future cross-sectoral collaborative agents was prioritised.

Acknowledging that urban landscapes are interdisciplinary allows us to understand the thesis position that the improvement of the built environment requires a long and often incomplete list of knowledge types, often too fragmented to be comprehended. Sargolini (2013) suggests that urban landscapes are shaped by a complex interplay of biotic and abiotic factors, necessitating the consideration of insights from various disciplinary fields. According to Carmona, (2019) the many researchers' distinct viewpoints on qualitative research in urban settings stem from their diverse backgrounds, ranging from planners to architects to engineers, designers or landscape architects. In alignment with this perspective, this research focuses on how to draw out knowledge that is embedded within personalities or transposable systems of projects to facilitate effective integration.

As a researcher with two decades of professional experience in landscape architecture, urban design, and sustainability, I bring practitioner knowledge to this inquiry. This positionality is methodologically justified through practitioner research literature (Schön, 1983) which recognises experiential knowledge as legitimate data when combined with reflexive practice. This positioning coincides with what Hesse-Biber (2010) terms "co-creation of knowledge" – the researcher's practice-based insights inform research design while systematic inquiry refines practice understanding. The subjective viewpoint of the practitioner-researcher is not a limitation but an asset, providing insider knowledge of landscape governance processes that might remain invisible to external observers.

3.2 Research Strategy

The research strategy bridges the interpretivist-constructivist philosophical foundations (Section 3.1) with the methodological implementation detailed in subsequent sections. This section articulates the overarching approach – qualitative multi-case study design – and justifies why this strategy appropriately addresses the five interconnected gaps identified in Chapter 2.

3.2.1 Qualitative Inquiry as Strategic Choice

Given the philosophical position that knowledge is socially constructed and context-dependent, this research adopts qualitative rather than quantitative inquiry. Landscape governance operates through contested meanings, negotiated values, and contextual interpretations that resist

reduction to measurable variables. Qualitative strategy privileges depth over breadth, examining how different stakeholders construct understanding across varied institutional and geographic contexts (Creswell and Creswell, 2007). This strategic choice aligns with the research's commitment to practice-based knowledge. Rather than treating professional experience as anecdotal, the strategy positions practitioners as legitimate knowledge creators whose insights emerge through reflective engagement with complex problems (Argyris and Schön, 1997). This requires methodological approaches capable of identifying tacit understanding that practitioners develop through experience.

3.2.2 Multi-case Study Strategy

The research employs multi-case study design to develop and test the RUL approach established in Chapter 2. Case study strategy suits investigation of contemporary phenomena within real-world contexts where boundaries between phenomenon and context blur (Yin, 2018). In landscape governance, processes cannot be meaningfully separated from their institutional, political, cultural, and ecological contexts. Multiple cases enable systematic comparison, revealing which findings are context-specific and which patterns hold across settings (Flyvbjerg, 2006). This comparative dimension is essential for developing a framework with transferability beyond specific cases examined. The strategy integrates four complementary components addressing specific knowledge gaps: policy document analysis examines global framework alignment with landscape governance (Gaps 2 and 4); city case studies investigate implementation in ordinary urban contexts (Gap 3); professional interviews surface practice-based knowledge invisible in academic literature (Gaps 1 and 5); and analysis of award-winning projects examines governance innovation embedded in design (Gap 5). This multi-component approach coincides with triangulation across data sources. Within the interpretivist-constructivist paradigm, triangulation reveals complexity and multiplicity of perspectives rather than validating singular truth (Baxter and Jack, 2008). Policy framers, municipal practitioners, and design professionals may construct legitimately different understandings of the same phenomena.

3.2.3 Analytical Coherence Through the RUL Framework

The strategy maintains analytical coherence through the RUL approach (Chapter 2, Section 2.6), which provides a conceptual architecture enabling systematic comparison across disparate cases and data sources. The RUL framework's six attributes are operationalised through the Knowledge Alignment matrix (Section 3.4), transforming abstract principles into assessment

criteria applicable across all data sources. This approach reflects what Flyvbjerg (2006) terms inquiry oriented towards practical wisdom rather than universal laws. The RUL attributes function as sensitising concepts that guide investigation while remaining open to refinement based on empirical findings, balancing analytical structure with flexibility to recognise emergent patterns.

3.2.4 Research Process Overview

The strategy creates deliberate progression: Chapter 2 identified gaps through literature review; Chapter 3 articulates the approach to addressing those gaps; Chapters 4–6 present findings from policy, city, and interview analysis; Chapter 7 synthesises across sources. This architecture maintains a clear trajectory from identified problems through systematic investigation to actionable frameworks, examining how governance principles attempt to translate across scalar boundaries and temporal horizons.

3.3 Research Methodology: Multiple Case Study Design

This research employs a multiple case study methodology to investigate how landscape governance operates across different scales and contexts. Case study methodology is appropriate when examining contemporary phenomena within real-world contexts where boundaries between phenomenon and context are not clear (Yin, 2018). Yin outlines a comprehensive approach to case study research, emphasising the importance of context and the integration of multiple sources of evidence (Yin, 2018). The diversity of scales to investigate suggested case studies as the best choice. Also, the variety of agents and built environment transformative professionals intervening in urban landscapes suggested cross-sectoral data collection as the best procedure for compiling information from various businesses or sectors to understand a specific phenomenon comprehensively.

The research examines:

— **Thematic landscape management approaches:** Thematic landscape management approaches applied to international policy frameworks

— **City case studies:** Cities policies and municipal strategies

— **Award-winning project studies:** Award-winning landscape projects as best professional practices

Within these cases, complementary document analysis methods, project analysis and semi-structured interviews are employed (detailed in Section 3.4)

The selected case studies were chosen not only geographically and thematically diverse but also to illuminate different forms of knowledge creation and transformation in urban landscapes. The multiple-case design comprises three complementary components, each responding to specific knowledge gaps identified in Chapter 2. Policy document analysis was designed to examine how global frameworks address landscape governance (addressing Gap 2: integration deficit and Gap 4: scalar gap). City case studies were designed to investigate implementation of landscape governance in ordinary urban contexts rather than exceptional sites (addressing Gap 3: equity gap). Semi-structured interviews with landscape professionals were designed to surface practice-based knowledge often invisible in academic literature (addressing Gap 1: silos gap and Gap 5: temporal gap). Analysis of award-winning projects from the Barcelona Biennial database was designed to examine governance innovation embedded in design processes (addressing Gap 5: temporal gap). Data collection methods were thus aligned with this methodology of qualitative multi-case study. Mainly focusing on semi-structured interviews, document analysis, and observational fieldwork of cases, these methods were used to investigate the subjective experiences of built environment transformative professionals.

Qualitative research within interpretivist paradigms recognises the researcher as an active participant in knowledge construction rather than a detached observer (Creswell, 2014). This research explicitly incorporates the researcher's professional experience as a legitimate source of data, following the tradition of practitioner – scholar inquiry where professionals "exhibit a kind of knowing-in-practice, most of which is tacit" (Visser, 2010). The methodological approach aligns with the Nonaka theory of organisational knowledge creation (1994), which posits that "knowledge is created through an epistemological process of knowledge conversion from one type to another (tacit and explicit) and amplified through different ontological levels" (p.62), whereby professional tacit knowledge embedded in practice is systematically transformed into explicit, transferable insights through processes of externalisation. The researcher's accumulated professional experience across architecture, landscape architecture, and urban planning provides what Bourdieu conceptualises as habitus and "practical sense" (Bourdieu, 1976), an embodied understanding of the field that coincides with identification of patterns and gaps often invisible to purely theoretical inquiry.

Case study methodology is particularly well-suited to the constructivist and interpretive research paradigms outlined in Section 3.1. Following relativist ontology inherent in constructivism, the research perceives reality as intersubjective, people cannot be isolated from their knowledge, and the interaction between researcher and research subject is integral to the research process (Stake, 2006). The investigation of case studies permits in-depth analysis of specific phenomena within their contexts, enabling investigation of how various stakeholders perceive and transform the urban environment and how these constructions and interpretations affect both private and public experiences of landscape. The interpretivist emphasis on understanding subjective experiences aligns with case study methodology's capacity to capture the diverse meanings and interpretations that different actors attach to their experiences within specific contexts (Merriam, 2009). However, the challenge emerges from juxtaposing different knowledge emanating from the different methods used within the case studies.

This thesis is presented as a complete and self-contained document. All analytical frameworks, scoring rationale, and empirical findings necessary to evaluate the research are reported in full within the body of the text.

3.3.1 Development of the Knowledge Alignment matrix

Narrative strategies are crucial in defining case studies since they let researchers collect and deliver data meaningfully. Researchers may employ strategies like thematic, content, and discourse analysis to identify patterns and themes within the data (Creswell and Creswell, 2007). In parallel, researchers may also use reflective analysis to examine their own prejudices and presumptions that may have affected how they interpreted the data. Due to the complexity of data emerging from the qualitative research methods, the KA matrix was developed to enhance reflective analysis and narrative approaches in constructivist research (Alavi and Leidner, 2001; UNIDO, 2024). The matrix provides a structured representation of how different knowledge, theories, or data align, helping the search for common patterns and themes. This clarity aids in correcting personal biases and assumptions that might influence interpretations while facilitating the iterative refinement of insights.

The development of the KA matrix draws upon traditional knowledge management alignment models, such as the capability-value alignment matrix used in the private sector to ensure that knowledge initiatives support organisational goals and deliver measurable value (Dulipovici and Robey, 2013). However, the KA matrix expands beyond these models by incorporating frameworks developed for sustainability contexts, including UNESCO's Education for

Sustainable Development and the European Sustainability Competence Framework (Green Comp)(European Commission, 2022), which align knowledge, skills, and attitudes with broader sustainability goals through systemic thinking, ethical decision-making , and transformative action (UNESCO, 2019).

3.3.2 KA matrix Scoring Criteria

The KA matrix employs a 0–5 scale to assess alignment between cases and the six RUL attributes. The scoring criteria were developed iteratively through pilot application and refined to ensure consistent application across all data sources:

- **0 = No alignment**: No evidence of the attribute present in the case
- **1 = Minimal alignment**: Attribute mentioned but not operationalised; rhetorical reference only
- **2 = Limited alignment**: Some operationalisation evident but inconsistent or fragmented application
- **3 = Moderate alignment**: Attribute clearly present with practical application and evidence of implementation
- **4 = Strong alignment**: Attribute well-integrated with clear mechanisms, sustained implementation, and demonstrable outcomes
- **5 = Comprehensive alignment**: Attribute fully embedded as core organising principle with solid operationalisation, systemic integration, and transferable methodologies

These criteria were applied consistently across policy documents (Section 3.4.1), city case studies (Section 3.4.2), interview data (Section 3.4.3), and award-winning projects (Section 3.4.4). Scoring involved qualitative assessment of evidence within each case against these definitions, documented through detailed justifications in the analysis matrices presented in Tables 4–10. Where evidence was ambiguous, conservative scoring was applied, and scores were triangulated across multiple data sources where available.

The KA matrix tool functions as an analytical device to visualise how knowledge aligns. Comparing diverse knowledge promotes its circulation and accumulation across practices, contexts, and communities of practice. To synthesise findings across these diverse data sources, the matrix provides a consensus-based framework of six attributes derived from the RUL approach established in Chapter 2. Rather than imposing a predetermined theoretical

framework, this approach is associated with structural adaptability by allowing knowledge from diverse sources to be benchmarked against the RUL attributes, progressively building an emergent synthesis that reconnects theory, policy, and practice in a manner responsive to the temporal and scalar flexibility that climate adaptation demands. The matrix structure employs the six RUL attributes as analytical dimensions applied consistently across all cases. Each attribute was translated into assessment criteria adapted to different data types. Development occurred iteratively through pilot application to selected policy documents and preliminary interviews, revealing necessary refinements particularly regarding attributes manifesting implicitly rather than explicitly in certain contexts. The finalised matrix serves three methodological functions as illustrated in Figure 3. First, it structures within case analysis, ensuring each case is examined systematically against all six RUL attributes. Second, it coincides with cross-case comparison, revealing patterns in how attributes manifest across policy, practice, and professional understanding. Third, it supports synthesis across data sources, providing the analytical architecture through which findings from document analysis, case studies, and interviews are integrated and discussed in Chapter 7.

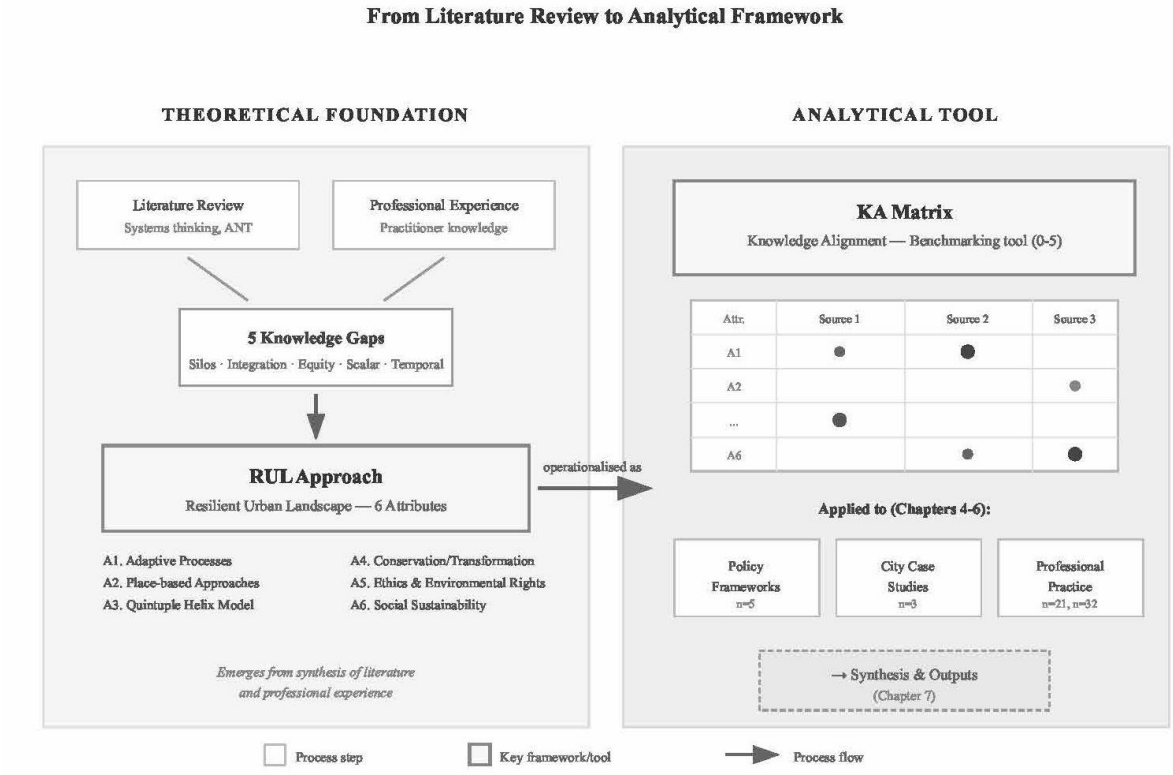

Figure 3. The RUL approach: Bridging Knowledge Gaps through the KA matrix (Source: the author).

3.4 Methods of Data Collection and Analysis: Operationalising the Research Design

The multiple case study methodology employs three complementary methods – document analysis, semi-structured interviews, and project analysis – each applied across all cases to enable systematic comparison through the KA matrix. Document analysis is conducted across two distinct bodies of material: policy frameworks and municipal landscape governance documents. The methods are structured as follows:

- Case study design: rationale, selection and design (Section 3.4.1)
- Document analysis: policy frameworks (Section 3.4.2) and municipal landscape governance (Section 3.4.3)
- Semi-structured interviews with professionals (Section 3.4.4)
- Project analysis: award-winning projects from archived database (Section 3.4.5)

3.4.1 Case Study Methodology: Rationale, Selection and Design

This section establishes the rationale, selection criteria, and design of the case study framework that structures the three complementary methods – document analysis, semi-structured interviews, and project analysis – introduced above.

The case study method provides operationalisation of context to the findings obtained in Chapter 2. The selected case studies should provide the background, ideas, and pertinent governmental instruments for landscape approaches according to Yin (2018). The definition of a case study is the in-depth analysis of a specific occurrence that frequently involves gathering qualitative data through interviews, observations, and document analysis. A case study method is ideal to collect data around the context of landscape approaches while identifying the difficulties and solutions particular to a given territory.

Specifically, the case study method is appropriate for analysing established urban case studies operationalising a landscape approach (Diedrich, 2013). The most influential recent publications on urban transformations rely on case studies to demonstrate their thesis (Mostafavi, 2016; Raibmon et al., 1997; Walheim et al., 2006).

The validity of this case study design is assessed throughout against Lincoln and Guba's (Lincoln, 1985) framework of trustworthiness – comprising credibility, transferability, dependability, and confirmability – as alternatives to positivist notions of validity and

reliability. These criteria are applied at each stage of data collection and analysis and are returned to in the discussion of findings.

Thus, this method is appropriate to examine city case studies bounded by time and place, as any design and planning project is. Case-study methodologies are standard among urban researchers because they have advantages for urban situations. Utilising multiple-case studies is considered an effective approach for addressing the absence of formal systematic research methods in design (Teegavarapu et al., 2008). This is what this methodology chapter intends to organise and is crucial for ensuring the credibility of the case study results.

By thoroughly understanding a particular urban integrative landscape Approach and the difficulties and opportunities during a specific time-lapse of transformation, concepts and replicable tools and procedures can be identified. The detailed analysis of case studies can assist in identifying the main problems of nature-based solutions in landscape approaches, suggesting systemic and transferable governance tools needed for the successful implementation of landscape approaches.

Thematic landscape management approaches, as used throughout this section, refer to the operationalised governance frameworks identified in Chapter 2 through which cities implement landscape strategies at different scales.

Case Study Design Stages

The following stages governed the design of the case study protocol:

1. The definition phase, which involves framing the thematic landscape management approaches selected through criteria obtained through:
    - A top-down selection process, according to the literature review in Chapter 2
2. Design phase, involving the design of the case study protocol and its purpose to lead the definition of criteria to establish significant and award-winning project studies:
    - A bottom-up process through in-depth semi-structured interviews
    - A bottom-up approach, investigating through the finalists to the Barcelona International Landscape Biennial database (2014–2024, therefore 8th to 12th edition)
3. Profiling Participants. The profiling was sequential and targeted three groups:
    - Participants were profiled for their relation to United Nations bodies and international professional associations.

- Prestigious international professionals
- Local experts related to city case studies (to be done after the definition of the subcase studies)

Data Collection and Analysis Stages

These design decisions informed the subsequent data collection and analysis procedures:

4. Preparation phase and data collection.
    - Interview guidelines for semi-structured interviews for the first two target groups.
    - Tables to relate the interview findings to the research questions (Tables 1 & 2)
    - 6 RUL approach attributes card to relate the literature findings to the Interviewees' contributions.
    - Data extractions sheet for the Rosa Barba Prize following the tool's typology points to relate the archive review to the literature findings.
5. Data Analysis
    - Interview analysis employed content analysis conducted manually.
    - Transcription using Scribe software then manually revised.
    - Content extraction organised in Excel matrices by research questions (matrix 1)
    - Assessment against six RUL attributes using KA matrix.
    - Cross-participant synthesis through Excel comparative charts
    - Triangulation with policy and project data
6. City case studies definition for local grounding and discussion
    - City case study selection criteria were deliberately aligned with research questions: Geographic distribution addresses RQ1 by testing whether landscape governance patterns from international policy hold across diverse European and North American contexts, including both cities within European Landscape Convention framework and outside it, addressing Gap 4 (scalar implementation). Complexity in governance structures (multiple jurisdictions, fragmented responsibilities) addresses RQ2 by providing contexts where integration challenges identified in Section 2.3 are evident, enabling investigation of cross-disciplinary collaboration tools, addressing Gap 1 (sectoral silos). Similarity in characteristics (comparable population 1.6–4M, post-industrial transformation, heritage governance, sustainability commitment)

addresses RQ3 by controlling variables unrelated to landscape governance while focusing on ordinary urban contexts rather than exceptional sites, addressing Gap 3 (equity gap). This combination enables comparison through similarity and contrast through diversity, investigating scalar implementation gaps between global frameworks and territorial realities.

7. **Award-winning project studies identification**
   - Project studies were identified through systematic gleaning of the Barcelona International Landscape Biennial database (2014–2024, 8th to 12th editions), selecting urban finalist projects benchmarked against the RUL approach attributes using the KA matrix. Projects were further categorised using the IUCN urban NbS taxonomy to enable systematic comparison across ecological function and governance context. These project studies function as exemplary practice cases, grounding the discussion in Section 6.5.

The definition phase involves defining the criteria to screen potential case studies and select pertinent ones to answer the research question. Therefore, as pointed out by Eisenhardt (1989) the case studies' selection process is a crucial step in the research. The criteria for selection must thus be aligned with the research question formulated. This guarantees that the chosen case studies contribute to the findings of the thesis. Finding the key variables or aspects pertinent to the research question and objectives is crucial to the defining process. These variables or factors should be precisely specified and operationalised to ensure the selection criteria are accurate and consistent (Yin, 2018).

The framing of the significant case studies emerged from listing potential case studies determined by the top-down selection process in Chapter 2. The research aimed to scrutinise operational tools successfully used for strategic planning embracing LGA for the conservation and transformation of urban landscapes. Thanks to the Chapter 2 findings and the institutional interviewees' judgement, a set of potential thematic landscape management approaches and selection criteria were extracted.

Then, the landscape approaches existing in the international arena that fitted the urban landscape approaches criteria were further explored to evaluate their potential and to distil potential city case studies. Finally, basal information was retrieved through the successive steps

below to confirm or eliminate the potential thematic landscape management approach by validating bottom-up procedures.

When the data analyses are complete, the results were compared with the preliminary findings to verify if they are in alignment with confirmability, transferability and dependability criteria (Merriam, 2009).

The potential case studies and any identified case studies had specific characteristics as a basis for solid validation. These were (1) their transferability to different contexts, (2) continuity across time in demonstrating the same findings, and (3) the confirmation of the results across several different sources. Since these three characteristics were present in the studies constituting the main cases, then their contingent findings served as findings of the cases themselves.

3.4.2 Policy Document Analysis: Selection Criteria and Analytical Procedures

Chapter 2 had outlined the initial part of the state of the art by providing a philosophical, terminological and exploratory frameworks, highlighting the shift from preservation to transformation and its impact on the understanding of cities as complex adaptive systems.

The focus is on evaluating United Nations and CoE programmes that embed LGA, to then investigate whether landscape governance approaches inform their development and implementation on several comparable cities. While the role of landscape governance in promoting sustainable development and resilience is well – known in natural reserves and agricultural – natural sites, its urban applications need to be explored further (United Nations World Bank, 2013).

This thesis investigates how international landscape governance can be integrated into urban planning and design beyond the division of "heritage preservation" versus "growth". To this end, policy documents from the main UN agencies related to built environment are considered: UN-Habitat, UNESCO and UNEP. In parallel, IUCN and ICOMOS documents are also examined, as these are as advisory bodies and accredited permanent observer mission to the United Nations.

The landscape governance approaches selected for further study focus on urban contexts and originate from United Nations agencies. Following a review of comparable policy instruments – including FAO's Globally Important Agricultural Heritage Sites (GIAHS), IUCN Protected Area Management Categories, Natural World Heritage sites, UNESCO World Heritage Centre

designations, and the Lists of Intangible Cultural Heritage with its Register of Good Safeguarding Practices – those with explicit urban applicability and governance innovation potential were selected as the focus of this analysis.

RQ Policy document analysis constitutes the first primary data collection method, employing content analysis to systematically review and critique policy documents on landscape governance approaches and urban landscapes. This differs from Chapter 2, which draws on policy documents as contextual literature to identify knowledge gaps and develop research questions. Here, following Bowen et al. (2010), policy documents are treated as primary data – objects of systematic analysis rather than background sources – providing empirical evidence that addresses those research questions across the three city case studies.

The analytical procedure follows five sequential stages. First, systematic document retrieval from the UN Official Documents and Publications database, United Nations Advisory bodies, and supra-national government bodies including the European Union and Council of Europe generate the policy corpus for analysis. Second, content analysis identifies how landscape approaches and integrated landscape management are articulated, operationalised, and prescribed within UN directives, recommendations, and regional policy frameworks. Third, discourse analysis examines the linguistic framing of key terminology – urban landscape, landscape conservation, landscape transformation – and their conceptual relationships to resilience and sustainability within policy texts. Fourth, diagrammatic analysis reveals structural relationships, hierarchies, and complexities within and across policy frameworks. Fifth, systematic synthesis across all analysed documents identifies recurring operational attributes that characterise landscape governance approaches across scales and contexts.

The five landscape governance approaches were identified through critical review of LGA literature in Chapter 2, Section 2.4. Chapter 2 traced the evolution of landscape governance from academic emergence (1972–1992) through policy recognition (1992–2007) to contemporary operationalisation (2007–2025), revealing convergence around core principles (adaptivity, multifunctionality, participatory processes) while identifying persistent implementation challenges. The detailed critical review in Section 2.4.4 justified selection of these specific governance approaches as case studies based on their urban applicability and governance innovation. According to the finding from Chapter 2, thematic landscape management approaches of international policy or instruments embracing landscape approaches emerge:

Case studies of the LGA around Landscape Conservation:

1. Protected Landscapes are a transversal urban natural protection by International Union for Conservation of Nature (IUCN). Regarding IUCN's Protected Areas Management Categories, most sites of urban protected areas are recognised as IUCN Category II (national park) or IUCN Category V (protected landscape or seascape). Nevertheless, all six IUCN categories include protected urban areas (IUCN, 2014).
2. *Recommendations on Historic Urban Landscapes* by UNESCO champions the preservation of cultural heritage in historic urban landscapes (UNESCO, 2019, 2011).

Case studies of potential LGA around Landscape Transformation:

3. Urban Green Infrastructure (UGI) Approach as defined by the United Nations Environment programme (UNEP),
    - UNEP's Integrated approaches in Action (UNEP, 2022a)
    - UNEP's The International Good Practice Principles for Sustainable Infrastructure (UNEP, 2022b)
4. Landscape Charters with quality objectives as defined by the European Landscape Convention (ELC) adopted by members of the Council of Europe in Florence in 2000. The ELC recognises the importance of landscape as a fundamental component of the quality of life for individuals and communities and promotes a holistic and integrated Approach to landscape planning and management.
    - European Landscape Convention (Council of Europe, 2000b)
    - Landscape and Sustainable Development (CoE, 2006)
5. HPF Habitat Professional Forum Declaration (HPF UN HABITAT, 2022) as the roadmap was to be analysed together with the City Resilience Profiling Tool developed by UN-Habitat, A city resilience profiling tool for urban resilience strategic assessment, planning and management (HPF, 2022).

In this research, an instrument is defined as a tool, guide, convention, methodology, software, model, policy, blueprint, toolbox, guideline or standardised design and governance resource towards education, management and professional practice contributing to the urban transformative practices aligned to the RUL approach attributes. The thesis considered both instruments produced by landscape Approach governance and transformative designers aiming for sustainability. These include organising stakeholders, mathematical models, software to visualise data, and methodologies to foster new policies and tools for collaborative planning.

3.4.3 City Document Analysis: Examining Municipal Landscape Governance

City document analysis addresses all three Research Questions by examining how international landscape governance frameworks are operationalised at municipal scale. Analysis of policy documents and strategic plans reveals how cities translate international policy frameworks into local context (RQ1), identifies specific tools and mechanisms for operationalising landscape approaches (RQ2), and through city comparison supports identification of transferable implementation strategies across different governance contexts (RQ3). The case studies provide empirical evidence of landscape governance in practice, complementing policy framework analysis (Chapter 4) and professional perspectives (Chapter 6).

The operationalisation of landscape governance approaches in the urban context is tested in the research by defining three City case studies amongst cities for investigation of similar size amongst the many potential references that emerged from the data analysis of the first semi-structured interviews and the archive review.

This research examines Barcelona, Birmingham, and Montreal as city case studies, selected for their similar size, distinct cultural contexts, significant urban transformations, and accessibility of data. The three cities are relevant for this research due to their complex governance structures and significant focus on urban transformation, both of which align with the core research questions of this thesis. The selection follows specific criteria designed to ensure a balance between comparability and contextual diversity. It could be argued that their geographic distance and cultural differences make them differ, but these cities share key cultural diversity and a sustained commitment to sustainable development. Though none are their respective countries' capital cities, their voluntary urban transformations underscore their regional significance, making them more relevant as a case study. Focusing on three cities is sufficient to provide a diverse yet manageable sample, allowing for meaningful comparisons without overwhelming the scope of the research, ensuring a detailed and focused analysis (O'Brien, 2007). Access to relevant data are also facilitated through established professional and academic connections, further supporting the depth of investigation.

Barcelona, Montreal, and Birmingham, the cities chosen as examples for the city document analysis**,** were considered in terms of the factors in which the research focuses, conservation and transformation governance relating to natural, cultural heritages, landscape, and resilience. These cities, characterised by contrasting realities regarding the studied factors, were chosen

due to their relevance and the researcher's familiarity with their contexts, ensuring their suitability for in-depth analysis.

To systematically catalogue the tools and practices identified through city document analysis, this research adapted the categorisation framework from the World Bank's Landscape Approach 101 course (The World Bank, 2017). This framework organises implementation tools into five categories based on their function in landscape governance:

1. Multistakeholder identification: tools for identifying and mapping relevant actors
2. Shared vision: mechanisms for developing collective goals and objectives
3. Collaborative planning: processes for joint decision-making and strategy development
4. Suitable practices: specific design, technical, and management interventions
5. Governance and policy: institutional structures, regulations, and policy instruments

This categorisation provides a standardised framework for comparing implementation approaches across the three city case studies and identifying tool gaps in current practice. The framework is applied in Section 6.5 to organise findings on tools and practices that enable transformative knowledge generation in Barcelona, Birmingham, and Montreal.

A review presented the well-established case studies of landscape governance approaches, focusing on the limitations and detecting new exploratory trends.

The evaluation of each case study among urban landscape strategies shall identify and weight the different factors contributing to addressing complexity through landscape approaches: (a) Influences of International and local, sustainable directives, (b) conflictual land-use governance in an urban context, (c) a variable component related to tools and LA instruments emphasising their limitations and new exploratory trends.

The analytical procedure follows four sequential stages. First, systematic document retrieval identifies relevant municipal strategies, masterplans, governance frameworks, and policy documents for each city. Second, content analysis examines how each city translates international landscape governance frameworks into local policy and planning instruments. Third, comparative analysis across the three cities identifies convergences and divergences in implementation approaches, governance structures, and tool deployment. Fourth, systematic synthesis organises findings according to the World Bank categorisation framework, enabling structured comparison of tools and practices across Barcelona, Birmingham, and Montreal.

3.4.4 Semi-structured Interviews: Participant Selection and Protocol

3.4.4.1 Participant Selection and Profiling

Semi-structured interviews are used when conducting study research since they help to ensure that the selected participants freely reflect on their own understandings the study's objectives and research topic. This Case Study technique, embraced from both a constructivist and interpretive standpoint, enable us to profile the participants and gain insight into their judgement and experience.

After initial profile research to determine whether to target a specific individual, the researcher complemented the information obtained in the in-depth semi-structured interview with published literature recommended by the interviewee, projects, and past studies conducted that were referred to during the conversation (Baxter and Jack, 2008). The interviewees' insights on the Integrated Landscape Approach case studies are at the core of the research. Thus, to allow interviewees to participate and give their opinions freely, the thesis anonymised their identities. The purpose of this anonymisation was to maximise the content obtained through semi-structured interviews without limiting participants. Nevertheless, interviewee profiles outlining relevant education and career experiences were documented to inform participant selection and contextualise responses, as these details are relevant to the reader and shaped the selection of individual respondents. This Approach ensures that while the focus remains on the content rather than personalities, the high profile of the interviewees and the significance of their opinions are properly acknowledged. Thus, the research follows interpretivism and constructivism to interpret participant profiles when analysing data, revealing how backgrounds influence professional leadership and contribute to transformative knowledge creation.

The twenty-one interviews are analysed in two distinct stages: nine city-specific interviews providing local grounding for the city case studies discussed in Chapter 5, and twelve international-level interviews with built environment transformative professionals whose global influence on landscape governance is analysed in Chapter 6.

The decision of which specific profiles to contact is sequential and subedited to the three targeted groups delivered in the design phase.

— The first set of interviewees is selected for their direct contact with international institutions operationalising landscape approaches considered as potential case studies. The interviewees' selection is based wholly on their roles within the

organisations/projects selected to form the case studies. Most interviewees are likely to hold senior management/decision-making roles or be senior practitioners experienced in urban landscape studies. While in academia or practice, they also assess global organisations and thus trigger change. Institutional innovators: The total number of interviewees is six, including CoE Interviewee 1, IUCN Interviewee 2, ICOMOS Interviewee 4, UNESCO Interviewee 6, ISUH Interviewee 21, and UN-HABITAT RESILIENCE HUB Interviewee 7. The second group of interviews would aim to contact built environment transformative professionals with reflective practices compatible with landscape approaches with prestige and worldwide experience. Reflective practitioners: The total number of interviewees is four, including Reflective practitioners: Interviewee 10, Interviewee 18, IFLA Past President Interviewee 8, and UIA Past President Interviewee 9.

Interviewees are numbered according to the sequence in which they were recruited across all three groups, rather than by group membership. Numbers therefore do not run sequentially within each group.

- Activist academics leveraging their expertise to influence public discourse, anonymise.
- The total number of interviewees is two, including Interviewee 3 and Interviewee 5.
- The third target group aims to interview ten personalities directly responsible for the subcase studies, defined at the end of the process: The total number of interviewees is 10, including 3 from the BCN city case study (Interviewees 15, 17, and 19), 3 from the BHX city case study (Interviewees 14, 16, and 20), and 4 from the MTL city case study (Interviewees 6, 11, 12, and 13).

The comprehensive participant profile, encompassing twenty-one interviewees, reflects the nuanced and interdisciplinary nature of the study. As the interviewed personalities often belong to multiple groups, the participant profile reflects the rich diversity of nationalities, genders, and backgrounds that contribute to and build up the expertise that integrates the thesis.

The one-on-one qualitative method uses questions that are prepared ahead of time. It allows the Interviewer and Interviewee to focus on the most pertinent parts of the conversation and enrich the dialogue with open-ended questions (Adams and Cox, 2008). An important aspect of this method is the sample size, and while there is no consensus about how many participants to include, research suggests a larger range of 5 to 50 is adequate (Dworkin, 2012). The proposed research method was to interview 21 people, who were allocated into groups across: international institutional representatives, built environment built environment transformative

professionals with reflective practices, and local experts responsible for the city case studies; to gain insights on landscape approaches, professional judgement, and practical experiences that illuminated the gap between global policy and local implementation.

3.4.4.2 Interview Preparation and Data Collection

The planning and data-collection stages of case study research need the most attention. This involves creating a meticulous data collection plan and identifying relevant and accessible data sources (Yin, 2018). One also needs to ensure that key authorisations or permissions have been secured to conduct the study. The 2019–2020 ethical review approved by the Faculty study's ethical committee ensures that the procedure can be trusted and that the 21 interviewees are fully protected and that their privacy is maintained (Baxter and Jack, 2015).

The three-step ethical procedure consists of the following:

1. informing the interviewee of their options and privacy rights.
2. obtaining the participants' consent before the interview.
3. ensuring the privacy and anonymity of their data.

For case studies the data collection was organised by the following documents and templates:

- Interview Guidelines for semi-structured interviews.
- Internal interview protocol (personal use)
- Participant Information Sheet (sent to interviewees)
- Consent Form (sent to interviewees to be completed and signed)
- Template of 300 words background bio profiling the Interviewee (personal use)
- Matrix relating the interview's findings to the research questions (matrix 1) (personal use)
- Matrices clarifying all Interviewees' contributions to the research questions (matrix 2) (personal use)
- 6 RUL approach attributes template to relate the Interviewees' contributions to the 6 points.

All the interviews followed the procedure determined by the Interview Guidelines and documents previously approved by the Faculty Academic Ethics Committee. The conversations were recorded, transcribed, reviewed, and finally analysed, transferring findings into tables to better understand any disconnection between policy and practice. To sharpen the discussion,

the interview findings were benchmarked against the self-made redefinition of the Landscape Approach and its functional characteristics (6 RUL approach points).

3.4.4.3 Interview Data Analysis Procedure

Interview data were analysed using content analysis conducted manually. The analytical procedure employed the KA matrix (Section 3.3.1) as the primary analytical element to benchmark knowledge, with the six RUL attributes functioning as assessment criteria. Audio-recorded interviews were transcribed using Scribe transcription software. Two interviews conducted without recording were documented through detailed written notes. Transcripts were then analysed manually without qualitative data analysis software such as NVivo. Interview content was systematically assessed against the six RUL approach attributes, with responses organised in Excel matrices to enable comparison across participants and cities. This process involved reading transcripts multiple times, extracting relevant content for each RUL approach attribute, and identifying patterns related to implementation challenges, governance mechanisms, and local innovations. The KA matrix framework provided consistent analytical structure while allowing themes to emerge from the data.

The analytical process utilised Microsoft Excel to create charts enabling systematic comparison and contrast of interview content against the KA matrix framework. Interview findings were organised into comparative matrices that mapped content to the six RUL attributes, revealing patterns of alignment, divergence, and expansion across the 21 interviews. This process of comparing interview content through Excel charts against the KA matrix framework generated the findings presented in Chapter 6, with cross-source synthesis provided in Chapter 7.

3.4.4.4 International-level Professional Interviews

Chapter 6 analyses a distinct set of twelve international-level interviews with built environment transformative professionals selected for their global influence on landscape governance. These interviews differ from the nine city-specific interviews in Chapter 5 in both participant selection and analytical focus.

Participants were classified into two professional contexts:

Institutional representatives (six participants): Professionals working within or closely with international organisations including IUCN, UNESCO, Council of Europe, UNEP, and UN-Habitat. Selection criteria included leadership or advisory roles in international landscape governance organisations, direct involvement in developing or implementing landscape

governance frameworks, and geographic diversity across global regions. These participants provide insights into institutional capacity building approaches.

Reflective practitioners (six participants): Independent professionals, academics, and consultants with international practice portfolios. Selection criteria included international recognition in landscape architecture or urban design, portfolios demonstrating theory-practice integration, experience navigating institutional constraints, and classification as reflective practitioners, activist academics, or institutional innovators. These participants provide insights into professional capability development.

Interviews followed the semi-structured protocol described in Section 3.4.4.1, adapted to focus on implementation strategies, professional tools employed, and mechanisms for bridging theory-practice gaps relevant to RQ3. Interview duration ranged from 45 to 90 minutes. All interviews were conducted remotely via video conferencing, recorded with participant consent, transcribed verbatim, and analysed using the same Excel-based comparative matrix approach described above.

Analysis focused on identifying implementation strategies, tools and instruments used in practice, and mechanisms for integrating knowledge across theory, practice, and governance. Interview responses were assessed against the six RUL approach attributes using the same analytical framework, enabling comparison between institutional and professional contexts. Findings are presented in Chapter 6 organised by professional context (institutional representatives in Section 6.2, reflective practitioners in Section 6.3).

3.4.5 Project Studies Analisys: Award-winning Projects from the Barcelona Biennial

3.4.5.1 Making Meaning: Tools and Guidelines for Interpreting the Data

The second research method proposed is articulated around a case of study research. The thematic landscape management approaches embraced are combined with the city case studies under investigation. Data analysis entails analysing the instruments tagged as landscape governance approaches or Integrative strategies listed as thematic landscape management approaches and the city documents related to landscape and resilience as thematic landscape management approaches. The KA matrix (Section 3.3.1) provides the primary analytical framework for assessing project findings against the six RUL approach attributes. Thematic analysis, content analysis, and narrative analysis are thus combined in those case studies as a few of the strategies that can be used when analysing data (Yin, 2018).

This method of spotting and classifying patterns has proven helpful in qualitative research (Braun and Clarke, 2006). Similarities and differences between the data obtained similarly hint at the richness of diverse interpretations behind those patterns and differences. The 6-point document listing the functional characteristics of RUL approach is crucial in relating the data from Chapter 2's theoretical framework to the findings and sharpening posterior discussion.

Award-winning project analysis employed content analysis of archived documentation from the Barcelona International Biennial of Landscape Architecture. This archive review method involves systematic extraction and analysis of project materials to identify governance tools and design methodologies embedded in practice. The dataset extracted from the Rosa Barba Prize archive (the Biennial's main professional prize) comprised:

- International Jury minutes, as published in official catalogues and on the Biennial website (https://www.arquitectes.cat/iframes/paisatge/)
- Transcripts of lectures delivered by finalists during the Biennial symposium, providing authors' own descriptions of project methodologies and governance contexts
- Project documentation submitted by finalists, including plans, images, and written descriptions

Data analysis involved three stages. First, qualitative responses from jury assessments and author presentations were interpreted to understand how projects addressed landscape governance challenges. Second, individual project reports were compiled documenting tools, instruments, and methodologies employed. Third, findings were assessed for transferability (applicability to different contexts), dependability (consistency of approach), and confirmability (validation across multiple data sources: jury assessment, author description, project documentation), following (Lincoln, 1985) trustworthiness criteria.

Analytical frameworks employed included:

- Urban nature-based solutions (NbS) taxonomy according to IUCN (2021), enabling categorisation of project interventions by ecological function
- The six RUL attributes template (Section 3.3.1), enabling systematic assessment of how projects aligned with resilient urban landscape governance principles
- The KA matrix (Section 3.3.1), enabling comparison of project-based knowledge with policy frameworks and interview findings

Projects were assessed against the six RUL attributes using the 0–5 scoring criteria established in Section 3.3.1.1. Assessment drew on three evidence sources: jury evaluation comments, author presentations at symposia, and submitted project documentation. Triangulation across these sources increased scoring confidence, with convergent evidence across all three sources justifying higher scores (–5) versus evidence from single sources alone (2–3).

This archive review focused on finalists from 2014–2024, selecting projects in urban contexts. The selection strategy employed "maximum variation cases" gathering insights into how different factors influence landscape governance processes and result across diverse international contexts.

Such analysis needs a close reading of primary sources – interpreting them to see how they might be relevant to the research question. It also requires an interpretation that considers the other pieces of data in the review.

3.4.5.2 Detection of Systems of Tools for Projects – Processes to articulate the final Discussion

Beyond operationalising the five global policies as primary case studies in the three city case studies recognised as cities for investigation, several specific exemplifications emerging from the case studies were highlighted to enrich the Discussion Chapter. These award-winning project studies were referenced as exemplary projects extracted by benchmarking RUL approach against the Barcelona Biennial international urban finalists, to proceed to the extraction of tools to ensure processes to enhance transferability, dependability, and confirmability.

Furthermore, the transformative knowledge from the interviewees and the projects was aligned through the same KA matrix used for the thematic landscape management approaches and city case studies. The methodology was concluded by extending the semi-structured interviews' research questions to the Rosa Barba Finalists indirectly. Creating transcriptions of the Rosa Barba Finalist's lectures during the symposium, insights of the work methodology applied for each study project were revealed. These transcripts captured the perspectives of the authors on most of the interview questions.

Data generated through semi-structured interviews and archive review were intended to provide valuable referencing on the following aspects:

Personal experiences: semi-structured interviews helped reveal people's perspectives and personal technical experience with urban landscapes from an academic, decision-making , and professional practice point of view. Furthermore, reviewing the International Jury minutes from the Rosa Barba Prize helped researchers understand the perspectives held by various jurors at specific moments and identified the factors influencing those viewpoints.

Institutional processes and practices: The Barcelona International Biennial of Landscape Architecture archive reviews illuminated a project's context and provided insights into institutional procedures for a specific project process. Context and procedure were critical to this research topic as they linked design to integrated landscape governance. Therefore, reviews helped comprehend how institutions functioned and how difficulties were overcome, affecting decision-making processes.

Innovation and creativity: best practices referenced by interviewees and selected by jurors frequently called for a high level of invention and originality to be highlighted, among others. This creative aspect of the process, the city influencers making the project innovative, was used as a source for the research.

Impact on the economy and society: The effects of nature-based projects and GI in planning directly impacted the inhabitants' health, the city's economy and culture. An urban project (de Solà, 2008) embedded with the naturalisation for a city approach entailed a transferability of knowledge.

The structured use of matrix templates KA matrix was designed to connect the specificities of award-winning project studies to thematic landscape management approaches, contributing to bridge theory and practice. Many tailored KA matrix-based matrices were used: one to relate interviewee contributions to key findings of the RUL approach attributes, another to connect LGA policies to RUL approach 6 points, another benchmarking city landscape and resilience policies to the six points, and finally another for specific projects and plans against those attributes as findings. Applying KA matrix systematically aided in identifying potential challenges in understanding the change of scale. However, it also served as a means of validating the researcher's questions of the thesis.

3.5 Research Quality, Ethics, and Limitations

This section addresses the quality criteria, ethical considerations, and methodological limitations that shaped the research design and implementation.

3.5.1 Quality and Rigour in Qualitative Research

Ensuring methodological rigor within interpretivist-constructivist research requires criteria appropriate to qualitative inquiry. This research adopts Lincoln and Guba's (1985) framework of trustworthiness, comprising credibility, transferability, dependability, and confirmability as alternatives to positivist notions of validity and reliability.

Credibility was enhanced through triangulation across three data sources (policy documents, city case studies, and professional interviews), prolonged engagement with cases through iterative analysis, and member checking with interview participants where feasible. The systematic application of the KA matrix provided consistent analytical framework, ensuring all cases were examined against the same six RUL attributes while preserving contextual specificity.

Transferability was supported through thick description of research contexts, cases, and procedures, enabling readers to assess applicability of findings to other contexts. The research aims for analytical rather than statistical generalisation, where findings contribute to theoretical understanding across similar contexts. Dependability was maintained through systematic documentation of research procedures, with the KA matrix providing consistent analytical framework applied across all cases. Confirmability was showed through clear chains of evidence linking findings to source data, with interview transcripts, policy document excerpts, and project documentation providing traceable evidence supporting interpretations.

3.5.2 Ethical Considerations

During the first year of the thesis, a formal ethics review was conducted in accordance with BCU protocols and approved by Chair's Action on 25 February 2021 (Reference: Cervera/#7655/sub2/R(A)/2021/Feb/CEBE FAEC - 7641). This review was carried out after the articulation of the research methodology, once the RUL approach had emerged from preliminary publications presented in Chapter 1, though its attributes had not yet been defined. The review ensured that all employed methodologies complied with established standards and upheld integrity throughout the research process. Participant confidentiality in semi-structured

interviews required particular attention. The review provided guidelines to ensure that all interview procedures aligned with principles of responsible research practice. Consequently, all participants received information sheets outlining the research objectives and were informed before interview of their role in the project. Consent forms were distributed to ensure that participation was freely given. This requirement conditioned the recording of some interviews. Data protection measures complied with GDPR, specifying secure storage on the university cloud system, access restrictions, and retention protocols. Contact information was provided for any enquiries or withdrawal requests.

The selection of 21 expert interviewees was guided by a multi-scalar strategy to ensure meaningful contributions to both global policy and local knowledge of the cities under examination. To capture the 'Shared Language' of the field without linguistic bias, interviews were conducted in English, French, Spanish, and Catalan. This multilingual approach was fundamental for accessing nuanced professional discourse in the Barcelona, Birmingham, and Montreal contexts.

Participant selection was guided by explicit Equality, Diversity, and Inclusion (EDI) criteria to avoid reinforcing existing power imbalances in landscape governance discourse. Geographic diversity was ensured through the selection of professionals from multiple continents and institutional contexts, with representation from Europe, Africa, America, Asia, and Oceania. The recruitment strategy deliberately targeted high-level representatives from intergovernmental organisations situated at the intersection of nature and culture (UN agencies), as well as professional bodies within the built environment sector**.** Furthermore, international non-governmental organisations (INGOs) were purposively sampled to ensure a comprehensive representation of global landscape governance and advocacy gender balance was actively pursued, ensuring representation across gender identities rather than male-dominated professional networks typical of senior leadership. While the focus on high-level expertise (20+ years' experience) naturally weighted the cohort towards senior age brackets, the inclusion of mid-career transformative practitioners ensured a cross-generational perspective. Professional diversity encompassed practitioners, academics, policymakers, and activists.

The profiling focused on experienced, high-level senior professionals with recognised prestige, capable of developing globally relevant conversation. Final protocols were adjusted to ensure data attribution was consistent with participant anonymity agreements, resolving initial

contradictions in the draft phase. In accordance with BCU ethics provisos, all interviewees were given the opportunity to review the synthesised findings to ensure their views were accurately represented and that anonymisation levels were satisfactory before final analysis.

Participant Anonymity and Confidentiality

The research adopted a comprehensive anonymisation approach for all interview participants, reflecting both the consent protocols approved through BCU's ethical review and the specific requirements of individual participants. All interviewees were provided with a *Participant Information Sheet (PIS)* outlining the research aims and their right to withdraw at any time without penalty. The consent form explicitly guaranteed participants "the right to anonymity/confidentiality," and whilst not all participants formally returned signed consent forms, all were offered this option during the interview process. Some participants exercised their right to anonymity, requesting that their identities not be disclosed in the thesis or associated publications. Final protocols were adjusted to ensure data attribution was consistent with participant anonymity agreements, resolving initial contradictions in the draft phase regarding the balance between professional recognition and personal privacy. Data was handled according to UK GDPR standards and stored on password-protected university drives. In compliance with GDPR and the university's ethical provisos, raw interview transcripts are held securely and are not included in the public document. However, to ensure the thesis remains a stand-alone scientific work, the synthesised evidence, thematic analysis, and anonymised expert testimony are fully integrated into Chapters 5, 6, and 7, providing the necessary empirical basis for the study's conclusions.

All participants are therefore referred to by coded identifiers throughout the thesis text (e.g., Interviewee 1, CoE Interviewee 1, IUCN Interviewee 2). This approach serves multiple purposes: it protects those participants who specifically requested anonymity; it maximises the candour of responses by ensuring all participants felt comfortable expressing critical perspectives without professional risk; and it maintains focus on the content and expertise rather than individual personalities. In accordance with the ethics committee's provisos, all interviewees were given the opportunity to review the synthesised findings and transcripts to ensure their views were accurately represented and that the anonymisation levels were satisfactory before final analysis. However, recognising that participants' professional backgrounds, institutional affiliations, and career trajectories are highly relevant to interpreting their contributions and understanding their perspectives, detailed biographical profiles were

compiled for methodological purposes, documenting educational background, career experience, institutional affiliations, and areas of expertise for each interviewee. These profiles outline educational background, career experience, institutional affiliations, and areas of expertise for each interviewee, enabling readers to assess the significance and credibility of contributions whilst maintaining anonymisation in the main text.

This approach – anonymisation in text – balances multiple ethical and methodological requirements. It upholds participants' right to confidentiality whilst maintaining research transparency about who was interviewed and why their perspectives matter. It demonstrates that the research accessed genuinely high-level expertise (senior UN officials, past presidents of international professional organisations, leading academic researchers) without requiring these individuals to be publicly identified with specific quotations that might be professionally sensitive. The approach aligns with established practice in policy research and elite interviewing, where anonymisation coincides with access to insider perspectives that participants might not provide if their comments were directly attributable.

For the minority of participants who provided written consent and did not request anonymity, their biographical details were documented comprehensively for research purposes whilst their anonymisation in the main text is maintained for consistency. The alternative – selectively naming some participants whilst anonymising others – would effectively reveal who had requested anonymity through process of elimination, thus defeating the purpose of confidentiality protections. The systematic anonymisation approach therefore represents the most methodologically sound and ethically rigorous solution to managing varied consent statuses whilst upholding all participants' confidentiality rights.

Consent Documentation and Participant Agreement

All 21 participants received information sheets and consent forms in accordance with BCU ethical protocols. Seventeen participants returned signed consent forms documenting their agreement to participate. Four participants did not return forms despite follow-up reminders, though all provided explicit verbal consent at interview commencement, with confirmation either audio-recorded or documented in written notes that they understood their rights and agreed to participate. One participant provided verbal consent initially and signed a retrospective consent form three years later.

Two interviews were conducted without audio recording. One participant declined recording whilst providing full written consent; one telephone interview was documented through written

notes. This approach respects participants' autonomy whilst maintaining research integrity through alternative documentation methods. The approach aligns with established practice in qualitative research, where informed verbal consent and varied recording methods are recognised as ethically valid when appropriately documented, particularly with senior international professionals (British Sociological Association, 2017). The consistent anonymisation of all interview data ensures that participants without standard documentation cannot be identified and receive identical confidentiality protections.

The inclusion of thesis supervisor Professor Kathryn Moore as a research participant warrants explicit methodological justification given the potential for perceived conflicts of interest. However, her inclusion is not merely permissible but methodologically essential for three interconnected reasons. First, Professor Moore is a principal architect of Birmingham's innovative landscape governance framework, including her central role in developing the West Midlands National Park initiative: a pioneering urban national park model that represents precisely the kind of transformative landscape governance this research investigates. Excluding her would create a critical knowledge gap: studying Birmingham's landscape governance evolution without accessing the expertise of the individual who shaped its policy direction would be analogous to analysing legislation without interviewing its primary author. No other individual possesses comparable insider knowledge of Birmingham's governance transformation, making her contribution irreplaceable rather than merely convenient.

Second, her dual role as supervisor and research participant reflects established precedent in practitioner-researcher methodologies, where supervisors with unique field access or specialised expertise contribute as participants while maintaining distinct supervisory functions. This approach is common in professional doctorates, action research, and ethnographic studies where the supervisor's professional network or institutional position provides access to knowledge otherwise unavailable to the doctoral candidate. The methodological validity depends not on excluding such participants but on managing potential bias through transparent acknowledgement, rigorous analytical procedures, and triangulation. Professor Moore's participation was reviewed and approved through Birmingham City University's ethical review process (2020), indicating institutional recognition that the benefits to research validity outweigh concerns about procedural conflicts.

Third, potential bias is mitigated through multiple safeguards built into the research design. Birmingham case study analysis includes three interviewees, not solely Professor Moore,

ensuring her perspective is contextualised within broader professional networks. Documentary analysis of Birmingham's landscape policies and comparison with Barcelona and Montreal case studies provide external validation of claims made in interviews. Most critically, the KA matrix applies identical analytical criteria to all interview data regardless of source, meaning Professor Moore's contributions are subject to the same systematic assessment against RUL attributes as all other participants. Her interview data are treated as expert testimony about Birmingham's landscape governance rather than as supervisory guidance about thesis direction, maintaining clear separation between her roles.

Additionally, Professor Moore's voluntary role as UN expert and past leadership in international professional organisations provided access to a global network of landscape governance expertise that facilitated the identification and recruitment of other high-level participants. Her dual positioning – as both local practitioners shaping Birmingham's policies and global expert contributing to international policy frameworks – exemplifies precisely the multi-scalar knowledge integration this research seeks to understand. The alternative approach of excluding her would privilege procedural purity over empirical validity, creating a more significant methodological limitation: a knowledge gap regarding the most innovative aspects of Birmingham's landscape governance. Transparency about her dual role, combined with systematic analytical procedures and triangulation, ensures that her inclusion strengthens rather than compromises research rigour.

The overall expertise of the set of professionals directly informed the research, providing valuable insights. Furthermore, their volunteer role as UN experts or past presidents of an INGO allowed access to a unique network of knowledge.

The data collection process did not commence until the Faculty Ethics Committee approved the interview guidelines. This moment was crucial to ignite the internal interview protocol and elaborate on the necessary documents to ensure a successful and appropriate data collection process.

Interview schedules and anonymised participant profiles have been retained by the researcher and are available to examiners upon request; they are not appended to this manuscript in accordance with GDPR obligations and the ethics amendment approved following the viva.

3.5.3 Methodological Limitations

Several methodological limitations must be acknowledged. The research examined three cities and conducted 21 interviews, appropriate for qualitative inquiry enabling in-depth analysis but not permitting statistical generalisation. The geographic focus on primarily European contexts (with selective global comparison) means findings may have limited applicability to non-Western or Global South contexts where landscape governance operates under different institutional, cultural, and resource conditions. The temporal scope (2019–2024) captured landscape governance during a specific period including the COVID-19 pandemic, which may have influenced governance priorities in ways not fully captured.

The research acknowledges a Eurocentric perspective embedded within both the theoretical framework and methodological approach. The European Landscape Convention and related governance frameworks that inform the RUL approach reflect European democratic values, cultural heritage paradigms, and assumptions about the relationship between urban form, landscape, and citizenship that may not translate to non-European contexts. The emphasis on landscape charters, quality objectives, and strategic planning instruments reflects specifically European governance traditions that privilege particular forms of state-citizen relations, public participation models, and aesthetic-ecological values. This Eurocentric vision positions European approaches as reference points for democratic values embedded in urban form and landscapes, potentially marginalising non-Western governance traditions, indigenous knowledge systems, and alternative conceptualisations of human-nature relationships that do not align with European landscape discourse. The gap identified in Chapter 2 concerning the operationalisation of design-governance integration through time as an explicit dimension reflects European planning traditions that separate strategic vision from implementation, a separation less pronounced in other governance cultures. While the research includes global policy frameworks through UN agencies and examines cities across different contexts, the analytical framework itself – particularly the RUL attributes derived substantially from European landscape governance literature – carries inherent Eurocentric assumptions. The focus on knowledge embedded in professional practice and policy implementation, while addressing the progressive separation between academic research, professional practice, and policy domains, still operates within predominantly Western professional networks and institutional structures. Future research should examine how landscape governance operates within non-European epistemologies and governance traditions, rather than assessing non-European contexts against frameworks derived from European experience.

The practitioner-researcher positionality, while providing valuable insider knowledge, inevitably shaped interpretation. Professional experience in landscape architecture and urban design influenced what was noticed, how findings were interpreted, and which practice aspects were emphasised. Interview participants were primarily senior professionals with established expertise and institutional influence: appropriate for accessing high-level policy and practice knowledge but potentially underrepresenting perspectives from early-career practitioners, community-based organisations, or marginalised groups affected by landscape governance.

The KA matrix, while providing systematic analytical structure, necessarily simplified complex governance realities into six attributes. This analytical reduction enabled coherent cross-case comparison but may have obscured nuances not fitting the predetermined framework. The research aims for analytical rather than statistical generalisation, seeking theoretical insights applicable across contexts rather than empirical patterns that can be quantified and predicted. Findings are context-dependent, and transferability to other settings requires careful consideration of contextual similarities and differences.

3.6 Key Findings: Methodological Framework for Empirical Analysis

This chapter established the methodological framework underpinning the empirical investigation detailed in subsequent chapters. Grounded in interpretivist-constructivist philosophy that recognises knowledge as socially constructed and context-dependent, the research strategy adopts qualitative multi-case study design to develop and test the Resilient Urban Landscape Approach identified through literature review in Chapter 2.

Three key methodological learnings emerged.

First, the KA matrix emerged as an effective analytical innovation for landscape governance research. KA matrix addressed a fundamental methodological challenge of the thesis: how to systematically compare heterogeneous evidence (policy documents, city plans, interview data, project examples) without reducing contextual complexity. By assessing diverse sources against common criteria (6 RUL attributes) whilst preserving qualitative depth, KA matrix enabled rigorous cross-case analysis appropriate to interpretivist epistemology (Section 3.3.1). The two-stage Excel matrix procedure (RQ mapping, RUL assessment) indicated that

systematic analytical rigour does not require specialised software, challenging assumptions about qualitative data management.

Second, triangulation across knowledge sources proved not merely desirable but fundamental. The investigation revealed that no single data source – academic literature, policy frameworks, or professional practice – provides sufficient insight into landscape governance implementation. Each source illuminates' different dimensions: policy documents reveal normative frameworks but obscure implementation realities; city cases demonstrate contextual application but risk idiosyncrasy; professional interviews access professional tacit knowledge but require verification. The four complementary data collection methods (policy documents n=5, cities n=3, interviews n=21, projects database n=32) enabled identification of convergences, contradictions, and implementation gaps invisible within single sources. This multi - source design directly operationalised the integration across fragmented knowledge systems required to address Gap 1 (epistemological silos) identified in Chapter 2.

Third, practitioner-researcher positionality constituted a methodological asset when explicitly managed. Two decades of landscape architecture practice enabled recognition of tacit professional knowledge, access to senior practitioners' networks, and nuanced interpretation of practice-based discourse – advantages unavailable to purely academic researchers. However, this positioning required methodological safeguards: triangulation across multiple data sources mitigated confirmation bias, reflexive documentation made analytical decisions transparent, and the KA matrix framework prevented privileging practice knowledge over policy or academic sources (Section 3.1.3). The positionality proved particularly valuable in translating between academic concepts, policy frameworks, and professional practice – a translation capability central to addressing landscape governance's inherent boundary – crossing complexity.

These methodological learnings collectively demonstrate that landscape governance research requires approaches capable of systematic comparison across knowledge domains whilst preserving the contextual specificity that determines implementation success or failure. The framework established in this chapter enables the systematic investigation presented in Chapters 4 (thematic landscape management approaches applied to international policy frameworks), 5 (city implementations), and 6 (professionals and projects), before integrated synthesis in Chapter 7.

Chapter 4 – Analysis of International Landscape Governance Frameworks

This chapter addresses the first research question: How do landscape principles and LGA align with global agendas (i.e. NUA and SDA) to promote resilience and urban quality in the context of climate change?

To respond to this question, the chapter undertakes policy document content analysis from five major international landscape governance organisations identified in Chapter 3: IUCN, UNESCO, the Council of Europe, UNEP, and UN-Habitat. The analysis systematically evaluates policy documents, frameworks, and guidance materials from each organisation against the six RUL approach attributes – adaptive processes, place-based multiscalar approaches, quintuple helix innovation, conservation and transformation balance, ethics and environmental rights, and co-production – to identify patterns of alignment between landscape principles and global agendas.

Two of the five thematic landscape management approaches represent established landscape preservation approaches (IUCN and UNESCO), while three focus on non-conventional landscape governance approaches that address urban transformation through different conceptualisations of the urban landscape (Council of Europe, UNEP, and UN-Habitat). This selection reflects one of the central challenges this research confronts: the need to balance established preservation approaches with innovative strategies for everyday landscape recognition and urban adaptation.

The chapter is structured as follows: Section 4.1 presents the documentary corpus analysed for each case study. Section 4.2 reports the findings of the content analysis, showing how each organisation's policy documents address the six RUL approach attributes. Section 4.3 analyses these findings to identify patterns across the cases. Section 4.4 synthesises the analysis to draw conclusions about the alignment between landscape principles and global urban agendas, directly responding to RQ1.

4.1 Preservation-oriented Landscape Governance approaches

This section examines IUCN, a United Nations Advisory Body, as the first thematic study analysing established nature preservation approaches to landscape governance. IUCN's

framework emphasises ecosystem-based management that engages local communities while advancing biodiversity conservation in urban contexts. The organisation's approach integrates diverse fields and employs technology to support global collaboration in nature-based urban governance.

4.1.1 INTEGRATIVE approaches for Nature Preservation

This section examines the first policy document of a potential LGA administered by IUCN, a United Nations Advisory Body. Stemming from the terminology outlined in the previous chapter, nature preservation in the urban context is crucial for the thesis rationale as key features in the cityscape help integrate its natural heritage. The application of ecosystem-based management aims at the engagement of local communities and the advancement of traditional biodiversity conservation (Figure 4). It unites diverse fields, using technology to support global collaboration and inspire sustainable urban governance through nature-based approaches.

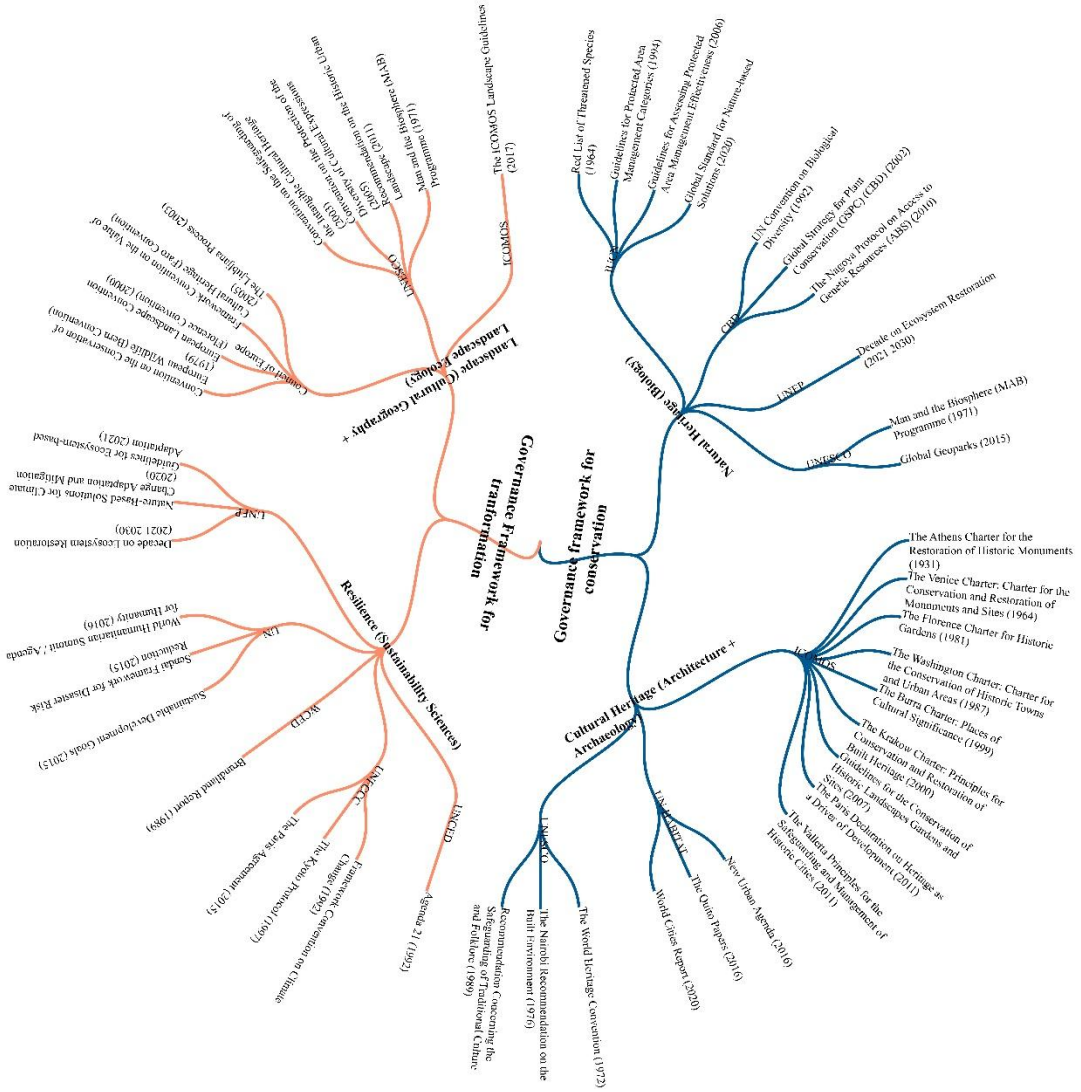

Figure 4. The diagram maps the relationships between different branches of natural and cultural heritage conservation and transformation, and the theoretical framework established by contemporary regulations and conventions (Source: the author).

4.1.1.1 Case Study 1: Nature Protected; Community Involved – The IUCN Landscape Model

The IUCN Protected Landscape Model

The International Union for Conservation of Nature (IUCN) is an advisory body of UN. It was founded in 1948 in Switzerland and it is the body responsible for developing the United Nations' first case study on landscape protection. IUCN is nowadays a leading global conservation organisation, known for *the IUCN Red List of Threatened Species* (IUCN, 1964). and the classification system for protected areas (Bland et al., 2019).

Protected areas are classified by the IUCN system based on management methods and objectives, defining permissible human impacts and operations. Officially adopted at the 1992 IUCN World Parks Congress in Caracas, this international system categorises protected areas by their primary management goals. However, national names and levels of allowed human intervention may vary (World Commission on Protected Areas (WCPA), 1998). The *Protected Landscape/Seascape* category emphasises managing significant human-nature interactions and prioritises sustainability over mere preservation. IUCN's approach supports local communities and poverty alleviation. It is suggested that categories I–IV are devoted to protected areas, while the focus on sustainable development lies in categories V and VI (Locke and Dearden, 2005).

The approval of the categories generated controversy. Scientists have criticised the understanding of categories V and VI as conservationist-based and claimed to rethink the categories towards a differentiation between conservation and sustainability (Shafer, 2015). Some experts propose four contemporary perspectives: the social-ecological landscape (Fischer et al., 2015);integration of social and biological tactics (Magris et al., 2014), the consideration of biological services (Harrington et al., 2010), and payment for biological services (Muradian et al., 2013). Shafer (2015)suggests that buffer zone land use constraints should be a specific governance measure for the "Protected Landscape" category to be viable. He supports the idea that urban landscape areas should have buffer zones integrated into them. These buffer zones should be given more importance, and ought to be treated according to the rules of the Protected Area (PA) to ensure an indirect conservation success for biological diversity.

Only positions in the first group are relevant as they integrate human and natural heritage. Combining urban life with protected landscapes has led to novel landscape governance approaches. This case study pioneers the integration of urban design with surrounding landscapes. The evolution in IUCN categories reflects the rise of resilience and panarchy as key concepts in adaptive systems theory (Folke et al., 2005).On the other hand, there has been success in academic prestige, and member states have ratified the European Landscape Convention (Scott, 2011). The concept of landscapes evolves from preserving "extraordinary landscapes" (United Nations, 1972b) to having a legal existence independently of its intrinsic qualities that consider all territories, whether rural or urban, exceptional or not. Michel Prieur, the author of the ELC and environmental lawyer, was an essential agent in shaping the legal entity of a cultural geographical conception. This idea emerged in 1977 in alignment with the common understanding of landscape genealogy, as detailed in the cityscapes section from

American's early cultural geographers (Roger, 1978). For the first time, the landscape was considered an essential scientific object without having to make an a priori value judgement. The new vision does not mean that the landscape has no value; it embeds the value bestowed upon it by a community. Since then, it has been accessible to everyone, democratised, and no longer limited to an economic or intellectual elite. It is scientifically observable and measurable (Prieur, 2008).

Category V of IUCN "protected areas" and "World Heritage Cultural Landscapes" focus on integrating nature and culture. IUCN's landscape approaches emphasise the role of local and indigenous populations as stewards, articulating their role as central in the management of their protected areas, empowering indigenous knowledge and enabling their active contribution to conservation efforts (Axelsson, 2012; Reed et al., 2014; Sayer et al., 2017). The landscape approach was seen as tool of unification for the socio-ecological authors, and the cultural landscapes promoted ELC intellectually, triggering the IUCN category reframe and adoption. For the purposes of this research, the new conceptualisation of the categories was a significant step forward from preservation in confined perimeters to the sustainability of broader and more diffused areas or landscapes.

Protected Landscape/Seascape Category V

The "Protected Landscape/Seascape" category V encompasses landscapes that have cultural, ecological and scenic values, and are managed to maintain those values while allowing sustainable human use (Trzyna, 2002) . This category might be the closest match to managing landscapes for preservation and conservation, contemplating its designable /planning potential and innovation in governance (Trzyna, 2002).

The ten principles guiding planning for Category V protected areas according to the IUCN outline are: plans should reflect local laws and customs; have a strong legal basis; use a systematic selection approach; link with other protected areas; consider international classifications; clearly define boundaries; accommodate existing landownership; have effective land use planning; involve diverse stakeholders; and build strong political and public support (Trzyna, 2002). The IUCN principles are significant when aligned with the Ten Principles for a Landscape Approach by Sayer et al. (2013a). There is a common interest in multi-scalar sustainability and stakeholder engagement. Furthermore, both mention the aim of conserving the landscape and biodiversity values. They also stress resolving conflicts while maintaining unique qualities, locating non-essential activities outside the area, maintaining high standards,

adopting adaptive management, and evaluating success through environmental and social outcomes.

The basic governance principles of Category V align with the alternative concepts of the LGA analysed in the literature review, such as the politics of scale defined by Görg (2005). However, the IUCN document "Management Guidelines for IUCN Category V Protected Areas Protected Landscapes/Seascapes" (WCPA, 2002) signals it as an antecedent of the LGA as described by Görg (2005). This frames the document within the Ecosystem Approach as antecedent to it (Secretariat of the Convention on Biological Diversity, 2004).

Developed under the Convention on Biological Diversity (CBD), the Ecosystem Approach aims to conserve biological diversity. The Ecosystem Approach is scientific and focuses on the biological organisation of ecosystems. It recognises and even celebrates the integral part humans, and their cultural diversity play in the ecological equation. The Ecosystem Approach is fundamental for guiding and connecting the different CBD programmes. Furthermore, the twelve guiding principles frame the Ecosystem Approach and emphasise that the fundamental objectives of managing land, water and living resources are societal choices that must be articulated by those concerned. Decentralising management to the lowest appropriate level is another principle that allows local stakeholders to have a voice in a process that directly affects them. The guidance to managers to consider the impacts of their decisions on adjacent ecosystems is another principle that encourages them to think in an ecosystem way. That suite of principles, quite naturally, leads to the conclusion that the conservation of ecosystems requires not just an ecological perspective but also understanding at the economic level. It is basal to have professionals from different disciplines working together and to integrate indigenous communities and stakeholders in order to influence landscapes that are protected under Category V. The core belief is that humans are part of the ecosystem; hence, sustainable landscape management demands the active involvement of communities, with the recognition that even conservation entails change.

The Protected Landscape Category V embraces the concept of transformation towards preservation. For its implementation, it is recommended to embrace management processes that are participatory, iterative, adaptive and flexible (IUCN WCPA, 2002). Participatory means that the community integrated into or around the protected landscapes must be an integral part of the process for management and implementation. Iterative means that the management should be conceived as an adaptive, cyclical, not a linear process. An adaptive process

inherently includes the ability to learn, making learning a fundamental aspect of its function. Finally, flexibility means that management and planning must read into the national and local circumstances, understanding effects at all scales and within different circumstances (IUCN WCPA, 2002).

Urban Protected Areas Guidelines

The IUCN document provided for protected areas in an urban environment is entitled "*Urban Protected Areas: Profiles and best practice guidelines"* (Trzyna, 2014). This document considers urban protected areas as areas sitting in or near larger population centres that need protection (IUCN WCPA, 2014). The urban landscape governances might have national, state, provincial, or local responsibilities, and NGOs, businesses, or community efforts manage some of them. IUCN guidelines exclude conventional urban parks and aim for complex landscapes with human and nature interaction that have been embraced as essential to a cityscape. It focuses on landscapes with high visitor numbers, multiple urban stakeholders, and threats from urban sprawl, increased use, and contraction. At the same time, all urban protected landscapes are fundamental to providing regular contact with nature to many of the city inhabitants; thus, they are crucial for nature conservation and are part of the city's image.

After investigating 15 cities as integral examples, the IUCN developed recommendations to manage urban protected areas (IUCN WCPA, 2014). On the one hand, this helps ensure universal access and promote local ownership while leveraging volunteers and support groups. Additionally, it allows the use of diverse technologies for communication as well as the use of tailored messages for different audiences. On the other hand, it enhances urban protected areas by connecting them to other natural spaces, conforming to green infrastructures.

Analysis: IUCN Alignment with Urban Governance Principles

Analysis of IUCN's framework reveals several critical governance mechanisms for urban protected areas. The framework emphasises institutional collaboration through partnerships with agencies, universities, and research institutions for manager training and knowledge development. A key finding is the framework's emphasis on adaptive learning, where continuous improvement derives from collaborative experiences rather than static guidelines.

Most significantly, the IUCN approach demonstrates recognition that urban contexts require governance flexibility, advocating for rule adaptation to suit urban settings rather than applying traditional conservation model's wholesale. This positions urban protected areas not as isolated

conservation zones but as integrated components of broader national and global conservation strategies, requiring context-specific governance approaches.

When evaluated against the Ecosystem Approach principles, the 30 guidelines for Urban Areas IUCN WCPA (2002) demonstrate substantial alignment, establishing a foundation for hybrid approaches to biodiversity preservation in urban contexts. The main controversies are centred on the confluence of urban protected areas with high ecological values with people's access and use and how communities and institutions should embrace their governance. The urban environment is pointed out in the Strategy 1 of section 2.1.2, the epitome of the conflict between people and nature, moving beyond the assets and species-oriented perspective to embrace a metabolic socio-ecologic systems-thinking approach.

While the IUCN case study highlights the importance of preserving natural heritage, the UNESCO Historic Urban Landscapes (HUL) approach offers insights into the governance of cultural heritage within urban environments.

4.1.2 Integrative approaches for cultural heritage preservation

4.1.2.1 Case Study 2: UNESCO's HUL – A Cultural Landscape Governance Tool

The previous section outlined IUCN's integrative approach to nature preservation in urban landscapes. This section examines UNESCO's framework for heritage preservation, which extends beyond individual World Heritage sites to encompass broader cultural and natural heritage protection in urban contexts.

UNESCO's approach to heritage preservation has evolved significantly since the mid-20th century. Interest in townscape preservation emerged during the post-war period (Delafons, 1997) when destruction of historic urban fabric triggered urban renewal programmes such as the UK's New Towns Act of 1946 and France's Nouvelles Villes Programme from 1969 (Fée et al., 2020). Scholars from Cullen (1961) to Kostof (1993) emphasised the importance of preserving cities' cultural, social, and environmental heritage, establishing intellectual foundations for contemporary heritage governance frameworks.

In time, organisations like UNESCO, ICOMOS, and later the Council of Europe have issued recommendations for protecting and managing cultural heritage. The first documents focused on monuments, as individual architectural building. Nevertheless, the scope broadened in the 1970s to include historical centres and later cultural landscapes. This evolution paved the way for viewing cities as living heritage by the turn of the 21st century (Ginzarly et al., 2019).

UNESCO's HUL – A Cultural Landscape Governance Tool

The second case study focuses on a particular tool developed by UNESCO, an arm of the UN that promotes urban preservation and the integration of governance processes across the world. The cooperation aspect of UNESCO's work is worth highlighting because the people UNESCO works with and serves, seldom speak with one voice. Looking into what they do and how they do it unlocks vast information about far-reaching practices that can improve the world.

The first definition of cultural heritage was developed by UNESCO in 1972 (United Nations, 1972), though more recently influenced by the ICOMOS Charter for Preservation of Historic Towns and Urban Areas, which defined the approach to cities as complex cultural landscapes (ICOMOS, 1987). The integration of the concept of landscape caused movement towards the ELC definition and shifted a cultural heritage understanding towards the many folded interpretations of the landscape, from landscape archaeology (Anschuetz et al., 2001) to Landscape Urbanism (Walheim, 2006) and Landscape Ecology (Forman, 1995). Cultural heritage is no longer concerned only with physical objects. The 2003 Convention for the Safeguarding of the Intangible Cultural Heritage (ICH) placed much greater emphasis on the "intangible values" and community connections that form the essence of a cultural group rather than on the group's physical objects of heritage (UNESCO, 2003). As a result of this vision, we now have a much more integrated perspective on heritage.

Development and Key Features of the HUL Approach

In 2013, the World Heritage Centre adopted the HUL recommendation (UNESCO, 2013). Francesco Bandarin was a key figure in shaping the discourse around intangible cultural heritage (ICH). He was a civil servant and driver of change, who served as the Director of the UNESCO World Heritage Centre. Through his position as an Assistant Director – General of UNESCO for Culture from 2010 to 2018, he championed urban heritage conservation with as a holistic approach with design-oriented perspective. His background in Architecture and Urbanism, also influenced by Aldo Rossi's mentoring, shaped his understanding of cities as layered historical records (Rossi, 1966). The design – oriented perspective is a turning point, as it is linked to landscape-led visions. Although urban areas constantly change, the need to value the pre-existing buildings, plots and streets exceeds their materiality. It recognises dimensions, patterns and relations among systems, making the materiality significant.

With this intellectual framework, Bandarin successfully promoted his vision through conventions that embraced concepts such as safeguarding intangible cultural heritage and

historic urban landscapes (UNESCO, 2013). He integrated landscape governance approaches from the scientific literature to support the UNESCO recommendation of the Vienna Memorandum, which calls for updated, integrative methods in urban preservation and development (UNESCO, 2013). The Historic Urban Landscapes (HUL) framework blends historic conservation with urban planning to maintain urban identity. The 2013 UNESCO tool on Historic Urban Landscapes exemplifies this approach, emphasising action in urban preservation and development and advocating the integration of governance processes. This tool addresses the growing complexity of urban systems and the need to understand interactions among city elements (Bandarin and van Oers, 2012).

According to Ginzarly et al. (2019) the HUL approach has three core features. First, it provides a comprehensive perspective of historic environments. Second, it embodies methods from multiple disciplines. Third, it is premised on principles that are based on values. They point out, however, that the challenge of effectively implementing value-based elements is not solved. This issue has also been addressed in recent literature (Cunha Ferreira et al., 2023). HUL research is better established in Europe, which is a direct consequence of the impact that UNESCO has had there and of the European research traditions in the "heritage in towns and cities" mentioned in the review section above (4.1.1.1 section). However, regions other than America, Africa, and Oceania have contributed little to this research. The 2020 systematic review of the HUL approach mentions the shift of literature towards operationalisation that had to be developed under six critical steps included in the 2010 roadmap to HUL (Rey-Pérez and Pereira Roders, 2020). Two sections of the Member States' roadmap outline key steps that are paramount to successfully implementing the historic urban landscape approach at the country level. Member States must first engage in comprehensive mapping and survey work to identify and understand the city's natural, cultural and human resources. The next step is to undertake "city development" or "city conservation" strategies that work within an urban development framework. The strategies prioritise the values of the city's urban heritage and seek to protect and conserve the resources essential to the city's urban heritage. The strategies also build in climate change and other socio-economic strategic assessments to identify what might make the resources vulnerable.

Analysis: HUL Implementation Challenges and Governance Implications

The local operationalisation of cultural heritage is a contested exercise where many interests collide and limit the HUL application (Ginzarly et al., 2019). Applying the Historic Urban

Landscape (HUL) approach locally is thus challenging. Nevertheless, landscape governance can manage HULs by balancing heritage preservation with urban development through inclusive decision-making and adaptive strategies to ensure equitable management.

This section has explored how international preservation frameworks, like IUCN and UNESCO's HUL, evolved beyond rigid protection to embrace inclusive, integrative governance. The thematic landscape management approaches show how legal, ecological, and cultural narratives can coexist, grasping the landscape values of the ELC although not mentioning them. These insights highlight that preservation is evolving into a dynamic, participatory process, emphasising the need for similarly dynamic approaches in transformation. This enables cities to preserve heritage while also addressing contemporary social and environmental needs, a topic explored in the next section.

4.2 Transformation-oriented Landscape Governance Approaches

Urban landscapes are constantly evolving, requiring governance strategies that embrace transformation alongside preservation. This section examines three thematic landscape management approaches representing non-conventional landscape governance approaches: the Council of Europe's spatial planning framework, UNEP's urban resilience initiatives, and UN-Habitat's urban development programmes. These frameworks address urban transformation through integrated strategic assessment, planning, and management approaches.

4.2.1 Integrative approaches for Urban Landscape Strategic Assessment, Planning and Management

This section examines the use of Urban Landscape Studies as a tool for integrated urban landscape management (Cervera and Mercadé-Aloy, 2024; Esteban and Arias, 2017; Nogué i Font, 2017). The Urban Landscape Studies are a replicable tool to produce a shared vision for the urban at an internal city council level, encouraging a collaborative environment among stakeholders and communities.

From an intellectual point of view, the Urban Landscape Studies stem from the Scapes of Place and Site approach from the terminology in chapter 2, linking with cultural geographers like Yi - Fu Tuan. Tuan (1976) was one of the necessary inspirations for Joan Nogué, later founder and director of the Catalan Landscape Observatory (Visentin, 2013), in his postdoctoral stay at the

University of Wisconsin at Madison. Tuan fathered humanistic geography, explaining in one of his papers that geography is the study of Earth as a home for humanity, and thus place and the complex meaning behind the term is central to the discipline (Tuan, 1976).

Joan Nogué, in his years as director, enriched the urban landscape linking it to ELC narrative with a multidimensional understanding that acknowledges the intrinsic connectivity between the tangible and intangible elements shaping our urban environments (Nogué, 2018) . Nogué's approach from the Observatory inspired the development of Urban Landscape Studies from this angle, originating the seeds of what the city of Barcelona would later develop as its own Urban Landscape Studies methodology.

The second case study of this section (Case Study 4) will explore the Urban Green Infrastructure (UGI) approach (UNEP, 2022b), curated by the UNEP, elucidating how the structural role of green spaces in the urban mosaic. The UGI can considerably change the quality of life in the city for the better as it promotes the infusion of vegetation into the urban environment, creating a network of green spaces that conserves natural ecosystem values and functions while establishing connections to natural ecosystems (Benedict and Mcmahon, 2016; UNEP, 2022b).

4.2.1.1 Case Study 3: How Local Studies Become Strategic Tools

The member states of the Council of Europe adopted the European Landscape Convention (ELC) in 2000. Moreover, many documents complementing its operationalisation have promoted policies for both these areas' conservation and sustainable development. The convention recognises that "the landscape is crucial for the identity of the European citizen and their quality of life (Council of Europe, 2000a). Beyond the enormous impact on the academic community and the renewed significance of the term, the ELC conceived a series of recommendations to promote its operationalisation around the signatory's member states. According to Article 5, every member state as Party undertakes the restraints of "Article 5 – General measures" section. The text has four components: (1) it recognises "landscapes" in law as part of the fundamental "surroundings" of people; (2) it "establishes and implements policies" for those landscapes; (3) it ensures participation in the process by everyone; and (4) it integrates landscape into law and planning (Council of Europe, 2000a).

The integration of urban landscapes into town planning is vital (Swanwick, 2009). This holds not just for urban design at the scale of the individual building but also for making towns and cities good places to live and work. Landscape – the quality of the built and natural

environment – has a huge impact on this (Landscape Institute, 2013). The European Landscape Convention (ELC) specifies this integration in its article 5. Article 6 further displays the tools or specific measures for ELC implementation (Council of Europe, 2000a). Article 6 further displays the tools or specific measures for ELC implementation: A. awareness-raising, B. Training and education, C. Identification and assessment and D. Landscape quality objectives.

While awareness-raising, training and education address general governance around the landscape, according to the ELC definition, the recognition and evaluation of the landscape through landscape quality objectives targets the professionals and is operationalised through Landscape Charters and Catalogues. This twin vision has been defined since the inception of ELC. It is essential to mention how, beyond the writing of the ELC that was developed through a process involving experts, diplomats, government representatives, and stakeholders from various European countries. Beyond the initial proposal by institutional innovator Adrian Phillips and the subsequent coordination of the drafting process by Riccardo Priore, the role of environmental lawyers Michel Prieur and Maguelonne Déjeant-Pons has been crucial to the ELC (Shuttleworth and Howard, 2025). Specifically, their work has driven the development of the methodologies, tools, and thematic documents necessary for the Convention's solid implementation and ongoing awareness (Déjeant-Pons, 2021; Prieur, 2022).

Landscape Charters, Landscape Catalogues, and the European Landscape Convention (CoE)

Once a national party adopts the ELC, new legislation is established to adopt the articles of the convention and make them compliant with national legislation. To implement landscape policies, each country must introduce instruments to protect, manage, and plan the landscape. To serve this purpose, the secretariat for the ELC has developed an annual workshop and thematic publications to share best practices across the member states while creating a professional European culture driven by the Steering Committee for Culture, Heritage, and Landscape (CDCPP) working group devoted to the follow up of ELC around the organisation of an annual prize. In the last two decades, two tools have been accepted as prevalent in the European context thanks to the ELC secretariat's coordination tasks and the outstanding practices of some parties to create a regional culture on the landscape. One of the most recognised examples of regional development of the ELC, as described by diverse authors (Nogué and Sala, 2018; Visentin, 2013) is the Catalonia Observatory for Landscape. In Catalan landscape law, the ELC is adopted in the detailed formulation of two differentiated tools, the Landscape Charters and the Landscape Catalogues.

Landscape Charters are guiding documents that transcend conventional planning approaches by developing stakeholder collaboration and creating shared visions for the future landscape. They facilitate the harmonisation of cultural, ecological, and historical dimensions, committing the communities to their landscapes in terms of trade-offs and quality objectives to achieve jointly. Landscape Catalogues differ from charters as they serve as compendiums of potentials and fragilities of the identified landscape units. They provide a comprehensive and accessible knowledge repository for informed decision-making . Some members states have equipped the landscape units with sets of quality objectives towards landscape preservation and transformation under sustainable development to be achieved in binding landscape planning (Nogué and Sala I Martí, 2018).

Landscape Charters, Catalogues, and the ELC collectively constitute a basal trio of instruments in Catalonia's contemporary landscape planning, management and governance. The abovementioned tools are fundamental to integrating landscape into territorial and urban planning. The emphasis on the participatory engagement of local communities ensures the recognition of the multifaceted values of landscapes, promoting a holistic perspective that acknowledges the intrinsic interplay between people and their surroundings. To identify and analyse the landscapes across its territory, address transforming forces and pressures, and consider local values, the catalogues and charters established quality objectives for each of the landscape units (Nogué I Font et al., 2009).

Urban Landscape Studies

Urban Landscape Studies emerging for ELC

Urban Landscape Studies have evolved significantly in recent years, emphasising landscape characterisation as a core tool (Butler and Berglund, 2014; Simensen et al., 2018)**.** To illustrate how ULS operates as a strategic tool in practice, this section briefly introduces two cities – Barcelona and Montreal – that have adopted this approach. These cities will be examined in depth in Chapter 5 as city document analysis but are referenced here to demonstrate the practical application of ULS methodologies derived from the European Landscape Convention.

Following the pioneer studies of perception led by Lynch (1960) in the context of phenomenology, mental mapping of the city has evolved. Collective transformation tools towards City Development Strategies (CDS) and City Conservation Strategies (CCS) increasingly integrate city inhabitants' perceptions. Fostering a holistic understanding of urban landscapes has also led to recognising distinct landscape units to consider inhabitants with an

identity linked to a specific area or unit. Employing instruments inspired by Landscape Charters and Catalogues facilitates governance through the identification of landscape units as a measure of both characterisation and governance. Notable examples of Urban Landscape Studies are seen in Barcelona and Montreal. Both cities have developed a systematic exploration of the city and metropolitan areas, respectively. The Barcelona Landscape Charter (Nogué i Font, 2017) and Montreal en Paysages (Poullaouec-Gonidec and Paquette, 2011) exemplify the commitment to defining landscape quality objectives following public consultation, as outlined in the European Landscape Convention (ELC). The Barcelona Landscape Charter considers the city as a field of study, recognising the Urban Landscape Units as city areas, each with a character and identity that give it its idiosyncrasy. The in-depth knowledge of the territory becomes an increasingly essential preliminary instrument for developing planning for actions in infrastructures and urbanisation, for interventions on the built heritage, and, in general, to guide political actions on the territory. This is why the city council body in charge of the urban landscape, Institut Municipal de Paisatge Urbà I la Qualitat de Vida (IMPUQV), founded by Ferran Ferrer Viana (Viana, 2001) has undertaken the task of carrying out landscape studies that provide this knowledge and formulate reflections and proposals for the interventions of preservation and design to care for the landscape, improve it, and value it as a common good for the citizenry. Barcelona's governance measure, published in 2016, permitted IMPUQV to allocate €3.7 million for 2017 to enhance the quality of the urban landscape and architectural heritage. Since 2017, a budget has been allocated to identify urban landscape units within the city, with the goal of generating quality objectives and enhancing strategic development towards sustainable development and urban quality. This initiative aims to strengthen comprehensive heritage management by expanding tools for knowledge, protection, and dissemination. It also seeks to promote architectural rehabilitation and other urban interventions with grants prioritising sustainability and energy efficiency criteria. Furthermore, the measure aims to advance data sharing and open access for knowledge and utilisation purposes (IMPUQV, 2016). It is likely that the set of these documents will become the Barcelona Landscape Catalogue once completed, namely by the year 2030.

Barcelona’s approach, grounded in the urban morphology tradition, will embrace the values of the ELC, advocating the definition of landscape units that are not coincident with the administrative districts and imagine the tools as a comprehensive reading for the city bringing together all key professionals running the governance of the city council and the neighbours’ representatives to deliver an institutional vision for the landscape units in the future

(Observatori del Paisatge, 2011). The structure elaborated by the IMPQV is to be followed by each one of the units examining an Urban Landscape Study and will include the following according to the internal index (Table 4) generated and provided by IMPQV to the teams commissioned to drive the urban landscape study:

Table 4. Internal Index ULS by IMPUQV

Section	Key Elements
(A) Introduction	**Urban Context**: Presentation of reasons for the detailed study of the area.
	Presentation of Reasons: Rationale for focusing on the specific urban area.
(B) Background	**Historical Study**: Historical context and development of the area.
	Reference Regulations: Overview of relevant regulations.
	Social Structure: Analysis of the area's social framework and dynamics.
	Other Existing Studies: Summary of prior studies and commissioned research.
(C) Analysis of the Variables	**Type**: Classification of the area and its components.
	Use: Examination of land use and function.
	Perception: How the area is perceived by different stakeholders.
(D) Conclusion	**Justification of Delimitation**: Explanation of the boundaries of the Urban Landscape Unit and its subunits.
	Values, Weaknesses, and Potentialities: Evaluation of the area's strengths, weaknesses, and opportunities.
	Landscape Quality Strategies: Proposed strategies to enhance landscape quality.

These conclusions (D) bring together the study's findings into a set of landscape quality strategies that align with ELC directives and connect with both planning and design, as well as governance departments within the city council. This comprehensive approach merits a closer examination through an in-depth subcase study to fully appreciate its applicability and effectiveness.

Meanwhile, Montreal Landscape Urban Studies (Poullaouec-Gonidec and Paquette, 2011; Ville de Montréal, 2009) are framed closer to cityscapes as a philosophical background, using the administrative neighbourhood as a working unit to trigger its inhabitants in a complex participation process that includes online surveys, allowing direct bottom-up governance to be

present in the decision-making of the future city landscape development (Poullaouec, 2011). Further examination of those case studies will evaluate the extent to which landscape governance approaches are embraced. It is important to notice that Barcelona and Montreal pioneer the field detailing how cities can effectively implement the principles of the ELC, ensuring that their landscapes are managed sustainably and equitably.

Montreal en Paysages describes the main methodological bases that contribute to the knowledge of the landscapes under both the physic spatial angle and socio-cultural (Table 5). There are four sections to determine the process (Poullaouec, 2011):

Table 5. Methodology index Montreal en Paysages

Section	Key Elements
(A) Reading Urban Landscapes	**A.1 Visual & Formal Perspectives**: Visual analyses, urban morphology, hybrid readings. **A.2 Heritage Perspective**: Historical landscapes, artistic and ordinary heritage values. **A.3 Spatiotemporal Perspective**: Territorial changes, townscapes, infrastructural turn. **A.4 Sociocultural & Experiential Perspectives**: Ethnographic assessments, urban atmospheres and experiences. **A.5 Ecological Perspective**: Urban ecology, metabolism at regional and local scales.
(B) Development of Collective Visions	**B.1 Forums**: Ladder of participation. **B.2 Scenario Workshops**: Landscape governance. **B.3 Collaborative Games**: Landscape governance. **B.4 Pecha Kucha Evenings**: Ladder of participation.
(C) Intervention Tools	**C.1 Commitment & Direction**: Statement of principle, landscape charter, strategic planning for ELC development. **C.2 Raising Awareness & Promotion**: Discovery trail, training activities, promotion of good practices. **C.3 Supervision & Support**: Planning and regulatory measures, advisory instruments to landscape governance.

Section	Key Elements
	C.4 Ideation & Projects: Design workshops.
(D) Tracking Transformations & Actions	**D.1 Landscape Monitoring**: Sustainability, landscape indicators.
	D.2 Landscape Indicators: Urban sustainability indicators.
	D.3 Project Audits: Urban sustainability indicators.
	D.4 Value - Added Assessment: Urban sustainability indicators.

First, all five thematic landscape management approaches demonstrate strong alignment with the 'place-based in multiple scales' attribute, confirming the importance of multi-scalar approaches to urban landscape governance. Second, the KA matrix reveals a progression from earlier frameworks (IUCN, UNESCO) that emphasise conservation and transformation balance towards more recent approaches (UNEP, UN-Habitat) that explicitly incorporate co-production and adaptive knowledge processes. Third, the quintuple helix innovation model remains unevenly implemented across frameworks, suggesting an opportunity to strengthen this dimension of integrated landscape governance.

The methodology structure is noteworthy as it systematically presents the objectives, possibilities of actions and tools for each section, corresponding to different stages of the intervention process. The broad range of perspectives and the call for action for each one made it an exemplary method, replicable to any urban context, and worth further examining in an in -depth subcase study.

Urban Landscape Studies Emerging from SEA and ELC

The Steinitz Framework for Geodesign is structured around six fundamental questions asked iteratively: (1) How should the landscape be described? (2) How does the landscape operate? (3) Is the current landscape working well? (4) How might the landscape be altered? (5) What differences might the changes cause? (6) How should the landscape be changed? (Steinitz, 2012). Critically, the framework's operationality lies not in providing prescriptive answers to these questions, but in organising collaborative processes that enable diverse stakeholders to negotiate complex spatial decisions systematically (Steinitz C, 2012). Carl Steinitz's work highlights the role of governance in urban landscape characterisation through this process-

oriented framework in conjunction with the European Landscape Convention (ELC) and Strategic Environmental Assessment (SEA).

In addition to Urban Landscape Studies from the European Landscapes Convention, Carl Steinitz's work highlights the role of governance in urban landscape characterisation (Steinitz, 2012). In conjunction with the European Directive 2001/42/EC – known as the Strategic Environmental Assessment (SEA) – this framework requires that environmental factors be integrated into all types of plans throughout the European member states. While embracing all the Landscape Ecology background, a contribution consisting of merging Landscape Ecology analysis with Computer Science stands out. Since the early 1980s, Steinitz has cooperated with ESRI, creating a framework that explores key concepts, historical context, and methodological insights (Lieske and Hamerlinck, 2023). Around the same time as the emergence of the Landscape Charters by ELC, Geodesign emerged, enabled by ESRI technology, with various ideas and techniques to engage all relevant stakeholders and diverse professional backgrounds in a collective effort to design the best possible solutions for spatial issues in urban and natural settings (Steinitz, 2012). This method helps leverage more of the tools and information within a unified process. Relying on the possibilities of computer science, Geodesign is an integrative approach that encompasses design and governance. Geodesign inception dates back to 2008, during a Spatial Concepts in GIS and Design workshop discussion. The main agents driving the new vision were ESRI co-founder Jack Dangermond and IT expert and designer Bran Ferren, who, together with Steinitz, were presenters of the initiative (Dangermond, 2009).

Geodesign Global Initiative (GGI) was founded by a group of professionals and Organisations aiming to foster global collaboration in the use of Geodesign practices to address complex environmental and urban challenges. Since then, it has facilitated numerous workshops, conferences, and projects around the world to advance the field of Geodesign. The GGI vision simultaneously displays an international and local vision, integrating local planning into global. Its locally bounded examination of an urban landscape is done through a methodology comparable to any other geodesign analysis worldwide (Batty, 2013a). Geodesign governance recommends place-based collaboration and centres a city's values over its simple visual aesthetics. Carl Steinitz's contribution since 2011 has been fundamental to building knowledge from practical case study workshops in cities worldwide. He promotes using Geographic Information Systems (GIS), aligned with ESRI's aiming to enhance a common digital cloud of

available landscape information for professionals, educators and the broader global community of GIS users (Campagna and Steinitz, 2016).

Batty (2013b) praised the Geodesign approach for emphasising landscape architecture and planning perspectives while integrating temporal dimensions into spatial decision-making . He underscored the significance of Geodesign tools in maintaining historical site information over time and observed that GIS is increasingly part of a global digital framework for spatial decision-making across spatial and temporal dimensions. However, the framework's true operationality lies in its capacity to structure collaborative processes rather than prescribe solutions; a characteristic that positions it as a governance tool rather than merely a technical methodology (Batty, 2013a; Steinitz C, 2012).

The International Geodesign Collaboration is thus relevant to this research, as it matches the purpose of the second strategy of the philosophical background. The initiative investigates the connection between contemporary theory and practice, challenging the limits of design and governance and integrating time into the equation. Some authors highlight the Geodesign methodology as a key framework in Landscape Architecture, emphasising its integration of ecological systems-thinking and sustainability science within the human-environment context (Gu et al., 2018; Huang et al., 2019). Thus, Geodesign can be considered for this thesis as an integrative landscape approach that combines digital technologies and landscape sustainability -related disciplines to design sustainable landscapes. Its participatory process and data-based planning offer a balanced approach that combines technological advancements with traditional planning knowledge and citizen input, helping to avoid the risks and limitations of data-driven planning (Buhigas and Sola-Morales, 2022).

This case study provides valuable insights into how local studies can become strategic tools within the RUL approach-based methodology, particularly addressing RUL approach attributes related to community engagement and contextual understanding.

4.2.1.2 Case Study 4: UNEP's Green Infrastructure Approach – Nature as System

In the 1970s, before specific terminologies tagged GI as a system of projects, the notion that a network of green spaces of different scales could provide well-being in the urban context and better cityscapes was present. In time, GI has evolved to adopt ecosystem services functions and mitigate climatic challenges, including natural infrastructure and nature-based solutions (NbS). Some exceptional designers, pioneers of Landscape Urbanism, have integrated GI and NbS as tools to develop their work further. Those designers, such as Field Operations (Corner,

1999) and Turenscapes (Yu, 2020), have curated a signature methodology, characterised their work, and, most importantly, led the ideology upon which the formal institutional definition of GI and NbS were built. The UNEP's Green Infrastructure approach will be evaluated using the six RUL approach attributes through the KA matrix.

Green infrastructure in NbS

The range and meaning of NbS have recently grown considerably, bringing in GI to deal with larger scales. This paper revisits the three main definitions of NbS to provide context for understanding GI as a systemic intervention that can enhance the sustainability of socio-ecological systems. According to the IUCN definition, NbS are actions that safeguard, handle, and rehabilitate ecosystems to resolve today's complex societal problems (Cohen-Shacham et al., 2019). The European Commission provides an alternative definition: NbS address sustainable environmental, social, and economic challenges by drawing inspiration from nature. They enhance existing strategies and explore new ones, often mimicking how natural systems handle extreme conditions (Davis et al., 2017). At its fifth session, the United Nations Environment Assembly (UNEA-5.2) formally adopted the first multilaterally agreed definition of NbS, establishing that they involve protecting, conserving, restoring, and sustainably managing ecosystems to address sustainability challenges while simultaneously enhancing human well-being and biodiversity (UNEA, 2022).

The multiplication of organisations adopting or generating definitions of NbS indicates we are moving towards a deliberate imitation of natural systems. NbS are a mechanism for transforming cities with a greater focus ecosystem health. Its broader application highlights the need for integrating nature into urban planning and policymaking. The NbS narrative to address global sustainability challenges is a global phenomenon.

NbS encompass a variety of approaches. Similar terms including ecosystem-based adaptation (EbA), green/blue infrastructure (GI/GBI/BI), integrated land management (ILM), sustainable land management (SLM) or catchment management and ecosystem approach. These diverse terms reflect the integration of environmental, social and economic factors in managing landscapes for sustainable development (Seddon et al., 2021b). Integrating those collaborative approaches infers the understanding of NbS and GI as collaborative planning embedded in a landscape approach. NbS can unite many policy areas, balancing conflicting land uses and natural resource management.

GI as Landscape Governance Approach (LGA)

The term Green Infrastructure was coined in the 1990s and rapidly influenced the rationales of policy guidelines and spatial planning (Seiwert and Rößler, 2020). Nonetheless, the interest in global initiatives stems from the production of foundational principles that embody integrative landscape approaches while landing them at a regional scale (European Commission Conference, 2010). The LGA accentuates the importance of managing urban green spaces and planning new infrastructures. Two central documents from UNEP set out the principles of Urban Green Infrastructure (UGI): *Integrated Approaches in Action* (UNEP, 2022a) and *The International Good Practice Principles for Sustainable Infrastructure* (UNEP, 2022b). More recently, UNEP (2024) has reinforced the case for integrating nature-based solutions into urban planning and infrastructure investment frameworks (UNEP, 2024).

The following case study will examine the UNEP's *Integrated Approaches in Action* and *A Companion to the International Good Practice Principles for Sustainable Infrastructure (UNEP, 2022c)* provide essential principles for effective urban green infrastructure (UGI) management. The ten important tenets of these documents are summed up as follows: make a strategic plan; serve responsively; consider the whole life cycle; assess and minimise environmental impacts; use resources efficiently; ensure equity and inclusiveness; provide clear economic benefits; plan for fiscal sustainability; make decisions transparently and use evidence to guide practices. These concepts, rooted in landscape ecology and the understanding of cities as complex Social-ecological Systems (SES), emphasise the need for integrative management and Adaptive Co-management (ACM). Armitage et al. (2009) identify ten conditions for successful ACM: well-defined resource systems, small-scale resource use, clear social entities, identifiable property rights, adaptable management measures, long-term institutional support, training and resources, key leaders, knowledge sharing, and supportive national and regional policies.

These have some implications that influence natural resource management's design and planning processes. The ACM of UGI encompasses a process that spans discipline and involves different stakeholders and scales (Armitage et al., 2009). Nevertheless, different authors highlight the need for established collaborative learning approaches to encourage ACM within urban contexts (Boud and Bearman, 2024; The James Hutton Institute, 2022). For instance, providing training and capacity-building resources indicate the necessity of incorporating changes in educational programmes (Antonini et al., 2021; Charalambous and Oliveira, 2024; The James Hutton Institute, 2022). Also, development skill initiatives could be embraced to

empower stakeholders to better participate in planning processes. In final analysis, the vital role that national and regional policies play in clearly backing co-management initiatives cannot be overstated. It is also important to have these policies align with one another and with the priorities of the co-management approach.

Some authors suggest that the education of professionals relating to the potential of GI is essential to contribute to creating the established collaborative learning approaches missing in ACM (Johnson et al., 2019; Lähde, 2020). Developing more concrete mechanisms for ensuring green infrastructure is central to the planning process which is crucial to cope with the following challenges for GI planning. This is a limitation because a lack of mechanism determines an impact on challenge resolutions through GI planning (Seddon et al., 2021). The construction of a governance framework provides practical guidance for those working at the local and regional level on turning such conceptual thinking into useable planning tools (Mell, 2008).

One of the earliest documents targeting professionals and providing multiple case studies distilling the vision, leadership, GI benefits and legacy is the Landscape Institute's Position Statement *Green Infrastructure. An integrated approach to land use* (Landscape Institute, 2013). The Landscape Institute in the United Kingdom promoted the notion of professionals integrating GI through Integrative landscape approaches through this publication as early as 2013, pioneering the generation of a transdisciplinary landscape culture. Birmingham also hosted the Green Infrastructure and Design Conference, , which sought to boost the use of GI in urban settings and was co-organised by the Institute of Ecology and the Landscape Institute. Furthermore, the Landscape Institute's Position Statement produced afterwards had a significant impact on IFLA. The results presentations in the IFLA World Council, generated the inception of the IFLA Green Infrastructure (GI) Working Group in 2015.

Academic authors promote establishing a governance framework and proposing structured systems of stages and principles to guide the professional implementation of GI and NbS. For example, certain authors, such as Raymond et al. (2017a), have delineated a seven-stage framework to assess and implement nature-based solutions. NbS begins with identifying a problem or major opportunity and assessing the NbS opportunity. At the next level, it engages stakeholders and partners at various scales in the design and implementation of the NbS. The final stage entails the evaluation of the NbS and its multiple co-benefits during and after implementation. This framework helps guide the identification of multiple values in NbS implementation (Raymond et al., 2017b).

4.2.2 Integrative approaches for Urban Resilience Strategic Assessment, Planning and Management

The last case study is framed within urban metabolism. Descending from the line of thought initiated through the vision of Geddes, who viewed the city as a complex, dynamic organism, the stress, in this framework, is centred on balance, adaptability and resilience. Geddes might be viewed as one of the first authors to appreciate the organic intricacies of urban spaces (Batty and Marshall, 2009). Urban metabolism aligns with Sustainable Urbanisation and city resilience. Holling (2002) introduced the concept of ecological resilience in the 1970s, adopting resilience together with adaptive management and the dynamics of complex systems (Folke et al., 2004). Holling's (2002) research illustrated how biological systems are intertwined with social processes defining resilience. Holling's influence shifted to the cultural understanding of nature towards its ecological vision of the environment. The substitution of nature for environment analyses its functional processes and overlooks the poetics of nature. The nuances between landscape, environment, and garden are examined in the *Jardin en movement,* highlighting the impact of the new paradigm towards an objective and processual understanding of nature (Clément, 2012).This perspective aligns with what has been described as an "ecology without nature," which extends to a planetary scale (Morton, 2019).

The application of resilience theory in urban development is currently oriented in three main directions. Firstly, there is multidimensional research into global urban resilience, exploring diverse aspects and challenges (Kong et al., 2022a). Secondly, there is a focus on urban resilience specific to the developmental backgrounds and past disasters experienced by countries (Rezvani et al., 2023). Lastly, quantitative assessment tools such as simulation models and optimisation techniques are employed to gauge urban resilience (Kong et al., 2022b).

While there is extensive academic research in the first direction, governmental and global agencies are focused on future risks and uncertainties that must be considered when planning for emergencies, embracing the second vision. Finally, the private sector spotted a direct application of resilience theory in urban development to assess global investment choices, developing the research around quantitative assessments. The quantitative assessment unveils a new vision of how investment should be evaluated. Within this vision of a resilience approach, divergent drivers emerged, conforming to a contrasted panorama but triggering the emergence of various networks of cities eager to compare and share alternative ways of measuring resilience and searching for best practices and methods (Datola, 2023).

Resilient City Network

However, the creation of networks is influenced by contrasted interests behind the Global Resilient City Network compositions and driving agents (Resilient cities network, 2020). On one side, the private stakeholder is pioneering and triggering a change in the conception of the profiling and evaluation of cities towards investments. On the other, the initiatives of several United Nations agencies promote resilience profiling to mitigate the effects of disaster events. The drivers towards the new vision, private and public, have determined the resilience assessment in the last decades.

ICLEI and the Resilient Development Programme

The concept of Resilient Cities was first articulated by ICLEI in 2002. It was presented during the UN World Summit Johannesburg. At this summit, ICLEI launched the Local Agenda 21 campaign, reinforcing the significance of governments in advancing sustainable development. ICLEI established from that year a series of partnerships on urban resilience with various UN Agencies and Programmes, including UNDRR, UNDP, UN-HABITAT and UNEP (Zhu, 2022). As a result of those relationships, ICLEI has been developing tools and methodologies to assess resilience. The Resilience Maturity Model is the most popular tool (Tubis and Werbińska-Wojciechowska, 2021), providing a database of policies to evaluate a city's stage of resilience maturity. The six vectors evaluated per each city are leadership, resources, governance, preparedness, infrastructure and cooperation (Smart Mature Resilience Project, 2018).

C40 cities and C40 Knowledge Hub

C40 Cities is a global network of cities aiming to share insights to tackle climate change. The original consortium started out in 2005 with 40 cities and their mayors to discuss reducing greenhouse gas emissions and promoting urban sustainability. At the network's core lies a knowledge hub for city officials, featuring tools such as the C40 Cities Climate Action Planning Framework. All tools are conceived to aid cities in executing climate strategies (Davidson et al., 2019). The funds to support the network come from some governments of the member cities, Bloomberg Philanthropies, or the Children's Investment Fund Foundation. The network framework prioritises transformative climate action and effective governance. Moreover, it integrates governance with planning while incorporating adaptive management throughout disaster risk management processes (Sharifi and Yamagata, 2017).

100 Resilient Cities and the City Resilience Index (CRI)

The 100 Resilient Cities initiative was set up in 2013 by the Rockefeller Foundation. In a way it was acting as a counterpart to C40 but aiming to build resilience. The network aims to improve urban areas' resilience to environmental and social or economic challenges. This initiative was heavily influenced by the Rockefeller Foundation. Its historical involvement with urban landscapes can be traced back to Jane Jacobs' work, which word was supported by several Foundation grants. In *The Death and Life of Great American Cities*, Jacobs (1961) critiques renewal policies and supports renewed community-centered planning.

The evolution of her thoughts through the Foundation philosophy has shifted from urban quality to resilience. The focus, since 2013, is on characterising urban resilience as people's capacity to withstand, adapt, and flourish under difficulties and pressures(Lowe et al., 2024). The effort focused on selecting one hundred chief resilience officers worldwide and devising some interesting new tools: the City Resilience Framework (CRF) and the City Resilience Index (CRI). Both CRF and CRI are tools that assist decision-making for urban investments (Cheek and Chmutina, 2022; Lowe et al., 2024). It displays the vulnerability, employment, health, community support, and services in a spider web diagram (The Rockefeller foundation, 2020).

4.2.2.1 Case Study 5: Profiling Cities for Resilience

While the C40 and 100 Resilient Cities have been developed through private funds, the UN agencies have also tried to promote resilience through various initiatives. For instance, the United Nations Development Programme (UNDP). UNDP helps countries build resilience against climate change. In parallel, the UN Office for Disaster Risk Reduction (UNDRR), proposes profiling city resilience to prepare for natural or humanitarian disasters. Both UN bodies found strategies in the Sendai Framework (Nations Office for Disaster Risk Reduction, 2015) and the earlier Hyogo Framework for Action 2005–2015. Yet another UN agency offers a tool to be considered in the research that embraced integrative management approaches. UN-Habitat offers the Resilience Global Programme, a systematic approach towards facilitating technical cooperation among cities (Un Habitat, 2020).

The City Prosperity Initiative (CPI), also launched by the UN-Habitat in 2012, assesses city prosperity by examining dimensions such as quality of life, equity in resource distribution and resilience to urban challenges. This index identifies strengths and weaknesses. It guides decision-making towards more balanced and sustainable development. Cities entering the

agreement for CPI need to involve the main players in the local situation and build local capacity through training. The data are normalised and weighted to guarantee comparability across all sixteen global dimensions. This allows the computation of composite scores for each dimension and an overall CPI. The follow-up analysis of the CPI is done through several methods. The first is the model's SWOT assessment. This is done to identify what parts of the model work well, what parts do not, and what can be done to improve the model. The second method is benchmarking. This method determines how well the model works relative to similar models or processes. Once these two analysis methods have been performed, a report is created and shared with the main stakeholders and the public (UN-HABITAT, 2016).

The evolution of the CPI experience brought the City Resilience Global Programme to develop UN-Habitat Urban Resilience Hub. The hub is conceived as a network of partner organisations and institutions focusing on resilience. This hybrid professional and academic network is fundamental to the City Resilience Profiling Programme (CRPP). The CRPP employs an innovative, multi-scale, multi-sector, multi-hazard and multi-stakeholder approach to risk reduction that goes beyond the conventional methods and is tailored to each city we work in. The city profiles are designed to serve as "guideposts", highlighting opportunities and challenges that illustrate the path to urban sustainability (Sharifi and Yamagata, 2017).

The CRPT assesses urban resilience along five critical dimensions. The first, spatial parameters, covers the settlement pattern and the distribution of populations from the local to the global scale. The second, organisational parameters, deals with the forms of environment - making that both formal and informal groups undertake. The third critical dimension, physical parameters, includes all infrastructure, from the basic to the very complex, that forms the urban physiognomy. The fourth dimension is functional parameters, which range over all the urban systems – both essential and ancillary – that provide the basic urban services and the even more complex urban flows. The fifth and final critical dimension is temporal parameters, which focus on the continuous evolution of settlements, cities, and the urban system. The urban resilience framework (Lowe et al., 2024; Sarda and Bahadure, 2023) is characterised by the search for persistence, adaptability, and inclusivity at all stages. In the early stages, UN-Habitat gets local authorities involved through training and communication. Next, it conducts a comprehensive data collection exercise in scope and scale. This involves the input of not just local authorities but also – but not limited to – state and national-level authorities and various kinds of stakeholders. The data cover more than just the local context; they cover historical context,

governance, demographics, hazards, and infrastructure. This data are then analysed to identify cross-cutting issues and develop actionable strategies for resilience (Lowe et al., 2024; Sarda and Bahadure, 2023) .

The experience through the tool application in various contexts generates a series of recommendations, “Actions for Resilience”, which provide a roadmap for implementing preventive measures based on empirical data about urban challenges. The methodology's last stage entails presenting this sequence of actions to stakeholders, defining roles and responsibilities towards a consensual action plan (UN-Habitat, 2018).

An example of resilience city profiling is found in Medellín, Colombia (Jha et al., 2013). This city has been implementing an intersectoral governance mechanism focusing on participatory decision-making and multi-stakeholder partnerships for resilience building. Medellín was one of the first cities in the world to use this approach – one that aligns with the ten landscape governance principles of Sayer et al. (2013a) – and among the first to apply the CRPT at city scale. Today, the city has engaged in various high-budget projects, two of which were finalists in the Rosa Barba Prize, regenerating both the city centre, *The tropics and the built landscape Urban Centre of Medellin Colombia* and the riverside *Medellin River Parks*.

Still, several authors have argued that urban resilience serves as a representation of the city. "Cities use the term 'urban resilience' as part of a branding exercise” (Naef, 2020; Sobhaninia et al., 2024). Even though they use the term, however, the way urban resilience is implemented sometimes leaves much to be desired. In some cases, urban resilience leads to "a business-as-usual model, a neglect of social justice, or both" (Anguelovski et al., 2016).

4.3 Cross-framework Analysis: Application of the Knowledge Alignment Matrix

This section examines how the six RUL approach attributes align with the thematic landscape management approaches detailed in 4.1. and 4.2 through the Key Attribute Matrix (KA matrix) that emerged from the Methodology chapter. (Table 6) presents the results of this evaluation, showing how each case study operationalises the attributes in pursuing zero-carbon landscapes that uphold landscape quality objectives.

The systematic application of the RUL approach to these five thematic landscape management approaches directly addresses Research Question 1: 'How do landscape principles and LGA

align with global agendas to promote resilience and urban quality in the context of climate change?'

Table 6 evaluates RUL approach attribute alignment across the five thematic landscape management approaches: IUCN Urban Protected Landscapes (section 4.1.1), UNESCO Historic Urban Landscapes (section 4.1.2), Council of Europe Urban Landscape Studies (section 4.2.1), UNEP Urban Green Infrastructure (section 4.2.1), and UN-Habitat City Resilience Profiling Tool (section 4.2.2).

Table 6. Table MJR. Thematic landscape management approaches benchmarked against RUL approach attributes using the Knowledge Alignment matrix (Source: the author)

RUL approach	Urban Protected Landscapes (IUCN)	Historic Urban Landscapes Recommendation HUL (UNESCO)	Urban Landscape Studies ELC (CoE)	Urban Green Infrastructure (UNEP)	City Resilience Profiling Tool (UN HABITAT)
Adaptive processes for knowledge creation in complex systems	Systematic approach for category V selection	Assess vulnerability to socio-economic stresses and climate change; develop a city development or conservation strategy	Tracking actions and transformations; identify variables in human- environment systems; explore social, economic, and ecological relationships	Life cycle assessment of sustainability to avoid adverse infrastructure impacts; enhance resource efficiency and circularity to minimise footprint and increase service efficiency	Recognise time as the fifth element - cities evolve continuously
Place based in multiple scale. Area of control and area of influence	Define protected area boundaries; ensure planning flexibility for landownership and institutional roles; establish an effective land use planning system	Conduct comprehensive surveys and mapping of the city's resources	Reading urban landscapes; altering spatiotemporal patterns; consider multiple scales	Avoid environmental impacts of infrastructure; invest in natural infrastructure for cost -effective, beneficial services	Spatial parameters: human settlements are situated and distributed across various spatial scales, from local to international
Towards a Quintuple Helix of Innovation Model	Plan Category V areas with links to other protected areas and broader bioregions; consider international protection classifications; build strong political and public support	Establish the appropriate partnerships and local management frameworks for each identified project for conservation and development	Use indicator-based assessment, valuation, and modelling for ecosystem services; develop sustainability indicators for environmental, social, and economic dimensions; geodesign includes	Enhancing economic benefits through employment and local support; fiscal sustainability and innovative financing for infrastructure	Functional parameters: describing processes and flows through an urban Literature Review, Metabolism vision
Conservation and Transformation: SD and complex system resilience	A robust legal basis for Category V protected areas is required		Intervention tools: strong vs. weak sustainability. Weak sustainability allows substitution between natural and human-made capital	Strategic planning for aligning infrastructure with sustainability agendas and strengthening the enabling environment;	Physical a parameter: from simple dwellings and unpaved village roads to complex mega -city environments
Ethics and Environmental rights	Planning should align with the laws, customs, and values of the society	Monitoring, evaluating, and impact assessment	The sense of place as defined by sense of place	Equity, inclusiveness, and empowerment through balanced social and economic infrastructure investment to uphold human rights	
From Consultation to Co-production	Planning must involve participation from national, regional, and local interests	Reach consensus through participatory planning and stakeholder consultations on values to protect and pass to future generations.	Development of collective visions	Transparent and inclusive decision-making with stakeholder analysis, public participation, and grievance mechanisms; evidence-based decisions	Organisational parameters: groupings of people for a common goal, whether formal, informal, corporate, or political

This captures the qualitative textual evidence extracted from each policy framework, showing how they address the six RUL approach attributes. However, for better visualisation of the matrix contents a unified KA matrix visualisation is considered. A radar chart is chosen as a visualisation tool that enables direct comparison between policies. The transition from this qualitative evidence to quantitative scores (0–5) requires interpretation. For each attribute, the scoring considered whether the framework merely mentions the concept or provides operational mechanisms for implementation. UNESCO - HUL's reference to "participatory planning and stakeholder consultations on values to protect and pass to future generations" scores 4 because it articulates both process and intergenerational purpose, indicating genuine operationalisation beyond rhetoric. IUCN's statement that "planning must involve participation from national, regional, and local interests" scores 3: participation is mandated but mechanisms remain unspecified. This interpretive process acknowledges that translating policy language into numerical values carries inherent subjectivity. Nevertheless, the consistent application of scoring criteria established in Section 3.3.2, combined with documented justifications for each score, ensures methodological transparency whilst recognising that professional judgement remains central to qualitative assessment.

Figure 5 provides a comparative visualisation of how each landscape governance international policy framework aligns with the six RUL approach attributes. This radar chart highlights the relative strengths and complementary nature of these policies, demonstrating how collectively they address all dimensions of resilient urban landscape governance. As will be shown in Chapter 5, these international policies inform municipal implementations in varying degrees across different urban contexts.

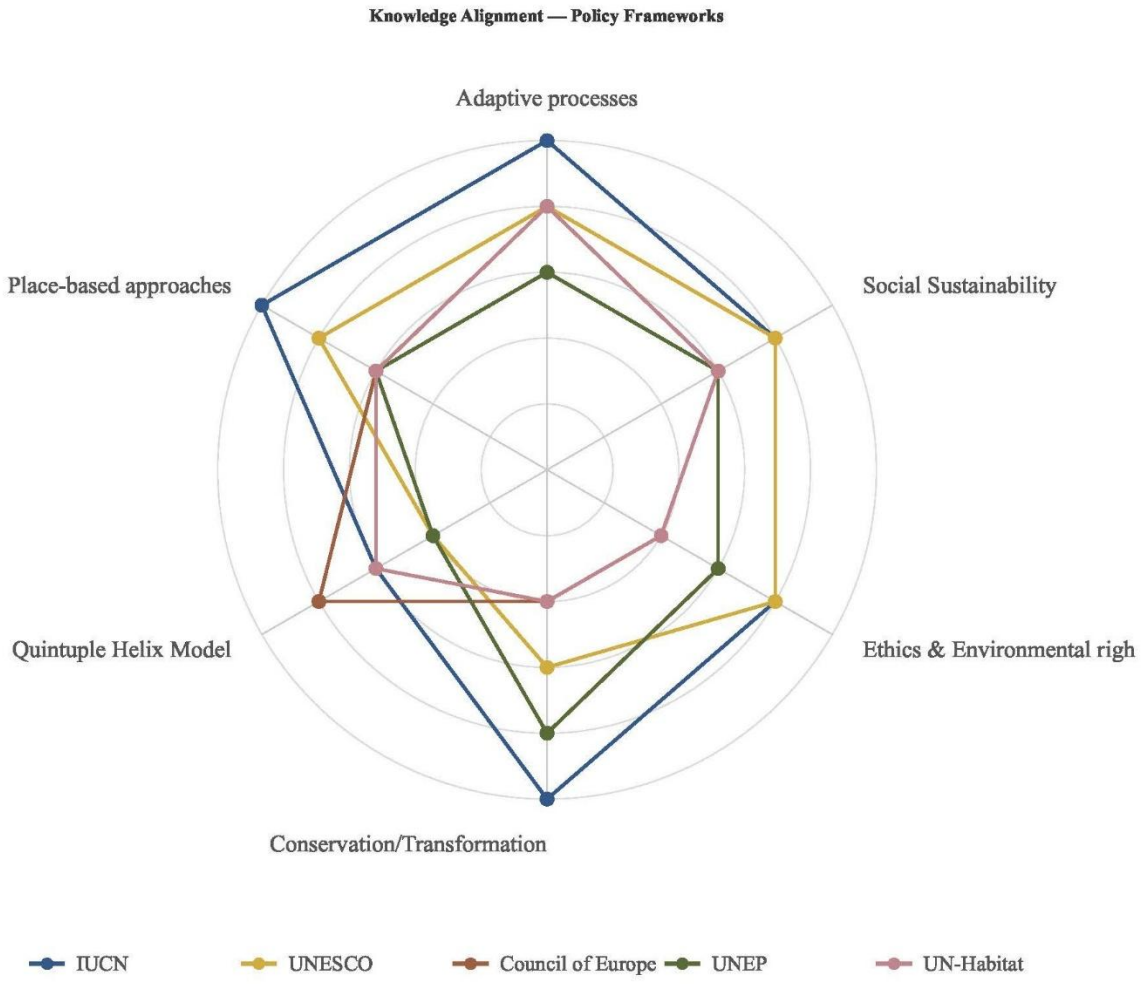

Figure 5.The radar chart visualises how each international policies align with the six RUL approach attributes on a scale of 0 centre-5 outermost. (Source: the author)

Figure 5 visualises how each international policy framework aligns with the six RUL approach attributes using the 0–5 scoring scale defined in Section 3.3.2 of the Methodology chapter. Assessment was based on systematic content and discourse analysis of policy documents (Section 3.4.1), with scores reflecting the depth of operationalisation evident in each framework: explicit implementation mechanisms and documented application scored higher (4–5) than aspirational statements or minimal guidance (1–2).

Considering the findings of the table and chart, the following reflections emerge.

4.4 Key Findings: International Framework Alignment with RUL Attributes

The systematic application of the KA Matrix to five thematic landscape management approaches successfully addresses RQ1. Analysis reveals how landscape principles and LGA align with global agendas through process-based adaptive management, multi-scalar governance structures, and collaborative stakeholder engagement mechanisms. The analysis of these five thematic landscape management approaches reveals consistent patterns in how successful landscape governance approaches address urban complexity. The IUCN and UNESCO cases demonstrate the evolution from object-oriented preservation to process-based adaptive management of complexities. The UNEP analysis identifies a philosophical shift from asset-oriented preservation towards metabolic socio-ecological systems thinking, supported by institutional collaboration mechanisms linking agencies, universities, and research institutions. Within the ELC framework, Montreal's landscape studies emerge as methodologically innovative with systematic presentation of objectives, actions, and tools deemed replicable across urban contexts, while Barcelona's approach successfully connects landscape quality strategies with governance departments. The UNEP green infrastructure analysis reveals a critical education gap where professional training in GI potential is essential for establishing the collaborative learning approaches currently missing, compounded by a deficit of concrete mechanisms for integrating green infrastructure into planning processes. UN-Habitat cases illustrate the integration of co-production and multi-scalar approaches and the importance of comparable frameworks to ground knowledge at global scale.

Cross-case pattern analysis through the KA Matrix reveals that successful landscape governance depends less on prescriptive frameworks than on process-oriented approaches that structure collaborative decision-making . The Steinitz Framework for Geodesign exemplifies this shift, demonstrating that framework operationality lies not in providing answers to its six iterative questions but in organising collaborative processes that enable diverse stakeholders to negotiate complex spatial decisions systematically, integrating time as key variable and positioning it as a governance tool rather than merely a technical methodology. Similarly, UN-Habitat's City Resilience Profiling Tool emphasises participatory assessment processes and trans-scalar governance structures – global, national, regional, municipal – over predetermined outcomes. This pattern suggests that effective landscape governance frameworks prioritise the organisation of collaboration and adaptive learning processes over static implementation

guidelines, representing a fundamental shift from result-oriented to process-oriented governance models that can accommodate contextual variation while maintaining systematic rigour.

Chapter 5 – Policy Analysis Using the Knowledge Alignment Matrix: Barcelona, Birmingham, and Montreal

This chapter examines how resilient urban landscape approaches are operationalised in three global cities analysing urban policy documents and drawing insights from transformative local built environment professionals. It builds on the five thematic landscape management approaches and applies the Resilient Urban Landscape approach (RUL approach), which emerged from the landscape governance approaches (LGA) literature review, to evaluate how international directives and sustainability concepts are translated into local actions through governance mechanisms.

This chapter addresses Research Questions 2 and 3:

- RQ2: What synergies between governance approaches and planning/design tools contribute to transformative knowledge generation and cross-disciplinary collaboration in resilient urban landscapes?
- RQ3: What implementation strategies bridge the theory-practice gap in sustainable urban landscape interventions whilst facilitating the integration of knowledge across theory, practice, and governance, thereby closing the loop of transformative knowledge creation?

While Chapter 4 analysed international landscape governance frameworks, this chapter examines implementation at the municipal scale to understand:

- How governance approaches connect with planning/design tools in practice (RQ2)
- What implementation strategies enable theory-practice integration (RQ3)

The analysis focuses on Barcelona, Birmingham, and Montreal, three cities implementing landscape governance systematically rather than through isolated showcase projects. Using policy document analysis and semi-structured interviews with transformative actors, the chapter reveals both formal policy frameworks and practical implementation strategies.

Recognition of locally developed solutions and knowledge generation Building on Chapter 4's analysis of international policy frameworks, this chapter reveals how global directives translate into local policy and practice.

5.1 Comparative Framework and City Case Study Introduction

While Chapter 4 applied the Knowledge Alignment matrix (KA matrix) to analyse five thematic landscape management approaches from international organisations (IUCN, UNESCO, Council of Europe, UNEP, UN-Habitat), this chapter applies the same methodology to municipal policy documents. Barcelona, Birmingham, and Montreal were selected to examine how these thematic approaches are implemented at the city scale. Using KA matrix to assess municipal policies enables systematic comparison between international policy frameworks and local implementation, revealing translation mechanisms, adaptation strategies, and implementation challenges. Each city's policies are examined for alignment with the six RUL approach attributes and for evidence of the five thematic approaches:

I. *Integrative Approaches for Nature Preservation,*
II. *Integrative Approaches for Cultural Heritage Preservation*,
III. *Urban Landscape Charters*
IV. *Integrative Approaches for Urban Landscape Strategic Assessment, Planning and Management* (considering landscape and GI approaches) and
V. *Integrative Approaches for Resilience Strategic Assessment, Planning and Management in Urban Contexts.*

Using content analysis of policy documents and semi-structured interviews with transformative actors, the chapter reveals both formal policy frameworks and practical implementation strategies (methodology detailed in Sections 3.4.2 and 3.4.3).

This chapter uses comparative case study methodology to examine implementation at the municipal scale in Barcelona, Birmingham, and Montreal. The evaluation of each city case study will look at factors that contribute to the use of landscape governance approaches, including:

(a) Influences of International and Local Sustainable Directives: this section examines how global and local sustainability directives impact urban landscape studies.

(b) Conflictual Land-use Governance in an Urban Context: assessing challenges governing land use within urban settings.

(c) Variable Component Related to tools and LA Instruments: recognising tools and instruments, methods and skills while exploring new trends.

(d) New competencies to acquire suggesting changes in education/governance/practice

According to Leedy and Ormrod (2018), researching a case study gives a more comprehensive view, focusing on using case studies to gain insight into "more about a little-known or poorly understood situation".

The first and second sections of the chapter employ the city case study method. The third and fourth sections of the chapter, however, propose to gain a deeper understanding of these elements. To do so, semi-structured interviews are conducted with individuals who are considered drivers or have citywide influence. All profiles fall into one of three expected categories: reflective practitioners, activist academics, and institutional innovators. The interviews are directed to contribute to the Strategies for Resilient Urban Landscapes as Transformative Knowledge. Hence, Chapter 5 will concentrate on the four factors that enhance building an institutional capacity model through the interviewees' insights.

5.1.1 Urban Landscapes: A Comparative Study of Birmingham, Montreal, and Barcelona

Birmingham, Montreal, and Barcelona were selected to provide diverse contexts for examining how the five international policy frameworks analysed in Chapter 4 are implemented at the municipal scale. These transformations have been voluntary in the aim to adopt innovative approaches in urban form, sustainability initiatives, and resilience strategies. Their varying governance structures, cultural contexts, and historical development trajectories offer valuable insights into how international directives on landscape and sustainability are implemented at the local level. The following table summarises Table 7 key characteristics of these three global cities.

Table 7. Comparative Characteristics of Birmingham, Montreal, and Barcelona as Urban Landscape case studies (Source: the author)

Characteristic	Birmingham, UK	Montreal, Canada	Barcelona, Spain
Administrative Status	Second-largest city in UK; main city of West Midlands	Second most populous city in Canada; largest city in Quebec	Capital of Catalonia's autonomous community; Spain's second city
Geographic Area	267.8 km² (city proper)	431.5 km² (city proper)	101.4 km² (city proper)
City Population	1,142,494	1,762,949	1,627,559
Population Density	4,266 inhabitants/km²	4,828.3 inhabitants/km²	16,000 inhabitants/km²
Metropolitan Area	4.3 million people across 600 km²	4.3 million people across 4,258.31 km²	3.24 million people across 636 km²
Global Significance	Gamma ranking (GaWC, 2024)	Beta Plus ranking (GaWC, 2023)	Beta Plus ranking (GaWC, 2024)
Historical Significance	Crucial role in Industrial Revolution; evolved from industrial dominance to commercial centre	Major port city; historically significant cultural and commercial hub for French-speaking Canada	Major national player with unique cultural background; important during Industrial Revolution
Current Economic Profile	International commercial centre; hub for education and culture	Dense urban centre with diverse economy; strong in aerospace, pharmaceuticals, and technology	Major Mediterranean port; strong tourism, technology, and design sectors
Distinctive Characteristics	Rapid development in recent decades; ethnic diversity; large international student community	diversity; large international student community Among North America's most densely populated cities; bilingual culture	High urban density; distinctive Catalan identity; architectural heritage

The comparative characteristics in

Table 7 are drawn from official census data (Idescat, 2024; ONS, 2024; Statistics Canada, 2024), global city rankings from the Globalization and World Cities Research Network (World Cities Research Network, 2024) and municipal planning documents from each city.

As evident from the comparative data, these cities present a varied densities and spatial scales. While Birmingham and Montreal maintain similar metropolitan populations, Barcelona achieves comparable urban significance within a significantly smaller and denser footprint. All three have evolved beyond their industrial pasts into diverse economic centres, yet each maintains distinctive approaches to urban landscape governance shaped by unique cultural, political, and administrative frameworks. These differences, set against their shared commitment to sustainability and urban innovation, provide a rich terrain for examining how resilient urban landscape approaches are operationalised across varied institutional contexts.

5.2 Municipal Policy Document Analysis

This section explores municipal documents from each city, evaluating them through the same RUL approach-based methodology and KA matrix applied to international policy frameworks in Chapter 4. Therefore, the analysis deals with reports, policies, and plans published by the municipalities of the selected cities on the "five thematic landscape management approaches: Natural Heritage Preservation, Cultural Heritage Preservation, Urban Landscape Strategic Assessment, Urban Landscape GI, and Urban Resilience Strategy. Each chosen document representing core areas will be then compared with the alignment matrix to identify compliance. If there is a positive correspondence, the key strategies and tools outlined in these documents are considered and listed.

The analysis, structured in table form for each city, follows the description of the documents and evaluates how municipal policies align with the RUL approach attributes, highlighting strengths and identifying gaps.

5.2.1 Review of Municipal Documents: Applying the RUL approach - based methodology to municipal documents: City-by-City Analysis

Birmingham

Birmingham's approach to urban green infrastructure directly responds to principles established by UNEP's Integrated Approaches in Action framework (discussed in Chapter 4), particularly in its emphasis on sustainable resource management and enhancing ecosystem services. Several

vital documents have been identified as fundamental for aligning with the five thematic landscape management approaches proposed by this thesis. The documents were selected among those generated by the city since 2016, in reference to UN SDG presentation, based on their relevance to Birmingham's urban policies and their potential to align with the six RUL approach attributes identified in this research. This section focuses on the examination of critical documents corresponding to each of the thematic landscape management approaches.

Within the in-depth examination of the document, the six RUL approach attributes are targeted to be found, mentioned or approached in this research. The following documents have been reviewed in detail for the city of Birmingham. Both documents emphasise urban resilience through environmental management and the expansion of green spaces, addressing climate challenges. While the Our Future City Plan promotes adaptability for a greener and healthier city, the Design Guide Principles prioritise sustainable, context-sensitive design and biodiversity enhancement, without explicitly addressing adaptive processes for knowledge creation. Both adopt a place-based approach, encouraging sustainability and long-term collaboration at all planning levels. Regarding social sustainability, they engage local communities, though terms like "social sustainability vector" and "co-production" are not explicitly mentioned. The documents focus on environmental outcomes without establishing explicit structures for university – industry – government – public – environment cooperation. Birmingham's commitment to integrated urban development offers a replicable model is being balancing growth and sustainability, but with an emphasis on nature over landscape and overlooking the link between sustainability to cultural landscape heritage.

IUCN Protected Landscape/Seascape (UPL)

Our Future Nature City Plan 2022: this document outlines Birmingham's City of Nature Plan, emphasising environmental sustainability and green urban development (Birmingham City Council, 2022a)

1. UNESCO Historic Urban Landscapes Recommendation (HUL)

Birmingham Heritage Strategy 2014–2019: this document, although outdated, was initially considered for its focus on architectural and cultural heritage conservation (Birmingham City Council, 2014).

2. Urban Landscape Studies (ELC)

The Green Living Spaces Plan 2013: an outdated document, yet relevant in conjunction with the Birmingham Design Guide Landscape to understand past and present landscape strategies (Franchina et al., 2017) .

3. Urban GI (UGI)

Birmingham Design Guide Landscape and GI City Manual: this manual provides guidelines for creating resilient landscapes, emphasising the integration of GI in urban planning (Birmingham City Council, 2022b).

4. City Resilience Profiling Tool (UN-Habitat)

The *Our Future Birmingham City Plan* and *Birmingham Local Plan Issues and Option documents* were selected for their compliance with RUL approach. These strategic documents outline Birmingham's long-term objectives, focusing on urban resilience and inclusive economic growth (Birmingham City Council, 2022c).

The detailed analysis of Birmingham's urban planning materials is summarised in Table 8. Table BHX. Birmingham Municipal policies benchmarked against RUL approach attributes. In summary, they reveal a cohesive vision of sustainable development focused on sustainability, connectivity, and urban resilience, with notable differences in priorities. When analysed through the RUL approach-based methodology, The Our Future City Plan: Central Birmingham 2040 and the Our Future Nature City Plan 2022 (Birmingham City Council, 2023), aligned with RUL approach attributes, emphasise the polycentric development of the city and the integration of green spaces as central elements for mitigating climate change and providing communal spaces for population growth. In contrast, the Birmingham Local Plan Issues and Options 2022 (Birmingham City Council, 2022c) adopts a more procedural approach, focusing on planning stages and emerging technologies like digital twins. The Design Guide Principles (Birmingham City Council, 2022), particularly the manuals on landscapes and green infrastructure, prioritise practical implementation through detailed assessments and sustainable construction techniques. Although these documents collectively address environmental and urban challenges, they vary in their treatment of cultural heritage and community participation, with cultural heritage losing priority in more recent formats. The alignment between green infrastructure, technological tools, and participatory governance demonstrates.

As concluded in Table 8. Table BHX. Birmingham Municipal policies benchmarked against RUL approach attributes, the KA matrix analysis of Birmingham's municipal policies benchmarked against RUL approach attributes, specifically the *Design Guide Principles and the Our Future City Plan*, highlights a strong focus on sustainability. Both documents emphasise urban resilience through environmental management and the expansion of green spaces, addressing climate challenges. While the *Our Future City Plan* promotes adaptability for a greener and healthier city, the *Design Guide Principles* prioritise sustainable, context-

sensitive design and biodiversity enhancement, without explicitly addressing adaptive processes for knowledge creation. Both encourage sustainability and long-term collaboration at all planning levels. Nevertheless, social sustainability and ideas on co-production are not mentioned.

Table 8. Table BHX. Birmingham Municipal policies benchmarked against RUL approach attributes (Source: the author)

RUL approach	Our Future Nature City Plan 2022 + Birmingham City of Nature Plan	The Birmingham Heritage Strategy 2014─2019	The Green Living Spaces Plan: 2013 + Birmingham Design Guide Landscape	Birmingham Design Guide Landscape and Green Infrastructure City Manual	Our Future Birmingham City Plan + Birmingham Local Plan Issues and Options
Adaptive processes for knowledge creation in complex systems	Enhances resilience and adaptability in environmental management, improving urban green spaces and addressing climate challenges	Stresses adaptability in heritage management with a focus on collaboration, flexible investment, and new approaches like ERIH for long-term preservation	Highlights adaptability in the Green Living Spaces Plan and future - ready, sustainable design in the Birmingham Design Guide.	Emphasises local character, green infrastructure, and biodiversity, supporting resilience through sustainable practices.	The City of Nature Plan aims for a greener, healthier city, focusing on adaptability and resilience, and is referenced in the Our Future Birmingham City Plan.
Place based in multiple scale. Area of control and area of influence	The plan promotes a place-based approach, emphasising sustainability, nature-focused planning, and long-term collaboration across all levels.	The plan highlights Birmingham's diverse heritage, including historic sites and natural habitats, and its contributions to the Industrial Revolution and Enlightenment.	The plan supports a "place-based" approach by emphasising sustainable, context-sensitive design and bespoke landscape solutions.	The plan focuses on local character and green infrastructure, enhancing biodiversity and geodiversity, without explicitly addressing "place-based" concepts.	The plan tailors' developments to Birmingham's neighbourhoods, involves local communities, and coordinates city- wide policies for sustainability and quality of life
Towards a Quintuple Helix of Innovation Model	The plan highlights collaboration and resilience, involving various stakeholders to address climate change and create a healthy environment.	The "Quintuple Helix of Innovation Model" is not mentioned but the strategy highlights economic sustainability, addressing reduced funding and the need for diverse income streams.	The guide suggests involving the community and aligning designs with their needs, while also considering the environment and consulting experts.	The document addresses resilient landscapes and biodiversity, using SUDS to support habitat creation, aligning with conservation principles.	The plan focuses on economic sustainability and resilience, supporting businesses, investment, job creation, and adaptability to economic shocks
Conservation and Transformation: SD and complex system resilience	The plan focuses on sustainable, inclusive development, addressing climate change, nature recovery, and access inequity by expanding green spaces.	The strategy emphasises flexible heritage management, crucial for resilience, though it does not explicitly mention "complex system resilience".	The guide Emphasises conserving existing assets, incorporating sustainable green infrastructure, and enhancing environments to improve quality and biodiversity.	The document focuses on resilient landscapes, asset protection, and biodiversity, using SUDS to support conservation and system resilience.	Addresses conservation and transformation, focusing on protecting and integrating Birmingham's heritage and natural environments into new developments
Ethics and Environmental rights	Emphasises fair treatment and inclusion in environmental policies, though it doesn't explicitly mention ethics and environmental rights.	Highlights parks and natural habitats as key ecological assets but does not explicitly mention "ethics and environmental rights".	Substantiates creating sustainable and future -ready buildings, aligning with ethical environmental stewardship and responsible development practices.	The document doesn't mention "ethics" or "environmental rights" but supports green infrastructure and biodiversity, indirectly addressing these concerns.	The plan focuses on sustainable, inclusive green spaces and transport, emphasising fairness and community well-being without using terms like "justice" or "rights".
Social Sustainability Vector	The plan proposes creating a City of Nature Board and groups to unite Organisations and provide access to green and blue spaces in Birmingham	The strategy Emphasises community participation in heritage, aligning with social sustainability, but doesn't use the term "social sustainability vector".	The document Emphasises engaging with public spaces, consulting the City Council, and using the Design Guide for high -quality, policy-aligned developments.	The document Emphasises engaging local communities for outdoor space design but doesn't mention "consultation to co-production".	The word "consultation" appears on some pages, but "co-production" does not.

Montreal

In Montréal, the six documents below were examined in relation to the six RUL approach attributes (Table 9. Table MTL. Montreal Municipal policies benchmarked against RUL approach):

1. IUCN Protected Landscape/Seascape (UPL)

   The Plan de protection et de mise en valeur du Mont-Royal is a binding document focusses on protection and enhancement of Mont-Royal (Ville de Montréal, 2009).

2. UNESCO Historic Urban Landscapes Recommendation (HUL)

   L'Agenda Montréalais 2030 pour la Qualité et l'Exemplarité en Design et en Architecture outlines Montreal's commitment to high standards in design and architecture. It embraces the UNESCO recommendations for historic urban landscapes (Ville de Montréal, 2019).

3. Urban Landscape Studies (ELC)

   Montreal en Paysage embeds the principles of urban landscape charters, promoting integrated and sustainable landscape planning in Montreal (Poullaouec-Gonidec and Paquette, 2011).

4. Urban GI (UGI)

   Trame verte et bleue du Grand Montréal outlines the GI and blue infrastructure strategy for Greater Montreal, focusing on enhancing ecological connectivity and urban resilience (Communauté metropolitaine de Montreal, 2012).

5. City Resilience Profiling Tool (UN-Habitat)

   Montréal's Resilient City Strategy assesses urban resilience, aligning with the objectives of creating a sustainable and adaptive urban environment in Montreal (Bureau de la résilience, 2018).

The urban planning documents from Montréal present a comprehensive vision to the thesis topics: sustainable development, heritage preservation, landscape consideration and urban resilience. This *Plan de protection et de mise en valeur du Mont-Royal* (Ville de Montréal, 2009) emphasises the importance of the preservation of Mont-Royal's as both natural and cultural heritage. Through a combination of regulatory measures, financial incentives, and a tailored management framework this cultural-natural duality is presented. This plan sustains de holistic vision RUL approach promotes and integrates sustainable recreational practices while

developing collaboration among stakeholders. Similarly, the Montréal 2030 Agenda (Cité de Montreal, 2019) serves as a strategic, though non-binding, guide. The document corroborates the importance of quality in urban design and planning. It introduces tools for public engagement, project branding, and multilevel governance, reinforcing its commitment to sustainability. This stress on quality of design is basal to a landscape approach.

The Montréal en paysages (Poullaouec-Gonidec and Paquette, 2011) initiative and the accompanying Atlas de Paysage du Mont-Royal advance innovative methodologies, including storytelling and adaptable guidelines, for landscape planning. These documents highlight the integration of natural and cultural heritage into urban planning, placing significant emphasis on public participation. Additionally, the *Trame verte et bleue du Grand Montréal*, is part of a broader regional strategy for green and blue infrastructure. It BGI seek to safeguard natural spaces and improving recreational accessibility. However, its alignment with approaches like RUL approach is limited.

Lastly, *Montréal's Resilient City Strategy and the Plan Climate 2020–2030* (de Montréal and de, 2015) offer a strong basis for addressing urban resilience. These strategies employ tools for risk assessment, mitigation measures, and the establishment of community-based resilience centres. All of those tools will be benchmarked to RUL approach attributes through KA matrix. They also integrate sustainability considerations, though they could benefit from a stronger focus on systemic resilience and environmental rights.

Collectively, these documents avoid the dichotomies of the paradigms outlined in the Montreal section (Table 9). These documents are clearly conceived with a focus on urban planning, intertwining cultural and natural heritage with innovative strategies for sustainability and resilience, always framed within the concept of design. Design thinking and design quality are presented as tools to enhance urban sustainability and resilience. Despite their strengths, there are areas where greater alignment with advanced articulations between regions and municipalities could improve their capacity to address complex urban challenges.

Table 9. Table MTL. Montreal Municipal policies benchmarked against RUL approach attributes (Source: the author)

RUL approach	The Plan de protection et de mise en valeur du Mont-Royal	Agenda Montréalais 2030 pour la Qualité et l'Exemplarité en Design et en Architecture	Montréal en paysages	Trame verte et bleue du Grand Montréal	City Resilience Profiling Tool
Adaptive processes for knowledge creation in complex systems	The plan focuses on Mont-Royal's heritage, integrating regulations, engaging stakeholders, and adaptive management, with periodic reviews to ensure effectiveness	The plan highlights how resilient, sustainable design in buildings and public spaces supports climate resilience and long-term viability	The plan calls for an adaptive approach, engaging stakeholders, and preserving place identity while adapting to local needs.	Highlights how the Trame verte et bleue boosts Greater Montreal's resilience to major urban challenges.	Focuses on adaptive processes, urban resilience, and enhancing citywide preparedness.
Place based in multiple scale. Area of control and area of influence	The document outlines heritage management with local agencies, focusing on the Mont-Royal area and interventions for restoration and enhancement.	Discusses place-based approaches at various scales, including "area of control" and "area of influence," emphasising sustainable design and community engagement.	Emphasises local and regional diversity in landscape management, including territory identity, feature preservation, and neighbourhood enhancement.	Substantiates "place-based" concepts and describes the project as a metropolitan network of accessible green and blue spaces.	Mentions place-based approaches and highlights resilience through local needs, risk management, and integrated governance.
Towards a Quintuple Helix of Innovation Model	Promotes a collaborative approach to managing Mont-Royal, involving various stakeholders for its preservation.	The document Emphasises cross-sector collaboration for better design, skill development, and sustainable heritage preservation.		It skips "university-industry-government - public-environment cooperation" but notes diverse partners like the Quebec government, municipalities, and environmental and cycling groups	The strategy advocates integrated governance and cross-sector collaboration for safety and sustainability, without mentioning the "Quintuple Helix of Innovation Model".
Conservation and Transformation: SD and complex system resilience	The document focuses on balancing conservation and transformation, with interventions for invasive plants, species protection, and trail improvement.	Substantiates that smart design boosts urban resilience to climate change and calls for carbon - neutral solutions and collaboration.	Highlights conservation of environments and biodiversity, and adaptation to changing urban dynamics while preserving place identity.	It addresses conservation and transformation by protecting natural spaces, creating green and blue networks, preserving heritage, and improving accessibility.	The strategy calls for Montreal to improve its risk anticipation, prevention, and adaptation.
Ethics and Environmental rights	Implies the "right to a healthy environment" by emphasising the protection of Mont-Royal's environment and heritage.	The agenda emphasises design's role in sustainability and equity, focusing on reduced environmental impact and low ecological footprint materials.	The document covers ethical landscape management, including heritage protection, equity, community rights, and environmental preservation.		The strategy focuses on improving green and grey infrastructures to support Montrealers' well-being.

Montreal's approach integrates adaptive processes through specific mechanisms such as the Bureau du Design and l'Office de la Consultation Publique à Montréal. The Plan de protection et de mise en valeur du Mont-Royal, focused on heritage management and adaptive practices for the protection of Mont-Royal, is a good example of attention to "urban landscapes," while the Agenda Montréalais 2030 emphasises sustainable design in buildings and public spaces as a key factor for their long-term viability. All these tools will be analysed through KA matrix. However, the documents do not directly mention the Quintuple Helix of Innovation Model or the concept of complex systems resilience, two elements that could strengthen their alignment with RUL approach attributes.

Barcelona

To identify critical documents pertinent to the research and align them with the six RUL approach attributes, the following documents were reviewed (Table 10):

1. IUCN Protected Landscape/Seascape (UPL)

Barcelona charter for the green and the biodiversity. This document focuses on Barcelona's GI and biodiversity strategy. It emphasises urban landscape protection and sustainable management (Ximeno et al., 2022).

2. UNESCO Historic Urban Landscapes Recommendation (HUL)

The Barcelona Historic Garden recommendation is a strategic document that addresses the conservation of the city's historic gardens. Following UNESCO's recommendations for historic urban landscapes, the text provides action plan strategies (Direcció d'Espais Verds i Biodiversitat, 2018).

3. Urban Landscape Studies (ELC)

IMPUQV Statutory documents include ordinances for urban landscape, while its atlas is supporting as assessing procedure towards landscape planning in Barcelona (Ajuntament de Barcelona, 1992).

4. Urban GI (UGI)

Pla Natura Barcelona 2030 outlines the GI strategy for Barcelona. It focuses on ecological connectivity and urban resilience (Àrea d'Ecologia Urbana Ajuntament de Barcelona, 2022).

5. City Resilience Profiling Tool (UN-Habitat)

Barcelona Building a Resilient City and Barcelona Climate Emergency Action Plan 2018–2030 provide a policy for climate emergency action (Barcelona City council, 2021).

After examining those documents, it is clear they collectively represent a comprehensive understanding of landscape and resilience for Barcelona.

The *Green and Biodiversity Charter (Regidor de Medi Ambient i Serveis Urbans – Hàbitat Urbà Joan Puigdollers, 2013)* presents a vision for the preservation of biodiversity through GI. The charter introduces key tools such as the Green Infrastructure Plan, eco-management practices for communities, and strategies to naturalise urban spaces. This results into practical mechanisms to regulate temperature, manage water, and improve acoustic comfort.

The Ecology department of the City Council *(Àrea d'Ecologia Urbana Ajuntament de Barcelona, 2022)* sets out a series of major actions to promote urban biodiversity. Those focus on three thematic axes: increasing urban vegetation, conserving existing green spaces, and involving citizens in diverse environmental initiatives. The strategy embraces the use of participatory tools such as the Decidim Platform. This online platform which allows public participation in decision-making by digital means. Furthermore, the document includes a commitment to monitor biodiversity through the Barcelona Biodiversity Observatory and integrate these results into municipal policies. This is an aligned position to adaptive models.

The *Framework for Historic Gardens of Barcelona (Direcció d'Espais Verds i Biodiversitat. Medi Ambient i Serveis Urbans, 2018)* is dedicated to the preservation of the city's historic gardens, emphasising the need for individualised management plans for each garden.

The *Statutory and Strategic Documents of the IMPUQV (Ajuntament de Barcelona, 1992)*, includes the Municipal Ordinance on Urban Landscape Uses and the Urban Landscape Atlas. These documents are the instrument regulating urban land use in Barcelona's urban landscape. The ordinance establishes parameters to control land use conflicts like advertising, or construction elements. The recognition of an Urban Landscapes department within the city management structure is transcendental to the thesis. The main task towards this aspect is the development of Urban Landscape Studies which provide a detailed evaluation of the city's landscape characteristics. These studies contribute to the Barcelona Landscape Catalogue and provide valuable insights for city planning.

The *Barcelona Building a Resilient City and Barcelona Climate Emergency Action Plan 2018–2030* (Barcelona City council, 2021) document tackles the city response to climate resilience and adaptation strategies. The Plan sets out principles to improve the city's capacity by the use of urban resilience indicators. The *Climate Emergency Action Plan for Barcelona* focuses on the following items: reducing carbon emissions, improving air quality, increasing urban vegetation, and promoting circular economies.

Together, all these documents reflect Barcelona’s commitment to integrated planning. However, the apparent segregation between the municipality's green sector discourse and community participation appears to be a weakness. Better integration could generate interesting synergies. Although the documents are comprehensive, there is margin for greater alignment with RUL approach.

Table 10. Table BCN. Barcelona Municipal policies benchmarked against RUL approach attributes (Source: the author)

RUL approach	Carta del Verd i de la Biodiversitat	Marc estratègic dels jardins històrics de Barcelona	Ordenança municipal dels usos del paisatge urbà de la ciutat de Barcelona + Urban Landscape Atlas	Pla Natura Barcelona 2030	Pla d'Acció per l'Emergència Climàtica 2030 + Model Resiliencia Barcelona
Adaptive processes for knowledge creation in complex systems	Emphasises multidisciplinary teams for managing green spaces and highlights the need for resilience to environmental and climate changes.	Does not explicitly mention adaptive processes or knowledge creation in complex systems.	Provides a structured approach for urban landscape analysis but lacks adaptive processes for knowledge creation in complex systems.	It doesn't mention adaptive processes or terms like "persistence," but the Observatori de la Biodiversitat may support adaptive knowledge.	It highlights preparedness, adaptability, and resilience, with a focus on reducing vulnerabilities and adapting to climate change.
Place based in multiple scale. Area of control and area of influence	Highlights the need for a multi-scalar perspective in urban green infrastructure, tailored to local landscape and biogeographical conditions.	Acknowledges historic gardens' complexity and advocates a holistic, multidisciplinary management approach.	Focuses on "landscape unity" in urban studies, addressing key variables and contexts to enhance landscape quality.	The plan, though not using "place-based in multiple scales," addresses urban biodiversity and green spaces with a focus on sustainability and resilience through green infrastructure.	The document supports a holistic, multi-scale approach to climate change, emphasising sustainability, adaptation, and broad involvement for city resilience.
Towards a Quintuple Helix of Innovation Model	Substantiates multidisciplinary collaboration and stakeholder involvement in urban green spaces.	Stresses collaboration among municipal entities and public involvement in managing historic gardens.	The document Emphasises government collaboration, public input, and environmental factors in urban landscape strategies.	Emphasises resilience and preparedness through green infrastructure to adapt to climate change, enhance urban resilience, and promote sustainability and health.	The document highlights the need for stakeholder collaboration and cooperation.
Conservation and Transformation: SD and complex system resilience	Highlights conserving and expanding urban green spaces to meet growing needs.	Emphasises balancing preservation with adaptation in managing historic gardens for sustainability and resilience.	Mentions SD, indicating sustainability is covered.	The document doesn't use the terms but emphasises urban biodiversity, sustainable development, and community involvement.	The plan calls for transformation to address the climate emergency while emphasising natural resource conservation.
Ethics and Environmental right	Promotes ethical and environmental principles through its focus on healthy, sustainable urban environments, even if not explicitly stated.	Doesn't mention "Ethics and Environmental Rights" but values historic gardens for their social and cultural benefits to the city's well-being.	Though not mentioned, the document's focus on collaboration and stakeholder engagement indirectly addresses "ethics" and "environmental rights".	Does not explicitly mention "Ethics" or "Environmental Rights".	The plan Emphasises social justice, inclusivity, and the well-being of vulnerable populations in the context of climate action.

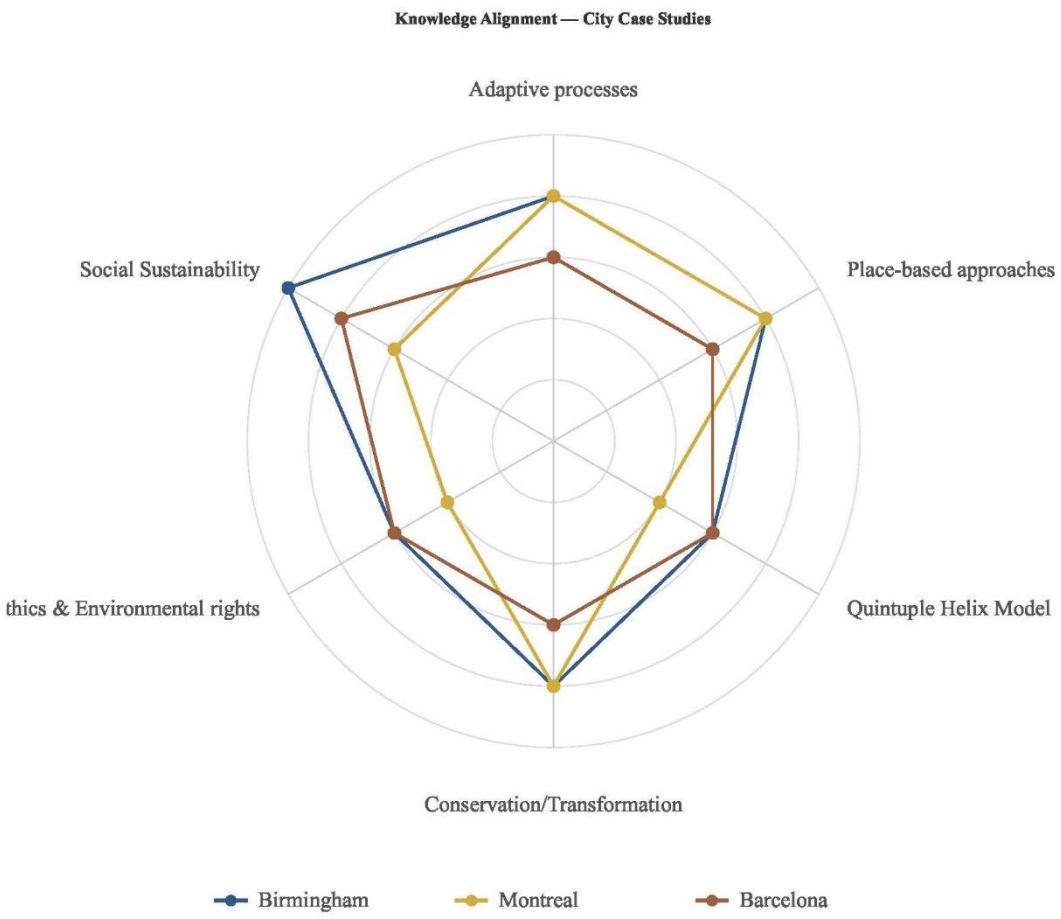

Figure 6. Radar chart comparing RUL approach Alignment of Municipal Policies in Birmingham, Montreal, and Barcelona. (Source: the author)

This section ends with this radar chart (Figure 6). The radar chart is an intuitive way to visualise how each city's municipal policies align with the six RUL approach attributes on a scale of 0–5. This visualisation of KA matrix follows the one done for the Thematic landscape management approaches.

Montreal demonstrates the strongest overall alignment, particularly in social sustainability. Birmingham shows strong alignment in place-based approaches and conservation/transformation but has gaps in the Quintuple Helix Model. Barcelona exhibits consistent moderate alignment across all attributes.

5.3 Interview Findings: Municipal Governance Perspectives

Three transformative actors were interviewed in each city to complement policy document analysis with insights on implementation challenges and local innovations (participant selection detailed in Section 3.4.3.1). Interview data were analysed using the methodology detailed in Section 3.4.3.3 assessing responses against the six RUL approach attributes.

This section presents findings organised by city to reveal city-specific governance contexts and locally developed innovations. Section 5.4 reorganises the same interview data by RUL approach attribute to identify cross-city patterns.

5.3.1 Birmingham: Interview Analysis

The impact of international sustainability directives on the three cities is analysed through policy analysis and interviews with key figures.

5.3.1.1 Recognising conflictual land uses governance leading the Transformation of municipal governance

Governance Transformation for Resilience

Two interviewees highlighted Birmingham's strategic shift in city council governance to align with modern sustainable development and multi-scale planning. In 2013, the Green Living Spaces Plan integrated local and global perspectives to address climate adaptation. By 2018, The Little Book of Ecosystem Services in the City proposed embedding nature into urban planning and governance, emphasising the interconnectedness of natural and built environments. This change of internal structure influenced the city council's management and indicated the benefits of prioritising nature (Sadler et al., 2018).

Birmingham's model involves diagnosing challenges and applying professional expertise. Co-creation and scenario analysis ensure solutions aligned with the community needs. The challenge is how to merge those with diverse business models. Rogers (2016) argues for adaptable governance to address managing complexity and stresses how much of successful urban transformation relies on collaboration.

Governance Transformation for Funding

Birmingham's shift to viewing the landscape as natural capital has led to a governance realignment integrating sustainability and financial goals. This approach attracts global

investment. Despite not focusing on traditional landscape terms, Public-private partnerships and Environmental, social, and governance (ESG) criteria are key. Nevertheless, their implementation requires significant resources and time. Neighbourhood-level pilot projects offer a practical approach to testing governance changes.

Governance Transformation for Capacity Building

The next phase of Birmingham's *Our Future City Plan* is ongoing. Projects like The City of Districts and the Jewellery District Neighbourhood plan highlight effective neighbourhood-level governance. Despite political differences, aligning regional, metropolitan and city council objectives is crucial for the sustainability of long-term city projects.

Integrating finance and ecology is essential for addressing the 2030 agenda and NetZero challenge. This link entails collaboration between departments. Departments are public servants, and their expertise is vital for effective decision-making . Improved capability models to prepare professionals with the necessary skills and interdisciplinary expertise remain key (Durall et al., 2022).

5.3.2 Montreal: Interview Analysis

The influences of international sustainable directives on the three selected cities are examined through a literature review and through insights from another set of influential personalities interviewed.

5.3.2.1 Recognising conflictual land uses governance leading the Transformation of municipal governance.

Governance transformation for resilient urban identities

The discourse encompassing heritage preservation, landscape governance, and SDGs is surfacing insistingly under the label of identities. Within the conversations, a profound respect and interconnectedness with the multifaceted concept of identity emerge. Cultural identity is profoundly linked to heritage preservation. The conservation of historical and ordinary landscapes plays a central role in safeguarding communities' identity and culture. The migratory waves have characterised the city's architectural typologies and Quartier landscapes. Urban areas, thus distinguished by their unique histories, architectures, and cultural heritages, can preserve and enrich their identities through judicious landscape governance approaches. Lastly, fostering community identity emerges as a consequential outcome of involving stakeholders, engaging citizens, and collaborating on landscape management initiatives. Active

participation in decision-making processes related to landscape governance empowers communities to shape and preserve their distinctive identities actively. Two interviewees highlighted that the heritage was first preserved by its neighbours for the city council to follow. The living forces of the neighbourhoods or quartiers seem vital, as they are the institutional stakeholders. It is thus seen as a loss of social resilience and the increasing mobility of Montreal's inhabitants, who know less and less about the quartier history and its importance as heritage and part of its dweller's identity. It also discusses the role of citizen movements and activism in influencing governance decisions, particularly in advocating for changes in infrastructure and transportation policies. The safeguarding of entire neighbourhoods such as Milton Park, among others, and the introduction of the bicycle in the city seem to have been entirely owned by well-organised activism in cooperation with the media.

The approach to activism and participation becomes evident through his emphasis on all personalities through the semi-structured interviews. Stress on involving citizens, engaging stakeholders, and advocating for public voices in the decision-making processes related to heritage preservation and landscape governance seem to be part of the understanding of the city itself. Richard Sennett explained the nuanced signification of the terms cité and ville in the Francophonie. In this direction, it is perceived that the interviewees reference the city as a holistic entity of morphology and its citizenship, which is far from the functionalism embraced in other case studies.

Regarding engaging citizens, referential personalities underscore the imperative of transitioning towards a phase wherein citizens actively contribute to raising alerts and proposing solutions. The youth of the Montrealese population has triggered online consultation, opening a broader and immediate contact with its inhabitants. The participatory culture is also promoted from a very young age, which determines the significance of citizens assuming responsibility by endorsing alerts and actively participating in identifying and implementing solutions. This approach corroborates a pronounced inclination towards promoting active citizen participation in addressing heritage preservation and landscape management concerns. Therefore, references to citizen engagement, community participation, and the impact of grassroots movements on shaping urban landscapes and policies need to be highlighted as part of Montrealese identity since the 70s.

An interviewee raised an important point in the contemporary context and shifted to environmentalism: the argument through which heritage is being revisited. Heritage

preservation is to be revisited as a massive carbon sequestration strategy. Reinvesting in heritage reformulates the built environment, a critical devised for ecological transition.

Governance transformations for controlling city transformations.

Transparency is deeply embedded within the participatory ethos Montréal's. To ensure clear processes a suite of governance instruments has evolved for stakeholder engagement. This analysis critically examines these mechanisms.

The Plan d'Urbanisme, serving as a foundational document, notably integrates landscape strategies within its annexes. It is a unique finding among the city case studies. Those annexes in landscapes are binding directives for the cultivation of "quality urban landscapes and architecture." The enduring influence of visual perspectives to and from Mont Royal, might be the most exemplar of them. Formalised through the historically significant 1992 Visual Cones, this landscape led urbanism corroborates a long-standing principle shaping Montréal's cityscape.

Drawing inspiration from the French Malraux Law, the preservation strategy for the old town incentivises the restoration of historic structures within designated zones. The emphasis on the "visuals of tradition" as a determinant of transformation in these areas contributes to the consolidation of streetscapes. The governance landscape further comprises the Conseil du Patrimoine de Montréal. The Conseil is an advisory body of external experts, and Heritage Montréal NGO, an advocacy group operating with independent expert criteria.

Projets Particuliers d'Urbanisme (PPU) offer a mechanism for detailed planning in specific urban sectors. PPU's are key to public consultation and function as amendments to the Master Plan. Whilst PPUs provide welcome flexibility in addressing localised urban development needs, the efficacy and genuine influence of the mandated public consultations require critical scrutiny to avoid mere procedural compliance. Similarly, Plans d'Implantation et d'Intégration Architecturale (PIIA), regulating the placement and design of new constructions to ensure contextual integration, particularly concerning street-level visibility, underscore a commitment to maintaining the existing urban fabric.

The Committee Jacques-Viger (CJV) serves as a formal consultative body providing expert feedback on a range of planning and urban design matters. Whilst the institutionalisation of expert advice is a positive development, the non-binding nature of the CJV's recommendations raises questions regarding their actual impact on municipal decision-making . Furthermore, the

provision for deviations from borough-level regulations for significant projects under Article 89 of the City Charter, necessitates transparent justification.

At the neighbourhood level, the Tables de concentration (Quartiers) represent a formalisation of grassroots activism. This commitment to decentralised governance and the empowerment of local communities is a significant aspect of Montréal's participatory identity. The distinct conceptualisation of the "quartier" as the scale where of identity emerges, as opposed to the purely administrative "borough," corroborates the importance of incorporating socio-cultural realities into urban governance.

Finally, the externally commissioned Cartes de Paysage (Urban Landscape Charters), exemplified by "Montréal en paysages," are a key finding. The Cartes propose a collaborative methodology for understanding and managing urban landscapes. Furthermore, their methodology is drawing upon international best practices and engaging diverse stakeholders. Those characteristics hints of LGA.

As has been showed, Montréal's governance comprises a multifaceted array of tools. Whilst demonstrating a commitment to public participation and expert input, critical analysis reveals potential tensions and areas requiring enhanced transparency and accountability. The imperative to safeguard Montréal's unique heritage and identity necessitates a continuous process of evaluation.

Governance transformation for better capacity building

Montréal has seen diverse initiatives for sustainability. Amongst these are the Bureau du Design, l'Office de la Consultation Publique à Montréal, and the influence of grassroots movements such as Save Montreal.

The Bureau du Design operates under the City of Montréal's Economic Development Department. Its mission is to improve urban development through strategic collaborations with the creative community. Its mission is to guide of municipal services and boroughs developing design and architectural excellence. Excellence is achieved then through initiatives such as competitions, workshops, and intellectual expert panels. Since the Picard Report of 1986, which strategically recognised design as a crucial sector for the city's developmental trajectory, Montréal has consistently implemented initiatives. The bureau also promotes implementing the Montréal 2030 Agenda for Quality and Exemplarity in Design and Architecture, adopted in 2019 and the strategic utilisation of the Urban Planning Regulations of Plateau – Mont-Royal as a benchmark.

L'Office de la Consultation Publique à Montréal functions as an instrument for social integration whilst actively promoting public participation. Drawing upon established methodologies, including the strategic deployment of social networks, participatory workshops, and co-design experiences, the Office advocates an integrated design approach. This approach integrates multidisciplinary teams, public consultation projects and a significant emphasis in innovative design solutions. Collectively, these initiatives significantly enhance the Office's decisive role in advancing transparent public consultation practices within Montréal.

The significance of grassroots movements as a bedrock of public engagement is powerfully exemplified in this city. The impactful actions of the urban conservation group Save Montreal during the key decades of the 1970s are a good example for the city case studies. Whilst frequently analysed within the specific context of heritage preservation and its profound impact on shaping local identity, Save Montreal transcended conventional heritage preservationist roles. Rather than solely focusing on the safeguarding of historically significant structures, the group's members strategically positioned themselves as vocals directly challenging the driving urban development within the city centre. Notably, one interviewee was specifically selected for embodying this crucial facet of a "green champion," actively advocating for the adoption of bicycles as a sustainable mode of urban transportation whilst promoting a more respectful mode of urban inhabitation through the defence of the iconic Montréal triplex housing typology.

Montréal's pursuit of sustainable urban development is significantly shaped by the dynamic interplay of the three initiatives as interconnected actors collectively contribute to a governance transformation.

5.3.3 Barcelona: Interview Analysis

Evaluating the influence of global policies on Barcelona's required a combination of the insights of three key interviewees, identified as 15, 17, and 19. Their perspectives, are a combination of diverse professional backgrounds. The interviews, which focus on institutional innovators, reflective practitioners, and academic activists, showcase several key policies palpable in the municipal level.

Interviewee 15 is a biologist specialised in environmental epidemiology. Consequently, their focus is on the built environment's impact and transport planning on public health. They led community interventions for the BlueHealth Project in Barcelona from 2017 to 2022 and are

researching the effects of prenatal and postnatal air pollution exposure on early-life health (Grellier et al., 2017).

Interviewee 17 was a retired professional from Barcelona. They had a distinguished career in project management at the Barcelona City Council, with degrees in Political and Commercial Sciences and Commercial Urbanism. They managed creative projects steering urban landscape studies in Barcelona. As Chair of the International Congress on Urban Landscape (ICOUL), they made notable contributions to urban landscapes.

Interviewee 18 is an academic and consultant. They specialise in civil and transportation engineering. They previously served as a senior executive at the European Investment Bank. This experience played a key role in shaping EU transport policies and infrastructure investments.

5.3.3.1 Recognising Conflictual Land Use Governance Leading the Transformation of Municipal Governance

This section critically examines governance transformations to enhance urban sustainability. This is done under the three primary approaches identified through literature review: governance transformation for governmental sustainability, funding strategies for city transformations, and enhancing capacity building.

Governance transformation for Governmental Sustainability

Barcelona's urban landscape has faced conflicts due to private interests impacting public spaces, leading to the creation of the IMPUQV regulation in 1998. Twenty years later, establishment of Urban Ecology department within the city council consolidated the contemporary structure that sectoral integration. Since then, The Strategic Internal Sustainability Plan (2016) has guided transformation in the internal structure to enhance governance through transparency, citizen participation, and accountability.

Governance transformation for funding city transformations

Integrating public and private sectors is key to urban landscape well-being, highlighted in two interviews with local experts and confirmed in specialised literature (De Balanzó and Rodríguez-Planas, 2018). In the 1990s, Barcelona's urban revitalisation spurred a specialised industry in façade restoration, now involving 160 firms. This collaboration between public and private tends to be crucial for funding sustainability projects. For instance, Barcelona has implemented several innovative funding mechanisms that attract private resources for public

landscape improvements. Advertisements displayed on scaffolding during façade restorations generate revenue directed towards landscape enhancements. Other initiatives on the same line, would be the naturalisation of Eixample Block interiors, the expansion of green rooftops across the city, and artistic/ ecological treatment of blind walls (Mercadé-Aloy and Cervera-Alonso-de-Medina, 2025).

Conversely, the importance of ESG metrics in urban planning is rising in importance. ESG generates metrics that evaluate environmental impacts, such as energy efficiency and waste management. Those metrics should help cities reduce their carbon footprint, hereby ensuring that development benefits all residents. Governance metrics promote transparency and ethical behaviour, to nurture trust and fair decision-making . An interviewee who rates ESG aspects for projects corroborates their role in sustainability, stressing the need for detailed ESG evaluations in new projects. The discussion concludes that rigorous PPP guidelines could significantly enhance sustainable development and project quality.

Governance transformation for better capacity building

The interviews conclude with open questions linked to capacity building. Some interviewees raise concerns about universities narrowing their scope to specialised research, as this limits professors' broader perspectives and affects students' critical thinking. Many experts agree that balance between deep expertise with a commitment to society to address contemporary challenges like ESG issues is the solution.

Another interviewee thinks that there is a need for urban planning transversality, noting that siloed governance limits the potential for comprehensive urban transformation. In their opinion, engaging citizens directly is crucial for project success, but ongoing monitoring is often neglected. The decline in consensus-building and rise in aggressive approaches has become problematic, increasing the need for meaningful dialogue in urban design.

The discussion ends by re-evaluating who should design urban governance mechanisms. There is a need for professionals with diverse expertise who can create flexible, effective decision-making processes. The current challenge at hand is finding such experts, capable of navigating urban development complexities. This means that we ought to upgrade to more evolved academic programmes in built environment disciplines to cultivate these competencies as a means to form critical-thinking professionals that will help solve key issues.

5.3.4 Key Findings from Transformative Actors Across Three Cities

Analysis of interviews with nine transformative actors reveals four cross-cutting findings regarding landscape governance implementation.

First, governance transformation requires structural reorganisation beyond departmental reform. Birmingham's shift to natural capital approaches, Montreal's establishment of the Bureau du Design and Office of Public Consultation, and Barcelona's creation of the Urban Ecology department demonstrate that effective landscape governance necessitates new institutional structures rather than merely reassigning existing responsibilities. However, all three cities continue to struggle with departmental silos that fragment implementation.

Second, financial mechanisms increasingly determine governance capacity. Public-private partnerships, ESG criteria, and innovative funding mechanisms emerged as critical enablers in all three cities. Birmingham's natural capital investment model, Barcelona's private sector engagement in façade restoration and urban sustainability, and Montreal's strategic use of development incentives demonstrate that contemporary landscape governance requires financial innovation alongside regulatory frameworks. Yet resource constraints and time-intensive processes remain significant barriers.

Third, public participation frameworks exist but lack operational depth. Montreal's extensive consultation mechanisms (Tables de concentration, OCPM, PPUs), Barcelona's Strategic Internal Sustainability Plan emphasis on citizen participation, and Birmingham's neighbourhood-level planning all articulate participation principles. However, transformative actors across cities identified gaps between consultation processes and meaningful co-production, with online platforms and grassroots movements often more effective than formal mechanisms.

Fourth, heritage and identity considerations increasingly frame landscape governance through climate rationales. Montreal's repositioning of heritage preservation as carbon sequestration strategy, Barcelona's integration of landscape quality with governmental sustainability, and Birmingham's ecosystem services framing demonstrate how landscape governance increasingly connects cultural and ecological values. This convergence creates opportunities for integrated approaches while raising questions about how diverse values are negotiated in governance processes.

Fifth, collaborative learning and capacity building emerged as critical enablers for implementation. Transformative actors consistently emphasised the importance of

transparency, continuous learning processes, and professional capacity development that enable policy adjustment and institutional innovation. This finding – not captured by existing landscape governance frameworks – reveals the need for explicit attention to attitudes and mechanisms that support knowledge co-creation among diverse stakeholders.

These findings inform the tool categorisation in Section 5.5, with the fifth finding providing the basis for an additional category addressing collaborative learning and capacity building.

5.4 Cross-city Analysis: Interview Findings Assessed Against RUL approach Attributes

Section 5.3 presented interview findings organised by city to reveal context-specific implementation challenges and innovations. This section reorganises the same interview data by RUL approach attribute, synthesising findings across Birmingham, Montreal, and Barcelona to identify which attributes are strongly reflected in practitioner knowledge and which remain underdeveloped in implementation. Interview responses are grouped by thematic perspective on each attribute. These groupings emerged from content analysis and represented distinct approaches or emphases identified across the nine participants.

This section addresses RQ2 by identifying specific tools and practices that enable synergies between governance approaches and planning/design tools, contributing to transformative knowledge generation.

5.4.1 Adaptive processes for knowledge creation in complex systems

This study is structured around two interconnected groups of research. One is focusing on critical aspects of urban development and governance. The first group explores governance challenges and adaptation strategies. Simultaneously, the second group examines the transformative aspects of strategic urban citizenship and the integration of culture, offering innovative perspectives on urban development.

Group 1: Governance and Adaptation Challenges

This group emphasises the challenges in urban landscape governance, underscoring the need for adaptive knowledge in complex systems. Interviewee 14 highlights the global neglect of urban landscape governance and promotes more effective reforms to integrate landscape and climate change. In parallel, interviewee 20 points out local governments' difficulties in aligning global discourse to local actions. Later, interviewee 13 proposes integrating climate change into

heritage narratives and merging environmental and cultural considerations to improve management. The interviewee 15 calls for reconciling human health with ecosystem health, challenging the traditional separation between environment and society. Interviewee 19 stresses integrating environmental, social, and governance aspects in urban development to promote innovation and resilience.

Group 2: Strategic Urban Citizenship and Culture Integration

This group focuses on integrating culture and strategic urban citizenship into urban development. Interviewee 16 suggests overcoming design dichotomies to address global threats. The interviewee proposes new design visions for better understandings. Interviewee 12 emphasises the importance of a symbiotic relationship between urban development, heritage preservation, and green spaces. Similarly, interviewee 6 contributes insights into urban landscape management by highlighting the role of governance after planning. Interviewee 11 supports interdisciplinary collaboration to address the interplay between urban and green spaces. Interviewee 17 envisions urban landscape governance as creating a new culture that needs to evolve as a new identity, integrating commercial, industrial and cultural elements.

5.4.2 Place-based in multiple scales. Area of control and area of influence. Multi-scalar as SDG operationalisation

In this section, the opinions of the interviewees are divided into two positions. The first backs the integration of urban planning within global policies and supports holistic visions that align with international agendas. The second group explores multiscale urban planning and heritage preservation.

Group 1: Multiscale Urban Planning Advocacy and SDG Integration

Interviewees 14, 20, and 15 recognise the need for urban development to operate across multiple scales. Interviewee 14 mentions the New Urban Agenda (NUA), as essential in promoting interconnected approaches. Interviewee 20 highlights the importance of local leadership. Drivers appear as triggers to the alignment of international policies to align local actions with global goals. Interviewee 15 advises city resilience should be considered at various scales. This transcalarity acknowledges the connection between clean air, sustainable mobility, and WHO guidelines. Their discussions underscore the interconnectedness of urban quality, health and governance.

Interviewee 14 says that cities should use the NUA to guide development, recognising the need for a holistic, multiscale approach aligned with UN SDGs. Interviewee 20 talks about the role

of local leadership and international policies in strategically empowering cities to address environmental challenges, emphasising the importance of global policies to support local actions. Interviewee 15's work on blue infrastructure shows how urban resilience is linked to multiple scales, focusing on clean air, mobility and health, which is aligned with WHO guidelines.

Group 2: Multiscale Considerations in Urban Planning and Heritage Preservation

Interviewees 16, 13, 12, 6, 11, and 19 discuss multiscale urban planning. Interviewee 16 backs a boundary-free approach to site design that focuses on landscape perspectives. Interviewee 13 talks about multi-scalar landscape urbanism and notes its lack of operationalisation. Interviewees 12, 6, and 11, lean to express concern on relationships between areas of control and influence, local regulations, and visible elements across different scales. Interviewee 19 corroborates the challenges posed by administrative borders in governance and advocates more flexible structures.

Additionally, interviewee 12 emphasises the importance to understand local control and broader influence in urban planning. Interviewee 6 stresses how working with communities and multiple scales can add value to this. Interviewee 11 discusses the significance of varying scales in active mobility in urban design. And, in interviewee 19´s view, rigid administrative borders can hinder effective governance hereby they encourage flexible, collaborative approaches to metropolitan decision-making .

Lastly, interviewee 17 proposes guiding landscape approaches through global scales, with detailed references for different levels of urban design, from large areas to minor elements.

Often, responses come in the form of links or recommendations after a period of reflection following the interview. The exploration of governance challenges from the first group Emphasises the need for flexible and adaptive strategies to address the complexities of urban landscapes in the context of climate change. The second group is focusing on cultural integration. Their understandings involve urban planning when community participation is incorporated into the design process. This group also highlights the importance of multi-level urban planning. Integrating these levels with global policies, such as the SDGs and the NUA, is considered fundamental for sustainable urban development. Overall, the interviews show a shared vision of urban landscapes that transcends traditional dichotomies. The perspectives obtained provide valuable contributions to future urban governance and guide to tools, that will be listed in chapter 6.

5.4.3 Towards a Quintuple Helix of Innovation Model: university – industry – government – public – environment

This part investigates the viewpoints of experts grouped into two focal points. The first group considers the role of comprehensive governance and industry. Separately, the second group focuses on an activist - driven vision.

Group 1: Comprehensive Governance and Industry Involvement

Interviewees 14, 20, and 17 stress the ever-growing need for an inclusive governance approach that incorporates public government, industry, and private investors. They defend the adjustment of governance with socio-environmental criteria and cross-sectoral collaborations, reflecting the quintuple helix model.

Interviewee 14 thinks that this model is a benefit for urban governance and notes its application in some city councils through public government and university partnerships. Nonetheless, the interviewee mentions the significant gap between municipal governance, planning, and finance, where financial interests often eclipse any other aspects. The role of industry and private investors is herewith crucial, with many city councils engaging in green finance and ESG programmes to attract future funding.

Interviewee 20 believes that many disciplines should be united – such as public health and financial modelling – in governance structures to for wiser and more informed decision-making .

Group 2: Activist-driven Vision and Inclusive Stakeholder Involvement

Interviewees 16, 13, 12, 6, 11, 15, and 19 discuss the importance of activism and stakeholder involvement in urban development, matching the quintuple helix model for transformative decision-making .

Interviewee 16 points out the need for an activist to drive the vision and promote transformation. Suchlike role is crucial for sparking citizens` interest and defining the vision for urban landscapes. Interviewee 13's experience echoes a strong grounding of the quintuple helix model in public government and academic institutions. This interviewee values sharing citizen perceptions as well as transparency through participative formats.

Interviewee 12 considers important the involvement of various agents, stakeholders, citizens, decision-makers, and NGOs in the shaping of urban landscapes. Interviewee 6 stresses the need for stakeholder engagement in urban landscape management, including designers, citizens, and

elected officials. Although not explicitly discussing the quintuple helix model, the interviewee supports collaboration with universities and elected officials for urban planning.

Interviewee 11 equally discusses the need for stakeholder, including academia and government. The interviewee accentuates the importance of pedagogy in ensuring the birth of new views that will influence the urban environment. Interviewee 15 integrates the public government and university partnership within the Quintuple Helix model. They note the private sector's reluctance. The interviewee then explains how the use of a cross-silos approach can serve to address public environmental health more effectively.

Interviewee 19 focuses on resilience in urban planning, emphasising the need for projects to adapt to disruptions. This perspective helps grasp the importance of resilience in ensuring effective and adaptable urban projects.

5.4.4 Conservation and Transformation: SD and Complex System Resilience

This section compiles the experts' insights into two groups, offering distinct perspectives on the side of dynamics of urban governance and departmental structures. On the other side on the delicate equilibrium between conservation and transformation.

Group 1: Governance and Departmental Silos

Interviewee 14 reflects on siloed departments. The reflections lead to the extreme where conservation and development strategies are misaligned because of bureaucratic. Interviewee 16 claims that conservation and transformation are not opposing strategies but complementary approaches for holistic change, checkmating traditional dichotomies.

Interviewee 20 brings forward the need for strategic and multi-scale action to address climate change, stressing that local governments ought to bridge the gaps between different governance levels. Interviewee 13 is concerned on environmental impacts overshadowing urban landscapes' sensory aspects.

Group 2: Conservation, Transformation, and Balancing

Interviewees refer in this section to the balance in conservation versus. On one hand Interviewee 12 poses the need to balance heritage preservation with urban transformation and notes that heritage can be a carbon-sequestration asset. Interviewee 6 presses for strategic visioning and stakeholder collaboration in urban management in order to address the conservation-transformation balance directly. On the other hand, Interviewee 11 views climate change as a key driver for transforming citizen behaviour and urban practices. Interviewee 15

understands conservation and transformation as parts of a compromise to achieve a liveable city, focusing on sustainable mobility and public health.

Interviewee 19 thinks universities could enhance stakeholder collaboration but warns that a narrow focus in academia may limit a holistic approach to ESG issues.

The conclusions derived highlight the need for more inclusive urban governance. The quintuple helix model emerges as a key tool to unite these diverse areas. Some of the interviewees were unfamiliar with the term. One of the major debates revolved around the difficulties of finding a balance between heritage conservation and urban transformation. The creation of technical-political consensus emerges as a future challenge. Furthermore, active citizen participation, driven by activism and transparency, is recognised as an essential element to legitimise change processes and promote a shared sense of community. However, the nuances regarding the role of this participation are very varied, ranging from co-production to mere consultation. Thus, it is clear that the integration of diverse knowledge and citizen involvement is necessary, but the mechanisms to achieve this are not yet fully developed or refined. In this regard, opening up methodologies and instruments seems to be appropriate for consensus generation and the integration of diverse knowledge, as the conclusion of each interview suggests that much knowledge remains unlocked, disappearing with personal experience without being reintegrated into the knowledge cycle to transform landscapes for sustainable development.

5.4.5 Ethics and Environmental rights

The discussion on rights diversified among the interviewees in 5 focuses.

Group 1: Governance and Environmental Rights

Interviewees 14 and 20 address how policy perspectives affect environmental rights. Interviewee 14 highlights the disconnect between carbon-focused policies and broader climate emergency needs. Interviewee 20 emphasises how green spaces are crucial to social benefits in urban planning, aligning with ethical concerns.

Group 2: Ethics and Professional Values in Landscape Planning

Interviewee 16 supports a holistic vision of landscape planning, stressing the integration of design, professional values and ethics. This approach, however, requires professionals to excel in multidisciplinary collaboration, research and public engagement. Interviewee 12 explains the ethical dimensions of balancing heritage preservation with functional requirements and showcases the responsibilities of stakeholders in urban planning.

Group 3: Environmental Rights and Urban Mobility

Interviewee 11 thinks that reassessing the role of automobiles in cities would help promote sustainable urban mobility, this would be in the benefit of pedestrians' respiratory health rights. Interviewee 15 views urban design as an ethical responsibility. This deontological dimension will be important in the conclusions.

Group 4: Integration of Environmental and Social Rights

Interviewees 19 and 17 think integrating environmental rights into evaluation processes would be helpful. They particularly doing so through the ESG criteria. Interviewee 19 favours ESG assessments to incorporate human rights. Interviewee 17 highlights the need for neutral urban landscapes that are free from commercial influence. According to the interviewee, decommodification fosters a better culture of public good.

Group 5: Visual Cones and Environmental Rights

Interviewee 13 thinks of "visual cones" as an individual right. Rights directly related to the importance of sunlight and visual perception are discussed. Interviewee 6 touches on the cultural aspect of environmental rights, emphasising the role of landscape heritage in shaping public perception. The importance of visuals, of green visuals specifically, contact to recognisable landscapes and light, emerge again as relevant in the rights discussion.

5.4.6 From Consultation to Co-production

In the quest for more dimensions of urban landscape development and governance, the aforementioned thematic groups among the interviewees help ponder on the profound intersections of indigenous and citizen knowledge, community engagement, private sector involvement, and co-responsibility, hereby revealing the parts that shape evolving landscape discourse.

Group 1: Citizen Knowledge and Landscape Visioning

Interviewees 14 and 16 note the value of indigenous and citizen knowledge in landscape projects. Interviewee 14 discusses the co-creation of knowledge as a benchmark for aligning proposals with local daily experiences. Interviewee 16 proposes a new participative model as an incentive for transformation. In this manner showing how using drawing as a tool to bridge knowledge gaps and engage citizens in envisioning their surroundings is useful. This approach seeks to inspire fresh perspectives in site visioning.

Group 2: Community Engagement and Decision-making Processes

Interviewees 20, 13, and 6 focus on the enhancement of community engagement. Interviewee 20 proposes the use of referendums to directly involve residents in decision-making . Democratic participation could add value to the shaping of local outcomes. Interviewee 13 says that the significance of co-producing knowledge about intangible landscapes through indigenous perspectives. Interviewee 6 supports a collaborative approach and notes a shift towards deeper engagement and co-production in urban planning, with landscape professionals leading these efforts.

Group 3: Urban Landscape Co-production and Private Sector

Interviewees 17, 15, and 19 address the dynamics of urban landscape co-production involving the private sector. Interviewee 17 corroborates the importance of private sector's role in city transformations. Interviewee 15 on the other hand, emphasises incorporating citizen perceptions into co-production processes. Interviewee 19 reflects on the evolution of public participation in time since the eighties.

Group 4: Co-responsibility and Ethical Responsibility

Interviewee 12 thinks that engaging citizens in co-production, reflecting a shift towards community empowerment and active participation, would be of use. Interviewee 11 supports collaborative approaches among stakeholders to achieve common goals, moving beyond traditional consultation.

Gaps in governance, like focusing only on carbon while ignoring other climate needs, show why it's important to include both environmental and social rights in decision-making . Furthermore, the ethical responsibility of professionals transforming landscapes emerges in many of the conversations, overlapping with the previous section, 5. On one hand, as guarantors of the balance between heritage conservation, but also as technicians capable of translating these considerations into actionable solutions. The value of indigenous and citizen knowledge in landscape visualisation and the capacity for complex design thinking champion the potential of professionals, both individually and cooperatively. This approach, in addition to promoting a sense of co-responsibility, also highlights the professional but ethical responsibility at a collective level in responding to the global change demanded by the new climate regime. This theme dominates the final part of the interviews. In the conversation ends, the debate is opened on the directions to be taken collectively in the future, beyond a disciplinary viewpoint. Ultimately, these reflections call for a more ethical approaches to landscape planning and

design. Focus on public well-being, community empowerment, and the creation of sustainable, are among the responses to the needs of all citizens.

5.5 Professional Tools and Practices Inventory

This section continues to address Research Questions 2 and 3 by cataloguing specific tools and practices that enable landscape governance implementation. The World Bank Landscape Approach 101 framework (Fretwell et al., 2021) provides the theoretical foundation for categorising implementation tools (categorisation detailed in Section 3.4.5). This framework, originally developed for rural landscape contexts, is adapted here for urban application.

Analysis of findings from the three city case studies (Sections 5.2–5.4) revealed an additional implementation dimension not captured by the World Bank's five categories: collaborative learning and capacity building for knowledge co-creation. This sixth category emerged from interview findings where transformative actors consistently emphasised transparency, continuous learning processes, and professional capacity development as critical enablers for implementation. Tools and practices are therefore organised into six categories below.

1. Multistakeholder identification is paired with “Identifying key actors in urban landscapes”. This involves communication with key agents, including community members, policymakers, academics, and practitioners.
2. Collaborative planning is matched with “Reading landscapes. Understanding the intricacies of urban environments is crucial for making informed decisions. Tools such as preliminary ecological appraisals and urban landscape catalogues help evaluate ecological and natural capital values, guiding policies to create quality resilient urban landscapes.
3. Shared vision is twinned with “Developing collective visions”. This means facilitating participatory processes to develop shared visions.
4. Suitable practices are identified with “Professional development capability”. This focuses on enhancing the skills of professionals.
5. Governance and policy are linked to “Institutional capacity building”. This involves strengthening relevant stakeholders' and organisational bodies.
6. Adjusting policies goes with “Attitudes for positive knowledge co-creation”. This emphasises formulating policies that facilitate collaborative knowledge co-creation

processes among various stakeholders, promoting transparency, accountability, and continuous learning.

5.6 Key Findings: Municipal Governance Capacity Assessment

This chapter examined landscape governance implementation in Barcelona, Birmingham, and Montreal through policy document analysis and interviews with built environment transformative professionals, addressing Research Questions 2 and 3. KA matrix analysis revealed that all three cities exhibit strong alignment with place-based multiscalar approaches and adaptive processes for knowledge creation. However, systematic weaknesses exist in frameworks addressing ethics and environmental rights and in structured co-production mechanisms. This pattern indicates that municipal policies prioritise spatial and technical dimensions of landscape governance while demonstrating limited development of participation infrastructure and knowledge creation approaches.

This fragmentation between municipal departments persists regardless of governance structure. Departmental silos and limited cross-sectoral coordination constrain implementation across all three cities regardless of governance structure or cultural context. Analysis of interview data identified organisational fragmentation as the primary barrier to integrated landscape approaches, suggesting this challenge is inherent to contemporary municipal governance structures rather than context specific. Barcelona's Superblocks programme, Birmingham's green infrastructure network development, and Montreal's ecological corridor planning demonstrate that spatial interventions enable testing, learning, and scaling of landscape governance principles. These projects generate demonstration effects that – occasionally – subsequently influence policy frameworks and institutional practices, functioning as mechanisms for bridging silos and theory-practice gaps identified in the literature. Public-private partnerships, Environmental, Social and Governance (ESG) criteria integration, and strategic development incentives emerged as critical enablers across cities. Analysis indicates that contemporary landscape governance requires financial frameworks capable of aligning environmental, social, and economic objectives.

However, resource constraints and time-intensive implementation processes remain significant barriers. While policy documents across all three cities articulate stakeholder engagement principles, interview analysis revealed substantial gaps between participation rhetoric and

operational implementation. Formal consultation structures provide procedural frameworks, yet mechanisms for meaningful co-design and co-implementation are largely absent. Evidence suggests that grassroots initiatives often achieve more substantive collaboration and can enact change more effectively than formal municipal programmes. Climate-related events and major international events emerged as catalysts enabling transformative actors to advance integrated landscape approaches. Analysis indicates that crisis creates decision-making windows that overcome institutional inertia, suggesting that implementation strategies should anticipate for crisis-driven opportunities rather than relying solely on incremental policy development. Interview analysis revealed that transformative actors consistently identified continuous learning processes, and interdisciplinary capacity building as implementation prerequisites. However, formal mechanisms supporting knowledge co-creation, institutional learning, and professional development are largely absent from municipal frameworks. This gap represents a critical implementation barrier not adequately addressed by existing landscape governance frameworks.

Research Question 2 asked: What synergies between governance approaches and planning/design tools contribute to transformative knowledge generation and cross-disciplinary collaboration in resilient urban landscapes? Analysis identified three primary synergies across the three cities. The integration of project-based spatial interventions with adaptive policy frameworks enables iterative learning and progressive scaling of innovations. Financial innovation mechanisms including ESG criteria, natural capital frameworks, and public-private partnerships align multiple stakeholder objectives and facilitate cross-sectoral collaboration. Multiscalar planning frameworks that connect neighbourhood-level interventions to metropolitan strategies enable knowledge transfer across governance scales.

Research Question 3 asked: What implementation strategies bridge the theory-practice gap in sustainable urban landscape interventions whilst facilitating the integration of knowledge across theory, practice, and governance? Four implementation strategies showed effectiveness across the case studies. Pilot projects implemented at neighbourhood scale create tangible demonstrations that inform citywide implementation. Crisis-responsive governance approaches leverage environmental events as catalysts for policy innovation. Hybrid funding models combine public resources with private investment aligned through sustainability criteria. Informal networks of transformative actors navigate institutional constraints through professional expertise and strategic positioning within governance structures. This analysis

reveals persistent disjuncture between municipal policy intentions and implementation realities. While policy documents increasingly reference integrated landscape approaches and climate resilience, operational mechanisms for cross-sectoral coordination, meaningful co-production, and institutional learning remain inadequately developed. Financial constraints, departmental fragmentation, and limited capacity building infrastructure constrain the translation of policy commitments into practice. The findings indicate that effective implementation depends less on comprehensive policy frameworks than on tangible spatial projects that enable experiential learning, financial mechanisms that align diverse objectives, institutional structures supporting cross-sectoral collaboration, and professional networks capable of navigating organisational complexity. These findings inform the development of two complementary frameworks presented in Chapter 6: the Institutional Landscape Capacity Building Model and the Professional Landscape Capability Development Model.

Chapter 6 – Professional Practice Analysis and Capacity Building

This chapter addresses Research Question 3:

RQ3: What implementation strategies bridge the theory-practice gap in sustainable urban landscape interventions whilst facilitating the integration of knowledge across theory, practice, and governance, thereby closing the loop of transformative knowledge creation?

6.1 Theoretical Framework: Two Complementary Approaches to Capacity Building

Chapter 5 findings revealed persistent gaps between policy intentions and implementation realities, highlighting the need for capacity building at both institutional and professional scales. This chapter develops two complementary frameworks addressing these gaps: the Institutional Landscape Capacity Building Model (Section 6.1.1) and the Professional Landscape Capability Development Model (Section 6.1.2).

6.1.1 Institutional Landscape Capacity Building Model: Scaling Up

The Institutional Landscape Capacity Building Model represents one approach to implementing integrated landscape management principles (Arts et al., 2017). This framework conceptualises landscape governance as a system of regulatory processes, mechanisms, and organisations that shape how political actors influence landscape-level actions and outcomes. The model addresses complex, multi-stakeholder challenges through several key mechanisms: facilitating dialogue between public and private sector actors, creating platforms for stakeholder alignment, and establishing institutional structures for collaborative decision-making . These mechanisms are intended to enable context-specific governance arrangements that respond to the particular socio-spatial characteristics of individual landscapes.

The LCF is structured around five core elements derived from the ten principles proposed by Sayer et al. (2013b). With these elements, landscapes can be conceptualised by understanding both natural and socio-cultural dimensions and achieving internal consistency by accommodating diverse stakeholders to facilitate collaboration. Additionally, the importance of generating marketable values through entrepreneurship is emphasised, and sustainable

business models and managing resources are considered by utilising and improving existing management systems through participatory processes.

Further exploration into landscape governance reveals a distinction between normative and transformative knowledge. The first judges how systems should be structured, while the second focuses on the managing of socio-ecological systems to achieving sustainable goals (Urmetzer et al., 2020). Transformative knowledge, which extends from or beyond normative frameworks, is driven by institutional innovators, activist academics, and reflective practitioners. This "knowledge for action", supported by scientific evidence on the political impact of sustainability goals (Biermann et al., 2022), plays a crucial role in the development of integrative strategies to address sustainability challenges and influences normative knowledge.

Collaborative learning is the way to obtain a “thought collective” necessary for transforming urban landscapes towards sustainability (Fleck, 1979). This thesis aims to increase the focus on urban landscapes within resilience by proposing a new framework. This framework acknowledges the need for a top-down transformative approach in science.

This institutional model is examined through interviews with institutional representatives (Section 6.2), revealing how international organisations operationalise capacity building in practice.

6.1.2 Professional Landscape Capability Development Model: Scaling Down

The Professional Landscape Capability Development Model complements the institutional approach by targeting individual built environment transformative professionals – reflective practitioners, activist academics, and institutional innovators – who navigate and shape landscape governance from within. While the institutional model operates at organisational scale, this professional model focuses on cultivating the skills, knowledge, and strategies necessary for developing and managing resilient urban landscapes among built environment professionals.

This model applies transformative knowledge to urban landscapes, structuring an approach designed to enhance the capabilities of professionals and agents involved in urban landscape development and agents involved in urban landscape development. The model is anchored in the fourth pillar of resilience, which emphasises preparedness, learning capacity, and transformative knowledge.

This framework also focuses on cultivating skills, knowledge, and strategies necessary for developing and managing resilient urban landscapes among built environment professionals. Different authors highlight the lack of identification and coordination among the professionals aimed at guiding Integrated Landscape Management Approaches (Arts et al., 2017; Beunen and Opdam, 2011. Zscheischler et al., 2019)

> *"The results indicate that due to the type of problem (landscape change) – which is characterised by complexity, beneficial linkages to a multitude of actor groups, and broad problem awareness – Collaborative Landscape Management appears to be feasible. However, other preconditions related to social relationships among actor groups, questions of legitimate coordination and the collaborative capacity of the community are not met, thus reducing the likelihood of success" (Zscheischler et al., 2019, p.495).*

This professional capability model is examined through interviews with reflective practitioners (Section 6.3) and analysis of 32 award-winning projects (Section 6.4), revealing implementation strategies that bridge theory and practice.

6.2 Research Approach: Examining Professional Practice

Chapter 6 gives attention to the third research question outlined in the introduction. The RQ3 aimed to explore how capacity and capability-building can be effectively implemented among built environment transformative professionals. To do so, it investigates how these strategies can facilitate the integration of knowledge across theory, practice, and governance, ultimately contributing to closing the loop of transformative knowledge creation.

This chapter employs the RUL approach-based methodology to examine how transformative knowledge is applied across different global settings. The six RUL approach attributes (adaptive processes, place-based multiscalar approaches, quintuple helix innovation, conservation-transformation balance, ethics and environmental rights, and co-production) serve as analytical lenses throughout this investigation of professional practice and award-winning projects.

While Chapter 5 examined municipal policy implementation, this chapter shifts attention to professional practice. Through interviews with twelve built environment transformative professionals and analysis of 32 finalist projects from the Rosa Barba International Landscape Prize, the chapter investigates implementation strategies and tools applied in real-world contexts (methodology detailed in Sections 3.4.3.4 and 3.4.4).

The analysis identifies transferable knowledge systems, design approaches, and governance practices that bridge theory and practice in professional landscape work. This chapter examines how built environment transformative professionals operationalise implementation strategies across diverse contexts, revealing mechanisms for capacity building, interdisciplinary collaboration, and resilience in urban landscapes.

"As practitioners mutually engage across the landscape of practice, they interlock their indwelling and sensitise themselves to the distinctions in the environment when faced with grand challenges – in other words, they develop their mutual capacity for phronesis."(Ackermann et al., 2024)

6.3 Materials and Methods: Unpacking Systems of Projects for Professional Growth

The research in Chapter 6 mirrors conceptually that presented in Chapter 5 of this thesis but does not concentrate on the three heterogeneous cities – Barcelona, Montreal, and Birmingham – described in Chapter 5. This section embraces a broader scope, aiming to identify global and multisectoral visions of urban landscapes. The investigation explores the findings extracted from interviews with key personalities. Design and planning initiatives are highlighted and aligned with the thesis research questions from those conversations. Finally, a range of systems of projects is distilled from the findings and will be considered for award-winning project studies analysis.

6.3.1 Professional Interview Analysis

This section presents findings from interviews with twelve built environment transformative professionals selected for their international influence on landscape governance. These "frontrunners" (Loorbach, 2010) interviews are distinct from the nine city-specific interviews in Chapter 5: while Chapter 5 interviewed three professionals per city focused on local implementation, these twelve interviews examine professionals with global portfolios to understand implementation strategies that bridge theory and practice, directly addressing RQ3 (Diedrich, 2013) . The twelve participants comprise six institutional representatives (professionals working within or closely with IUCN, UNESCO, Council of Europe, UNEP, UN-Habitat) and six reflective practitioners (independent professionals, academics, and consultants with international practice).

Interview analysis focused on identifying implementation strategies, professional tools employed, and mechanisms for integrating knowledge across theory, practice, and governance; the core components of RQ3 (methodology detailed in Section 3.4.3.4).

Interview findings are organised by professional context: institutional representatives (Section 6.3) provide insights into organisational capacity building approaches, while reflective practitioners (Section 6.4) reveal individual capability development strategies.

Analysis reveals implementation tools, governance challenges navigated by professionals, and professional competencies required for bridging theory and practice in landscape governance.

6.3.2 Systems of Transformation: Projects as Knowledge Ecosystems

Whilst interviews reveal how professionals think about implementation, examining award-winning projects shows what actually happens in practice. This section analyses 32 urban landscape projects selected from Rosa Barba International Landscape Prize finalists (editions 8–12, 2014–2024). The Rosa Barba Prize, coinciding with the Barcelona International Landscape Biennial, recognises outstanding landscape architecture projects internationally. The project analysis complements interview findings by identifying the tools, design approaches, and governance mechanisms professionals employ in real contexts. Projects were assessed using the same RUL approach framework applied throughout the thesis, examining how professional practice operationalises the six attributes: adaptive processes, place-based multiscalar approaches, quintuple helix innovation, conservation-transformation balance, ethics and environmental rights, and co-production (methodology detailed in Section 3.4.4). The analysis extracts transferable strategies across projects, organised by implementation function: identifying key actors, reading urban landscapes, developing collective visions, professional capability development, capacity building, and policy adjustment for knowledge co-creation. These categories draw from the World Bank Landscape Approach framework adapted for urban contexts (Section 3.4.5), enabling systematic comparison of tools and approaches across diverse geographic and project types. Section 6.5 presents the findings, revealing patterns in how award-winning projects bridge theory and practice through specific tools, stakeholder engagement approaches, and adaptive governance strategies.

6.4 Analytical Approach to Project Documentation

This section presents the key findings from interviews with 11 experts. Those individuals were selected because their profiles and curricula make them recognisable drivers of change, and thus representatives of the transformative community today. Together with the ten interviewees considered in the previous chapter for the cities' case studies, they represent diverse geographical regions, professional backgrounds, and areas of expertise, providing a differential view of urban landscapes. Through semi-structured interviews, these experts shared insights on four key areas: how global directives influence local practice, how conflict drives governance innovation, which tools and instruments enable transformability, and how professional capabilities must evolve to meet future challenges. Their comprehensive view of current challenges and opportunities organised against the four topics. Those four topics are in fact, reuniting information for the research questions of the thesis RQ1, RQ2 and RQ3. Table 11 synthesises their main contributions across these themes and aims to communicate the findings in a more visual manner.

Table 11 synthesises findings from the twelve international interviews. The interview transcripts were analysed using the excel-based comparative matrix approach described in Section 3.4.3.3, systematically extracting content relevant to implementation strategies, professional tools, governance challenges, and capacity building mechanisms. The table condenses the key themes identified across participants, organised by professional context (institutional representatives and reflective practitioners), enabling comparison of different perspectives on bridging theory and practice in landscape governance.

Table 11. Summary of Expert Perspectives on Transformative Urban Landscape Practice (Source: the author)

Expert	Professional Background	2.1 Global Directives, Local Practice	2.2 Design /Governance Lessons	2.3 Tools and Instruments for Transformability	2.4 Future - Proofing Practice: Evolving Professional Capabilities
Interviewee 1	Legal professional with expertise in environmental and cultural heritage law	European Landscape Convention integration with SDGs; lacks specific implementation tools	Need to clarify relationship between landscape and urbanism; transdisciplinary landscape culture	Lausanne Declaration on Landscape Integration in Sectoral Policies; multi-stakeholder collaboration	Education and practice should adopt transformative methods; landscape education from primary school
Interviewee 2	Professor with interdisciplinary background in ecosystem management, climate adaptation, and sustainable agriculture	Challenges in MDGs to SDGs transition; critique of Social-ecological System approach	Tension between urbanisation and green spaces; ecosystem governance with top-down policies and bottom-up knowledge	NbS and green roof integration; integrated approaches for urban challenges	Landscape governance drawing on scientific, local, and indigenous knowledge; interdisciplinary collaboration
Interviewee 3	Emeritus Professor of Landscape Architecture	Temporal challenges in governance; proposes extending 2030 Agenda to 2050	Governance conflict between conservation and development; clear communication and strategic planning	International Geodesign Collaborative (IGC) integration with SDGs; collaborative decision-making	From teaching students to training educators; blending urban and natural environments
Interviewee 4	Professional with background in architecture and planning	Biodiversity loss and resource exploitation; Latin American Landscape Charter	Biocultural landscapes concept; integration of cultural and natural elements	IGC and Landscape Architecture Latin Initiative (LALI); ecosystem conservation	New competencies needed for migration and climate change impacts; holistic educational approach
Interviewee 5	Associate Professor of Landscape Architecture	Gap between political rhetoric and real actions; Western vs. Indigenous perspectives	Integration of cultural and spiritual values; balancing profit - driven approaches with community values	Indigenous knowledge in landscape planning; collaborative planning	Indigenous knowledge in African Landscape Governance Models; community - centered approaches
Interviewee 7	Economist with experience in urban resilience	Translating international principles into actionable strategies; New Urban Agenda	City-to-city collaborations; balancing competing land-use demands	City Resilience Profiling Tool (CRPT); data collection and stakeholder engagement	Cross-disciplinary approaches; NbS, circular economy, and sustainable mobility development
Interviewee 8	Leader in landscape architecture and cultural heritage preservation	SDGs impact on landscape architecture; bottom-up approach to global goals	SDGs critique for inadequate local context consideration; feedback mechanisms	Legal recognition of landscape features; regional landscape charters	Collaboration and contextualised integration; understanding local contexts culturally and symbolically

Interviewee 9	Architect and sustainability supporter	Urban landscapes connecting communities with global ecosystems; structured strategies	Participatory design processes and community engagement for conflict mitigation	Participatory design for addressing conflicts	Evolution in architectural education towards ecosystem-based approaches; circular economy principles
Interviewee 10	Pioneering figure in landscape architecture and urbanism	International policies influence on sponge city concept; sustainability principles	Integration of urban and natural environments; nature-based designs	Geodesign, NbS, and Sponge cities application	Landscape architects' role in policy formation; active involvement in decision-making
Interviewee 18	Leading landscape architect and theorist	Impact of SDGs, New European Agenda, and ELC; quantitative metrics and qualitative thinking	Historical examples (US survey grid) influencing governance systems; innovative approaches	Landscape Urbanism; green infrastructure for flood control	Cultural preferences for open spaces; transformative approaches meeting needs while maintaining integrity
Interviewee 21	Executive Director of health-focused organisation	Urban health determinants complexity; focus on SDG 11; addressing disparities	Land-use decisions' impact on public health; transparent decision-making	Fitwel Healthy Building certification; Accelerating City Equity (ACE) project	Salutogenic disciplines

The ten expert perspectives in Table 11 reveal the following themes:

The most consistent one by far is the context-specific implementation of global frameworks. This theme emerged with experts like Interviewees 1, 5, and 8 highlighting how international directives must be calibrated to local conditions. In the same direction, the integration of indigenous and local knowledge, was strongly advocated by Interviewees 2, 4, 5, and 8. Moving beyond Western-centric paradigms' imagery of knowledge towards more inclusive approaches could be taken.

Interdisciplinary collaboration was universally emphasised as basal for addressing complex challenges. Interviewees 2, 7, and 21 particularly stressed the need for cross-sectoral expertise. The notion of involving not only design professionals but also health experts, economists, and community representatives surfaces as recurring. While all the tools mentioned in the interviews will be displayed in Chapter 7, it is worth mentioning the recurring naming of tools like the International Geodesign Collaborative (IGC) and NbS.

Experts also highlighted the need to balance quantitative with qualitative metrics. From both ends of the dichotomy presented in chapter 3, interviewees call for more balance between metrics and approaches. Interviewee 18 specifically called for combining technical

measurements with experiential understanding, while Interviewees 1 and 10 emphasised the importance of both scientific data and cultural values in decision-making .

Finally, mentions to resilience or sustainability are unanimous, while public health, mental or physical, emerged as a crucial capability.

Whilst these expert interviews provide theoretical and practical foundations, Section 6.5 examines how implementation strategies and professional tools manifest in award-winning projects, offering concrete examples of transformative urban landscape interventions.

6.5 Award-winning Project Analysis

Building on Chapter 5's city case studies, this chapter examines professional practice through twelve international interviews and 32 Rosa Barba Prize finalist projects. These award-winning projects demonstrate implementation strategies in practice, revealing the tools, methods, and governance approaches professionals employ to bridge theory and practice. Project analysis uses the same RUL approach framework applied throughout the thesis, enabling systematic comparison and integration of findings in Chapter 7.

6.5.1 Award-winning interventions in Urban Landscapes: Analysing Rosa Barba Finalists

The Prize is open to all landscape projects materialised in the five calendar years before the Prize open call. The jury comprises leading international personalities in the landscape world, chosen by the Organising Committee of the Biennial. The submission to the Prize must be made by the authors of the projects, following an online procedure. The submission must include personal details, a project file, a project or landscape planning summary, and graphic documentation. The finalists present their projects at Barcelona's International Biennial of Landscape, where life, after the juror deliberation, the winner is announced.

This analysis examines award-winning projects from 2014–2023, providing contemporary examples that complement the policy evolution discussed in Chapter 5. The selection process entails identifying urban finalists from the 8th to the 12th editions of the Barcelona Biennial, ensuring the worldwide representation of diverse landscape projects. The sample of finalists for the initial seven editions is not considered representative, as the Prize primarily focused on European projects during that period. Therefore, from the 41 finalists across the 8th to the 12th editions, 32 projects aiming the 41 were retained. The discarded ones were in rural or natural contexts, thus not aligning with the thematic urban focus of the research.

Transcriptions of public presentations delivered by the 32 finalists during biennial editions 8–12 (2014–2024) were analysed to identify 16 specific projects in the urban design strategies and implementation processes that would be further analysed. Each project was then assessed against the six tool categories established in Section 3.4.5: identifying key actors, reading urban landscapes, developing collective visions, professional development capability, institutional capacity building, and adjusting policies for knowledge co-creation. This systematic assessment reveals which implementation tools appear most frequently across award-winning projects, how professionals combine tools in practice, and which strategies prove effective across diverse geographic and typological contexts.

The Knowledge Alignment Matrix (KA matrix established in Chapter 2 provides the systematic framework for evaluating how the 32 projects align with the six RUL approach attributes. Each project was assessed using the same five-point scale applied in Chapters 4 and 5, enabling comparison across thematic landscape management approaches applied to international policy frameworks (Chapter 4), municipal policies (Chapter 5), and professional practice (Chapter 6). Assessment criteria are detailed in Section 3.4, whilst condensed findings appear in Table 12. Table RBF. 16 Rosa Barba Finalists Assessment Using Knowledge Alignment matrix, whilst condensed findings appear in Table 12. This consistent analytical approach reveals patterns in how award-winning projects operationalise resilient urban landscape principles across diverse contexts.

Table 12. Table RBF. 16 Rosa Barba Finalists Assessment Using Knowledge Alignment matrix (Source: the author)

Entry	Code	Country	Presenter	Identifying Key Actors	Reading Urban Landscapes	Developing Collective Visions	Professional Development Capability	Institutional Capacity Building	Adjusting Policies for Knowledge Co-creation
Thermal Central de Yang Shupu	1_2021	CHN	Ming Zhang	Government officials ensure compliance, architects design, environmental experts assess, community members provide feedback, construction teams build and integrate.	Satellite images from 2000 to 2019 likely tracked site changes and urban evolution.	Presenting the design process shows stakeholder involvement and collaboration.	Ecological restoration revives ecosystems; industrial heritage transformation creates eco-friendly spaces.	Progressive shutdown turns industrial relics into public spaces, repurposing polluted sites for community and environmental benefits.	
Medellín River Park	2_2021	COL	Juan David Hoyos	J.D. Hoyos and S. Monsalve lead the Medellin project. Stakeholders include government, planners, and community members, with key roles for NGOs and municipal collaboration.	The text highlights the need to understand Medellin's historical context for urban development.	Emphasis on how long-term community involvement is crucial for the project's success, integrating it into the city's development.	Long-term planning spans 20─30 years for sustainable urban development. The project enhances city connectivity with bridges, paths, and transport links.	International competition Emphasises a holistic approach to urban development, integrating various elements for a cohesive, sustainable city.	Integrated urban planning connects development with nature, using green infrastructure, sustainable transport, and river protection measures.
Girona Shore	3_2021	ESP	Martí Franch Batllori	M. Franch collaborated with Girona's municipality, trading free plans for support, advancing the green infrastructure project.	The team observed the site extensively, analysing trees, vegetation, and landscape features to develop tailored management plans.	Citizens were involved as caretakers, developing ownership and pride. This approach ensured the project reflected local values, leading to inclusive transformation.		The project builds institutional capacity by collaborating with the municipality and Environment Department to enhance local expertise in sustainable management.	
Parque Ribeirinho Oriente	4_2021	PRT	Catarina Assis Pacheco	C. A. Pacheco highlights the multidisciplinary team, including geobotanists who analysed vegetation and park design.	Land modelling fills areas to protect buildings from river levels, offering wind protection.			The project uses land modelling to protect infrastructure from higher river levels, showing a commitment to resilience.	

La Mexicana	5_2021	MEX	Mario Eduardo Schjetnan	Community input shaped the park, city authorities handled permits, developers provided funding, associations managed upkeep, and design professionals created the plan.	Negotiations led to La Mexicana Park, with M. Schjetnan's team planning an alternative to development for recreation and environmental benefits.	The text covers a business model for park sustainability, using private funding and financial planning tools.	Collaborative design involved community input, indicating stakeholder engagement. Environmental planning reserved parts of the site for remediation.	The text outlines the procedure for park creation, land allocation, and a sustainable business model using public-private partnerships.	
The Quays of the River Schelde	6_2021	BEL	João Nunes	Stakeholder analysis, collaboration with Antwerp, and public participation drove the project.	Analysis of the landscape's historical layers informed the design, addressed flooding, and considered climate change impacts.	Public participation shaped the design, positioning a water barrier as interactive infrastructure.	The concept involves creating interactive, inhabited blue infrastructure, focusing on urban areas with managed, sustainable landscapes.	The Antwerp project's flexible master plan adapted to changes, addressing flooding and ensuring long-term sustainability.	The site, once an industrial port area, focused on infrastructure reuse and climate change adaptation.
Tropic and Build Landscape in Medellin	7_2021	COL	Carlos Porta	C. Puerta led the Medellín project, which won the city's competition and involved urban planners and designers.	Historical analysis is key for understanding the built environment, preserving heritage, and linking past and present in urban design.		"Storytelling landscape" incorporates physical memory and history into design, using artistic and narrative elements to preserve and interpret cultural heritage.	International architecture competition awarded the project.	The "environmental alarm" Substantiates the need for knowledge to guide resilient urban planning and shape project goals.
Chulalongkorn University Centenary Park	8_2021	THA	Kotchakorn Voraakhom	K. Voraakhom is an environmental expert. The local community, government, and funding partners are key to the project's success.	Voraakhom addresses Bangkok's flooding and urbanisation, connecting them to historical trends and advocating for NbS.	Voraakhom park design features social activities to engage the community and foster ownership.	The project features Thailand's largest green roof, rain gardens, and NbS for climate resilience and water management.	International competition awarded the project, which incorporates social activities and community involvement.	Recognising landscape analysis and community engagement in tackling climate change.
Valencia Central Park	9_2021	ESP	Kathryn Gustafson	The community engaged in maintenance, contractors implemented features, and public authorities ensured compliance and oversight.	The park integrates natural and cultural water, emphasises ecological regeneration, and unifies Valencia's industrial area	Public involvement and responsibility in park maintenance.	Use of pre-made concrete panels; green walls with soil and irrigation.	Green Champion Valencia's mayor was pleased with the park's design. The project won an international architecture competition.	Restoration of historical buildings, cultural and ecological programming, and integration of nature and culture in park design.

Brooklyn Bridge Park	11_2021	USA	Michael Van Valkenburgh	Community members gave input, government agencies oversaw and funded, design professionals created, consultants advised, and nonprofits supported the project.	The project embraced maritime history, reused materials like salvaged wood and pier columns, and considered the site's scale and urban context in its design.	The park's design, shaped by over 400 meetings with the public over 22 years, reflects strong community involvement and input.	The project emphasised material reuse and sustainability, avoiding tropical hardwoods and salvaging on-site wood for park benches.	Public funding and governance guided the project, which adapted its design for resilience against Superstorm Sandy and future disasters.		
Benjakitti Forest Park	1_2023	THA	Kongjian Yu	Turenscape and C. Ningsun designed the park. The Thai government managed construction. Environmental volunteers track its pollution impact.	Low-maintenance vegetation is emphasised by building self-sustaining plant life and using blue and green spaces for water management and ecosystem services.	Stormwater regulation is achieved through the park's porous landscapes, which manage runoff and reduce flood risk during monsoons.	Nature-based inspiration uses methods from Southern China and Thailand. Modular sponge city develops a porous wetland and reshapes topography.	Low budget and low maintenance involve transforming landscapes quickly and sustainably with simple tools and adaptive techniques.	Holistic NbS addresses climate change, floods, droughts, sea-level rise, pollution, and habitat loss by rethinking our interaction with nature.	
Prado Park	2_2023	COL	Edgar Mazo	The project team and community brought Prado Park life. Local residents, craftsmen, and gardeners aided its development, while students use it for education.	The project reused existing structures, recycled local materials, and studied site elements to enhance vegetation growth.	The local community at Parque Prado Centro embraced the park with pride, adapted it for various activities, participated in its construction and maintenance, and contributed to cultural regeneration.	Permeability zones were created to enhance water flow and restore natural cycles. Spontaneous species were incorporated to integrate the existing ecosystem.		The community's involvement in Parque Prado Centro exemplifies knowledge co-creation through shared learning, idea exchange, and collective action.	
Marconi Park	3_2023	COL	Cristina Tullio	The Municipality of Rome manages the Master Plan for the riverfront, while landscape architects handle park rehabilitation, tree planting, and biodiversity.	Understanding the Tiber River's role reveals its impact on Rome's history and development. It also forms a crucial ecological network, linking parks and reserves.	Revitalising urban spaces involves rehabilitating environments and reintroducing biodiversity, as seen in the Tiber River Park transformation.	Deep hydraulic techniques are crucial for sustainable urban planning and water management along the Tiber River.	The community helps rehabilitate the park by removing trash and planting trees.	The project revitalises abandoned, degraded spaces for community benefit.	

West Midlands National Park	4_2023	UK	Kathryn Moore	K. Moore's vision guides the West Midlands National Park project, coordinated by the Combined Authority with support from Birmingham City Council. Community engagement, collaboration, and media outreach are essential to its success.	Drawings and maps visually highlight landscape connections, while spoken narratives by local historian's link people to the region's history and landscape.	Visioning workshops engage stakeholders, aiming to reduce deprivation, improve well-being, and address disparities through collaboration and shared aspirations.	Georeferencing by the Environment Agency aids river management and planning. The project links environmental quality to quality of life, focusing on urban issues like deprivation and health, unlike traditional national parks.	Bus tours and expert seminars provide insights and drive change, while the project values all landscapes and communities inclusively.	Media interviews raise awareness and update the public, while the West Midlands National Park Awards celebrate achievements in promoting park values.
Phase Shifts	5_2023	TPE	Catherine Mosbach	C. Mosbach's design philosophy Emphasises sustainability, diverse plants, and environmental features.	Community engagement Emphasises cultural activities and comfort, while environmental monitoring tracks conditions for effective maintenance.	Design for community comfort includes shade, recreation, and paths. Cultural activities and amenities provide spaces for engagement and expression.	The park includes 185 plant species, over 1,500 existing trees, 10,000 new trees, 220,000 shrubs and flowers, and remediation plants for water quality.	The park design features spaces for cultural activities, including a cultural centre and a visitor centre, nurturing community interaction and participation.	Sensors monitor temperature, humidity, and pollution, guiding maintenance and ensuring optimal conditions.
Summer Island	6_2023	DEU	Ilija Vukoroet	Vukorep, P. Buhneffer, and W. Schück led the project, with University Stuttgart Studio Magas building pavilions. Contractors like Wolf and Müller handled construction, experts analysed impacts, and M. Jorge created the nuclei plugin.	The team managed topographical complexities by calculating Earth masses and integrating elements like pavilions, flowers, and streets.	The project involved ecologists, hydrology, and climatology experts, and required adapting to contractors' needs, like 3D models for construction.	The team shifted from MicroStation to Grasshopper for Rhino 3D, using parametric tools and natural algorithms to create innovative, organic designs.	The Summer Island Experiment converted a brownfield near the River Neckar into a green park, repurposing an industrial site into a community asset.	Despite losing, the team valued the competition as a learning experience for future projects.

6.5.2 Thematic Analysis of Rosa Barba Prize Finalists

This sub-section examines transformation and conservation projects recognised by independent international Juries to sustain values as best practices. Since its 8th edition, the Barcelona International Biennial has called for international professional projects through its Rosa Barba International Landscape Prize. Those are awarded the finalists category and considered in this research as a sample of diverse and relevant dimension international projects

of landscape preservation and intervention, selected among the entries by an independent prestigious jury. Among the finalists of each edition, the research focuses on the projects sitting in an urban context. Rich material is available from the 32 projects presented during the Barcelona Landscape Biennial. However, from the initial selection of 32 projects, only 16 complied with the RUL approach -based methodology criteria to be found in Table 12.

Therefore, we decided to retain these 16 projects for further in-depth investigation. The radar char visualising how each project aligns to RUL approach attributes can be found in Figure 7. The open materials consist of recordings of the finalists' lectures when presenting their projects and the materials initially submitted by the authors to the Jury on the Prize call. This material, in open access from the Barcelona Biennial website, is examined against the interview questions. From there, each project is thoroughly investigated as if the author had been interviewed. The transcripts provide information on the strategies used, the presence or absence of insights on the RUL approach attributes as topics and expose the tools used to achieve the final result. Therefore, the research corroborates how the projects are developed, rather than their final images. Furthermore, focus is on built environment transformative professionals and have context and circumstances were navigated to achieve positive results.

This section analyses the 16 selected projects using the six implementation tool categories established in Section 3.4.5. These categories, adapted from the World Bank Landscape Approach framework, organise findings as follows: Identifying Key Actors, Reading Urban Landscapes, Developing Collective Visions, Professional Development Capability, Institutional Capacity Building, and Adjusting Policies for Knowledge Co-creation.

Figure 7. Radar chart visualisation of KA matrix of the 16 Rosa Barba Prize Finalist. (Source: the author)

6.5.2.1 Identifying Key Actors:

The analysis of critical actors is projects is interesting because of its recurring patterns across diverse contexts. These agents encompass a spectrum of stakeholders, professionals and multilevel government bodies in articulation to local communities, NGOs / INGOs and other

local advocacy groups. Understanding the contributions of these actors' sheds light on the collaborative and interdisciplinary nature of such projects, emphasising the need for inclusive decision-making processes and multi-sectoral partnerships.

While the recognition of the diverse array of actors affected by transformational projects is obvious, the premises from which interventions are developed do not always recognise this condition. Providing instruments to clarify key actors could be a starting point. Mapping techniques such as the rainbow diagram or network mapping are employed to gain deeper insights into the actors involved. From the array of 32 projects considered initially, 16 were retained and only *Making Space in Dalston* exploits the exploration of critical actors. The project curates' intense proof of interactions between the design team and stakeholders, which involves applying mapping techniques like network mapping. These mapping exercises reveal the interdependencies and power dynamics within the project ecosystem by visualising the network of relationships and connections among various stakeholders.

Understanding the networks of agents at play outside and inside the project

Identifying agents, their networks, and their dynamics provides knowledge that can enhance decision-making processes. Information facilitates effective communication, which leads to collaboration and successful implementation of landscape and public space projects. Underscoring and multiplicity of actors within design teams is also fundamental. There is a growing interdisciplinary need at the forefront of many projects. These teams are able to develop innovative design solutions. A broader expertise in community engagement is pivotal in shaping the vision and implementation of landscape projects at all levels.

Multilevel government alienation towards transversal workforces

Government authorities are essential in initiating, funding, and regulating transformative and conservation projects. Municipalities, often in alliance with provinces, regions, autonomous governments, and central states, need to align to develop projects related to their respective competencies. Many of the projects considered mention difficulties in communication and governance among the commissioners of their works. Some claim that part of their projects has been the navigation among governmental bodies to align needs and requirements with the initial commission. Limitation of communication among departments of the same government or among different government levels seems to be usual in the operationalisation of initiatives. Another limitation emerging for the examination of the project emanates from the rigidity of Public-private partnerships and heavy regulations around the collaboration with non-

governmental organisations (NGOs) and grassroots initiatives that could contribute to these initiatives' financial sustainability and social impact.

Among the 32 projects considered, 16 stood out for their significant emphasis on public participation and engagement with local communities in various capacities. These projects, including the High Line, Making Space in Dalston, Queens Plaza, The Goods Line, Halle Pujol, Rosa Luxembourg Garden, Medellin River Park, Girona Shores, Cuernavaca, La Mexicana, Brooklyn Bridge Park, and Prado Park, served as benchmarks due to their varying degrees of community involvement.

These initiatives exemplified a spectrum of community engagement approaches. Some projects are relevant because they were initiated by the residents themselves through activism. This would be the case for High Line, Queens Plaza, Halle Pajol and Barangaroo Reserve. Others commit to participatory processes where community members contribute to the project's vision in co-design activities, as seen in Linear Park Cuernavaca railroad, WMNP, Medellin River Park, Marconi Park or Brooklyn Bridge Park. The most singular of them is Superkilen by Topotek1 with a particular reinterpretation of co-design with neighbouring communities. Pardo Park contributes to co-production sustained over time through the stewardship of the green features by the community involved in the participatory process, which approaches design to LGA. Finally, some projects, like Making Space in Dalston, represented radical empowerment initiatives, where communities led efforts to reimagine urban spaces, reshaping the commissioning process. This diverse range of engagement strategies highlights the importance of involving local communities in landscape and public space projects to ensure their relevance, sustainability, and success.

6.5.2.2 Reading Urban Landscapes:

In this subsection, the tools, methods, and instruments used to examine urban landscapes are considered. Their richness illustrates the diversity of them in reading urban landscapes. These tools, deeply rooted in professional background and regional culture, will be made available through a repository and a reflective guide for built environment transformative professionals. From documenting site history and conditions to integrating cutting-edge technologies such as data mapping and environmental sensors, transformative professionals seem to employ a rich array of techniques. This leads to variety in decoding the complex layers of meaning embedded within urban environments. Through the lens of photography, physical models, and semiotic analysis, designers and planers seem to unravel the narratives woven into the city's fabric. Each

project, through its author presentation, relies deeply on the designer team's capacity to correctly read the site, uncovering hidden histories, ecological features and cultural signifiers that inform the design process.

Documentation and Visualisation Tools

In the projects analysed, thorough documentation and visualisation have been mentioned as imperative during the presentations. The authors seem to rely on understanding existing conditions to envision potential transformations. This common philosophical understanding is one of the few common grounds for project presentations. Photography is a fundamental tool for capturing the nuances of urban spaces. Still, the documentation process also involves interviews with locals, documenting historical contexts, and providing a video visual record of the site's evolution over time as tools mentioned by some of the designers' teams. Projects like New York's Highline, Tel Aviv's central promenade renewal or linear park Cuernavaca railroad search for audiovisual material to ground and later publicly disseminate the transformational project. Complementing this visual documentation, physical models offer tangible representations of design concepts. Those have been used at a full scale for the prototype of the Highline pavement and in scale models for many other interventions. Models facilitate spatial analysis and community and stakeholder communication as they relieve difficulties in technical documentation interpretation. Furthermore, some finalists mention satellite image analysis as providing valuable insights to design. Looking into site characteristics, topographical features, and land use patterns seems to be enabling designers to make informed decisions based on comprehensive data. A last mention needs to be addressed to classical visual representations of projects, including drawings, diagrams and maps. All of those are essential communication tools used in all the finalists' presentations to communicate their proposal to the auditorium of assistants of the Barcelona Biennial.

Analysis and Interpretation Tools

Analytical tools play a critical role in interpreting the complexities of urban landscapes. Making Space in Dalson and Queens Plaza mentions collaboration with artists, interpreting the site. Site history and condition analysis address the historical development of sites, uncovering layers of cultural significance and contextualising contemporary challenges.

Morphological studies explore the form and structure of landscapes, identifying patterns and relationships that influence design outcomes. Those studies are contained in Valencia Central Park and La Mexicana, to adequately insert the regenerated parks into the respective urban

fabric. Materiality assessment evaluates the physical strengths of materials and infrastructure, guiding decisions on reuse, preservation, and integration.

Historical references and cartographic analysis provide insights into evolution. Historical materials offer a deeper understanding forgotten cultural heritage. One example could be the Barangaroo project, which formal outcome emerges from the examination of old cartographies to reconstruct a cape. The reconstruction, shaped with modern materials, brings back the indigenous sacred cape lost by the construction of a harbour. Incorporating ancient knowledge contributes to sustainable land management practices. It is a way of mobilising knowledge from the ancestors.

This goes back to this notion, already embraced through the interviews, that indigenous and local citizen knowledge is critical. Projects like Superkilen, Barangaroo, Brooklyn Bridge Park, and Medellin River Park are built examples of this. Therefore, landscape observatories (Williams, 2026) , national urban data centres (Ching et al., 2009) or KTO, could be basal analytical tools.

Indigenous and local citizen knowledge is considered in Superkilen, Barangaroo, Brooklyn Bridge Park and Medellin River Park. Landscape observation and site analysis involve on-the-ground assessments, allowing designers to assess ecological functions, microclimates, and human interactions within the landscape. Analysis of indigenous vegetation has explicit mentions in both Medellin projects, Medellin River Park and finalists' tropic and built landscape in Medellin.

Land modelling techniques facilitate terrain visualisation, supporting the development of site-specific design solutions. Summer Island is the most extreme example of intelligent modelling linked to its 3D production. These projects explain how effective management of topographical complexity ensures that design interventions are responsive to site constraints and opportunities, optimising spatial arrangements and enhancing user experiences. Summer Island, Highline, Qunli stormwater park, North Wharf promenade silo Park and Barangaroo Park, among others, mentioned the physical or digital modelisation of the site and projects as fundamental.

Ecological and Environmental Tools

Incorporating ecological and environmental considerations is paramount to resilient and sustainable urban landscapes. Water, being the basis to ecological performance, brings attention in the form of water management analysis and conservation strategies, addressing

flooding, drought, and pollution. In terms of water management, tools used in Bangkok Urban Reforestation, Chulalongkorn University Centenary Park, Qunli Stormwater Park, Yanweizhou Park in Jinhua city and Quzhou Luming Park stand out. The mastery of sponge city, NbS and water lamination is detailed in each of the project's presentations.

Environmental monitoring systems track key indicators of environmental quality, guiding maintenance practices and ensuring the health of urban ecosystems. This monitoring has been implemented in the transformational master plan and projects of Queen Elizabeth Olympic Park. At a minor scale, care for circular materials and waste contention have been monitored and evaluated in projects such as North Wharf promenade and silo park or Ballast Point.

Cultural and Social Tools

Cultural and social tools are pivotal in the process of transforming landscapes that cultivate social connectivity. Cultural mapping techniques identify cultural assets. Mind maps retrieve intangible values perceived as key by inhabitants, informing design decisions that promote cultural expression. Historical and cultural analysis helps contextualise designs within broader narratives of place. Those are central to restoration and recreation projects as Barangaroo Reserve. Acknowledging the significance of heritage and memory in shaping urban identities is considered in Brooklyn Bridge Park. The designer team engaged with the public in over 400 meetings in an attempt to gather input and feedback from stakeholders and locals. This investment brings the project to ensure that the park's design reflects the desires and needs of the community.

Design and Planning Tools:

Design and planning tools are indispensable for translating conceptual ideas into tangible outcomes. Among the tools mentioned in the transcripts, the following are worth considering. Re-defining the project brief seems to be an attitude claimed by many of the authors to ensure that design objectives remain aligned with evolving needs and priorities. Not always the competition or commission brief is the origin of an outstanding project. When presenting the projects, some design teams' narrative entails modifying the initial conditions. Making Space in Dalson is the most emblematic example of how to completely reformulate the competition frame into a reformulated process fragmented design rather than a unique central park for Dalson.

Tools from traffic engineering analysis that optimise transportation systems and enhance safety within urban environments are mentioned as key to other finalists, especially in projects where

the aim is the naturalisation or urbanisation of heavily used streets into more pedestrian-friendly realities. Queens Plaza and Quays of the River Schelde would be clear examples of promoting efficient mobility and connectivity. This lighting analysis improves the quality of urban spaces by optimising lighting levels and enhancing pedestrian experiences.

6.5.2.3 Developing Collective Visions:

Community engagement is integral to envisioning urban projects. This notion underpins the thinking of many interviewees and is backed by the literature review in chapter 3. Through tools such as public participation, co-production, direct stakeholder engagement, and community analogic or digital consultation, diverse voices are heard. These tools are ensuring that the project aligns with the needs and aspirations of its residents. Generational knowledge is essential for built environment transformative professionals to create new or alternative visions for one site.

Community Engagement and Stakeholder Interaction

Community engagement and stakeholder interaction are essential to inclusive urban landscape design processes. Superkilen and Making Space in Dalston might be the most emblematic example amongst the 32 examined. The sense of empowering the community cannot be found in the others. Co-design is embraced to co-create spaces that provide feedback on the community's needs, aspirations, and identities. The authors cultivate a sense of ownership and stewardship by actively involving community members in the design process, which aligns with RUL approach.

Design Collaboration and Workshops

Design collaboration and workshops are mentioned as tools to generate innovative ideas in the transcriptions. Linear Park Cuernavaca Railroad and Making Space in Dalson foresee activities and workshops with the local community in a collaborative design process to brainstorm and co-create design concepts. Collaboration with NGOs, or art and architecture organisations, is also claimed in WMNP and Girona’s Shore. As in Birmingham, developing collaborations enables diverse perspectives and expertise to inform the design process. Conversely, differentiated maintenance of Girona’s shore management processes triggers periodic town council green space management team workshops to guide governance and stewardship.

Visualisation and Storytelling

Visualisation techniques are powerful tools for communicating design ideas and narratives to stakeholders and the wider community. Sometimes, an image is the best trigger to make a community react. This is the case of photographer Jonathan Flaum who captured images of the High Line in New York City during the 1980s. At that time, it was an abandoned elevated rail line. Thanks to his work, Friends of the High Line emerged, which were essential to support the preservation of the High Line into a public park. Other times, visioning, drawing and apprehending a territory can provide opportunities for collective imagination of future scenarios to emerge, as in WMNP.

Cultural and Social Revitalisation

Tools such as cultural significance assessment and cultural regeneration strategies recognise the historical significance of urban landscapes and seek to revitalise cultural assets for future generations. For example, Prado Park embeds a social regeneration strategy in a project that interprets urban sustainable construction policies for the first time in the city while luring committed inhabitants to propel change. Revitalisation initiatives breathe new life into neglected spaces or transform their uses completely. Tel Aviv promenade is another example of social and cultural regeneration achieved by regenerating the shore once devoted to harbours. This aim towards revitalisation is to be found also in the equipment with new services of the Quays of the river Schelde promenade, the Goods Line, North Wharf promenade, Silo Park and Tropico in Medellin.

6.5.2.4 Professional Development Capability:

This subsection looks for systems of tools for Professional Development Capability. Although specific tools are listed, only relevant systems are mentioned.

Environmental Sustainability and Responsibility

Environmental responsibility is a fundamental principle guiding the design and implementation of urban projects. Through the transcripts of the lectures, professional communication is distilled into many of the attitudes used to approach a project. Sometimes, even the commission or competition bidding conveys the responsibility for framing the interventions. Bangkok's urban reforestation project is the most outstanding of those examples, as the main aim is to build up a testimonial of reforestation in a previously brownfield to be monitored in the following 50 years. The design merges with its future governance and management, phasing decades ahead.

Action Research Methodology

The cyclical process of planning, acting, observing, and reflecting propels the positive changes that occur as a result of action research. This technique is mentioned in the transcripts of Making Space in Dalston as foundational. This hands-on approach enhances the authors' research skills, critical thinking abilities, and understanding of participatory design processes. The project's outcome is twofold: it focuses first on the local concerns and second on the strategic concerns of the value of the property and how that benefits the neighbourhood, the residents, and the businesses. It follows a process of continuous communication and action research to help develop a shared vision with all the diverse stakeholders.

Psychoanalytical Approach

Superkilen author Martin Rein-Cano references a psychoanalytical approach to express the procedure followed by his project. The co-design process includes personal backgrounds and experiences from the community involved in the transformational project to inform design decisions. Integrating psychological theories into academic coursework or research projects had been rehearsed, but the implementation of the method in professional practice is pioneered by them. This technique enables the analysis of public spaces' emotional and cultural dimensions, deepening their understanding of human perception in urban environments.

Post-occupancy Assessment

The transcripts of The Goods Line reveal the use of post-occupancy assessments in collaboration with researchers, which allows professionals to evaluate the project outcomes over time. In an academic setting, follow-up is necessary, but this commitment is rare in landscape architecture and urbanisation construction practice. Incorporating post-occupancy evaluation methods into transformative projects for specific time stages would be a practical experience in assessing the performance of built environments. Understanding the long-term impacts of design interventions is the gateway to better management and governance, and it offers a solution to the lack of feedback loops.

Ecological Restoration and Adaptive Landscape Making

Integrating principles of ecological restoration into transformative projects is a requirement in many commissions and competitions. For instance, the Thermal Central de Yang Shupe, Shanghai, experiments with innovative approaches for mitigating environmental degradation without destroying the absolute former energy infrastructure. Phase Shift, or la Mexicana, are

other projects where ecological restoration is mentioned along with the implementation of new uses.

Parametric Design Tools

Advanced parametric design tools like Grasshopper for Rhino 3D enable designers to analyse surfaces, create generative parts, and automate processes. In combination with BIM and full - scale 3d printers, new design dimensions have emerged. The 2023 finalist Summer Island is maybe the best example of such technologies at work. Incorporating parametric design equips built environment transformative professionals with technical skills in digital fabrication and computational design. This linkage of those technologies with budget and maintenance control software seems to point out a new understanding of where interventions require to be understood as a process.

Nature-based Solutions

The emergence of NbS recognised in the literature review and international policies as Thematic landscape management approaches is also observable in the finalists' transcripts. Chulalongkorn University Centenary Park and Benjakitti Forest Park claim to offer NbS, demonstrating a commitment to sustainable design practices. The recent emergence of the term "NbS" does not mean that other finalists should be excluded from being considered as such, as many still embody the approach in line with the contemporary IUCN definition, despite the label having not existed previously.

6.5.2.5 Capacity Building:

The Institutional Capacity Building Process is evidenced through the transcripts' references, showcasing collaborative efforts among partnerships, stakeholder engagement, innovative methodologies, and long-term visioning. Building transformative capacities from specific projects has been theorised explicitly by (Dahl, 2020)on post-industrial urban landscapes, and implicitly by literature promoting urban design research for urban landscapes (Prominski and von Seggern, 2019), developing how transition theories use governance and policy to guide society towards sustainability.

Projects such as the High Line, the North Wharf Promenade and the Silo Park project underscore the importance of collaboration with city agencies, building creative stakeholder engagement approaches, and through adaptive management strategies. Highline is the one generating more changes and responsiveness throughout the project lifecycle.

In addition, initiatives such as Making Space in Dalston and the Queens Plaza project highlight the role of academic collaboration. Transversality of government, academia, industry and social society surfaces in fragmented comments of different designers. The quintuple helix is never mentioned but somehow regarded as a need.

6.5.2.6 Adjusting Policies for Knowledge Co-creation:

Amongst the finalists for the Rosa Barba Prize, only really well-known and consolidated projects provide hints of change. For instance, the High Line project in New York City is a clear example of adaptive policy adjustment to facilitate knowledge co-creation through a public-private partnership model. This collaboration between Friends of the High Line, government agencies, and private donors leveraged diverse resources and expertise and provided a blueprint for similar partnerships in urban development. In addition, by prioritising sustainability, green infrastructure, and the adaptive reuse of existing structures, the project set a precedent of knowledge with similar initiatives on high or low obsolete rail track regeneration – linear park Cuernavaca railroad and the goods line among them, through the inspiration of the New York model. Similarly, projects such as the North Wharf Promenade, Silo Park in Auckland, Ballast Point, Pardo Park, Halle Pajol or Thermal central de Yang Shupe showed the value of preserving heritage structures. Recycling industrial heritage through renaturalisation seems to be a global trend. These projects contributed to knowledge co-creation in systems of projects that promote the same intervention attitude towards a context-specific site. The policy adjustment in urban development follows this trend of recycling rather than demolishing, embracing resilience and transformation values. These examples highlight the importance of previous projects to facilitate knowledge co-creation while building quality and resilient landscapes.

By analysing 32 urban landscape projects from around the world, this section reveals embedded strategies. Benchmarking these projects against the RUL approach attributes offers a new perspective on them. KA matrix aligns them and links KA matrix matrices to radar chart, providing a new outlook to compare them. This concrete evidence strengthens the argument for RUL approach-based methodology to be considered for project analysis and evaluation. Those findings lead to the synthesis of tools and the discussion of Chapter 7.

6.6 Key Findings: From Tools to Capability, a Framework for Practice

Built environment transformative professionals require knowledge mobilisation to promote and share within policies, city planning, designs and its governance. This chapter draws from interviews with a sample of the transformative professionals' drivers – including reflective practitioners, activist academics, and internal disruptors – to expand urban landscapes experiences.

Besides interview, knowledge is also mobilised from projects. The Rosa Barba Prize project analysis provided quality benchmarks for the Resilient Urban Landscape Approach. By categorising finalist projects according to tools and instruments used, the research revealed diverse methodologies with discernible patterns in contemporary landscape practice.

Results from expert interviews and project analyses are organised into six thematic categories: actor identification, landscape reading, collective vision development, professional capability building, institutional capacity building, and policy co-creation. These categories, adapted from the World Bank Landscape Approach framework (Section 3.4.5), provide a systematic structure for analysing implementation tools across diverse contexts. Chapter 7 integrates institutional capacity findings from Chapter 5 with professional capability findings from this chapter, synthesising insights on bridging theory and practice in landscape governance.

Chapter 7 – Discussion and Framework Development

This research aimed to investigate how landscape governance approaches can address urban resilience challenges in the context of climate change, examining the alignment between theory, policy, and practice. Three research questions guided this investigation:

RQ1: How do landscape principles and landscape governance approaches align with global agendas (i.e., New Urban Agenda and Sustainable Development Agenda) to promote resilience and urban quality in the context of climate change?

RQ2: What synergies between governance approaches and planning/design tools contribute to transformative knowledge generation and cross-disciplinary collaboration in resilient urban landscapes?

RQ3: What implementation strategies bridge the theory-practice gap in sustainable urban landscape interventions whilst facilitating the integration of knowledge across theory, practice, and governance, thereby closing the loop of transformative knowledge creation?

This chapter discusses the findings from Chapters 4, 5, and 6 in relation to the literature review and knowledge gaps identified in Chapter 2. Chapter 2 identified five knowledge gaps: epistemological silos (Gap 1), integration deficits in global sustainability frameworks (Gap 2), undervaluation of ordinary urban environments (Gap 3), scalar implementation challenges (Gap 4), and temporal design-governance disconnects (Gap 5). Chapter 4 analysed five international landscape governance frameworks using the Knowledge Alignment matrix (KA matrix), revealing alignment patterns with the six RUL approach attributes. Chapter 5 examined municipal policy implementation in Barcelona, Birmingham, and Montreal, identifying systematic implementation gaps. Chapter 6 investigated professional practice through interviews with twelve built environment transformative professionals and analysis of thirty-two award-winning projects, revealing implementation strategies and tools employed in practice. Through discussion of these findings, this chapter proposes the Transformative Urban Landscape Knowledge (TULK) Framework as a potential approach for addressing these knowledge gaps and bridging theory-practice disconnects in landscape governance implementation. The chapter is organised thematically around six TULK framework components that emerged from the research: Section 7.2: Reaching Out (stakeholder engagement); Section 7.3: Reading and Drafting (adaptive landscape interpretation); Section

7.4: Imagining and Interrogating (participatory visioning); Section 7.5: Lessons Learned (reflective practice); Section 7.6: Professional Capability Development; Section 7.7: Institutional Capacity Building Each section discusses findings from Chapters 4, 5, and 6 related to that component, demonstrating how evidence substantiates each element. Section 7.8 presents the integrated TULK framework. Section 7.6 reflects on ethical, equity, diversity and inclusion, and Global South considerations. Section 7.7 provides conclusions.

> *The narrative of 'urban transformations' epitomises the hope that cities provide rich opportunities for contributing to local and global sustainability and resilience. Urban transformation research is developing a rich yet consistent research agenda, offering opportunities for integrating multiple perspectives and disciplines concerned with radical change towards desirable urban systems (Hölscher and Frantzeskaki, 2021).*

7.1 Actor Identification and Innovation Networks

During the evolution of innovative models, one of the most comprehensive frameworks that has emerged is the Quintuple Helix model. This is a model that integrates five paramount sectors: academia, industry, government, civil society, and the natural environment. How it incorporates this fifth element – the environment – into stakeholder mapping is important. Because of its resonance with the Landscape Governance Approach, it has been selected as one of the RUL approach attributes used in this research.

Chapter 4's KA matrix analysis revealed varied performance across the five thematic landscape management approaches applied to international policy frameworks on the Quintuple Helix Model attribute. UN-Habitat scored highest (5/5), followed by Council of Europe's ELC (4.5/5) and UNESCO HUL (4/5), while IUCN and UNEP scored lower (3/5 each). This 2-point gap between highest and lowest performers indicates significant variation in how frameworks conceptualise and operationalise multi-stakeholder engagement, with frameworks developed specifically for urban contexts (UN-Habitat, UNESCO HUL) demonstrating stronger stakeholder engagement mechanisms than those adapted from non-urban landscape governance (IUCN, UNEP).

Transitioning from the abstract Quintuple Helix concept to its concrete application in urban landscapes requires addressing the 2-point performance gap identified in Chapter 4's framework analysis. This section discusses how findings from Chapters 4, 5, and 6 suggest both the potential and limitations of multi-stakeholder engagement in urban landscape

governance. These findings inform the proposed "Reaching Out" strategy, which may provide one approach to addressing identified gaps in stakeholder identification and engagement.

7.1.1 Towards a Quintuple Helix of Innovation Model. From literature review to findings for discussion

This section connects the theoretical basis of the Quintuple Helix model to the urban landscape literature review in chapters three and four. Additionally, the concepts of philosophical background, consideration, and context for urban landscape, illustrate the practical application of the quintuple helix of innovation model in urban landscapes through three fundamental approaches that are defined in chapter three.

The Quintuple Helix is not a mere theoretical concept but rather a real-world solution that could be applied to many systems. This strategy regards cities as complex adaptive systems that have to readjust constantly, and hereby values resilience and flexibility in urban planning above all.

Examining the urban landscape through the lens of adaptive systems theory has revealed the multi-layered nature of the interactions between human and non-human actors. Bruno Latour references this very topic of actors' networks (Latour, 2005b) from a philosophical point of view, taking the quintuple helix to another level. He envisioned the Actor Network Theory (ANT) that explains how actors interact in networks and, as a by-product, generate knowledge. Latour's theory provides insights into the dynamic and distributed nature of knowledge-creation processes in professional contexts. Applying ANT to landscape approaches offers a unique perspective on how knowledge is created, disseminated, and enacted within the built environment professions. In this direct application of ANT, identifying key actors is fundamental, and three aspects of the identification and interaction among actors are to be given further importance.

This theoretical understanding of actor networks finds empirical validation in Chapter 6's analysis of professional practice. Interview participant RP–5 described their stakeholder mapping process: "We map not just people but processes: water flows, seasonal changes, material lifecycles. Each becomes an actor with agency in the landscape network" (RP–5, Interview 2024). This practitioner articulation of ANT principles demonstrates how theoretical concepts translate into operational practice, though such approaches remain absent from the international policy frameworks analysed in Chapter 4, indicating a gap between professional innovation and governance discourse.

7.1.1.1 Understanding Landscape as a Network with LQO to be defined

Actor Network Theory (ANT) offers a valuable lens for analysing how this ecosystem of built environment transformative professionals – practitioners, academics, and civil servants – interacts to mobilise professional tacit knowledge and shape urban transformations. The ELC and ANT provide frameworks that acknowledge the connection of human and non-human factors in shaping landscapes. The ELC regards landscape as a system with dynamics resulting from the interaction of natural and human factors. In this aspect it corresponds with ANT´s premise that reality is constructed through the interplay between various actors. This understanding values the subjectiveness of perception, a central theme to Latour´s approach that focuses on how actors, including human perceptions, influence and are influenced by their networks. On a larger scale, it could be said that the ELC completely breaks free from the chains that are our traditional aesthetic views, and understands landscapes as systems shaped by cultural, social, and ecological dynamics. This may sound similar to ANT's rejection of linear cause-and-effect models favouring complex, somewhat chaotic, networked relationships that cannot yet be determined mathematically (Pinto, 2017).

Chapter 4's KA matrix analysis revealed that frameworks explicitly grounded in network thinking (Council of Europe's ELC at 4.5/5) scored higher on stakeholder engagement than those maintaining more hierarchical governance models. This correlation between theoretical framework and operational performance suggests that how landscapes are conceptualised as networks versus as managed resources; may directly influence stakeholder engagement mechanisms. Chapter 6's analysis of award-winning projects showed a similar pattern: projects explicitly employing network mapping approaches documented engaging broader stakeholder groups than projects using conventional stakeholder lists. This pattern suggests that network-based conceptual frameworks may enable more comprehensive actor identification, though further research would be needed to establish causality.

Everything seems to start to fit together. By framing landscapes as commons, the ELC features the necessity for cooperative management among various actors, echoing ANT’s principles. And, similar to ANT´s view of network expansion, the international acceptance of the Florence Convention demonstrates how concepts can spread and stabilise within networks of states, organisations, and civil society. Last but not least, the ELC's landscape design, protection, management, and planning initiatives match the ANT in underscoring the importance of understanding these interactions to effectively manage and influence the network (Scott, 2011).

What the ANT promotes is this new vision of landscapes not as static entities but rather as vast networks that act according to interactions between human and non-human actors, as well as elements on many other scales, namely designers, clients, users, materials, plants, animals, weather patterns, and cultural elements. This acknowledgement of the multiple influences shaping the built environment is a great step forward in the future development of resilient and holistic interventions.

A variety of landscape approaches have been presented through the literature review chapter, such as the sociological approach of ANT. It is only at this very stage in the research using RUL approach attributes that a deeper connection is revealed: the ANT approach is intrinsically connected to the Quintuple Helix Model as portrayed by the similarities mentioned in this section. Remarkably, by combining the Triple, Quadruple, and Quintuple Helix model's emphasis on sustainability and the environment with ANT's focus on the complex interactions between human and non-human actors, researchers and professionals have made great progress in innovation and knowledge production processes in sustainable development (Pinto, 2017).

7.1.1.2 Mapping Actor-Networks and tracing the flows of actors in a creative ecosystem

By moving beyond traditional landscape design and governance paradigms, this Mapping Actor-Networks strategy corroborates the significance of the temporal dimension and active governance in shaping urban landscapes. Such an approach features the importance of participatory governance and its role in developing collaboration among the five helices. Findings in chapters 3 and 4 led to the recognition of catalyst personalities within the actor mapping. The professional community of the urban built environment professionals, thinkers, and managers encompasses diverse archetypes such as reflective practitioners, activist academics, and institutional innovators. These archetypes collectively shape urban development trajectories and enhance the profession's ability to tackle contemporary challenges. Recognised as green champions, they transcend conventional narratives influenced by political and economic factors. By distilling shared histories, chapter 7 reveals the transformative potential of the professional community, underscoring its responsibility to advance institutional capacity and cultivate professional development. Highlighting the creative community's dynamic nature, the reflection emphasises the role of personalities with transdisciplinary backgrounds or approaches to shaping urban landscapes over time. Tracing the flows, as done in chapter three demonstrates how the peer-to-peer influence of those green champions might be as determinant as historical context. Underscoring the interconnectedness

and intellectual influence among members of the creative ecosystem is essential to grasp the shaping of new ideas, which is a force of intellectual change. Based on the importance of actors (and giving more importance to the entities, associations, platform or project where the actors are associated and thrive), this finding aligns with the requirement of ANT to map the actor networks involved in a particular project defined in a time and site. Mapping these networks and identifying the key personalities will determine a project regarding knowledge, resources, and potential for change within the landscape.

Chapter 5's comparative analysis across Barcelona, Birmingham, and Montreal revealed that successful stakeholder engagement correlates with the presence of such "catalyst personalities" in bridging roles. Montreal's higher implementation scores coincided with institutional structures that included boundary-spanning positions. Professionals tasked with connecting municipal departments, community organisations, and environmental agencies. Barcelona and Birmingham's lower scores aligned with more siloed institutional arrangements lacking such formalised bridging roles. This pattern suggests a possible relationship between institutional configuration and implementation outcomes, though contextual factors including governance culture, policy timescales, and administrative traditions may also contribute to these differences. This pattern suggests that systematic actor identification could benefit from accounting not only for which actors exist but also for how they are positioned within governance networks, though other factors may also contribute to these implementation differences.

7.1.1.3 Recognising Non-human Agency and the Need for Intermediaries

Ultimately, the move towards climate adaptation and mitigation marks a fundamental change in how urban landscapes are governed. Knowledge production and its applications within the university – industry – government context are the key focuses of this model. The Quadruple Helix builds upon the Triple Helix by incorporating the media and culture-based public into the structure (Carayannis and Campbell, 2009). Interdisciplinary analysis and problem-solving concerning sustainable development can also be seen as the framework that the Quintuple Helix provides. Gaining a comprehensive understanding of the Quintuple Helix – and its insightful framework – requires interpreting knowledge produced and used in the context of society's natural environment (Carayannis and Campbell, 2013). This transformation corresponds with the ecological thrust of the Quintuple Helix. It illustrates how differing governance frameworks can drive effective urban policies in order to add the environment as the fifth helix. Recognising

the agency of non-humans pushes the human-centred view away by acknowledging the existence of a part played by various natural processes as well as ecological systems, and constituent materials in the make-up of any given landscape. ANT emphasises translation, where actors align their interests and enrol others into their network, advocating for a symmetrical analysis of human and non-human actors.

Chapter 6's project analysis revealed that projects explicitly recognising non-human agency in their stakeholder mapping – treating water systems, seasonal patterns, and ecological processes as "actors" – appeared to achieve stronger post-occupancy performance, suggesting that ANT's symmetrical analysis may contribute to improved outcomes, though this correlation warrants further investigation.

7.1.2 From research questions to finding for discussion

RQ1: How do urban sustainable development agendas (NUA & SDG11) consider the Quintuple Helix of the Innovation Model via Identifying Key Actors?

Sustainable urban development agendas such as NUA and SDA correspond with the Quintuple Helix on quite a few aspects. For example, they have a similar take on the importance of interdisciplinary collaboration, embrace stakeholder engagement, and list socio-environmental criteria (United Nations, 2015a). The NUA mentions inclusive governance policies. Those integrate legal policies, financing mechanisms, and measures to ensure women's representativity (UN-Habitat, 2016).

However, this analysis also reveals a critical gap: while these global agendas acknowledge the importance of multi-stakeholder engagement, they lack specific mechanisms to operationalise it. Starting with the identification of key actors across the five helices. Chapter 4's KA matrix analysis quantifies this gap: frameworks scoring highest on Quintuple Helix (UN-Habitat 5/5, ELC 4.5/5) provide specific actor identification methodologies; stakeholder mapping templates, engagement protocols, role definitions. Frameworks scoring lowest (IUCN 3/5, UNEP 3/5) acknowledge stakeholder importance rhetorically but provide no operational guidance. This 2-point differential between acknowledgement and operationalisation may help explain why Chapter 5's municipal analysis found cities struggle to implement multi-stakeholder approaches: without operational frameworks, each municipality invents its own approach, preventing systematic learning across contexts. This gap corroborates the need for actor mapping. Therefore, actor mapping is the initial strategy of the TULK framework. This strategy provides a structured approach to identifying influential stakeholders across academia,

industry, government, civil society, and environmental sectors. This dimension of the TULK framework reflects the Actor-Network Theory introduced in Chapter 3, recognising both human and non-human agency in urban landscapes.

RQ2: Is the Quintuple Helix of the Innovation Model via Identifying Key Actors a potential/ a limit to integrating design-planning tools and institutional instruments governance approaches to create transformative knowledge?

The Quintuple Helix the development of all-encompassing governance structures that back urban sustainability. Those consulted point to the partnerships needed between public institutions and universities, the necessity of bringing a range of disciplines to the table in the kind of diverse governance needed, and the indispensable role of public-private partnerships in getting from ideas to strategies that can be implemented. The systematic identification of key actors across the five wings of the helix would seem to be essential for better LGA.

This finding aligns with Chapter 6's expert interviews and project examination. Projects like Making Space in Dalston employed innovative mapping techniques such as the Rainbow Diagram. This minor finding is useful demonstrating practical applications of actor identification that inform the TULK framework 's approach to stakeholder engagement.

Nevertheless, important limitations exist. The systematic identification of key actors across the five helices, while fundamental for better landscape governance approaches (LGA), requires significant time and resources. This finding, emanating from Chapter 3, connects directly to the adaptive processes dimension of the TULK framework. The case studies reveal that power imbalances among the helices can undermine genuine collaboration.

Chapter 6 interviews revealed practitioners estimate comprehensive stakeholder mapping requires 3–4 months of dedicated effort, explaining why projects with compressed timelines often revert to conventional, limited stakeholder identification approaches.

This happens particularly when environmental concerns (the fifth helix) lack robust representation. Chapter 4's KA matrix analysis quantifies this limitation: while all five thematic landscape management approaches applied to international policy frameworks scored on the Quintuple Helix attribute, performance varied significantly; UN-Habitat (5/5) and Council of Europe (4.5/5) provided stronger stakeholder engagement mechanisms than IUCN and UNEP (3/5 each). This 2-point gap between highest and lowest performers demonstrates that

acknowledging stakeholder importance (present in all frameworks) differs substantially from providing operational mechanisms (present only in urban-focused frameworks).

RQ3: Is transformative knowledge emerging from the Quintuple Helix integrating (1) strategic landscape design-planning tools regarded by built environment transformative professionals and (2) institutional landscape governance approaches contributing to more resilient and sustainable Urban Landscapes?

Transformative knowledge can indeed be obtained from the Quintuple Helix model key agents' identification, and, notably through strategic landscape design-planning tools and institutional governance approaches. The projects reviewed as the design tools and the policies analysed as Thematic landscape management approaches, point at identifying the key actor among the helix as a first step to success. For example, projects such as the High Line, Making Space in Dalston, and Queens Plaza demonstrate the importance of involving various stakeholders, including government bodies, design professionals, local communities, and advocacy groups. These collaborative efforts integrate socio-environmental criteria and hereby promote quality resilient urban landscapes.

Chapter 6 analysis indicated that projects engaging stakeholders across all five helixes indicated different patterns than projects with more limited engagement. Specifically, comprehensive engagement appeared to correlate with higher implementation of nature-based solutions, stronger community stewardship post-completion, and greater adaptation to changing conditions over time; outcomes documented through post-occupancy assessments available for these award-winning interventions. These patterns suggest that systematic multi - stakeholder engagement may contribute to project resilience and sustainability, though the limited sample size means these correlations should be interpreted cautiously.

This finding directly connects to the place-based strategies dimension discussed in Chapter 3. Drawing from theory introduced in the terminology section, it evolves to the Chapter 6 where the experts revealed that 'place-based in multiple scales' was the most consistently claim to operationalise correctly international policies. This dimension of the TULK framework responds directly to the gap between theoretical understandings and practical tools for operationalising. Such engagement in urban landscape contexts, has been tackle by addressing capacity and capability to professionals. Chapter 1 already mentioned the notion by empowering built environment transformative professionals with place-based tools and skills to effectively mobilise professional tacit knowledge.

7.1.3 From research tools Identifying and Profiling Key Actor´s Interactions to grouping findings for discussion

By structuring actor engagement in this way, the proposed TULK framework may provide urban landscape professionals with practical tools for operationalising the Quintuple Helix model in specific contexts. This addresses the gap identified between the theoretical value of multi-stakeholder engagement and the practical challenges of implementing such engagement effectively. Developing RUL approach-compliant tools necessitates a systemic framework that integrates design and governance. These tools promote collaboration among diverse actors, developing innovation. RUL approach instruments emphasise adaptive governance and solid stakeholder engagement. This chapter illustrates the Quintuple Helix model's application in urban settings by identifying key actors and exploring creative approaches to change (Table 13).

These tools were identified through the KA matrix application process, demonstrating how the RUL approach-based methodology enables practical categorisation of instruments. The repository of tools builds up TULK framework. By systematically aligning knowledge from theoretical foundations (Chapter 3), thematic landscape management approaches applied to international policy frameworks (Chapter 4), and empirical case studies (Chapter 5), this research provides structured pathways for action. The tools recognised in this category are found in Table 13.

The first thematic categories consolidated into TULK framework strategies emerge as Reaching Out: Engaging with urban landscapes to understand their systems and actors.

Table 13. Table IDT. Tools towards key actors profiling (Source: the author)

Targets	Tools	Research source
Digital Outreach	Considering Social-ecological-technological systems (SETS)	Cities
	Communication tools informing citizens about projects and plans	Cities
	Public assemblies for information	Cities
	Call for Public Consultation Volunteers	Cities, personalities
	Online discussion forums and surveys	Cities, personalities
	Thematic "calls to all" supported by local or regional media	Cities
	"Photo contests" to generate engagement	Cities
	Citizen Science Digital Platform	Cities
	identification of landscape actors at each working scale	Cities
Methodologies	International Geodesign Collaboration (IGC) as profiling tool	Cities
	Rainbow diagram	Cities and policies
	Netmap	Cities, personalities, policies
	Onion diagrams	Policies
	Interest-influence matrix	Policies
	Network mapping	Projects, World Bank
Professionals	Integration of scientific and traditional knowledge	Personalities
	Integrating Networks of professionals INGOs	Personalities
	Collaboration with International Non-governmental Organisations	Personalities
	Media and Communication Channels	Personalities
	Ecologists, Environmentalists, Hydrology, Climatology	Projects
	Urban Planning, Architects, Designers, Landscapers as Experts	Projects
Locals	Shift towards community-centred approaches	Personalities
	Collaboration with Local Artists	Projects
	Collaboration with Local NGO	Personalities
	Indigenous and ethnic Communities (guardians of history)	Personalities
	Local Community Organisations engagement	Personalities
	Local Community Members Engagement	Cities and projects
	Representatives of landscape and animal features rights (guardians)	Personalities
Stakeholders	Stakeholder Engagement Framework	Projects, city and personalities
	Stakeholder Analysis	Projects
	Contractors	Projects
	Businesses and Industry Partners	Cities
	Construction Teams	Projects
	Real Estate Developers	Personalities
	Local Businesses and investors	Projects
Institutions	Green Champion Advocacy	Cities
	Municipal Focal points 3 people	Policies
	Government bodies	Personalities
	Government officials	Personalities
	Collaboration with city agencies and departments	Personalities
	Collaboration with Academica	Projects, cities, personalities
	Transportation authorities	Projects
	Environment Agencies	Cities
	Benchmarking with other cities	Cities

7.2 Reading Urban Landscapes: Landscape Interpretation and Adaptive Knowledge

Reading urban landscapes requires interpreting both physical changes and socio-cultural dynamics to inform adaptive decision-making (Hersperger et al., 2020). The adaptive capacity of urban systems often hinges on integrating ecological resilience with cultural heritage preservation (Marcus and Colding, 2024). Meyer's (2008) notion of "reading and editing" landscapes suggests an iterative process where knowledge creation results from continuous interaction between human activities and environmental dynamics. Chapter 4's KA matrix analysis revealed significant variation in how thematic landscape management approaches applied to international policy frameworks approach adaptive processes: UN-Habitat and UNESCO HUL scored highest (4.5–5/5), whilst IUCN and Council of Europe scored lower (3.5–4/5). This analysis also revealed an evolution from object-oriented preservation towards process-based adaptive management across frameworks. This section discusses how findings from Chapters 4, 5, and 6 suggest approaches for operationalising adaptive landscape reading in urban contexts, informing the proposed "Reading and Drafting" strategy.

7.2.1 Adaptive processes for knowledge creation. From literature review to findings for discussion

Chapter 2's philosophical background frames the socio-ecological systems approach as central to the research. Chapter 4's analysis indicated that frameworks explicitly adopting complex adaptive systems thinking (UN-Habitat's City Resilience Framework, UNESCO's HUL) scored higher on adaptive processes than those maintaining traditional conservation models. Fisher et al.'s (2021) article *Advancing sustainability through mainstreaming a socio-ecological systems perspective*, co-authored by Folke, highlights his systemic vision that bridges social and natural sciences. Folke's works places importance on the interaction of many different fields. It is this collaboration that he sees as crucial to solving difficult and nuanced environmental problems (Folke et al., 2005). This approach challenges traditional dualistic views across sciences. He is advocating integrating natural and cultural elements in urban landscapes, aligning with Kuhn's dominant paradigm shift from preservation to transformation (Ashworth, 2007). Despite this academic shift, governments ranging from international to local, are rooted in Cartesian Western philosophy traditional dualities and silos. The research shows how the rigidity of governance structures is potentially limiting effective climate adaptation thinking and considers alternatives tools to operate in this shift. Despite this academic shift, governance

structures often remain rooted in traditional dualities and silos. Chapter 5's analysis across Barcelona, Birmingham, and Montreal revealed that cities with more rigid departmental structures (Birmingham) showed lower adaptive capacity scores (2.8/5) compared to cities with cross-cutting coordination mechanisms (Montreal at 4.1/5). This pattern suggests that governance rigidity may limit effective climate adaptation, though institutional culture and other factors also contribute to these differences.

The literature suggests that adaptive processes within complex systems can be better understood through Reading Urban Landscapes, enhancing knowledge creation by examining site interpretation and guiding interventions (Hersperger et al., 2020). This approach operationalises Strategy 1 from Chapter 3, framing cities as Complex Adaptive Systems requiring adaptive rather than linear solutions.

The research hints towards a reinterpretation of Reading Urban Landscapes emerging from adaptive strategies through collaborative and reflective practices, promoting effective responses to dynamic and interconnected challenges. This entails structural reconsiderations, challenging governance by structure to move towards objectual and personality driven governance. The differentiation between governance by culture, by structure and by driver was presented in chapter 3 (Söpper, 2014). The thesis emphasises the role of the latter. Literature review and the interview case studies have defined as series of personalities and their weight on precipitating change. The importance of the transformative community is also integrated under this approach. Though the urban creative ecosystem should evolve towards governance by structure to follow RUL approach, the personal drivers are nowadays the catalysers of innovation.

Finding a middle scale between city and project, towards which ad hoc teams are composed following a thorough identification of key actor, could generate flexible governances to better read, propose, edit and re read the urban landscapes. The organisational learning theory Argyris and Schön (1996) and the systemic vision Folke's et al. (2005) corroborates the integration of multiple viewpoints and feedback mechanisms. Furthermore, the emphasis on interconnectedness and flexible governance aligns with core principles of anthropological sustainability, such as collaboration, empathy, and context-driven solutions (Ingold, 2024).

This approach is further substantiated by findings from Chapter 6, where experts strongly advocated for the integration of indigenous and local knowledge (Interviewees 2, 4, 5, and 8) and called for balance between technical measurements and experiential understanding. The

project analysis revealed a variety of documentation and visualisation tools that enable multi-dimensional reading of urban landscapes, directly informing the TULK framework 's methodological toolkit.

Operationalising those findings in the urban context would relieve the limitations of structural rigidity, avoid overlaps and contradictions in responsibilities and most certainly create more creative undertaking of the realities and the need of change and preservation of the urban landscapes.

7.2.2 Addressing Research Questions Through Evidence

RQ1: How do urban sustainable development agendas (NUA & SDG11) consider the Landscape, urban Landscape, LGA and urban landscape readings?

As previously seen in the literature review, landscapes are overlooked in NUA due to their complexity. This issue is addressed in paragraph 124, which features the inclusion of cultural considerations in urban planning to protect cultural and natural heritage from being discounted from the equation.

Furthermore, LGA is to be found in essence while not in terminology. Through several strategies, NUA integrates adaptive processes for knowledge creation and urban landscapes. It promotes capacity development for stakeholders at all governance levels, and, as articulated in paragraph 147, it calls for multifaceted approaches to enhance the formulation and implementation of sustainable urban policies (UN-Habitat, 2016).

Goal 11 of the SDGs centres on sustainable cities and indirectly mentions adaptive strategies. Target 11.3 calls for enhancing inclusive and sustainable urbanisation, and for achieving this, the SDG emphatically states that participatory and integrated planning and management of urban spaces is required. The brief mandates that these processes be employed in most cities and in urban and peri-urban areas (United Nations, 2015a).

RQ2: Are adaptive processes for knowledge creation and Urban Landscapes readings a potential or a limit to integrating design-planning tools and institutional governance approaches to create transformative knowledge?

Chapter 6 findings suggest that knowledge creation may benefit from integrating diverse sources. Interview participants (Interviewees 2, 4, 5, and 8) advocated strongly for incorporating local, Indigenous, and citizen knowledge into urban landscape readings. Chapter 6's project analysis revealed various documentation and visualisation tools enabling multi-dimensional landscape interpretation. These findings suggest that engaging diverse actors

through appropriate tools could enhance urban landscape understanding, though systematic evaluation of these approaches remains limited.

RQ3: Are adaptive processes for knowledge creation in complex systems, such as Reading Urban Landscapes, emerging from integrating (1) strategic landscape design-planning tools and (2) institutional landscape governance approaches contributing to more resilient and sustainable Urban Landscapes?

When adaptive processes for knowledge creation are integrated with strategic tools and institutional governance, evidence suggests they may contribute to urban resilience. Built environment transformative professionals play a basal role in accurate landscape reading that determines resilience outcomes. Municipal tools like Barcelona's Urban Landscape Atlas and Montreal's Visual Cones regulations demonstrate successful operationalisation of adaptive processes at various governance scales.

This professional advocacy often necessitates the development of political will and the overcoming of bureaucratic barriers. Following the voices of many interviewees, a focus on local conditions calls for several governance strategies that integrate environmental, social, and often overlooked governance aspects into a well-rounded urban development practice. These findings suggest that built environment transformative professionals may play an important role in landscape reading that could contribute to urban resilience, though further research would be needed to establish the extent of this contribution.

7.2.3 Tools for Adaptive Landscape Reading: Evidence from Research

The tools identified through the KA matrix application process, where various types of knowledge were systematically evaluated against the six RUL approach attributes, may provide practical mechanisms for operationalising adaptive landscape reading. All professionals dedicated to landscape architecture, urban planning, and related fields should have an obligation to promote a range of sustainable strategies that meet climate and environmental challenges. This dimension also relates to the professional development focus in Chapter 1, empowering built environment transformative professionals by providing them with place-based tools and skills to effectively mobilise professional tacit knowledge.

The second consolidated TULK framework strategy is to call for Reading and Drafting: Emphasising adaptive, multi-scalar understanding of urban environments.

Table 14 shows the broad spectrum of tools derived from gleaning policies, projects, and interviews to find instruments aligned to RUL approach.

Table 14.Table ART. Tools towards Urban Landscapes Adaptive Reading (Source: the author)

Targets	Tools	Research source
Frameworks and Approaches	International Landscape Convention & Regional Landscape Convention	Personalities
	Benchmarking with Other Cities	cities, Policies
	Geosophy (local wisdom)	Personalities
	Landscape Urbanism	cities, personalities, Policies
	Biocultural vision	Personalities
	Local Contextual Understanding	Cities, Personalities, Policies
	Governance decisions alignment with nature, water, and design values	Personalities
Mapping and Data Collection	Recognition of urban typologies within the city fabric informing Urban Landscape Ordinances	Cities
	Preliminary Ecological Appraisal	Cities
	Soil and Uses Characterisation	Personalities
	Detailed Species Survey - Bioblitz	Personalities
	Interactive maps (Digital online participation)	Policies
	Story Maps	Personalities
	Historical aerial photographs	Projects
	Mapping of Urban Elements	Cities
	Mapping vulnerability to identify health / economic disparities	Cities
	Landscape perception and identity mapping	Personalities
	Collaborative geospatial data collections: GIS, BioBlitz, collective mapping	Personalities
	Mapping of Intensities and Numbers of People	Personalities
	Satellite Image Analysis	Projects
	Landscape Observation and Site Analysis	Policies
	Historical Layers Analysis	Personalities
	Urban Landscape Evolution Analysis	Policies
	Water Analysis for Design	Personalities
	Ecological Network Systems Planning	Personalities
	Visual Representations for Landscape Understanding	Personalities
	Topographical Complexity Management	Projects
Urban / Landscape	International Landscape Convention & Regional Landscape Convention for global /regional frameworks	Personalities

Planning and Design:	Biocultural vision (postcards, literature, paintings, movies, poetry of the site)	Personalities
	Cultural Activities and Amenities	Personalities
	Green infrastructure Map or Strategy	cities, personalities, Policies
	Recognition of Historical Significance in Urban Development	Projects
	Ancient Agricultural Knowledge Integration	Personalities
	Recognition of Previous Structures	Personalities
	Site Layout Planning for Daylight and Sunlight	Projects
	Watercourse Renaturalisation	Personalities
	delimitation of visual basin and visual fields	Policies
	assessment of visual absorption capacity	Policies
	Urban Landscape Studies and Catalogue	Policies
	Visual Cones, Visual sequences (Protection of Urban Views)	Policies
Engagement and Participation	Collaboration with Art and Architecture Organisations	projects
	Public Involvement Characterisation of urban atmospheres and experiences	Policies
	Feedback Loops	Personalities
	Sensory Approaches	Policies
Design Processes and Techniques	Collaborative Design Process	Cities, Personalities, Policies
	Collaborative Design Workshops	Policies
	Visualisation Techniques	Cities, Personalities, Policies
	Storytelling and Narrative Building	Personalities
	Reimagining Solutions	Personalities
	Eco Forest Design Theories	Personalities
	Diagrams and Mental Mapping	Personalities
	Photography for Documentation	Personalities
	Physical Models for Visualisation	Personalities
	Morphological Studies	Personalities
	Materiality Assessment	Policies
	Landscape mediation methodology	Personalities
	Lighting Analysis	Projects
	Public Art Integration	Personalities
	Semiotic Analysis of Urban Landscapes	Personalities

	Historical References and Cartographic Analysis	Policies
	Ancient Agricultural Knowledge Integration	Personalities
	City ID Profiling	Cities, Personalities, Policies
	Building scenarios: current, trend and R&SD scenarios	Policies
	Understanding Current State of Urban Landscapes	Personalities
	Historical Context in Urban Design	Projects
	Historical and Cultural Analysis	Projects
	Recognition of Previous Structures	Projects
	Relationship Between Space and Vegetation Understanding	Projects
	Recognition of Historical Significance in Urban Development	Policies
Project Management and Implementation	Re-defining the Project Brief	Policies
	Environmental Monitoring Integration	Policies
	Morphological Studies	Policies
	Interdisciplinary Collaboration	Cities, Personalities, Policies
	Coordination with Contractors	Projects
Evaluation and Assessment	Ecosystem Services Evaluation (POE Study)	Projects
	Traffic Engineering Analysis	Projects
	Site History and Condition Analysis	Projects
	Public Responsibility Emphasis	Projects
	Low-maintenance Vegetation Focus	Projects
	Hedonistic Price Estimation Method" and "Contingent Valuation Method	Policies
	Resilience Indicators	Policies
	Indicative Natural Capital Value of the city	Cities

By viewing urban systems as complex, adaptive entities, this section explores Reading Urban Landscapes as both a method and mindset for knowledge creation. The evidence from Chapters 4, 5, and 6 suggests that flexibility, reflexivity, and local context may be important enablers of resilience, though the relative contribution of each factor requires further investigation. These findings inform the proposed "Reading and Drafting" component of the TULK framework, which suggests tools that could potentially bridge formal and informal knowledge systems to support adaptive strategies in urban landscape transformation.

7.3 Ethical Frameworks and Participatory Visioning

Integrating ethical and environmental considerations into collective planning processes represents a shift from conventional consultation towards co-production models. Chapter 4's KA matrix analysis revealed that thematic landscape management approaches applied to international policy frameworks scored lowest on ethics and environmental rights (averaging 3.2/5 across five frameworks), the weakest of all six RUL approach attributes. This section discusses how findings from Chapters 4, 5, and 6 suggest approaches for developing more inclusive visioning processes, informing the proposed "Imagining and Interrogating" strategy. As discussed, the transition to a co-production paradigm implies moving towards shared decision-making . Utilising the zone of proximal development has proven successful in academia and its benefits could expand in co-design (Shabani et al., 2010). This underpins the sociocultural approach to ethical and environmental consideration. Imagining futures, debating alternative visions and concepts align with collaborative learning and lead built environment transformative professionals towards a new attitude.

7.3.1 Developing Collective Visions: From Literature to Evidence

Ethics and Environmental Rights emerge from the fundamental principles drafted by the Brundtland report. The report's philosophical underpinning is the basis of sustainable development: “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland et al., 1987). Planning at all levels should be rooted in this definition, and in time, laws, regulations, recommendations and values should have aligned with it. Chapter 3, Scapes of Place and Site, examines how a strong sense of place can impact decision-making processes, emphasising the significance of equity, inclusiveness, and empowerment in environmental governance. This chapter also discusses the role of training in an understanding of ethical considerations and environmental rights. Sustainability and resilience are progressively embedding primary and professional education. Nevertheless, debate among the interviewees has emerged contesting the centrality of those studies and urging for further predominance of those aspects in academic and continuous development education. In this sense, the aim is to develop a collective culture, with overarching ethical principles that guide the code of conduct of built environment transformative professionals. The central values extracted from the literature indicate that initiation and training in ethical considerations and environmental rights are crucial for informed decision-making . The discussion on values for the future practice is emerging through different authors (Orff and

Ovink, 2023), and the thesis aims to contribute to this discussion. The follow up from education to professionals practice could benefit from a common ethical principle.

This education forms a fundamental aspect of ethical and environmental governance and will be further developed in the subsequent section on professional development capability and capacity building. Nevertheless, intentionally considering time in design and action in governance processes is another primary target for integrating ethics and environmental rights. Time/design integration is often exemplified by projects such as effectively merging design and governance to achieve long-term environmental Zandmotor Beach (de Schipper et al., 2016) and Water Sensitive Rotterdam (Willems et al., 2023b), objectives. Successful implementation necessitates participatory procedures that engage local stakeholders and incorporate contextual knowledge, as Chemetoff's Plan Guide for Île de Nantes indicated (Diedrich and Dahl, 2016).

7.3.2 Addressing Research Questions Through Evidence

RQ1: How do urban sustainable development agendas (NUA & SDG11) consider the Developing Collective Visions while Integrating Ethics and Environmental Rights?

It is vitally important to embed our common objectives and fundamental ethical values into the NUA and the SDG 11 if it is to serve as the basis for a truly sustainable urban future. Both these documents, formulated in 2016, have the appearance of being inclusive and participatory. Yet they remain silent on the important matter of environmental rights – of which the most pressing part is the right to a safe, stable climate. On the social side, the NUA is stronger. It emphasises the need for urban environments that promote social inclusion, safety, social cohesion, and gender equality (UN-Habitat, 2016).

The agenda also fosters an environmentally sustainable economy for equitable social and economic prosperity in all communities, ensuring disaster resilience, and conserving ecosystems. In the agenda context, the United Nations Development Programme (UNDP) draws attention to certain facets of SDG 11 concerning urbanisation. This goal embraces a vision of urban spaces that includes "the right to the city for all; a city that is safe, secure, and inclusive for all; a healthy city that is resilient to disasters; and a sustainable city that offers all forms of ecological, social, and economic wealth to its inhabitants" (United Nations, 2015a).

RQ2: Is Developing Collective Visions Integrating Ethics and Environmental Rights a potential/limitation to integrating design-planning tools and institutional governance approaches to create transformative knowledge?

Chapter 5's analysis revealed that cities employing participatory visioning processes (Montreal with its Office de Consultation Publique) indicated higher implementation scores than those relying on conventional consultation. However, Chapter 6 interviews revealed systematic barriers: resource constraints (time and funding) limit stakeholder involvement depth, managing diverse interests presents coordination challenges, and translating collective visions into implemented projects remains difficult. These findings suggest that whilst collective visioning may improve outcomes, significant institutional and resource barriers must be addressed for effective operationalisation.

RQ3: Are developing collective visions emerging from integrating (1) strategic landscape design-planning tools and (2) institutional landscape governance approaches that contribute to more quality resilient urban landscapes?

Chapter 6's project analysis suggested that interventions employing collective visioning processes showed different characteristics than those using top-down planning. Projects documented as using participatory visioning workshops reported stronger community engagement and post-completion stewardship, though systematic comparative data remains limited. These patterns suggest that collective visioning may contribute to urban resilience, though further research would be needed to establish causal relationships and optimal implementation approaches. An integration of built environment transformative professionals and institutional ethical approaches would be beneficial to define scope and attitudes, in the sense of Corajoud to enhance those visions (Corajoud, 2000).

7.3.3 Tools for Collective Visioning: Evidence from Research

This section presents the list of instruments mentioned in the examination of the cities and projects aligned to RUL approach (Table 15). The grouping is underpinned by the third consolidated TULK framework strategy:

Imagining and Interrogating: Developing collective, ethically grounded visions for transformation.

Table 15. Table CVT. Tools towards Developing Collective Visions (Source: the author)

Targets	Tools	Research source
Community Empowerment and Social Impact	Community Engagement and Participation	Cities, Policies
	Incorporation of Indigenous/Citizen knowledge values into landscape projects	Cities, Policies
	Social Impact of Urban Revitalisation	Personalities
	Community Rehabilitation Efforts	Cities, Personalities, Policies
	Cultural Regeneration	Personalities
	Design for Community Comfort	Cities, Personalities, Policies
	Cultural Reinvention	Cities
	Rehabilitation and Revitalisation	Cities
	Social Activities	Cities, Personalities
Sustainability and Circular Development	Embracing a circular development	Personalities
	Sustainable Design Practices for Urban Landscapes	Personalities
	Minimal Intervention Strategies in Landscape Design	Personalities
	Focus on Quality of Life in Environmental Planning	Personalities
	Site Requalification	Projects
	Adaptations and Appropriation	Cities
	Route 2Zero	Cities, Personalities
Collaborative Approach and Governance	Adopting a Collaborative Approach to planning and design	Personalities
	Adopting an Ecosystem or Landscape Governance Approach	Personalities
	Integration and Trans-disciplinary Collaboration	Personalities
	Fostering multi-stakeholder collaboration	Projects
	Feedback mechanisms and data-driven decision-making processes	Policies
	Technological Participation	Personalities
	Collective Vision Development in Workshops	Policies
	Inclusive Approach to Landscape Design	Personalities
	Negotiation and Persistence in Urban Development	Personalities
	Integration and Connectivity in Urban Design	Personalities
	Collaborative Design Process for Community Engagement	Projects

	Process-based Approach	Personalities
	Embrace Co-design Sessions.	Personalities
	Landscape Quality Objectives	Personalities
	Declaration of Principles, Landscape Charters, and Strategic Plans	Cities, Personalities
	Neighbourhoods' adequate unit to pilot-test city governance transformations	Cities, Personalities, Policies
	Spatial Visions and Policy Integration Strategies	Cities
	Cost-benefit Analysis	Cities
	Urban Quality Plans	Cities
Methodologies	Forums	Policies
	Pecha Kucha	Policies
	Collaborative Games	Policies
	Consultation Table	Policies
	Observatory	Policies
	Scenarios	Policies
	landscape performance	Policies
	hexagon technique	Policies
	increased participation for knowledge generation PDU	Policies
	Briefing CRTL	Policies
	Workshop	Policies

This section explores how ethical values and environmental justice might be integrated into participatory planning processes. The evidence from Chapters 4, 5, and 6 suggests that moving from conventional consultation towards co-production approaches may contribute to more inclusive urban outcomes, though systematic evaluation of these approaches remains limited. These findings inform the proposed "Imagining and Interrogating" component of the TULK framework, which suggests embedding ethical considerations into design and governance processes through landscape quality objectives, potentially strengthening the community-driven dimension of urban landscape transformation.

7.4 Professional Development and Knowledge Transfer

Professional development capability addresses the complexities of operating across multiple spatial and temporal scales in urban landscape transformation. Chapter 4 revealed that 'place-based in multiple scales' was the most consistently implemented attribute across international policy frameworks (averaging 4.2/5), yet Chapter 5's municipal analysis and Chapter 6's professional interviews identified persistent challenges in connecting global agendas to local actions. This section discusses how findings suggest approaches for enhancing professional capacity to work across scales, informing the proposed "Lessons Learned from the Process" strategy.

A critical aspect of professional development capability is consideration of temporal and dimensional scales. The politics of scale ((Görg, 2005) emerge as fundamental. Chapter 5's municipal policy analysis and Chapter 6 interviews revealed consistent advocacy for an intermediate scale of work – smaller than the city yet larger than a project – as necessary for urban landscape strategies. This pattern appeared across all three cities (Barcelona, Birmingham, Montreal) and in multiple professional interviews, suggesting that current governance scales may not align with optimal landscape intervention scales. Additionally, any intermediate landscape strategy would be aligned with policies at all other governmental scales to ensure cohesive and coordinated efforts in urban development. Similarly, aligning objectives among different scales of governance requires multiple time scales that should be articulated to the 2030 Agenda. Furthermore, the consideration of municipal policies often makes claims for continuous monitoring and assessment of objectives, which tend not to happen, according to the interviewees experience. Benchmarking objectives and targets against the SDGs seems to surface at the end as an auto-evaluation exercise. From a political point of view the 2030 Agenda offers a structured policy measuring success through indicators and ensuring alignment with global sustainability standards. However, from a transformative professional point of view, the approach has not overcome the limitations of its institutional scope. Both professionals and stakeholders do not seem to engage with the 2030 Agenda. On the professional side, the agenda is often mentioned and considered in debates but dissociated from professional practice. This may emerge as a challenge to overcome, framing projects into multiple dimensional scales as an attitude or practice to adapt systematically. In a way the International GeoDesign Collaboration Initiative embeds these principles and it could be referenced and adapted to intermediate urban scale requirements.

Chapter 4 revealed 'place-based in multiple scales' was the most consistently implemented attribute across international policy frameworks, though challenges remain in connecting global agendas to local actions.

7.4.1 Scaling Professional Development Capability: From Literature to Evidence

The notion of the politics of scale, as articulated by Görg (2005),is reinterpreted here to develop professional capacity in terms of place-based multiple scales and time conceptions, aiming to elevate the role of built environment transformative professionals. Professional Capability Development, under this perspective, would focus on defining the adequate politics of scale defining the transformational project areas of control and influence claimed by (Diedrich, 2013) as essential to decision making for successful projects.

Implementing this notion requires professionals to acknowledge that environmental challenges often transcend political and administrative boundaries and challenge the bidding brief and commission requirements necessitating analysis and discussion across different scales of governance. The capacity to think beyond the site, at multiple scales and envision different time conceptions, could be considered as professional knowledge revealed in the project transcripts of the Rosa Barba finalists. Pushing the limits of place-based development across multiple scales, aligning specific objectives to global agendas and actions among various governance levels, represents a range of skills and competences to be acquired.

This approach involves enhancing professional knowledge towards effectively engaging with diverse scales of governance, while building up a structure that allows the dissemination of specific urban knowledges limitation and challenges, thus equipping these built environment transformative professionals to be more effective agents of change. To this end, the examples mentioned in the previous chapter such as landscape observatories (e.g. ELC, LTSER Platforms, KTOs or Knowledge Hubs) provide a precedent for megastructures that assist individual professionals in a broader quest. Ultimately, grasping the politics of scale would enable INGO to voice concerns on the operationalisation of practices at any level and eventually to affect United Nations resolutions and recommendations. The lack of collective vision outside the lobbyist purpose of the main transformative professional INGO limits the insertion of expert voices into the bodies and programmes of the United Nations. The UN search for professional neutrality forms the limits to integrating both integrate scientific and professional knowledge. The ability to convey the importance of governance through drivers rather than through structure could help bridge this gap, in search of a fluidity of interaction

both with public and private stakeholders. According to the findings from the interviews, there is a potential for personalities to have a positive effect at a local scale. Scaling up professional voices through working groups and committees at different governance levels would be a mechanism to evolve towards an adaptive landscape approach model. This would require thorough previous coordination of ethical principles and objective contributions to impact policies. HPF in WUF, the Resilience Hub Programme and the Urban Landscape Chair from UNESCO, could be gates towards the TULK framework impact at an international level.

7.4.2 Addressing Research Questions Through Evidence

RQ1: How do urban sustainable development agendas (NUA & SDG11) consider multiple-place-based governance and professional development capability at multiple scales?

NUA emphasises multiple-place-based governance and integrates diverse stakeholders across various scales. This can be seen in NUA's paragraph 149, as it supports local government associations in capacity development, advocating collaboration with professionals, academia, and other stakeholders through peer-to-peer learning and science-policy interfaces (UN-Habitat, 2016).

The analysis demonstrates that both the NUA and SDG11 acknowledge the significance of governance that operates from multiple places and the development of professional capabilities. The NUA approaches the latter indirectly since it speaks mainly to environments for collaboration – "contexts" in which "actors" can build the "partnerships" so crucial for "sustainable development". However, in the NUA's imprecise way, it at least acknowledges that something like professional expertise is necessary. In contrast, SDG11 takes a more explicit view of the "knowledge" and "understanding" vital for effective urban governance - again, in contexts where collaboration and partnership between multiple stakeholders are key (United Nations, 2015a).

RQ2: Are multiple-scale place-based governance a potential or a limit to integrating design-planning tools and institutional governance approaches towards professional capability development?

Chapter 6 interviews revealed that multiple-scale place-based governance presents both opportunities and constraints. Professional participants reported that operating across scales enables more comprehensive landscape strategies but requires significant coordination capacity often lacking in current institutional structures. Chapter 6's project analysis suggested that

award-winning interventions demonstrating multi-scalar approaches employed specific coordination mechanisms and capacity-building processes. These findings inform the proposed Professional Capability Development component of the TULK framework, though further research would be needed to establish optimal implementation pathways.

RQ3: Are multiple-scale place-based governance emerging from integrating (1) strategic professional development capability tools regarded by built environment transformative professionals and (2) institutional landscape governance approaches that contribute to more quality resilient urban landscapes?

Professional capabilities in urban landscape development involve the use of various tools and methodologies to improve skills and knowledge. Action research methodologies, such as those in the *Making Space in Dalston* project, drive positive change through a cyclical planning and reflection process. The *Superkilen* project uses psychoanalytical approaches. It informs design by exploring personal experiences. Ecological restoration principles are yet another option, as exemplified by the *Thermal Central de Yang Shupe* project. Advanced parametric design tools used in the *Summer Island* project equip students with technical skills in computational design. *Chulalongkorn University Centenary Park* project exemplifies how NbS address urban challenges.

Multiscale governance is a key element of landscape adaptation because it uses an interconnected hierarchy of spatial scales – horizontal and vertical – that transformative communities can traverse as they work their way up and down this hierarchy to implement measures that ensure resilience in the urban landscape.

7.4.3 Tools for Professional Development: Evidence from Research

The tools outlined in Section 6.3.2.4 may enhance capacities of urban planning, design, and management professionals through knowledge generation and knowledge application, primarily via continuous learning, workshops, and knowledge-sharing platforms. Chapter 6 analysis suggested these approaches could be particularly relevant for professionals in the Global South working in fast-urbanising, resource-constrained contexts, though systematic evaluation of their effectiveness across different contexts remains limited (

Table 16).

The fourth category developed into the TULK framework is thus, Lessons Learned from the Process: Using insights from past experiences to inform the co-creation of knowledge.

Table 16. Table DCT. Professional Development Capability tools (Source: the author)

Targets	Tools	Research source
Local transposition of the charter	Urban Landscape Charters	Cities, Personalities
Auscultation and contextualising documents	Urban landscape studies	Cities, Personalities
Methodologies	Suitable practice	Policies
	trade-off	Policies
	Dynamic informatic framework	Policies
	Exact carbon sequestration calculator	Policies
	Real time information tools	Policies
	Spatial agent	Policies
	KNOWLEDGE PORTAL	Policies
	Global forecast	Policies
	Roam	Policies
	Geodesign	Policies
Existing Toolboxes	Complexity of Design Tools in Landscape Architecture	Cities, Personalities, Policies
	Parametric Design Tools for Innovative Solutions	Projects
	Natural Algorithms and Structures in Design Processes	Projects
	Urban nature lab NbS Strategies and Tools https://unalab.enoll.org/unalab/	Policies
	Tool kit « Creating Better Cities for Migrants » (Programme MOST-UNESCO)	Policies
	(GeodesignHub.com, City Wide Public Space Assessment Toolkit from UN Habitat)	Policies
	keypad polling Our Voices, Our Future: Community Envisioning Process	Policies
	Global Public Space Toolkit UN Habitat 2016	Policies
	IUCN Urban Toolbox	Policies
	City Wide Public Space Assessment Tool Un Habitat 2020	Policies
	NATURE-BASED INFRASTRUCTUR UNEP 2023	Policies
	Toolkit for Mainstreaming NBS into Nationally Determined Contributions	Policies
	Tools for Co-creation	Policies
	MED Community Toolkit.	Policies
	UN Governance tools for Public Space	Cities, Personalities

	incorporating Blue and Green Infrastructure	Cities, Personalities, Policies
	Sponge Cities & SUD for water management	Cities, Personalities, Policies
	Incorporating green Infrastructure	Cities, Personalities, Policies
	SUD's (Sustainable Urban Drainage Systems)	Cities, Personalities, Policies
	NbS (Nature-based solutions)	Cities, Personalities, Policies
	Passive Solar Design	Cities
	Liveable Cities Method (LCM)	Cities, Personalities
	Interdisciplinary Catalogue of Criteria (ICC) URGE	Personalities
	Inception of Urban National Park & creation or recognition of Urban Forests	Personalities
	Ecosystem-based adaptation (EbA) strategies	Personalities
Incorporating nature-based Solutions	Green Roofs and discarded plots for climate resilience	Cities, Personalities, Policies
	Holistic Nature-based solutions for Climate Adaptation	Cities, Personalities, Policies
	Rain Gardens for Climate Resilience	Personalities
	Paving Technology for Landscape Dynamic Preservation	Policies
	Rainwater Management Systems	Cities, Personalities, Policies
	Blue Infrastructure for Urban Resilience	Personalities
	Green Sponge Concept for Urban Resilience	Cities, Personalities, Policies
	Green Roofs for Sustainable Urban Development	Projects
	Stormwater Management Strategies	Cities, Personalities, Policies
	Deep Hydraulic Techniques for Water Management	Personalities
	Georeferencing for Integrated River Management	Personalities
	Stormwater Regulation	Cities, Personalities, Policies
	Modular Approach to Sponge City Design	Cities, Personalities, Policies
	Plant Species Diversity in Urban Parks	Projects
	Environmental Remediation and Planning	Projects
	Phytoremediation for Water Treatment	Projects
Adaptive Design for Nature Integration	Creation of Permeability Zones in Urban Parks	Projects
	Cut and Fill Technique for Purposeful Landscapes	Projects
	Textures of Plants in Landscape Design	Projects
	Native Plant Species for Reforestation Projects	Projects
	Engineered Soil for Urban Planting	Projects

	Ecological Restoration in Urban Environment	Projects
Archetypes of Potential projects	Brownfield Regeneration Projects	Projects
	Opportunities offered by the Progressive Shutdown of Industrial Heritage	Projects
	Connective Corridor in Urban Design	Projects
	Heritage Preservation and Adaptive Reuse	Projects
	Integrating Nature and Culture in Urban Spaces	Projects
	Restoration of Historical Buildings	Projects
	Adaptive Reuse Proficiency in Sustainable Design	Policies
	Action Research in Urban Development	Policies
Empowering Professionals	Landscape Architect as a Design Entrepreneur	Policies
	Promoting Resilience through Landscape Architecture	Policies
	Acquiring skills in community engagement	Policies
	Community Engagement Skills in Public Space Design	Cities, Personalities

Chapter 6 interviews suggested that professional development and intermediate-scale governance may be important for operationalising urban transformation, with multiple participants highlighting the importance of addressing temporal and spatial challenges in coherence with global agendas. Chapter 5 identified a persistent tension between global directives and local implementation across all three city case studies, suggesting this represents a systematic rather than isolated challenge. The evidence indicates that operationalisation may depend significantly on informed built environment transformative professionals serving as mediators between international policy frameworks and local contexts, though the mechanisms for supporting this mediating role remain underdeveloped. Chapter 5 also identified administrative silos as significant barriers to integration, with conservation and development strategies frequently misaligned due to departmental separation; a pattern observed in Barcelona and Birmingham but less evident in Montreal's more integrated governance structure.

7.5 Professional Capability Development Process: Operationalising Global Agendas Locally

Professional capability development addresses how built environment transformative professionals might operationalise global agendas through knowledge co-creation at local and regional scales. Chapter 4's analysis revealed that whilst frameworks advocate knowledge co-creation rhetorically, systematic mechanisms for enabling it to remain underdeveloped across most frameworks. This section discusses how findings from Chapters 4, 5, and 6 suggest approaches for supporting knowledge co-creation processes, informing the proposed "Professional Capability Development Process" component of the TULK framework. Reflective practitioners, activist academics, and institutional innovators play a central role in this process.

Interviewees underscore the fundamental role of designers in envisioning future cities. This capacity for presenting visions is transferable to resilient post-disaster cities programmes and projects. However, a limitation of access to UN programmes and advisory bodies is considered. Advocating a proactive approach that integrates recovery into urban design thinking seems critical in the new climate regime. This resonates with the TULK framework objective to effectively integrate RUL approach and design practices, developing sustainable and resilient urban landscapes. One of the main limitations emerging from the literature review is the fragmentation of the terminology around the urban landscapes. As previously examined, concepts overlap while terms differ. Chapters 3 and 4 brought to light examples of terminology bridging towards more effective implementation: examples of false synonyms in term designation cityscape, townscape, urban landscape, placemaking, urban metabolism; a broad array of terms appropriated by each discipline challenges the perception of the conceptual common ground. Positive impact is achieved by disseminating transformative knowledge generated through integrative approaches, according to the literature review. Awards, prizes and open-source repositories of good practices help the consolidation of an urban transformation culture. Societies gain deeper insights into their rights and responsibilities in shaping resilient urban environments through specific local examples that embed abstract concepts.

7.5.1 Knowledge Co-creation for Multi-scalar Operationalisation: From Literature to Evidence

The literature review in Chapter 3 introduces knowledge-creation. It refers to Nonaka and Takeuchi's SECI model (Nonaka, 1996), which is known for its structured approach to organisational knowledge. The mobilising knowledge is important to the rationale of the research. In fact, the original constructs of the research aim to mobilising knowledge as means to improve multi-scalar operationalisation of global agendas. Mauser et al. (2013) introduced three foundational models – co-design, co-production, and co-dissemination – for knowledge co-creation within the SECI that are inspirational to the thesis. Knowledge mobilisation is hence interpreted through the dynamic phases proposed by the authors. Socialisation, externalisation, combination, and internalisation, are at the core of RUL approach-based methodology. Furthermore, these phases align with the RUL approach attributes, with adaptive processes that transcend conventional dichotomies.

Besides, the notion of a Knowledge Transfer Offices (KTOs) network, aligns with city-to-city network initiatives. KTO granting free access to the information generated remains a difference. Local knowledge from projects could enhance institutional competencies by building knowledge flows within transformative communities. Open-source knowledge is in this context mandatory for adaptive approaches such as the RUL approach. This aligns with the Institutional Landscape Capacity Building Model, emphasising public-private dialogues, stakeholder alignment, and innovative mechanisms.

7.5.2 Addressing Research Questions Through Evidence

RQ1: How do urban sustainable development agendas (NUA & SDG11) consider Knowledge Co-creation and its operationalisation in global agendas?

The NUA centres on knowledge co-creation through the promotion of collaboration, expertise sharing, leveraging technology, and capacity building. The objective is to achieve SDGs at the local level and feed any lessons learned to global agendas for continuous improvement (UN-Habitat, 2016).

The Sustainable Cities Goal of the SDA emphasises that urban indicators ought to integrate local and national data. The targets developed by SDG11 embrace spatial analysis and city data indicators. Hereby, it addresses challenges such as the need for city-level data collection and the aggregation of city-based data at national, regional and global levels (United Nations, 2015a).

RQ2: Can Knowledge Co-creation enhance design-planning tools and institutional governance for Multi-scalar Global Agendas?

Chapter 6 interviews suggested that knowledge co-creation may enhance design-planning tools and governance approaches for multi-scalar global agendas. Participants advocated for integrating local and citizen insights to inform urban resilience, with several noting the value of visual methods (drawings, polls) for engagement. The evidence suggests that incorporating Indigenous knowledge, private sector contributions, and citizen perceptions into co-production processes could improve correspondence with community needs, though systematic evaluation of these approaches across different contexts remains limited. Using design-planning tools and institutional governance as a means to harness Knowledge Co-creation supports adaptive and inclusive urban development, contributing to global agendas through collaborative and innovative approaches. Chapter 5's comparative analysis across Barcelona, Birmingham, and Montreal suggested that context-sensitive approaches may benefit from 'transformative personalities' who serve as knowledge brokers within governance structures. Montreal's relatively higher implementation scores coincided with identified boundary-spanning professionals connecting municipal departments with community organisations and international policy frameworks, though establishing causality would require further investigation.

RQ3: Are Multi-scalar Global Agendas' operationalisation and adaptive evolution tools emerging from integrating strategic professional development capability and institutional governance approaches?

Investigating knowledge co-creation through the SECI model by Nonaka (Farnese et al., 2019b; Nonaka, 1996) shows how projects contribute to Multi-scalar Global Agendas. The SECI model's phases illustrate how knowledge is generated and applied.

For instance, the High Line project in New York City exemplifies socialisation by developing collaboration among various stakeholders. In like manner, projects like North Wharf Promenade in Auckland demonstrate externalisation by translating professional tacit knowledge into explicit design elements. Meanwhile, Internalisation occurs as projects influence stakeholders' practices and community understanding as seen in integrating diverse explicit knowledge into cohesive urban frameworks.

7.5.3 Tools for Knowledge Co-creation: Evidence from Research

Several key categories emerge to explore how adjusting policies and attitudes can cultivate positive knowledge co-creation: Accessible Knowledge Repositories, Knowledge Translation Frameworks, Knowledge Co-creation in Community Projects, Policy Feedback Mechanisms, Enhancing Project Communication, and Quality Procedures. Each category encompasses methodologies and strategies for integrating knowledge into urban landscape development and governance. This examination reveals their critical roles in promoting collaborative and innovative environments and how knowledge co-creation can be operationalised and adapted to support Multi-scalar Global Agendas (Table 17).

The fifth consolidated TULK framework strategy calls for a Professional Capability Development Process.

Table 17.Table KCT. Knowledge co-creation Tools (Source: the author)

Targets	Tools	Research source
Accessible Knowledge Repositories	Open-source archives of Awarded Projects by nonprofit organisations, i.e. Council of Europe Landscape Award or Barcelona Landscape Biennial	cities, personalities
	Open-source archives of Policies, i.e. European Landscape Convention Information System (ELCIS).	cities, personalities
	Open-source archives of metrics to evaluate the effectiveness of proposed projects across several dimensions	cities, personalities
Knowledge Translation Frameworks	Actions for Resilience (A4R).	policies
	Healthy Green & Building Certification Programme to foster maintenance	personalities
	Improving communication and outreach skills after transformation conservation interventions	policies
	Sustainability and Resilience Policy Frameworks	cities, personalities, policies
	Creating a Framework for Landscape Management	personalities
	Long-term Vision Integration	cities, personalities, policies
	Knowledge Transfer in Sustainable Urban Development	cities, personalities
Knowledge Co-creation in Community Projects	Knowledge-sharing Approach in Design	cities, personalities, policies
	Ecological Forest Technique	cities, personalities, policies
	Knowledge Co-creation in Community Projects	cities, personalities, policies
	Knowledge Transfer in Sustainable Urban Development	projects

Regulatory & Disciplinary controls	Taxation for ecosystem services	cities, personalities, policies
	Inspection and Enforcement and Sanctioning Procedure: Urban Landscape Ordinances	policies
	Policy Advocacy for Public Space Quality	projects
Monitoring feedback on policies	Engagement of both academics and professionals in shaping and adjusting international policies and guidelines	cities, personalities, policies
	The inclusion of industry professionals in decision-making processes ensures that policies are well-informed and effectively implemented.	cities
	Public-private Partnership Model for management	cities
	Programmed Events for Community Engagement	cities, personalities, policies
	Cultural and Ecological Programming in Parks	cities
	Monitoring and Data Collection Technologies	cities, projects
	Educational and Cultural Programming	cities, projects
	Long-term Maintenance	projects
	Long-term Planning for Sustainable Development	personalities
	Community Engagement and Cultural Activities	cities, personalities, policies
	Vulnerability Criteria and Adaptive Impact Assessment	personalities
	Institutional Capacity Building Adaptation	cities, personalities
Dissemination	Competition and Learning Experiences in Design	personalities
	Media Engagement for Project Communication	cities, projects
	App Technology for Project Information	personalities
	Tailored Communication Strategies	cities, personalities, policies
	Bus Tours and Expert Seminars	projects
	Awards for best practices	personalities
	Film / Audiovisual Presentation for Project Communication	policies
Indicators	Landscape indicators	policies
	IUCN Urban Nature Index	cities, personalities
	A tool for measuring the ecological performance of cities	cities, personalities
	Maintenance reports	personalities

	City Resilience Index (CRI)	projects
Project Audits	UK Commission for Architecture and the Built Environment (CABE)	policies
	Post-operational Evaluation (POE) Stud	personalities
	Risk Assessment and Preparedness and Adaptation guidelines	cities, personalities
Quality Procedures	Commission for Architecture and Built Environment	cities
	National Report conducted by the Ministry of Ecology and Sustainable Development	cities, projects
	evaluation of the performance of the measures adopted	personalities
	consultation and support	cities, personalities
	Visual and cartographic monitoring of landscapes	policies
	Design Excellence Criteria	policies
	Evaluation Mechanisms	cities, personalities
	Adaptive Management Strategies	cities, personalities

This section explores how global agendas might be operationalised through knowledge co-creation processes. The evidence from Chapters 4, 5, and 6 suggests that co-design, co-production, and co-dissemination approaches may support adaptive and inclusive urban development, though systematic mechanisms for implementing these processes across different governance contexts require further development. These findings inform the proposed "Professional Capability Development Process" component of the TULK framework, which suggests mechanisms for supporting collective knowledge generation and continuous learning across scales.

7.6 Institutional Capacity Building: Balancing Preservation and Change

Institutional capacity building addresses how organisations might balance conservation and transformation imperatives in urban landscape governance. Chapter 4's analysis revealed that frameworks varied significantly on conservation-transformation balance (scores ranging from 3/5 to 4.5/5), with this dimension showing the second – weakest average performance across frameworks. This section discusses how findings from Chapters 4, 5, and 6 suggest approaches

for enhancing institutional capacity to navigate this balance, informing the proposed "Institutional Capacity Building Process" component of the TULK framework. This dimension builds upon the preservation-transformation dichotomy observed in Chapter 4's analysis of IUCN and UNESCO frameworks, reconceptualising this relationship as dynamic balance rather than opposition.

7.6.1 Balancing Conservation and Transformation: From Literature to Evidence

Overcoming the dichotomy between cultural and natural heritage is crucial within the narrative of cities as socio-ecological systems (Ashworth, 2007). Chapter 4's analysis revealed this tension: IUCN and UNESCO frameworks scored differently on conservation-transformation balance (IUCN 3.5/5, UNESCO HUL 4/5), reflecting their different emphases on preservation versus adaptation. Recent literature promotes transformation towards climate adaptation, transcending previous preservation paradigms (Bai et al., 2016), though Chapter 5's municipal analysis suggested implementing this shift remains challenging in practice. This evolution embraces the dual imperatives of adaptation and mitigation under the new climate regime, breaking down silos and promoting integrated strategies for urban resilience (ISCCL, 2017).

By examining two governance frameworks, one focused on the conservation of cities and the other on their transformation, the thesis explores how integrating natural and cultural elements within urban landscapes can cultivate more holistic strategies for sustainable development and resilience. This integrated approach confronts the contextual transformations necessary for urban survival and positions climate change as a key driver of change and integration in urban governance.

The preserving approach focuses on maintaining existing landscapes and mitigating adverse impacts, aligning with the current stability of the urban ecological system. This approach applied to natural capital was investigated through UNEP UGI and IUCN UPL as Thematic landscape management approaches. The findings of the research led to understand the limitations of protecting anthropogenic landscapes under those policies. Blue and GI refer to natural spaces and territorial scales. Those often result in spaces that appear eco-sustainable but may be greenwashed. In parallel, HUL was envisaged as the tool for the preservation of ordinary heritage. Though the gentrification processes are also a risk assumed by HUL, this tool was interesting to examine for its consideration of listed heritage and contributive heritage.

In contrast, the transforming approach envisions potential changes, reimagining spaces as green and sustainable, but integrating human presence.

The landscapes catalogues and urban landscape studies have surfaced as an interesting strategising tool prescribing NbS, GI, BI within urban context, at a finer intermediate scale. They also conceptualise and plan for heritage protection and even visual cones (Bell, 2019), observed in the planning of some of the cities. Visual Resources and the consideration of sightlines are essential for conducting a strategic urban landscape assessment and proposals. While the qualitative aspect is further redeveloped in the CoE charters and catalogues, relevant data could be extracted from CRPT. The successful experiences at a global level and the constitution of relevant data make it a positive experience to learn from in terms of TULK framework.

Institutional Capacity Building is found to be essential to equip institution with procedures to ponder, consider and resolve positions in the urban landscape's conservation (W) and transformation model's debate. Across the literature review, many instruments in the form of committees of experts, transversal taskforces, PPP and consortia have emerged as potential governance approaches to assess and advise through the debate. The research favours the discussion led by professional drivers in parallel to the political programmes, which are usually short term and biased. While urban ecosystems have a real and live potential for transformation, they can be altered easily, and long-term thinking is needed. Equally, heritage and ordinary landscapes need non-politically driven to develop in favourable ways. This capacity building approach is a process of internal change that ensures the impact of any project gets monitored and followed up. The objective would be to reach the difficult-to-achieve consensus among a public and a diverse array of stakeholders so that urban areas can be better served in the capacity of both conservation and transformation zones. The driver needs to be institutional and here is where all the findings from the previous chapter could apply.

The last reflection towards Institutional Capacity Building would bring us back to the examined city's literature review. One of the main findings of the section was the high connectivity displayed by transformative cities. Both through city-to-city networks and via becoming members of international or UN led programmes, cities align with transformative aspiration search for inspiration and experience through mirroring situations. These organisations limit access to knowledge for wider audiences including creative ecosystem. The city networks tend to be led by private funding or directed by politicians rather than professional technical staff

serving operational change. This challenges the potential exchange between professionals, or the access to an open-source information for research hindering the cooperation between global north and south.

7.6.2 Addressing Research Questions Through Evidence

RQ1: How do urban sustainable development agendas (NUA & SDG11) consider institutional capacity building and decision-making regarding conservation and transformation balance?

The cultural diversity beings play a significant role in sustainable development. The NUA stresses the need to balance urban development with conservation across governance levels. (UN-Habitat, 2016). Furthermore, it advocates a holistic approach that fosters resilience and environmental stewardship. Similarly, the SDG11 emphasises the importance of adaptive processes for knowledge creation through specific targets. However, it does not fully bridge the natural-cultural dichotomy in conservation efforts (United Nations, 2015a).

RQ2: Is decision-making on conservation and transformation a potential limit to integrating design-planning tools, institutional instruments, and governance approaches towards institutional capacity building?

Chapter 6 interviews revealed tensions in balancing conservation and transformation. Interviewees 18 and 21 emphasised ongoing maintenance and management, advocating holistic approaches that balance conservation with transformative design. Multiple participants suggested that finding this balance may be constrained more by political short-termism and economic interests than by technical capacity, indicating that institutional barriers to balanced decision-making may be structural rather than knowledge-based, though further research would be needed to establish the relative influence of these factors.

RQ3: Is decision-making on Conservation and Transformation governance emerging from integrating (1) Institutional capacity-building tools regarded by built environment transformative professionals and (2) institutional landscape governance approaches that contribute to more quality resilient urban landscapes?

Decision-making on balancing conservation and transformation benefits from institutional capacity-building tools and LGA. Projects like the High Line, Girona's Shores, and Qunli Stormwater Park demonstrate how evaluation mechanisms, and adaptive management strategies enhance institutional practices. LGA also contribute to resilient landscapes by integrating adaptive management strategies. Other projects seen in chapter 6 as Superkilen and

Queen Elizabeth Olympic Park illustrate how to regenerate deprived communities. Finally, the transformation of industrial heritage into public spaces, such as Silos Park or the Thermal Central de Yang Shupe project, highlights the role of culture in sustainable, community-oriented development.

7.6.3 Tools for Institutional Capacity Building: Evidence from Research

The development of tools within the RUL approach necessitates a comprehensive articulation integrating design and governance. RUL approach emphasises adaptive governance, participatory design, and stakeholder engagement.

These considerations address challenges identified in Chapter 6, where experts noted difficulties in the MDGs to SDGs transition (Interviewee 2) and emphasised the need for clear feedback mechanisms in governance (Interviewee 8). Temporal challenges were highlighted, with proposals to extend planning horizons beyond the 2030 Agenda to 2050. Those challenges are addressed in the knowledge co-creation dimension of the TULK framework through its emphasis on adaptive, iterative learning processes.

This section highlights practical outcomes of strategies enhancing institutional capacity in urban settings, which is crucial for Conservation and Transformation initiatives (Table 18).

The sixth thematic categories consolidated into TULK framework strategies is Institutional Capacity Building Process.

Table 18.Table CBT. Institutional Capacity Building Tools (Source: the author)

Targets	Tools	Research source
The professionals in the institutions, SILOS merge	Creating Manuals for navigating regulatory frameworks	Research Source
	Integration of Ecology, Finance, and Planning departments within council.	Cities, Personalities
	Urban Design Panels independent professionals in decision or project approval committees	Cities, Personalities
	Capacity Building Programmes in Continuous Education for bureaucrats	Personalities, Cities
	Increase the significance of interdisciplinary skills in academic and professionals training	Personalities
	Collaborative Partnerships: Agreements with local authorities (professionals NGO), i.e. Urban Design Forum	Policies
Ecological perspective to planning and economic	Green Sponge Strategy	Policies
	Strategic planning with landscape and resilience bidding strategies	Cities, Personalities, Policies

departments of the institutional	Climate Change Adaptation Strategy	Personalities
	GI vocabulary of terms. Bridges and Hooks serve as translational mechanisms to connect ecosystem science concepts to specific policy contexts	Cities, Personalities, Policies
	Connective Corridors in Urban Design	Personalities
	Integrating Nature and Culture in Urban Spaces	Cities, Personalities, Policies
	Embracing Reforestation Techniques in Urban Areas	Cities, Personalities, Policies
	Ecosystem Services Evaluation Systematisation	Policies
	Stakeholder Management in Urban Projects	Policies
	Urban National Park Development	Cities, Personalities, Policies
Sociological and community perspective in planning and economic departments of the institutional	Adaptive Design for Resilience	Projects
	Adaptability in Urban Planning	Policies
	Transformation of Abandoned Spaces	Policies
	Collaborative Approach in Urban Development	Projects
	Community Benefit Consideration	Policies
	Historical Significance Preservation	Policies
	Adaptive Reuse in Urban Redevelopment	Projects
Adjusting Funding and Adaptive Governance	Advocating to Secure Budget GI and NbS	Projects
	Financial assistance programmes, i.e. Operational Business Models	Policies
	Requesting Low Budget and Low Maintenance Solutions in competitions and commissions	Policies
	Subsidies for Climate Projects aimed at reducing greenhouse gas emissions and promoting climate justice	Policies
	Landscape taxes	Personalities
	Payment for ecosystemic services	Personalities
	Prioritising urban green in term of health in budgets Ecosystem Approach	Personalities
	Regulation of commercial signage practices to fund large-scale restoration programmes	Personalities
	Financial Support for Climate Innovation	Cities, Personalities
	Subsidies for Climate Projects aimed at reducing greenhouse gas emissions and promoting climate justice	Personalities

	Developing and implementing capacity-building methodologies	Personalities
Guidelines and tools boxes transpositions	Financial assistance programmes, i.e. Operational Business Models	Cities, Personalities, Policies
	UN-Habitat HPF Road to Recovery	Cities
	SUDs Building Research Establishment Guide	Policies
	Handbook of Best Practices in Design	Cities
	Wind Microclimatic Guidelines	Cities
	Guide to Street and Spaces City Manual	Cities
methodologies or figures	Consultation table	Cities, Personalities
	Multi criteria decision making model	Cities, Projects
	Designers copyright of projects overtime	Personalities
	Diploma of State Landscape Architect	Personalities
	International debates on the future of cities (e.g., World Urban Forum –WUF 8) Europan, Grand Paris)	Personalities
	Architectural integration and implementation plan (PIA)	Personalities
	Statement of principle on urban Landscape (regulation)	Cities, Personalities
	Urban National Park Development	Cities

This section explores how institutional capacity-building might support sustainable urban governance by navigating tensions between preservation and transformation. The evidence from Chapters 4, 5, and 6 suggests that city networks, governance models, and interdisciplinary structures may significantly influence transformation capacity, though the specific mechanisms through which these factors operate require further investigation Table 19. These findings inform the proposed "Institutional Capacity Building Process" component of the TULK framework, which suggests mechanisms for enhancing institutional procedures and interdisciplinary collaboration to support balanced decision-making .

Table 19. From RUL approach Attributes to TULK framework. Strategies (Source: the author)

RUL approach Attribute (Chapter 3: LGA Literature Review)	World Bank 101 on LGA (5 Categories)	Adopted Categories for Tool Organisation (Chapters 5 & 6)	TULK framework Strategy (Chapter 7)	Description
Key Actors and Innovation (Quintuple Helix)	1. Multistakeholder Identification	Identifying Key Actors in Urban Landscapes Communication with key agents: community members, policymakers, academics, and practitioners	**1. Reaching Out (Attitude)**	Direct engagement approach for mapping and mobilising stakeholders across the quintuple helix to understand urban landscape systems
Adaptive Processes for Knowledge Creation	3. Collaborative Planning	Reading Landscapes Understanding urban environment intricacies for informed decisions. Tools: preliminary ecological appraisals, urban landscape catalogues	**2. Reading and Drafting (Attitude)**	Continuous interpretation and adaptive response to urban environments through multi-scalar understanding and documentation
Ethics and Environmental Rights	2. Shared Vision	Developing Collective Visions Facilitating participatory processes to develop shared visions	**3. Imagining and Interrogating (Attitude)**	Participatory approach to co-create ethically grounded, inclusive visions for urban landscape transformation
Place-based Development (Multiple Scales)	4. Suitable Practices	Multi-scalar Development. Enhancing the skills of professionals	**4. Lessons Learned from the Process (Attitude)**	Reflective practice that integrates insights from past experiences across temporal and spatial scales to inform future actions
Knowledge Co-creation	*(6th category added)*	Attitudes for Positive Knowledge Co-creation Formulating policies that facilitate collaborative knowledge co-creation, promoting transparency, accountability, and continuous learning	**5. Professional Capability Development (Enabling Process)**	Systemic mechanism for operationalising global agendas through collaborative knowledge production, translation, and dissemination across scales
Conservation and Transformation Balance	5. Governance and Policy	Institutional Capacity Building Strengthening relevant stakeholders and organisational bodies	**6. Institutional Capacity Building (Enabling Process)**	Systemic mechanism to enhance institutional procedures and interdisciplinary collaboration for balancing preservation with adaptive change

7.7 Key Findings: The TULK framework and Six Integrated Strategies

The principal finding of this chapter is that systematic application of the RUL approach-based methodology (diagrammed in Figure 8) across international policy frameworks, municipal policies, and professional practice reveals six interconnected strategies shown in

Table 19. From RUL approach Attributes to TULK framework. Strategies (Source: the author) that may address identified knowledge gaps in urban landscape governance.

When the six RUL approach attributes are operationalised through the KA matrix and evaluated against empirical evidence from Chapters 4, 5, and 6, they transform from analytical lenses into actionable strategies, forming the proposed Transformative Urban Landscape Knowledge (TULK) Framework.

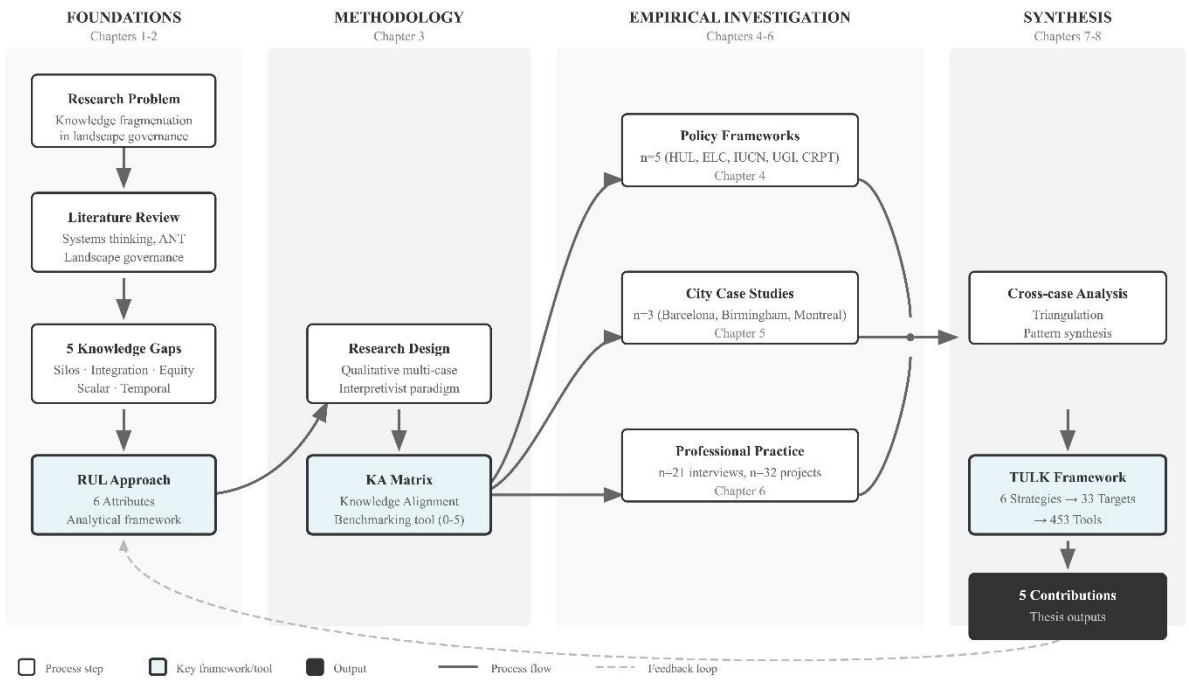

Figure 8. Thesis Research Process. This diagram provides a visual overview of the RUL approach - based methodological employed in this thesis, outlining the research structure towards the development flow. (Source: the author).

The research demonstrates that each RUL approach attribute, when interrogated through the three research questions across multiple knowledge domains, generates specific strategic responses. The Key Actors and Innovation attribute, assessed against the Quintuple Helix model, suggests the need for systematic stakeholder engagement mechanisms, forming the "Reaching Out" strategy. Evidence from Chapter 4 revealed two-point variation in how frameworks operationalise stakeholder engagement, whilst Chapter 6 documented that projects employing systematic actor mapping engaged substantially broader stakeholder groups than conventional approaches. This convergence between framework gaps and professional solutions informs the proposed strategy.

The Adaptive Processes for Knowledge Creation attribute, when examined across all three findings chapters, indicates the importance of continuous landscape interpretation and response, forming the "Reading and Drafting" strategy. Chapter 4 analysis showed that frameworks explicitly adopting complex adaptive systems thinking tended to score higher, though this association warrants further investigation on this attribute, whilst Chapter 5 revealed that cities with more flexible governance structures indicated higher adaptive capacity. Chapter 6 interviews advocated strongly for integrating diverse knowledge sources into landscape readings. This pattern across international, municipal, and professional scales suggests that adaptive interpretation may be fundamental to urban landscape transformation.

The Ethics and Environmental Rights attribute, identified as the weakest across thematic landscape management approaches applied to international policy frameworks at 3.2 out of 5, when combined with evidence of participatory process challenges in Chapter 5 and professional advocacy for ethical grounding in Chapter 6, suggests the need for enhanced collective visioning processes, forming the "Imagining and Interrogating" strategy. The consistent gap between rhetorical commitment to participation and implemented mechanisms – documented across all three cities with 2.3-to-2.7-point differentials – indicates that this strategy must address not merely conceptual frameworks but practical implementation barriers including resource allocation and institutional structures.

The Place-based Development attribute, consistently scoring highest across frameworks yet revealing implementation challenges at municipal and professional levels, indicates the critical importance of multi-scalar coordination, forming the "Lessons Learned from the Process" strategy. The convergent advocacy for intermediate-scale governance, identified in Chapter 4's highest-scoring frameworks, Chapter 5's municipal policy documents, and Chapter 6's professional interviews, suggests this strategy addresses a systematic gap in current governance architectures. The evidence indicates that optimal landscape intervention scales may not align with existing administrative boundaries.

The Knowledge Co-creation attribute, whilst present conceptually across frameworks, indicated limited operational mechanisms in Chapter 4 analysis, implementation challenges in Chapter 5 cities, yet significant professional innovation in Chapter 6 projects. This discrepancy between professional practice and governance frameworks suggests the need for systematic knowledge capture and dissemination mechanisms, forming the "Professional Capability Development Process" strategy. The documented five-to-seven-year lag between professional

innovation cycles and framework updates indicates this strategy must include accelerated feedback mechanisms.

The Conservation and Transformation Balance attribute, showing significant variation across frameworks and persistent tensions in municipal implementation, combined with professional navigation of preservation-adaptation dilemmas, suggests the need for enhanced institutional capacity to manage these dynamics, forming the "Institutional Capacity Building Process" strategy. Evidence from Chapter 5 revealed that Montreal's cross-cutting institutional structures correlated with higher implementation scores compared to Barcelona and Birmingham's siloed departments, suggesting that this strategy must address structural rather than merely conceptual integration. The key finding, therefore, is not simply that gaps exist in landscape governance rather that when RUL approach attributes are operationalised through systematic analysis across multiple knowledge domains and scales, they reveal a coherent set of strategic responses that may address these gaps.

The TULK framework emerges as the synthesis of these responses, proposing six strategies that connect international policy frameworks, municipal implementation, and professional practice through evidence-informed mechanisms. Each strategy derives from convergent evidence across at least two of the three empirical chapters, suggesting systematic rather than isolated patterns. However, this finding comes with important caveats. The framework proposes these strategies based on evidence from five thematic landscape management approaches applied to international policy frameworks, three cities, and thirty-two projects: a substantial but not comprehensive sample. The patterns identified may not generalise across all contexts, particularly in Global South cities with different governance structures, resource constraints, and cultural contexts. The correlation between institutional infrastructure and implementation success, whilst documented in Montreal's case, requires validation across broader contexts. The assumption that professional innovations can be systematically scaled requires testing through implementation. The proposed two-to-three-year update cycles for knowledge capture, whilst addressing documented lags, may prove insufficient or excessive depending on specific contexts and domains.

A critical pattern across these findings is that effective change arises through collaboration across disciplines rather than within them. Chapter 4 revealed that whilst international policy frameworks describe what built environment transformative professionals should achieve, they lack systematic mechanisms for coordinating between academic research, professional

practice, and institutional implementation. Chapter 5 indicated that successful municipal innovation: Barcelona's Superblocks involving university researchers and municipal planners, Montreal's OCPM coordinating academic experts with city officials, Birmingham's green infrastructure bridging research partnerships with council implementation; involved collaboration across these domains rather than isolated professional initiatives. Chapter 6 analysis showed that projects engaging reflective practitioners, activist academics, and institutional innovators showed greater RUL approach alignment than single-domain efforts. This suggests urban landscape transformation depends less on individual "grand authors" and more on systems enabling coordination between anonymous drivers across professional boundaries. The TULK framework addresses this by proposing strategies that explicitly connect these domains; each strategy specifies mechanisms for integrating academic knowledge, professional practice, and institutional capacity rather than assuming individual professionals bridge these gaps independently. This system-building approach distinguishes TULK from existing frameworks analysed in Chapter 4.

The TULK framework operates bidirectionally within professional communities: top-down in providing structured categories that orient practice, bottom-up in absorbing emergent knowledge as practitioners apply and expand it. It speaks to professionals, not directly to citizens, relying on their mediation to translate structure into context-sensitive action. Therefore, the TULK framework is proposed not as a definitive solution but as a hypothesis to be tested: that systematic operationalisation of RUL approach attributes through integrated analysis of frameworks, policies, and practice may generate actionable strategies for addressing urban landscape governance gaps. The framework's utility depends on factors this research cannot guarantee, adequate resources, institutional support, political will, and contextual adaptation. What the research demonstrates is that the six proposed strategies emerge consistently from evidence analysis and address documented gaps across multiple scales, suggesting they merit empirical evaluation through pilot implementations and iterative refinement. The framework offers a structured approach for organising the substantial body of tools and practices identified through this research – detailed in Tables 12 through 17 – whilst acknowledging that their effectiveness requires validation through application in diverse urban landscape contexts.

Chapter 8 – Conclusions and Contributions: Towards a Transformative Urban Landscape Knowledge Framework

This research addressed systemic fragmentation in urban landscape governance, where academic research, professional practice, and institutional implementation evolve independently, undermining capacity for climate-driven urban transformation. Five interconnected gaps identified through literature review revealed knowledge systems rendered fragile by fragmentation and rigidity, outdated dichotomies, disciplinary silos, and absence of scalar or temporal adaptability. International policy frameworks advocate transformative approaches to urban landscapes, yet systematic mechanisms coordinating between academic knowledge, professional innovation, and institutional capacity remain underdeveloped.

The research developed the Resilient Urban Landscape (RUL) approach as a filtering and integrating mechanism restoring structural adaptability across disconnected domains. Through systematic analysis of thematic landscape management approaches (Chapter 4), city case studies (Chapter 5), and award-winning project studies (Chapter 6), the research revealed that systemic coordination outweighs individual mastery as a driver of change. Chapter 7 synthesised these findings into the Transformative Urban Landscape Knowledge (TULK) framework, proposing six strategies that explicitly connect academic research, professional practice, and institutional implementation through evidence-informed mechanisms.

This concluding chapter addresses the research aim and questions, summarises key findings, identifies contributions to knowledge, discusses implications for professional advocacy and system-building, examines limitations whilst reflecting on research scope and context, and proposes future research directions.

8.1 Key Findings

The thesis traces how ideas emerge, evolve, and are adopted from one domain to another, driven by the intertwined nature of diverse drivers, including academia, professionals, and civil servants. This leads to a reflection on how knowledge can be created and reintegrated across various disciplines, breaking down silos and providing practical strategies with a specific focus on urban landscapes.

8.1.1 Systemic Fragility and Five Knowledge Gaps

Chapter 2's comprehensive literature review revealed systemic fragility as the central challenge: knowledge systems (emerging from practice, policy, and academia) are rendered fragile by structural inflexibility limiting knowledge growth and implementation. Five interconnected gaps define this fragility: epistemological barriers and sectoral fragmentation, landscape governance integration deficit, undervaluation of ordinary urban environments, scalar implementation gaps between global frameworks and territorial realities, and design-governance integration deficits across temporal dimensions. These gaps collectively expose knowledge systems rendered fragile by rigidity, outdated dichotomies, disciplinary silos, and absence of scalar or temporal adaptability.

8.1.2 Process-oriented Approaches Enable Transformation

Chapter 4's systematic application of the KA matrix to five thematic landscape management approaches applied to international policy frameworks (IUCN, UNESCO HUL, ELC, UNEP, UN-Habitat) successfully addresses RQ1, revealing that landscape principles and landscape governance approaches align with global sustainability agendas through process-based adaptive management, multi-scalar governance structures, and collaborative stakeholder engagement mechanisms. The critical finding is that successful landscape governance depends less on prescriptive frameworks than on process-oriented approaches that structure collaborative decision-making . However, whilst conceptual alignment exists, frameworks systematically lack coordination mechanisms between academic research, professional practice, and institutional implementation. The synthesis in Chapter 7 revealed two-point variation in how frameworks operationalise stakeholder engagement, indicating substantial implementation gaps.

8.1.3 Municipal Implementation Requires Structural Reorganisation

The examination of Barcelona, Birmingham, and Montreal through policy analysis and interviews with nine transformative actors in Chapter 5 revealed four critical findings. First, governance transformation requires structural reorganisation beyond departmental reform: Birmingham's natural capital approaches, Montreal's Bureau du Design and OCPM, and Barcelona's Urban Ecology department demonstrate that effective landscape governance necessitates new institutional structures. Second, financial mechanisms (public-private partnerships, ESG criteria, innovative funding) emerged as critical enablers across all three cities. Third, the sectoral isolation documented in Chapter 5, constrain implementation

regardless of governance structure or cultural context. Fourth, substantial gaps exist between participation rhetoric and operational implementation. KA matrix analysis showed strong alignment with place-based multiscalar approaches and adaptive processes, but systematic weaknesses in ethics and environmental rights frameworks.

8.1.4 Professional Practice Reveals Six Thematic Categories

The analysis of 32 Rosa Barba Prize projects and expert interviews with reflective practitioners, activist academics, and institutional innovators in Chapter 6, identified six thematic categories: actor identification, landscape reading, collective vision development, professional capability building, institutional capacity building, and policy co-creation. These categories, adapted from the World Bank Landscape Approach framework, provide systematic structure for analysing implementation tools across diverse contexts. The research revealed discernible patterns in contemporary landscape practice, mobilising knowledge from built environment transformative professionals to expand urban landscape experiences.

8.1.5 Transformative Capacity Emerges from System Coordination

The synthesis in Chapter 7 revealed the critical pattern underlying all empirical findings: systemic coordination outweighs individual mastery as a driver of change. Chapter 4 revealed that frameworks lack systematic coordination mechanisms while Chapter 5 showed that successful municipal innovations from Barcelona's Superblocks involving transversal designers teams and municipal planners, to Montreal's OCPM coordinating academic experts with city officials or Birmingham's green infrastructure bridging research partnerships with council implementation. All resulted from collaboration across professional domains rather than isolated initiatives. This finding directly addresses the epistemological barriers and sectoral fragmentation (Gap 1) identified in Chapter 2, proposing that urban landscape transformation depends on systems enabling coordination between diverse professional profiles across disciplinary boundaries.

8.1.6 Six Interconnected Strategies Form the TULK framework

The successful construction of the TULK framework supports the RUL approach as a methodology and the KA matrix as an analytical tool. Chapter 7 synthesised convergent evidence into six interconnected strategies: four attitudes (Reaching Out, Reading and Drafting, Imagining and Interrogating, Lessons Learned from the Process) and two processes (Professional Capability Development, Institutional Capacity Building). Each strategy derives

from convergent evidence across at least two empirical chapters, suggesting systematic rather than isolated patterns. The research suggests a necessary shift from rigid toolsets to attitude-based approaches that foster continuous learning. A critical finding is the importance of professional and institutional growth as a circular process, contrasting with the project-by-project culture in which professional tacit knowledge is frequently lost. The TULK framework proposes mechanisms enabling a circular culture where design extends over governance and governance informs design, requiring coordination amongst academics, professionals, and policymakers to align urban transformation strategies with global sustainability goals.

8.2 Addressing the Research Aim and Questions

The overarching aim of this research is to develop an integrative methodology for aligning landscape governance approaches with global sustainability agendas, addressing fragmentation between academic knowledge, professional practice, and institutional implementation across multiple scales to enhance urban landscape transformation capacity in the context of climate change.

This research aimed to contribute to building the knowledge base needed to navigate complex urban challenges through renewed attitudes, processes, and tools that function in an integrated and systemic manner across governance scales. The research addresses systemic fragmentation where systems (emerging from practice, policy, and academia) are rendered fragile by structural inflexibility limiting knowledge growth and implementation. The research developed the Resilient Urban Landscape (RUL) approach as an integrative framework responding to five interconnected gaps: epistemological barriers and sectoral fragmentation, landscape governance integration deficit, undervaluation of ordinary urban environments, scalar implementation gaps, and design-governance integration deficits.

Three overarching research questions structured the investigation:

8.2.1 Research Question 1: How do landscape principles and landscape governance approaches align with global agendas to promote resilience and urban quality in the context of climate change?

This research found substantial yet incomplete alignment between landscape principles, landscape governance approaches agendas (i.e., New Urban Agenda and Sustainable Development Agenda 2030), and global sustainability agendas. Chapter 4's systematic application of the Knowledge Alignment (KA) matrix to five thematic landscape management

approaches applied to international policy frameworks revealed convergence around core principles whilst exposing systematic implementation gaps. Place-based multi-scalar approaches showed highest alignment (4.2 out of 5 across frameworks) whilst ethics and environmental rights remained weakest (3.2 out of 5), with two-point variation in how frameworks operationalise stakeholder engagement.

The answer to RQ1 affirms that sufficient common ground exists between landscape principles, landscape governance approaches, and global sustainability agendas to support systematic integration. Landscape approaches provide fundamental conceptual foundations for climate resilience and urban quality objectives. However, the critical caveat is that whilst conceptual alignment exists, procedural mechanisms that would support implementation remain underdeveloped. Individual instruments (HUL Recommendation, ELC, IUCN Protected Landscapes) recognise landscape's integrative potential yet lack systematic coordination structures. The research suggests that translating alignment from principle to practice requires explicit coordination mechanisms largely absent from current frameworks.

8.2.2 Research Question 2: What synergies between governance approaches and planning/design tools contribute to transformative knowledge generation and cross-disciplinary collaboration in resilient urban landscapes?

This research identified three critical synergies associated with transformative knowledge generation. First, project-based spatial interventions combined with adaptive policy frameworks appear to foster iterative learning cycles, as illustrated through Barcelona's Superblocks programme, Birmingham's green infrastructure network development, and Montreal's ecological corridor planning (Chapter 5). These projects function as governance laboratories where planning/design tools and governance mechanisms co-evolve. Second, financial innovation mechanisms – natural capital accounting, ESG criteria integration, strategic public-private partnerships – align multiple objectives across professional domains. Third, multi-scalar planning frameworks connecting neighbourhood interventions to metropolitan strategies are associated with knowledge transfer across scales.

The analysis discussed in Chapter 6 revealed that projects engaging reflective practitioners, activist academics, and institutional innovators showed greater alignment to the RUL approach than single-domain efforts. The synergy emerges not from specific tool excellence but from coordination systems that support diverse professional profiles to contribute complementary knowledge forms, academic theoretical frameworks, professional practical innovations,

institutional implementation mechanisms. The synthesis in Chapter 7 revealed this pattern systematically: each of the six TULK strategies derives from convergent evidence across at least two empirical chapters, suggesting that transformative knowledge generation depends on systematic platforms supporting multi-domain collaboration rather than isolated technical instruments. The research answers RQ2 by suggesting that governance approaches connect with planning/design tools through coordination architectures bridging epistemological barriers.

8.2.3 Research Question 3: What implementation strategies bridge the theory-practice gap in sustainable urban landscape interventions whilst facilitating the integration of knowledge across theory, practice, and governance?

This research identified four implementation strategies effectively bridging theory-practice gaps. First, pilot projects at neighbourhood scale enable tangible demonstrations and learning -by-doing before citywide implementation, reducing risk whilst building institutional capacity, evident across all three cities. Second, crisis-responsive governance structures leveraging environmental events as policy innovation catalysts create decision-making windows overcoming institutional inertia. Third, hybrid funding models combining public resources with private investment aligned through sustainability criteria enable projects impossible through single-sector financing. Fourth, informal networks of built environment transformative professionals navigating institutional constraints through coordinated action prove more effective than formal structures alone, particularly in ordinary urban environments. Four steps, that as described, thereby close the loop of transformative knowledge creation.

These strategies share a common characteristic: they create feedback loops enabling knowledge circulation between theory, practice, and governance domains. Chapter 7 indicated that when RUL approach attributes are operationalised through systematic analysis across multiple knowledge domains and scales, they reveal coherent strategic responses addressing documented gaps. The TULK framework, structured around six strategies, addresses RQ3 by proposing explicit coordination mechanisms: stakeholder engagement platforms (Reaching Out), landscape interpretation systems (Reading and Drafting), participatory visioning processes (Imagining and Interrogating), knowledge capture mechanisms (Lessons Learned from the Process), professional capability development networks (Professional Capability Development Process), and institutional structures enabling cross-sectoral integration (Institutional Capacity Building Process). The research answers RQ3 suggesting that bridging theory-practice gaps benefits from systematic coordination architectures enabling knowledge

co-creation across professional boundaries, particularly in ordinary urban contexts representing humanity's primary habitat.

8.2.4 Achieving the Research Aim

The work developed throughout this research demonstrates that the stated aim has been achieved through renewed attitudes, processes, and tools operating systemically. A critical pattern across findings is that transformative capacity emerges from coordination between professional domains rather than individual excellence within domains. Whilst international policy frameworks describe what built environment transformative professionals should achieve, they lack systematic mechanisms coordinating between academic research, professional practice, and institutional implementation. Successful municipal innovations involved collaboration across these domains rather than isolated professional initiatives. Projects engaging multiple professional profiles showed greater RUL approach alignment than single-domain efforts. This suggests that urban landscape transformation depends less on individual "grand authors" and more on systems enabling coordination between anonymous drivers across professional boundaries.

The TULK framework, developed and refined through systematic application across thematic landscape management approaches, city case studies, and award-winning project studies, proposes this systematic structure. Each strategy specifies mechanisms for integrating academic knowledge, professional practice, and institutional capacity rather than assuming individual professionals bridge gaps independently. This system-building approach distinguishes TULK from existing frameworks. The RUL approach functions as the integrative mechanism supporting this coordination, restoring structural adaptability across disconnected domains. However, important qualifications apply: the framework requires further testing and validation in diverse contexts, particularly Global South cities; coordination mechanisms need validation through implementation; patterns identified may not generalise across all contexts with different governance structures, resource constraints, and cultural contexts.

8.3 Research Contribution

This research makes five interconnected contributions addressing the knowledge gaps identified in Chapter 2. Whilst individual contributions could be implemented separately, their collective value lies in their systematic integration through the RUL approach methodology.

8.3.1 Innovative Methodology Integrating Knowledge Sources

The KA matrix is proposed as a tool that integrates knowledge sources of various natures, such as programmes, governance lines, policies, projects, and testimonies, without discrimination of origin. This cross-sectional analysis allows for testing the RUL approach and has proven effective in distilling hundreds of tools feeding a common knowledge framework: the TULK framework. The TULK framework has been developed and refined through successive application into specific strategies, objectives, and recommending existing tools. A key innovation of the TULK framework lies in its capacity to integrate these: for instance, 453 tools, 33 objectives, and six strategies aligned with the RUL approach attributes are presented in this thesis.

The research encourages the adoption of the TULK framework and the RUL approach with the KA matrix as a methodology. Through these contributions, the thesis offers a new perspective on integrating sustainability into urban landscape transformation and the development of adaptive and integrated governance models.

All strategies foster interdisciplinary collaboration and overcome the barriers between academia, professional practice, and governance to ensure the production of quality resilient urban landscapes. Amongst the six strategies, four attitudes guiding interventions and two enabling processes are presented to work with different scales and urban contexts. The research proposes attitudes that prioritise adaptability over rigid tools, whilst placing global ethical principles above the professional deontology of each discipline. The transferability of the TULK framework findings, organised in tools, objectives, and strategies, are within themselves a contribution to others or further research.

This methodological contribution directly addresses Gap 1 (epistemological barriers and sectoral fragmentation) and Gap 5 (design-governance integration deficit) by providing systematic mechanisms for integrating knowledge across disciplinary boundaries that previously remained isolated.

8.3.2 Throwing the Toolkit Away: From Tools to Attitudes

The initial intention of the thesis was to develop a methodology that would distil knowledge aligned with the RUL approach in search of specific tools that would be transferable into other urban landscape contexts. However, the vast number of instruments extracted in Chapters 5 and 6 made it necessary to synthesise the findings into manageable groups. A temporary classification was retrieved from the literature review to finally identify the six typologies of tools paired with the RUL approach attributes. This process of manipulating the data into understandable units of meaning led to the six strategies.

Key findings point towards the need for a new culture of continuous learning as examined through the research methodology and strategies. Finally, the importance of strategies before toolbox applications stands. Michel Corajoud's teachings align with this stress towards attitudes. In his letter to students, Corajoud (2010) outlined nine steps for guiding the project process, including thorough site exploration, detailed documentation, and design integration. Corajoud pioneered the notion of reflecting on accumulated knowledge and maintaining design coherence at all scales, disseminated in the ENSPV, the landscape school of Versailles (Helms, 2019). For instance, the shift from traditional urban planning toolkits to attitude – and process – driven strategies is exemplified by RUL approach's emphasis on adaptive management and continuous stakeholder engagement, enabling a nuanced response to evolving urban challenges.

The thesis promotes a shift from a reliance on rigid 'toolkits' to the cultivation of adaptive 'attitudes and processes' in urban landscape transformation. While this emphasis is crucial for navigating the inherent dynamism of urban environments, it is important to acknowledge that tools themselves are not inherently problematic. The key, perhaps, lies in developing a professional culture that prioritises critical thinking. Being critical, flexible, and collaborative enables practitioners to judiciously select tools rather than applying them prescriptively. This perspective recognises the importance of both having access to appropriate tools, possessing the adaptive capacity to utilise them effectively and developing the notion of a community of practice, where knowledge is shared in an adaptive back loop.

The research thus corroborates the need to shift from rigid toolkits to a dynamic, attitude-driven approach. This is the major shift within the initial aims. Integrating continuous learning and innovative strategies to effectively manage urban transformations is at the centre of the final

findings of the research. It is the moment to "throw away the toolkit," or at least to set the right attitudes to use it first.

8.3.3 Transferable Instruments, Visualising Transformative Potential

Beyond the methodology already presented as a contribution, one could envisage the extensive compilation of tools as a contribution in terms of a repository. Through these hundreds of tools, organised into attitudes and processes, the research offers a comprehensive repository of tools, toolboxes, methods, and sources related to urban landscape transformation.

The mere availability of these tools, gleaned from UN policies, municipal regulations, professional bodies, etc., is essential to visualise how many resources we have at the disposal of our transformative community. This offers a new perspective on integrating sustainability into urban landscape transformation through simply adequate communication of what we already have to build integrated design, planning, and governance models.

8.3.4 Shared Language Development

The obsession with language emerges from the first scoping literature review. In fact, the study included cities with various official languages and utilised multilingual skills to translate materials from Catalan, Spanish, French, and English, aiming to broaden the literature review and incorporate diverse perspectives.

The research aims to contribute to developing a shared language between landscape and resilience science, based on the understanding that there is overlooked contributive knowledge lost in disciplinary translation that could be used to foster joint improvement of urban landscapes. It reconsiders terms and overlapping concepts to provide an overarching vision to discover that similar strategies are defined by different terms but work as one to create adaptive urban transformation strategies. By synthesising professional practical knowledge and theoretical frameworks, a common language emerges. The TULK framework integrates insights from different spectrums of knowledge. Insights from professionals provide practical experience, academics offer theoretical and research-based knowledge, and civil servants contribute expertise in policy and governance. Thus, the TULK framework is a framework and repository bridging disciplinary jargon.

8.3.5 Intermediate Scale of Action

Spatially, this thesis offers a methodological contribution. Through various case study findings, it suggests that an intermediate scale of action is the most effective level for intervening in the urban landscape to enhance both resilience and quality. Situated between the city-wide masterplan and small-scale projects, this scale enables the deployment of key tools, objectives, and attitudes outlined in the TULK framework.

This intermediate scale functions as a bridge towards global agendas and goals like the SDGs. Therefore, the thesis is grounded in the concept of transcalarity, focusing specifically on cultivating landscape-led adaptive knowledge. At the same time, it anchors plans to minorities' claims and the knowledge of local citizens/indigenous people. In this sense, the neighbourhood intermediate scale plays a central role in enacting landscape values to guide decision-making .

This spatial contribution addresses Gap 3 (undervaluation of ordinary urban environments) and Gap 4 (scalar implementation gap) by identifying the neighbourhood scale as the optimal level for translating global frameworks into local implementation whilst focusing in ordinary landscapes.

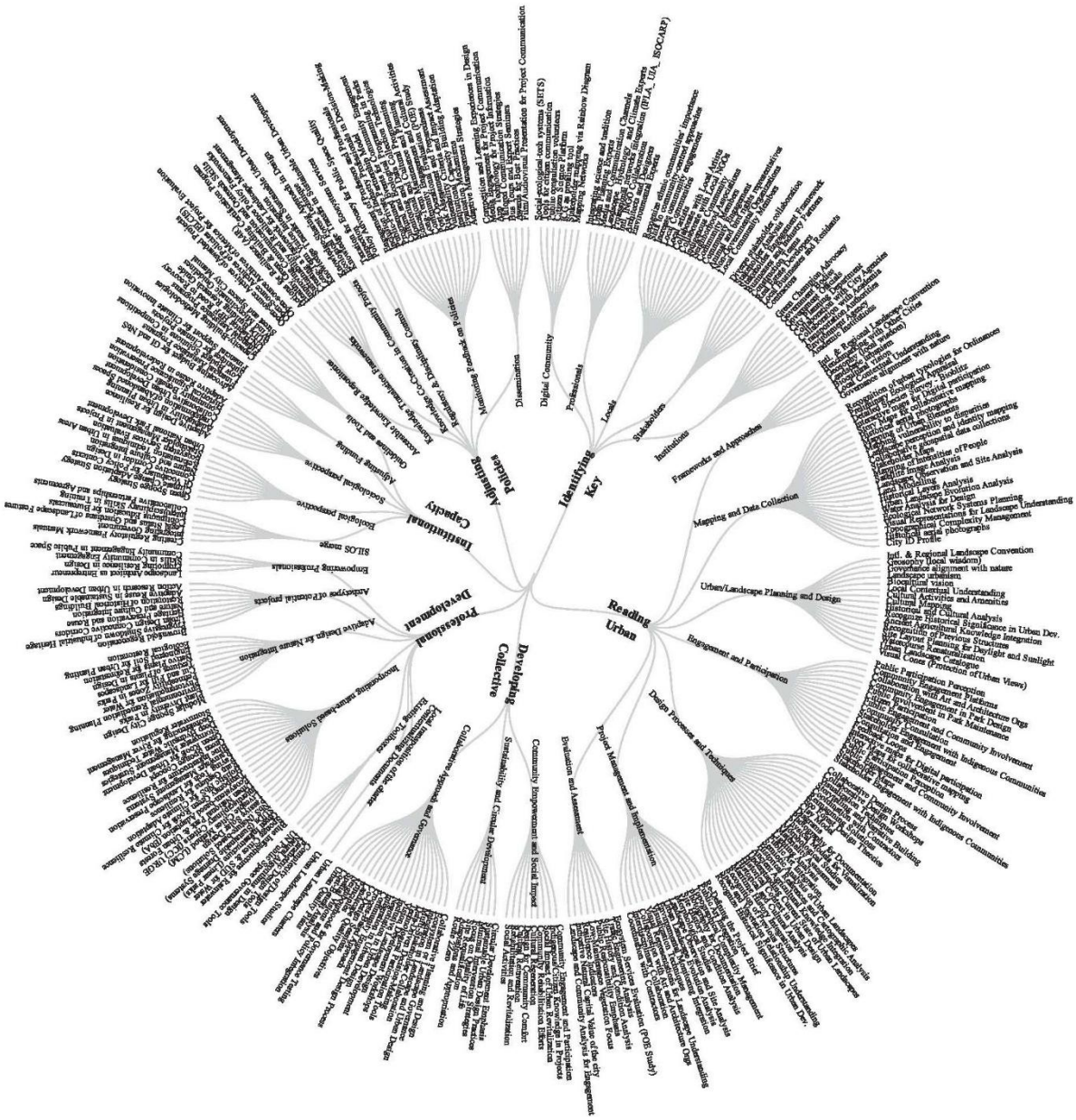

Figure 9. Diagram representing the 453 tools, 33 targets and 6 strategies produced as results of the RUL approach-based methodology (Source: the author)

8.4 Implications of Findings

The TULK framework addresses the fragmentation of urban transformation efforts by proposing a conceptual meeting point that unifies knowledge from theory and professional practice across disciplines, achieving sustainable, high-quality landscapes through the RUL approach's integration of diverse knowledge sources. The research proposes that through activating three professional profiles – reflective practitioners, activist academics, and institutional innovators – across neighbouring transformative disciplines, a governance by drivers would emerge, utilising the framework's common attitudes and processes to trigger positive change. This is based on the potential verticality of professional international non-governmental organisations (INGOs), whose inter-regional membership structures could bridge the global-to-local gap, enabling networks of academics, professionals, and civil servants to find alternative spaces for collaboration whilst overcoming institutional barriers.

8.4.1 Developing Professional Advocacy of Urban Transformative Disciplines

This research suggests that effective urban landscape transformation requires dependable systems connecting reflective practitioners, activist academics, and institutional innovators. This finding directly addresses the systemic fragility identified in Chapter 2, where academic – professional separation and fragmented professional networks constrain implementation capacity.

The TULK framework proposes professional advocacy as a system-building strategy rather than individual-focused capacity development. For those who embrace landscape architecture as an integrative stance rather than a siloed discipline, this means championing collective agency over individual stars. Research findings demonstrate that personality agency matters, but through systems, not isolated individuals. Barcelona's governance innovations, Birmingham's green infrastructure development, and Montreal's participatory frameworks succeeded through coordinated networks of professionals, academics, and institutional change-makers working collectively rather than through star designer interventions.

The three-profile system makes visible the agencies that drive transformation. Rather than anonymous governance processes, the framework highlights how reflective practitioners, activist academics, and institutional innovators collaborate to bridge theory-practice gaps and navigate institutional constraints. The findings in Chapters 5 and 6 revealed how separation between academic research and professional practice weakens implementation capacity.

Professional advocacy requires activist academics who engage directly with practice and policy, reflective practitioners who critically engage with research, and institutional innovators who facilitate institutional learning.

The research identified fragmented professional networks as a critical barrier across all three cities. Professional advocacy means constructing formal and informal platforms where the three profiles coordinate knowledge co-creation, institutional innovation, and implementation strategies. This system-based approach offers an alternative to star designer narratives that overshadow collective mechanisms. It recognises that transformative change emerges from coordinated networks of diverse actors rather than individual genius, addressing the systemic fragility that constrains urban transformation capacity. The role of professional international organisations is essential in this endeavour, providing vertical structures that bridge global-to-local gaps through their inter-regional membership.

Aligning ethical professional codes across architecture, urban planning, landscape architecture, horticulture, and engineering with TULK framework principles would cultivate a foundation to uphold high standards in urban development, drafting a path towards shared ethical underpinning. The research proposes redesigning professional awards programmes to recognise the iterative processes and adaptability of projects, rather than just static and immediate achievements. Using transformative projects as benchmarks corroborates the significance of sustainable urban design and its influence on policy development and urban outcomes, treating projects as non-living agents whose knowledge can be extracted and systematised.

The TULK framework aims to establish a shared vocabulary facilitating clear communication across disciplines, identifying exemplary instruments and integrating them into governance. Only through further implementation of the KA matrix can the arsenal of tools and attitudes be strengthened as a reference, helping build this cohesive community of built environment transformative professionals.

8.4.2 Practical Applicability

In practical terms, the research addresses various areas of impact, with a common focus on consolidating a creative professional community to which the thesis identifies more than 400 tools derived from policies, projects, and professional experiences. These tools are organised into a flexible taxonomy, adaptable to different contexts, and support the implementation of

the TULK framework and RUL approach to promote multi-level urban governance, particularly at the neighbourhood scale, ensuring holistic urban landscape strategies with mid and long-term visions.

Academia:

The thesis proposes enriching curricula with interdisciplinary approaches and shared ontological principles for future built environment transformative professionals. This includes integrating ethical principles into educational programmes and introducing methodologies that emphasise adaptability over rigid tools. Additionally, it promotes curricular openness to governance tools and design methodologies (formal, informal, and stakeholder-based), promoting international relations competence and facilitating the integration of knowledge from diverse sources (indigenous, citizen, and transdisciplinary professional knowledge) into the complex thinking of future professionals. The proposal thus aims to increase academic-critical trials and engaged scholarship.

Institutional capacity building:

Enhancing institutional capacity building emerges as capital to urban transformative projects. These are often limited by the structures of decision-making and a lack of dialogue with the network of agents around them. Conversely, the professional tacit experience generated through those interventions is not reintegrated into design or governance. The TULK framework strategies foster new attitudes equipped with tools, instruments, and guidelines that mitigate the lack of precedent and posterior activities around the project/plan.

Professional Practice

The research proposes a transformation of professional practices in urban landscapes through the capacity-building methodology of the RUL approach, developing transformative learning and interdisciplinary collaboration. It proposes an approach that prioritises sustainability, equity, and long-term reflection in urban projects. This perspective is realised through the implementation of the TULK framework: the incorporation of a taxonomy of adaptable tools and attitudes for various contexts, providing practical instruments to implement resilient urban solutions. Furthermore, the need for sustained critical evaluation mechanisms is emphasised, focusing on successful synergies between governance and design. Case studies demonstrate the scalability and adaptability of these approaches to address the diversity of urban projects.

Through this perspective, professional recognition systems are also revisited, advocating for awards that value iterative and adaptive projects capable of responding to long-term challenges. It recommends aligning award databases, such as the Rosa Barba Landscape Prize, with RUL approach attributes to recognise diverse perspectives in governance. Professional capability is embraced as an individual endeavour, promoting governance by drivers that impact positive change in transformative operations. Its presentation in a taxonomy makes it easier to use as a repository of available instruments that adapt to the moment in which the tools are required.

In addition to the arsenal provided by research, a dimensional and temporal conclusion emerges to guide its application. Beyond the ecological territorial decisions and the municipal masterplans, the neighbourhood scale is agreed in the research as a comfortable size towards landscape governance approaches. It gives adequate multi-governance and the politics of scale to reach the community, avoiding over-specificity of projects that lose the holistic view. Mauser et al.'s (2013) co-design, co-production, and co-dissemination finds its best fit at this scale. Furthermore, this dimensional recommendation towards landscape development strategies and landscape conservation strategies implementation concludes at least two temporal moments should be considered in visioning and strategising: mid and long-term. The lapse of time under landscape governance approaches is envisaged to be kept under control of a transformative professional team. This agrees with the Indigenous notion of guardian of land, Corajoud's concept of becoming the guardian of your project, and the abstract merging of design and governance claimed as a research premise.

Governance

The research substantiates the benefits of incorporating real-world knowledge into political constructs through knowledge transfer offices. These offices, by drawing on data from sustained urban projects, can inform adaptive governance models that better respond to the evolving needs of urban landscapes and enable the replicability of these models in other contexts. In these constructs, UN-Habitat's non-binding guidelines for urban landscape governance are presented as a valuable tool with great potential for building international cooperation and bridging global thinking with local realities. However, the research identifies significant political and socio-economic challenges, such as resistance to new ideas due to political and financial constraints. To address these barriers, concrete strategies are proposed, such as better alignment of resources with long-term goals and an inclusive approach involving multiple actors in urban transformation, paving the way for knowledge to return to the city.

The structuring of a professional governance system, acting as knowledge transfer offices, would play a vital role in incorporating real-world insights into abstract policies. Embedding lessons from transformative projects supports adaptive governance, fostering collaboration amongst stakeholders. Accumulating data and insights from successful projects should inform future governance strategies. Also, by consolidating a creative professional community, these frameworks provide a shared vocabulary that facilitates clear communication.

The implications extend the TULK framework's relevance across academia, practice, and policy. This section highlights how shared attitudes and strategies foster collaboration across silos, integrate professional tacit and explicit knowledge, and promote a common language between disciplines. It reaffirms the RUL approach's potential as a scalable methodology for professional transformative communities to act as transformative agents, enabling holistic urban strategies grounded in ethical principles and resilience.

8.5 Limitations and Scope of the Research

8.5.1 Scope Constraints

Whilst this thesis positions-built environment transformative professionals as key frontrunner agents in driving urban landscape transformation, it is crucial to acknowledge the potential limitations of this emphasis. A deeper exploration of the power dynamics at play is warranted, recognising that professionals operate within existing systems and are thus subject to clientelism. Over-reliance on individual professionals risks overlooking systemic constraints, such as policy limitations, funding restrictions, and existing institutional practices. The researcher acknowledges the boundaries of action which can significantly impede transformative change. Furthermore, the influence of other stakeholders – developers, politicians, and communities – must be carefully considered, as the priorities of each agent shape the trajectory of urban projects. Therefore, whilst recognising the limitations at play, the thesis considers empowering built environment transformative professionals in alignment as deontologically fundamental. Effectiveness must be coupled with strategies that cultivate systemic change. Nevertheless, any action towards inclusive collaboration amongst all relevant actors to ensure sustainability seems preferable to inaction in the face of the new climate regime.

Geographical and linguistic scope:

The study faces significant constraints due to its reliance on European-centric scientific literature. These linguistic aspects and limited literature restrict the scope of an international approach. The research has predominantly focused on developed contexts with high living standards, potentially overlooking survival-oriented perspectives due to limited production and linguistic barriers. For example, whilst Western literature highlights urban landscapes in affluent regions, it may miss unique insights from non-English, French, or Spanish-speaking areas where different linguistic and cultural dynamics shape urban environments. The thesis sought to mitigate this limitation by including profiles from diverse genders, continents, and professional backgrounds to offer a more inclusive view. The study included cities with various official languages and utilised multilingual skills to translate materials from Catalan, Spanish, French, and English, aiming to broaden the literature review and incorporate diverse perspectives. Additionally, the study faced challenges in recruiting and collaborating with senior experts.

Methodological scope:

Another limitation is found in focusing on a single design competition. The Rosa Barba Prize awards multiple projects and was chosen for initial application. Nevertheless, it could be argued that this choice narrows the scope of the research. However, this method allows for further application of the RUL approach-based methodology in other prizes in future research. If another prize not restricting participation to a particular discipline could be found, a detailed exploration of processes and projects would be beneficial to enlarge the TULK framework. The results derived from this single case may not fully reflect the broader range of strategies present in other competitions, but it is considered a first attempt towards preliminary conclusions.

Temporal tensions:

The central limitation of the thesis lies in time. A key tension encountered was that between advocating for long-term governance transformations to integrate landscape approaches and responding to the urgency of the changes required. The challenge is thus to reconcile these competing demands: long-term sustainability with short-term action. This is an old challenge of environmentalists but moving the focus to empowering built environment transformative professionals, enabling them to act in a new aligned direction, could be the trigger to action whilst preparing for the future. By connecting the immediate needs of urban landscapes with

the necessary foundations for future adaptation, professionals can drive transformative change that is both reactive and resilient, ensuring that urban governance and design evolve in tandem with pressing global challenges.

This conclusion section identifies research contributions: the importance of intermediate-scale interventions and cross-disciplinary translation of terms and tools to make knowledge practically useful in a soft transition between creation and urban governance. It acknowledges geographical and disciplinary limitations, offering transparency and inviting future expansion, especially to Global South and rural contexts. Moreover, it highlights a main contribution: a new methodology integrating diverse sources of knowledge whilst redefining professional and institutional agency.

8.6 Reflections on the Research

This research could not address several important dimensions due to scope and resource constraints, representing opportunities for future investigation whilst acknowledging conscious methodological and ethical decisions that shaped the research boundaries.

Global North limitations and Eurocentric bias: The geographical focus on Barcelona, Birmingham, and Montreal, whilst enabling in-depth comparative analysis, introduces inherent limitations. The European Landscape Convention's influence on the theoretical framework carries Eurocentric assumptions about landscape values, governance structures, and professional agency that may not translate elsewhere. Cities in the Global South face fundamentally different challenges: informal settlements, acute climate vulnerabilities, limited institutional capacity, survival-oriented planning priorities, and different relationships between state, civil society, and development actors. Whether the RUL approach applies to these contexts remains untested and requires validation through further research in diverse geographical settings. The framework's flexibility was designed with extrapolation in mind: attributes function as conceptual anchors rather than prescriptive tools, mirroring Carl Steinitz's Geodesign Framework, which helps organise processes without proposing answers. Like Steinitz's six iterative questions that must be worked through in relation to specific problems, the TULK framework's six strategies provide structure for practitioners to adapt to local contexts. However, whether this flexibility genuinely enables application across radically different urban realities remains an empirical question requiring future research.

Equity, Diversity, and Inclusion considerations: Whilst the research included diverse professional profiles across genders and continents, systematic analysis of how EDI principles intersect with urban landscape governance remains limited. The framework does not examine how transformative strategies might advance social equity and environmental justice across different demographic groups, nor interrogate how power differentials based on race, class, or gender shape who participates in landscape governance and whose knowledge is valued. Future research should investigate whether the three professional profiles adequately represent diverse voices or inadvertently reproduce existing power structures.

Ethical considerations and anonymisation decisions: Following ethical amendment discussions during the viva, all interviewees were anonymised to ensure equity amongst participants, some of whom wished anonymity whilst others were comfortable being identified. Whilst regrettable that the significant expertise of certain interviewees cannot be explicitly acknowledged, anonymisation reinforces the thesis's central argument about systems of coordinated professionals rather than individual genius or "star designers." This methodological decision privileges collective knowledge over individual authority, aligning with the research's theoretical position. However, this limits the study's ability to trace specific innovations to particular institutional contexts or acknowledge how individual thought leaders shape discourse in the field. Following Kate Orff's declaration (2016) this research understands landscape architecture not as a siloed profession but as a civic and political stance-one that must actively interrogate whose landscapes are valued and who holds agency in transformation processes.

Ethical complexities in practice: Whilst ethical principles are proposed as future directions, the research did not deeply interrogate ethical dilemmas arising in practice: conflicts between conservation and development, tensions between indigenous knowledge and formal planning frameworks, or trade-offs between environmental goals and social equity. Questions of who decides what constitutes "quality" in quality resilient urban landscapes, whose visions are privileged, and how to balance expert knowledge with democratic participation remain underexplored.

Failures as lessons learned: The research emphasised successful examples, potentially overlooking valuable lessons from failed transformations. Systematic documentation of what does not work: abandoned pilot projects, unsustainable governance innovations, or tools that failed when transferred across contexts, would strengthen the framework's applicability by

identifying pitfalls and contextual limitations. The absence of failure analysis may create unrealistic expectations about implementation, obscuring the messy realities where good intentions, sophisticated methodologies, and committed professionals do not always produce desired outcomes.

Framework flexibility and contextual adaptation: The tension between flexibility and operationalisation remains unresolved. Excessive flexibility risks the framework becoming too abstract to guide practitioners, whilst rigid operationalisation undermines adaptability. The research indicates applicability across three Global North cities with relatively similar governance structures, but whether this translates to cities with fundamentally different political systems, resource constraints, or climate vulnerabilities requires empirical testing through subsequent implementation phases.

These limitations and reflections are acknowledged as invitations for future research to expand, test, critique, and refine the framework across diverse contexts. The conscious decision to anonymise interviewees, the focus on Global North cities, the emphasis on successes, and the Eurocentric theoretical foundations represent boundaries that shaped this research whilst simultaneously indicating pathways for future investigation that could enhance the framework's robustness, equity, and global relevance.

This research cannot claim to have resolved the fragmentation it identifies; indeed, the TULK framework risks becoming another siloed toolkit unless actively integrated through the collaborative mechanisms it advocates. The tools catalogued represent potential rather than prescription. Ultimately, transformative capacity depends less on which tools practitioners adopt than on whether they embrace the integrative six attitudes enabling coordination across professional boundaries.

8.7 Future directions

8.7.1 Integrating Ethical Principles as Universal Principles for transformative professions to eventually promote a specific convention

Recognising these challenges and proposing steps to foster better communication is basal. The insufficiency of traditional toolkits in transforming urban landscapes corroborates the need for innovation in communication methods amongst professionals. By prioritising adaptability and professional development, this research backs the creation of dynamic learning environments

where projects become spaces for collaboration, risk-taking, and reflection. This approach enhances engagement, interaction, and creative problem-solving, empowering knowledge production in urban landscape transformation projects. Integrating ethical principles into urban governance requires not only policy guidelines but also practical mechanisms for accountability and transparent decision-making , ensuring that sustainability goals are pursued equitably and justly.

Although professional capacity building is fundamental, some critics argue that professionals cannot be the sole (de Haas and Westerink, 2025; Ingold, 2024; Ostrom, 2010). The participation of citizens and other non-professional stakeholders is also crucial for sustainable transformation. Expanding strategies for community engagement and bottom-up governance must complement professional efforts. Urban landscape design is evolving towards more inclusive frameworks, as seen in the growth of circular city initiatives, some supported by various professional INGOs or ethical codes from certain professionals that include resilience and durable sustainability as objectives, such as the IFLA ethical principles or circular city concepts. Integrating these ethical codes into the TULK framework nurtures a unified approach towards urban resilience and sustainability. Aligning the TULK framework with the guidelines of IFLA and WFEO underscores a commitment to environmental responsibility, supporting the Quintuple Helix innovation model for collaborative solutions to environmental challenges.

Thus, a future line of work in the field of professional activism would involve generating an agreement amongst the UIA, IFLA, ISOCARP, and the World Federation of Engineering Organisations (WFEO) to support professional ethical principles that redefine a shared deontology and ontology of knowledge. This set of principles should be ratified by each INGO and cascaded to national member associations of professional INGOs, reaching professionals along with training materials for continuous education explaining the global project.

From this joint action, other initiatives for policy formalisation and protocols could emerge to strengthen the TULK framework towards a stable and widely accepted normative framework.

8.7.2 Phase One: Pilot Implementation and Evaluation

This first phase of further application could take several directions, as the methodology is designed to be versatile and adaptable. One option would be to expand the TULK framework by seeking informal tools in cities of the Global South, in contrast to the three cities studied in this thesis. Although the research addresses the fragmentation between global frameworks and

local realities, it is based on the premise that global frameworks can be effectively adapted. Therefore, it is crucial to critically rethink these frameworks, adjusting them to the specific challenges of urban transformation and enriching them with real cases and transformation experiences that better contextualise and refine them. The thesis represents a first step that should be complemented by transformations from the Global South to ensure the overcoming of potential initial biases.

Another option would be to develop further application of the RUL approach by studying a specific city, analysing the public projects generated by that city. This would include the profiles of agents with experience and sources of local and global knowledge, as well as conducting an extensive and transversal analysis of urban policies. Additionally, a prototype of "Knowledge Transfer Offices" (KTO) could be generated, conducting a retrospective of past transformations and immediate future perspectives, to develop landscape strategies and urban quality plans that inform future transformations in the medium and long term.

The third way to develop this proof of concept is by analysing the "synergies" between governance and design as a critical direction. To clarify this, it is integral to present specific case studies that illustrate successful examples and assess their scalability and adaptability. One proposed approach is to explore specific international award databases. Using again the Rosa Barba Landscape Prize or similar project repositories would lead to uncovering the often-overlooked role of governance in shaping design outcomes. By reinterpreting award-winning projects from this governance perspective, we can gain new insights into what constitutes good practice across different stages of a project's life cycle, offering a richer and more innovative framework for evaluation. The extensive application of the RUL approach alignment matrix to these award databases could highlight the need to investigate less restrictive awards regarding the professional profiles of the authors, helping to incorporate rural and local perspectives. This approach could provide insights for design innovation and governance structures improvement. Thus, the award criteria could better align with the values promoted by the RUL approach and TULK framework, enhancing the global relevance of projects and enriching the urban transformation methodology.

8.7.3 Phase Two: Broader Application and Refinement

Evolving Education

The TULK framework could play a fundamental role in both university education and continuous professional development. After further review of the practical application, this

framework could be fine-tuned to offer an integral and adaptable framework to address the changing challenges of urban landscape transformation. In academic settings, its integration could enable more applied pedagogy. For instance, it could be conceived as a transversal course or common subject for all future built environment transformative professionals. A subject bridging traditional disciplines such as urbanism, landscape architecture, planning, and environmental science. Coming together and promoting collaboration between teachers and students of different fields would be encouraging students to work with diverse perspectives. The subject should include those of non-professional actors, who are fundamental to sustainable urban development and that or yet not present in academic assignments. The integration of governance design in the process of design, as well as the time vector and interaction with non-professional actors as a source of knowledge, would be key elements to integrate at the teaching level.

A quick future implementation direction could be through the European Higher Education Framework, which constantly seeks to harmonise curricula across participating countries, presenting a compelling example for such an investigation. Introducing governance-driven design into academic curricula would equip students with new desirable skills, also for their future employability. The integration of TULK framework strategies in academic settings could be facilitated through European research funds such as the EU TEACH and EU LAND projects (De Vries et al., 2021). The focus of projects funded by the EU Horizon initiative is aligned with TULK framework in terms of refining educational and Professional models, making them more actionable across disciplines and operationalising them in the European territories (2021; Turan et al., 2021; Turan and Westerdahl, 2021).

Professional Practice

Regarding continuous professional development, the TULK framework would serve as a repository. If approached as a guide for professionals throughout their careers, tools, objectives and strategies might help them stay updated. This would entail one or many of the built environment transformative professionals INGO's to feed the TULK framework in a systematic manner. This update sourced from practice would provide links to the latest tools, methodologies, and instruments in urban landscape governance. As urban environments become more complex, professionals need flexible strategies adapted to specific contexts. The emergence of AI resources during the last year of this research, opens a management instrument for TULK framework. AI could help build the future TULK framework through its strategies

with the online inputs of professionals around the world. The TULK framework 's approach in the form of a short course, reinforcing knowledge of activities and techniques at hand, focused on the design of project governance processes and interaction with third-party actors, would be a key pillar. Another important aspect would be reinforcing the notion of professional adaptability and ethical principles, drawing from global frameworks such as the IFLA ethical codes and UN-Habitat guidelines, helping professionals make informed and responsible decisions framed by current recommendations, especially in regions with unique socio-political contexts or urgent sustainability needs.

Governance

The most significant outcome of the TULK framework would be an International Convention on Urban Landscapes (ICUL). Whilst the European Landscape Convention has proven relevant for 25 years, its ambiguous nature fails to address the specific challenges faced by urban contexts such as over-urbanisation, informal settlements, climate change, and cultural homogenisation. An ICUL would operationalise the New Urban Agenda by providing a unified global framework for urban landscape protection and governance, defining "urban landscapes" whilst balancing global uniformity with regional sensitivity. Such a convention could formalise principles of cultural identity and sustainability, integrating tangible and intangible heritage into urban planning, recognise the role of frontrunners as agents of change, and provide specific strategies for managing metropolitan landscapes that require tailored approaches due to their scale, density, and cultural diversity. The RUL approach methodology, enhanced through further application, could inform technical tools and guidelines integrated through organisations like UN-Habitat.

8.8 Final Reflection: Contributions, Learnings, and Future Directions

Writing this doctoral thesis taught me how to navigate complex questions about my profession and my backgrounds. Through the years, I have merged the subject of the research with my intellectual growth, linking theory with practice, both in the thesis and through my works, commissions, and teaching. I’ve grown more confident in framing problems and critically analysing them to place them in the intellectual construct of the thesis, which binds together my interests and passions.

The initial desire to carry out this thesis has been a link to my vocation for contributing to the redefinition of the concept of the city, drawing from prior knowledge acquired in three areas of my professional activity: as a part-time professor of landscape and urbanism at the university, as the executive director of the Barcelona International Landscape Biennale, and as a hybrid professional with a vocation to understand, strategise, and create resilient, high-quality landscapes. The research, carried out over seven years, has allowed me to work on a long-term project that has evolved alongside me, requiring the acquisition of new skills in knowledge management, time management, and addressing the challenges of global functioning.

The morphing global context during those years indicates that the coordination architectures we lack are not merely desirable but urgent. If transformative capacity emerges from coordination between professional domains rather than individual excellence within them or institutional leadership, then building these coordination mechanisms represents not merely academic contribution but professional obligation. The transformative community this research envisions is not an aspiration; it is a necessity.

This set of experiences, combined with the development of a series of interviews with senior admired experts, has helped me grow as a researcher and find my voice It has created a new life path to be discovered through any of the future implementation phases to come, improving my ability to make research relevant for professional practice and sustainable development policy design.

In this context, Chapter 8 serves as a conclusive reflection of the initial question set in Chapter 1. By emphasising multi-level governance, interdisciplinary education, and professional advocacy, the chapter charts practical next steps – such as further piloting and testing the TULK framework and revising award systems – and points to future research directions. This transition, as framed throughout the thesis, is not just an aspiration but personally felt as an urgent necessity, in light of the complex challenges posed by the new climate regime. The work calls for a sustained effort to ensure urban landscapes contribute to resilient, zero-carbon futures, and this research aims to be my small contribution to this collective effort.

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