

instance, has largely been left out of the canon of planning history, a more expansive understanding of these histories can prove transformative (Silva, 2015). Such a rethinking also involves acknowledging the places and languages from which planning history is written and questioning the underlying premises. It acknowledges the extensive historiography of planning, and that much of the important writing on planning history came out of England and the United States first. It also emphasises that, in the end, these are regional or national stories that need to be paralleled with other approaches guided by different language patterns and by different political, economic, social, and cultural approaches to planning. Reflecting on the multiple planning histories and historiographies of Southeast Asia and South Asia, for example, requires that authors understand planning as an expression of state power and corporate development.

Recent research in planning history aims to overcome the limitations of different disciplines and geography (Hein, 2018). Some authors have started to address the challenges of planning history writing, including the need to overcome national stories that are bounded by specific archives, languages, and cultures, towards transnational understanding, to go beyond empirical and narrative-driven research to develop critical theories and broader contextualised perspectives (Ward, Freestone, & Silver, 2011; Nasr & Volait 2003; Hein, 2014; 2018). While such an approach cannot be comprehensive, we need global planning histories, giving insights into different approaches, geographical patterns, languages, and principles, connecting the parallel worlds of academic planning history in different disciplines and facilitating the emergence of collective languages, terminologies, methodologies, and

theories. This chapter aims to provide some insight into the 'Why', 'How', and 'What' of planning history, to conclude with its role for research and education in the field of planning.

2. Why planning history?

The discipline and focus of planning have shifted in tune with political and economic developments as well as societal changes across the decades. Today, planning is primarily a forward-looking discipline, in which past developments and approaches play a limited but changing role. Over time, some architects and planners have looked to the past as a toolbox, using historical references, for example, by copying historic squares, while others cite prior plans only in passing, or ignore them altogether. This change is also reflected in planning education. A brief look at curricula and their changes over time indicates that planning schools increasingly prefer to teach planning theory rather than planning history, and most planning schools do not train planning historians. But discerning what planning is, and what the city is in time and place, planning history builds awareness of diverse ideological and theoretical positions. It also allows for new transnational, conceptual, methodological, or theoretical approaches to emerge, for instance about informality, that challenge the ideas of modernity in urban form and function, and that call into question the concepts of planning and representations of space.

Planning history helps us to understand planning's past influence on our cities, regions, and nations, and to imagine the future of planning as a professional practice as the past or even current performance of the discipline is being questioned and global challenges require comprehensive new

measures. As a means to better understand the role of planning in the historical transformation of cities and regions, planning history can also help us understand the downsides or shortcomings of historic planning practice and the needs for novel approaches. For example, in some areas of the world, planning has created more economic, social, or ethnic inequalities rather than solving them, think of infrastructure planning for the extraction of minerals, petroleum, or agricultural products and their transportation to industrialised countries – the extraction of petroleum from Iran and other countries of the Middle East and its export to Europe and the United States stands as an example, and a close analysis can help understand the reasons for these shortcomings. In other areas, attempts to undo former colonial planning practice can benefit from a comprehensive understanding of the complexity of colonial planning practice, ranging from legal practices to aesthetic and symbolic interactions. For example, the highly publicised destruction of colonial Japanese heritage buildings in Korea, such as the Government General Building, did not go hand in hand with an undoing of colonial laws. Furthermore, the emergence of informal settlements that in some areas of the world are more extensive than planned ones raises questions about the necessary flexibility of planning and the changing intersection between planned spaces and informal urban development. Many planning interventions have simply failed, or have been too inflexible to accommodate urban change.

Planning has shaped our environment extensively but it has also faced extensive criticism. Zoning, originally developed to improve health in a time of industrial development in the nineteenth century, destroyed multifunctional neighbourhoods, and

became a target for citizen movements such as the *Atelier de Recherche et d'Action Urbaines* (ARAU) since the 1960s (ARAU, 1984). Over the last decade, cities and regions around the world have been facing increased challenges ranging from climate change and global sea level rise to migration and population growth, and comprehensive solutions are needed to create resilient planning systems. Planning history can be an important and valuable tool for conceptualising such systems for the future, speaking to the challenges of the future and integrating lessons from the past.

The American planning historian, Larry Vale, introduced the concept of critical resilience, arguing that such discussions need to be more attuned to issues of power and politics in moments of disaster and post-trauma (Vale & Lamb, 2016). Pointing out that planning historians are well trained in analysing historical disaster recovery, Vale believes that this analytical tool should be applied more widely when thinking about contemporary and future resilience. We do not need ideological answers or engineers who engage only with future challenges – we need planners with a sense of history and historians with a sense of planning.

Planning historians also have an important role in analysing past plans for a bygone future, pointing out challenges for the future. As they evaluate and sometimes revive future visions, they provide grounding for contemporary design. The planning of Berlin as a capital is just one example of the impact that visionary plans have had on planning discussions worldwide. Numerous visionary projects for Berlin that did not become reality – from monumental plans under Albert Speer, Adolf Hitler's favourite architect, to megastructural projects for the Capital Berlin competition 1957/58 – have informed



Figure 1: Albert Speer Plan for Berlin. The Volkshalle's Great Dome can be seen at the top of this model of Speer's plan. Author of the photo unknown. Image available at the Bundesarchiv, Bild 146III-373 / Retrieved from: <https://commons.wikimedia.org/w/index.php?curid=5484311> CC-BY-SA 3.0.



Figure 2: A small part of the huge underground shopping mall underneath Tokyo Station. Photo by author.

projects in later decades. These can have as much or longer standing powers than realised plans; they can travel through time and space, influencing later decision-making or flourishing where they find fertile ground. Speer's projects, while not realised, would shape planning decisions in West Berlin from the end of the war until after the fall of the Wall in 1989, with subsequent planners avoiding all monumental or axial designs. Other concepts live on, and many have since been realised in piecemeal fashion at the hands of public institutions and corporations: megastructural visions established in Europe and Japan can be seen as predecessors of extensive underground shopping malls, huge skyscrapers connected by pedestrian bridges, and large infrastructure such as floating airports.

3. How to write and teach planning history?

The notion of planning is intimately related to the concept of modernity and modernisation after the Industrial Revolution, and to the assumption that changing the physical spaces of a city would change its residents' life conditions, and social and cultural patterns (Scott, 1998). Planning historians have contributed to writing the history of modernity, documenting the efforts of leading planners, strains of practice, and interventions. Rethinking the definition of modern as being related to industrialisation, Scott's book both defines the concept of planning and revises that definition, going beyond the concept of planning as 'progress' and the activity of the historical 'avant-garde' and exploring planned interventions in conjunction with vernacular or unplanned spaces.

Questioning the concept of the modern in planning brings new themes and questions to the forefront of research. Planning has presented itself as a science, employing social engineering, traffic engineering, and other supposedly objective methodologies. However, few planners or historians have questioned or tested the results of specific interventions. Perhaps even worse, what was presented as a scientific response to health in one era later itself became seen as a health hazard. For example, blocks and slabs in greenery-type housing projects of the 1920s and 50s are now condemned for reasons of security and aesthetics, elements that are important to walkability, a topic that scholars today have recognised as essential to combat obesity and foster a sense of community.

As a result of the prominence of a Western approach in history writing, there are lines of influences that are taken for granted rather than being critically explored and reflected. Mesopotamia and Greece and the Roman empire were interconnected, but they often appear as disconnected in contemporary writing, as the two areas today belong to two different cultural areas; similarly, Japan has long been considered a recipient of planning rather than a translator and generator of concepts for Asia, mostly because Asian languages and approaches to planning history do not easily intersect with those in English or other European languages. A global view of planning history critically challenges some traditions and raises questions of periodisation, overcoming established narratives.

Historiography is never objective, but we have to be very careful to make sure that it does not become only subjective. To do that, historians (including those of planning) provide evidence that is significant and appropriate. The 'history of practice'

as examined by historians focuses on how people acted in the past, but typically does not consider the past's implications for the present. In contrast, practitioners 'practice history', that is, they turn to history for their work in the present, but they do not always consider the past on its own merits. This is also true for analysis of how planning practices cross borders: often books on 'learning from' other cultures are about creating an argument for certain planning approaches rather than gaining deeper understanding (Shelton, 1998). Treating planning history explicitly as the history of a future-oriented discipline, allows scholars and practitioners to explore how the discipline has narrated the past and how planning practitioners have mobilised the past for the future.

Questions of planning's authorship, spatiality, and temporality are reproduced in planning history as it has traced the development of planning and its targets, focusing on issues of hygiene, infrastructure, and housing, and on capital design, infrastructure planning, and heritage (the use of the past itself). But planning histories have not addressed all areas, time periods, or practices in the same ways. The writing of history at times went hand in hand with the making of history. Some of the early planning histories have been written to legitimise a group of planners or a specific ideology, notably of the modernist movement, the CIAM movement, or megastructures (Kultermann, 1986). Even attempts to counter the focus on modernist architecture and planning have started with the focus on single architects, including Albert Speer (Larsson, 1983). Occasionally (architectural or urban) historians were even part of iconic movements: Kenneth Frampton famously documented the modern movement and Noboru Kawazoe wrote for and with the Japanese

Metabolists. These engagements raise the question of how historians more generally have created an official narrative of the modern city and its planning while being affiliated or intellectually connected with certain movements.

When planning historians narrate the past, they risk creating heroic histories. The actors of planning and thus the heroes of planning history were often elite white males who followed their 'interest' or 'genius'. Emphasising these stories – not necessarily historians' conscious goals but rather the result of a specific cultural moment – ensured that other plans and planners would be ignored and that a celebratory track record emerged. The resulting planning history can be read as a listing of their achievements without acknowledging the specific political, social, economic, cultural context. Studies abound of Baron Georges-Eugène Haussmann, Ildefonso Cerdà, Ebenezer Howard, Le Corbusier, Robert Moses, and the Congrès Internationaux d'Architecture Moderne (CIAM), and their respective plans. Even when these accounts are critical, these are often still the types of projects and images that figure prominently, influence opinion, and may even become cliché.

Heroic stories also risk perpetuating gendered structures. But women have always been present in planning. While fewer women were active as planners in the early years, upper-class women tried to help the poor, such as the German writer and social activist Bettina von Arnim who worked with the architect Wilhelm Stier to project for a city of the poor, establishing a well-recognised line of intervention in planning by women. By the 1920s and 1930s, women started to become professional planners: Catherine Bauer and her sister Elisabeth Bauer Mock, and Jaqueline Tyrwhitt are just some

examples. Planning history also has its female leaders, from Francoise Choay to Annie Fourcaut, Susan Fainstein, Leonie Sandercock, Donatella Calabi, and Helen Meller, who have contributed innovative approaches. A full account of planning history from a female lens is increasingly important but currently still missing.

Other patterns of planning that have yet to be fully acknowledged in planning history include the history of engineering. The history of engineering has been closely connected to that of planning, but historians have yet to recognise engineers' contributions to planning. Studying the ways in which planners have picked up new technologies in attempts to promote organised, planned spaces over unplanned ones may reveal new connections in the long-term narrative of planning. Planners have not been initiators but have picked up on engineering responses as drivers and executors. Visionaries like Le Corbusier promoted engineering, and dressed it up. Elevators, trains, cars, and planes, all these different means of transportation have provided the incentive for extensive changes of urban form and function. Trains and cars provided the opportunity and tools for suburbia, while planes allowed for the creation of networks of cities more closely connected to each other than each city was connected to its surrounding urban area. Engineers made it their goal to counter the forces of nature while planners and architects provided the designs and rationales that sustained the transformation. New materials made possible buildings and entire cities that could be defended against water, earthquake, or climate, in river deltas once flooded on a regular basis, on coastlines or next to rivers, in areas that were prone to earthquakes or tsunamis, ones located in punishingly hot or cold climates. But the engineer's

preferred focus remains narrow, whereas planning implies some degree of comprehensiveness, a social or environmental function. Understanding the pitfalls of engineering-based planning merits further investigation to also learn from failures and missed chances.

Moreover, critical planning histories and awareness of missing narratives can provide a foundation for planning that addresses the challenges of the future. For example, historical analysis of the physical and financial flows of petroleum can help us understand the formation of modern cities, making visible that industry's need of industrial, administrative, retail, and ancillary spaces as well as its representation of the built environment in advertisement, art, architecture, or urban form. Such a study can also help us anticipate and design for changes in an imminent post-oil future: remediating and repurposing defunct refineries and storage tanks, rethinking infrastructural and other linkages between oil industries and headquarters, reorganising global towards more circular economies. Understanding how and these systems and dynamics developed historically will help planners imagine new futures for them.

4. Imagining the future(s) of planning history?

In order to imagine the future of planning history, we need to develop new concepts and challenge the teaching of planning and its history in diverse educational systems, in planning schools, and in other academic departments. That might also mean integrating and teaching design thinking, not only in the context of planning education, but also in social

science departments, and developing relevant curricula that engage with new perspectives.

Acknowledging biases in terms of culture, colonialism, gender, and fields of inquiry is a necessary foundation for planning historians. For example, they will have to reflect on the writing of planning histories involving countries that have fought wars against each other. Questions of gender will be central, especially when they engage with planning in societies where men dominate the public realm, considering not only questions of exclusion and the role of women but constructions of masculinity itself. They will have to reflect on the role of Western theory in the analysis of megacities in countries like China, for instance, as it ignores the specificity of these cities and theories related to the cultures in which they emerged. Other boundary-pushing work for planning historians will concern the 'urbanisation' of oceans – the proliferation of drilling platforms, energy parks, and other floating structures – and questions of energy networks, food landscapes, and the study of commodity flows and their influence on the built environment.

Planning history scholars have recently made new steps towards overcoming biases such as the focus on English-language sources, and developing novel interdisciplinary, trans-cultural, and post-colonial approaches (Hein, 2018). The Planning History Handbook, for example, examines sites, dynamics, and typologies, and explores the state of the field, its achievements and shortcomings, and future challenges. Such novel approaches can serve as a foundation for defining the field and as a springboard for scholars, practitioners, and students engaging in innovative research. Writing and teaching planning history can build on this to provide both new global standpoints and new approaches, querying official

iconographies, including other disciplines, investigating different parts of the world.

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Amsterdam street scene. Photo by R. Rocco.

Current Issues



Four Clusters of Thought on Flood Resilience and Climate Adaptation

The state of the art and new directions for spatial planning

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The need to respond to increasing flood risk, climate change, and rapid urban development has shaped innovative policies and practices of spatial planning in many countries over recent decades. As an instrumental–technical intervention, planning is mainly used to improve the physical environment (through concepts such as regulating waterproof facades of architecture, setting buffering zones, and designing green-blue corridors). However, the implementation of the proposed physical interventions is often challenging and necessitates assistance from practices such as climate assessment, policy disciplines, civil societies, and economic resources. These extensive perspectives have spawned many new research domains in the realm of spatial planning. This chapter provides a review of the recent developments in flood resilience, risk management, and climate adaptation; based on this, it positions planning research and practice within these works of literature. Four clusters of thought are identified, mainly in the European and American scholarship of the last two decades. They are environmental concerns, disaster management concerns, socio-economic concerns, and institutional concerns. Current planning research concentrates on disaster management in the underlying belief that planning is functionally efficient. The attention to environmental concerns, socio-economic concerns, and institutional concerns of planning research remains insufficient but has been growing. This, in turn, enlarges the scope of planning research and indicates future directions for study. These new concerns relate to spatial planning’s ability to operate effectively in a multi-sectoral setting, despite limited resources and in the face of uncertain risk.

1. Introduction

There are lively scholarly and policy discussions on how to solve the growing flood threat and climate change, on which approaches are usable, and on how different actors can contribute to addressing these concerns (Vis et al., 2003; Economics of Climate Adaptation Working Group, 2009; Hegger et al., 2013; Löschner & Nordbeck, 2020). Although spatial planning has been recognised as a source of valuable tools to handle flooding hazards and make human settlements more resilient, most studies appraise its physical function, as an instrumental–technical intervention to arrange the spatial layout and land use, such as regulating waterproof façades of architecture, setting buffering zones, and designing rainfall gardens and green-blue corridors (Davoudi et al., 2009; Roggema, 2009; 2012). This chapter argues that the role of planning goes beyond this and can be extended into, for instance, environmental, social-economic, and institutional issues. To support it, the study reviews a wide range of literature to 1) outline the state of the art of the planning literature dealing with floods in policy, research, and practice, and 2) point out the progress and development of planning in different aspects. The aim here is to sketch out a wide landscape of scholarship from different research perspectives that can be used to understand and clarify the role of the planning field. This chapter concentrates on multiply source of flooding events, including: 1) fluvial floods (river floods), 2) pluvial floods (surface water floods occurring when rainfalls exceed the capacity of drainage systems), and 3) coastal floods (including extreme storm surges and gradually rising sea levels).

This chapter consists of three sections. Firstly,

it introduces a four-pillar conceptual framework for the literature review developed in this chapter. Secondly, it applies this framework to review the planning literature of relevance in the recent 20 years (the 1990s–late 2010s). It explores the *status quo* in the spatial planning research in relation to each of the four clusters of thought to identify the well-developed and neglected perspectives. The latter create scope for planning to contribute to the advancement of scholarship on flood resilience. The study closes with an outline of future research directions and concluding remarks.

2. The four pillars of resilience agendas through the lens of sustainability

The starting point for organising the review is the literature on resilience and sustainability in urban development. The 17 Sustainable Development Goals (SDGs) associate resilience with sustainability in Goal 11 and propose to ‘make cities and human settlements inclusive, safe, resilient, and sustainable’ (United Nations, 2015: 24). Diverse actions are envisaged to reach this goal which can be summarised in five perspectives: environmental concerns (the reduction of the adverse environmental impact of cities); social concerns (the protection of poor or vulnerable people, including women, children, and elderly people); economic concerns (the decrease in financial loss); disaster management concerns (access to safety through, for instance, transport infrastructure and resilient buildings); and institution-

al concerns (participatory and integrated planning and management). Similar categories have been proposed, for example, a fourfold categorisation of benefits: environmental benefits (e.g. land, water, climate change), social benefits (e.g. safety, risk reduction, welfare), economic benefits (e.g. resources, payments), and institutional and governance benefits (e.g. stakeholders, institutions, networks) (Grafakos et al., 2016).

Inspired by these groups, we have adopted a four-pillar framework to organise the review of research and practice on the connection between flood resilience and spatial planning. These pillars are 1) environmental, 2) disaster management, 3) socio-economic, and 4) institutional (and governance) concerns. Social and economic perspectives are merged on account of the intertwined negative impacts caused by floods, for instance, the poor (a financial problem) having limited access to safe shelter (an inequity problem). A disaster management perspective is highlighted here referring to physical interventions (e.g., infrastructure layout designs, land use allocation) and related regulations that manage physical changes (e.g., building codes).

3. The development of spatial planning research, policy, and practice across the four pillars of flood resilience literature

This section provides a brief account of the development and challenges of spatial planning in relation to the proposed four pillars of flood resilience and climate adaptation, based on extensive (academic and grey) literature across the fields of literature from climate science, disaster mitigation, water

management, flood risk management, hydrological engineering, economics, adaptation planning, public participation, administration, and governance. Here, the subtle difference between spatial planning and similar terms like land-use planning or urban planning is neglected for simplification. Some early research has indicated that these similar terms are more technical and concerned with zoning and setting parameters for land development, while spatial planning is broader, not only technical but also relating to the coordination of spatial activities (Fleischhauer, 2008; Stead, 2008).

3.1. Limited attention paid to environmental concerns

The literature focusing on environmental concerns aims to unpack how social-ecological systems—encompassing all ecological goods, (built) assets, services, and even populations—are threatened by flood hazards that can be exacerbated by climate change and human activities. These concerns arose from the uncertainty of climate change, extreme weather, and the risks they entail. At the global level, this strand was promoted by the projection of ecosystem-based risk such as the changes in precipitation and sea-level rise (Tegart et al., 1990) and the identification of the gains and losses (vulnerability) of human settlements in different regions, nations, and areas (Lehner et al., 2006; Intergovernmental Panel on Climate Change, 2007; Katsman et al., 2009; Forzieri et al., 2016; Jana & Hegde, 2016; Barnard et al., 2019).

In terms of planning scholars and practitioners, environmental concerns have not been a main focus. In practice, agencies dealing with climate science, meteorology, environmental science, and hydrology

are forerunners in flood resilience, having more experience in monitoring, weather forecasting, and climatic assessment. As a result, these agents are mainly responsible for observing, modelling, and projecting climate change impacts and leading flood events. For instance, in the United Kingdom, the Environment Agency in England, the Natural Resources Wales, the Scottish Environment Protection Agency, and the Department of Infrastructure in Northern Ireland launched their flood maps within their jurisdictions (Department of Infrastructure in Northern Ireland, n.d.; Environment Agency in England, n.d.; Natural Resources Wales, n.d.; Scottish Environment Protection Agency, n.d.). Similarly, in the Netherlands, the Foundation Climate Adaptation Services launched the Climate Impact Atlas, which indicates the potential flooding areas (Foundation Climate Adaptation Services, n.d.).

Due to a lack of professionalised knowledge, planning institutions often step behind the above-mentioned institutions. Even so, they can still make a contribution to this stream by building strategic cooperation with those forerunners and overlaying hydrological maps (e.g. flooding maps) with socio-spatial data (e.g. age, incomes, land uses) to identify gains and losses of flood-exposed entities in different regions, nations, and areas. The findings then allow the planning sector to offer solutions to reduce flood loss. Typical cases are the Urban Waterfront Adaptive Strategies in New York (New York & Connecticut Sustainable Communities Consortium, 2013) and Climate Change Adaptation Strategies in Rotterdam (Rotterdam Climate Initiative, 2013), in which flooding maps and socio-spatial data were used to identify the vulnerabilities of communities and neighbourhoods caused by coastal floods and rainfalls and further develop strategies for flood resilience.

3.2. A focus on disaster management concerns

The literature focusing on disaster management concerns aims at identifying effective solutions to reduce the negative impacts of flood hazards. Since the early 2000s, this cluster witnessed a transition from hydrological engineering defences toward integrated solutions, considering the increasing damage potentiality in a basin where confidence in safety is miscreated by traditional flood control infrastructure (Takeuchi, 2001; Vis et al., 2003).

According to our observations, extensive planning literature has developed rich experience in disaster management concerns. The main aim of this literature is to identify and implement measures that planning can use to deal with floods. As with the former goal, the proposed measures in the more recent literature since the 1990s can be categorised into five aspects, based on the early study from Hegger et al. (2014), including avoidance, defence, mitigation, preparation, and recovery in terms of structural and non-structural interventions (see details in Table 1).

Nature-based infrastructure for flood mitigation has been a major solution widely promoted in the planning literature to decrease flood loss: ecological buffer zones at the macro-scale; mangroves, dunes, marshes, wetlands, lakes, and green-blue river/waterway/canal branches at the meso-scale; and rain gardens, permeable paving, green roofs at the micro-scale. They are proposed to protect shorelines, ensure drainage of excessive river waters as fast as possible or retain rainwater (Kang et al., 2009; Sayers et al., 2013; Wingfield et al., 2019).

Some measures adopted by planning can be de-

Measures	Statements in Planning Policies/Regulations	Affected (Non-) Structural Interventions in Practice	References
Avoidance/prevention	Floodplain zoning plans; land acquisition and relocation plans	<ul style="list-style-type: none"> - Watershed management and retreating from waters (avoiding urban development in flood-prone areas) - Function arrangement (economic enterprises, residential areas and recreations) - Population move and building (re)locations 	(Thampapillai and Musgrave, 1985; Kang, Lee and Lee, 2009; Sayers et al., 2013)
Defence	Multipurpose/multifunctional engineering measures to deal with coastal and fluvial floods with the consideration of leisure, landscape, and commerce	<ul style="list-style-type: none"> - Dykes, floodwalls or quay walls (setting back, combined with residential buildings, commercial development, greening, and transportation) - Reservoirs (water storage, supply, natural landscape, and recreation) 	(Van Veelen, Voorendt and Van Der Zwet, 2015; Voorendt, 2017; Wingfield et al., 2019)
Mitigation	Nature-based infrastructure for coastal flooding reduction, rainfalls detention, retention, and a river discharge passage	<ul style="list-style-type: none"> - Creation of green buffers and flood detention areas - Creation and preservation of mangroves, dunes, marshes wetlands, lakes, and green-blue corridors - Waterways and channels de-culverting, greening, and improvement - Sustainable Drainage Systems (SuDS)/Low impact development measures (rain gardens, permeable paving, green roofs) 	(Kang, Lee and Lee, 2009; Sayers et al., 2013; Wingfield et al., 2019)
Preparation	Building codes and building controls; evacuation plans; safe havens arrangement	<ul style="list-style-type: none"> - Building waterproofing (removable stop logs, water-retaining walls, mobile barriers, the lowest flood elevation for footings, structural requirement to withstand water pressure, prohibiting basements, flood-proof facades, standards for buildings anchored to foundations) - Road networks optimization - Safe havens creation 	(Water Resources Council, 1971; Elsergany et al., 2015; Coutinho-Rodrigues, Sousa and Natividade-Jesus, 2016; Voorendt, 2017; Jamrussri and Toda, 2018)
Recovery	Post-recovery plan; critical infrastructure protection	<ul style="list-style-type: none"> - Building reconstruction - Re(location) and reinforcement of supporting buildings such as power plants, healthcare centres, and police stations 	(Olshansky et al., 2008; Sayers et al., 2013; World Health Organization (Regional Office for

Table 1: Five types of measures to deal with the flood risk when planning is taken into consideration.

batable and are not universally used. For instance, floodplain zoning plans in the avoidance category, which suggest retreating from waters (often coastal and fluvial floods), have faced criticism of losing valuable lands for urban development in countries and areas with high population density, like those that are members of the Organisation for Economic Cooperation and Development (OECD) (Sayers et al., 2013; Chiabai et al., 2015). Another case is the synergy of dyke systems and transportation or residential development in the defence category. This synergy has been a context-specific experience. In the Netherlands, this measure has been highly appraised, where the integration between planning and flood risk management and un-embanked area development (urban development beyond dykes) is well-established and rooted in deeply embedded traditions in water management and planning (van Veelen et al., 2015; Voorendt, 2017). Thus, these experiences cannot be used in other contexts without modification.

Preparation and recovery measures, such as evacuations and safe haven establishments, have received little attention in the planning literature (emergency response). A few papers based on Geographic Information System (GIS) methods, transportation, and urban simulation, opened windows for the domain of spatial planning to optimise evacuation plans and shelter locations arrangements in the face of coastal and fluvial floods (Tagg et al., 2013; Elsergany et al., 2015; Coutinho-Rodrigues et al., 2016; Jamrussri & Toda, 2018). Similarly, critical infrastructure protection is an under-researched issue in planning literature, which calls for paying more attention to protecting essential buildings in the flood events, such as power generation plants, healthcare centres, and police stations (Sayers et

al., 2013; World Health Organization, 2017).

The implementation of the proposed measures, however, often faced challenges, given the enormous investment entailed, as well as data and predictive uncertainty in modelling (Vis et al., 2003). Additionally, current successful solutions may no longer be valid when hazards exceed a threshold (the maximum capacity of a system to keep safety, e.g., drainage systems) in the future. Thus, static or on-off resilient measures are not advisable in the face of the unpredictability of climate change, and the flexibility to shift from one to another alternative is significant (Reeder & Ranger, 2010; Barnett et al., 2014; Siebentritt et al., 2014; Buurman & Babovic, 2016).

As a result, since the 2010s, the planning literature has increasingly shifted its focus to the concept of 'adaptive planning,' taking into account the economic utility of resilient measures and wise funding allocation. This notion calls for 1) planning to keep options open to changing circumstances, avoiding locking in rigid decisions; and for 2) local societies and policymakers to remain flexible and adjust their strategies and measures in the face of the uncertainty of floods and climate change (Haasnoot et al., 2013; Walker et al., 2013). Even so, this literature has been criticised due to its idealised assumptions that decision-makers would like to make decisions based on long-term visions and seek opportunities to adjust plans and strategies in the face of the failure of some measures or their unintended negative effects ('maladaptation') (van Veelen, 2016).

3.3. A weak but emerging focus on socio-economic concerns

Despite the growing knowledge on the effects of climate change and flood hazards and available measures to deal with the effects, substantial economic uncertainties still hinder the design and implementation of adaptation measures in practice. These uncertainties include: 1) the potential loss of threatened systems under pressures (McCarthy et al., 2001), 2) the extent to which the resilient (or adaptation) measures could ameliorate the negative effects and enhance positive effects, and the extent of the cost of actions (de Bruin et al., 2009; Debels et al., 2009; Mechler et al., 2014), and 3) the distributional effects of the proposed resilience measures (Anguelovski et al., 2016). The literature focusing on socio-economic concerns, strongly supported by economic scientists and economic analysis institutions, provides some insights into these issues by 1) estimating financial losses of climate change and flood hazards (Stern, 2007), 2) calculating investment and payoff of flood resilience measures (Hallegatte et al., 2011), and 3) allocating the responsibilities of a flood (or pre-flood) loss compensation (Doorn-Hoekveld et al., 2016).

In the planning literature, the discussion of socio-economic features of resilience measures has been largely neglected. It has been partly covered in a few planning papers that concentrate on the economic issues of flood resilience measures in urban development projects, such as the calculation of investment and payoff (Raaijmakers et al., 2008). An early study from Bruin and Goosen (2014) used cost-benefit analysis (CBA) to verify the economic efficiency of flood resilience measures to deal

with precipitation. They found that rainfall gardens, raised roads, and building codes were not economically efficient compared to ecological networks in a Dutch case. The institute Urban Floods Community of Practice confirmed the significance of regulatory instruments in Florida relying on cost-effectiveness analysis (CEA), where risk-based building codes reduced severe flood loss from Hurricane Charley by 42% (Urban Floods Community of Practice, 2017). Similar applications of cost-effectiveness analysis also appear in papers that confirm the effects of zoning plans and development controls in England, Colombia, Japan, New Orleans, Seoul, etc. (Urban Floods Community of Practice, 2017). Raaijmakers et al. explored ways of using multi-criteria analysis (MCA) to decide either a continuation of housing development in flood-prone areas for profits or a change of cultivated lands to natural lands to face the flood risk (coastal floods caused by storms) given the public and private stakeholders' worries and their individual risk perception (Raaijmakers et al., 2008).

Economic reports have given a more critical assessment of different flood resilience options available for planning and pointed out that the benefit-to-cost ratio is variable. For instance, mangroves as a natural option to create buffer zones to reduce coastal floods, supposed to have a high benefit-to-cost ratio by the Economics of Climate Adaptation Working Group (ECA) report (Economics of Climate Adaptation Working Group (ECA), 2009), was criticised by Sanghi et al. (2010) on account of an exponential increase in costs in high-income countries, like the United States. Similar discrepancies also appeared in options like retreating from low-lying areas, and building codes (see Table 2).

The inconclusive cost-benefit results are partly

Resilience Interventions		Calculation Methods	Findings	References
Watershed management and function arrangement	Retreating from low-lying areas *	CBA	A high benefit-to-cost ratio for hurricane protection and storm-surge; yet involving high opportunities in costs of lands, like OECD countries	(Economics of Climate Adaptation Working Group (ECA), 2009; Chiabai et al., 2015)
	Zoning plan with a functional arrangement	CEA	High benefits	(Urban Floods Community of Practice (UFCOP), 2017)
	A change of cultivated lands to natural lands to mitigate loss	MCA	High acceptance of public and private stakeholders in individual risk perception	(Raaijmakers, Krywkow and Veen, 2008)
Building codes/controls	Mobile barriers *	CBA	A high benefit-to-cost ratio	(Economics of Climate Adaptation Working Group (ECA), 2009)
	Houses with waterproof glass or windows *	CBA	A low benefit-to-cost ratio	(Bruin and Goosen, 2014)
	Retrofitting building materials against floods *	CBA	High/low benefit-to-cost ratio depending on differences in risk levels, the costs of resilience, existing costs and asset lifetimes, and assumed discount rates locally	(Hochrainer-Stigler et al., 2010)
	Residential building controls reducing severe flood loss from Hurricane Charley by 42%	CEA	High benefits	(Urban Floods Community of Practice (UFCOP), 2017)
Multi-purpose engineering measures	Construction of dykes combined with transportation	CBA	A low benefit-to-cost ratio	(Bruin and Goosen, 2014)
	A change of cultivated lands to ecological networks	CBA	A high benefit-to-cost ratio	(Bruin and Goosen, 2014)
Natural coastal and waterfront buffer zones	Mangroves *	CBA	A high benefit-to-cost ratio; yet an exponentially increase in costs due to land transformation and policy enforcement costs in high-income countries, like the US	(Economics of Climate Adaptation Working Group (ECA), 2009; Sanghi et al., 2010)
Water detention	Rainfall gardens for	CBA	A low benefit-to-cost ratio	(Bruin and Goosen, 2014)

Table 2: Economics of flood resilience measures available for spatial planning. Grey coloured blanks are the findings indicating variable benefit to cost ratios

CBA: cost-benefit analysis; CFA: Cost-effectiveness; MCA: multi-criteria analysis

* The findings come from economic reports

due to the uncertainties related to flooding extremes and the high site-specificity (Chiabai et al., 2015). Risk levels, the costs of resilience measures, land prices, policy enforcement costs, maintenance expenses, and asset lifetimes, etc., are different from a place to a place. It leads to a variation in cost-benefit ratios in different areas even for the same implemented measures (Hochrainer-Stigler et al., 2010; Sanghi et al., 2010). Also, the calculation can be affected by the definition of 'cost' and 'benefit' which can greatly alter the mathematical results (Sanghi et al., 2010; Chiabai et al., 2015). Even so, the analysis in the economic literature still provides insights for the planning literature on how to calculate the economic payoffs and profits of resilient measures that support option selection according to local conditions.

3.4. An increasing focus on institutional and governance concerns in the planning literature

The strand of the flood resilience scholarship concerned with institutional and governance issues is a mixed body of literature spanning across the disciplines of social science (Aylett, 2015), political science (Fraser and Kirbyshire, 2017), and policy studies (Keskitalo, 2010; Bulkeley, 2013). It explores how an institutional system at the national, regional urban, or community level responds to flood risk and natural hazards. The literature observes resilience policies and adaptation activities as a result of collective behaviours in multi-level, multi-domain, and multi-actor settings (Bulkeley, 2010; 2013; Keskitalo, 2010).

This strand has attracted a growing (albeit lim-

ited) number of planning researchers concerned with institutional and governance issues (Mileti, 1999; Storbjörk, 2007; Deyle, Chapin & Baker, 2008; White et al., 2016; Francesch-Huidobro et al., 2017). One stream of the literature suggests exploring the involvement of planning in flood affairs as a by-product of water management governance under the notions such as 'integrated water resources management' (Mostert, 2006), 'synergy between flood risk management and spatial planning' (Sayers et al., 2013; Ward et al., 2013; Ran & Nedovic-Budic, 2016; van Buren et al., 2016; Driessen et al., 2018), 'multi-level governance and boundary spanning planning for adaptation' (Dąbrowski, 2018a), and 'diversification of flood risk management with spatial planning's involvement' (Driessen et al., 2018). Another stream of research, although represented only in a few papers, positions planning at the centre of flood resilience and calls for the incorporation of flood risk management and climate adaptation in land use planning or spatial planning (Mileti, 1999; Storbjörk, 2007; Deyle et al., 2008; White et al., 2016; Francesch-Huidobro et al., 2017).

These emerging studies share a focus on identifying the facilitators and barriers for planning institutions to play a meaningful role in flood governance and exploring how and why they emerge. The main points include four aspects (see Table 3). The first aspect is about the products of flood governance. Some studies reported that policies, strategies, codes, standards, and planning rules provided legal supports and frameworks for planning to be involved in flood agendas (Wilby & Keenan, 2012). Empirically, policymakers and researchers argued that planning for adaptation can be impaired by 'fragmented and convoluted' frameworks and legislation (Wamsler & Pauleit, 2016). They believe

that the ways of framing or interpreting climate adaptation and flooding in planning discourse are significant (Brouwer et al., 2013), which is relevant not only to the definitions of problems and intentions of acts but also to the expected means to do so (Foxell & Cooper, 2015). However, in practice, it is still not easy to avoid insufficient framing (for example, no detailed guidelines for local practice and the lack of corresponding explanations at the regional and national levels), incomplete framing (for example, thinking merely flood defence in flood risks management) and disconnected framing (for example, initiating detached policies failing to mainstream adaptation) (Storbjörk, 2007; Ward et al., 2013; Wamsler & Pauleit, 2016; Driessen et al., 2018; Runhaar et al., 2018). More empirical knowledge is needed of how framing works in practice.

The second aspect is about the collaborative process between divergent agencies. Increasing numbers of planning studies stress the joint work between planning and extensive actors in the formulation and implementation of resilience and adaptation policies, albeit pointing out that trade-offs are difficult between governments, planning agencies, hydrological engineers, scientists, civil society, and markets due to divergent interests and political positions (Storbjörk, 2007; Francesch-Huidobro et al., 2017; Dąbrowski, 2018b; Driessen et al., 2018). A few papers added to this line of argument and reported that mismatches in time-spans and procedures between professions could impair the transboundary cooperation between the planning sector and other sectors (Mostert, 2006; Davidse et al., 2015; Ran & Nedovic-Budic, 2016). More research is needed to explore the means to facilitate these co-determined processes.

The third aspect is about the start-conditions for

planning to participate in flood governance: A small number of studies have cast light on the complexity of the collaborative process in terms of authority, resource and organisation conditions and indicated these pre-sets could affect planning's performance in the collaborative governance (Mileti, 1999; Deyle et al., 2008; Driessen et al., 2018). For example, the legal clarity and versatility of planning tools may affect land use restrictions and policy changes in response to climatic uncertainty (Mileti, 1999; Deyle et al., 2008; Driessen et al., 2018). Also, suitable allocation of finance and access to information in relation to planning is required to deal with distributional effects of floods (fairness), information sharing between sectors, and the public's right to be informed (Intergovernmental Panel on Climate Change, 2014; Driessen et al., 2018). Last but not least, the establishment of technical co-working platforms, clarification of planning's accountability (or responsibilities), and the planners' knowledge determine the planning agencies' capacities in flood governance (Mileti, 1999; Storbjörk, 2007; Ward et al., 2013; Ran & Nedovic-Budic, 2016; Driessen et al., 2018). However, the means to improve these start-conditions remain an under-researched issue.

The fourth aspect is about the contextual factors shaping the start conditions for planning in flood governance: This stream of research on the contextual factors that could affect the pre-conditions for planning in flood governance—from the fixed administrative structures and shared perceptions, to notions, values, and traditions embedded in history—is limited in the planning literature. Early studies reported that fragmented structures in political administration, asymmetries of powers, and persistence in the old paradigms in flood governance could weaken the capacities of planning agencies in

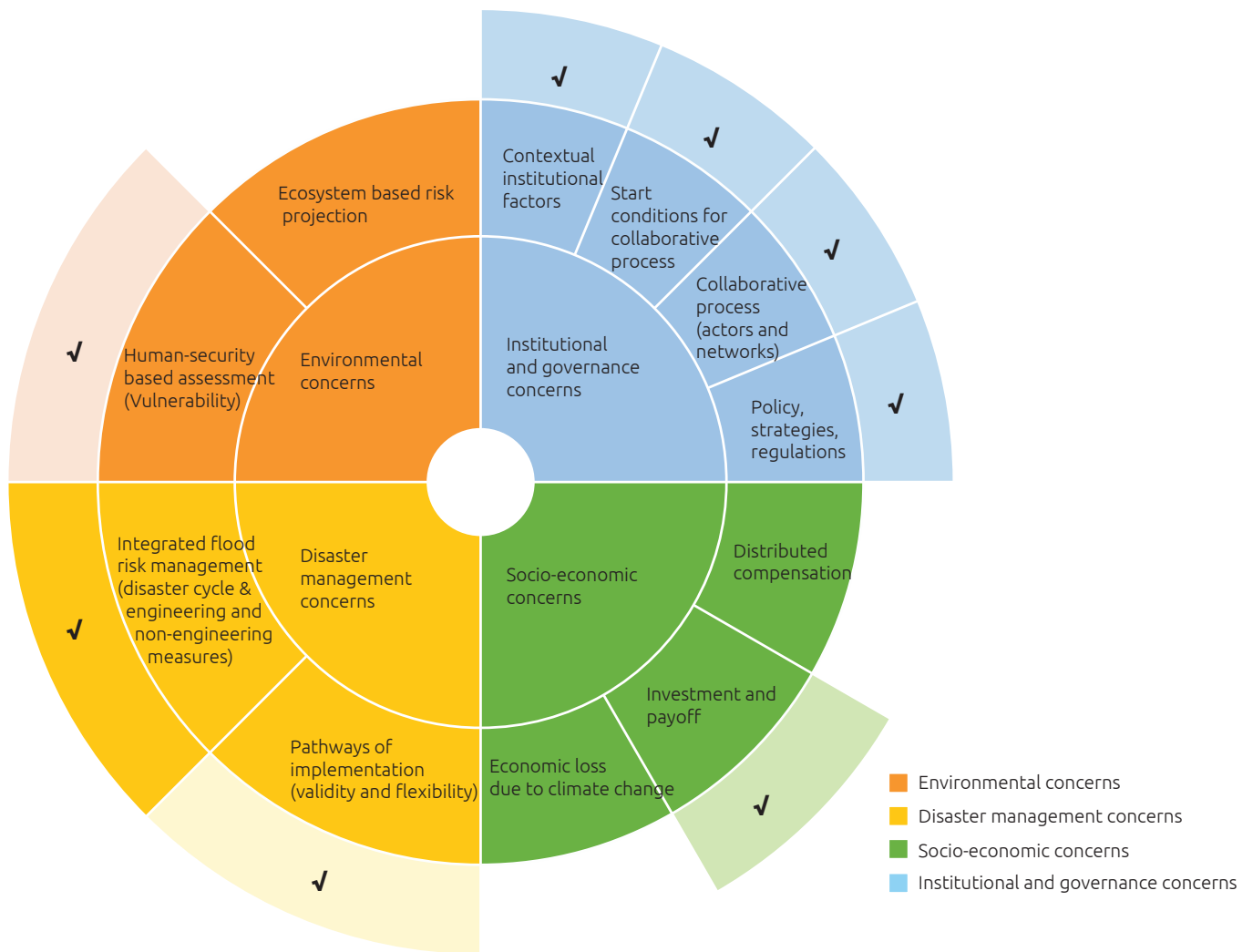


Figure 1: The developments of planning literature in the four pillars (the third ring).

Note: The dark colours mean that there are many studies, pale colours mean that there is a limited but increasing amount of studies, and white means that there is a gap here and the topic is under-researched in planning literature

implementing a broader set of adaptation measures in flood agendas (Mileti, 1999; Ward et al., 2013; van Buren et al., 2016). However, to change these contextual factors is often difficult, which need more explorations about their continuity and way out. See Table 3 on the next page.

4. Discussion

As an indispensable approach for flood resilience, planning makes a contribution through a broad range of inter-disciplinary experience. Figure 1 present planning’s recent roles in environmental concerns, disaster management concerns, socio-economic concerns, and institutional and governance concerns. The darker the colours are, the deeper the relative

Key Topics	Sub-Topics	Challenges for Spatial Planning	References
Outputs of flood governance	Policies, strategies, codes, standards, planning rules	<ul style="list-style-type: none"> - Mainstreaming flood risk issues in local agendas - Diversifying adaptation measures in discourse such as non-structural measures - Aligning the mismatches between local, regional, and national policy discourse - Short-term vs. long-term benefits 	(Storbjörk, 2006)
Collaborative process	Actors/ stakeholders	<ul style="list-style-type: none"> - Enhancing the roles of planning in the decision-making process (proactive participation) - Resolving misaligned interests of parties, - Converging conflicting understanding of parties in flood resilience and climate adaptation (awareness of risk, cognitions of adaptation measures, priorities on short- and long-term benefits), - Strengthening the weak abilities in using climatic knowledge to predict future scenarios 	(Storbjörk, 2006; et al., 2018)
	Networks	<ul style="list-style-type: none"> - Aligning the conflicting timespans and planning procedures in contrast to water management and environmental planning - Strengthening communications and cooperation between governmental and private actors in planning and flood-risk management 	(Mostert, 2006; Budic, 2016)
Start conditions for planning to participate in flood governance	Authority condition	<ul style="list-style-type: none"> - Balancing legal certainty and flexibility to regulate restrictions or change land-use functions for flood resilience 	(Mileti, 1999; Driessen et al., 2001)
	Resource condition	<ul style="list-style-type: none"> - Adopting appropriate principles in dealing with distributional effects of planning layouts (fairness in the distribution of cost and benefit), - Enabling information sharing and knowledge communications between governmental sectors - Facilitating public access to spatial planning information. 	(IPCC, 2014; Driessen et al., 2001)
	Organisation condition	<ul style="list-style-type: none"> - Establishing a technical information platform for interactions between territorial, institutional, and policy cooperation - Clarifying blurred accountability (responsibilities) and powers between national authorities, local planning actors, and other stakeholders for flood events - Personnel skills 	(Mileti, 1999; Driessen et al., 2001)
Contextual factors shaping the start conditions for planning in flood governance	Institutional design	<ul style="list-style-type: none"> - Facing fragmented administrative and political structures 	(Mileti, 1999; Werners, 2001)
	Notions, values, and traditions embedded in history and traditions	<ul style="list-style-type: none"> - Facing the persistence in the old paradigms (institutional inertia and path divergence) - Facing the asymmetries of powers 	(Van Buren, Ellerman, 2001)

Table 3: Key challenges for planning to play a role in flood governance.

7; Ward et al., 2013; Driessen et al., 2018; Runhaar et al., 2018)

7; Francesch-Huidobro et al., 2017; Dąbrowski, 2018b; Driessen

Davidse, Othengrafen and Deppisch, 2015; Ran and Nedovic-

eyle, Chapin and Baker, 2008; Driessen et al., 2018)

essen et al., 2018)

torbjörk, 2007; Ward et al., 2013; Ran and Nedovic-Budic, 2016;
(2018)

Ward et al., 2013)

en and Warner, 2016)

exploration by the publications in relation to spatial planning. The four-pillar model indicates that the planning literature pays more attention to disaster management concerns. This reflects the perspective on planning as a design approach, technically efficient in dealing with floods, which corresponds to one origin of planning as a physical intervention approach organising city development and property.

Meanwhile, the influence of climate, economic, social, and policy sciences on planning is emerging, even though few planning studies investigate these concerns. They inspired planning research, policy, and practice to broaden their scopes to include new topics such as vulnerability identification, investment and payoff, and governance. Planning, thus, is adapting its role as an integrated approach to contribute to flood resilience.

5. Conclusions and ‘opening up’

The growing threats of floods and climate change necessitate long-term safe, fair, economically efficient, and institutionally coordinated circumstances for human settlements. For this goal, this chapter proposes a four-pillar framework to understand environmental, disaster management, socio-economic, and institutional challenges that need to be considered in flood resilience and climate adaptation. It is applied here to conduct an extensive literature review spanning across the fields of climate science, disaster mitigation, water management, flood risk management, hydrological engineering, economics, climate policy, adaptation planning, public participation, administration, and governance. The proposed framework aids in identifying and assessing spatial planning trends concerning flood resilience and climate adaptation against the disciplines listed above.

Our analysis of the literature indicates that the domain of planning concentrates on improving the physical environment mainly in relation to disaster management concerns, in the belief that planning is an instrumental-technical

intervention shaping human settlement patterns. However, planning is a broad discipline increasingly including the environmental, socio-economic, and institutional topics in the wider policy context. This trend is spurred by insights from climate change analysis, economic analysis, social science, governance and policy studies, and promoted by pioneering planning scholars.

Our analysis also indicates that emerging topics could bring valuable insights informing the implementation of physical planning in practice, which remains challenging due to uncertainty about the future risks, limited resources, and complex social and institutional relations. Relevant research can add to spatial planning's ability to 1) enhance the evidence-based evaluations of flood hazards and evidence-based strategies for resilience, 2) act on uncertainty in the face of a shortage of financial resources, 3) address the unfair distributional effects of flood damages with adequate and equitable compensation, 4) manage societal concerns and divergent interests, 5) improve the coordination of resilience measures across sectors and spatial scales, and finally, 6) propose spatial resilience strategies that respect and take advantage of knowledge and values embedded in local history and traditions.

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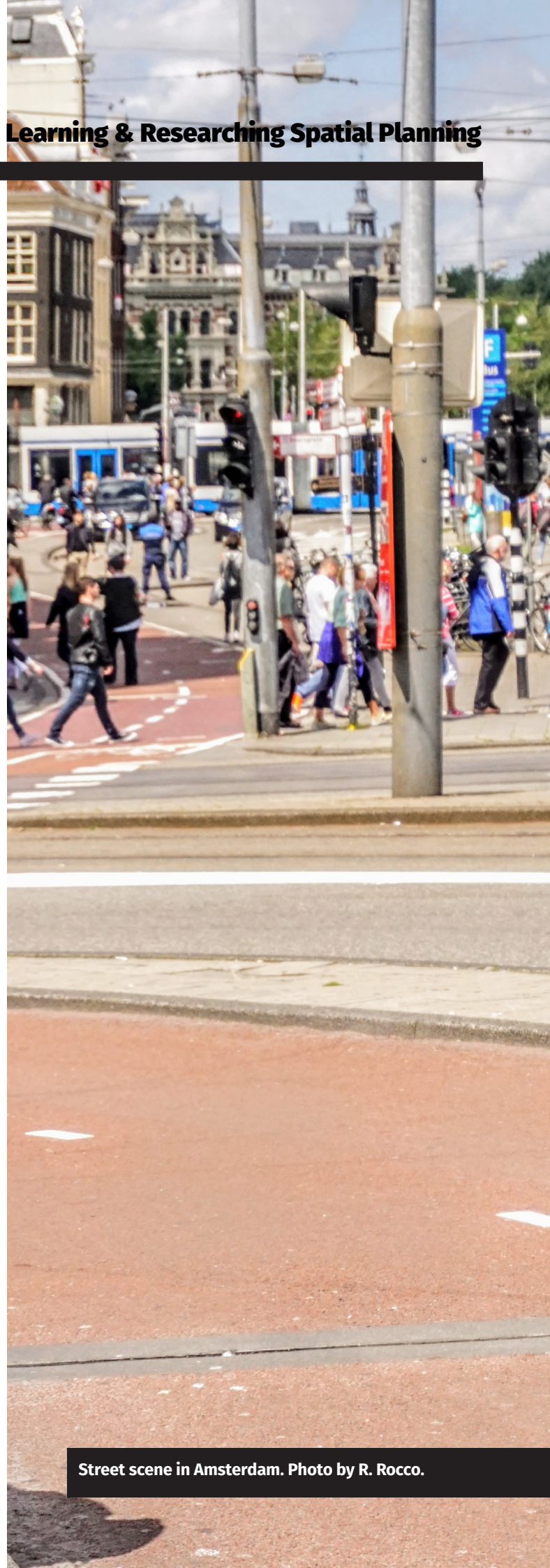
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Street scene in Amsterdam. Photo by R. Rocco.



Urban Mobility in Planning

**An exclusionary or a uniting force?
Conceptualising urban mobility for
the planning discipline**

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The mobility transition is increasingly viewed as a tool to improve social and environmental qualities of cities. Despite the vital role of mobility systems in connecting people and places, many elements of their current design also create socio-spatial exclusions and aggravate climate change and liveability challenges. Mobility and transport planning, however, have often worked in a disconnected way. This chapter sheds light on this dichotomy and outlines the contemporary shifts surrounding urban mobility and planning. Using mobilities theory and new conceptualisations of urban mobility, it argues that urban spaces are better off when city planning – rather than transport planning – is at the heart of their design. This offers a clear remit for planning students and practitioners to engage with urban mobility, appreciate its spatial imprint on cities and regions, and explore new tools and research methods to make sense of people’s individual and collective mobility practices. This chapter concludes that urban (mobility) design needs to take account of the softer elements that constitute lived urban mobility experiences of diverse population groups. These elements include social, behavioural, and life course factors, but also the wider meanings of mobility, embodied experiences, and its environmental impacts. It suggests tools for research and practice to closely engage with the mobile subject and seek the assistance of big and small data sources. In line with the sizable role urban mobility transitions can play to address contemporary urban challenges, it introduces the key debates with the intention to provide food for the planning thought and practice.

**URBAN MOBILITY, SUSTAINABLE TRANSPORT, URBAN TRANSITIONS,
SOCIAL EXCLUSION, MOBILE METHODS**

1. Introduction

Current UN forecasts predict that nearly 70% of the global population will be living in cities by 2050 (UN, 2019). Continuing urbanisation propels cities' economic activity and mobility, while they are prime locations for public, health, and educational services. The ever-diversifying composition of urban living, working, visiting, commuting, and other forms of dwelling pressurise cities' public spaces. Although the nature of these pressures takes different forms due to cities' different development trajectories, planning systems and urban functions, mobility has a major bearing on urban space, human abilities (e.g. health), and even shapes urbanisation itself. The advent of private car travel has, for instance, facilitated suburban sprawl (Kasraian et al., 2019; Dieleman & Wegener, 2004). Other, denser urban areas endure the negative effects of urban mobility through increasing levels of air and noise pollution (Banister, 2008). This chapter critically describes how multiple mobilities have come to shape urban space, the opportunities of those living and working there, and eventually the systemic challenges that are prompting mobility transitions.

Against this background, urban mobility research is being mobilised to address two of today's main (urban) challenges: demographic shifts and climate change. First, societal developments, such as migration and population ageing, have started to transform urban mobility thinking. The needs and preferences of people traversing the city are fundamentally changing in many parts of the world, affecting mobility patterns as well as individuals' mobile capacity. Over time, high mobility levels have become the norm for citizens' economic and well-being opportunities. This means that 'mobility poverty' may easily lead

to exclusion, particularly of already disadvantaged groups (Cass et al., 2005; European Parliament, 2015). Very recently, some cities, either driven by economic reasons or spatial justice arguments, are giving increasing attention to the interests of groups with potentially lower mobility opportunities. Their interventions foreground mobility as fair and just, assuming that every citizen should have the same access to urban facilities, regardless of age, gender, income ethnicity and ability.

Nevertheless, a plenitude of examples of 'mobile practices' remains, in which mobility is not available to everyone nor tailored to diverse mobility needs (Sheller & Urry, 2006; Mattioli, 2014). In addition to this potentially exclusionary role, the grand challenge of climate change highlights that the limits of urban mobility growth have been reached. These two challenges go hand-in-hand: the unequal distribution of mobility opportunities and their intense imprint on urban spaces have created negative externalities for both people and planet. Cities have evolved along the lines of unrestricted mobility opportunities, following the logic of private and motorised travel options, thus increasing the provision of intense flows of vehicles and goods. In fact, the entrenched car dominance has produced the outlook of urban landscapes for the better part of a century. Alongside the overall contribution of urban transport to climate change, this development also reduces liveability and safety. This underlines a twofold problem with current urban mobility systems: they produce large amounts of greenhouse gases and air pollution, while also laying a great claim on public spaces and cities' sensory landscapes.

Among these multiple and growing challenges,

however, there is a place for cautious optimism. In recent years, cities have also emerged as core centres and early adopters of climate-friendly and sustainable mobility transformations, such as the reduction of private car ownership, the emergence of mobility-as-a-service, new rail connections, and 'cycle booms' (Schwanen, 2015). Cycling mobility, for instance, particularly suits the urban scale, given its relative speed, low space claim, and benefits for public health, climate, and sociability (Nixon, 2014). On the whole, these innovations can trigger a socio-technical transition toward more sustainable and socially inclusive urban mobility systems. At the same time, however, they require urban and transport planners to re-think the parameters of mobility spaces and the built environment features that underlie mobile behaviour, as well as to develop research practices that fit new multi-modal and social realities.

Accordingly, this chapter intends to take a step back from mobility practices and transport realities, and start by revisiting the building blocks of sustainable and inclusive urban mobility. In the next sections, I will attempt to unravel the workings of urban and transport planning, shed light on some of the theory around urban mobility, and interpret their value to address contemporary urban challenges. I outline the main developments and gaps in research, with a view to make mobility concepts accessible to planning education. In section two, I will present a number of theoretical concepts that are used to understand mobility as part of wider urban and social structures. In section three, I will apply these concepts to recent urban challenges and explore the position of spatial planning and possible planning tools. Section four, in conclusion, will summarise the most salient issues and outline remaining challenges for urban mobility research and education.

2. Mobilities theory and urban planning

Urban mobility is central to cities' functioning as places of work, education, recreation, consumption, and simply of everyday living. It connects different places, people, and activities, and has become an urban practice in itself. Think for instance of a walk with a friend, a jog in the park, a bus ride, or a strolling urban tourist. The term 'urban mobility' includes three related elements: the ability to move the human body, be it human-powered or through vehicle use; the physical system that moves people and goods into and within cities, governed by city and national authorities, logistics engineers, and transport operators; and the social-emotional experience of traversing urban space, intersecting with cultural identity, belonging and citizenship (Cresswell, 2006).

In recent years, (transport) geographers and planners have started to bring these three elements together under the plural headings of mobilities studies or mobilities theory. In the past, the term 'mobility' had been reserved for residential movement by individuals and households (e.g. social mobility) and migration of humans and animals. In the early 2000s, however, sociologists Mimi Sheller and John Urry (2006) noticed that the movement of people, goods, and ideas had permeated in so many elements of human life that it in part defined how we come to think of the world. Studies following this 'mobilities turn' have noted that the increased availability of travel options in terms of frequency and distance travelled was such that mobilities, rather than specific sites and settings, shape the urban experience. As a result, the presumed un-

derstanding of cities as being a set of places (A, B, C, etc.) has shifted to a conceptualisation of cities as amalgamations of mobilities (from A to B, between A and B, and onwards). As a new paradigm, this drew urban research away from studying those place dynamics in isolation to, instead, attend to the lived experiences of being on-the-move and to the entanglement of the objective and subjective elements of different travel modes, mobility environments, and temporalities (Kwan, 2015).

Although mobilities theory has led to new insights, applications, and even methodologies (Büscher et al., 2011), it has also clashed with transport planning traditions. Transportation and engineering studies had generally understood mobility as the short-term, repetitive, and systematic flows of people situated around circulation rather than migration (Law, 1999). The plural and ever-changing nature of co-constituted mobility practices, in which the transport system is just one of multiple agents, created a juxtaposition. In fact, mobilities did no longer exclusively consist of objective bodily movement, but also draw upon the *imagined*, through images and discourses that represent mobility opportunities, and the *potential* of agents to be mobile (Kaufmann, 2002; Urry, 2007). In an attempt to combine the best of both worlds, Kwan and Schwanen (2016) called for the appreciation of mobilities as an entanglement of physical movements and the rich meanings or embodiment through which they are sensed, perceived, and felt.

In concrete terms, mobilities scholarship is now pursuing new ways to conceptualise the interface of transport systems and social processes of exclusion or marginalisation. Car ownership, for instance, is seen as a cornerstone of the 'frictionless mobility' that also creates social privilege, defining the

mobility as well as immobility that people face in daily lives (Mattioli et al., 2020). Figure 1 shows the ultimate expression of the (im)mobility and marginalisation these systems can bring about. In the context of race, subsequently, Sheller argues that 'our capacities for movement shape our bodily experiences and identities within normative social orders and hegemonic mobility regimes' (2018:45). Other contributions have prompted the decolonialisation and decentralisation of mobilities, both within the Western world (e.g. Best, 2016; Golub et al., 2016) and in emerging economies (Schwanen, 2018). Lastly, in terms of data, the flexible, interdisciplinary nature of mobilities research offers a way to analyse urban transport relationally. Through big or 'small' data and qualitative or mixed 'mobile methods', individual and collective mobilities have shed light on social and material realities of movement, and found new ways to understand movement, constraints, and place-making (Jensen, 2010).

2.1. Making the 'mobilities turn' work

The mobilities turn has a variety of implications for the planning discipline. The prominence of environmental and transport policy in spatial planning in most countries, at the expense of other sectors and policy domains (Nadin et al., 2020), means that planning has acted as both a driving and restraining force for sustainable mobility transitions. Freudendal-Pedersen (2020), for instance, outlines how car-centred thinking has permeated in planning to the extent that it now threatens sustainable urban futures. Planning discourses of (economic) expansion, accessibility, and efficiency have pivoted around motorised travel and thus inadvertently allocated large plots of (public) city space to exclu-



Figure 1: Where urban transport systems and residential functions meet. The picture shows the construction of the Teraet Al-Zomor Bridge in Cairo. Its edges are within arm's reach of people's balconies and it overshadows at least four storeys. Image credit: Mostnir Shady Ahmed (2020), <https://www.facebook.com/mostnir/posts/10221856461623192> (Accessed on 26 Feb 2021). Printed with permission.

sive (private) transport modes. This mechanism is aptly described by Hugo Priemus (see also Kasraian et al., 2016):

When a parcel of land becomes more accessible through proximity to a motorway or a high quality public transport connection, the land value of this parcel increases. The land parcel becomes more attractive as a location for housing estates and/or offices. This attraction explains the rapid development of industrial estates along the motorways. It also explains the recent interest of spatial planners and public authorities in corridors, [...] functioning as economic development axes and even urbanization areas (Priemus et al., 2001: 169-170).

On the other hand, throughout the 2010s, urban challenges related to social change and climate issues have prompted new forms of spatial planning and alternatives to the 'architecture of automobility' (Sheller & Urry, 2016). The participatory traditions and empirically grounded nature of spatial planning make the discipline well situated to unravel socio-technical systems like urban mobility, to lay bare power structures, and to create the foundations for an alternative use of exclusionary mobility spaces. A planning framework that successfully integrates the technical and social elements of urban mobility is Jensen's (2013) Staging Mobilities model. He argues that mobile practices are not only the outcome of staging 'from above', through planning, design, engineering, and institutions, but are also acted out 'from below' through social interactions and embodied performances (whether on the move or stationary).

Yet, the overall dominance of autologic in urban and transport planning has subordinated other mobilities, and effectively obstructed more balanced

and sustainable forms of planning (Koglin & Rye, 2014; Freudendal-Pedersen 2020). Mobility planning that looks beyond 'hard' factors such as urban form, land use, and infrastructure is, thus far, largely inspired by spatial justice arguments. Although not directly applied to mobilities at first, the debates on the 'right to the city' resonate with the constraining impact of urban environments on groups without access to transformative power that is also found in cycle planning (Lefebvre, 1996; Koglin & Rye, 2014). Similarly, David Harvey (2012) has pointed to the private car as a source of integral alienation, predicated on lifestyles that de-prioritise local ties and public space. The contested effects of urban mobility and liveability costs thus often bear down on those on the margins of economic power, civil involvement, and physical ability. Other applications of these debates are vision frameworks such as the Good City (Amin, 2006) the Age-Friendly City (Plouffe & Kalache, 2010), and the Just City (Fainstein, 2005). These interdisciplinary manifestos depart from the assumption that contemporary cities produce stress, confusion, and health issues for most people, and suggest integrated and human rights-based policy and planning solutions, culminating in a better representation of societal interests.

3. Urban mobility, planning, and disciplinary innovations

In the last section, I introduced mobilities and planning theories that have attempted to understand mobility as part of wider urban and social structures. While coming from different disciplinary viewpoints, they both redefine the material parameters that underlie mobile behaviour and envision sustainable mobility transitions. In this section, I will make these concepts more concrete in the light of urgent urban challenges, mobility innovations, and research and planning on wider urban development trends. Although, for instance, mobility innovations are mushrooming throughout the world, their positive impact on social and spatial inclusion is not always evident. New mobility systems may reinforce social segregation or socio-spatial exclusion, as shown for Bus Rapid Transit (Casas & Delmelle, 2014). Using the case of automated vehicles, Bissell et al. (2020) argue that new systems may primarily serve the 'kinetic elite', who already travels far and fast, and enhance their flexibility and comfort at the expense of those with fewer opportunities.

3.1. The transformative powers of mobility innovations

Similar reservations exist in innovations or planning tools that centre on cycling, such as bicycle oriented development (Fleming, 2012). While cycling ticks many boxes as an environmentally sustainable, healthy, and inherently social form of travel that lays a low space claim, the dominant planning narrative of 'build it and they will come' is increas-

ingly critiqued. Recent literature has casted doubts about the social equity of urban cycling. In many countries, cycling uptake has been persistently low and is structurally narrow in terms of demographics. From a gender and age perspective, children, women, and older people are usually underrepresented (Aldred et al., 2016), and this is unlikely to change when cycle planning starts without considering the mobility needs of all non-cycling public. In addition, emerging studies are getting a grip on the class and ethnicity issues of recent cycle-oriented planning. From a United States perspective, Hoffmann (2020) argues that cycling advocacy has mainly focused on the interests of white and middle-class 'mobile citizens', may contribute to neighbourhood conflicts, racism, and gentrification, and is at risk of misunderstanding the significance of cycling to marginalised groups. Similarly, Lam (2018) signals the risk that technocratic cycling interventions may 'iron out' the multiple ways in which urban spaces may be inhabited, using the case of a high-cycling borough in London.

Indeed, these challenges reflect the position of mobilities at the heart of design and regulatory powers 'from above', and their incongruence with the needs and enactment of mobility 'from below' (Jensen, 2013). Rather than starting by technical interventions, new mobility innovations should recognise that urban mobility is the product of unique, place-specific historical, sociological, and anthropological circumstance. One solution is to marry rather separate planning and transportation concepts into 'networked urban mobilities' (Freudendal-Pedersen, 2020). This would allow, for instance, cycle planners and advocates to look beyond 'spatial fixes', or high-cycling cities for that matter, and consider the 'place-specific politics of urban mobility, so-

cial norms and cultural setting' (Nello-Deakin & Nikolaeva, 2020: 2). As a result, (planning) research is increasingly targeting the temporal dimension and the learned and embodied nature of mobility (Murray & Doughty, 2016), as well as their occurrence in less-able bodies (Den Hoed & Jarvis, 2021; Winters et al., 2016).

As mentioned in Section 2, social and spatial justice arguments have inspired new initiatives at the interface of mobility and urban planning. They explore more inclusive and future-proof approaches to mobility in cities. In Bilbao in Spain, for example, the rationale of the Age-Friendly City has materialised in planning solutions that consider the capacities of older citizens. By installing public lifts and escalators to integrate upland residential areas, the city has improved (vertical) walkability for citizens of all ages and abilities. Furthermore, the construction of cable cars in Medellín, Colombia has made the urban centre more accessible to those living at the fringes of the city and has reduced carbon emissions by prioritising the mobility needs of low-income groups (see Ayuntamiento de Bilbao, 2018; Dávila et al., 2013; Reynolds et al., 2017 for further examples). Importantly, such solutions are often ecologically friendly and use pressing socio-economic needs and low-carbon benefits as principle guides to manage the use and connectedness of urban spaces.

3.2. Urban mobility methodologies

The transformative role of mobilities is not confined to cities' social, economic, and spatial dynamics. Notably, new research methodologies, grounded on the practice of mobilities, have also found their way to academia. As part of the new

mobilities paradigm (Section 2) and building on the foundations of time geography (as explained by Thrift, 2005), so-called mobile methods are used to understand the manifold ways in which people move in the city. They combine physical movement, materiality, sense-scape, meaning, and sociality of mobility to open up new ways to capture lived experiences, thus complementing 'stationary' methods such as surveys and interviews (Dowling et al., 2016; Merriman, 2014). In doing so, mobile methods research links previously separated domains such as transport and health, and engages with the subtler personal and temporal elements that constitute urban mobility practices (Büscher et al., 2011; Murray & Doughty, 2016). They offer new analytical ways to develop the intricate connection between urban mobility, other planning domains, and individual and collective livelihoods. This relational approach to the research object, never separated from the urban and social settings in which mobilities take place, has cultivated mixed participatory and (auto-)ethnographic approaches to mobility and engagements and qualitative enquiry while on-the-move. For instance, Rau and colleagues (2020) show the sensitivity of mobility practices of non-cyclists to personal and temporal biographies and Popan (2019) utilises his own cycling practices to envision slower mobility systems. Figure 2, in turn, shows the 'live' recording of a cycling journey, attempting to better understand the everyday mobility practice by documenting the mobility and safety negotiations of an older cyclist in a car-dominant environment.

A crucial element that mobile methods bring to the table is their ability to gather data in synchrony with the social interactions researched. In this respect, mobile technologies for instance assist (audio and video) recording of 'being with' the



A. Taking primary position



B. Being 'forced' to give priority



C. Taking the outer lane to anticipate a right-turn

Figure 2: Example of a video-recorded 'bike-along', showing the negotiations of a residential area in Newcastle-upon-Tyne, UK by an older person. The subtitles indicate the measures she takes to go safely from A to B. Source: author's images.

mobile subject, elicitation interviews, geo-tracking, and exploration of data science to describe large-scale mobility patterns (Jensen et al., 2015; Jones et al., 2016; Vanhoof et al., 2019). Likewise, this distinctively close engagement with the mundane aspects of everyday life has brought spatial and mobility justice issues to the surface. Mobile methods have been instrumental to provide insight in the qualities of and barriers to more sociable and equitable forms of urban mobility, and to redefine mobility spaces as places for community life and activism. As an example, 'bicycle activism has raised fundamen-

tal questions about how road space is allocated, who determines how public space is experienced and governed, and how change in urban transport and the city is enacted' (Verlinghieri & Schwanen, 2020, p.1; Castañeda, 2020). In the same vein, findings on 'austere mobilities' have instigated discussions on reconceptualising mobility itself – asking fundamental questions and changing the narrative about how and why we move and accommodate our public spaces accordingly (Nikolaeva et al., 2019: 351).

3.3. Integrated planning of urban mobility spaces

The combined engagement of urban geography, transportation, and urban planning studies with the lived experiences of the research object – the (im) mobile citizen – reflects a cautious trend towards convergence between urban planning and transport planning when (re-)designing urban public spaces. Amidst other urban development trends, some cities have begun to rethink the mere transport function of urban space, which has accelerated since the COVID-19 pandemic and subsequent physical distancing measures. As initial research on the topic suggests: ‘the liveable and human-scale city is far from the technocratic planning ideas of speed, efficiency, and accessibility. It has shown that a mobility culture is possible that does not solely fetishize speed and time efficiency. In other words, what we can learn from COVID-19 is how to structure existing and future cities, and the scapes of cities’ (Freudental-Pedersen & Kesselring, 2020: 93). Although the notion of immobility in cities is not new, the pandemic and the pause of urban and global mobilities have reminded us of the importance of our immediate surroundings, such as the house, street, and neighbourhood. Echoing other studies on urban (mobility) infrastructures that increase inequalities (Datta & Ahmed, 2020; Mattioli et al., 2020), immobility and mobility are increasingly entangled in the urban arena.

What are the planning implications of this myriad of urban mobility challenges, innovations, and new research approaches? First, mobile methods and the use of participatory mobile technologies are crucial to increase the public participation and mo-

bilise a variety of voices to influence the planning process (Kleinhans, van Ham & Evans-Cowley, 2015). In line with the debates in mobilities studies (Merriam, 2014), assistive (online) tools should exist next to, rather than instead of, offline engagement and consultation. Second, recent demographic and climate change related challenges, accelerated by the COVID-19 pandemic, have underlined the need for a revision in the hierarchies of urban (mobility) ‘users’. Design and allocation of space to accessible, efficient, and safe forms of active travel should be prioritised over modes that negatively affect the environment and urban liveability, while taking into account the needs of those with less mobility opportunities. Third, urban and transport planners have to pursue an integrated approach to addressing these challenges appropriately, for instance by:

- considering the real costs and opportunities of transportation and accessibility, including those across policy domains (e.g. Vision Zero, health, and environmental trade-offs)
- focusing on reducing (motorised) mobility needs, e.g. in developments of housing, workplaces and other urban amenities, thus breaking the (implicit) link between urban development and motorised accessibility in many parts of the world
- creating and developing overarching imperatives for inclusive and sustainable urban planning, such as bicycle oriented development, the targeting of mobility benefits for specific groups (e.g. children, elderly, migrants), and language use that embraces lived dimensions of the urban environment (see Te Brömmelstroet et al, 2021)

In the light of the urban trends outlined in Section 1, I assert that urban planning sits at the heart

of mobility transitions. When we look at the different literature and methodologies that attempt to unravel the multiple facets of mobility, there is ample evidence of their embedding in urban and social structures, for instance as material infrastructures, social and kinetic mobility practices, embodied and emotional experiences, and as drivers of moments of stillness and immobility. Importantly, the uptake of such a multi-faceted approach is a prerequisite to avoid the reproduction of existing inequalities and negative externalities, as induced by dominant automobility systems, and for instead engaging the multiple publics and sites involved in mobility. One of the specific challenges will be to open the 'black box' of mobilities that may arise when citizens are offered new mobility innovations that will shape the outlook and experience of future cities, for instance through the physical and sensory effects of new structures and interactions, as convincingly demonstrated for automated and electric automobility transitions (Bissell et al., 2020; Hopkins & Schwanen, 2018). Similarly, new, collective and allegedly sustainable mobility innovations can be developed in such a way that they increase spatial exclusion or create a waste surplus. This is becoming apparent in bike-sharing schemes in Spain, which predominantly terminated in poorer regions and smaller towns (Anaya-Boig et al., 2021). The lifecycle of these new systems underlines my call for an interdisciplinary approach to urban planning, in this case to link mobility transitions to the circular economy.

4. Conclusions and implications

The obvious conclusion is that the impact of urban mobility policy and planning on urban structures is a wide-ranging subject. The varied pace of transition and innovation in this area across the globe makes it even more complex to grasp. While this chapter was by no means an exhaustive overview of societal developments and academic practice in the urban mobility domain, I highlighted some of the most problematic trends and made suggestions to improve our understanding and - eventually - our ability to address the challenges at hand. I argued that potential solutions only stem from an interdisciplinary approach to urban mobility, for instance drawing on urban geography, planning, urban design, and sociological perspectives. The close interplay of urban mobility with grand societal challenges such as demographic and climate change underlines the urgency of an integrated approach to revising the parameters of mobility, both the built environment features that underlie mobile behaviour and the use of urban spaces.

I started this chapter by taking a step back from mobility practices and transport realities and revisiting the building blocks of sustainable and inclusive urban mobility. This showed the pervasiveness of mobility in the way cities have developed and are lived. I conceptualised this dominance through the mobilities paradigm, which argues that urban life is shaped by the multiple mobilities taking place within them. It showed how urban mobility has long worked in extension of engineering, zoning and regulatory solutions to transportation, and how this notion shifted to the appreciation of the mobility

experiences as they are acted out from below. By putting mobility at the centre of today's fundamental urban development challenges, I attempted to disentangle the negative role mobility systems have played for sustainable urban futures. Based on the literature discussed above, I conclude that we should start by asking the right questions about mobility. To give examples, what does it mean for the built environment when urban populations are ageing, increase their mobility demand, or - in turn - radically alter their mobile activities (e.g. following a pandemic)? How can spatial planning respond to citizens' diversifying requirements in terms of housing, mobility, and place-making? How can related services meet their needs? Who are the stakeholders who should inform the design of these environments and services?

What follows is that research and planning education have the right tools at hand to advance socio-spatial dynamics. For instance, planning and designing cities with active mobility modes or diverse user groups at their heart has led to positive spatial interventions. At the same time, I showed that mobility transitions are complex. Physical interventions take time (a matter of years) and behavioural and cultural changes usually take even longer. Urban mobility futures are unpredictable, in flux, and people do not always use the urban space in the way it was designed for or thought-out. Mobilities studies and in particular mobile methods offer new ways to grasp this complexity, relationality, and effects on people's lived (im)mobility before, during and after the planning process.

We know that city planning benefits from clear territorial policies that 'look over the fence' at other disciplines (e.g. health, economy). To this end, we should remind governance and policy actors with

political, economic, and material-infrastructure interests of the fundamental role of human behaviour in sustainable urban (mobility) transitions. Supporting these transitions means that we need to accompany adaptive and agile participation processes with the needs and preferences of a heterogeneity of citizens, some of whose voices are heard less often. Importantly, we have to address urban mobility challenges in a functional territory; they usually cross municipal or regional boundaries and planning remits. Lastly, and perhaps most distinctively, we should realise that the planning practice has the ability to break mobility and territorialisation hegemonies instilled in transportation and urbanisation. Existing policies and participation models have often been a cause of these hegemonies, and call for an urgent reconceptualisation of what mobility is. In other words, should we plan to maintain flows and boundaries? Or to allow sensing, exploring, and socialising? As such, the place-based specialism of urban planning will be instrumental to understand, adapt, and fit the mobility innovations on the horizon into the urban and social realities on the ground.

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Street scene in Amsterdam (2015). Photo by R. Rocco.

Spatial Planning Policy Tools

A conceptual model*

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This chapter outlines a conceptual model for understanding the range of policy tools which can be used in spatial planning. The classification of tools builds on the NATO model (nodality, authority, treasure, and organisation) proposed by Christopher Hood (1986) and differentiates between two separate functions of policy tools: substantive and procedural. Substantive policy tools refer to those which directly affect the delivery of the goals of a plan, while procedural policy tools refer to those which affect the process and procedure of developing or reviewing a plan. A further distinction is made between tools used for the activities of plan-making (and review), development control and plan enforcement, since these activities make use of different types of tools.

**SPATIAL PLANNING, POLICY TOOLS, PLAN-MAKING, DEVELOPMENT
CONTROL, PLAN ENFORCEMENT**

* This chapter is an abridged version of an article published in the Journal of Planning Literature (Stead, 2021).

1. Introduction

The governance of spatial planning has been analysed and compared in several recent publications (e.g. Knapp et al, 2015; Reimer et al, 2014; Schmitt & Van Well, 2016; Nadin et al, 2018). Each of these studies illustrates the diversity of planning practices and approaches depending on specific social, economic, environmental, and social contexts. A relatively underdeveloped feature of this literature is the types of policy tools that are used (or could potentially be used) for spatial planning. In general, conceptual thinking about policy tools used in spatial planning is relatively limited and not always consistent (Stead, 2021).

While the policy studies literature contains a number of extensive accounts of public policy tools (e.g. Hood, 1986; Howlett, 2000; Salamon, 2002), this literature has largely been overlooked in studies of spatial planning. Many of the most frequently cited tools of spatial planning are regulatory (e.g. conservation orders, land appropriation, environmental impact assessment). In practice, however, spatial planning involves a much wider range of policy tools than regulation alone, as proponents of communicative and collaborative planning theory have recognised for some time (e.g. Forester, 1993; Healey, 1997; Innes & Booher, 2010). Nevertheless, there is still a general tendency in planning literature to emphasise regulatory tools above most others. According to Rydin (1998), regulation is the 'fundamental policy tool available to the planning system [operating] at different levels and on different aspects of the built environment' (754). At the same time, Rydin explicitly recognises that achieving planning goals such as sustainability and social cohesion requires

more than regulation alone: these goals demand additional policy tools. This chapter sets out a framework for categorising, analysing, and comparing spatial planning policy tools. It does so by building on literature from policy studies which has been applied to other areas of decision-making, including energy and urban policy (Acciai & Capano, 2021).

2. Understanding policy tools

Various taxonomies for categorising policy tools were developed and proposed during the 1980s and 1990s (see for example Hood, 1986; Vedung 1998; Howlett, 1991). Of the various taxonomies of policy tools that were proposed, one of the most well-known is the model developed by Hood (1986) which classified policy tools into four sets using the NATO mnemonic: 1) nodality (i.e. information-based), 2) authority (i.e. regulatory), 3) treasure (i.e. fiscal), and 4) organisation (i.e. direct action by government). Hood also distinguished between policy tools designed to effect change in a policy environment and those designed to detect changes in it, which he termed 'effectors' and 'detectors' respectively (see Table 1). This model has since gained widespread use in many areas of public policy-making, although Hood's classification of policy tools has seldom appeared in spatial planning literature to date. Meanwhile, Hood's 'effectors' and 'detectors' have largely been replaced by the distinction between substantive and procedural tools (Howlett, 2000). Substantive policy tools refer to those which directly affect the delivery of policy goals while procedural policy tools refer to those which affect the process and

	Nodality	Authority	Treasure	Organisation
Detectors (to detect change)	Surveys Information colla- tion Registration	Registers Censuses Inspections	Consultancy ser- vices Paid informers	Coastguard Public archives
Effectors (to effect change)	Advice Promotion Reminders Training	Certification Licences Prohibitions Patents	Grants Loans Subsidies Taxes	Quarantines Bonded ware- houses Customs

Table 1: Hood's taxonomy of policy tools with selected examples.

procedures of developing policy. These two types of tools are closely interlinked: procedural policy tools support the functioning of substantive policy tools. For example, procedural policy tools structure how policies are formulated, implemented, and evaluated by government actors and agents (Howlett, 2000). In the context of spatial planning, procedural policy tools can be utilised to facilitate interaction and consensus-building between stakeholders in order to generate or strengthen support for policy goals or initiatives (Runhaar et al, 2009; Macintosh et al, 2015).

Three of the four main types of tool (i.e. nodality, authority, and treasure) contained in the NATO model require little further explanation. However, a short explanation is provided about the tool of organisation since its meaning is not straightforward to fully understand from its name alone. The tool has less to do with how government is organised or structured (as might be implied by the name) and more to do with the agencies, services, amenities, facilities, or infrastructure which governments provide directly. While recognising that these types of tools often require a combination of nodality, authority, and/or treasure tools, to put organisation tools in place, Hood classifies them as separate and distinct tools and describes them in terms of the 'stock of land, buildings and equip-

ment, and [...] individuals with whatever skills they may have, in the government's direct possession' (72) which 'enables government to act directly on its subjects, their property or their environment' (73). Hood also refers to some examples of organisation tools that are particularly relevant to spatial planning, stating that government 'may provide for the welfare of its subjects in general by facilities such as parks, gardens, bridges, dykes and dams' (80). In addition to these different forms of physical capital or infrastructure, it is also important to note that organisation tools related to spatial planning can also include the stock of human capital and skills in the government's possession, notably the stock of public officials involved in developing, implementing, or enforcing spatial planning policy. In a number of contexts, the stock of human capital involved in spatial planning under the direct employment of government has been in decline in recent years and/or has been redistributed across public, private, and voluntary sectors as part of the hollowing-out, contractualisation, and outsourcing of government (Grijzen, 2010; Raco, 2013; Lennon, 2019).

Hood's taxonomy, and others developed around the same time, generated a new academic literature on policy tools (Howlett, 2000). Initially, the majority of this literature focused on substantive tools – those that directly affect the production and deliv-

ery of goods and services in society. Less attention was devoted to the systematic analysis of procedural tools – those intended to support substantive policy tools by for example managing state-societal interactions in order to assure general support for government aims and initiatives – despite the fact that they can be categorised in a similar way to their substantive counterparts, and have an equally important role in determining outcomes. Even now, attention to procedural policy tools in the academic literature is less prevalent than attention to substantive tools. This is true for the policy studies literature in general as well as the spatial planning literature in specific (discussed below). However, this is not to say that procedural policy tools have been completely neglected. Bressers and Klok (1988), for example, describe how various procedural policy tools involving the creation, provision, and diffusion of information to policy actors can affect the level of support for policy. Their work helps to identify a range of procedural policy tools, such as education, training, institution creation, the provision of information, formal evaluations, and hearings.

Literature on spatial planning and governance contains very few explicit references to the literature from policy studies (see above). Moreover, there are very few definitions or taxonomies of policy tools in the spatial planning literature. The situation is summarised by Van den Broeck (2008) who states that although ‘planning theory is basically all about planning tools, there is, however, hardly any literature that theorizes the concept of planning tools’ (262). A recent review of literature on spatial planning policy tools reveals substantial variations in how policy tools themselves are understood (Stead, 2021). To date, most discussions of spatial planning policy tools place more emphasis on substantive rather than procedural tools.

3. Categorising policy tools in spatial planning

When considering procedural policy tools for spatial planning, a distinction can be made between the tools used by public officials for distinct parts of the process since different types of tools are required. In this paper, a distinction is made between three parts of the planning process:

1. plan-making (and review)
2. development control
3. plan enforcement

Plan-making refers to the genesis, approval, and subsequent evaluation and revision of a spatial plan – the document which specifies the desired type, scale, and location of future development, and which may also specify the policies or rules to be adopted in order to achieve this desired vision. Development control refers to the granting of permission for development, a process involving the assessment of the compatibility of the proposed development (e.g. residence, office, shopping centre) with the aims and policies of the plan. Plan enforcement is concerned with ensuring that urban development takes place in line with a plan and, in cases where it does not, taking action to address the situation. In other words, there is one set of tools which can be used to influence the process of plan-making, a second set which can be used in the process of fulfilling or realising a plan’s ambitions, and a third set which can be used to detect and act against contraventions to the plan. To date, such a distinction has not been made in the literature on spatial planning policy tools. Examples of procedural and substantive policy tools for plan-making (and

		<i>Nodality</i>	<i>Authority</i>	<i>Treasure</i>	<i>Organisation</i>
Procedural tools	Plan-making (and review): to secure public/political support for a spatial plan and any revisions to it	Public exhibition and consultation	Strategic environmental assessment	Reward/ incentive for involvement of interest groups	'Urban experiment' (e.g. temporary parklet[1])
	Development control: to test the fit between the proposed development (e.g. residence, factory, office, shopping centre) and the aims of the spatial plan	Public consultation and scrutiny	Environmental impact assessment	Commissioned independent assessment	Aesthetic control committee
	Plan enforcement: to address cases of non-conformance between development and the aims of the spatial plan	Public information about reporting non-compliance	Enforcement notice	Fines	Imprisonment
Substantive tools	To deliver the ambitions of the plan (i.e. to deliver development congruent with the plan)	Non-binding policy advice or guidance	Greenbelt; Urban growth boundary; Zoning ordinance	Tax relief for land remediation; Tax credits for rehabilitation of historic buildings	Provision of facilities (as a catalyst for urban development)

Note: [1] A parklet is a sidewalk extension that provides more space for public street amenities (e.g. green space, seating, art works). Parklets are typically created by using parking lanes.

Table 2: Categorisation of procedural and substantive tools for spatial planning with selected examples.

review), development control, and plan-enforcement are presented in Table 2.

It should be noted here that the distinction made here between three aspects of the planning process (plan-making, development control, and plan enforcement) is separate to a distinction based on the main stages of the policy cycle (see, for example, Howlett, 2019). The relationship between the three aspects of the planning process is illustrated in Figure 1. All three aspects of the planning process have their own distinct policy cycles, involving different starting points, stakeholders, and timescales. In the process of plan-making (concerned with the genesis, approval, and revision of a spatial

plan), decisions are made regarding the content of a spatial plan (and accompanying policies) which typically has a time horizon of 10–20 years. This decision-making process can involve several iterations before a plan is approved and may involve multiple inputs from a wide set of stakeholders, including citizens, businesses, and NGOs. This process may also involve inputs not only at the plan approval stage but also when a plan is periodically evaluated and revised (Alexander, 2006). Meanwhile, the process of development control (concerned with granting permission for development proposals) is shorter in duration than plan-making, typically within a prescribed number of weeks after the submission

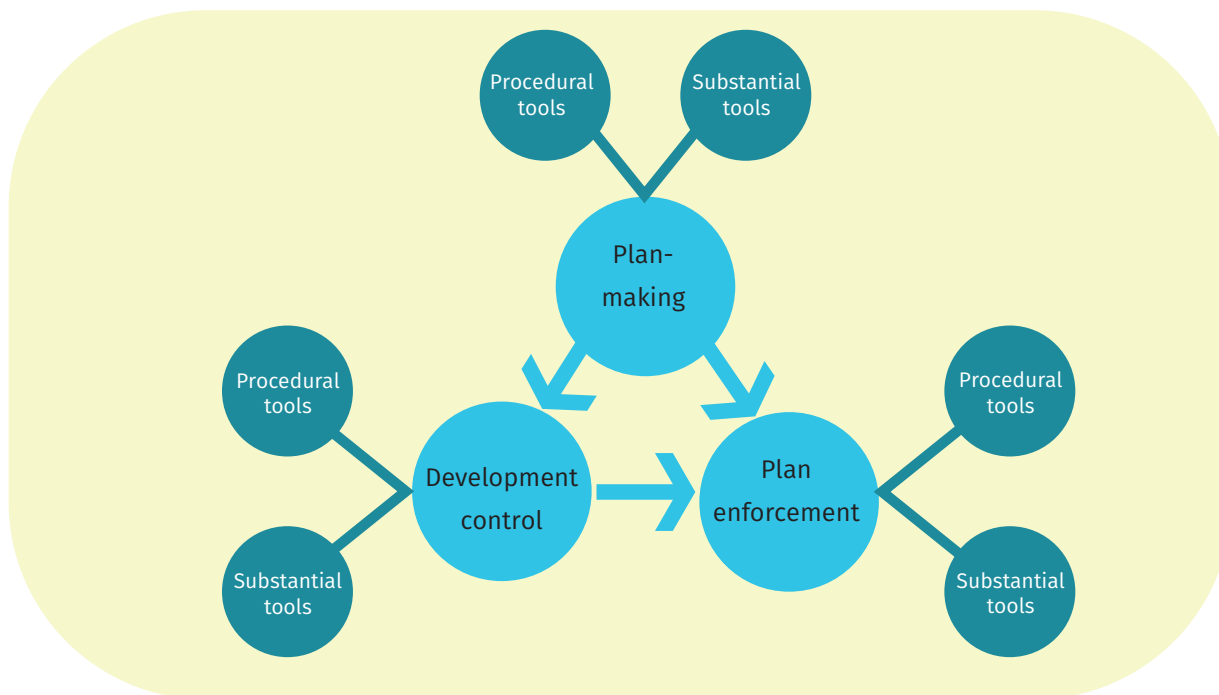


Figure 1: Relation between plan-making, development control and plan enforcement.

of a planning application. Decision-making is instigated by the submission of a planning application: no decision is needed if no proposal is submitted. In this case, decision-making involves inputs from a less diverse set of stakeholders than the process of plan-making, often limited to those with a direct interest in the development being proposed (e.g. land-owners and residents directly adjacent to the proposed development). Thirdly, the process of plan enforcement is either instigated by the planning authority’s own monitoring activities (e.g. on-site checks) or via information from third parties (e.g. NGOs, neighbours). No decision about plan enforcement needs to be made until a policy breach is noticed and reported. Decision-making about plan enforcement involves relatively few inputs from stakeholders.

3.1 Procedural tools for plan-making

Procedural tools for plan-making refer to the tools which can be used to influence public or political support in the genesis and approval of a spatial plan (and any subsequent amendment). A range of nodality, authority, treasure, and organisation tools, as outlined below, can be used for this purpose.

- Nodality. There are several tools of nodality to secure public or political support for a plan, such as outreach activities to consult, inform, and persuade. Public consultations and exhibitions are typical examples where information can be gathered from stakeholders to generate (or co-create) the ambitions of the plan before or during its formulation, or where information can be presented to stakeholders to convince them about the content and direction of the plan. Clearly, the number and type of stakeholders involved in these processes, as well

as the stage of decision-making during which they are involved, has an important impact on the level of support which can be achieved for the plan. Also crucial for the level of support for a spatial plan is the way in which the benefits or advantages of a plan are formulated and communicated to different stakeholders.

- **Authority.** Strategic environmental assessment (SEA) is a statutory planning tool in many countries (including all European countries) which is designed to ensure that the environmental consequences of strategic decisions are identified and assessed during the plan preparation process and before plan adoption (Sadler et al, 2011). A key idea behind SEA is that the technique improves the information basis for planning by providing insights into possible consequences, as well as identifying alternative options and measures that can avoid negative impacts. Clearly, the statutory requirement to conduct an SEA can lead to amendments during the plan-making process, thereby affecting the content of a spatial plan.

- **Treasure.** Policy tools which provide rewards or incentives to promote the involvement of certain interest groups in plan-making can be classified as procedural policy tools related to treasure (i.e. fiscal tools). The state-funded Landcare Australia programme is an example of this type of tool, to which Curtis and Lockwood (2000) refer as a state-sponsored (i.e. state funded) mode of community participation. Landcare Australia is a government funded programme which supports local Landcare groups, community not-for-profit organisations involving groups of volunteers who work on projects to repair and improve the natural environment. Representatives from these local Landcare groups are represented on regional Catchment Management

Committees and other important fora and make significant contributions to natural resource management decision-making (Curtis et al, 1995). Other fiscal tools that can be used to affect procedural aspects of plan-making include the hiring of planning consultants to organize citizen participation processes for urban planning (see, for example, Grijzen, 2010; Stapper et al, 2020), and the use of financial incentives (e.g. prize draws) to encourage public responses to draft plans. These tools not only influence the number and type of stakeholders involved in the plan-making procedure but also potentially influence the spectrum of responses that are submitted (as a consequence of who is included and excluded, or supported and unsupported) in the participation process.

- **Organisation.** An organisation tool 'enables government to act directly on its subjects, their property or their environment' (Hood, 1986: 73). This type of tool encompasses a range of possible interventions, including 'urban experiments' – temporary physical structures that could be used to demonstrate the benefits or advantages of proposals contained in the plan and, as such, influence public or political opinion and support during the process of plan-making. One specific example of a temporary experiment is a parklet where new space for public street amenities (e.g. green space, seating, art) is created by removing existing carriageway or car parking spaces. This could be used to physically demonstrate the impact of extending pedestrianised areas and/or removing car parking. A separate example of an organisation tool which can affect the plan-making process is the creation of new organisational structure or entity in government. For example, interdepartmental commissions have been employed alongside informal processes

of consensus-building in the Netherlands as means of influencing and persuading ministers from other government departments to support national spatial plans (Grijzen, 2010).

3.2 Procedural tools for development control

Procedural tools for realising the ambitions of the plan refer to the tools which can be used to test public or political acceptability of a new development proposal.

- **Nodality.** Public consultation in spatial planning is generally not only limited to the process of plan-making: it also extends to the development control process. In most countries, the nodality tool of public consultation forms an important part of the process in which planning authorities (usually local governments) decide whether to grant permission for development. Applications for planning permission typically involve consultation with neighbouring residents and businesses as well as statutory consultees (e.g. authorities responsible for environment, transport, archaeology). Seemingly simple rules about which residents and businesses are allowed to express their views about proposed development, and the way in which they are informed, can potentially have important impacts on the overall level of public or political support and acceptability for a development proposal. In the United Kingdom, for example, local planning authorities have some choice in deciding how to notify neighbours for certain types of development (e.g. site notice or letter), which can potentially affect the number of responses.

- **Authority.** Environmental impact assessment (EIA) is applied to development control in a similar way that strategic environmental assessment is applied to plan-making (see above). It is an example of a procedural policy tool of authority that can potentially influence public or political support in the development control process. EIA is used to identify the environmental impacts of a development (during all its phases – construction, operation, and decommissioning) prior to decision-making. The tool seeks to predict environmental impacts before development starts, to identify ways of mitigating potentially adverse impacts, and to present the predictions and options to decision-makers. In Europe, EIA is a statutory planning tool for development proposals of large projects such as power stations, refineries, chemical plants, airports, motorways, waste disposal installations, dams, quarries, and major power lines. While the content of EIAs is prescribed by regulation, the way in which the impacts and mitigation measures are presented can vary. Clearly, EIA is an important tool in shaping the public or political acceptability of a new development proposal.

- **Treasure.** An example of a treasure-related procedural policy tool which can be used in the development control process is the commissioning of independent reports or assessments from specialist consultants on the impacts (economic, social, environmental) of proposed development. These assessments may be externally commissioned by planning authorities for several reasons. One reason could be the lack in-house capacity (expertise and/or time). Another reason could be the objective of reaching a more independent, trusted assessment, particularly in the case of more contested development proposals where certain parties stand to gain

or lose substantially from the development. A third reason could be that an independent assessment is commissioned as a way of reducing the likelihood of legal challenges (by the developer or the opposing party) after a decision has been made by the planning authority to grant or deny planning permission. Whatever the reason for commissioning these independent reports or assessments, their content is likely to sway public or political opinions to some degree about the acceptability of a new development proposal.

- **Organisation.** The inclusion of an aesthetic control committee or a similar body (e.g. architectural advisory panel, design review board, urban design panel) in the development control process can influence the final decision that a planning authority makes about a development proposal. It can also affect the conditions applied to development if planning permission is granted (e.g. building height, orientation, shape, materials). Various forms and remits of aesthetic control committees can be found in countries such as Canada, the Netherlands, New Zealand, United Kingdom, and United States. In the Netherlands, aesthetic control committees, mainly comprising nominated independent experts in architecture and spatial planning, were made statutory by the 1962 Housing Act (up to 2013 when the spatial planning system was decentralised), thereby introducing a new procedure for evaluating planning applications (Nelissen, 2002). As with any committee, its composition (e.g. disciplinary representation; aesthetic preferences; expertise) can play an important role in the type of advice or recommendations that it provides.

3.3 Procedural tools for plan enforcement

Most forms of physical development are subject to prior approval by the responsible planning authority (i.e. the granting of permission to develop). Certain categories of development are exempted, mainly in cases where development is minor (e.g. a small extension to a home). Where development has taken place (or is taking place) without necessary approval (e.g. construction of a building or the change of use of a building without obtaining permission, unauthorised change to a protected building, non-compliance with the conditions attached to planning permission), the planning authority can take action to address the situation. To do so, it can draw on a variety of policy tools that include Nodality, Authority, Treasure, and Organisation. Since effective tools for the enforcement of planning control are generally considered necessary for increasing overall compliance with the planning system, all tools for plan enforcement can be considered as procedural in the sense that they are a pre-condition for substantive planning policy tools to function effectively (c.f. Howlett et al, forthcoming).

- **Nodality.** One example of a tool of nodality is the provision and promotion of public information about how to report suspected incidences of non-compliance. In some countries, public reporting (rather than official surveys or inspections) is one of the main ways of identifying non-compliance with planning rules.

- **Authority.** Where development does not conform to the plan, or the conditions attached to planning permission, the planning authority often has statutory powers to take enforcement action, resulting,

for example, in obtaining a court ruling requiring a retrospective application for planning permission to be made, or for actions to be undertaken in conformance of the conditions of the permission granted, or for the development to be removed and the site returned to its prior condition.

- **Treasure.** Fines are also used as a sanction against development taking place without the necessary approval. In some cases, the calibration of the fine is related to the severity and/or frequency of non-compliance (e.g. Ireland – see Department of Environment, Community and Local Government, 2012).

- **Organisation.** Although an extreme sanction, imprisonment can also be used as a policy tool (in addition to or instead of a fine) in some countries where non-compliance is considered serious. In Ireland, for example, penalties for breaching planning law vary according to the seriousness of the case. Offences involving the construction of unauthorised development carry a maximum penalty of €5000 or six months in prison or both (Department of Environment, Community and Local Government, 2012).

3.4 Substantive tools of spatial planning

Substantive policy tools are more commonly discussed than procedural tools in the spatial planning literature. Although examples can be found which refer to tools of nodality, authority, treasure, and organisation, most of the examples cited in the planning literature refer either to tools of Authority or Treasure. Examples of tools from all four types are presented below.

- **Nodality.** Higher levels of government in many

countries prepare indicative policy guidance (and/or good practice guides) as a way of steering the content of lower-level plans. In cases where this guidance is indicative and non-binding (which is implied by the term ‘guidance’), they can be classed as a nodality-related procedural policy tool (binding policy advice on the other hand can be classed as tools of authority). Policy guidance related to urban design and planning exists in a variety of forms, amongst which are local design guides, design frameworks, design briefs, development standards, design codes, design protocols, and design charters (Carmona, 2017). It is useful to acknowledge here that these nodality tools cannot usually be relied upon in isolation, particularly where there is a substantial tension between public and private interests, as there often is in the process of urban development (Carmona, 2017). Instead, a key function of these types of instruments is to internalise the desired behaviour into corporate and individual decision-making. As such, policy guidance for spatial planning represents a policy tool that offers the potential to deliver the ambitions of the plan primarily by means of persuading stakeholders and agenda-setting.

- **Authority.** There are many examples of authority-based procedural policy tools that are used in spatial planning. One of the most important regulatory tools in the development management process is the restriction of development in specific areas in order to steer development in preferred locations (e.g. urban cores, new towns, industrial parks). These restrictions can take various forms including greenbelts, urban growth boundaries, and zoning ordinances. A greenbelt is a zone of largely undeveloped, wild, or agricultural land surrounding a city, which in principle enjoys regulatory protec-

tion against development. Greenbelts are used to restrict urban development around many cities around the world (e.g. Adelaide, London, Hong Kong, Milan, Ottawa, Seoul, Toronto, Vancouver, and Vienna). Similar to greenbelts, urban growth boundaries delineate the extent to which urban areas are permitted to expand in countries such as New Zealand and the United States. Zoning ordinances are one of the most common regulatory tools contained in urban plans (LeGates, 2004) and are used to distinguish between different types of zones in the city (e.g. residential, industrial) in which certain land uses are permitted or prohibited. While greenbelts, urban growth boundaries, and zoning ordinances primarily regulate the location of development, other authority-based planning policy tools exist to control the scale, height and orientation of development.

- **Treasure.** Fiscal policy tools in the form of incentives can be used to attract development to locations of strategic interest, and to encourage developers to take actions that improve the conditions of the built environment and protect the natural environment (such as redevelopment, conservation, historic preservation, and rehabilitation). For example, cities may seek to encourage urban regeneration by offering tax relief for land remediation, tax credits for the rehabilitation of historic buildings, or exemptions from local business taxes. Meanwhile, fiscal tools in the form of taxes and penalties can be used to discourage development in less favoured locations. For example, cities may seek to discourage urban sprawl by means of property taxes, financial contributions for local infrastructure costs, or impact fees for development in 'greenfield' locations. Tax incentives are generally more popular and well used than penalties (Adams & Tiesdell, 2013).

- **Organisation.** Referring to policy tools of organisation, Hood states that government 'may provide for the welfare of its subjects in general by facilities such as parks, gardens, bridges, dykes and dams' (1986: 80). Clearly, many of these types of facilities can be used as a catalyst to promote development in cities to underpin the objectives of a plan. Examples can vary from minor to major in size and impact. Frequently, major flagship projects are credited with significant impacts on urban development and change, such as the urban regeneration effects of the Guggenheim Museum in Bilbao, the Expo site in Seville, or the Olympic Park in Barcelona (Bell & Oakley, 2015). However, direct introduction by government of much smaller facilities or physical urban changes, such as a pedestrianised street, a community garden, or a river walkway can also act as catalysts for new urban development in their immediate vicinity, thereby contributing to the ambitions of the plan in specific locations. This idea is reflected in Lerner's notion of 'urban acupuncture' – projects or initiatives that uplift city life. Lerner states that 'sometimes, a simple, focused intervention can create new energy, demonstrating the possibilities of a space in a way that motivates others to engage with their community. It can even contribute to the planning process' (Lerner, 2014: 4).

4. Conclusions

Studying spatial planning policy tools is important for identifying how to address complex societal goals in planning practice in a systematic and organised way. Meanwhile, from a more theoretical perspective, the classification of spatial planning policy tools is important when making comparisons and assessments of the governance of spatial

planning in different contexts, which in turn can add detail to studies of policy styles, professional cultures, and path dependence in spatial planning. In setting out a taxonomy of planning tools, the paper not only differentiates between procedural and substantive issues; it also distinguishes between different groups of procedural tools related to three parts of the process of spatial planning: plan-making, development control, and plan enforcement. Each of these parts of the process require the use of different tools, almost always in combination.

The review and taxonomy presented in this paper can be seen as a new point of departure for more fine-grained empirical research on the governance of spatial planning in the future. At present, detailed empirical information about trajectories of change remains relatively sparse, especially when it comes to recent comparative evidence (Nadin et al, 2021). What is already known is that certain types of policy tools are being increasingly used across many countries while others are not. For example, many countries have witnessed increases in the trends towards a wider use of 'softer' tools related to nodality (e.g. citizen engagement), while 'harder' financial and regulatory tools have often been scaled back either in terms of their number or calibration (Schmitt & Van Well, 2016; Nadin et al, 2018). While the link has already been made between the changing role of spatial planning and the skills that planners need (e.g. Ozawa & Seltzer, 1999; Alexander, 2007), there is still substantial potential in developing new research into the changing use of different types of policy tool and the skills that are required to use them. Ultimately, understanding the full range of policy tools is fundamental to being able to plan effectively.

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Street scene in Amsterdam (2015). Photo by R. Rocco.



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8

Never

Metropolitan Landscape

Definition, Mapping, and Governance

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This chapter revisits the most significant international definitions of the metropolitan landscape. It shows methods of mapping and measuring the metropolitan landscape, most of them developed at TU Delft. Additionally, it discusses one of the tools that can be used to develop the metropolitan landscape and reflect on its qualities and challenges: the Community of Practice (CoP). The organisation and some of the outcomes of a Dutch CoP for metropolitan landscape development (coordinated by the Deltametropolis Association 2016-2023) are highlighted. The chapter draws conclusions on metropolitan landscape challenges and sets an agenda for spatial planning and research in this field.

**METROPOLITAN LANDSCAPE, SPATIAL PLANNING, QUALITY OF LIFE,
CARTOGRAPHY, COMMUNITY OF PRACTICE**

1. Introduction

In our highly urbanised world, in which planners attempt to solve different problems and integrate several policy agendas simultaneously, the concept of metropolitan landscapes has become increasingly important. After all, how do we call the backcloth and the stage on which the energy transition, climate adaptation, and other major spatial transformations of our time play out? Furthermore, the environmental quality and accessibility of the metropolitan landscape is, for a large part, responsible for the quality of life and well being in cities, and therefore also their economic competitiveness in the global arena.

In this chapter, we revisit the most significant international definitions of the metropolitan landscape. It shows methods of mapping and measuring the metropolitan landscape, most of them developed at TU Delft: metropolitan landscape characterisation (Tisma et al.), spatio-visual characteristics of landscape spaces (Nijhuis), territories-in-between (Wandl), diagrams for international comparison (Nefs) and urban-rural planning forces (PBL, the Netherlands Environmental Assessment Agency).

Additionally, we discuss one of the tools that can be used to develop the metropolitan landscape and reflect on its qualities and challenges: the Community of Practice (CoP). No single authority is responsible for the metropolitan landscape. Therefore, planners from public and private entities continuously explore better ways to collaborate and share their experience. The organisation and some of the outcomes of a Dutch CoP for metropolitan landscape development (coordinated by the Deltametropolis Association 2016-2023) are highlighted.

The chapter ends with conclusions on crucial metropolitan landscape challenges and sets an agenda for spatial planning and research in this field.

2. Definitions of the metropolitan landscape

The metropolitan landscape has inspired many geographers and planners to define aspects of it in intriguing terms, such as the *Zwischenstadt* by Thomas Sieverts, *Edge City* by Joel Garreau, and *Post-suburbia* by Edward Soja. The lack of a more holistic view has made the metropolitan landscape into a fuzzy, fragmented, and complex field of work (Harms et al., 2004). The overlapping and blurring of land use functions, such as residential and agricultural use, contributes to this fuzziness, as does the blending of the key spatial divisions urban and rural into the so-called peri-urban. According to Piorr and Ravetz (2011), large parts of Europe and more than half of the Netherlands are in fact peri-urban. In landscape conservation circles, a less fuzzy and more holistic landscape definition is used – an area perceived by people, also including infrastructural and brownfield landscapes, since the European Landscape Convention of 2000.

The conflict of economic, social, and political interests is common in the metropolitan landscape, which is why planners are increasingly being forced to investigate it. In the Netherlands especially, the economic use and interests have played a large part in the planning and shaping of the (metropoli-

tan) landscape. Already in the seventeenth century, landscape transformations and cultivation were related mainly to business models, 'making a living' or showing off one's wealth (Steenhuis, 2019). The nineteenth-century paintings of Vincent van Gogh often depict landscapes as places of transformation and hard labour – one of the reasons for the recently founded Van Gogh National Park in a (today highly urbanised part of) Noord-Brabant. During the 2017 Landscape Triennial, Persian-Dutch writer Kader Abdolah reflected on the strong economic roots of the Dutch landscape, and the way it shapes its citizens:

The spirit of the merchant is so powerful in this lowland, with its swamps, that the spirit sets firmly into its body. Sometimes it can take thirty or fifty years, but there is no escaping from it (Feddes & Nefs, 2018: 90)

In our neoliberal time, the metropolitan landscape has been characterised as a battleground for economic developments (Ambrose, 1992; Nefs, 2021; Scott et al., 2013). Landscape architect Hough observes that 'it has long been the fate of the rural landscape at the edge of the city to be the raw material for housing subdivisions, industrial estates, and mobile-home parks. [...] The changing scene at the edge and the placelessness that goes along with it has become a battleground between efforts to preserve rural land and the relentless forces of urbanisation' (1990: 88). Today, besides housing and industry, there are also wind and solar parks, various transport infrastructures, recreational facilities, and other functions demanding space at the urban fringe. If we allow planners to nudge those functions to the places where they are still acceptable,

without aiming for a holistic approach, we get what Dirk Sijmons calls 'a landscape from hell'. At the same time, the metropolitan environment is increasingly being listed as a valuable asset for urban quality of life, as well as a tool for improving health and retaining (possibly even attracting) talent in a region. In Dutch economic policies, however, metropolitan landscape has been a blind spot for a long time (Luttik et al., 2008; Vereniging Deltametropool, 2016).

These definitions provide several perspectives to discuss and work with the metropolitan landscape concept. However, to use it in spatial planning, we need to go one step further to visualise and map the metropolitan landscape.

3. Mapping the metropolitan landscape

'The map is not the territory'. This truth applies especially to the metropolitan landscape. However, it is possible to understand important aspects of the metropolitan landscape by using different types of cartography. A complete overview would be impossible in one chapter, but we will revisit five recent maps made in the Netherlands, three of them at TU Delft. The first three focus on the hybrid morphology of the metropolitan landscape, building on the ideas of the urban network (Baccini & Oswald, 2008), the horizontal metropolis (Viganò et al., 2018) and the in-between city (Sieverts, 2001). The fourth focuses on its general geographical structure in contrast to other metropolises, while the fifth focuses on rural-urban planning powers. All five used geographical information systems (GIS) at some point in the process.

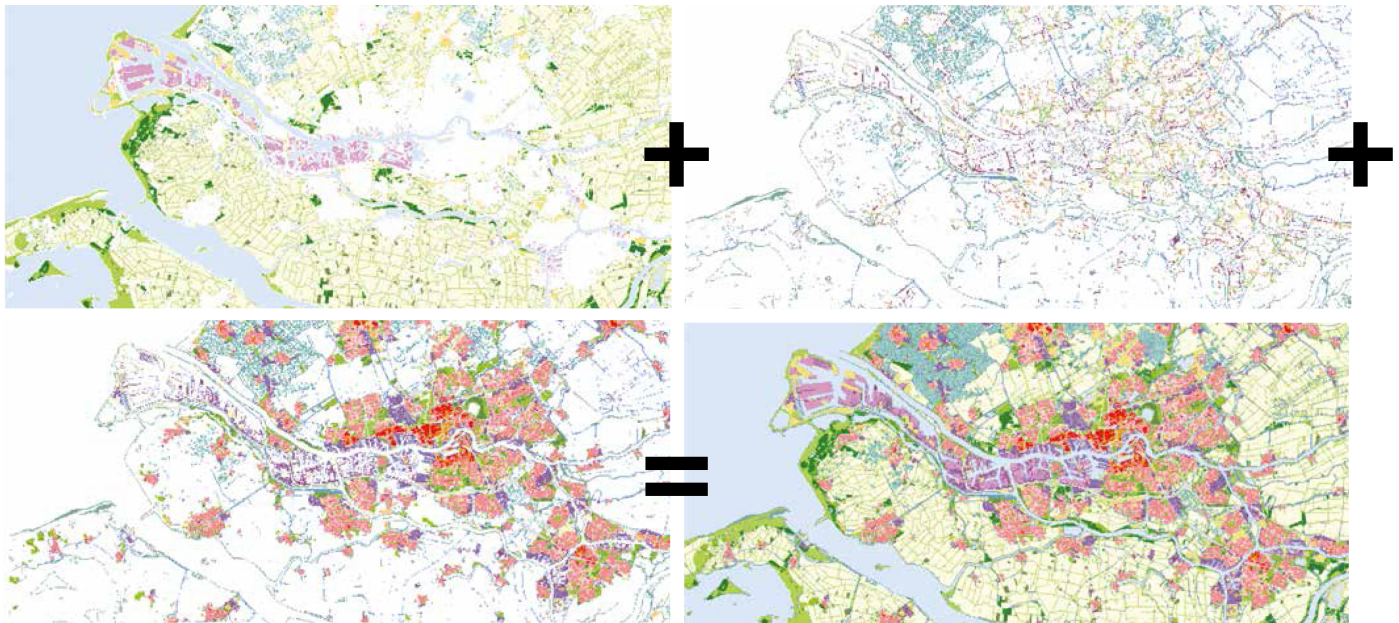


Figure 1: Details of cluster analysis of the Metropolitan Landscape Characterization study, focusing on the Rotterdam area. Tisma, Van der Velde, Nijhuis & Pouderoijen, 2014.

As we have seen above, the metropolitan landscape contains urban, rural, and peri-urban landscape types, but where are these located precisely, and how can we separate one type from another if they look like a blend? In their work on the Rotterdam area, Tisma et al. (2014) break the metropolitan landscape apart statistically, in small grid cells with a certain combination of land-use types. It turns out that about a third of the metropolitan landscape is neither predominantly urban nor rural, but rather one of many hybrid forms of both. Additionally, they use so-called cluster analysis. They discover that only some land uses are found in large continuous areas – mostly agriculture, nature reserves, water, and Rotterdam’s port area. Especially (peri)urban areas are largely discontinuous, forming edges and patches with a mix of land uses, as shown in Figure 1.

Spatial planning laws in most countries deal with either rural or urban areas and do not have clear

statements about the hybrid areas. Traditionally, these regions have been ignored in spatial plans or lumped into one of two major categories. Even though there will probably not be a special law for hybrid landscapes, the introduction of hybrid land use categories helps planners to be more specific in their spatial plans in metropolitan areas and to cross their disciplinary boundaries when needed. For hybrid landscape types to be useful in practice though, land use is not always enough. What a plot of land looks like is not necessarily determined by how it is used. In a study for the Arnhem-Nijmegen region (Vereniging Deltametropool, 2017b: 66), Nijhuis combined 25 land-use types with six dominant visual characteristics into a set of 150 categories of the urban-rural continuum (Figure 2). This nuanced perspective opens the door to planning areas that have previously gone unnoticed and have largely unknown cultural and ecological values. Using the characteristics of the metropolitan landscape in

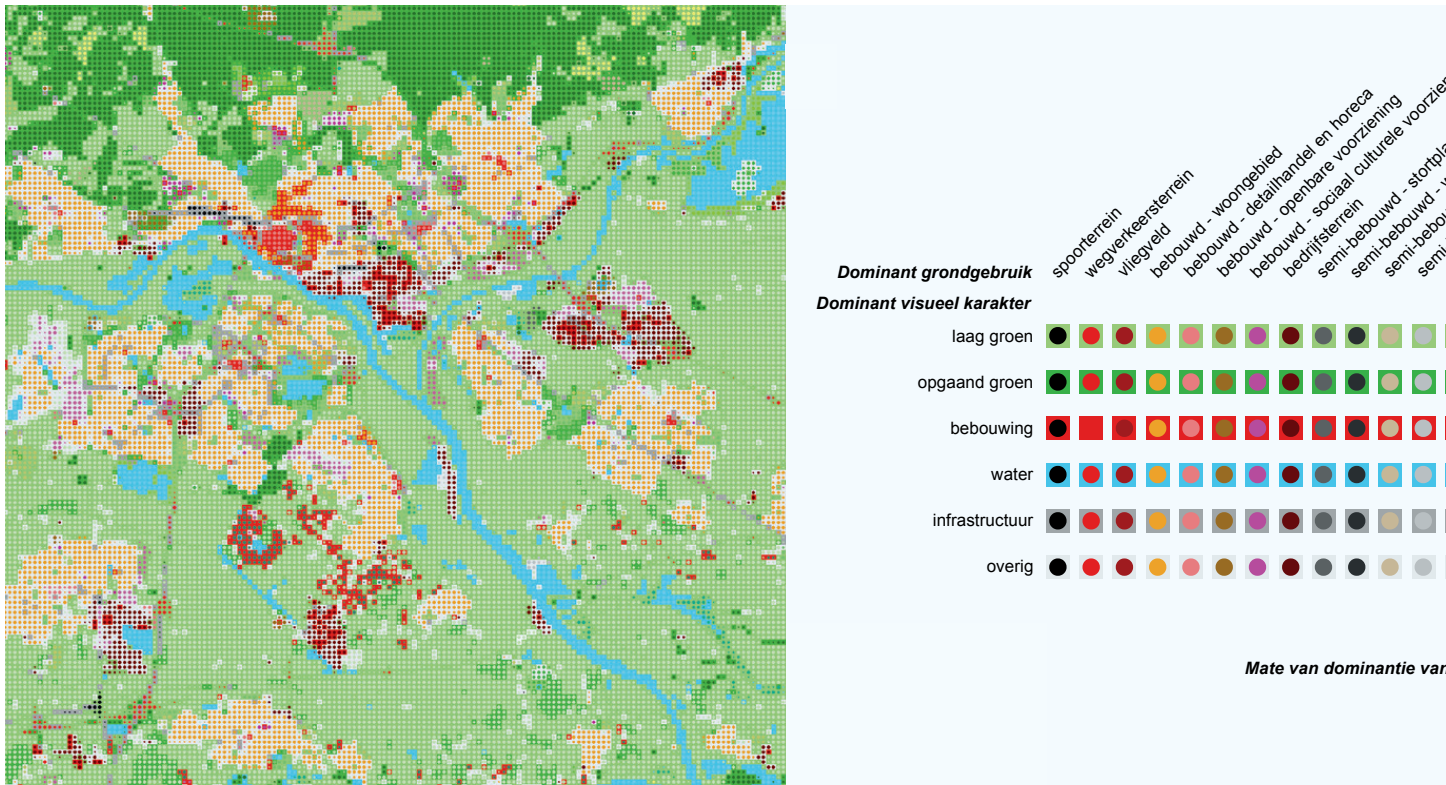


Figure 2: The urban-rural continuum in the Arnhem-Nijmegen region. Nijhuis, 2017.

planning necessarily means making it political: how can interventions in parts of the metropolitan landscape realise social, environmental and economic policy goals? In his work on territories in-between, Wandl (2020) recommends not to be blinded by the black and white view that separates urban from rural and condemns urban sprawl. There are indications that the mixed and hybrid areas between the extremes play an essential role in keeping metropolitan areas liveable and sustainable since these areas can produce ecosystem services for those who live nearby. Wandl promotes a combination of the usual functional zone planning of the territory with network urbanism, which for example links consumers to producers in a metropolitan area. An example of such a link is the availability of green space, which provides recreation, clean air and

other services to the inhabitants. A region which can offer this, is considered more sustainable. Figure 3 shows the calculated potential for sustainability in territories in-between.

Metropolitan regions around the world use per-



Figure 3: Potential for sustainability in territories in-between, mapped for South Holland. Wandl, 2020.



ceptions of their metropolitan landscape to present themselves in the global arena, for example, as an excellent place to live and work in the battle for talent, or an exciting place to visit. Such perceptions also frequently form the assumption underneath spatial and economic policies in these areas. The complex and technical approaches described above do not always work in these discussions with a diverse group of public and private stakeholders. The abstract metropolitan landscape diagrams by Nefs (Vereniging Deltametropool, 2016) communicate a simple perception of the metropolitan landscape in a region. For example, that the Dutch Randstad can be seen as urban agglomerations situated around a Green Heart in the Rhine Delta, while Greater London is a dense monocentric metropolis at the river Thames, surrounded by a greenbelt. To enhance perception and experience, travel time from the

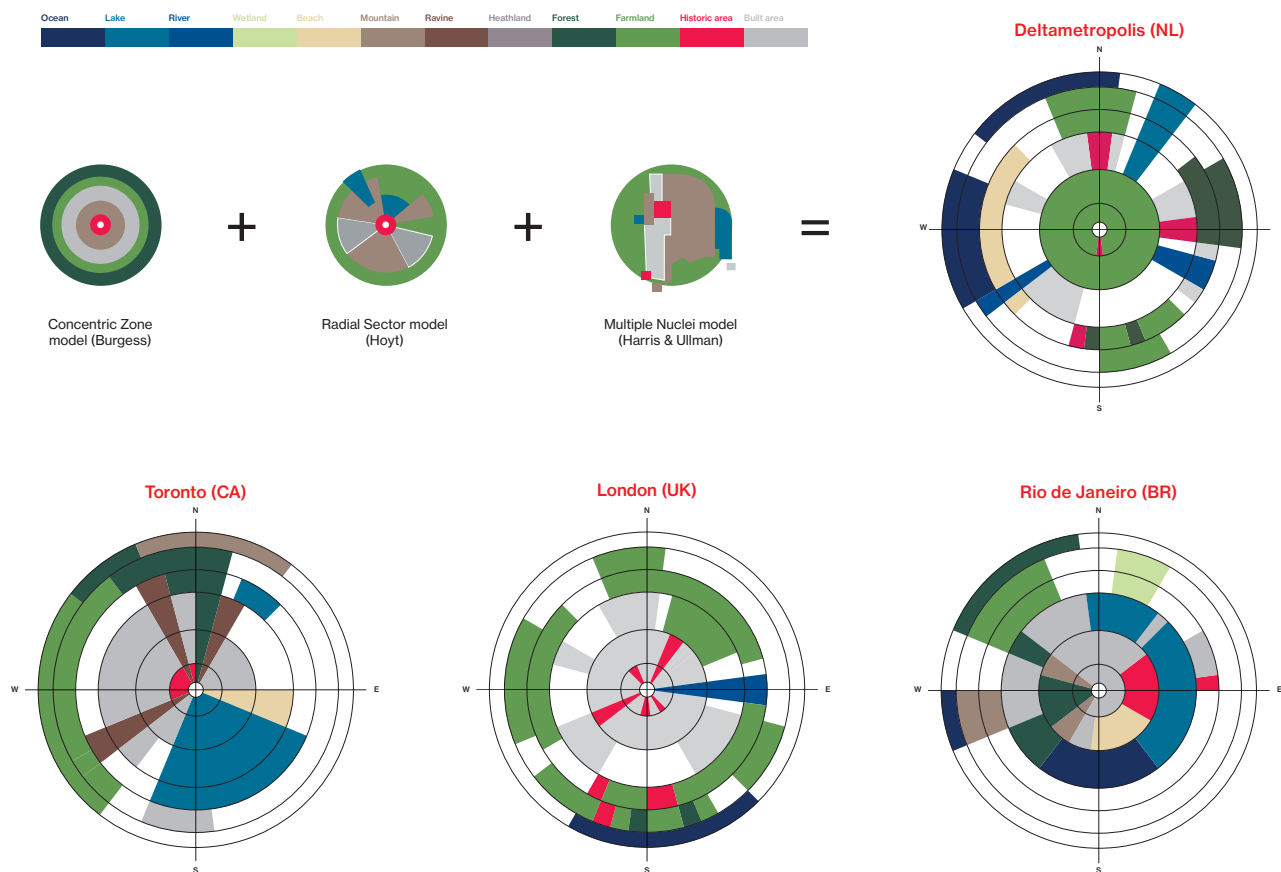


Figure 4: Metropolitan landscape diagrams for the Deltametropolis, London, Toronto and Rio de Janeiro. Nefs, 2016.

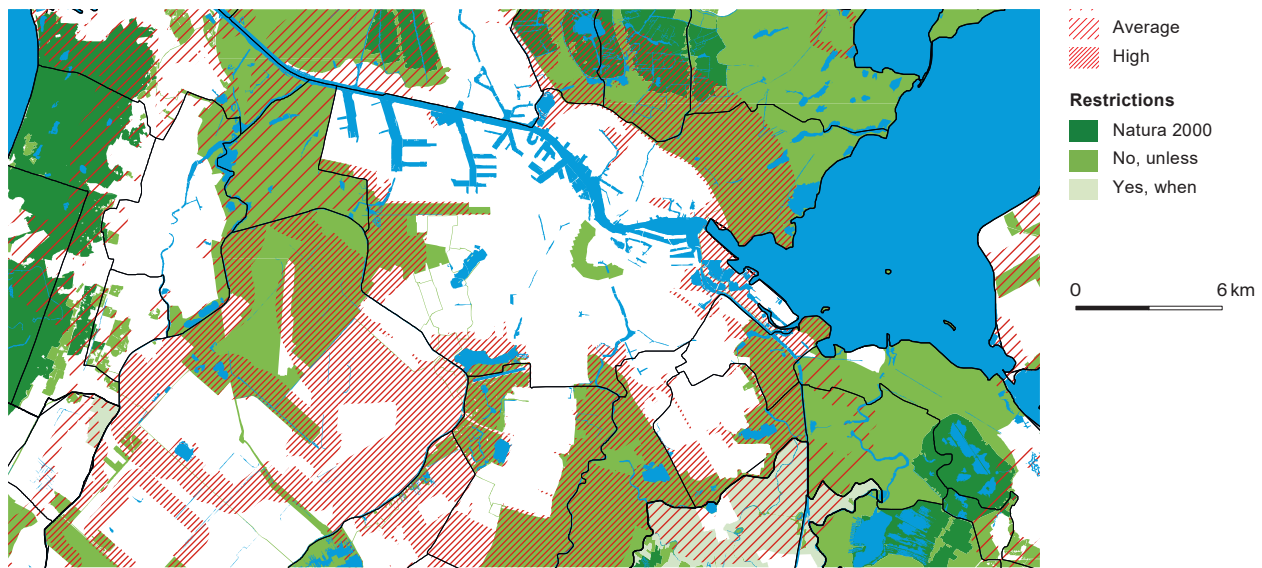


Figure 5: Red and green pressures mapped for the Metropolitan Region of Amsterdam. PBL, 2019.

population centre is used instead of physical (Euclidean) distance. The diagram (Figure 4) uses well-known geographical concepts such as the belt, the wedge and the multiple nuclei or zoning model. This makes diagrams comparable across countries.

The spatial planning regime itself, and how it plays out in different parts of the metropolitan landscape, can also be mapped. The Environmental Assessment Agency of the Netherlands (PBL) drew up the so-called red and green pressures in the metropolitan region of Amsterdam, showing development plans for new residential areas in red and restrictive policies and nature development in green. Figure 5 demonstrates clearly that these pressures meet in the urban fringe. Naturally, this is also where the largest and most significant planning discussions take place, as well as where important social trade-offs are made. For example, certain recent expansion plans of Amsterdam are considered important and sustainable, despite the transformation of open space on the urban fringe, since realising housing developments farther away would increase mobility and the commutes of thousands

of people who work in Amsterdam. As a compensation, financial means and land are used to increase biodiversity, water buffering, and recreational areas near such urban developments on the urban fringe of Amsterdam.

4. Working on the metropolitan landscape in a Community of Practice

In the section above, we have seen how different aspects of the metropolitan landscape can be visualised, to understand and plan these areas better. We have also noticed that the metropolitan landscape is very fragmented and hybrid in terms of urban and rural land uses, visual characteristics, and political perceptions. The institutional landscape in most metropolitan areas is equally fragmented and hybrid, including several overlapping government layers, planning scales, and sectoral departments, such as housing, agriculture, and infrastructure. To improve the region's quality and

socio-economic results, an integrated approach is required; however, how can this be accomplished in such a setting? Institutional reform is a possibility, albeit a slow and politically difficult route. This chapter discusses another option: keeping the institutional construct the way it is while working together in a Community of Practice (CoP).

A Community of Practice is a group of people and/or organisations who share a common goal. By sharing information and experiences, new solutions are found quicker in such a CoP than in normal circumstances, and they are put into practice earlier (Andringa & Reyn, 2014; Cummings & van Zee, 2005). In short, in a CoP, the participants learn together in practice. This is different from a Community of Learning - usually organised by an educational institute, in which participants (students, teachers and externals) learn from each other in a societal context. In the CoP, the issue is leading, while in the CoL, the institute is leading. In principle, both forms

are fitted to learn how to deal with complex 'wicked' problems. The CoP as a way of working is 'of all times', although its name and discussion in Dutch practice started around 2000 (Brood & Coenders, 2004).

The CoP Landscape as Location Factor (in Dutch *Landschap als Vestigingsvoorwaarde*) is based on the idea that metropolitan landscape development, while it is often regarded as a cost, is, in fact, a great asset in the economic performance of a region. Among the many hard location factors that businesses weigh when deciding whether to settle or remain in an area, access to talent has become one of the most critical. Talented workers are scarce and only settle in regions of excellent quality of life - strongly correlating with high-quality metropolitan landscape. This makes landscape, usually regarded as a soft factor, a priority for governments who wish to maintain or enhance their business climate and attractiveness. The goal of the CoP is to bring this



Figure 6: Landscape Triennial 2017 book presentation, joining CoP participants, researchers, planners and designers, students, entrepreneurs, citizen groups, politicians and policymakers. Photo Mirande Phernambucq. Printed with permission.

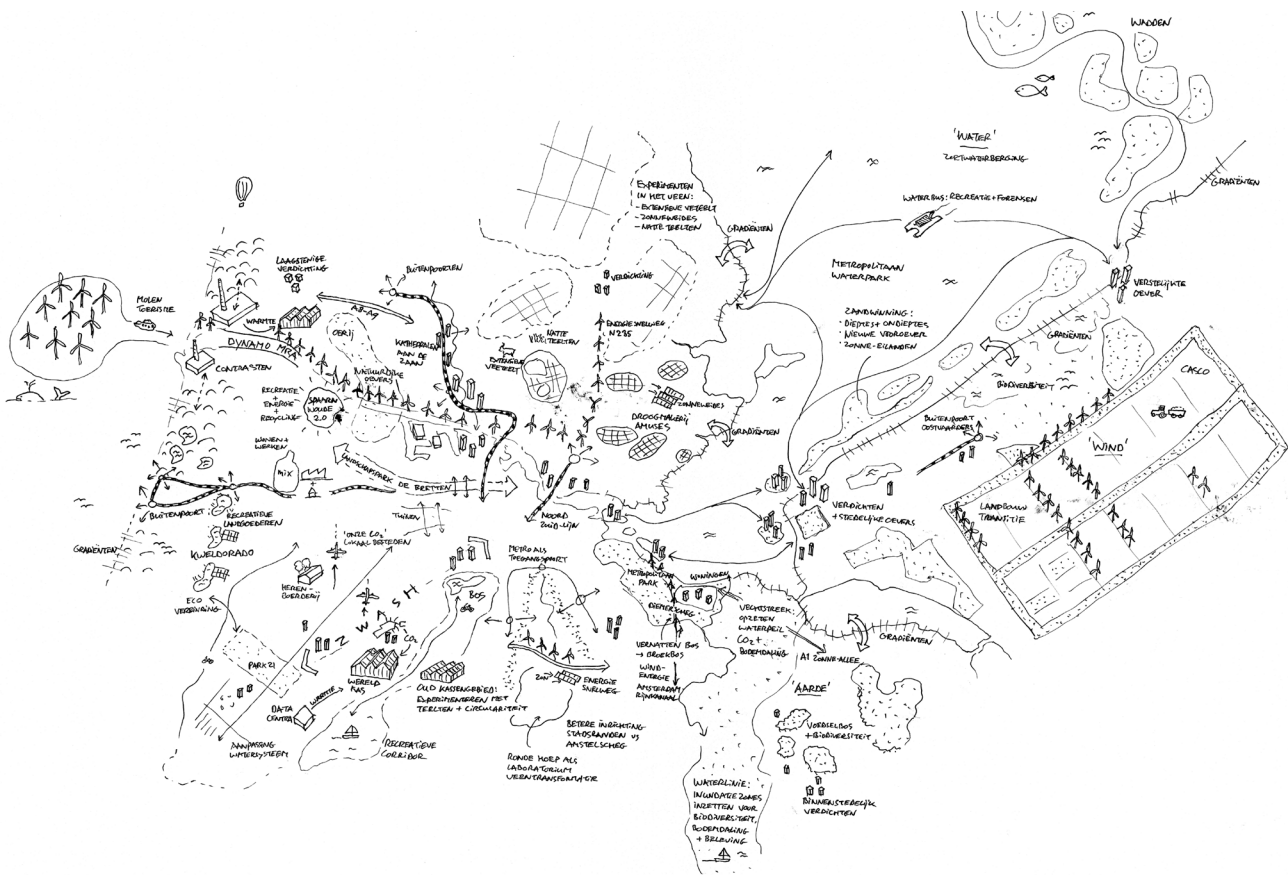


Figure 7: Metropolitan landscape co-development. Compilation of concepts and project ideas from 16 atelier sessions in 8 areas in the Metropolitan Region of Amsterdam. Nefs, 2019

idea into practice through policies and projects and learn as much as possible about the relationship between metropolitan landscape and economy.

Research comparing ten regions of 10 million inhabitants was the starting point for the CoP. The research (Vereniging Deltametropool, 2016) indicated that many metropolises worldwide had already made landscape investments as part of their economic policy, but that this remained a blind spot in the Netherlands' spatial-economic policies. Several Dutch regions reacted with enthusiasm to this message, since they were struggling to get landscape investment on the agenda, and out of the usual defensive discussion. A proactive economic landscape discourse made that possible. Together with three national governmental organisations, four regions founded the CoP to be coordinated by the Deltame-

ropolis Association. The community, which arose from collaborations in 2017 and became formalised in 2018, is funded and programmed to function until 2023.

Besides the founders (National Heritage Agency, National Forest Service, Board of Government Advisors, Deltametropolis Association, and the Provinces of Noord-Brabant, Noord-Holland, Utrecht, and Zuid-Holland), several other organisations participate in the activities of the CoP, including municipalities, researchers, planners, designers, students, entrepreneurs, citizen groups, and politicians. This rich community calls for flexible coordination with over 500 unique participants in events between 2017 and 2020. Participants come and go according to their needs and the timing of their projects. Some ways to keep the CoP members on the same page

are a yearly work conference, a dynamic webpage (Vereniging Deltametropool, 2018), shared content on partner websites, a 3-4 monthly newsletter and a LinkedIn group of ca. 250 members (Vereniging Deltametropool, 2017a).

The CoP's activities range from small, informal peer-to-peer meetings in which participants exchange experiences and focus on one another's practices, to seminars and webinars of between 70 and 100 participants. The CoP has also co-organised parts of the Landscape Triennial 2017 (over 11,000 visitors), where the Landscape as Location Factor was the opening manifestation, and of the 2020 Triennial with the appropriate theme Hightech Highgreen. The involvement of high-tech and other companies in landscape development has become an increasingly important topic in the CoP. Hightech Highgreen focuses on public-private collaborations in landscape development in the Brainport region – the high-tech cluster around Eindhoven, to enhance both the quality of life and the business climate in the region.

The activities of the CoP, directly and indirectly, influence policies about landscape and economy in the Netherlands. The four mentioned provinces (and metropolitan regions in those provinces) explicitly state the goal of Landscape as Location Factor in their visions and other policy documents since 2017, in an increasingly concrete and operational manner (Metropoolregio Amsterdam, 2016; Provincie Noord-Brabant, 2018; PARK Zuid-Holland, 2018; Metropoolregio Utrecht, 2020). Sometimes the CoP organises participatory events to help form new policies on the regional level, for example in the Metropolitan Region of Amsterdam (see Figure 7). When stakeholders in the region are asked how they would like to address issues such as renewable

energy change, urban development, and water management, it turns out that they are willing to suggest alternatives (such as wind turbines) that are normally unwelcome when imposed from above. The recent national environmental strategy (BZK, 2020) also explicitly mentions the idea of landscape as a location factor in various parts of the document.

Knowledge sharing and development is also a part of the CoP's activities. The community has exchanged knowledge about planning and governance with other regions, in the Netherlands and internationally, for example, in Mantua, Toronto, and Birmingham. The CoP develops new knowledge by doing practice-oriented research, usually involving research by design, interviews, comparisons, and best practices. The results are distributed in digital and printed publications, which can be accessed freely under a Creative Commons license. One example is the publication *Spot On*, in which 12 Dutch pilot projects were bundled, including a proposal for the West Brabant region (see Figure 8). Another example is the *Landvestors* project, in which the CoP analysed 12 cases of landscape development by citizens and companies. Lessons for the Netherlands were drawn from these international cases, which can be roughly divided into donation, crowdfunding, and business models. In the next phase of *Landvestors* (from the Deltametropolis Association), landscape architects, planners, and economists



Figure 8: Research by design project, exploring the synergy between biobased agro-chemistry, delta nature development and recreation in the West-Brab



ant region. Studio Marco Vermeulen & Province Noord-Brabant, 2017. Printed with permission.

will apply these lessons to show the potential of private initiative in two high-tech regions with large landscape ambitions and transitions: the aforementioned Brainport and the *Rheinisches Revier* region in Germany.

5. Conclusions

In this chapter, we have looked at several definitions of the metropolitan landscape, and revisited five ways to map it. We have seen that there is a lot of nuance between the rural and the urban realm, and that there are different ways to show this. The metropolitan landscape is clearly a broad concept with many aspects – some of which are more relevant to certain stakeholders and less to others. Certain aspects, such as the confrontation between red and green planning systems, are even invisible within the territory itself. Being the platform where several spatial transitions will take place, the metropolitan landscape should be understandable for professionals and citizens in order for them to come up with integrated and socially acceptable solutions. This calls for a flexible attitude towards the metropolitan landscape and the (plat)forms of collaboration needed to develop it, as well as continuous research – quantitative and qualitative, using design and all other tools available, to enhance the understanding of the metropolitan landscape and share the knowledge.

We have reviewed the founding and activities of the Community of Practice (CoP) Landscape as Location Factor. The CoP demonstrates the demand for broad open (plat)forms of collaboration on metropolitan landscape planning and the need for both grounded knowledge development as well as

informal exchange of experiences and other information among stakeholders. It has shown that, in light of economic prosperity (specifically, quality of life and the fight for talent), the initiative to improve Dutch metropolitan landscapes lies at the national, regional, and local levels. The regional level has become a more dominant player in spatial-economic strategies over recent decades, due to the decentralisation policies of the national government. However, recent discussions suggest that spatial planning on the national level might be making a comeback, and that municipalities still have a large decision-making power in spatial developments. One thing remains certain: the emerging spatial governance structure will need a continuously updated understanding of the metropolitan landscape to deal with the upcoming transitions. Flexible (plat)forms of collaboration and knowledge sharing will play an essential role in that effort.

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Street scene in Amsterdam. Photo by R. Rocco.



Street scene in Delft. Photo by Marcin Dabrowski.



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Regional Network Governance in Spatial Planning

**Constructing a framework to analyse
the influence of regional authorities
in metropolitan areas**

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In spatial planning the importance of the region is increasingly recognised. In the Netherlands and other European countries, responsibilities have been transferred from the national state to the province and (cooperating) municipalities. National challenges like climate adaptation and energy transition rise above the local level and come together at the region – the level between the province and the municipality. The region is usually neither spatially nor administratively bounded. The key issue of this chapter is the question of how regional authorities in the Netherlands influence spatial planning in metropolitan areas. To explore this question, an analytical framework is proposed. Insights from aspects of policy networks, public administration roles, and spatial planning are suitable for building such an analytical framework, and a three-step approach is proposed to analyse policy practices in regional planning.

SPATIAL PLANNING, PUBLIC GOVERNANCE, REGIONAL AUTHORITY, ANALYTICAL FRAMEWORK, POLICY PRACTICE

1. Introduction

In recent decades, patterns of living and working have changed at a high rate. This rapid change involved strong population growth, economic development, and an increase in mobility. All these changes have a major impact on the spatial qualities and features of regions and cities. Authorities at national, regional, and local levels have contributed greatly to these transitions through legislation, policy-making, and the regulation and financing of projects. The responsibility

for spatial planning in the region became increasingly decentralised. For example, in the Netherlands we observed a shift of competences from the national level to provincial and municipal levels. In addition to these measures, the last couple of decades have seen an increase in influence of non-governmental actors such as companies, non-governmental organisations, and other organised citizen groups.

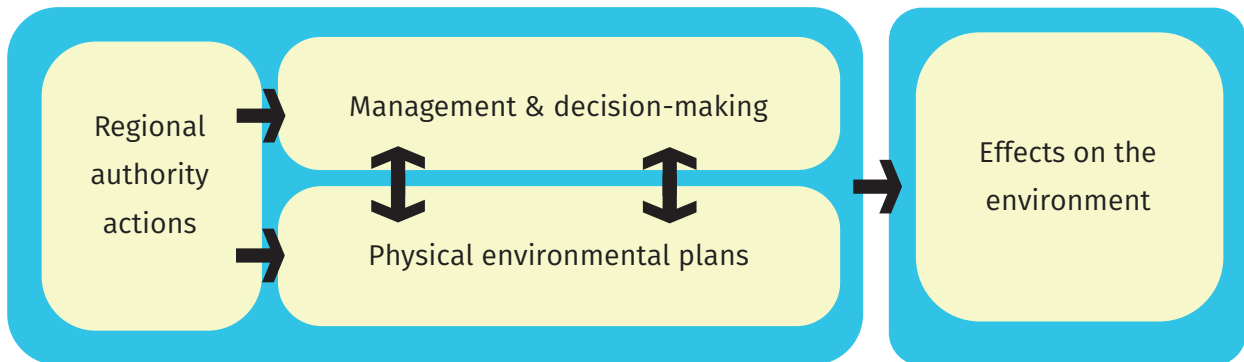


Figure 1: Interaction between the management and decision-making process (administrative process), physical environment plans and the influence of regional authorities.

Informal administrative cooperation in ‘soft spaces’, combined with formal collaborations between municipalities in the region became common in policy practices in many European regions (Houghton et al., 2009; de Vries, 2018; Skelcher et al., 2013 _quoted in Schaap et al., 2018). The administrative structure, with its institutions, sectors, and boundaries, does not always match the functional relationships in the region. Many spatial issues, such as climate adaptation, sustainable energy transition, and regional public transport, occur at a scale that does not correspond to the administrative boundaries of formal authorities like provinces and municipalities (e.g. Hajer et al., 2006; ten Cate, 2019).

In this changing context, regional policy practices can be analysed from the point of how the regional authority influences the decision-making process as well as how this, in turn, causes changes in the physical environment, including the interurban area (see Figure 1). To conduct such an analysis, however, we need a sound research framework.

This chapter proposes such a framework, offering starting points and guidance for researching policy practices at the regional scale. First, it focuses on regionalisation that can be seen all around Europe (Section 2.1) and offers insights into the evolving

collaboration between governmental institutions, companies, and civil society actors within the regional arena (Section 2.2). Then, the chapter overviews the key relevant theoretical aspects on the matter (Sections 3.1 to 3.3) and provides building blocks for constructing a framework (Section 3.4). The attention then shifts to development of a method by which policy practices at the regional scale can be analysed (Section 4). And finally, the chapter closes with a set of conclusions and a discussion of the key take-aways (Section 5).

2. Transition in regional governance

This section discusses the increased significance of the region in spatial planning. The national state has decentralised responsibilities to regional authorities like provinces and (cooperating) municipalities. National issues such as energy transition and climate adaptation must be made concrete in the region and resolved in combination with regional challenges, such as public transport and conservation of natural areas. Classic provincial responsibilities, like supervising, controlling, and redrawing

municipalities, are mentioned. The province as a regional authority in the Netherlands has added to the organisational and coordinating role in regional environmental policy. Non-statutory or informal cooperation in regional planning networks is also common for regional authorities.

2.1 Regionalisation

The region is a functional concept that refers to the supralocal coherence of functions like housing, mobility, agriculture, and so on. The region is a spatially and economically coherent area that is (usually) neither spatially nor administratively bounded (Bosma, 1993; de Zwart, 2015; Raad voor leefomgeving en infrastructuur, 2019). The region is the scale level at which many economic activities as well as the daily lives of people and businesses take place, with informal ways of managing and coordination activities. National challenges, like climate adaptation and energy transition, rise above the local scale and come together at the regional level. The challenges must be made concrete in and by the actors in the region in connection with the issues of the region in itself, for example, regional infrastructure, nature restoration, and housing (Raad voor leefomgeving en infrastructuur, 2019; Verdaas et al., 2020).

Not only in the Netherlands, but also in different European democracies, a strong regionalisation (i.e. more autonomy and responsibility for the region) has occurred. However, there are large differences between countries concerning the way in which regional government is organised. Options involve having a regional parliament (or not); having a large (or limited) role for the regional government in managing regional affairs; the national government having much (or little) influence on what the region-

al authorities do; having a degree of fiscal autonomy, or being dependent on financial transfers from the central government; etc. (Hooghe et al., 2010). In each country, regional government has its own specific history and culture. Also, in the policy domain of spatial and physical planning, responsibilities have been transferred from the national to the regional administration. Examples include: the (urban) regions in France, the *Länder* and (Land) *kreise* in Germany, Italy with its *città metropolitane*, the cantons of Switzerland (Larsson, 2006; Booth et al., 2007; Muggli, 2016). Although the focus is on the physical environment, in many countries spatial planning often does relate to economic and social planning as well as to sectoral planning.

The take-away message is that the importance of the region is increasingly recognised, both in the Netherlands and in several other European countries. Responsibilities for spatial and physical planning have often been (partly) transferred from national state to the regional government. However, there are major differences between countries. Foreign planning systems can hardly be applied in the Netherlands, due to the often-large differences in the administrative context.

2.2 Regional collaboration

In the decentralised unitary state of the Netherlands, the province is the formal regional area authority, located below the national government and above municipal governments. The connection between the levels of government is not based on hierarchical supremacy, however, but on agreement and consensus building (van Lier, 2007). The classic provincial responsibilities are mainly supervising and controlling municipalities, as well as sometimes

restructuring municipal boundaries. Additional tasks, defined in the Province Act of 1962, are to organise and coordinate regional environmental policy. The province gains its legitimacy directly from the voters. In addition to the province as a regional area authority, there is sometimes also structural cooperation between municipalities around specific issues at the regional level, based on the Joint Regulations Act (the *Wet gemeenschappelijke regelingen*).

Parallel to its administrative position, the province also manages spatial processes in an informal way. This refers to ad hoc administrative cooperation in networks, known as 'soft spaces' delimited by 'fuzzy boundaries' (Allmendinger et al., 2015; Haughton et al., 2009). Non-statutory or informal cooperation in regional planning is also common in and beyond Europe. Soft spaces exist alongside, but separate from, the spatial planning plans and processes of elected governing institutions at the local, regional, or national level. They do not replace the 'hard spaces' bounded by administrative borders between jurisdictions but are complementary to them and provide additional opportunities for new developments in a region or municipality (Allmendinger & Haughton, 2009; Waterhout, 2010). Soft spaces within the provincial boundaries are usually smaller than the territory of the province. The boundaries of these soft spaces do not usually coincide with territorial boundaries of a province or municipality. Although soft spaces derive a certain legitimate status as elected representatives from that origin, they can equally be interpreted as having a lack of legitimacy and representativeness because such 'hybrid' forms of governance often lack direct democratic legitimacy (Engel, 2001; Skelcher et al., 2013 (cited in Schaap et al., 2018)).

3. Theoretical exploration

An important characteristic of regional governance in the spatial domain is its acting in a network environment. The theoretical exploration of this chapter is approached from three aspects central to a network approach. The first aspect is the multi-layered multi-actor one, where cooperation between public, private, and civil society actors is a central element for achieving common (spatial) goals. Continuous interaction between actors, and the interdependence and variety of actors and interests, are features of this aspect. A closer look at public administration roles is a second aspect of this governance approach and is oriented towards the legal responsibilities of the regional authority and its informal role as a participant in the policy process. A third aspect, which covers plans and planning, shows that the spatial plan and spatial planning have increasingly become a guideline for the future and a frame of reference for consultation.

There is a certain overlap between these different aspects. This is a result of the decision to view the role of the regional governance from a network point of view. This is reflected in all three aspects. All three together can provide the building blocks for an empirical research method or an analytical framework to identify, analyse, and compare policy practices. In next section, the aspects are explained and conclusions drawn regarding building blocks for an analytical framework for policy practices.

3.1 Multi-layered multi-actor aspect

The various participants that 'govern' together in what is known as the governance approach (Klijn & Koppenjan, 1998; Teisman et al., 2018) act as a network. 'Network' adds a nuance to governance: it is about using networks to achieve certain goals (Sørensen & Torfing, 2007). Until the end of the last century, formal institutions (e.g. national government, province, municipality) were the organising principle in the governance of the region. In the new century, the network has become the organising principle (Teisman, 2001). Actors regularly meet (and need) each other in networks. They exchange knowledge, create shared agendas, and develop shared projects. If participants in a network have to perform something, they must organise this in a network. Actors should – each from their own core task – jointly make agreements about the entire process of 'driving the development', the contributions of the partners and the mutual recognition of each other's added value, as well as agreements about management and about the way in which participants are accountable for jointly achieved results. In policy practice, joint accountability is still exclusively the responsibility of the formal organisations (Teisman & Voermans, 2017). The principle of a network is that several actors actively operate together to achieve common goals.

The multi-layered (also called multi-level) and multi-actor aspect was a reaction to the rational government model that assumed hierarchical control, with complete, scientific, and expert information (Simon, 1957; Lindblom, 1959; Dunn, 1981) with the government acting in the role of 'market master' (Teisman & Voermans, 2017). The multi-layered

multi-actor approach emphasises the transition from government to governance (Hajer & Wagenaar, 2003), embedded in an institutional context of independently operating actors and networks. In this approach, the regional administration is a 'chain partner' (Teisman & Voermans, 2017). Regional (spatial) policy is created in tightly interwoven networks between a large number of public and non-governmental actors who depend on each other and cannot realise their own goals without resources that are in the possession of other actors (Klijn, 1996; Rhodes, 1990). Hanf and Scharpf (1978) also points to the dynamics that relate to the outcomes of interactions and to the strategies of the actors involved. The final result – most of the time reached after dispute, consultation, and/or negotiation – is a consequence of a complex interplay of the strategies of all the actors. To analyse networks, van Waarden (1992) distinguishes seven dimensions: actors, functions, structure, institutional relations, rules of play, power relations, and actor strategy. Van Bueren et al. (2003) uses a threefold division: 1) a series of interactions, 2) arenas as places where actors act (Cohen et al., 1972; Koppenjan, 1993), 3) networks of stable relationships between mutually dependent actors (Rhodes, 1997; Kickert et al., 1997). Enserink et al. (2010) also points out the need to not only analyse networks but also actors and their environments. He defines an 'actor' as a social entity, a person or an organisation that can act or at least influence a decision. His method of analysis focuses on the actor's environment to maximise opportunities for cooperation and minimise threats.

Because the key issue in this chapter is the question of how regional authorities in the Netherlands influence spatial planning in metropolitan areas, it is relevant to elaborate on the special position and

responsibility of the regional government in network governance. The section below will examine the specific role of public administration.

3.2 Public administration aspect

As a public actor, the (regional) administration has a specific role in managing policy-making in a network structure involving several actors. Due to the divergent interests of those actors, the administration must adopt an arbitrator role, whereby it must navigate and reach consensus between divergent or mutually contradictory interests. In order to function as a government partner in a network environment, power must take on the form of authority. The classic institutions of state, such as the national, provincial, and local governments, are challenged in the network structure to go along with the renewal of thinking about participation and democracy. The institutions have to deal with, among other things, citizen groups and companies (Hajer, 2003). The network configuration in regional policy practices, typified by a participatory and democratic policy process, are influenced by multiple actors.

The Netherlands Environmental Assessment Agency (PBL) and the Netherlands School for Public Administration (NSOB) have distinguished four perceptions of and conscious choices in public administration roles:

- Public Administration: Legitimacy and lawfulness is the basis, hierarchical management, a clear mandate and clear responsibilities, with rules and procedures
- New Public Management: Efficient and measurable results. The government is the client and citizens are the customers
- Network governance: Result-oriented coalitions

and agreements, government and society manage together

- Societal Resilience: the participating government with societal dynamics as the basis for the government's work

It is important to note that the four roles are superimposed like layers and are relevant simultaneously (van der Steen et al., 2015). Legitimacy and performance form the basis on which other 'layers' are placed. Administrative organisations are mixed forms in which elements from the different roles are simultaneously present.

Van der Steen and van Buuren (2018) apply this 'model of roles' from the administrative roles to routes for spatial policy. They see most opportunities for participatory and social policy development as possible routes for spatial policy. In participative policy development it is the regional administration that is in the lead in a participatory process. There is cooperation with civil society organisations, and tasks, identified by the administrations, are formed in a constellation by the government, often through social umbrella organisations and representative actors. Societal policy development creates space in the regional administration for civil society organisations through concrete programme lines. The government invites and acts in partnership from a position of secondary importance. Parties jointly define the issues that are important to them and around which they wish to organise their efforts. The administration can initiate this process. For example, by setting long-term ambitions and inviting others to contribute.

The regional government derives its legitimacy from administrative power granted by rule of law, and from principles of good governance, such as openness, transparency, possibility of participation,

availability of information, respect for property, justice, and democracy (Tompkins et al., 2008; Scharpf, 1997; Dryzek, 1990; Pahl-Wostl et al., 2008 (cited in van Buuren et al., 2014)). It is in line with the first perception of Public Administration (see above) and of the 'model' of the Environmental Assessment Agency (PBL) and the Netherlands School for Public Administration (NSOB) (van der Steen, 2015). In a network environment, legitimacy translates into the possibility for actors to participate and influence decisions, in the (quality of) interaction and reflection between actors, and the outcomes of processes that reflect the influence of the actors. This fits the second perception (New Public Management) and the third perception (Network Governance) of the PBL/NSOB model. An open and interactive process is a necessity, but it is not a sufficient condition for a legitimate process. Decision-makers or other authorities should also adopt the outcomes, but this involves a value debate with a choice (in broad terms) between a neo-liberal and a social-democratic approach. There does not yet seem to be a solution to this permanent friction between the two value systems and their institutional regimes (Edelenbos, 2005).

As can be seen, governance aspects, with particular attention being paid to the special position of public administration, were the focus of this sub-section; the spatial plan and planning aspects are examined in the following one.

3.3 Spatial plan and planning aspect

Spatial planning is a process of decision-making by the government in which the focus is mainly on the organisation of the decision-making process by indicating options (de Jonge, 2009). It can focus

on long-term but also short-term processes and on various levels of scale, from local to international. Characteristic elements of spatial planning are action orientation and communication as well as the production of legislation and policy (Carmona & Sieh, 2008; Sanyal, 2005; Knieling & Othengrafen, 2009 (cited in Kempenaar, 2017)). Strategic (spatial) planning is a mix of concepts, procedures, and instruments that need to be carefully aligned in order to achieve a desired future (Albrechts, 2001). In this aspect, the 'client' is important – often a professional public institution – that has a link with a strategic, substantive subject or area and with a forum or arena in which dialogue takes place. Strategic spatial planning is long-term planning for area transformations that require new public institutions. It requires an integrated approach to economic, social, and cultural tasks and issues, relating to the physical living environment (Albrechts, 2001; Albrechts et al., 2003).

In a spatial planning aspect, the 'plan' is the vehicle for the process. In a 'conformance approach', described by Mastop and Faludi (1997), a plan is regarded as a blueprint that must be followed in order to achieve an intended goal. Plans are, in that view, simply translated into policies and methods implemented to address specific problems and to achieve expected results. Mastop and Faludi distance themselves from a conformance method and approach the plan from the perspective of social interaction. A method of planning in which several agencies participate simultaneously fits much better with policy practice: the negotiation planning (van der Cammen, 1982), which is in line with the multi-actor approach (Klijn, 1996; 1997; Blom-Hansen, 1997; Rhodes, 1997; Teisman, 2001). The aim of this planning process is to reach consensus leading to collaborative de-

cision-making (Rooij et al., 2019). Discussion and planning notes are primarily written for interagency consultation. Van der Cammen's negotiation method – referred to by others as the communicative turn in spatial planning (Healey, 1993 (cited in Zonneveld, 2011)) is an accepted method for creating a spatial plan. In a 'performance approach', planning is an incremental, continuous process of transformations, adaptations, and decision-making (Mastop & Faludi, 1997). The instruments are spread among different actors. A main line is connecting the 'administrative power' of the different actors. Deviations from plans are not experienced as problematic. They are often necessary to achieve results. A strategic plan is a dynamic overview of agreements reached. It is an indicative plan that serves as a reference for negotiations (Faludi & van der Valk, 1994). A strategic plan, according to Faludi and van der Valk, is both a guideline and a source of information for subsequent decision-making.

The changing methodology of spatial planning has become very dynamic since the turn of the century. It also needs to address new challenges, such as climate change, migration, globalisation, socio-spatial fragmentation, and sustainable development. This requires an interdisciplinary and integrative methodology. Not only with regard to the object of spatial planning (i.e. what to do?), but also the governance process and the democratic involvement of citizens (i.e. how to do it?). These have been decisive in adapting the methodology. Social developments, such as deregulation, decentralisation, and the digital contribution to planning processes, have also influenced traditional spatial planning (Rooij et al., 2019).

Using the above theories on planning, Spit and Zoete (2016) have developed a model for spatial

planning. This model distinguishes three dimensions of spatial planning: 1) object of planning, which represents the content of the issue with regional features and regional development, 2) planning process, or the role of public and private actors and their coalitions and coordination, and 3) planning context, or the norms and values and social rules, the institutions, and the positions of the actors. In this model of spatial planning, the three dimensions interact strongly with each other. The regional outcome – the spatial 'trade-off' – is established in decisions and agreements. The outcome of mutual interaction also influences the continuous process of fine-tuning and negotiation (Spit & Zoete, 2009). This creates specific tensions between the components. Social developments, e.g. social fragmentation, globalisation, and individualisation, influence the political system that is challenged to adapt (Flyvbjerg, 1998; Forester, 1989 (cited in Waterhout, 2010)). Regulation is probably the most important 'footprint' of the institutional context on planning. Planning competences are spread across various authorities (Healey, 2007; Davoudi & Strange, 2009 (cited in Waterhout, 2010)).

3.4 Building blocks for a framework

The above sub-sections have outlined the governance aspect with special attention to public administration roles and the aspect of the significance of plans and planning in the spatial domain. These aspects do not yet immediately provide an appropriate, field-tested method that can be used directly for reconstructing policy practices. On the other hand, key notions, such as network structure, role and perception of actors, interaction between actors, spatial plan, process, and tool sets are im-

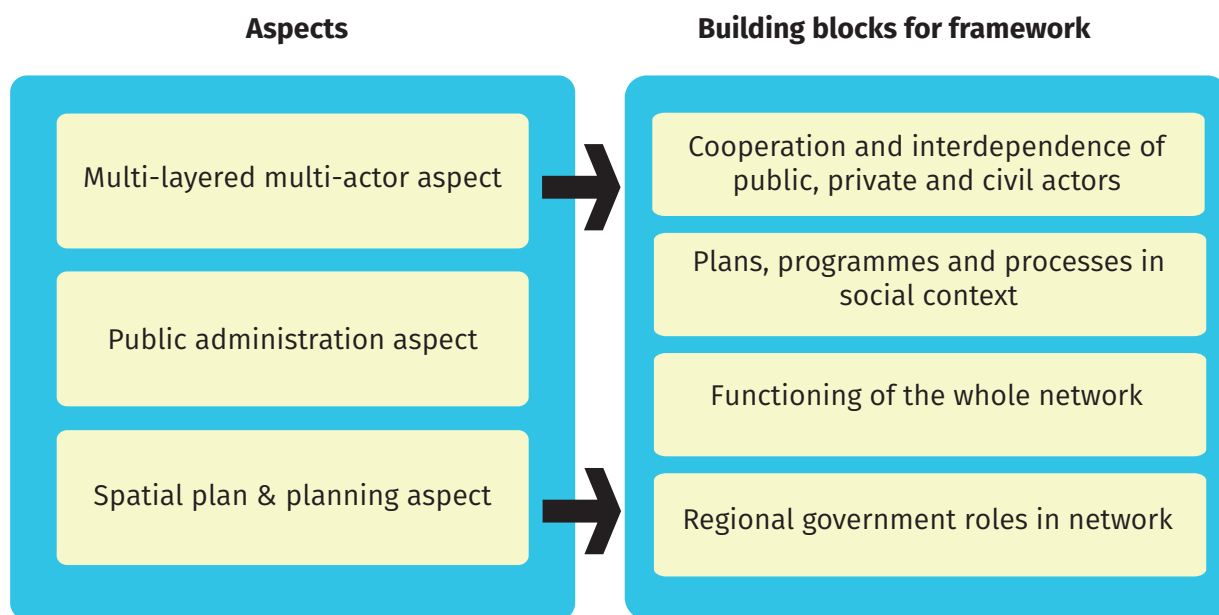


Figure 2: Aspects from viewpoints of governance, public administration and spatial plan and planning, leading to building blocks for constructing a framework.

portant. The aspects and their key notions provide building blocks for constructing a framework to analyse and assess regional policy practices.

The next building blocks (as shown in Figure 2) are formulated thus:

- Cooperation and interdependence of public, private, and social actors working in an open, transparent process in a network structure to achieve common (spatial) goals
- Relationships between challenges, plans, programmes, and the process followed in the social context
- Functioning of the network with multiple actors, with different perceptions, at different levels of scale, in multiple arenas, and through various decision-making processes
- Acting of the regional government in the network, based on responsibilities and roles of the regional government

In the next section, a framework (with operation-

al criteria) is constructed using the building blocks outlined above.

4. Analytical framework

Based on the building blocks derived from the theoretical exploration seen above (see sub-section 3.4), an analytical and assessment framework is developed to reconstruct policy practices. The methodology distinguishes three steps in which operational criteria are used: Step 1: identifying policy practice; Step 2: network functioning; Step 3: regional ways of acting.

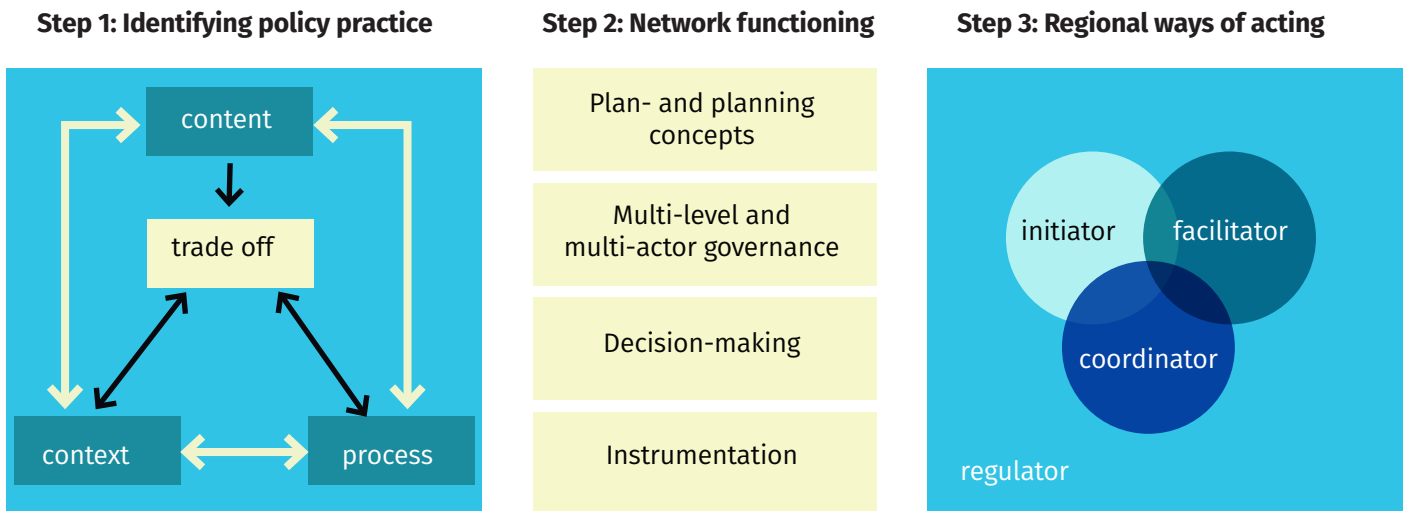


Figure 3: Analysis framework in three steps to analyse policy practices.

Step 1: Identifying policy practice

The facts are recorded as neutrally as possible, in words, tables, figures, and maps. The facts are registered according to the dimensions:

- Content: what are the challenges, the strategy, the plan, the tools?
- Process: what is the way of acting with the issue?
- Context: what is the (societal) environment of the issue?

The three dimensions interact strongly and can have real spatial impact after decision-making about plans and their implementation. Through a literature study, document analysis, and interviews with key players, relevant factual information is collected.

Step 2: Network functioning

Analysing the actions in the network, using operational criteria such as:

- Plan and planning concepts: what are substantive concepts and process-oriented methods?
- Multi-level and multi-actor governance: how

actors are managing networks from different levels of scale, by actors from different levels, in different arenas?

- Decision-making: is it formally on the basis of legality or informally via (ad hoc) cooperation? whether or not in the form of key decisions?
- Instrumentation: which 'hard' instruments, such as laws and regulations, ownership, finance, and/or 'soft' instruments, such as programme, agreement, communication and consultation, are used?

Step 3: Regional ways of acting

Four ideal types are distinguished which are based on regional roles in policy practice and the way in which the province uses its competences. The roles mentioned below either require active intervention by the province (for the first two roles) or are more passive in character (for the third and fourth roles):

- Initiator: is the regional authority an agenda setter, an inspirer, and/or a catalyst?
- Coordinator: is the regional authority the project leader, director, and/or mediator?

- Facilitator: is the regional authority a process adviser, knowledge provider, and/or financial (co-) funder?
- Regulator: is the regional authority the administrative partner, regulator, and/or supervisor?

5. Conclusions and discussion

In last few decades the significance of the region has increased, not only in the Netherlands, but also in several European countries. Responsibilities for spatial and physical planning have been (partly) transferred from the national state to regional governments. However, there are major differences between countries. Foreign planning systems can hardly be applied in the Netherlands, due to (often large) differences in the administrative context.

Many spatial issues, such as climate adaptation, sustainable energy transition, and regional public transport, occur at a scale that does not correspond to the administrative boundaries of formal authorities in the Netherlands, like provinces and municipalities (Hajer et al., 2006; ten Cate, 2019).

The regional government derives its legitimacy and administrative power from the rule of law and from principles of good governance, such as openness, transparency, possibility of participation, availability of information, respect for property, justice, and democracy. Due to various divergent interests, public governments have a specific role. They must adopt an arbitrating role, whereby they must choose from divergent or mutually contradictory interests. Parallel to this administrative position, regional government also manages spatial processes in an informal way. This refers to ad hoc administrative cooperation in networks, known as 'soft spaces', and delimited by 'fuzzy boundaries' (Allmendinger

et al., 2015; Haughton et al., 2009).

Looking for an analytical framework to examine the influence of regional authorities in metropolitan areas – the main focus of this chapter – methods from different aspects have been explored. None of these aspects provide an appropriate, field-tested method that can be used directly for reconstructing policy practices. However, key notions, such as network structure, role and perception of actors, interaction between actors, spatial plan, process, and tool sets, can provide the building blocks for constructing a specific framework to analyse regional policy practices.

A three-step analysis framework has been developed: 1) identifying policy practices, 2) network functioning, and 3) regional ways of acting. This framework is founded on building blocks derived from a multi-layered, multi-level aspect, public administration roles, and a spatial planning aspect. The advantage is that one can use information (key notes) derived from these aspects and translate them into building blocks to construct a framework by which regional policy practices can be compared.

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