# POLICY DESIGN AND INFRASTRUCTURE PLANNING

FINDING TOOLS TO PROMOTE LAND USE TRANSPORT INTEGRATION

## **MARIJN T. VAN GEET**



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## POLICY DESIGN AND INFRASTRUCTURE PLANNING

Finding tools to promote land use transport integration

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## POLICY DESIGN AND INFRASTRUCTURE PLANNING

Finding tools to promote land use transport integration

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## The power of qualitative research



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## INTRODUCTION: A POLICY DESIGN APPROACH TO LAND USE AND TRANSPORT INTEGRATION

## 1.1 LAND USE AND TRANSPORT INTEGRATION: AN ONGOING STRUGGLE

The goal to integrate land use and transport planning has been part of Dutch policy for decades (Arts et al., 2016a; V&W, 1988), nevertheless the topic is currently receiving renewed interest (see PBL, 2014b; IBO Werkgroep, 2016; Rli, 2016, 2018; NSOB, 2017; CRa, 2018, 2019a, 2019b). This increased concern for establishing better integration of land use and transport planning comes at a time when the Netherlands is facing a pressing housing shortage of one million houses until 2040 (PBL, 2016), while congestion is increasing in all transport networks (I&M, 2017). Even though these problems are inherently interconnected and require an integrated approach (CRa, 2019a), several studies underline that Dutch urban and infrastructural development is often segmented and subsequently many economic, social and environmental opportunities go to waste (Heeres, 2017; PBL, 2014b; Rli, 2016, 2018). Similarly, CRa (2018) underlined that these "different policy domains need to be linked in order for policy to be effective [...] otherwise future governments will pay the societal cost of inappropriate decisions made today".

To improve the planning of land use and transport, Dutch policy studies collectively advocate a regional approach that integrates transport infrastructure and land use planning. The regional scale is of vital importance because this is where international, national, regional and local travel patterns come together (Rli, 2016). Furthermore, most of people's travel patterns take place at the regional level (PBL, 2014a; Rli, 2018). Ultimately, such a regional approach revolves around matching configurations of land-use patterns and transport infrastructure networks to support broader regional policy objectives, such as economic vitality, accessibility, sustainable mobility, effective use of public budgets, liveability and climate adaptation (CRa, 2018; NSOB, 2017; PBL, 2014b; Rli, 2018). Hence, integrating land use and transport could be considered as a means to serve broader societal and economic regional goals (PBL, 2014b). Rli (2016) emphasized that in order to achieve an integrated planning of transport infrastructure and land use development, new connections need to be made through collaboration between sectoral policies between and within different tiers of government (Rli, 2016).

Despite all the measures that Dutch governments have taken to encourage collaboration between tiers of government involved in the planning and development of land use and transport infrastructure, fragmented government action often prevails. The Dutch Ministry of Infrastructure and Water Management and its executive agency *Rijkswaterstaat* have been encouraging land use and transport integration (LUTI) in a variety of ways. For example, they have introduced shared regional policy agendas as new planning instruments, and they have broadened the scope of decision-making on infrastructure planning and programming. In addition, new administrative procedures required shared decision-making between national and regional governments on infrastructure investment, and they stimulated public-public and public-private partnerships for the procurement and contracting of infrastructure projects (Heeres, 2017; Leendertse, 2015; Leendertse and Arts, 2020; Lenferink, 2013; NSOB, 2017). Nevertheless, LUTI is still perceived as a struggle by Dutch policy makers, as attempts to achieve integration are often frustrated due to a variety of factors (Lamberigts et al., 2016). The most frequently described barriers to LUTI in the Dutch context include the continuing dominance of traditional, sectoral thinking, the strong drive for new infrastructure development projects, and the gap between the formation and implementation stages of the policy process (Arts et al., 2016a; Straatemeier, 2019; Switzer, 2019). Overall, the required collaboration between land use and transport is often not achieved because the boundaries between policy sectors and levels of government prove difficult to overcome.

## The need to integrate land use and transport planning is growing

The growing ambition for LUTI in the Netherlands is in line with the need to adopt integrated approaches to urban and transport planning, which has garnered widespread international attention (UN-Habitat, 2013). It is now widely recognized that the traditional predict-and-provide approach to transport planning, in which the expected growth in traffic is met by investing in additional road capacity, is obsolete and counterproductive (e.g. Meyer & Miller, 2001; Bertolini, 2012; Bliemer et al., 2016). This conventional strategy is considered unsustainable, as increasing infrastructure capacity generally results in more travel, dispersed urban development and enhanced car dependency. Furthermore, this strategy's unimodal perspective fails to take into account the interrelatedness of different infrastructure networks and ignores the interaction between transport and land use.

It is important to take these interactions between land use and transport into account, because these can help finding sustainable ways to deal with the continuous global growth in transport demand (ITF, 2019a) and rapid urbanization (UN-Habitat, 2013) that is putting increasing pressure on the accessibility and liveability of cities and regions. Integrated approaches to land use and transport are needed, as they can help to accommodate these trends while preventing the economic losses and increased pollution resulting from increasing congestion. For example, research shows that changes in the built environment can help moderate travel demand, stimulate greater efficiency of the transport system and reduce trip length (Banister, 2008; Ewing & Cervero, 2001). Furthermore, certain land-use configurations can encourage a modal shift to the use of sustainable modes of transport such as bicycles and trains (Bertolini et al., 2005). Additionally, Heeres (2017) showed that LUTI can reduce the negative externalities that infrastructure development exerts on its surroundings. For these and many other social, economic and environmental benefits of integration, governments have widely adopted goals on land use and transport integration (Arts et al., 2016a; Button & Hensher, 2005; UN-Habitat, 2013). Despite these integrated ambitions, policy outcomes are usually fragmented (Duffhues & Bertolini, 2016; UN-Habitat, 2013) because "the steps required to maximize the synergy between transport and land use objectives at the multi-scalar levels of decision-making are often absent" (Hull, 2010). A variety of studies have addressed these concerns of fragmentation as well as the barriers that impede integration. Even though these studies have been valuable as they have

improved understanding of the struggle of LUTI, successfully overcoming these barriers remains a key concern.

As there is a growing need to develop and implement integrated land-use and transport solutions, new approaches to successfully achieving LUTI are highly relevant. This study proposes a policy design approach to LUTI as novel perspective on achieving LUTI. Essentially, policy design revolves around finding the right mix of policy instruments to support policy goals, in order to attain the desired outcomes. Although policy design has been receiving increasing attention in policy integration literature (Candel & Biesbroek, 2016; Peters, 2018a), to the best of our knowledge it has not yet been applied in the context of achieving integrated planning of land use and transport infrastructure development.

Serving as the conceptual foundation of the thesis, this introductory chapter presents a theoretical perspective on how and why policy design is relevant to bringing about LUTI. This chapter is organized as follows: the next section conceptualizes LUTI and addresses the key benefits of and barriers to LUTI, based on the existing body of literature. Subsequently, section 1.3 presents the key principles of policy design as a means of achieving the desired policy outcomes – in other words, policy design effectiveness. The fourth section begins by discussing the policy design approach to LUTI from a theoretical perspective and its relevance to the existing body of knowledge, and then presents the study's conceptual model. The final three sections present the research scope and research questions, the research design and the outline of this study.

## **1.2 LUTI AS A CONCEPT AND HOW IT IS PURSUED**

Ever since the relationship between land use and transport was put forward by Mitchell and Rapkin (1954), many scholars have contributed to our understanding of the comprehensive and intricate reciprocal relationship between the land use system and the transport system (e.g. Kelly, 1994; Wegener & Fürst, 1999; Ewing & Cervero, 2001). Initially, these studies stressed the need to integrate land use and transport policy in order to enhance strategic policy goals such as accessibility or sustainable mobility (Banister, 2008; Bertolini et al., 2005). Later, however, scholars also developed a more operational, project-oriented approach to land use and transport integration (e.g. Heeres et al., 2012; Lahdenperä, 2012; Klakegg et al., 2016). Klakegg et al. (2016) focused on improving the delivery of transport infrastructure in integrated land use and infrastructure development projects. These two approaches to LUTI are discussed in greater detail below.

## Integrating land use policy and transport policy

At a strategic level, ambitions for the integration of land use policy and transport policy principally revolve around the notion that the access provided by infrastructure

networks influences urban development patterns, while at the same time transport patterns, volumes and modal split are largely a function of land use distributions (Geurs & van Wee, 2004). This reciprocal relationship between land use and transport is conceptualized by the notion of *accessibility* (Hull, 2008; Straatemeier, 2019), which is a concept at the heart of land use transport policy integration, which has been widely discussed in transport literature and which has been adopted as a policy goal by many governments all over the world (UN-Habitat, 2013).

Accessibility has been defined and operationalized in several ways, but it essentially captures the two-way interaction between land use and transport systems. On the one hand, the distribution of land uses determines the locations of human activities such as living, shopping and leisure. The distribution of these activities in space requires transport to overcome the distance between locations of activities. On the other hand, the impact of transport on land use is expressed in terms of accessibility, i.e. the number and diversity of places of activity that can be reached within a given travel time and/or cost (Bertolini et al., 2005). Accessibility of locations co-determines how the land use system develops as higher accessibility increases the attractiveness of a location for all types of land use (Wegener & Fürst, 1999).

From an accessibility perspective, LUTI is generally aimed at devising "an optimum spatial organization of activities and a well-balanced transport system linking these activities" (Wegener & Fürst, 1999, p.76) to serve economic, social and/or environmental purposes (Straatemeier, 2008). From an economic perspective, Eddington (2006) concluded that "there is a clear evidence that a comprehensive and high-performing transport system is an important enabler of sustained economic prosperity... [However,] transport cannot of itself create growth: it is an enabler that can improve productivity when other conditions are right". Similarly, Banister & Berechman (2001) concluded that devising complementary policies is the crucial factor in influencing and strengthening the potential impact of transport investment on local economic development. From a social perspective, accessibility can benefit social inclusion and social justice (see e.g. Farrington & Farrington, 2005; Gudmundsson et al., 2015). Accessibility influences the extent to which people can participate in society by engaging them in a range of activities, including healthcare, employment and education. In addition to these economic and social aspects, the environmental perspective to accessibility has been receiving the most attention (Banister et al., 2011; Bache et al., 2015). Successfully reducing the environmental impact of transport by reducing travel distance or promoting more sustainable travel options such as walking, cycling and public transport is highly dependent on complementary land use planning interventions. For example, urban density, mixed land use, neighbourhood design, proximity and distance to public transport connections all need to be taken into account to create cities that are less car-dependent (OECD, 2002; van Wee et al., 2013). Bertolini et al. (2005) argued that ultimately these economic, social and environmental goals will be combined and 'sustainable accessibility' will be achieved.

### Integrating land use development and infrastructure development

At an operational level, LUTI emerged as a strategy to improve project delivery by finding synergies in combining land use and infrastructure development. Traditional sectoral or 'line-oriented' approaches to infrastructure development have been shown to often give rise to intersectoral conflicts, social resistance, and budget and time overruns (van den Brink, 2009; Heeres et al., 2012). Combining infrastructure with other land use developments, such as housing, energy, nature and recreation, may benefit project lead time by reducing conflicts and resistance, as it allows different interests to be combined (Arts, 2007; Elverding et al., 2008; Heeres, 2017). Furthermore, combining transport infrastructure development (e.g. roads and railways) with local land use developments has been shown to improve the societal, economic and environmental revenue of projects (Arts et al., 2014, 2016b; Bertolini et al., 2005; Mottee et al., 2020).

Transit-oriented development (TOD) and the area-oriented approach are two concepts that are illustrative of land use transport project integration. TOD is often defined as "mixed-use development near and/or oriented to mass-transit facilities" (Tan, 2013; Thomas et al., 2018, p.1201). It promotes sustainable urban development (Papa & Bertolini, 2015) by integrating land use and transport by centring compact, high density, mixed land use around well-served transit stations that are characterized by pedestrian and cycle-friendly public spaces (Cervero et al., 2002). Area-oriented infrastructure planning is directed at widening the scope of infrastructure projects to serve other land use development goals, such as housing, energy or nature development (Heeres et al., 2012; Spijkerboer et al., 2019; Teisman & Klijn, 2002). Besides being able to serve a broader range of policy goals, infrastructure and land use development has been shown to successfully reduce the impact of infrastructure on its surroundings, to enhance overall outcomes for an area in terms of higher quality and sustainability, and to provide more benefits in a better, faster and cheaper way (Arts et al., 2016b; Heeres, 2017).

### Land use and transport integration: a challenge of governance

As responsibilities for land use and transport are dispersed throughout public administration, LUTI is often described as a governance challenge that requires collaboration across horizontal and vertical administrative boundaries (Arts & Faith-Ell, 2012; Hull, 2010; Johansson et al., 2018; Marsden & Reardon, 2017; Marshall & Banister, 2007; Tornberg & Odhage, 2018; Willson, 2001). Regardless of whether the underlying motivation for integrating land use and transport is promoting sustainable accessibility, stimulating social inclusion or improving project delivery, LUTI is a "complex process, full of negotiations and contextually defined relationships among departments and authorities at different tiers of governments and from various policy areas" (Mu & De Jong, 2016, p. 56). On the one hand, all transport systems consist of multimodal networks of interconnected rail (including stations, highspeed rail, light rail and metro), road (including highways, access roads, bus stops and bicycle paths) and water infrastructure (including waterways, locks and weirs) at different spatial scales: corridors at the national or international level, daily urban systems at the regional / metropolitan level and the built environment at the local level (Arts et al., 2014). The roles and responsibilities related to these different modes and scales are divided between a wide variety of actors. Similarly, land use planning is dispersed both horizontally, i.e. between policy sectors, and vertically, i.e. across levels of government (OECD, 2017a). In addition to transport, sectoral policy on housing, economy, industry, agriculture, nature, energy and tourism will influence how land is used. Despite the interrelation that may exist between sectoral issues, they are generally managed in separate siloes and responsibilities, and accountability on territorial development is divided among different levels of government (OECD, 2017a). In some countries, the national government still exerts a strong influence on planning at lower levels, while in other counties, a regional authority regulates land use planning or local authorities have full control over land use planning (OECD, 2017b).

This multi-level and cross-sectoral character of the land use and the transport systems helps to understand why LUTI can be considered a challenge to governance, which according to Ansell (2000, p. 311) revolves around the "bringing together of unique configurations of actors around specific projects oriented towards integrative solutions". Kooiman (2003) stated that these networks of actors take shape because of interdependencies that exist as no single actor has the required resources to successfully develop and deliver integrative solutions. Different kinds of resources need to be drawn from a wider range of actors (Shaw, 2013). Such interdependency gives rise to processes of interaction with a view to exchanging resources and negotiating shared goals (Rhodes, 1996; Stoker, 1998). Even though these interdependencies across horizontal and vertical administrative boundaries and the subsequent need for collaboration to successfully achieve LUTI is widely acknowledged, government action on land use and transport often remains fragmented (UN-Habitat, 2013).

#### Institutional barriers and fragmented government action

To date, several studies have taken an institutional approach to studying the fragmented government action on land use and transport. In this context, institutions are defined as 'the rules of the game'; i.e. any form of human-devised rule that structures political, economic and social interaction (North, 1990). Institutions not only shape collective action by prescribing what is permitted, obliged or forbidden, but they also influence actor behaviour in processes of designing, negotiating and funding policies (March & Olsen, 1989; Ostrom, 2005). In addition, institutions strongly influence any process of policy formation and implementation by encouraging or impeding collaboration between policy actors (Alexander, 2005; Curtis & Low, 2012). Together, institutions give structure to public policy making as they constitute the framework of rules that shape "procedures, routines, norms and conventions embedded in the organizational structure of the polity" (Hall & Taylor, 1996, p. 938). The existing body of institutional research on LUTI shows how institutional barriers sustain fragmented government action on land use and transport planning (Banister & Marshall, 2000; Curtis & Low, 2012; Heeres, 2017; Hull, 2010; Marsden & Rye, 2010; Marsden & May, 2006; Stead & Meijers, 2009). Curtis and Low (2012) even state that when it comes

to successfully integrating the planning of land use and transport, "time and time again it appears that institutions block the way" (p.13). These institutional barriers take a variety of forms. Hull (2010b, p.110-125) provided an overview of six types of institutional barriers for land use and transport integration that are commonly found in literature:

- Financial barriers top-down, sectoral and inflexible nature of financial systems and lack of connection between funding schemes.
- Organizational barriers organizational and jurisdictional boundaries, lack of clarity or incompatibility in targets and objectives, different, knowledge and capacity.
- Cultural barriers professional barriers between organizations and academic disciplines, resistance to change, different rationalities between land use and transport planners.
- Legislative barriers complex and overlapping legislative processes and jurisdictions.
- Political barriers power relationships, division of political mandate, diffuse internal communication within the political and official bodies lead to uncertainty and poor links between the stages in the policy process.
- Technical barriers technical knowledge is still sectoral-oriented, existing computerized models of LUTI and integrated methods for cost-effectiveness appraisal or integrated assessment are contested and rarely used in practice.

To acquire a better understanding of how these institutional barriers are formed and why they are difficult to overcome, a historical perspective is required.

## Understanding fragmentation from a historical perspective

In general, contemporary concerns about the fragmentation of government action on land use and transport can be explained as part of a major trend in public administration. Between the 1970s and late 1990s, New Public Management (NPM) thinking gave rise to widespread government reform, following principles of disaggregation, specialization and decentralization (Christensen & Lægreid, 2007; Hood & Dixon, 2015; Pollitt & Bouckaert, 2011). Peters (2018a) argued that these reforms contributed to further horizontal and vertical fragmentation of already fragmented government action. Horizontal fragmentation was encouraged by disaggregation and specialization, which stimulated dedicated policy domains to form lean, flat and autonomous 'single-purpose' organizational units with explicit and non-overlapping goals and responsibilities (Cejudo & Michel, 2017; Pollitt & Bouckaert, 2011). In time, these policy domains developed their own segmented understanding of policy problems, appropriate solutions, ideologies and interests. This was encouraged by the performance-oriented nature of NPM, which focused on achieving specialized sectoral targets. As a result, collective goals tended to be ignored (Peters, 2018a). Additionally, vertical fragmentation resulted from decentralization, and this diffused the roles and responsibilities in public management between different levels of governments. In time, these NPM principles were incrementally institutionalized through legislation as well as administrative and organizational reform, shaping countries' internal politics and the distribution of power, accountability and budgets.

More specifically, within this general trend towards fragmentation of the public sector, for a long time both land use and transport planning developed as separated disciplines following different rationalities (Arts et al., 2016a; WRR, 1998). Transport planning is traditionally characterized by a technical or instrumental rationality that adopts a technocratic engineering logic to dealing with policy problems. Decision-making draws upon systematized knowledge and linear reasoning, which are based on straightforward predict-and-provide approaches that use replicable analytical models and tools that reduce problems to single frames (Tornberg & Odhage, 2018). By contrast, land use planning has a longstanding tradition in following a communicative rationale (Arts et al., 2016a), which takes a more consensus-oriented, procedural approach to decision-making and which stimulates interaction between interdependent actors (Innes & Booher, 2010). De Roo (2003) pointed out that technical rationality and communicative rationality can be seen as two ends of a spectrum. Whereas the former is more linear and based on hard facts, causality, models and quantitative data, the latter is described as non-linear and intersubjective, and is based on a diversity of perspectives and processes of dialogue between actors carrying a variety of knowledge and interests. In time, conversion can be witnessed between land use and transport planning (WRR, 1998) as it has been increasingly acknowledged that the conventional approach to transport planning is unable to deal with the wicked nature of contemporary transport policy problems (Stead, 2016; Tornberg & Odhage, 2018; Willson, 2001). Despite the increasing calls for a more collaborative and integrated approach to transport planning, there remains "a strong tradition of rational top-down planning and implementation approaches [that] probably derived from the early influence of engineers" (Stanley & Pearce, 2016, p. 183). Findings of both Hull (2010) and Hrelja (2015) illustrate that, in practice, the different rationalities of land use and transport planners reinforce the barriers that impede land use and transport integration.

Together, these historical developments help understand why institutional barriers that separate land use and transport are inherent to the public sector. Government power, political, financial and legal accountability are formulated following sectoral lines and divided between levels of government (Peters, 2018b). Hull (2010) described how this fragmentation is maintained by vested interests, perceived competition, professional differences, lack of a common language, different priorities, ideologies and goals, bureaucratization and specialization. In line with Hull (2010), several studies have shown that institutional boundaries are incredibly persistent and hard to change (Buitelaar et al., 2007; Peters, 2018b; Sorensen, 2015; Stead & Meijers, 2009). Therefore, this study focuses on finding ways to overcome the fragmented policy sector, rather than breaking down institutional barriers.

#### Dealing with fragmentation through integration

Thus far, scholars have developed various strategies in their attempts to overcome fragmentation. Joined-up government, whole-of-government, policy coordination and policy integration are some of the best-known examples (Christensen & Lægreid, 2007; Perri, 2004;

Stead & Meijers, 2009). Even though there are subtle conceptual and empirical differences between these concepts (see e.g. Cejudo & Michel, 2017; Trein et al., 2019), they are closely related and are often used synonymously (Meijers & Stead, 2004). Compared to the concepts *joined-up government* and *whole-of-government*, which are characterized by an organizational approach, policy integration has a more instrumental focus to overcoming fragmentation (Trein et al., 2019). Furthermore, policy integration differs from coordination as it is more far-reaching and comprehensive; integration goes beyond compatibility and exceeds individual goals by focusing on cross-cutting objectives such as sustainable development, which unite multiple domains (Stead et al., 2004). Compared to coordination, policy integration is characterized by increasing interdependencies, by including a wider variety of actors and by requiring more time and resources (Meijers & Stead, 2004). Therefore, integration is characterized by greater interaction, i.e. more exchange of resources, across policy subsystems and between levels of government (Stead et al., 2004; Peters, 2015; Candel & Biesbroek, 2016).

In line with the focus on LUTI, this study specifically concentrates on policy integration as a strategy to overcome fragmented government. Following Cejudo and Michel (2017a), it is assumed that integration and fragmentation are interrelated concepts as a higher level of policy integration implies that government action is less fragmented. In general terms, policy integration aims at producing synergies, or at least reducing externalities between all policies that influence one another (Peters, 2018a, p. 1). More specifically, drawing on a range of sources (Candel & Biesbroek, 2016; Cejudo & Michel, 2017; Stead et al., 2004), policy integration is defined here as having the following characteristics:

- Policy integration is a strategy to holistically address complex policy problems that demand collaboration that cuts across the established boundaries of policy siloes, jurisdictions and levels of government. Solving this policy problem is a goal that encompasses – but exceeds – the policy goals of the individual agencies that are involved.
- 2. Policy integration is a process where decisions are made in order to achieve the common, greater goal of solving a complex problem; this overall goal is pursued at every moment of the policy process.
- 3. Policy integration is an ongoing process that unfolds sequentially at multiple levels of abstraction; "the advancement of policy goals and instruments towards enhanced or weakened policy integration is informed by and follows on shifts in more abstract governance modes and general problem perceptions" (Candel & Biesbroek, 2016, p.216).
- 4. Policy integration requires a decision-making body (e.g. an inter-ministerial commission or intergovernmental body) in which different policies and organizations work under a new logic, subordinating their objectives to a new overall goal aimed at addressing a complex problem, and making their decisions based on that overall goal.
- 5. Policy integration occurs during interaction (i.e. resource exchange) between actors that are interdependent with the aim of solving a complex policy problem; the resources required to address the problem are dispersed among different policy sectors and levels of governments.

### Policy design to promote policy integration

For a long time, the literature on policy integration was primarily concerned with the factors that impede integration; however, research is now increasingly directed towards finding ways of achieving policy integration (Jordan & Lenschow, 2010; Tosun & Lang, 2017). Within this emerging field of study, the design of policy instruments has been receiving specific attention (Adelle & Russel, 2013; Jordan et al., 2005; Lang, 2016). Candel & Biesbroek (2016) argued that policy instruments play an important role in successfully putting processes of policy integration into practice, as these processes can help achieve "coordination and convergence between policy domains" (p.214). However, they underline the importance of tailoring these instruments to the goals they aim to attain. As policy design takes a specific interest in deliberately matching goals and instruments to produce desired policy outcomes (Howlett & Lejano, 2013; Howlett, 2014a), scholars have acknowledged its relevance in promoting policy integration (Howlett et al., 2017; Howlett & Rayner, 2007; Peters et al., 2018). With the aim of developing a policy design approach to LUTI, the next section discusses the principles of policy design.

## **1.3 POLICY DESIGN: FINDING TOOLS FOR THE JOB**

Essentially, policy design revolves around "the deliberate and conscious attempt to define policy goals and to connect them to instruments or tools expected to realize those objectives" (Howlett et al., 2015, p.292). Policy design emerged and developed from the roots of policy sciences in the 1980s and early 1990s as an approach that integrates aspects of policy formation and implementation. After experiencing a decline, it is now receiving renewed interest (Howlett, 2014a; Howlett & Lejano, 2013; Howlett & Mukherjee, 2018) the field languished in the 1990s and 2000s as work in the policy sciences focused on the impact on policy outcomes of meta-changes in society and the international environment. Both globalization and governance studies of the period ignored traditional design concerns in arguing that changes at this level predetermined policy specifications and promoted the use of market and collaborative governance network. Even though the focus on systematically matching ends and means to effectively attain policy goals still prevails, so-called *new* policy design thinking is diverted away from traditional linear and taxonomic means-to-ends reasoning (e.g. Hood, 1983; Linder & Peters, 1984; Salamon, 1989; May, 1991). Instead, new policy design thinking adopts more diverse and comprehensive definition of policy instruments and considers how these can be used effectively to support policy goals in the field of contemporary policy science, which is characterized by governance, decentralization, globalization, context-orientation, de-regulation and interdependencies (Howlett, 2014a; Howlett & Lejano, 2013)

## New policy design thinking

As policy design thinking evolved, its central focus remained on achieving policy design effectiveness. However, its understanding of what determines effectiveness incrementally moved away from Tinbergen's (1952) rule that effective policy design consists of a 1:1 goal-means ratio where one instrument fully addresses one policy goal (Knudson, 2008), towards a more comprehensive understanding on policy design effectiveness. For example, the new design orientation differentiates between policy design as a noun) (Howlett & Rayner, 2013; Peters et al., 2018). The former describes how policy alternatives can be effectively formulated during processes of 'policy designing'. For this study, however, the latter is most relevant as it focuses on the effectiveness of actual policy design in attaining intended outcomes.

Any policy design (as a noun) has policy goals and policy means as its two core components (Howlett, 2009). Typically, governments deploy a mix of multiple interrelating policy goals and instruments that has developed over time (Rayner & Howlett, 2009). Here, policy goals are the statements of government aims and ambitions in a specific policy area (Howlett & Rayner, 2007). These goals are the outcome of political decision-making processes, and they reflect which governments aim to address policy problems and how they aim to do so. Policy means are the variety of policy instruments that governments use throughout the policy process to make their policies effective (Howlett & Rayner, 2007; Leroy & Arts, 2006; Torfing, 2012). Instruments shape policy outcomes by influencing individual or collective action by using government resources (Howlett, 1990). Following Lascoumes & Le Galès (2007), policy instruments are defined here as a particular type of institutional design, i.e. a deliberately devised set of rules that govern interactions and behaviours of actors and organizations in order to attain a predefined outcome. From this perspective, policy instruments are understood as a set of institutions that can be brought into existence and tailored to fit the goals they aim to achieve, rather than as readily available tools (Kassim & Le Galès, 2010).

In general, new policy design literature differentiates between two instrument types: substantive and procedural instruments (Howlett, 2000). Traditionally, governments have primarily used substantive instruments to attain their goals. These command-and-control type of instruments use the government resources *authority, treasure, information and organization* to directly induce or prohibit certain behaviour (Howlett, 1990) – there are many typologies of government resources, but this one by Hood (1983) is generally used in policy design literature (Howlett, 2000, 2018a). Some examples of such substantive instruments are subsidies, loans, grants (treasure), regulation, licences, permits (authority), advice, training, reports (information), executive agencies and public enterprises (organization) (Howlett, 2018a). Procedural instruments, on the other hand, have a more indirect influence on policy outcomes as they guide or steer "policy processes in the direction government wishes through the manipulation of policy actors and their interrelationships" (Howlett, 2000, p.424). Procedural tools structure how the implementation process unfolds by influencing interaction, behaviour and interrelationships between policy actors during the process of formulating, adopting and implementing policy solutions without predefining the outcomes of these processes (Howlett, 2018a; Peters et al., 2018). Some examples of these procedural instruments are incorporating or excluding policy actors in decision-making, creating funding mechanisms, and administrative re-organization (Howlett, 2000, 2018a). This study will primarily focus on these procedural instruments as several scholars underwrite the central role of procedural instruments for attaining collective goals in governance contexts due to their ability to link policy sectors and levels of government (Candel & Biesbroek, 2016; Jordan et al., 2005; Jordan & Lenschow, 2010; Majoor & Schwartz, 2015).

Governments usually deploy mixes of policy instruments to attain one or more policy goals (Bemelmans-Videc et al., 2011; Howlett, 2014b; Howlett & Del Rio, 2015). These goals and instruments are configured into a interrelating mix that stretches across different phases of the policy process (Howlett, 2014b; Rogge, 2018; Rogge & Reichardt, 2016). Contemporary policy design thinking adopts a multilevel and nested understanding of interrelated mixes of policy goals and means. This multilevel perspective has been introduced by Howlett (2009), following work by Hall (1993) and Cashore & Howlett (2007); it was incrementally established and developed in a series of studies into the taxonomy presented in Table 1.1 (see Howlett & Cashore, 2009; Howlett & Rayner, 2013; Howlett & Mukherjee, 2018; Peters et al., 2018; Howlett, 2019). The table operationalizes the three levels of abstraction that shape policy design. These levels are nested in the sense that the range of choices that can be made at a certain level is re stricted by the decisions made at the higher level (Howlett, 2009). The pace at which components change differs between the levels (Hall, 1993); the micro-level technical design of substantive and procedural instruments may change quite frequently, while the general meso-level objectives and tools remain the same. The macro-level governance modes and instrument logic are the most stable components.

## TABLE 1.1 COMPONENTS OF PUBLIC POLICY IN POLICY DESIGN. BASED ON: CASHORE & HOWLETT (2007) AND HOWLETT (2018a)

		Policy content	
		Policy goals	Policy means (instruments)
	High level abstraction – macro level	GOALS	INSTRUMENT LOGIC
		What general types of ideas govern policy development?	What general norms guide policy instrument preferences?
Policy level		For example, environmental protection, economic develop- ment, and social cohesion.	For example, coercive "command and control", voluntary, markets, and neoliberal norms.
	Policy level or	OBJECTIVES	TOOLS
	operationalization – meso level	What does policy formally aim to address?	What type of instruments are utilized?
		For example, saving wilderness or species habitat, and reducing greenhouse gas emissions.	For example, tax incen- tives, loans, public enter- prise, and cap-and-trade carbon markets.
	Specific on-the-ground measures – micro level	SETTINGS	CALIBRATIONS
		What are the specific "on the ground" requirements of the policy?	What are the specific ways in which the instrument is applied?
		For example, the size of protec- ted areas and the level of carbon.	For example, qualifications for tax incentives, rules governing cap-and-trade markets such as specifics on leakage, allocation of resources and approach to enforcement.

## Criteria for policy design effectiveness

As mentioned above, new policy design revolves around effectiveness. Peters et al. (2018) even stated that effectiveness is why policymakers, implicitly or explicitly, engage in policy design in the first place. It is considered to be the foundation of any design upon which additional goals such as sustainability, equity or efficiency are constructed (Bali et al., 2019; Howlett, 2018b; Mukherjee & Bali, 2018; Mukherjee & Howlett, 2018; Peters, 2018a; Peters et al., 2018; Rogge & Reichardt, 2016). In this setting, policy design effectiveness is commonly expressed as a measure for goal attainment; i.e. the extent to which the outcomes of policy design match its goals. This understanding of effectiveness accords with the purposive nature of policy design, which essentially 'resides in the articulation of policy options expected to meet government goals' (Mukherjee & Howlett, 2018, p. 375). It makes design effectiveness a multifaceted concept as its operationalization is inherently related to the goals that are pursued (del Río, 2014). The growing interest in policy design has encouraged scholars to identify a variety of attributes that are considered to potentially affect policy design effectiveness. Within this body of literature, a differentiation is be made between effectiveness in terms of *process* – in which policy design is seen as a verb – and *content*—in which policy design is seen as a noun (Howlett & Rayner, 2013; Peters et al., 2018).

Regarding the process of formulating a policy design, scholars identified several attributes to influence its effectiveness. For example, Howlett (2018b) described the degree of freedom attribute, which concerns the freedom policy designers have in developing new designs given existing historical arrangements of policy components (Howlett, 2018b, p. 13). He argued that the persistence of existing design components may create path-dependency and limit the leeway of policy designers in their decision-making. In a similar vein, Bali & Ramesh (2018) highlighted that the freedom of policy designers may be impeded by transaction cost associated to making changes – i.e., the *transition attribute* – and the rigidity of the design components that are already in place – i.e., the reversibility attribute. Other work has emphasized contextual influences on the formulation of policy design components. For instance, Howlett et al. (2015) argue that the 'design space' affects the ability and intent of governments to engage in policy designing. Howlett & Mukherjee (2014) have worked out a spectrum that shows how different *degrees of freedom* within a design space allow for different types of policy design interventions (replacement, smart-patching, stretching, and tense layering). Additionally, they describe non-design spaces as settings in which processes of bargaining, clientelism, log-rolling, or electoral opportunism do not allow for rational policy design processes to unfold. Additionally, Bali & Ramesh (2018) have highlighted that *policy capacities* – i.e., the available set of analytical, operational, and political policymaking skills and competencies – influence government's ability to effectively address policy challenges through policy design. Importantly, taking them together, these studies indicate that the effectiveness of the process of articulating policy goals and of giving shape to supportive mixes of policy instruments is determined by a variety of attributes and capacities, which in the end will determine the configuration of goals and instruments - i.e., policy design as a noun – that is put into place.

This study, however, takes interest in the technical characteristics that determine the effectiveness of a policy design (as a noun that is). When it comes to influencing this type of effectiveness, scholars have highlighted several attributes. Schmidt & Sewerin (2018), for instance, posed that a higher *intensity* – i.e., the amount of resources or activity that is invested or allocated to a specific policy instrument (Schaffrin et al., 2015) – will make a design more effective (p.4). Furthermore, they state that a high *balance* – i.e., the variety of instrument types – will contribute to the effectiveness of a design because that will enable it to better address the various stakeholders and aspects of a policy issue (Schmidt and Sewerin, 2018, p. 3). Additionally, Thomann (2018) highlighted that the calibration of an instrument in terms of *explicitness* – i.e., the extent to which an instrument promotes desired

behaviour by attributing positive or negative valence to certain actions relative to a given policy goals - helps in accounting for design effectiveness as this will influence how a target group responds to an instrument. Even though these studies have helped in expanding the debate on attributes for design effectiveness, the theoretical and empirical evidence on *intensity, balance* and *explicitness* has been scant and needs further work. So far, most research on the effectiveness of a policy design (as a noun) has revolved around the three main attributes that hallmark contemporary policy design thinking: the first is '*policy design fit*', which focuses on aligning goals and instruments, the second is '*temporal influence*', which focuses on maintaining effectiveness over time by sustaining policy design fit and the third is '*goodness-of-fit*', which refers to contextual influences on instrumental effectiveness and to how these can be taken into account creating effective policy designs. Each of these attributes is discussed in more detail below as they are the focal point of the current research.

## Improving policy design effectiveness by improving policy design fit

A wide body of literature describes how devising successful policy designs requires that the different nested components in a policy design are aligned within and between different levels of abstraction (Howlett, 2009; Howlett & Rayner, 2013). As such, policy design is generally aimed at devising effective mixes, which are achieved by maximizing *policy design fit*. Policy design fit expresses the complementarity effects of policy elements in terms of goals coherence, instrumental consistence and the congruence of goals and instruments (Howlett 2014a; Howlett & Rayner, 2013) (see Figure 1.1). Coherence is achieved if goals, objectives and settings can be pursued at the same time without trade-offs (Kern & Howlett, 2009). Rogge & Reichardt (2016) argued that the *consistency* of a policy design reflects how well instruments are aligned with each other and how well they contribute to achieving the same policy objectives. They state that consistency may range from the absence of contradictions to the existence of synergies between policy means. This is in line with Howlett & Rayner's (2013) understanding that means consistency is reflected by the "ability of multiple policy tools to reinforce rather than undermine each other in the pursuit of goals" (p.174). Congruence reflects the extent to which goals and means are mutually supportive and are successful at working together to serve corresponding purposes (Kern & Howlett, 2009).

#### FIGURE 1.1 POLICY DESIGN COHERENCE, CONSISTENCE AND CONGRUENCE. BASED ON: HOWLETT (2009).



## Maintaining policy design fit over time

The idea that policy designs develop over time is key to contemporary thinking on policy design (Rayner & Howlett, 2009). Mixes of goals and means evolve as new elements are added onto the foundations of earlier design choices, and existing elements adapt to new contexts or are removed (Kern & Howlett, 2009; Howlett & Rayner, 2013). Several scholars have shown how temporal dynamics can affect policy design coherence, consistence and congruence – i.e. policy design fit – and how they cause policy mixes to evolve into suboptimal configurations of goals and means (del Río et al., 2011; Howlett & del Rio, 2015; Rogge & Reichardt, 2016; Kern et al., 2017). Literature differentiates between five modes of change through which policy mixes evolve, namely layering, drift, conversion, replacement and exhaustion (Streeck & Thelen, 2005; Kern & Howlett, 2009; Rayner & Howlett, 2009; Howlett & Rayner, 2013; Howlett et al., 2015; Kern et al., 2017; Rayner et al., 2017; Peters, 2018a).

*Layering* is the process of simply adding new goals and/or means to existing designs. Generally, layering causes policy mixes to develop into increasingly complex configurations of policy design elements that are based on diverging conceptual understandings (Peters, 2005). *Drift* describes a situation in which policy goals change, while the mix of instruments remains the same (Howlett et al., 2018). *Conversion* occurs when an existing instrument is used differently in response to changed goals (Mahoney & Thelen, 2010). Replacement refers to a situation where new design elements are deliberately put in the place of old ones, which may happen abruptly or gradually, depending on the rigidity of existing elements (Streeck & Thelen, 2005). Replacement is often impeded by the path-dependency created by the design elements that are already in place (Peters, 2018a). Lastly, exhaustion describes situations in which older design elements are undermined because they do not function satisfactorily in the light of newer policy elements (Howlett & Rayner, 2013). Figure 1.2 illustrates how the different modes of change can influence the coherence, consistence and congruence of policy designs.

#### FIGURE 1.2 HOW POLICY DESIGNS CAN EVOLVE OVER TIME, BASED ON HOWLETT AND RAYNER. (2013).



Means areused differently in response to changed goals

New desian elements are deliberately put in the place of old ones

Older desian elements are undermined

## Tailoring instruments to context: the goodness-of-fit attribute

A policy design does not operate in a vacuum. Contextual influences have therefore always received much attention from policy design scholars (Howlett et al., 2015). The new design approach advocates particularly the 'goodness-of-fit' principle, which means that policy instruments need to be adapted to meet the specificities of a particular context for them to be successful in delivering the intended outcomes (Howlett et al., 2015; Howlett & Rayner, 2013). For policy design studies, the relationship between context and instrument is important: if a policy instrument is to be effective, it needs to be able to respond to the particular contextual setting of the policy sector involved (van den Broeck, 2008; Howlett & Rayner, 2013, 2018). Similarly, Weimer (1992) argued that "instruments, alone or in combination, must be crafted to fit particular, substantive, organizational and political contexts" (p.373), and Peters (2018a) pointed out that "what makes a good instrument depends on the context in which it will be employed" (p.110). In the same vein, Chindarkar

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et al. (2017) argued that context influences how policy instruments affect individual and collective behaviour to produce policy outcomes. Together, these studies indicate that goodness-of-fit reflects the extent to which policy instruments are compatible with the broader governance and political context (Mukherjee & Bali, 2018).

Elaborating on this notion, Capano & Howlett (2019) made some initial steps to provide further understanding of why a certain policy instrument might work in one specific context but not in another. By taking a mechanistic perspective, they break down the process of how instruments achieve policy outcomes into a mechanistic chain of four elements, namely instrument choice, mechanism activation, reception and impact. They argue that specific contextual barriers and impediments may influence any of these elements and thus affect policy outcomes. They identify the following general contextual barriers: governance styles, history, legacies, ideologies & institutions, time-frame, resource availability, habits, heuristics and path dependencies. Capano & Howlett (2019) argued that differences in these conditions will cause the same instrument to deliver different outcomes depending on the context in which it is deployed. Despite these promising theoretical advances on the contextual factors influencing policy design outcomes, still very little is known about how the goodness-of-fit between policy instruments and context influences policy design effectiveness.

To further operationalize goodness-of-fit between context and policy instruments, this study proposes an institutional perspective. This perspective considers the goodness-of-fit between the specific institutional design of a policy instrument and the broader institutional environment – i.e. context – in which the instrument is deployed. The perspective builds on work by Alexander (2005), who argued that a distinction can be made between institutions that can be directly influenced and institutions that lie outside the influence of policy makers. The first type of institution has been deliberately designed by policy makers. Such institutions include specific "planning and implementation structures and processes ... [such as] establishing and operating interorganizational networks, creating new organizations and transforming existing ones, and devising and deploying incentives and constraints in the form of laws, regulations, and resources to develop and implement policies, programmes, projects and plans" (Alexander, 2005, p.214). On the other hand, there are also institutions that lie outside the influence of policy makers; these should be considered as a given because they are divorced from the topic areas in which policy makers are qualified (p.214), such as constitutions, professional cultures and political agendas.

This study argues that the institutions defining a policy instrument can be deliberately designed (Lascoumes & Le Galès, 2007); after all, these instruments are the devised means through which policy makers make their policies effective. The institutional context, however, often lies outside the influence of policy makers and is therefore considered here as a given. These contextual institutions can be both formal and informal (Helmke & Levitsky, 2004). Formal institutions are the rules that are "created, communicated and enforced through formal governmental channels such as courts, legislatures and bureaucracies" and informal institutions are as "socially shared rules that may be unwritten and are created, communicated and enforced outside formally sanctioned channels" (Helmke & Levitsky, 2004,

p. 727). In practice these "instrumental" and "contextual" institutions interrelate. They can either reinforce, weaken, or have no impact on each other (de Jong, 2008). This inter-relation could be a measure to assess the goodness-of-fit between instrument and context. Ostrom (2011) points out that institutional analysis is a method that allows studying the interrelation between institutions and their effect on policy processes and outcomes.

## 1.4 POLICY DESIGN AND LAND USE TRANSPORT INTEGRATION

Considering the discussion in the previous sections, the policy design approach that is adopted in this study revolves around finding – throughout the policy process – the mix of policy instruments to effectively support integrated land use and transport goals in the face of temporal dynamics and contextual influences. More specifically, the approach is directed at three main criteria influencing design effectiveness, as visualized in Figure 1.3: (i) the coherence, consistence and congruence of policy design, (ii) the temporal influences on the alignment of policy goals and instruments, and (iii) the goodness-of-fit between policy instruments and the policy design context. By applying this policy design approach to the field of the integrated planning of land use and transport infrastructure development, this study sees opportunities to contribute to the knowledge of policy design and to the field of integrated land use and transport planning.

Specifically, this research attempts to contribute to the existing body of knowledge on policy design thinking by focusing on four specific accounts. Firstly, this study aims to provide empirical insights into the role of policy design in processes of policy integration. Jordan et al. (2005) highlighted how policy instruments can link policies and stimulate collective action across various policy fields. However, so far policy design studies have given this little consideration (Peters, 2018a). Secondly, this study aims to develop a better understanding of the technical design of policy mixes by providing more insight into the relationship between policy design fit – in terms of policy design coherence, consistency and congruence – and policy design effectiveness. So far, arguments underpinning the positive influence of design coherence, consistency and congruence on policy design effectiveness are predominantly theoretical, and empirical evidence has remained limited (Rogge & Schleich, 2018). Thirdly, in relation to the temporal aspect of new policy design thinking, a growing number of studies argue how policy designs are not usually created on a 'clean sheet' but, instead, develop incrementally over time, building on existing policy elements (e.g. del Río et al., 2011; Rogge & Reichardt, 2016; Schmidt & Sewerin 2018). However, there have been surprisingly few studies on how these dynamics affect the effectiveness of policy designs (Rayner et al., 2017). Lastly, Peters (2018b) stated that "as well as not having a strong temporal dimension, policy design is often done without regard to context. [...] If designers are excessively technocratic and/or ideological, they may assume that their favourite policies work, regardless of the institutional or social context. Those assumptions are often the recipes for policy failure"

(p.28). Hence, this research aims to add to the limited body of research on how context affects policy design effectiveness through the concept of goodness-of-fit.

Furthermore, this study intends to contribute to the literature on LUTI in the following ways. Firstly, this study complements recent studies that have focused on further conceptualizing and operationalizing LUTI as a concept (e.g. Straatemeier, 2019). Additionally, the policy design perspective adopted in the current study is considered to offer a novel approach to promoting LUTI in addition to Switzer's (2019) recent transition theory approach. Moreover, the present study builds on existing research focusing on single instrument use (e.g. Macario et al., 2005; Busscher, 2014) and research focusing on integrated project development (Heeres, 2017; Leendertse, 2015; Lenferink, 2013), by looking at effective mixes of interrelating policy instruments – used throughout the whole policy process – to overcome the persistent boundaries that separate the planning of land use and transport. Lastly, most of the current literature on LUTI focuses on developing technical decision-support systems, such as accessibility models and transport models (e.g. te Brömmelstroet, 2010a; Papa & Bertolini, 2015), while governance instruments, which focus on encouraging collaboration and achieving shared goals, have received only limited attention (Marsden & Reardon, 2017).



#### FIGURE 1.3 CONCEPTUAL MODEL OF THIS STUDY.

## **1.5 RESEARCH SCOPE AND RESEARCH QUESTIONS**

Even though governments have widely adopted policy goals on LUTI as the necessity for and benefits of LUTI are widely recognized, attaining these goals has remained a struggle. To help understand and overcome this struggle for LUTI, this study adopts a policy design perspective. The theory-based policy design approach to LUTI revolves around finding a mix of policy instruments throughout the policy process that effectively support integrated land use and transport goals, deploying these instruments in a coherent, consistent and congruent policy design, and maintaining the effectiveness of such a design in the face of temporal dynamics and contextual influences. Therefore, this study aims:

to explore how instruments can support goals in policy designs that remain effective for achieving integrated planning of land use and transport infrastructure.

In line with this aim, the study aims to answer the following primary research question:

## How can instruments support goals in policy designs that remain effective for achieving integrated planning of land use and transport infrastructure?

Following the conceptual framework, this primary research question is subdivided into the following four secondary research questions. Each of these questions will be addressed in a separate chapter.

- 1. How are mixes of policy instruments used throughout the policy process to promote land use and transport integration?
- 2. What are necessary and sufficient conditions coherent goals, consistent means, congruency of goals and means for effective policy design?
- 3. How do temporal dynamics affect the development of mixes of policy goals and instruments over time, and how does this development affect the coherence of goals, the consistence of instruments and the congruence between goals and instruments?
- 4. How does the institutional context affect the effectiveness of policy instruments for LUTI?

## 1.6 RESEARCH DESIGN AND PROCESS

## Ontological and epistemological stance

The aim and design of this qualitative study is formulated following specific ontological and epistemological underpinnings. Inherent to the social sciences and in line with the idealist ontology, this study acknowledges that "reality is made up of shared interpretations that social actors produce and reproduce as they go about their everyday life" (Blaikie & Priest, 2019). Subsequently, reality is considered to be a socially negotiated construct that is historically founded and contextually verifiable rather than individually produced and universally valid (Chiari & Nuzzo, 1996). From an idealist perspective, social research is interpretative by nature and is focused on understanding social phenomena, rather than explicative and focused on explaining and finding causality (Crotty, 1998).

In addition, this study adopts a constructionist epistemological stance that considers the social phenomena that are studied to be ultimately constructed by human beings as they engage, interpret and negotiate with each other. As Stake (1995) put it, "phenomena are intricately related through many coincidental actions and understanding them requires looking at a wide sweep of contexts: temporal and spatial, historical, political, economic, cultural, social, and personal" (p.43). This passage mirrors an important aspect of constructionism that is relevant to note, namely, that the way individuals collectively construct reality is influenced by pre-existing frames or institutions (Fish, 1990) or by the culture (Geertz, 1973) in which they are embedded. These 'frames' serve as the lenses through which people interpret natural and social phenomena or objects and construct meaning. This implies that conducting such qualitative research is never value-free.

Interpretivism fits the idealist ontology and the constructionist epistemology, and it is an important reason for adopting a case-study methodology to conduct this research. A critical component in designing case studies is dealing with the notion of interpretivism and giving careful attention to structuring how the researcher collects, analyzes and interprets observations in order to ensure the validity and reliability of the outcomes (Stake, 1995; Yin, 2003).

## Case-study methodology

In order to answer the research questions formulated, this study adopts a casestudy methodology. This qualitative research approach is typically adopted to explore a phenomenon within its context by using a variety of data sources and by following specific procedures (Baxter & Jack, 2008). There are different types of case study; a case study can take the form of a single-case or a multiple-case study, and it can be either exploratory, explanatory or descriptive (Yin, 2003). For this research, a specific case-study design has been tailored to each of the secondary research questions (see Table 1.2). The corresponding chapter describes each individual research design in more detail. Below, a more general reflection is given on the relevance of adopting a case-study methodology in the light of this study, the logic of the research design and the techniques of data collection and data analysis.

A case study approach was adopted because it is particularly appropriate when a 'how' or 'why' question is being asked about a contemporary phenomenon that is influenced by contextual factors and over which the researcher has no or limited control (Yin, 2003). Furthermore, case studies are useful to comprehend the full complexity of reality as they allow for an in-depth inquiry of complex real-life situations, such as policy and governance processes (Hennink et al., 2010; Mitchell, 1983; Stake, 1995; Yin, 2003). Rather than pressing for finding explanations by establishing statistical correlations, case-study research aims to achieve a thorough understanding of phenomena by finding patterns across different data sources (Stake, 1995). In establishing these patterns, as in any qualitative research, the interpretation of the researchers plays an important role. It is therefore of paramount importance to carefully structure the process data collection and interpretation to allow for the generalization of findings and to secure the validity and reliability of the study's outcomes.

Case-study research generalizes to theoretical propositions based on reasoning and not to populations based on statistics (Baxter & Jack, 2008; Yin, 2013). This so-called analytical generalization can be constructed via deductive, inductive and abductive reasoning (Johansson, 2007). To allow for a more structured analysis across the different case studies, this research follows Yin's (2003) deductive approach, in which the extensive theoretical framework presented above plays a prominent role. Essentially, a case study that follows deductive reasoning validates and adjusts theoretical propositions through empirical data of a single case or multiple cases. For this study, the theoretical framework not only inspires the research questions, but also structures the data collection, data analysis and data interpretation, and serves as the vehicle for generalizing case study results. This research consists of four separate case studies, each with its own distinct theoretical focus and purpose, which are connected through an overarching theoretical framework (see Figure 1.4).

Besides using theory to structure and focus the process of data collection, data analysis and data interpretation, this study intends to strengthen the validity and credibility of its findings by having informants review the interim findings in focus group discussions, triangulating different sources of data and maintaining a chain of evidence. Triangulation is the hallmark of case-study research (Yin, 2003). It refers to the process of finding patterns within data that have been obtained from multiple sources. Baxter & Jack (2008) argue that such convergence of evidence adds strength to the findings "as the various strands of data are braided together to promote a greater understanding of the case" (p.554). Patton (1990) differentiated between the triangulation of data sources, investigators, theoretical perspectives and methods. To achieve triangulation, different analytical techniques can be adopted (Yin, 2003, 2013). The individual chapters describe how triangulation was performed for each specific study to achieve outcomes; Table 1.2 presents an overview of the analytical techniques
#### Primary research question:

How can instruments support goals in policy designs that remain effective for achieving integrated planning of land use and transport infrastructure?



that were used for each study. Furthermore, this study aims to strength the credibility of our findings by maintaining a chain of evidence linking the questions asked, the data collected and the conclusions drawn, thus allowing readers to determine for themselves which steps were taken.

## The unit of analysis

The unit of analysis is a key component in any case-study research design (Yin, 2003). Abstractly, the unit of analysis, or in effect the case, can be defined as a "phenomenon of some sort that is occurring in a bounded context" (Miles et al., 2014). To focus the analyses, a case can have one or multiple subunits of analysis (Yin, 2003). For instance, a so-called embedded case study may be about an organization while the analysis focuses specifically on one or multiple departments or policy programmes. Even though the unit of analysis is defined separately for each study and was thus tailored to the conceptual focus and research questions, all cases comprise an embedded case-study design on Dutch national or regional governments, focusing on the organization's land use and transport infrastructure planning policy design. The focus on the Netherlands was adopted because it is considered a critical case; there are two main reasons why it can be instrumental in gaining more insight into the use of policy design for LUTI (Stake, 1995). Firstly, the Dutch have a long-standing tradition of integrated land use planning, and they have a planning culture that places particular emphasis on collaboration (Arts et al, 2016a; de Jong, 1999). Even though policies at different levels of governments are self-binding, they generally support and reinforce each other. As a result of this tradition, the Dutch public management system includes numerous formal and informal network-based collaborative arrangements and instruments to jointly provide public services across administrative boundaries (OECD, 2014). Within the Dutch context, specific focus was put on studying national government and regional governments as these are widely considered the most prominent actors in LUTI (PBL, 2014b; Rli, 2016). Secondly, similar to many countries, the Dutch context is characterized by fragmentation of roles and responsibilities on land use and transport planning across and within tiers of government (Arts et al., 2016a). The national government creates the legal framework for spatial planning and divides responsibilities between levels of government, following the principle of subsidiary: authority is given to the lowest level of government if possible and to a higher level if necessary (OECD, 2017b). Following this rationale, land use planning is the core task of municipalities while provincial governments play only a coordinating role. Infrastructure planning, on the other hand, is primarily carried out by national and regional governments.

### **Process of data collection**

The research process comprised of three rounds of data collection. During the initial round, data was collected for chapters 4 and 5 at the Ministry of Infrastructure and the Environment, and its executive agency Rijkswaterstaat. The data for the collection of this thesis was combined with a research project financed by the Ministry of Infrastructure and the Environment on the alignment between goals and instruments with regard to transport infrastructure planning on national and regional level - academic freedom was secured in the contractual agreement. As a result of this project, the researcher received an account that provided access inside both organisations to collect the data. Furthermore, there were two contacts within the Ministry who helped to recruit the right participants and to organize the interviews, focus groups and workshops. Additionally, a sounding board was formed with members of the Ministry and Rijkswaterstaat to verify and reflect on interim findings in order to strengthen research outcomes. This first round of data collection, was started by a document analysis and served as input for 21 semi-structured interviews with experts working for the Ministry of Infrastructure and the Environment and Rijkswaterstaat - see Appendix C and Appendix D. The interviews led to a structured discussion of relevant outcomes of the literature study, while giving interviewees sufficient scope to introduce new experiences and conversation topics (Liamputtong & Ezzy, 2005). Subsequently, focus group discussion were held based on statements derived from the document analysis and the interviews as their starting points. Throughout the data process meetings were planned with the sounding board to reflect on research findings. The second round of data collection, which was used for Chapter 2, followed a similar structure, but focused on provincial

	Research Question	Type of case study	Unit of analysis (the case)	Data collection techniques (methods)	Data analysis techniques
Chapter 2	How are mixes of policy instruments used throughout the policy process to promote LUTI?	Multiple qualitative comparative case studies	The regional infrastructure planning in the provinces of Friesland, Overijssel and Noord-Brabant	Document analysis, interviews, focus groups	Cross-case synthesis (see Yin, 2003)
Chapter 3	What are necessary and sufficient condi- tions – coherent goals, consistent means, congruency of goals and means – for successful policy design?	Multiple qualitative comparative case studies	Regional infrastructure planning in the 12 Dutch provinces	Document analysis	Crisp-set quali- tative compar- ative analysis (csQCA) (see e.g. Gerrits & Verweij, 2018)
Chapter 4	How do temporal dynamics affected the development of mixes of policy goals and instruments over time, and how does this development affect the coherence of goals, the consis- tence of instruments and the congruence between goals and instruments?	Single longitudinal qualitative case study	Dutch national infrastructure planning	Document analysis, interviews, focus groups, workshops	Time- series analysis (see Yin, 2003)
Chapter 5	How does the institu- tional context affect the effectiveness of policy instruments for LUTI?	Single qualitative case study	Dutch national infrastructure planning	Document analysis, interviews, focus groups, workshops	Institutional analysis following Ostrom's Institutional Analysis and Development Framework (see Ostrom, 2005)

#### TABLE 1.2 OVERVIEW OF ADOPTED CASE STUDY STRATEGIES.

organizations of Friesland, Overijssel and Noord-Brabant – see Appedix A. One or two key actors within each organization were selected as contact person to help identify participants and organize interviews and focus groups.

During these first two rounds of data collections, participants were selected purposively. Key actors within the organisations were used to recruit participants that reflected the study population. Additionally, all interviewees were asked as a closing questions to recommend participants for the study. We ensured that the total group of participants and the sounding board, each represented different stages of the policy process, as well as, the policy fields land use and transport. During the collection of qualitative data, researchers and participants bring in subjective views; this is inevitable as both will contribute to the co-construction of reality during the course of interviews and focus groups (Finlay & Gough, 2008). To manage the subjectivity bias during the first two rounds of data collection, three main approaches were adopted. First, theory was used to structure interviews and focus group discussions. The theoretical concepts underlying the questions and statements were explained to the participants. Furthermore, the sounding board, focus groups and workshop were used to refine and validate findings amongst a broader range of participants. Third, researchers ensured to derive data from different sources to ensure that findings are supported by a broader body of evidence.

The third round of data collection, which was used for Chapter 3, followed a different approach. A desk research was conducted, as the focus on 12 cases demanded a more practical and efficient approach to data collection. For all cases, the documents were collected and analysed in a similar way. First, the transport policy strategy of the province was analysed to develop an overview of policy goals and identify all policy instruments that were adopted. Thereafter, additional data was sought on these specific policy instruments. Finally, annual reports were collected for at least ten years after the adoption of the policy strategy to assess the progress of implementation. This data on policy effectiveness were supplemented with addition material that could be found on the monitoring and evaluation of the goals defined in the policy strategy. Along this approach to document collection a more or less similar data set was created for all cases. As Dutch provinces are required by law to formulated strategic transport plans and report annually policy output all required documents were available and accessible. A document analysis was chosen because it enabled the researcher to efficiently collect data that covered a long period of time and allowed for more cases to be included into the analysis.

#### Data analysis

The process of data analysis has exclusively focussed on written records. Hence, data was prepared by transcribing all the interview, focus group and workshop data into verbatim transcripts. As such the analysis focussed on *what* was said, rather than *how* it was said. All transcripts were double checked on accuracy and completeness by listening to the recording while following the written transcripts and correct any inaccuracies. Subsequently, the transcripts were combined with the collected documents in to one dataset. ATLAS.ti 8.4 was used to perform integrated analyses on all data following a deductively defined coding scheme. Each chapter had a coding scheme tailored to the theoretical focus of that specific analysis. These codes were used to structure the analysis and interpretation of the collected material, to distinguish empirical patterns throughout the dataset and to triangulate evidence from different sources. To maintain consistency in the coding of data, all material was coded by the same researcher.

# 1.7 OUTLINE

The overall study comprises six chapters. Following this introduction, the rest of the study is composed of five themed chapters. Chapters 2-5 each address one of the study's secondary research questions. The second chapter develops an instrumental perspective on LUTI. Chapter 3 studies the importance of goal coherence, means consistence, and the congruence of goals and means for policy design effectiveness. Chapter 4 illustrates how temporal influences affect the fit of a policy design – i.e. goal coherence, means consistence and congruence of goals and means. Subsequently, the institutional analysis presented in Chapter 5 illustrates how, in addition to these temporal influences, the contextual setting affects policy design effectiveness by influencing how policy instruments are used. The final chapter is the concluding chapter; it answers the research questions, discusses the findings, highlights practical implications and provides a reflection on the research design. Besides these six main chapters, additional material has been included in the appendices, in order to enhance the overall transparency of this study. This material contains a list of interviewees and focus group participants, focus group guides, interview guides, coding schemes and relevant additional results that have not been included in the individual chapters.



FINDING THE RIGHT TOOLS FOR THE JOB: INSTRUMENT MIXES FOR LAND USE AND TRANSPORT INTEGRATION IN THE NETHERLANDS

# ABSTRACT

Governments have widely adopted policy goals, such as accessibility and sustainable mobility, which span the domains of land use and transport. Despite these integrated ambitions, government action often remains fragmented. This study adopts an instrumental perspective to encourage land use and transport integration. So far, the existing literature on this subject has adopted a rather narrow single-instrument perspective and has been primarily focused on technical, rather than governance-oriented instruments. Using a comprehensive analytical framework derived from combining policy integration and policy instrument theory, this in-depth multiple case study of the Dutch provinces of Friesland, Overijssel and Noord-Brabant investigates how governments use a variety of policy instruments throughout the policy process to achieve land use and transport integration (LUTI) in collaboration with local governments. These instruments are compared based on how they structure interaction – i.e. the transfer of resources – across horizontal and vertical boundaries. The study has identified seventeen policy instruments between the three cases and finds that there is not one right tool to achieve LUTI. Instead, it is about finding the right mix of instruments which, in line with LUTI goals, helps overcome the fragmentation of resources throughout the planning process by structuring interaction patterns, which simultaneously cross horizontal and vertical boundaries. Interestingly, each province adopts a unique mix of instruments which reflects a specific approach, typical to the case.

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# 2.1 INTRODUCTION

Ever since Mitchell & Rapkin (1954) first put forward their description of the interaction between land use and transport, scholars and practitioners have made great progress in conceptualizing and operationalizing this reciprocal relationship (e.g. Ewing & Cervero, 2001; Kelly, 1994; Wegener & Fürst, 1999; Bertolini, 2012; Switzer et al., 2013). Today, land use and transport integration (LUTI) is widely adopted as an important policy goal in sustainable solutions to prevent rapid growth in transport from coming at the cost of growing congestion, economic losses and further environmental degradation (IFT, 2019b). Governments have also been aiming to integrate land use and transport planning to encourage sustained economic prosperity (Eddington, 2006), enhance social inclusion (Farrington & Farrington, 2005) and to improve project delivery (Heeres et al., 2016). However, even though LUTI is now widely embraced as a policy objective, its successful implementation often remains a struggle (e.g. te Brömmelstroet & Bertolini, 2010; UN-Habitat, 2013; Bliemer et al., 2016; Duffhues & Bertolini, 2016).

An emerging body of literature on policy design studies takes a specific interest in systematically matching goals and instruments to attain desired policy objectives (Howlett & Lejano, 2013; Howlett, 2014a). This field of research holds that policy instrument mixes can be tailored to support policy goals in order to achieve the intended outcomes (Howlett & Rayner, 2018). Candel & Biesbroek (2016) argued that this policy design principle also applies in the face of policy integration. They argue that policy instruments play an important role in successfully putting into practice policy ambitions about integration as they can help achieve 'coordination and convergence between policy domains' (p. 214). Similarly, several other authors have highlighted that this approach to policy design, which tries to match means to goals, is relevant in bringing about policy integration (Jordan et al., 2005; Jordan & Lenschow, 2010; Peters, 2018a).

Thus far, however, such an instrumental perspective on LUTI has received limited attention. The dominant share of existing literature on LUTI instruments is concerned with technical decision-support systems, such as accessibility models and transport models (Marsden & Reardon, 2017). Only recently have scholars started to acknowledge the relevance of collaborative or governance-oriented instruments to bring about LUTI (Mu & de Jong, 2016; Stead, 2016; Johansson et al., 2018; Tornberg & Odhage, 2018). However, in general, literature on this topic is limited to a single instrumental focus, thereby ignoring the conception that successful implementation depends on mixes of mutually supportive instruments deployed throughout the policy process. Stead (2008) argued that it is important to consider this total mix of instruments to ensure that integrated policy objectives are also implemented.

This study aims to develop further an instrumental approach to LUTI. To this end, we developed an analytical framework which combines insights into policy integration and policy instruments to study how mixes of policy instruments are used throughout the policy

process to achieve LUTI. We apply this framework to the Dutch provinces of Friesland, Overijssel and Noord-Brabant. This regional focus was adopted because LUTI is considered an inherently regional enterprise, as mobility issues predominantly manifest themselves a t this level (Marshall & Banister, 2007; Curtis, 2008; Hatzopoulou & Miller, 2008; Straatemeier, 2008; OECD, 2014), and because regions are considered to be 'the principal implementers of integrated land use and transport strategies' (Marshall & Banister, 2007 p. 373). The Netherlands was chosen for its rich tradition in integrated planning of land use and transport (Arts et al., 2016a). Dutch authorities have adopted numerous formal and informal network-based collaborative arrangements and instruments to provide public goods and services jointly across administrative boundaries (OECD, 2014). Provinces are interesting because they have traditionally played an integrative role in Dutch spatial planning. Rli (2016) stated that because of their central tasks in sustainable spatial development, regional accessibility and regional economy, the Dutch provinces are the designated government tier to take the lead in LUTI.

# 2.2 THEORETICAL BACKGROUND

## The inverse relationship between fragmentation and integration

Understanding how policy instruments can be successful in supporting LUTI requires a general understanding of the inverse relationship between fragmentation and integration. Generally, theory presents policy integration as the antithesis of policy fragmentation, which means that 'if the process of policy integration is successful, government action would be less fragmented' (Cejudo & Michel, 2017). In this way, the concepts are inherently interrelated.

The fragmentation of the public sector and its persistence is best understood from a historical perspective. Traditionally, the public sector has been organized according to the Weberian model, which is characterized by a bureaucratic government, clearly delineated responsibilities and a hierarchical and sector-oriented division of tasks (Dunleavy & Hood, 1994). Then, between the 1970s and late 1990s, the wave of New Public Management (NPM) reforms further fragmented the already disintegrated hierarchical government activities (Peters, 2018b). On the one hand, decentralization diffused the roles and responsibilities in public policy vertically between tiers of government and on the other, disaggregation and specialization encourage segmentation horizontally, within tiers of government. These reforms caused dedicated policy domains to form lean, flat and autonomous 'single-purpose' organizational units with explicit and discrete goals and responsibilities (Pollitt & Bouckaert, 2011; Cejudo & Michel, 2017). Over time, these policy domains developed their own segmented conception of policy problems, appropriate solutions, ideologies and interests. This was further encouraged by the performance-oriented nature of NPM reforms which focused on attaining specialized sectoral targets. Fragmentation proved persistent as

principles of decentralization, disaggregation and specialization were incrementally institutionalized through legislation, and administrative and organizational reform. This shaped a country's internal politics and the distribution of power, accountability and budgets. It strongly influenced public policymaking because it defined how government resources – i.e. the formal competencies such as decision-making power, clearly identifiable resources such as personnel, money and necessary competences, but also less tangible resources such as legitimacy (see Table 2.1) – are dispersed horizontally and vertically throughout the government apparatus. As a result, fragmentation is now inherently part of government policy and therefore difficult to reverse (Stead & Meijers, 2009).

Following this wave of NPM reforms, the fragmentation of public management has become of increasing concern to policymakers for two main reasons. First, policy domains are strongly interconnected and the success of any policy will often depend, at least in part, on the effects of policies from other domains (Howlett & del Rio, 2015; Peters, 2018b. Second, complex societal problems such as climate change, environmental degradation or depletion of fossil fuels, span across sectors and levels of government (Christensen & Lægreid, 2007; Jordan & Lenschow, 2010; Cejudo & Michel, 2017). The complexity of these 'cross-cutting' problems is determined by the extent to which their causes are entrenched in different policy domains and responsibilities, and the extent to which the resources to address a problem are dispersed between different departments, ministries and levels of government (Peters, 2005). Finding answers to cross-cutting policy problems requires collective action (van Bueren et al., 2003) because no single actor has all the required resources. Different and specific resources – see Table 2.1 – need to be drawn from a wider range of interdependent actors to formulate and implement integrative solutions (Ansell, 2000; Kooiman, 2003; Shaw, 2013). As a response to these growing concerns, policy integration emerged as a strategy for overcoming fragmentation (Perri, 2004; Christensen & Lægreid, 2007; Stead & Meijers, 2009).

Policy integration generally takes an instrumental focus to overcoming fragmentation (Trein et al., 2019). In this study, policy integration is considered to comprise the strategic and administrative decision-making at all stages of a policy process that is aiming to attain shared goals which transcend individual policy domains to address complex policy problems (Cejudo & Michel, 2017). The process of policy integration can be both oriented towards formulating shared and integrated objectives and towards developing policy instruments to support cross-cutting objectives (Candel & Biesbroek, 2016). First, instead of goals being defined autonomously, it is important to define shared goals and to incorporate these into an overarching strategy so that multiple domains are united and contribute rather than undermine each other in tackling a shared policy problem more or less holistically (Cejudo & Michel, 2017). Second, and within this context, policy instruments are developed – individually and together – to meet the shared policy goals they serve consistently and to help coordinate action across policy domains. Candel & Biesbroek (2016) acknowledge that processes of policy integration are often characterized by discrepancies or time lags between the degree of integration that is achieved on goals level and instrument level.

Within this conception of policy integration, interaction – i.e. the transfer of resources – plays a central role. Interaction is a core mechanism for overcoming interdependencies between policy actors in addressing cross-cutting problems (Pfeffer & Salancik, 2003). This is supported by Cejudo & Michel (2017) who argue that 'interactions enhance the possibilities of achieving the broader goal of solving complex problems' (Cejudo & Michel, 2017). Actors generally 'interact with each other to obtain resources they do not control themselves' (Poppelaars, 2007 p. 7). Several authors have argued that higher degrees of integration are generally associated with higher degrees and frequencies of interaction between a greater variety of policy sectors and levels of government (Stead et al., 2004; Peters, 2015; Candel & Biesbroek, 2016).

TABLE 2.1	THE FIVE RESOURCES TRANSFERRED IN PROCESSES OF PUBLIC POLICY FORMATION
	AND IMPLEMENTATION – BASED ON KLIJN & KOPPENJAN (2016)

Resources	Description
Financial resources (FRs)	FRs refer to money and budgets. FRs are needed to cover the cost of policy formation and implementation. As such, FRs provide opportunities not only to finance policy solutions, but also to cover the transaction costs attached to the decision-making processes prior to actual implementation.
Production resources (PRs)	PRs are the resources needed for the actual realization of solutions, policies and services. This can include, for instance, land ownership for an urban restructuring project, a construction firm's building equipment or the necessary staff.
Competency resources (CRs)	CRs concern the juridical authority ('competence') to make certain decisions. Examples include the authority to decide on zoning plans or to issue permits for certain activities.
Knowledge resources (KRs)	KRs are important for investigating problems and generating solu- tions. KRs can be made available through documents or by prompt- ing a knowledgeable actor to transfer implicit knowledge in the decision-making process.
Legitimacy resources (LRs)	LRs are a relatively vague resource which concern granting legiti- macy to, or withhold legitimacy from, a decision. LRs can include the support of elected political bodies, the media or citizens, giving extra weight to a project or policy initiative.

## Land use and transport integration

In light of the above discussion, LUTI is framed as a strategy for overcoming growing concerns about fragmented government action in land use and transport (Hull, 2008). Traditionally, transport planning was a technocratic, self-contained discipline which can be characterized as siloed, line-oriented (Heeres et al., 2012), and primarily aimed at enhancing transport system performance. Transport policies often focused on a single infrastructure mode (road, water, rail etc.) and were limited in scope (Banister, 2005). As a consequence

of quantitative predict-and-provide thinking, transport planners were primarily focussed on meeting the increasing demand for transport through network development and expansion. Growing insights into the interrelationships and interactions between, at first, different transport modes, and later between the transport and land use systems, provoked trenchant critique of this technical rationality (Banister, 2002). Transport planning is increasingly acknowledged ideally to take into account the boundary-spanning and multi-scalar nature of transport services and mobility patterns as well as the interrelationship with land use (Arts et al., 2014; Arts et al., 2016b).

As a specific form of policy integration, LUTI focuses on a reciprocal relationship between the land use system and the transport system (Wegener & Fürst, 1999). In planning practice, this occurs in two different ways. The first can be regarded as land use transport policy integration, which pertains to a strategic orientation and generally aims to 'contribute to an optimum spatial organization of activities and a well-balanced transport system linking these activities in an efficient and sustainable way' (Wegener & Fürst, 1999, p. 76). Even though LUTI is considered valuable as it leads to a variety of social (Farrington & Farrington, 2005; Gudmundsson et al., 2015) and economic benefits (Banister & Berechman, 2001), the environmental argument for integration is most dominant (Banister et al., 2011; Bache et al., 2015). Reducing the need for transport and increasing the use of sustainable transport modes to reduce transport-related emissions (Bliemer et al., 2016) is highly dependent on complementary land use policy. For instance, urban density, mixed land use, neighbourhood design, proximity and distance to public transport connections successfully help create less car-dependent cities (Stead & Marshall, 2001; Ewing & Cervero, 2001; OECD, 2002; van Wee et al., 2013). The second way is more operational in nature and can be regarded as land use transport project integration. This approach focuses on integrating infrastructure development with adjacent land use development into integrated projects (Heeres et al., 2016). This type of integration enhances the 'overall outcomes for an area, in terms of higher quality and more sustainable results' (Heeres, 2017 p. 14). Several researchers have shown that combining transport infrastructure development with local land use development – e.g. housing, energy, nature or recreation – can improve the societal, economic and environmental revenue of projects (Arts et al., 2016b, 2014; Elverding et al., 2008; Bertolini et al., 2005).

## Policy instruments and policy integration

This study adopts an instrumental approach to land use and transport integration. In line with Howlett (2000a), policy instruments are considered here as the main implementation tools of governments as they can directly influence the policy outcome achieved. They are the deliberately devised means that governments use to put their policies into practice (Leroy & Arts, 2006; Howlett & Rayner, 2007; Torfing, 2012). Governments usually mobilize mixes of instruments throughout the policy process to attain one or multiple goals (Bemelmans-Videc et al., 2011; Howlett, 2014b; Howlett & del Rio, 2015). Inspired by Lascoumes & Le Galès (2007), instruments are defined here as a particular type of institutional design, i.e. a deliberately devised set of rules which governs the interactions and behaviours of actors and organizations in order to attain a predefined outcome. By shaping interaction processes, policy instruments can have productive impacts on the results of implementation (Bressers & O'Toole, 2005).

In general, two instrument types can be distinguished: substantive and procedural ones (Howlett, 2000). Traditionally, governments have primarily used substantive instruments to attain their goals. These command-and-control type instruments make direct use of government resources to induce the desired behaviour or prohibit certain behaviour (Howlett, 1990). Examples of such substantive instruments include: subsidies, loans, grants (financial resource), regulation, licences, permitting (competence resource), advice, training and reporting (knowledge resource). *Procedural instruments* on the other hand act to indirectly 'guide or steer policy processes in the direction government wishes through the manipulation of policy actors and their interrelationships' (Howlett, 2000, p.424). Procedural tools structure how the implementation process unfolds by shaping interaction and behaviour during the process of formulating and adopting policy solutions without predefining the outcomes of these processes (Howlett, 2018; Peters et al., 2018). Governments can steer interactions and interrelationships between policy actors by for instance providing information, devising overarching strategies, incorporating or excluding policy actors in decisionmaking, creating funding mechanisms and carrying out an administrative re-organization (Howlett, 2000, 2018).

In the context of policy integration, governments are increasingly mobilizing softer procedural instruments (Salamon, 2000). Candel & Biesbroek (2016) argued that a high degree of policy integration is generally characterized by a high deployment of predominantly procedural instruments to coordinate between policy domains and levels of government. From this perspective, policy instruments can be seen as a mechanism which activates processes of interaction between networks of actors (Capano & Howlett, 2019). Accordingly, procedural instruments can stimulate the transfer of resources to overcome interdependencies to successfully formulate and implement integrated policy solutions. These instruments can even take the form of boundary-spanning structures which oversee and address cross-cutting problems as a whole (Jochim & May, 2010). Peters et al., (2018) even suggested that procedural instruments could supplant substantive instrument interventions in the context of such network settings as procedural instruments in particular have proved important for policy integration because they structure the required cross-sectoral and multilevel interaction processes to address the fundamental links against a background of a fragmented polity.

## Policy instruments for land use and transport integration

A variety of studies have discussed the policy instruments available to planners to better integrate land use and transport planning. Only a few of those studies have concentrated on substantive instruments; they describe how different substantial land use policy instruments (e.g. development density and mixed land use, and parking standards) and transport policy instruments (e.g. park-and-ride, cycle networks, bus rapid transit, light rail and pricing) can be combined into supportive instrument mixes (May & Crass, 2007; May et al., 2012). Most literature on LUTI policy instruments focusses on procedural instruments. This body of research can be divided into two categories.

The first focusses on the development and use of *technical decision support instruments*, such as accessibility models and integrated land use and transport models, which aim to provide information to decision makers. Many such models have been developed over the years (Papa et al., 2015; Moeckel et al., 2018). The downside of these planning support systems is that they are considered to be too technical, generic, inflexible and complex (te Brömmelstroet, 2010b) models and tools – in Dutch planning practice, in order to shed light on how planning practitioners perceive these instruments and to ascertain the reasons and manner of their (lack of and there remains much debate on appropriate indictor sets. Therefore, these models are hardly ever used in practice (Straatemeier, 2008; Silva et al., 2017; ITF, 2019b).

The second group is *policy instruments which aim to span boundaries* between the land use and transport domains and to encourage integration processes throughout the policy process (Mu & de Jong, 2016; Marsden & Reardon, 2017; Tornberg & Odhage, 2018). The LUTI literature describes several examples of such procedural policy instruments, e.g. establishing cross-departmental working groups (Jones & Lucas, 2000), introducing cross-departmental budgeting schemes (Macario et al., 2005; Stead, 2008) or using planning instruments such as the Dutch 'sustainable urbanization ladder' (see Duffhues & Bertolini, 2016) and the Swedish 'four step principle' (see Johansson et al., 2018). However, to date, research on such procedural instruments and their impact on policy integration has been rather limited and continues to be focused on individual instruments. Given that when implementing LUTI governments deploy mixes of instruments throughout the policy process to put their policies into practice, we need more insight into how mixes of procedural instruments influence LUTI, both with regard to policy formulation and implementation.

# 2.3 METHODS

This study employs a multiple case study methodology (see Yin, 2003). Three Dutch cases have been compared using evidence derived from triangulating the results of desk research on government policy, in-depth interviews and focus group discussions. Such a qualitative case study approach allows for a detailed examination of how regional governments use mixes of policy instruments to facilitate interaction during processes of policy formation and implementation in the context of LUTI. A multi-case comparison design was used to strengthen analytical generalization and formulate more robust results (Yin, 2003). The Dutch provinces of Friesland, Overijssel and Noord-Brabant were selected for three main reasons. First, the Dutch have a long tradition of land use and transport integration

as it has been a central policy objective for decades (V&W, 1977). Second, Dutch spatial planning increasingly occurs at the regional level. Widespread endorsement of subsidiarity and decentralization principles has deconcentrated parts of the administration and decision-making on land use and transport, making Dutch sub-national governments dominant partners in land use and transport planning (Rli, 2016) – see Table 2.2. Third, a preliminary orientation of possible cases was carried out in cooperation with the Dutch national government officials. Overijssel, Friesland and Noord-Brabant were identified as relevant cases, mainly because they are interesting for cross-case comparison as these provinces have been active in their attempts to integrate land use and transport using different approaches. Moreover, the cases are rooted in a similar public administrative context and the resources on land use and transport planning and development are allocated between the province and municipalities in a similar way.

The process of data collection was similar for each case and was carried out in three subsequent steps. Desk research into policy documents provided input for semi-structured interviews. The interviewees were selected based on their position in the provincial organization. Our sample included public practitioners on provincial land use and transport planning, both at the policy and the project level. A total of sixteen people were interviewed: five from Friesland, four from Overijssel and seven from Noord-Brabant (see Appendix A1 for a list of respondents and Appendix A2 for the interview guide). The interview outcomes were verified and elaborated in focus group discussions, which were held for every case. The different focus groups each comprised four to nine participants, selected on the basis of references from the interviewees. Participants were asked to comment collectively and reflect on a set of statements, which had been based on interview outcomes (see Appendix A1 for a list of focus group participants and Appendix A3 for the focus group setup). All the data collected was transcribed, coded and analysed using Atlas TI. Each case was analysed individually before cross-case comparisons were made. The analysis was guided by the theoretical framework following the coding scheme included in Appendix A4.

	Municipalities	Provinces
Land Use	<ul> <li>Prepare land use plans, issue permits and manage public land</li> <li>Manage urban and rural development</li> <li>Housing and business development programmes</li> </ul>	<ul> <li>Policy on nature protection and biodiversity</li> <li>Policy on recreation, tourism and rural landscape</li> <li>Energy and climate, renewable energy</li> <li>Agriculture and rural development</li> <li>Coordinate the interrelationship between regional land use and economic development</li> <li>Coordinate municipal housing and business development programmes with a regional perspective</li> </ul>
Transport	– Development and maintenance of municipal infrastructure	<ul> <li>Development and maintenance of provincial infra- structure</li> <li>Long-term regional strategies on transport policy</li> <li>Regional public transport network</li> <li>Tender and contract for public transport services</li> </ul>

# TABLE 2.2 FORMAL ROLES AND RESPONSIBILITIES IN DUTCH REGIONAL LAND USE AND TRANSPORT PLANNING

# 2.4 ANALYSIS OF REGIONAL PLANNING PRACTICE

The case study results are presented according to the two components of the theoretical framework. The first section presents the findings on how the fragmentation of the policy sector shapes Dutch regional land use and transport planning. The second section elaborates on how each case deploys a distinct mix of policy instruments throughout the planning process to structure interaction to achieve land use and transport integration.

# How resource interdependencies shape Dutch regional land use and transport planning

Table 2.3 illustrates how resources associated with land use and transport planning and development are distributed horizontally, within provinces, and vertically between municipalities and provinces. Respondents expressed a variety of perspectives on how resource interdependencies influence land use transport planning and how it prompts intervention.

Horizontally, the unequal distribution of financial resources between the land use and transport departments was frequently highlighted. Respondent 20 stated that their department for 'mobility has budget [...] while land use is penniless'. Overall, the respondents offered numerous examples of how fragmentation of internal resources gives rise to interdependencies in achieving LUTI outcomes, triggering horizontal interaction. This quote from Respondent 3 is illustrative: 'We used to have a "mobility" team and a "spatial planning" team [...] Integrating these teams has resulted in much more policy integration'. Vertically, fragmentation creates interdependencies between provincial and municipal organizations. As Respondent 31 asserted: 'Practically, we [the Province] are not responsible for land use planning. We are responsible for transport and mobility. We own 800 kilometres of road infrastructure [...] As such, we have to manage, maintain and invest in infrastructure. We have direct influence. But for land use planning [...] we are always dependent on others'. This relationship influences how provinces and municipalities interact. For example, provinces have a key role in coordinating land use development at a regional scale, for which they may use legal ordinances. Respondents indicated that despite having this competence, provinces hesitate to use it, as - due to their interdependency - it is beneficial to them to have a good relationship with the municipalities. As such, provinces tend to adopt collaborative approaches aimed at achieving consensus: 'The implementation of housing programmes lies with municipalities. The same applies to the allocation and development of business areas. In these cases we make sure to be involved at the early stages and to coordinate their plans with our own projects' (Respondent 4).

Financial resou	rces
Municipality	Municipal budgets are first outlined in a coalition agreement and then further labelled and divided between investment programmes. The available budgets and the focus of the investment programmes vary between municipalities. In 2017 the average shares of municipal expenditure allocated to spatial planning and housing were as follows: Friesland 5%, Overijssel 7% and Noord-Brabant 9%. For traffic and transport this was: Friesland 6%, Overijssel 5% and Noord-Brabant 6% (CBS, 2016).
Provinces	Programme budgets are outlined in coalition agreements and later labelled specifically by the elected assembly. Budgets for land use development are limited and fragmented across different investment programmes. Financial resources for transport are incorporated into provincial budget programmes. This programme budget is specifically allocated to different modes (car, bike and public transport) and policy goals (e.g. accessibility and safety). Transferring funds within an invest- ment programme is generally easy, whereas between programmes is difficult. In 2016 the shares of provincial expenditure allocated to spatial planning and housing were: Friesland 1%, Overijssel 3% and Noord-Brabant 2%. For traffic and transport this was: Friesland 47%, Overijssel 17% and Noord-Brabant 21% (CBS, 2016).

# TABLE 2.3 FRAGMENTATION OF RESOURCES BETWEEN PROVINCIAL AND MUNICIPAL ORGANIZATIONS, AND WITHIN PROVINCIAL ORGANIZATIONS

Production resou	rces
Municipality	Public land policy varies among municipalities. Larger municipalities in particular engage in strategic land acquisition for future development of housing or business areas. Furthermore, municipalities own local infrastructure and public works, and they can start legal land expropriation procedures to acquire land for infrastructure and land use development if this serves a clear public interest.
Province	Public land policy varies among the cases. Friesland, Overijssel and Brabant avoid engaging in strategic land acquisition for future housing or business development sites. They acquire land if this is required to achieve policy objectives for tasks for which they are formally responsible. Provinces own regional infrastructure and public works and they can start a legal land expropriation procedure to acquire land for infrastructure and land use development if this serves a clear public interest.
Competencies	1
Municipality	Municipalities have decision-making authority on local land use development (housing, offices and industry) and local infrastructure planning and development as long as this does not interfere with regional or national interests. The local land use plan is their main instrument.
Province	Provinces have a supervisory role over municipalities from a regional perspective. To support them in this task, provinces have legal instruments enabling them to direct and align municipal land use plans. In domains where they have administra- tive responsibility (Table 2.2), they can use legal ordinances to implement policy. Provinces also have decision-making authority over regional infrastructure planning and development. Provinces have legal instruments to implement infrastructure development projects which automatically overrule municipality plans.
Knowledge resou	irces
Municipality	Knowledge of land use and transport planning and development is dispersed across departments. Municipalities have strategic and operational knowledge of and data on the local context, which is important for LUTI at a strategic and operational level.
Province	Provinces have strategic knowledge and operational data at a regional scale, which is relevant for LUTI. Depending on the organizational structure, the internal fragmentation of this knowledge varies per case. In Noord-Brabant, spatial planning and transport planning is conducted in separate clusters. Friesland is currently organized into sectors but is incrementally adopting an organizational structure in which cross-disciplinary teams work on cross-cutting policy problems. Overijssel works with a spatial planning team and an accessibility team, and both teams include land use planners and transport planners.
Legitimacy resou	rces
Municipality	Decisions are usually taken by the executive members of the municipal council ( <i>wethouders</i> ). They have a sectoral mandate as their competences are linked to delineated political portfolios. Generally, land use and transport are part of different portfolios managed by different executives.
Province	Decisions are usually taken by members of the Provincial Executive ( <i>gedeputeer-den</i> ). They have a sectoral mandate as their competences are linked to delineated political portfolios. In all cases, land use and transport are part of different portfolios managed by different executive members.

### Instrument mixes for land use and transport integration

The results show that Friesland, Overijssel and Noord-Brabant deploy different instrument mixes to facilitate LUTI. The results are presented below for each case individually: a table provides a brief description of each policy instrument used and a figure visualizes how these instruments together form a mix and how they structure interaction throughout the policy process. Furthermore, interview and focus group data set out how these policy mixes are used to achieve integrated land use and transport outcomes. A more elaborate explanation of each of the policy instruments is provided in the Appendix A5.

## Friesland – projects as a platform for integrated land use and transport development

Table 2.4 describes the four policy instruments observed in Friesland. Data reveals an ongoing and widespread development towards integrated policymaking and implementation in Friesland. This trend is reflected in various ways. Foremost, Friesland has invested in developing a strong sense of community by building coalitions with municipalities and the water board, aiming to 'operate as one government' (Respondent 5). Furthermore, policy integration is encouraged through a series of organizational reforms which merged policy departments: 'In the past we had a provincial apparatus consisting of many cubicles, each with a person working on his or her own project. Now we are mixed [...] and I collaborate with various policy domains' (Respondent 6). Although LUTI is a prominent topic in Friesland, it only plays a marginal role during policy formation processes. Friesland's strategicallyoriented instruments are used for other forms of policy integration, e.g. a sustainable energy policy is currently a major theme. Therefore, the Frisian approach to integrating land use and transport is considered as predominantly operational. Infrastructure development is used as a trigger for adjacent land use development. The motivation behind this operational focus was expressed by Respondent 8: 'Our council has always stressed that whenever we develop infrastructure, we need to add value to the area [...] As such we engage with local stakeholders to develop an integrated area-development plan [...] It is a means of compensating for the impact of infrastructure development'.

#### TABLE 2.4 THE PROVINCE OF FRIESLAND'S POLICY INSTRUMENTS FOR LAND USE AND TRANSPORT INTEGRATION

Instrument name	Instrument description	Interaction pat- tern
1. The Frisian Approach	The 'Frisian Approach' is a visioning process in which the province, along with 23 of the 24 municipalities and the water board, aims to formulate an integrated, regional long-term environmental policy strategy paper, including the potential integration of municipal land use policy and provincial transport.	Horizontal and vertical transfer of knowledge and legitimacy resources.
2. Streekwurk regions	The province is divided into five <i>Streekwurk</i> regions. Within these regions, the province, municipalities and water board collaborate based on a shared <i>regional</i> policy agenda. The regions are used by the province for making small-scale infrastructure investments (e.g. bicycle infra- structure) and reaching regional agreement on locations for future housing, retail or business development.	Horizontal and vertical transfer of financial, knowledge and legitimacy resources.
3. Integrated policy problem management	The provincial organization is divided into routine opera- tions (e.g. issuance of permits, enforcement and road maintenance) and the formulation and solving of cross- cutting policy problems. Regarding the latter, a 'Policy Issue Committee' within the provincial organization trans- lates the coalition agreement into integrated policy tasks assigned to cross-disciplinary teams. LUTI is not explicitly mentioned as one of the integrated policy tasks.	Horizontal transfer of financial, knowledge and legitimacy resources.
4. Large infra projects	All large-scale road, rail and water infrastructure develop- ment projects within the province carry the label 'Large infra project'. All these projects have a strong external orientation as project development occurs in close col- laboration with the stakeholders involved (both public and private) to explore possibilities to integrate infrastructure development with land use developments.	Horizontal and vertical transfer of financial, knowledge, legitimacy and production resources

Figure 2.1 visualizes Friesland's policy instrument mix. Findings show that the province uses a pragmatic approach to LUTI, which is principally focussed on the formation phase of the policy process. At the strategic level, LUTI is not well established, as Friesland's Environmental Strategy emphasizes other policy themes. This leaves much unused potential in the existing strategic instruments for encouraging LUTI at the strategic level. Respondents indicated that Friesland's success at achieving LUTI at the operational level results from a large-scale infrastructure development programme for which the council ordered the structural adoption of an integrative approach. As such, infrastructure development has been the key driver for finding opportunities for combined land use and infrastructure development mix has been successful in developing these integrated land use and transport development projects. Friesland has no instruments to structure

interaction at the interface of policy formation and implementation. Our analysis reveals that infrastructure projects are not incorporated into a LUTI-oriented policy agenda. This is a weakness in this mix: potential benefits of strategic LUTI may have been missed due to a weakly linked policy framework. There is a danger that project delivery will become a goal in itself and become disconnected from any strategic foundation.





## Overijssel – front-end focussed legal approach to land use and transport integration

Table 2.5 presents the six instruments the province of Overijssel uses for LUTI. The results indicate that Overijssel's past experience in integrated spatial planning, during the implementation of the 2009 integrated environmental strategy, has benefited Overijssel in bringing about LUTI. This benefit is reflected in the close collaboration developed with municipalities on land use and transport planning: 'We have a long-established tradition in front-end collaboration [...] As a result, we hardly need to use our more directive implementation instruments' (Respondent 1). Moreover, Overijssel has established a strong intraorganizational link between land use and transport at both the strategic and operational level: 'The interrelation of urban dynamic and its interconnecting infrastructure network is an important planning principle [...] Infrastructure developments should be approached as integrated area-development projects' (Overijssel, 2017 p. 99 & 115). Overijssel's instrument mix is characterized by front-end collaboration and a legal orientation. Interviewees commonly expressed the principal role of early involvement of public and private stakeholders at both the policy and the project level as 'shared policy goals make it easy to collaborate' (Respondent 1). This legal orientation is reflected in two ways. First, there is a sharp focus on formal administrative responsibilities when engaging in collaboration. As Respondent 1 put it: 'we are open for collaboration if there is a clear provincial interest

involved'. Second, Overijssel is the only one of the three provinces to use a legal ordinance to implement LUTI.

#### TABLE 2.5 THE PROVINCE OF OVERIJSSEL'S POLICY INSTRUMENTS FOR LAND USE AND TRANSPORT INTEGRATION

Instrument name	Instrument description	Interaction pattern
1. Overijssel Environmental Strategy	Overijssel used its revision of the 2009 Environmental Strategy as a way to re-establish and further develop integrated policy goals in collaboration with municipali- ties. Existing LUTI ambitions are further developed in a supplementary, economically oriented, strategic network vision on the integration between transport networks and the land use system.	Horizontal and vertical transfer of knowledge and legitimacy resources.
2. Regional development agenda	Overijssel shares a regional development agenda on land use and transport with the Dutch national govern- ment, which is used to obtain large national infrastruc- ture development funds. The province and municipalities collectively formulate key regional policy challenges for Overijssel which they want to address in cooperation with the national government.	Horizontal and vertical transfer of knowledge and legitimacy resources.
3. Environmental ordinance	LUTI policy as defined in the provincial environmental strategy is partly implemented by means of an area-spe- cific environmental ordinance. This ordinance explicitly considers the land use system and transport system as interconnected systems. Subsequently, the ordinance in- corporates multiple main planning principles to promote LUTI at the strategic and operational level.	Vertical transfer of competency resources.
4. Front-end collaboration	Front-end collaboration encourages interaction with municipalities in the early stages of policy and plan- ning development to explore and subsequently benefit from integration opportunities. The instrument is widely institutionalized in the organization and is important for achieving LUTI.	Horizontal and vertical transfer of competency, knowledge and legitimacy resources.
5. Spatial planning and accessibility teams	Overijssel has integrated its spatial and transport plan- ning departments into two spatial planning and acces- sibility teams. The Strategy Team is responsible for the formation of LUTI policy. The Adoption and Execution Team is responsible for policy implementation.	Horizontal transfer of knowledge resources.
6. Multi-project programmes	Multi-project programmes are used to integrate land use and infrastructure development. These programmes encompass a combination of land use and infrastructure development projects which are interrelated through a shared programme objective.	Horizontal and vertical transfer of knowledge and financial resources.

Figure 2.2 presents Overijssel's instrument mix for attaining LUTI. It illustrates that Overijssel emphasizes integration at the interface between policy formation and implementation. Respondents indicate that the three instruments positioned at this interface have helped firmly establish LUTI principles at both the strategic and the operational level. The environmental ordinance includes strategic LUTI-oriented planning principles and renders them into area-specific ordinances which translate these principles to the operational level. Front-end collaboration is applied at both the strategic level, during policy formation, and the operational level, during project development. This collaboration allows the province to incorporate LUTI principles during the early stages of policy and project decision-making. Knowledge transfer in spatial planning and accessibility teams is important for defining regional strategic integrated land use and transport policy goals in the Overijssel Environmental Strategy. These teams work on project delivery with the ambition of integrating new infrastructure in the existing spatial context. Multi-project programmes are used to facilitate this area-oriented project development approach. The programmes structure the transfer of financial resources. Instruments 3 and 4 reflect Overijssel's more formal, coercive and legal approach to achieving LUTI. Through these instruments, Overijssel uses its legal coordinative powers to achieve LUTI goals. This coordinating style causes the inter-organizational regional LUTI policy agenda to become rather unsuccessful, as the province has a dominant role in directing this agenda.





#### Noord-Brabant – setting land use and transport integration in informal networks

Table 2.6 provides an overview of the seven instruments used by Brabant to achieve LUTI. Brabant emphasizes the importance of strong ties with municipalities to achieve land use and transport integration. Interviewees have widely confirmed that LUTI requires inter and intra-organizational interaction to overcome resource interdependencies. Discussing operational LUTI, Respondent 11 reflected on these interdependencies by stressing the importance of using 'the front-end of your project well: this is where you invest in relationships [...] At later stages of the project you will enjoy the benefits of avoiding legal procedures'. At a more strategic level, Brabant is characterized by close cooperation between municipal and provincial government executives; Respondent 22 suggested that it 'might be typical for Brabant [...] to organize large-scale, strategic administrative meetings between government executives to talk about the major policy issues'. At both the strategic and the operational level, Brabant invests in developing a large variety of inter and intra-organizational partnerships. Within these partnerships, the province emphasises 'an informal climate for collaboration' (Respondent 14).

Instrument name	Instrument description	Interaction pattern
1. Brabant Environmental Strategy	Noord-Brabant has formulated an integrated environ- mental strategy based on an inclusive visioning process. During this process, many different formal and informal sessions were organized with public and private stakehol- ders, including municipalities. This strategy specifically integrates existing sectoral policies on spatial planning and mobility.	Horizontal and vertical transfer of knowledge and legitimacy resources.
2. Concern strategy	The concern strategy, which links to the Brabant Environ- mental Strategy, is a strategic policy agenda at the provincial management level, supported by the directors of the various organizational clusters. LUTI is one of the issues on the agenda.	Horizontal transfer of knowledge and legitimacy resources.
3. Area-oriented policy approach	The area-oriented policy approach deals with the for- mulation of shared, cross-cutting policy problems from a regional perspective, taking the area as an integrated framework. Depending on the scope and the location of the problem, different actor networks are involved.	Horizontal and vertical transfer of knowledge, legitimacy and financial resources.
4. BrabantCity	BrabantCity is an informal collaborative network which includes the province and its five largest cities. It started in 2000. The network develops a shared strategic agenda and an executive agenda in which LUTI is one of the key topics. Informal thematic meetings are periodically organized between the municipal and provincial executives concerned.	Horizontal and vertical transfer of knowledge and legitimacy resources.
5. Regional development days	Biannually, Noord-Brabant organizes regional develop- ment days for integrating regional land use and transport decision making. These days consist of two rounds. The first round has a strong operational focus and aims to align and prioritize programmed infrastructure and land use developments. Round two is strategic and aims at developing a regional policy agenda for integrated land use and transport. Development days are organized for the four Noord-Brabant regions: West, Middle, Northeast, and Southeast.	Horizontal and vertical transfer of knowledge and legitimacy resources.

#### TABLE 2.6 THE PROVINCE OF NOORD-BRABANT'S POLICY INSTRUMENTS FOR LAND USE AND TRANSPORT INTEGRATION

6. Area-oriented project delivery	Noord-Brabant has adopted an area-oriented approach for its latest infrastructure development projects. This appro- ach implies front-end involvement of stakeholders aiming to use infrastructure development plans to kick start adja- cent land use developments.	Horizontal and vertical transfer of knowledge, financial and legitimacy resources.
7. Flocking	Maintenance of provincial infrastructure is set out in long- term programmes spanning multiple electoral cycles. Flocking describes the intra-organizational process of finding possible synergies between these operational infrastructure programmes and other, land-use oriented provincial programmes (e.g. energy, nature and sustainability).	Horizontal transfer of knowledge resources.

Figure 2.3 illustrates that Noord-Brabant's policy mix is characterized by establishing high-frequency and high-variety horizontal and vertical interactions throughout the policy process. Respondents reported that instruments predominantly facilitated the transfer of knowledge and legitimacy resources to explore shared objectives and obtain the required legitimacy resources to further pursue these objectives. Financial resources come into play when these shared objectives are translated into specific programmes or projects. Respondents stressed that LUTI is well-established in Brabant, at both the strategic and the operational levels. At the strategic level there is a LUTI-oriented strategic inter-organizational regional policy agenda supported by provincial and municipal executives and pursued by public managers. This shared agenda has proved to be a powerful tool to align the focus of all strategically-oriented instruments as well as to lobby for investment funds from the Dutch national government and the European Union. Regional development days focus on linking policy formation and implementation, by interrelating and aligning programmed provincial and municipal land use and transport developments, and by reflecting on how these developments link to regional policy objectives. At the operational level, multiple instruments aim at integrating land use and transport through knowledge, legitimacy and financial resources. Integration at the operational level is strongly driven by the ambition to give impetus to the project area to stimulate successful project delivery or to find efficiencies in maintenance programmes. More generally, respondents emphasized that this mix is successful in finding and pursuing common opportunities for LUTI as a result of short, informal communication lines and close involvement of municipal and provincial executives. Despite this agility, the instrument mix also remains rather opportunistic, as outcomes are strongly shaped by negotiations. This makes the transport sector a dominant theme, as the land use sector is in a more vulnerable position.



#### FIGURE 2.3 THE PROVINCE OF NOORD-BRABANT'S POLICY MIX FOR LAND USE AND TRANSPORT INTEGRATION

# 2.5 **DISCUSSION AND CONCLUSION**

This article set out to develop an instrumental approach to land use and transport integration. To achieve this objective, a multiple case study was performed to compare how Dutch regional governments use mixes of policy instruments throughout the policy process to achieve LUTI. As mentioned in the literature review, fragmentation of the public sector has dispersed financial, production, competency, knowledge and legitimacy resources on land use and transport across tiers of government and within each of these tiers. The success of LUTI depends on the extent to which policy actors successfully transfer these resources to overcome their interdependencies to formulate and implement integrated land use and transport solutions. The results are discussed below and conclusions are drawn in line with the theoretical framework underlying this study.

#### Overcoming fragmented land use and transport planning

The negative effect of government fragmentation on policy integration is widely discussed in public management literature. Likewise, within the field of transport planning, multiple studies have underlined that fragmentation is a key barrier for LUTI (Hull, 2010; UN-Habitat, 2013). Inspired by Pfeffer & Salancik (2003) and Poppelaars (2007), this study adopted a resource perspective to address this issue. It was found that in line with the segmentation of roles and responsibilities, government resources on land use and transport planning are dispersed between and within levels of government. The cases show that pursuing LUTI creates resource interdependencies as no single actor possesses all the required resources. To overcome these interdependencies, Friesland, Overijssel and Noord-Brabant engage in horizontal and vertical interaction processes. They use mixes of policy instruments to structure these patterns of interaction throughout the policy process.

# Policy instrument mixes for developing and delivering integrated land use and transport policy

This study identified a total of seventeen policy instruments used to promote LUTI. Many of these instruments have been reported in previous studies, such as the use of broad strategic concepts (Marshall & Banister, 2007), regional planning structures or umbrella organizations (Macario et al., 2005; Marsden & May, 2006; UN-Habitat, 2013; Mu & de Jong, 2016), integrated transport projects (Heeres et al., 2012; Lahdenperä, 2012; Lenferink et al., 2013) and cross-sectoral teams (Geerlings & Stead, 2003). Furthermore, it stands out that this study exclusively identified procedural policy instruments. This outcome is in line with Peters et al. (2018) who argued that procedural policy instruments, rather than substantive instruments, are appropriate in the context of interdependencies because they indirectly shape policy outcomes by influencing how policy actors interact in policy processes. Another relevant finding is that none of the cases use technical support systems for LUTI. It mirrors the outcomes of earlier studies which found that despite the large body of literature, these technical decision support systems (e.g. accessibility and land use transport models) are seldom used in practice (Papa et al., 2015; Moeckel et al., 2018; ITF, 2019b).

As addressed in the literature review, existing research on LUTI has predominantly focused on a single policy instrument. This study finds, however, that governments deploy mixes of complementary policy instruments throughout the policy process to promote LUTI. Even though the specific configuration of instruments differs per case, all mixes highlight the importance of complementarity between the different instruments for achieving LUTI. For example, all three mixes include some form of comprehensive strategic spatial plan which is further operationalized in a shared regional policy agenda or other regional planning structure. It can be concluded that these regional planning instruments play a crucial role in the integration of provincial and municipal land use and transport policies and in the operationalization of these policies into specific infrastructure investments and land use interventions. Another interesting finding relates to the different policy instruments found at the interface of the formation and implementation phases (see Figures 2.1-2.3). Outcomes show that these are important for operationalizing integrated land use and transport policy, as well as preparing for land use transport project integration in the policy implementation phase. These outcomes illustrate, in line with Rayner & Howlett (2009), that policy formation and implementation instruments strongly interrelate and should be considered together in a single mix. Furthermore, it underlines previous studies which highlighted that land use and transport integration requires attention and instruments throughout the policy process (Macario et al., 2005; van Geet et al., 2019a).

Comparing the three policy mixes found, it is striking that each mix is unique and reflects a distinct approach to land use and transport integration. Whereas the Province of Friesland pursues a pragmatic and project-oriented approach to LUTI, Overijssel's style is directed at achieving both policy and project integration but in a more formalized, hierarchical manner which heavily relies on the use of competency resources. Alternatively, Noord-Brabant has the same combined policy and project focus but aims to achieve LUTI by fostering a high

intensity of informal interaction throughout the policy process. These differences between the cases underline that there is no silver bullet to achieving LUTI. Rather, these outcomes confirm what is described in earlier studies: that instrument mixes need to be tailored to fit the contextual setting in which they operate (Howlett & Rayner, 2004; Rogge & Reichardt, 2016; Lieu et al., 2018).

### Patterns of resource transfer in land use and transport integration

To provide a more in-depth understanding of how policy instruments structure interaction to achieve LUTI, this study qualitatively compared each instrument in terms of interaction – i.e. the horizontal and vertical transfer of financial, production, competency, knowledge and legitimacy resources. We found that most policy instruments combine simultaneous processes of horizontal and vertical interaction. These outcomes are likely to be related to the horizontal and vertical fragmentation of land use and transport resources observed between provincial departments and between municipalities and provinces. Furthermore, it is striking that knowledge and legitimacy resources are most frequently transferred, generally in combination with one another. This illustrates the general importance of information flows and shared decision-making throughout the policy process. Furthermore, the opposing use of competency resources between cases stands out. While Overijssel shows that competency is a powerful resource for achieving LUTI, the other cases deliberately avoided using it because of its potential for negatively affecting their relationships with municipalities. In addition, the results suggest that the transfer of production resources was not found in any of the instruments. This could be explained by Dutch legislation which defines specific land expropriation procedures.

More generally, these findings acknowledge, in line with Pfeffer & Salanciks's (2003) and Poppelaars's (2007) conceptions, that resource dependency is a key driver for interaction. The fragmentation of land use and transport resources creates interdependencies and a need to collaborate across horizontal and vertical boundaries. Recently, a number of scholars have underlined the need to adopt a more governance-oriented approach to transport planning (Mu & de Jong, 2016; Marsden & Reardon, 2017; Tornberg & Odhage, 2018). These findings once more stress the importance of research on this topic.

# Achieving land use and transport integration: finding the right instrument mix for the job

Taken together, these results help to develop an instrumental approach to LUTI. Such an instrumental approach could be an effective option to overcome government fragmentation in addition to institutional approaches to LUTI. While institutional approaches address fragmentation by removing institutional barriers, this instrumental perspective is characterized by overcoming fragmentation through interaction. Stead & Meijers (2009) are among those who have highlighted the persistence of these administrative boundaries, suggesting that overcoming fragmentation could be a more efficient strategy than resolving fragmentation. This comparative case study on Dutch regional planning shows that governments use mixes of policy instruments throughout the policy process to pursue land use and transport integration. In general, we conclude that there is not one right tool for LUTI. Instead, it is about finding the right mix of instruments which, in line with LUTI-goals, helps overcome the fragmentation of resources throughout the planning process by structuring interaction patterns across horizontal and vertical boundaries. More specifically, the findings show that government policy is inherently fragmented and that this determines how land use and transport resources are distributed between and within tiers of government. This drives Friesland, Overijssel and Noord-Brabant to interact in policy networks for the development and delivery of integrated land use and transport solutions. To structure these interaction patterns, each province adopts a unique mix of policy instruments: these mixes primarily consist of procedural instruments. Throughout the policy process, interaction predominantly entails the simultaneous transfer of knowledge and legitimacy resources which reflects the importance of information flows and shared decision making in the LUTI process. Furthermore, competency resources can be used to construct powerful and coercive policy instruments for LUTI. Nevertheless, cross-case comparison shows that this resource is not necessary to achieve LUTI.

#### Implications, limitations and directions for future research

Overall, this study developed a further understanding of how policy instruments can play a central role in achieving LUTI. Its outcomes provide insight into how mixes of mutually supportive instruments can shape the interaction processes which encourage integration. The study findings suggest that these policy mixes are the means through which fragmented government action can be overcome and cross-cutting policy challenges can be addressed. This implies, in line with Marsden & Reardon (2017), that governments and researchers should pay more attention to procedural, governance-oriented policy instruments in the field of transport planning.

It should be noted, however, that this research had a very specific focus to allow for a more in-depth analysis. As a result, the study did not take into account, for instance, policy instruments for monitoring and evaluation, the role of national government or the influence of other land use and transport policy instruments not primarily aimed at achieving LUTI. Furthermore, this study adopted a qualitative approach to interaction. Therefore, it does not provide insights into the density of interactions and the strength of ties between policy actors. These limitations, however, provide promising avenues for future research. It would be interesting to extend the scope of this study in several ways, to find further verification of our findings by, for example, including national governments, looking outside the Dutch context and/or by taking into account other spatial sectors. Another interesting research topic would be a more in-depth comparison of different mixes based on their performance rather than their design. Finally, it would be interesting to see how sectoral land use or transport policy instruments interact with LUTI procedural instruments.



THE IMPORTANCE OF POLICY DESIGN FIT FOR EFFECTIVENESS: A QUALITATIVE COMPARATIVE ANALYSIS OF POLICY INTEGRATION IN REGIONAL TRANSPORT PLANNING

## ABSTRACT

Policy design has returned as a central topic in public policy research. An important area of policy design study deals with effectively attaining desired policy outcomes by aligning goals and means to achieve policy design fit. So far, only a few empirical studies have explored the relationship between policy design fit and effectiveness. In this paper, we adopt the multilevel framework for policy design to determine which conditions of policy design fit – i.e. goal coherence, means consistency, and congruence of goals and means across policy levels - are necessary and/or sufficient for policy design effectiveness in the context of policy integration. To this end, we performed a Qualitative Comparative Analysis of Dutch regional transport planning including all twelve provinces. Outcomes show no condition is necessary and two combinations of conditions are sufficient for effectiveness. The first sufficient combination confirms what the literature suggests, namely that policy design fit results in policy design effectiveness. The second indicates that the combination goal incoherence and incongruence of goals and means is sufficient for policy design effectiveness. An in-depth interpretation of this counterintuitive result leads to the conclusion that for achieving policy integration the supportive relationship between policy design fit and policy design effectiveness is less straightforward as theory suggests. Instead, results indicate there are varying degrees of coherence, consistency, and congruence that affect effectiveness in different ways. Furthermore, outcomes reveal that under specific circumstances a policy design may be effective in promoting desired policy integration even if it is incoherent, inconsistent, and/or incongruent.

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# 3.1 INTRODUCTION

How to develop policy designs that effectively address policy problems has been an ongoing topic of research for decades. A policy design is generally understood as a mix of interrelating goals and means that governments employ to give effect to their policies (Howlett, 2014a; Howlett & Rayner, 2013). Even though policy design thinking has expanded considerably over the years, a key component has always focused on bringing about intended policy outcomes by consciously matching goals and means (Howlett & Mukherjee, 2018a) because a good fit between goals and mean is said to minimize incompatibilities and exploit synergies, so as to improve policy design effectiveness (Rayner et al., 2017). In this setting, policy design fit is considered to be the sum of coherence of goals, consistency of means, and congruence of goals and means (van Geet et al., 2019b). Contemporary studies on policy design often present these elements – coherence, consistency, and congruence – as the criteria that determine policy design effectiveness (e.g. Kern & Howlett, 2009; Howlett & Rayner, 2013, 2018).

To further mature as a field, policy design studies would benefit from methodological innovations and a stronger emphasis on the application and operationalization of the field's theoretical principles (see e.g. Rogge *et al.*, 2017; Schmidt & Sewerin, 2018). This also applies to the relationship between policy design fit and effectiveness which, to date, has undergone limited empirical testing (Rogge & Schleich, 2018). Consequently, the evidence for the positive relationship between policy design fit and policy design effectiveness has been predominantly of a theoretical nature (e.g. Howlett, 2009; Howlett & Rayner, 2013, 2018; Rayner et al., 2017). Not only have existing empirical studies hardly addressed all three conditions of policy design fit together, but they also present different findings of the importance of design coherence, consistency, and congruence for achieving desired outcomes (see Kern et al., 2017; Kern & Howlett, 2009; Reichardt & Rogge, 2016; Rogge & Schleich, 2018). A systematic empirical analysis, including all three conditions, of how coherence, consistency, and congruence – i.e. policy design fit – contribute to policy design effectiveness is lacking. This article aims to bridge this research gap by investigating to what extent policy design fit is needed for policy design effectiveness.

Understanding the relationship between policy design fit and design effectiveness is especially relevant in moving towards more comprehensive policy integration. Recently, there is increased interest in linking policy design thinking and policy integration research (Peters, 2018a). The purposive nature of policy design can help to achieve the increased integration between policy areas and levels of government that is needed to address cross-cutting policy problems (Candel & Biesbroek, 2016; Cejudo & Michel, 2017). Several scholars have already highlighted that certain policy instruments can help to address policy issues that span across policy fields and levels of government (Jordan et al., 2005). However, few policy design studies have given this consideration (Peters, 2018a). So far, it has remained unclear whether and how aligning policy goals and instruments help to effectively bring about desired policy integration. An earlier study by van Geet et al. (2019b) did reveal that discrepancies in the degree of integration between policy goals and policy instruments give rise to policy design incoherence, inconsistency, and incongruence. It is, however, unclear to what extent these mismatches between policy design elements impede effective policy integration.

The current study addresses these research gaps and investigates whether all three attributes of policy design fit are required, or whether, for example, only coherence or a certain combination of attributes, is sufficient for effectively achieving desired policy integration. Our study focuses on the impact of policy design fit in the domain of transport planning, where the challenge of promoting policy integration has become particularly apparent. Over the course of decades, transport planning evolved from an unimodal approach, to a multimodal approach, to an integrated approach on land use and transport planning (Arts et al., 2016a; Busscher et al., 2015; Heeres et al., 2012). While the field has progressed towards increased integration, governments are struggling to come up with effective policy designs to support current integrated ambitions on land use and transport (Van Geet et al., 2019a).

To achieve its objective, the current study applies Howlett's (2009)not all of which are as amenable to (re multi-level policy design framework to study policy integration in Dutch regional transport planning and adopts Qualitative Comparative Analysis (QCA) methodology to analyse the policy designs of all 12 Dutch provinces. More specifically, this research design is adopted to investigate whether the coherence of goals, the consistency of means, and the congruence of goals and means – or combinations of these three attributes – are necessary and/or sufficient for effective policy integration. QCA was selected both for its systematic approach to case comparison and for its configurational nature (Gerrits & Verweij, 2018; Rihoux & Ragin, 2009), which means that it allows for analyzing the necessity and sufficiency of conditions or combinations of conditions for achieving certain outcomes. QCA is an appropriate method for studying policy designs and explaining policy outcomes (Rihoux et al., 2011). Even though QCA has been used in public policy studies (Rihoux et al., 2011) and planning studies (Verweij & Trell, 2019) before, it offers a new methodological approach to examining the influence of policy design fit on policy design effectiveness.

# **3.2 THEORETICAL FRAMEWORK**

## A multi-level approach to policy design

The literature on policy design has come a long way. In its early stages, policy design thinking revolved around Tinbergen's (1952) notion that the most effective policy design consists of a 1-to-1 goal-means ratio, where one instrument fully addresses one policy goal (Knudson, 2008). Tinbergen himself acknowledged the difficulty of maintaining this 1-to-1 ratio because comprehensive policy goals will require a mix of policy instruments.

Yet, it took some time for his policy design approach to develop into the more comprehensive thinking that a policy design should be understood as a mix of interrelated goals and instruments that are deployed throughout the policy process (Howlett, 2014a; Howlett et al., 2015; Howlett & Rayner, 2018).

Key principles of current policy design thinking are captured by the nested model introduced by Howlett (2009) not all of which are as amenable to (re, building on the work by Hall (1993) and Cashore and Howlett (2007a)including Baumgartner and Jones (1993; 2002, as visualized in Figure 3.1. Since its introduction, this model has been incrementally developed and further established in a series of studies (Howlett & Cashore, 2009; Howlett & Rayner, 2013; Howlett & Mukherjee, 2018; Peters et al., 2018; Howlett, 2019). The model adopts a multilevel perspective on how mixes of policy goals and means are formed, based on the principle that higher levels of abstraction delineate and shape the features at the lower levels. The highest level of abstraction is the macro-level. This concerns the general mode of governance (e.g., corporatist, market, and network governance) that shapes policy deliberations and decision-making, as well as the preferred type of government regulation mechanisms (e.g., legal, financial, or communicative mechanisms) (Howlett, 2009, 2018a). Howlett (2018b) describes the macro-level as the contextual features that structure the policy formation and policy implementation practices of governments. The intermediate level of abstraction is the *meso-level*. This is referred to as the policy level and concerns the generic set of policy objectives of a certain policy sector, as well as the combination of policy instruments that are used throughout the policy process to attain these objectives (Howlett, 2018b). The decisions on policy design that are made on the meso-level set the boundaries for the design choices that can be made at the micro-level, which is the third and lowest level of abstraction. At the *micro-level*, policy design is operationalized and directly linked to goal attainment. Micro-level policy design is concerned with the delivery of policy outcomes. It is the level of the specific on-the-ground measures that are formed by detailed policy goal settings and specific instrument calibrations.

A key aspect that hallmarks current policy design thinking is the conscious effort to bring configurations of interrelating policy goals and instruments into alignment, so as to effectively achieve intended outcomes (Howlett et al., 2015). Multiple scholars have defined attributes to operationalize the alignment of design components. Examples include coordination, complementarity, coherence, consistency, and congruence (Bali & Ramesh, 2018). Some of these concepts partly overlap, as their focus is on either of three possible relations; the alignment between goals, between means, or between goals and means. When it comes to the multilevel understanding of a policy design that is adopted here, the alignment across components is generally expressed as, the coherence of goals, the consistency of means, and the congruence of goals and means (Howlett, 2009; Howlett & Rayner, 2013)not all of which are as amenable to (re. This is shown in Figure 3.1. More specifically, *coherence* is achieved when goals, objectives, and settings can be pursued at the same time without trade-offs (Kern & Howlett, 2009). Rogge & Reichardt (2016) argued that the *consistency* of a policy design reflects how well instruments are aligned with each other and how well they

contribute to achieving the same policy objective. Their study explained that consistency may range from the absence of contradictions between policy means to the existence of synergies between policy means. This is in line with Howlett & Rayner's (2013) view that the consistency of policy means is reflected by the "ability of multiple policy tools to reinforce rather than undermine each other in the pursuit of goals" (p. 174). *Congruence*, finally, reflects the extent to which policy goals and means are mutually supportive and successful at working together to achieve corresponding goals (Kern & Howlett, 2009). The sum of goal coherence, mean consistency, and congruence of goals and means, may be described as *policy design fit* (van Geet et al., 2019b).

*Policy design fit* is a dynamic concept; policy design components develop over time, through processes of layering, drift, conversion, replacement, and exhaustion (van Geet et al., 2019b; Kern & Howlett, 2009; Rayner, et al., 2017). It is important to take into account these processes of change as they will impact the *fit* of policy design components (van Geet et al., 2019b). Cashore & Howlett (2007) provide useful insight on how processes of policy design change unfold between goals and means across different policy levels. They found dynamics to differ across the model's components goals, objectives, settings, instrument logic, tools, and calibrations, because they evolve irregularly at a varying tempo, depending on the institutional structures that are in place for each component. In general, it is assumed that the macro-level is characterized by long-lasting stability; at the meso-level instances of policy change will occur in a higher frequency; and the micro-level is most dynamic (Hall, 1993; Howlett, 2009).

#### FIGURE 3.1 COMPONENTS OF PUBLIC POLICY IN POLICY DESIGN AND CONDITIONS FOR POLICY DESIGN FIT. BASED ON: CASHORE AND HOWLETT (2007), HOWLETT (2009), AND HOWLETT (2018a).

		roncy	content	
		Policy goals	Policy means (instruments)	
	<b>Macro level</b> – High level abstraction	GOALS What general types of ideas govern policy development? e.g. environmental protection, economic development, social cohesion	INSTRUMENT LOGIC What general norms guide policy instrument preferences? e.g. coercive "command and control", voluntary, markets, neoliberal norms	
Policy level	<b>Meso level</b> – Policy level or programme level operationalization	OBJECTIVES What does policy formally aim to address? e.g. saving wilderness or species habitat, reducing greenhouse gas emissions	TOOLS What type of instruments are utilized? e.g. tax incentives, loans, public enterprise, cap and trade carbon markets	 Congruence
	<b>Micro level</b> – Specific on- the-ground measures	SETTINGS What are the specific "on the ground" requirements of the policy? e.g. size of protected areas, level of carbon	CALIBRATIONS What are the specific ways in which the instrument is applied? e.g. qualification for tax incentives, rules governing cap and trade markets such as specifics on leakage, allocation of resources and approach to enforcement	
		Coherence	Consistency	

#### **Policy content**

## Attributes of policy design effectiveness

Effectiveness is widely acknowledged to be the fundamental goal of any policy design and is receiving considerable attention from design scholars. This is not surprising as effectiveness is generally considered the foundation upon which additional goals – such as sustainability, public value, or justice – may be constructed (Bali et al., 2019; Howlett, 2018b; Mukherjee & Bali, 2018; Mukherjee & Howlett, 2018; Peters, 2018a; Peters et al., 2018; Rogge & Reichardt, 2016). Peters et al. (2018) even argued that effectiveness is why policymakers, either implicitly or explicitly, engage in policy design in the first place. The growing interest in policy design fit, are considered to potentially affect policy design effectiveness. Within this rapidly growing body of literature, a differentiation can be made between effectiveness in terms of *process* – in which policy design is seen as a verb – and *content* – in which policy design is seen as a noun (Howlett & Rayner, 2013; Peters et al., 2018). This study focuses on the effectiveness of a policy design *as a verb* – i.e. the extent to which the technical specifications of a policy design are successful in attaining desired outcomes.

In recent years discussions on policy design effectiveness (as a noun that is) have converged to explore a variety of attributes that go beyond the traditional focus of matching goals and instruments. Schmidt & Sewerin (2018), for example, pose that policy designs with a higher intensity—i.e. the amount of resources or activity that is invested or allocated to a specific policy instrument – and a higher *balance* – i.e. the variety of instrument types within a design - will be more effective. Additionally, Thomann (2018) highlighted that explicitness in the calibration of a policy instrument – i.e., the extent to which desired behaviour is encouraged by attributing positive or native valence to certain actions – in part accounts for its effectiveness. Furthermore, Mukherjee & Bali (2019) argue that the capacity – i.e., the range of analytical, operational, and political skills – a government has available will determine its ability to successfully put instruments to use for achieving desired outcomes. Finally, both Peters et al. (2018) and Capano & Howlett (2019) describe the goodness-offit attribute, which holds that the calibration of an instrument needs to be responsive to the context in which it is deployed. Despite these valuable theoretical contributions, there is scant empirical evidence on the interrelationship between these attributes and design effectiveness. Filling this research gap is an important next step for bridging the growing gap between policy design theory and practice. Increasing our understanding of the relationship between policy design fit and effectiveness is an important first step to be made as this may be considered the foundation of current design thinking and still plays a leading role in contemporary policy design theory (e.g., Howlett, 2009, 2018b; Howlett & Rayner 2013, 2018; Howlett & Mukherjee, 2018).

The limited number of conducted empirical studies on the relationship between policy design fit and effectiveness has been confined to a single level focus on policy design and reveal different outcomes based on divergent research approaches. For example, Kern & Howlett's
(2009) single-case study describes how discrepancies in the development of policy goals and means over time resulted in sub-optimal outcomes, as a result of instrumental inconsistency as well as growing incongruence between goals and means. However, they did not explain how incongruence and inconsistency negatively influenced policy design effectiveness. Similarly, Kern et al. (2017) study on design dynamics implied that consistency and coherence may encourage goal attainment. However, they have not supported this claim by analyzing achieved policy outcomes. Rogge & Schleich's (2018) pioneering explorative quantitative study tested how the perception of German companies (n=390) regarding the coherence, consistency, and congruence of a policy design was associated with the policy outcome of low-carbon innovation. This study found only weak support for consistency and congruence, while coherence was not significantly contributing to the achievement of intended outcomes. Furthermore, Reichardt & Rogge (2016) conducted a multiple-company case study (n=6) and found that stable and coherent long-term policy goals, in combination with a consistent mix of policy instruments that were congruent with the long-term goals, led to successful corporate innovation in the offshore wind energy in Germany. Taken together, these empirical studies provide initial evidence that design coherence, consistency, and congruence may benefit policy design effectiveness. However, a systematic assessment of the relationship between policy design fit and effectiveness based on the multilevel understanding of policy design is still missing.

## **Operationalizing policy design effectiveness**

When it comes to determining the effectiveness of a policy design, the current body on policy design literature broadly provides the conformance and performance approaches as the two main alternatives. The first, which is also the most widely described, regards effectiveness as the degree to which a policy design achieves intended outcomes (e.g. Howlett & Rayner, 2018). In this approach, effectiveness is determined by comparing policy intentions to outcomes. The conformance approach to effectiveness is in line with the purposive understanding of policy design as a systematic effort to link appropriate means to attain predefined goals. Del Río (2014) argues that, despite the straightforward nature of this conformance-perspective, design effectiveness remains a multifaceted notion; any criteria for measuring effectiveness are to be specifically defined for each individual policy design to "include different criteria and policy goals which are relevant" (Del Río, 2014, p. 269). Multiple scholars highlighted that policy monitors and policy evaluations may be used for assessing this type of design effectiveness (Doremus, 2003; del Río, 2014; Howlett, 2018a; Peters et al., 2018). Alternatively, the performance approach to policy design effectiveness, which was introduced by Peters et al. (2018), focuses on how a policy design performs as a "frame for action [...] through which problem, process, and result are collectively defined and accepted" (Peters et al., 2018, p. 14). The performance approach is more geared towards the effectuality of policy processes. From this perspective, effectiveness is determined by analysing the policy processes that follow the employment of a policy design to determine whether a policy design effectively supports policy actors in making sense of policy problems and addressing them. To date, this performance approach to design effectiveness is still in

its infancy; the literature provides limited leads to develop a robust method for performance assessment. Thus, this study will adopt a conformance understanding of policy design effectiveness that revolves around comparing policy goals to policy outcomes.

## 3.3 RESEARCH DESIGN

This paper aims to determine whether all three conditions of policy design fit, or whether a single condition or a combination of two conditions are sufficient to ensure policy design effectiveness. To this end, we apply Qualitative Comparative Analysis (QCA). This is a set-theoretic method for analyzing the necessary and sufficient conditions (or combinations of conditions) that explain a certain outcome of interest (Schneider & Wagemann, 2012). As such, it allows testing conditions for effective policy design, while maintaining a qualitative understanding of the specifics of the individual cases from which results are derived. To be able to maintain this in-depth qualitative understanding, QCA works best for an intermediate number of cases. In QCA, studying a small or intermediate number of 12 cases is common (see e.g. Rihoux et al., 2013; Verweij & Trell, 2019). The 12 cases are naturally sufficient for this study because they constitute the entire population of Dutch provinces. This section goes into the design and execution of the Qualitative Comparative Analysis Methodology.

## Adopting policy design thinking to study policy integration

Policy design fit – i.e., coherence, consistency and, congruence—is a multi-faceted concept; its operationalization and assessment will depend on the 'specific job at hand' (Howlett, 2014a). When it comes to the job of achieving policy integration, work by Candel & Biesbroek (2016) provides a base for operationalizing these policy design conditions. More generally, policy integration is understood here as a strategy to overcome the fragmented organization of the public sector in order to address problems that cross established administrative and jurisdictional boundaries (see e.g. Cejudo & Michel, 2017; Trein et al., 2019). Candel & Biesbroek (2016) put forward policy integration as an ongoing process. They discern between goals and instruments as two of the dimensions on which these processes on integration take place that vary on a spectrum from a low to a high degree of integration. They argue that integration processes often show discrepancies or a-synchronicity across dimensions and that consequently, goals and means may be of a different degree, or level, of integration. For this study, we use the synchronicity of the integration process across goals and means as a measure for policy design fit.

To determine the level of integration of goals and instruments, Candel & Biesbroek (2016) have formulated specific criteria. On the dimension of policy goals, the degree of integration is dependent on two aspects. First, the range of policies, both between as within subsystems that collectively address the same problem (e.g. domains of transport, energy, and maritime all addressing climate change) and second, the extent to which different subsystems

embed their policy goals in an overarching strategy directed at solving a collective problem. Additionally, the degree of integration on the dimension of policy means is reflected by three aspects. First, the diversity of instruments that are deployed and support each other in addressing a collective goal. Second, the range of instruments in place that structure interaction and coordinate policy action across administrative boundaries to achieve collective, overarching goals (e.g. interdepartmental working groups, overarching plans, overarching funding programs). Third, the extent to which a mix of cross-subsystem instruments is adopted, tailored to meet an overarching policy goal.

Over time, transport planning has incrementally evolved towards an advanced level of integration – see Figure 3.2 (Curtis & James, 2004; Heeres, 2017; van Geet et al., 2019a). Traditionally, transport planning was characterized by a sectoral *unimodal approach* in which sectoral specialization resulted in the segmented planning of roads, railways, and waterways (Busscher et al., 2015; Owens, 1995). However, as the awareness increased of the interrelationships between different modes of transport and the interactions between land use and transport, multimodal, and integrated land use and transport planning approaches were developed (Hull, 2010; Potter & Skinner, 2000). A multimodal approach focuses on the entire transport system and regards the different modes of transport and infrastructure networks as functioning as an integrated whole (Arts et al., 2014; Heeres et al., 2012; Hull, 2005) technical solution driven – planning approach towards a broad/network-scoped – strategy driven – planning approach. This paper builds on a research programme developed for EU's Horizon 2020 in which Transport Infrastructure is Integrated with Land-Use Planning (TIILUP. Integrated land use and transport planning goes one step further and also considers the reciprocal relationship between the multimodal transport system and land use (Hull, 2010; Wegener & Fürst, 1999). It focuses on 'people' and 'places', by acknowledging that travel is a means to engage in activities such as meeting family, working, and shopping (UN-Habitat, 2013) and that transport infrastructure connects different spatial functions where these activities take place (Heeres et al., 2012, 2016). The latter approach combines transport planning measures (e.g. investment in infrastructure networks) and land use planning measures (e.g. mixed-use planning, urban density, proximity, and distance to public transport) to achieve broad policy goals, such as improving accessibility (Hull, 2010; Straatemeier, 2019; Van Wee et al., 2013) or sustainable mobility (Banister, 2008; Bertolini et al., 2005).

## FIGURE 3.2 THREE APPROACHES TO TRANSPORT PLANNING POSITIONED ON A SPECTRUM FROM A LOW DEGREE TO A HIGH DEGREE OF INTEGRATION

Low degree of integration

High degree of integration

**Unimodal planning** – sectoral specialization

Multimodal planning – intra-sectoral integration on transport system level

Integrated land use and transport planning – intersectoral integration of land use and transport Collectively, these studies on policy integration and transport planning provide a foundation for operationalizing this QCA's four policy design attributes. The three conditioning attributes are assessed based on the synchronicity of the policy design in terms of integration. Table 3.1 shows how each component mat be scored as *unimodal*, *multimodal*, or *integrated land use and transport*. Depending on synchronicity that is consequently observed between the policy design's components, policy design coherence, consistency and congruence will be determined. The outcome attribute will be assessed on the extent to which policy outcomes correspond to the desired degree of integration. This is done, in line with conformance thinking, by comparing the level of integration of meso-level goals to the level of integration of the achieved policy outcomes. This intermediate-level is the key level when it comes to determining effectiveness as these are the objectives you hope to achieve in formulating specific on-the-ground measures.

TABLE 3.1	A TAXONOMIC ANALYTICAL FRAMEWORK FOR ANALYZING TRANSPORT PLANNING
	POLICY DESIGNS. BASED ON CANDEL AND BIESBROEK (2016), CASHORE AND
	HOWLETT (2007), CURTIS AND JAMES (2004), HOWLETT (2018a), AND WEGENER AND FÜRST (1999).

		Policy goals	Policy means
Macro level – High level of abstraction		GOALS What general types of ideas govern policy development?	INSTRUMENT LOGIC What general norms guide policy instrument preferences?
	Unimodal	Policy should be developed separately for single modes of transport to address problems that fall within the boundaries of that specific transport mode.	Instruments are adopted following a logic of single-mode specialization. Policy implementation is achieved using specialized instruments that are directed at specific single modal goals.
	Multimodal	Policy should be developed from a broader transport perspective; there is general recognition that in governing transport problems, the interrelationships between different modes should be taken into account.	Instruments are adopted following a logic of intra-sectoral integration; policy implementation is achieved using instruments that coordinate and steer collaboration within the transport system.
	Integrated Land Use and Trans- port	Policy should be developed from an integrated land use and transport perspective; there is a general recognition that policy problems should be governed according to a holistic approach on the land use system and the transport system.	Instruments are adopted following a logic of inter-sectoral integration; policy implementation is achieved using instruments that coordinate and steer collaboration between the transport system and the land use system.

	1		
Meso level – Policy level or programme level operationa- lization		OBJECTIVES	TOOLS
		What does policy formally aim to address?	What types of instruments are used?
	Unimodal	Policy goals aim to address problems on the individual transport network and can be attained through single modal planning (e.g. goals oriented at influencing transport flow, vehicle speed, congestion, and network connectivity). Specific strategic policy plans are develo- ped for each transport network.	The instrument mix that is in place has a purely sectoral focus and only addresses single-mode problems. There are no instruments that coordinate and steer government action on multiple transport modes.
	Multimodal	Policy goals aim to address broader transport problems that require integrated action across different modes of transport (e.g. goals may be targeted at greater overall mobility, intermodal transfer, and the complementa- rity between different networks). Shared policy goals are embed- ded within an overarching transport strategy.	The instrument mix that is in place guides policy action on multiple transport modes to achieve an overarching transport goal. This mix includes a range of instruments that coordinate and steer government action on multiple modes of transport.
	Integrated Land Use and Trans- port	Policy goals aim to address policy problems that require integrated action across land use and transport (e.g. transit- oriented development, sustaina- ble mobility, and accessibility). Shared policy goals are embed- ded within an overarching spatial planning strategy.	The instrument mix that is in place guides policy action on transport and land use to achieve an overarching policy goal. This mix includes a range of instruments that coordinate and steer government action on land use and transport.

	SETTINGS What are the specific 'on-the- ground' requirements of the policy?	CALIBRATIONS What are the specific ways in which the instrument is applied?
Unimodal	A combination of specific on-the- ground measures is formulated to address problems on a single transport network (e.g. infrastruc- ture development and infrastruc- ture expansion).	Policy instruments have a specialized focus; they are applied for planning and delivering policy measures on single modes of transport.
Multimodal	A combination of on-the-ground measures is formulated for diffe- rent transport modes to address broader transport problems (e.g. the development of a transport hub or park-and-rides).	Policy instruments are applied for planning and delivering policy measures on multiple modes of transport. There are instruments in place that coordinate policy measu- res on different transport modes and combine these to attain overarching transport goals.
Integrated Land Use and Trans- port	A combination of on-the-ground measures is formulated for land use and transport planning to address overarching policy problems (e.g. combining increasing urban density and mixed land use development with investment in public transport infrastructure development).	Policy instruments are applied for planning and delivering policy measures on transport and land use. There are instruments in place that coordinate policy measures on land use and transport modes and combine these to attain overarching goals.
	Unimodal Multimodal Integrated Land Use and Trans- port	SETTINGSWhat are the specific 'on-the- ground' requirements of the policy?UnimodalA combination of specific on-the- ground measures is formulated to address problems on a single transport network (e.g. infrastruc- ture development and infrastruc- ture expansion).MultimodalA combination of on-the-ground measures is formulated for diffe- rent transport modes to address broader transport problems (e.g. the development of a transport hub or park-and-rides).Integrated Land Use and Trans- portA combination of on-the-ground measures is formulated for land use and transport planning to address overarching policy problems (e.g. combining increasing urban density and mixed land use development with investment in public transport infrastructure development).

## Unit of analysis

The transport planning policy design is the unit of analysis for each of the twelve cases. Each of the designs included in this study was adopted between 2003 and 2009. The effectiveness of each design was assessed from its adoption until 2020 - so over the course of at least ten years. Data were collected in the form of provincial policy documents, provincial websites, internet archives, and online policy monitors. A total of 193 sources were collected and coded in ATLAS.ti. Table 3.2 provides an overview of the documents and websites. The reference list is given in the Appendix.

## TABLE 3.2OVERVIEW OF DATA SOURCES.

Case	Analyzed sources for scoring policy design coherence, consistency and congruence	Analyzed sources for scoring policy design effectiveness
Drenthe	(Drenthe, 2007a, 2007b, 2009a, 2010a)	(Drenthe, 2009b, 2010b, 2011, 2012, 2014, 2015, 2017, 2018, 2019; CBS, 2017; OV Bureau, 2017)
Flevoland	(Flevoland, 1994, 2006a, 2006b, 2007, 2008a; V&W, 2006)	(Flevoland, 2008b, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017; Panteia, 2019; Tableau Public, 2020)
Friesland	(Friesland, 2006a, 2006b, 2014a)	(Friesland, 2008, 2009, 2016, 2020, 2010a, 2010c, 2010b, 2011, 2012, 2013, 2014b, 2015; Panteia, 2015)
Gelderland	(Gelderland, 2004, 2005, 2006a, 2006b, 2007a, 2007b, 2007c, 2013a)	(Rekenkamer Oost-Nederland, 2011; Gelderland, 2013b, 2014, 2015, 2020; Schuldenberg et al., 2013)
Groningen	(GA, 2006, 2013; Groningen, 2009a, 2009b, 2009c, 2010)	(Groningen, 2020a, 2020b, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019; Geerdinck et al., 2017; Govers & Roelofsen, 2017)
Limburg	(Limburg, 2006, 2007a, 2007b, 2009)	(Limburg, 2018, 2020, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017; Dirksen & Poppeliers, 2011; O&S Heerlen, 2011; Buck Consultants International, 2016; MuConsult, 2017)
Noord- Brabant	(Noord-Brabant, 2006a, 2006b, 2006c, 2006d, 2006e, 2008, 2011a, 2014a; RWB, 2014)	(Noord-Brabant, 2007, 2017, 2019, 2020, 2010, 2011c, 2011b, 2012, 2013, 2014b, 2015, 2016; RWB, 2014; Metropool Regio Eindhoven, 2020)
Noord- Holland	(ROA, 2006; V&W, 2006; Noord-Holland, 2008, 2010a, 2012a, 2014a)	(Noord-Holland, 2010b, 2011, 2012b, 2013, 2014b, 2015, 2016a, 2016b, 2017, 2018)
Overijssel	(Overijssel, 2009a, 2009b, 2009c, 2017)	(Overijssel, 2011, 2013, 2014, 2020a, 2020b)
Utrecht	(Utrecht, 2003a, 2003b, 2004; Witmond & Lahaye, 2006; Utrecht, 2007, 2008a, 2010a)	(Utrecht, 2008b, 2009, 2016, 2020, 2010b, 2010c, 2010d, 2011, 2012, 2013, 2014, 2015)
Zeeland	(Zeeland, 2004, 2006a, 2006b, 2008, 2010a, 2013a)	(Zeeland, 2010b, 2011, 2019, 2012a, 2012b, 2013b, 2014, 2015, 2016, 2017, 2018)
Zuid- Holland	(Zuid-Holland, 2004a, 2004b, 2005, 2006)	(Zuid-Holland, 2011, 2012a, 2012b, 2013, 2014, 2015, 2018, 2020)

## Calibration and the data matrix

As part of the QCA, the collected data were calibrated following the guidelines of Basurto & Speer (2012), De Block & Vis (2018), and Gerrits & Verweij (2018). During the calibration, membership scores are defined for each case on every 'set'. In QCA, each condition and the outcome is understood as a 'set'. Our analysis includes four sets: the conditions coherence, consistency, and congruence, and the outcome was effectiveness. Calibration involves the transformation of the qualitative case information (in this case the coded documents for the twelve transport planning policy designs) into quantitative set-membership scores (Gerrits & Verweij, 2018). We based our calibration choices on the analytical framework and operationalization presented above. An extensive overview of the data calibration can be found as supplementary material<sup>1</sup>.

The data were calibrated through systematic document coding in ATLAS.ti and followed three steps for every case. The first step involved coding the data in line with the policy design components outlined in Figure 3.1. The main long-term strategic transport plan of every province was retrieved and was used to identify the policy goals and policy means. These data were complemented with additional material regarding the policy means that were described in the strategic plan (see Table 3.2). This provided an overview of the macro-, meso- and micro-level transport planning policy goals and means of each of the provinces. In a second step, using the criteria listed in Table 3.1, the degree of integration for each of the design components was assessed for each province. In other words, each of the design components was qualified as either unimodal, multimodal, or integrated land use and transport. Additionally, the policy outcomes were reviewed to determine whether the policy design was effective. Policy design effectiveness was scored by triangulating evidence from Provincial Annual Reports and from material on monitoring and evaluation. Table 3.2 provides an overview of the material that was used in the process of data calibration, and Table 3.3 presents the output.

The supplementary material to this chapter can be accessed through http://doi.org/10.1007/s11077-021-09429-z

Case Name	Macro- level Goals	Meso- level Goals	Micro- level Goals	Macro- level Means	Meso- level Means	Micro- level Means	Policy Design Effectiveness
Drenthe	LUT	MULTI	MULTI	MULTI	MULTI	MULTI	Yes
Flevoland	LUT	LUT	LUT	LUT	LUT	LUT	Yes
Friesland	LUT	LUT	LUT	LUT	MULTI	MULTI	No
Gelderland	LUT	LUT	LUT	LUT	LUT	MULTI	No
Groningen	LUT	MULTI	UNI	LUT	LUT	LUT	Yes
Limburg	LUT	MULTI	MULTI	MULTI	MULTI	MULTI	No
Noord- Brabant	LUT	MULTI	MULTI	MULTI	MULTI	MULTI	Yes
Noord- Holland	LUT	LUT	LUT	MULTI	MULTI	MULTI	No
Overijssel	LUT	MULTI	MULTI	LUT	LUT	LUT	Yes
Zuid-Holland	LUT	LUT	LUT	LUT	LUT	LUT	Yes
Utrecht	LUT	MULTI	MULTI	MULTI	MULTI	MULTI	Yes
Zeeland	LUT	MULTI	MULTI	MULTI	MULTI	MULTI	Yes

## TABLE 3.3SCORING OF CASES. UNI = UNIMODAL, MULTI = MULTIMODAL, AND LUT = INTEGRATED<br/>LAND USE AND TRANSPORT.

The third step was quantifying the case data. This quantification is necessary for the QCA analysis. The calibration rules are provided in Table 3.4. We used a crisp-set calibration (i.e. binary quantification) because of the highly qualitative nature of the data and because of the lack of precise scales in the literature for differentiating degrees of policy design coherence, consistency, and congruence. By applying the calibration rules in Table 3.4 to the case scorings in Table 3.3, the so-called 'calibrated data matrix' was constructed. The calibrated data matrix is provided in Table 3.5.

#### TABLE 3.4 CALIBRATION RULES IN THIS STUDY

Condition	Abbreviation	Calibration
Coherent policy goals	COHER	o Incoherent – macro-level goals and micro-level goals are not of the same type as meso-level goals.
		1 Coherent – macro-level goals and micro-level goals are of the same type as meso-level goals.
Consistent policy	CONSIS	o Inconsistent – macro-level means, meso-level means, and micro-level means are not of the same type as meso-level goals.
instruments		1 Consistent – macro-level means, meso-level means, and micro-level means are of the same type as meso-level goals.
Congruence of goals and	CONGR	o Incongruent – policy goals and means are not of the same type at all three levels of abstraction as meso-level goals.
means		1 Congruent – policy goals and means are of the same type at all three levels of abstraction as meso-level goals.
Outcome: Policy Design Effectiveness	EFFCT	o Not effective – policy evaluations indicate that outcomes are not in line with the policy goals on meso level.
		1 Effectiveness – policy evaluations indicate that outcomes are in line with the policy goals on meso level.

Figure 3.3 illustrates how the application of the calibration rules resulted in coherence, consistency, and congruence scores in the case of Noord-Brabant. This figure shows that the policy design of Noord-Brabant is incoherent since the macro-level goals show a different degree of integration than the meso- and micro-level goals. In contrast, the policy design is consistent as macro-, meso- and micro-level means all show the same degree of integration. Furthermore, the design is incongruent as the macro-level goals and macro-level means show a different degree of integration. Finally, our analysis of the policy outcomes found this policy design to be effective.

## FIGURE 3.3 SCORES OF THE POLICY DESIGN COMPONENTS AND CALIBRATION FOR THE CONDITIONS COHERENCE, CONSISTENCY AND CONGRUENCE FOR NOORD-BRABANT.



**Noord-Brabant** 

Case	Conditions		Outcome	
	COHER	CONSIS	CONGR	EFFCT
Zuid-Holland	1	1	1	1
Flevoland	1	1	1	1
Noord-Holland	1	0	0	0
Friesland	1	0	0	0
Gelderland	1	0	0	0
Drenthe	0	1	0	1
Noord-Brabant	0	1	0	1
Utrecht	0	1	0	1
Zeeland	0	1	0	1
Limburg	0	1	0	0
Overijssel	0	0	0	1
Groningen	0	0	0	1

#### TABLE 3.5 CALIBRATED DATA MATRIX

## **3.4 QUALITATIVE COMPARATIVE ANALYSIS RESULTS**

The analysis was carried out using fs/QCA software (Ragin & Davey, 2016). First, a test for necessary conditions was performed. A condition is necessary when the outcome cannot be achieved without it (Gerrits & Verweij, 2018). The results of the necessity analysis are presented in Table 3.6. A tilde sign indicates the absence of a condition; for example, ~COHER means incoherent. The consistency value in the second column of Table 3.6 reflects the degree to which the cases – the empirical evidence – support the claim that the set-theoretic relationship exists. The coverage value expresses the empirical importance of the relationship (ibid.). As no condition has a consistency value of 0.9 or higher, we find that no single condition is necessary for policy design effectiveness.

Condition tested	Consistency	Coverage
		coverage
COHER	0.25	0.40
~COHER	0.75	0.86
CONSIS	0.75	0.86
~CONSIS	0.25	0.40
CONGR	0.25	1.00
~CONGR	0.75	0.60

#### TABLE 3.6 RESULTS OF THE NECESSITY ANALYSIS

Subsequently, the sufficiency of the configurations was determined by using a truth table analysis. The truth table in Table 3.7 lists all the logically possible combinations of conditions and illustrates the cases that are covered by these combinations. Truth table analysis involves the pairwise comparison of configurations that agree on the outcome and differ for only one of the conditions. Four configurations had no cases and thus are not included in the analysis. One configuration (i.e. COHER\*~CONSIS\*~CONGR) has a consistency below 0.75 and thus is not included in the analysis either (Gerrits & Verweij, 2018; Ragin, 2009). In the end, three configurations were selected for the pairwise comparison. The analysis was specified to explain positive outcomes, i.e. policy design effectiveness. Table 3.8 presents the results of the truth table analysis. The table shows that two configurations are sufficient for policy design effectiveness. The first configuration – COHER\*CONSIS\*CONGR  $\rightarrow$  EFFCT – confirms the theoretical model of Howlett and Cashore (Figure 3.1) and supports the notion that the combination of coherent goals, consistent means, and congruence of goals and means explains policy design effectiveness. The second configuration - ~COHER\*~CONGR  $\rightarrow$  EFFECT – states that incoherence in combination with incongruence is sufficient for policy design effectiveness. Furthermore, consistency is redundant in explaining policy design effectiveness for this pathway.

COHER	CONSIS	CONGR	Number	Cases	EFFCT	Raw Consist.	PRI Consist.	SYM Consist.
1	1	1	2	Flevoland, Zuid-Holland	1	1	1	1
0	0	0	2	Groningen, Overijssel	1	1	1	1
0	1	0	5	Drenthe, Limburg (c), Noord-Brabant, Utrecht, Zeeland	1	0.8	0.8	0.8
1	0	0	3	Friesland, Gelderland, Noord-Holland	0	0	0	0
1	1	0	0	-	-	-	-	-
0	0	1	0	-	-	-	-	-
1	0	1	0	-	-	-	-	-
0	1	1	0	-	-	-	-	-

#### TABLE 3.7 TRUTH TABLE

Note: PRI, Proportional reduction in consistency; SYM, Symmetric consistency; (c) contradictory case

#### TABLE 3.8 RESULTS TABLE

Frequency cutoff: 2

Consistency cutoff: 0.8

	Raw coverage	Unique coverage	Consistency
COHER*CONSIS*CONGR	0.25	0.25	1
~COHER*~CONGR	0.75	0.75	0.857143
Solution coverage: 1			

Solution consistency: 0.888889

Cases covered by COHER\*CONSIS\*CONGR: Flevoland, Zuid-Holland

Cases covered by ~COHER\*~CONGR: Drenthe, Groningen, Limburg (c), Noord-Brabant, Overijssel, Utrecht, Zeeland

Note: (c) contradictory case

## 3.5 **DISCUSSION**

### Interpreting and discussing QCA findings

As part of the increased interest in policy design thinking, the development of effective configurations of goals and instruments has become a major theme within policy science and practice. A widely accepted assumption is that the fit of policy design components – i.e. the combination of goal coherence, means consistence, and the congruence of goals and means – is to benefit effectiveness (Howlett, 2009, 2018b; Howlett & Rayner 2013, 2018; Howlett & Mukherjee, 2018). Building on the theoretical advancements that have been made in conceptualizing the relationship between design fit and effectiveness, this study provides a first empirical assessment by applying Howlett's (2009) nested model on policy design in the context of policy integration. Our analysis did not find any necessary conditions for achieving policy design effectiveness. It did find two sufficient pathways for achieving policy design effectiveness. The first states that the fit of policy design components is sufficient for effectiveness, whereas the second states that policy design incoherence combined with incongruence is sufficient for effectiveness. This two-sided outcome suggests that the supportive relationship between policy design fit and policy design effectiveness is not as straightforward as theory suggests and provides some interesting footholds for further discussion. This section further elaborates and interprets the two pathways to policy design effectiveness and subsequently formulates implications of these findings for policy design and policy integration literature.

#### Sufficiency of policy design fit for policy design effectiveness

The first pathway states that the combination goal coherence, means consistency, and congruence of goals and means is sufficient for design effectiveness. In light of the object of this study, the outcomes suggest that when the goals and means of a policy design are of the same degree of integration across all three policy levels, this will be sufficient to promote desired policy integration. The pathway's consistency score of 1.0 indicates that all cases covered by this configuration support this result. The low coverage score (0.25) indicates that this result is of limited empirical relevance as the specific configuration accounts for 2 out of 8 instances in which design effectiveness was observed. Interestingly, even though this outcome accords with a considerable theoretical body of literature on policy design (Howlett, 2009, 2018b; Howlett & Rayner 2013, 2018; Howlett & Mukherjee, 2018), other than our analysis, very few empirical studies have been able to provide empirical verification. So far, only Reichardt & Rogge (2016) have demonstrated, based on interview data, that, in addition to credibility and stability of policy strategies, also policy design coherence, consistency, and congruence were considered by their respondents as important conditions for effectively promoting desired corporate innovation activities in offshore wind. Due to the considerable differences in the design of the current and Reichardt & Rogge's (2016) study, it is hard to draw comparisons and discuss outcomes in relation to one another. Overall, this pathway provides initial empirical proof in support of the theoretical assertion that a coherent, consistent, and congruent policy design effectively attains desired outcomes.

#### Why incoherence and incongruence was sufficient for policy design effectiveness.

The second pathway states that the combination goal incoherence and incongruence of goals and means is sufficient for policy design effectiveness. This pathway, which followed out of the pairwise comparison of the configurations  $\sim$ COHER\*CONSIS\* $\sim$ CONGR  $\rightarrow$  EFFECT and  $\sim$ COHER\* $\sim$ CONSIS\* $\sim$ CONGR  $\rightarrow$  EFFECT (see Table 3.7), indicates that discrepancies in the degree of integration between policy goals on the one hand, and between policy goals and policy means across policy levels, on the other hand, will be sufficient for promoting desired policy integration. Another aspect that stands out that consistency is redundant in explaining effectiveness for this pathway. From a policy design theory perspective, this outcome is highly unexpected for several reasons. First, because it suggests that the negation of policy design coherence and congruence is sufficient for policy design effectiveness. Furthermore, this outcome contradicts the findings of other empirical studies that found policy design coherence (Kern et al., 2017; Reichardt & Rogge, 2016) as well as congruence (Kern & Howlett, 2009; Reichardt & Rogge, 2016; Rogge & Schleich, 2018). The high coverage score (0.75) indicates the result to be of strong empirical relevance as it represents a considerable share of the cases. This underlines the relevance of finding and robust explanation for this counterintuitive outcome. To this end, an in-depth empirical and theoretical account is given for the two individual configurations that formed this pathway.

Concerning the configuration ~COHER\*CONSIS\*~CONGR two aspects require clarification. First, what stands out already in Table 3.3 is that the observed incoherence and incongruence in all five cases was the result of the discrepancy between macro-level goals – qualified

as integrated land use and transport - and all other policy design components – qualified as multimodal. It is relevant to note that these incoherencies and incongruences were exposed as a result of the multilevel framework that was adopted for this study; a singlelevel approach would not have found these mismatches. This raises a relevant question. Namely, to what extent do policy misfits between goals and means across policy levels impact effectiveness? A possible answer is provided by Howlett (2014a) who argues that the nested nature of the policy level cause design choices on each policy level to be constrained by higher-order components; high-level governance modes set the outside boundaries for the decision on the second level of policy or program operationalization, which in turn, shape the micro-level operationalization of a policy design. Consequently, this micro-level of policy design has to most significant influence on the outcomes that are achieved (Howlett, 2009). This suggests that if high-level ambitions are not correctly translated into the meso-level components, their influence on policy outcomes will be limited. Furthermore, the impact on effectiveness is expected to be minimal as policy design effectiveness is determined based on meso-level goals. This clarification provides a plausible explanation as to why in the current study the configuration ~COHER\*CONSIS\*~CONGR was effective. However, for this explanation to hold, it is required to account for Limburg, where the same configuration led to a different, contradicting outcome.

Table 3.7 shows that Limburg is the only case where the configuration ~COHER\*CONSIS\*~CONGR was ineffective. Following the strategies for resolving contradictions by Gerrits and Verweij (2018), an explanation was found by re-examining the original case-based material. A closer look at the Provincial Annual Reports of Limburg as well as Dirksen & Poppeliers's (2011) policy evaluation, revealed that policy action in Limburg was primarily geared towards attaining unimodal policy goals that were put down in the Provincial Coalition Agreement (Dutch: '*bestuursakkoord*') instead of the multimodal goals that were defined in the strategic transport policy document, which was used to perform the QCA. This provides and explanation why the desired level of multimodal policy integration was not achieved in Limburg.

The configuration ~COHER\*~CONSIS\*~CONGR was found effective in the cases Groningen and Overijssel. Looking more closely at the scoring of these individual cases in Table 3.3, it stands out that both cases managed to effectively promote desired integration across transport modes by using instruments that were designed for integrating land use and transport planning. From a policy design perspective, it is surprising that despite this incongruence effectiveness was achieved. Alternatively, from a policy integration point of view, it is sensible that instruments designed to promote integrated policy action within and across the domains of land use and transport can also be effective in promoting collective action within the domain transport.

## Implications and opportunities for future research

This study adopted QCA methodology to explore the causal mechanisms behind policy design effectiveness through case-based research. QCA is especially appropriate for testing, refining and validating theory as it requires researchers to follow a well-structured and transparent analytic procedure that iterates between theory and case based data (Befani, 2013) leading to theory development; b. It should however be taken into account that due to its case-based and explanatory character, QCA findings cannot simply be decontextualized (Byrne, 2013). The results of the current analysis are therefore primarily representative for the Dutch regional transport planning context. Extrapolating case study findings beyond the target population is possible but should be done with care as it requires a degree of similarity between both cases (Greene & David, 1984). Case-based research seeks to make analytic generalizations by assessing the applicability of theoretical conceptions in explaining observed outcomes within a specific context. In doing so, the current QCA analysis provides powerful evidence on the generalizability of the notion that policy design fit benefits effectiveness. The contradicting outcomes of the QCA analysis highlight that this relationship is more ambiguous then literature puts forward. The process of interpreting and explaining the outcomes by returning to theory and case study data yielded several implications for policy design and policy integration literature.

### Implications for policy design

The main contribution of this study to policy design can be considered its empirical insights regarding the relationship between policy design fit and effectiveness. Even though the multilevel policy design model that was adopted in this study is receiving much attention in the more conceptual strand of policy design literature, it so far had not been empirically tested. This study found seemingly contrasting evidence on the relationship between policy design fit and effectiveness. On the one hand, our results provide empirical proof that supports the general theoretical consensus that matching goals and instruments across policy levels benefits design effectiveness (see e.g. Howlett & Rayner, 2013, 2018; Howlett, 2014b). On the other hand, results show that neither coherence nor consistency nor congruence nor a combination of those features is necessary for policy design effectiveness. Furthermore, we found that under specific conditions, design effectiveness can be achieved despite the presence of incoherence, inconsistency, and incongruence. These outcomes clearly illustrate that the relationship between policy design fit and policy design effectiveness is not as straight-forward as theory suggests.

Our multifaceted findings are in line with other empirical studies, which describe, based on different research approaches, various outcomes regarding the relationship between policy design fit and effectiveness. When it comes to promoting effectiveness Kern et al. (2017) describe the importance of coherence and consistency, Rogge & Schleich (2018) highlight the need for consistency and congruence, while Reichardt & Rogge (2016) indicate that coherence, consistency, and congruence are all needed. However, since these studies have adopted a single, meso-level approach to studying policy designs, and use different

methodologies, their outcomes are difficult to compare to our findings. Essentially, a systematic assessment, based on the multilevel model like the one in this study had been missing in current design discussions. The outcomes of this study are therefore the first step towards a more profound understanding of the influence of the fit of policy design components across policy levels on effectiveness. It needs to be noted that the findings are, due to the specific operationalization of the model, closely related to the domain of policy integration. It would be essential to empirically study this model in other policy domains to get a better understanding of the apparently intricate interrelationship between policy design fit across policy levels and policy design effectiveness. The well-developed theoretical body of literature on policy design offers a robust analytical framework for designing well-structured and consistent empirical research across a broad field of applications, which would allow for triangulation of findings from a wide range of applications (George et al., 2005).

Another possible explanation for the multifaceted findings regarding the relationship between policy design fit and design effectiveness of this and other studies is that there may be other policy design attributes at play that might have influenced design effectiveness. The literature review presented an overview of the various attributes that have been introduced in recent studies. From these attributes, it is only certain that temporal influences as described by e.g. Howlett et al. (2018), Peters et al. (2018), and Rayner et al. (2017) can be ruled out as we tracked the development of the policy designs over time by analysing annual reports and did not observe any changes in the typology for any of the design components. It is hard to reflect on the possible influence of the other attributes that have been linked to policy design effectiveness - i.e. policy design balance (e.g. Schmidt & Sewerin, 2018), explicitness (e.g. Thomann, 2018), capacity (e.g. Mukherjee & Bali, 2019), and goodness-of-fit (e.g. Peters et al., 2018) – on our findings as existing studies on those attributes lack empirical testing as discussions have remained predominantly explorative and conceptual of nature. This once more underlines the need for empirical research that studies the impact of policy design attributes on effectiveness, by adopting policy design effectiveness as the dependent variable. This would require conformance and performance approaches to policy design evaluation to further develop into complementary approaches for assessing policy design effectiveness (see e.g. Faludi, 1989; Mastop & Faludi, 1997).

In addition to existing studies on the relationship between policy design fit and effectiveness, the outcomes of this study provide a novel perspective on the concept of *policy design fit*. Currently, the features that determine policy design fits are presented as a duality; a policy design is either coherent, consistent, and/or congruent or it is not. This goes against our empirical findings, which suggest that when taking different policy levels into account, varying degrees of incoherence, inconsistency, and incongruence affect effectiveness differently. Importantly, these need not result in ineffectiveness. Especially when these are found at a macro level they have limited impact on effectiveness. As such, this argues for a much more nuanced conceptualization of policy design coherence, consistency, and congruence. This would be an interesting avenue for further research to explore.

#### Implications for policy integration

Building on Candel & Biesbroek (2016), this study analysed how effectiveness discrepancies in the level of integration of interrelated policy design components. As shown in Table 3.2, the current study differentiates between three levels of integration: sub-sectoral fragmentation (unimodal planning), intra-sectoral integration (multimodal planning), and intersectoral integration (integrated land use and transport planning). The individual scoring of our cases in Table 3.3 shows that, in line with Candel & Biesbroek (2016), discrepancies in the level of integration within a single policy design are "the rule rather than exception". Interestingly, it was found that these a-synchronicities under specific circumstances do not necessarily stand in the way of achieving effectiveness. More specifically, results indicate that instrument mixes, which are of a higher degree of integration than the related policy goals can be effective in promoting desired integration. This was observed in both Groningen and Overijssel. In these cases, intersectoral instrument mixes were used to effectively promote desired processes of intra-sectoral policy integration. It could, however, be argued that such a-synchronicity is inefficient since instruments promote higher levels of collaboration and interaction throughout the public sector than is necessary to achieve desired outcomes. Additionally, the effective policy design of Groningen illustrates that intra-sectoral objectives may be incoherently operationalized to sub-sectoral on the ground measures as long as there are instruments in place that help to coordinate sub-sectoral policy action in line with intra-sectoral objectives. This outcome resonates well with work by Cejudo & Michel (2017) who argue that policy integration may be achieved through overarching procedural instruments that guide sub-sectoral policy action in line with a shared overarching integrative logic.

The results of the analysis suggest that the formulation and adoption of a shared overarching logic to guide integrated government action is not straightforward. It stands out from the observed discrepancies in Table 3.3 that, even though it is widely recognized that policymaking should take into consideration intersectoral relationship between land use and transport, only a few organizations have successfully translated these integrative ambitions to lower policy levels. This observation is in line with work by Rayner & Howlett (2009), who noted that integrated goals are rarely adopted unless there is a widespread dissatisfaction of existing approach, as a variety of institutional barriers – financial, organizational, cultural, legislative, political, and technical – that have to be overcome (cf. Hull, 2010).

The outcomes of this study add to an emerging body of research on the appropriate policy instruments for giving effect to these integrated goals (e.g. van Geet et al., 2021; Marsden & Reardon, 2017; Mu and de Jong, 2016). Although findings have been derived from the context of transport planning, the analytic generalizations that can be drawn from this study (see Polit & Beck, 2010) carry interesting implications for debates on policy integration in other sectors such as health policy, climate policy, environmental policy, and energy policy. A key insight that was obtained from the current study is that the design of the instrument mix plays a crucial role in supporting and steering the integrated government action that is required to achieve policy goals that are shared between multiple sectors. In line with Candel

& Biesbroek (2016) and Cejudo & Michel (2017), our analysis underlines the importance of overarching policy instruments that allow to steer and coordinate sectoral or sub-sectoral action in line with shared goals. Our outcomes indicate that in line with the degree of integration of the adopted policy goals – i.e. the range of sectors or sub-sectors that are involved – instrument mixes need be at least of the same degree of integration.

## 3.6 **CONCLUSION**

This study applied the multilevel approach to policy design to determine which conditions of policy design fit – coherence, consistency, and congruence – are necessary or sufficient for policy design effectiveness in the context of policy integration. The QCA that was performed revealed no necessary conditions or combinations of conditions and showed two configurations of conditions to be sufficient for policy design effectiveness. The first configuration confirms that the presence of policy design coherence, consistency, and congruence is sufficient for policy design effectiveness. The second configuration is counter-intuitive and states that the combination incoherence and incongruence is sufficient for policy design effectiveness.

An in-depth theoretical and empirical interpretation of the QCA outcomes lead to the conclusion that when it comes to promoting policy integration, achieving policy design effectiveness is not a matter of simply matching goals and means across policy levels. In specific situations, a policy design is still effective despite being incoherent, inconsistent, or incongruent. For example, mismatches between macro- and meso-level policy design components will not necessarily impede design effectiveness when meso- and micro-level components are aligned. That is, there are different degrees of policy design coherence, consistency, and congruence that impact effectiveness differently. Furthermore, when policy means are inconsistent but show a higher degree of integration, these means can still be effective even though this makes them less efficient in achieving the desired outcomes. Hereby, our study shows that the relationship between policy design fit and policy design effectiveness is more intricate in practice than theory suggests. More empirical research is needed to complement the initial steps made in this study to get a better understanding of the relationship between policy design fit and effectiveness from a multilevel policy design perspective.



# POLICY DESIGN DYNAMICS: FITTING GOALS AND INSTRUMENTS IN TRANSPORT INFRASTRUCTURE PLANNING IN THE NETHERLANDS

## ABSTRACT

A policy design is a dynamic mix of goals and instruments that develop over time through processes of layering, drift, conversion, replacement and exhaustion. In the face of these dynamics, it is a key concern for policy designers to maintain fit between policy design elements by sustaining goal coherence, instrument consistency and the congruence of goals and instruments. Even though the temporal aspect is fundamental to new policy design thinking, few studies have dealt with the interrelation between policy dynamics and fit. With a longitudinal case study of Dutch transport planning, this research aims to provide insight into this interrelation and to highlight practical implications. This study reveals an intricate and ongoing fitting process between goals and instruments, in which any moment of coherence, consistency and congruence is temporary. During this fitting process, goals and instruments developed in different and largely separate trajectories. In this case, layering successfully improved congruence, but at the same time created inconsistencies between old and new instruments. To resolve some of these inconsistencies, conversion was used. These findings show that policy design is an ongoing process. The main practical implications of this study are that integrating the design of goals and instruments is an essential first practical step, that the ongoing monitoring and evaluation of policy design performance should be a central component in the ongoing process of policy design, and that a combination of layering and conversion can be a successful design approach to adjust instrument mixes to changing goals.

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## 4.1 INTRODUCTION

Policy design has always revolved around effectively realizing policy objectives through the calibration of policy goals and policy instruments. A new wave of design research engages in finding the right mix of the instruments to be used throughout the policy process to achieve multiple goals (Howlett et al., 2015; Rogge and Reichardt, 2016). A policy design should then be thought of as a multi-goal and multi-instrument configuration or mix (Howlett, 2014b, 2014a). Its effectiveness is largely defined by the supportive relationship – the fit – between the total mix of goals and instruments that forms the design (Peters et al., 2018; Rayner et al., 2017). Fit may be understood as the sum of goal coherence, instrumental consistency, and congruence between goals and means (e.g. Howlett, 2009; Howlett and Rayner, 2013; Kern and Howlett, 2009).

Theoretically, it is preferable to develop policy designs from scratch; however, this hardly ever happens in practice (Rayner & Howlett, 2009). Instead, policy designs tend to evolve over time by building on the legacies of earlier design choices. Multiple studies have shown that it is challenging to sustain fit between goals and instruments in the face of these developments (Howlett & del Rio, 2015; Kern et al., 2017; del Río et al., 2011; Rogge & Reichardt, 2016). Policy designs often unintentionally develop into sub-optimal mixes, thus compromising their effectiveness (Howlett, 2009; Howlett & Rayner, 2013, 2018; Kern & Howlett, 2009; Rayner et al., 2017). Therefore, equipping policy designers with strategies to maintain design fit in the face of these dynamics is a critical step forward in the field of policy design.

Despite a growing number of empirical studies on the incremental development of policy designs (e.g. del Río et al., 2011; Rogge & Reichardt, 2016; Schmidt & Sewerin, 2018), there have been surprisingly few studies on the interplay between the dynamics and policy design fit (Rayner et al., 2017). The existing literature on this topic is predominantly conceptual in nature (e.g. Howlett, 2018; Howlett & Rayner, 2013; Rayner & Howlett, 2009), and only a small number of empirical studies have been carried out. These case studies, which predominately focused on the energy sector, provided initial evidence that the temporal dynamics of policy design influences the goal coherence, instrumental consistence and congruence between goals and instruments (Kern et al., 2017; Kern & Howlett, 2009; Rogge & Reichardt, 2016; Rogge & Schleich, 2018; Trencher & van der Heijden, 2019). However, these case studies did not include a detailed examination of the interplay between policy design dynamics and fit. Moreover, they paid only limited attention to practical implications.

This study aims to provide greater insight into the interplay between policy design dynamics and policy design fit as well as to deduce in retrospect what the implications are for policy design practice. To this end, we performed a historical analysis of the evolution of Dutch national transport planning policy goals and policy instruments between 1997 and 2018. We chose this case study because the national transport policy design underwent considerable changes in this period: policy goals changed as the planning approach shifted from a sectoral transport orientation to an integrated land use-transport planning orientation, and policy instruments were thoroughly revised (van Geet et al., 2019a).

## 4.2 LITERATURE REVIEW

Goals and instruments are the two core elements of any policy design (Howlett, 2009) not all of which are as amenable to (re. Policy goals are statements of government objectives and ambitions in a specific policy area, and instruments are considered the arrangement of the means used throughout the policy process to attain these objectives and ambitions (Howlett, 2014b; Howlett & Rayner, 2007).

Policy design study emerged and developed from the policy sciences in the 1980s and early 1990s. After a dip in popularity, it is currently receiving renewed interest (Howlett, 2014a; Howlett & Lejano, 2013; Howlett & Mukherjee, 2018a). Broadly speaking, policy design revolves around "the deliberate and conscious attempt to define policy goals and to connect them to instruments or tools expected to realize those objectives" (Howlett et al., 2015, p. 292). This generic definition reflects the goal-driven and pragmatic instrumental focus that underlies policy design. According to Howlett, (2014b), a distinction can be made between old and new design approaches. Whereas the former can be characterized by a single instrument design rationale following a straightforward means-to-end understanding (e.g. Hood, 1983; Linder & Peters, 1984; May, 1991; Salamon, 1989), the latter has a more comprehensive perspective on policy design. It views policy designs not as given sets, but rather as an interactive mix of goals and instruments (Howlett and Lejano, 2013). Furthermore, it acknowledges the dynamic character of these mixes as a result of temporal and contextual influences.

Essentially, new design thinking aims at creating policy mixes with coherent goals, consistent instruments, and congruent goals and instruments (Howlett and Rayner, 2013). Meeting these design criteria is widely considered a key requirement for policy designs to effectively produce optimal outcomes (Howlett, 2009; Howlett and Rayner, 2013, 2018; Kern & Howlett, 2009; Peters et al., 2018; Rayner et al., 2017). In line with Kern and Howlett (2009), policy goals are considered coherent if they relate to the same overall policy objectives and can be pursued at the same time without tradeoffs; instruments are considered consistent if they are mutually supportive and work together to achieve the same goal by creating related incentives and disincentives; and goals and means are considered congruent if they serve corresponding purposes. As shown in Figure 4.1, this study proposes the term "policy design fit" to express the extent to which these design criteria are met.

#### FIGURE 4.1 ELEMENTS DEFINING POLICY DESIGN FIT.



A number of studies discuss how policy mixes, like institutions, evolve over time through five modes of change: layering, drift, conversion, replacement and exhaustion (Howlett et al., 2015; Howlett and Rayner, 2013; Kern et al., 2017; Kern & Howlett, 2009; Peters, 2018a; Rayner et al., 2017; Rayner & Howlett, 2009; Streeck and Thelen, 2005). Multiple empirical studies show that policy designs generally evolve through a combination of these modes (e.g. van der Heijden, 2016; Kern et al., 2017; Rayner et al., 2017). Layering entails the process of adding goals and/or instruments without replacing or adjusting existing design elements. Consequently, policy mixes typically develop into increasingly complex configurations of elements that are based on various conceptual understandings (Peters, 2005). Drift describes a situation in which goals of policy change, without changing the instruments to implement them (Howlett et al., 2018). Conversion refers to a situation where an existing instrument is used differently in response to changed goals (Mahoney and Thelen, 2010). Replacement occurs when new design elements are deliberately put in the place of old ones, which may happen abruptly or gradually, depending on the rigidity of existing elements (Streeck and Thelen, 2005). Replacement initiatives are often impeded by design elements that are already in place and that have created path-dependency (Peters, 2018a). Finally, exhaustion refers to a process of breakdown or fading away rather than actual change (Streeck and Thelen, 2005). Howlett and Rayner (2013) argue that the latter concept, exhaustion, may be used to describe situations in which older design elements are undermined because they do not function satisfactorily in the light of newer policy elements.

Generally, scholars see replacement as the preferred mode of policy design development because internally supportive combinations of goals and instruments can be designed as an integrated whole without the externalities of preexisting elements (Rayner & Howlett,

2009). Thereby, it "simply imposes the smallest number of constraints on successful design" (Howlett & Rayner, 2013, p. 177). However, this form of wholesale replacement of a policy design, referred to as policy packaging, is rare in practice. Usually, policy designs develop incrementally through layering, drift and conversion, building on what has been established in the past (Howlett et al., 2018). Legacies from past decision-making are often persistent and hard to change. They create path-dependencies, limiting the freedom of policy makers in policy design. In such situations, policy design takes the shape of reform, in which designers use forms of layering, drift and conversion as "patches" to restructure existing policy elements (Howlett & Rayner, 2013). However, policy patching has two sides. If it is done well, patching can positively influence the fit of a policy design – this is called "smart patching" (Howlett & Mukherjee, 2014). For example, layering instruments to form complementary mixes can produce an enhanced effect (Gunningham et al., 1998; Gunningham & Sinclair, 1999). Furthermore, smart patching can help adapt mixes to changing circumstances (Howlett and Rayner, 2013) and "ameliorate or reduce tensions" between policy elements (Rayner et al., 2017, p. 481). In contrast, if patching is done poorly, conflicts may arise between old and new policy elements, unintentionally causing policy mixes to evolve into suboptimal configurations (Howlett et al., 2015; Howlett and Rayner, 2013; Kern et al., 2017; Kern & Howlett, 2009). An example is the phenomenon of stretching, in which policy mixes are extended to cover areas that were not intended in the outset (Feindt & Flynn, 2009; Rayner et al., 2017), creating contradictory goals and instruments (Howlett et al., 2018).

## 4.3 **RESEARCH DESIGN**

A single case study approach was adopted to obtain greater insight into policy design dynamics and their influence on policy design fit. This theory-based research approach allows for an in-depth investigation of phenomena (Dyer & Wilkins, 1991; Siggelkow, 2007; Yin, 2003). We chose a single case over a multiple case study, because the required division of resources between cases would compromise the depth of the analysis (Yin, 2013).

The case study design was created following Yin (2003). The unit of analysis is the Dutch national government's infrastructure planning policy design between 1997 and 2018. For a more detailed level of inquiry, the case study focuses on two embedded units of analysis: policy goals and policy instruments. Policy goals pertain to all national transport planning policy strategies implemented between 1997 and 2018. Policy instruments concern all instruments of the Dutch national transport planning, programing and budgeting (PPB) system. This PPB system is called the Long-range Program on Infrastructure, Space and Transport (Meerjarenprogramma Infrastructuur, Ruimte en Transport in Dutch, abbreviated as MIRT). The MIRT system comprises a wide variety of policy instruments that shape the process of transport infrastructure planning, investment and development (Arts et al., 2016a; van Geet et al., 2019a; Heeres, 2017; Heeres et al., 2016; Lenferink et al., 2014). To delimit

the focus of this study and allow for a more in-depth analysis, emphasis was put on the development of the policy instruments used in the formation and adoption stages of the MIRT process.

Data were gathered by using a mixed-method approach that combined longitudinal document analysis, in-depth interviews, focus group discussions and workshops. Document analysis laid the foundation of this research as a source of historical data, allowing us to track the development of the Dutch infrastructure policy design over time (Bowen, 2009). We analyzed the development of policy goals by referring to V&W (1988), V&W & VROM (2004) and I&M (2012), and we studied the evolution of policy instruments as documented in V&W (1997), V&W & VROM (2009) and I&M (2011, 2016). The outcomes of this analysis served as input for 21 semi-structured interviews with experts working for the Ministry of Infrastructure and Water Management in the Netherlands (Ministerie IenW in Dutch) as well as the Directorate-General for Public Works and Water Management (Rijkswaterstaat in Dutch). All interviewees were involved in the formation or implementation of the Dutch national transport policy or the design or operation of the PPB system MIRT. The interviews were complemented with two focus group discussions based on statements derived from the document analysis and interviews. All interviews and focus groups were transcribed. Finally, all textual data were systematically analyzed according to a deductive coding scheme following the theoretical framework. A respondent list can be found in Appendix C1.

## 4.4 **RESULTS**

In order to gain a more in-depth understanding of the interplay between policy design dynamics and fit, we performed a longitudinal study of the Dutch national infrastructure policy design. Figure 4.2 presents an overview of the observed dynamics of goals and instruments, as derived from the longitudinal document analysis. The results of the document study were triangulated with empirical data from interviews and focus groups to obtain a better understanding of how these dynamics influence policy design fit. The results are presented below from the following three perspectives: (i) the evolution of policy goals and how they affect goal coherence, (ii) instrumental development and how it influences instrumental consistency, and (iii) the development of policy goals in relation to policy instruments and how this influences congruence between goals and instruments.

## Policy goals and coherence

### The goals of Dutch national infrastructure policy over time

Between 1988 and 2004, the Dutch transport policy was predominantly geared towards decreasing car dependence and improving public transport. To achieve this, the 1988 Second Structural Plan for Traffic and Transport (abbreviated as SVV-II) emphasized the need to overcome fragmented planning of rail, road and water infrastructure. SVV-II stressed

## FIGURE 4.2 THE DEVELOPMENT OF DUTCH NATIONAL TRANSPORT POLICY DESIGN DURING THE STAGES OF POLICY FORMATION AND ADOPTION.



the need for collaboration between national transport departments and between national and regional governments (V&W, 1988). The policy goals of SVV-II covered 4 policy themes divided into 23 tracks, which were further subdivided into 136 projects covering various modes of transport. Each of these projects was detailed in terms of goals, planning, costs and responsible government(s). In addition to this focus on multi-level and cross-sector integration, in SVV-II initial steps were taken towards the coordination of transport and land use planning. It was stated: "As yet, transport has had a limited influence on land use policy. This must change. [Subsequently], coordination will take place between the national strategy on transport planning and the national strategy on land use planning" (V&W, 1988, pp. 6&16). This ambition was translated into goals to concentrate the development of workplaces, housing and recreation facilities around public transport nodes. In addition, SVV-II was aimed at integrating new infrastructure developments into their surroundings.

In 2004, the National Mobility Plan (NoMo) replaced SVV-II. NoMo was developed in close adherence to the goals of the National Spatial Plan. Its central ambition was to strengthen

the "interrelationship between land use, transport and economy at every level of government to sustain the competitiveness of the Dutch economy" (V&W and VROM, 2004, p. 10). NoMo covered 6 themes, each of which carried a variety of generic policy aims; for example, it stated that "to achieve economic growth and a strong international competitive position, the Netherlands must take a more integrated approach on economic, land use and infrastructure development" (V&W and VROM, 2004, p. 18). To facilitate reaching these goals, the roles and responsibilities of national, regional and local governments were described. In line with the NoMo's maxim "decentralize if possible, centralize if necessary," responsibilities on transport and land use planning were disaggregated and party decentralized, and regional governments and private actors were given a greater role in the decision-making and implementation of transport policy. Furthermore, public–public partnerships were formed for the delivery of infrastructure projects.

In 2012, NoMo was replaced by the Infrastructure and Spatial Planning Strategy (abbreviated as SVIR). This integrated land use and transport strategy has three main objectives: increasing economic competitiveness, improving accessibility, and adopting an integrated regional approach to land use and transport planning (I&M, 2012). These goals were further substantiated into thirteen general policy objectives, for which the Dutch national government took formal responsibility. In conformity with the strategy's two maxims "decentralize, unless..." and "either it is your responsibility or it is not your responsibility," the division of responsibilities between levels of government continued. The national government primarily focused on its own responsibilities, and regional governments received more autonomy in land use and transport planning. To stimulate regional policy integration, the SVIR called for the further operationalization of the SVIR's national policy goals in collaboration with regional governments in shared regional policy agendas (I&M, 2012).

### Periodical replacement of policy goals

The results of the document analysis indicate that the coherence of Dutch national transport planning goals was maintained successfully through replacement. New policy strategies were formulated as a comprehensive and coherent package of mutually supportive goals that worked together toward an overarching policy aim. As a new strategy was adopted, its predecessor automatically expired; this allowed goals to develop relatively flexibly without much influence of past design choices. In between these moments of replacement, the policy strategies did not undergo any formal revisions. Hence, the document analysis did not reveal any processes of layering, conversion or exhaustion. Despite this process of wholesale replacement of policy goals, the data indicates that strategies cannot be seen as being entirely separate from each other. The trend toward regionalization and policy integration indicates that strategies build on each other. Policy goals have been defined at an increasing level of abstraction, deliberately leaving more room for further operationalization of these goals in collaboration with regional and local land use and transport policy.

Both the document analysis and the interview data provided insight into the drivers behind this development process of policy goals. The document analysis revealed that the 1988 Second Structural Plan for Traffic and Transport was adopted because the existing policy strategy was outdated, as "much has happened in the domain of transport planning. The role of cars, public transport and freight is under discussion. The political and economic conditions have changed and the technological development is progressing" (V&W, 1988, p. 6). Subsequently, the National Mobility Plan was developed "as a result of the 1998 Traffic and Transport Planning Act" (Planwet Verkeer en Vervoer in Dutch) (V&W and VROM, 2004, p. 6). Lastly, the Infrastructure and Spatial Planning Strategy was formulated in accordance with the 2008 Spatial Planning Act (Wet Ruimtelijke Ordening in Dutch) because "existing policy notes are outdated due to new political values and changing societal circumstances such as the economic crisis, climate change and increasing regional differences" (I&M, 2012, p. 9). Respondents have confirmed these contextual and legislative influences on the development trajectory of policy goals. Interviewee 13 stated that in formulating policy goals, "we are figuring out what politics and society want. And this changes constantly." Furthermore, Interviewee 40 commented that "in the end we have to comply with legislation so that is our starting point."

## Policy instruments and consistency

### The instrument mix of Dutch national infrastructure policy over time

The document analysis reveals how the planning stage of the Dutch national infrastructure PPB system has become increasingly more comprehensive and complex. In 1997, the PPB system comprised of two main instruments, namely the explorative study and the project study. In multiple rounds of revisions, the PPB system was transformed considerably as new policy instruments were added and existing instruments were revised.

In 2004, the first round of revisions was completed. New rules obliged a social cost-benefit analysis of proposed infrastructure developments and posed additional requirements for conducting an explorative study. As a result, decision-makers now needed to explore the benefits of public–public and public–private collaboration and to assess the impact and cost-effectiveness of proposed infrastructure development plans. Furthermore, regional governments were formally given autonomy on decision-making if the costs remained within a certain financial limit. Finally, shared decision-making across ministries was encouraged.

The next revision followed in 2009. Changes were targeted at coordinating investments in infrastructure, housing, business development, accessibility, water management and nature by involving regional governments and other stakeholders (V&W and VROM, 2009). In line with this objective, the PPB system underwent considerable changes. The most significant change was the introduction of periodic governmental deliberations and four regional agendas as new instruments to encourage a better integration of transport and land use policy on the regional scale prior to the start of an explorative study. Furthermore, existing instruments were revised to include an area-oriented approach that focused on integrating land use and transport planning and development. Finally, the information requirements were expanded and standardized for all types of infrastructure development.

In 2011, the PPB system was revised for the third time, with modifications aiming primarily at achieving process time reduction (I&M, 2011). One way in which this was realized was by reducing the number of decision-making moments from five to four. In addition, emphasis was put on improving the quality of early-stage collaboration and decision-making, as this would save time during the later stages of project study – limited to 2 years – and project execution. Subsequently, a MIRT investigation was introduced as a new instrument during the formation stage.

The most recent review was completed in 2016. Changes were made to stretch the scope of MIRT further by including more public and private stakeholders in the decision-making. More specifically, these changes aimed to encourage collaboration between national and regional governmental organizations – including provinces, municipalities, transport regions, and water boards – and between governmental organizations, civil society and market actors, to increase the competitiveness, accessibility and livability of the Netherlands in a sustainable way (I&M, 2016). To achieve these aims, the number of regional policy agendas was increased from four to seven, the scope of information criteria was broadened, and a program-oriented planning approach was introduced as a new policy instrument.

## Instrumental layering and conversion leading to congruence and inconsistencies

Overall, the PPB system evolved during an intricate process of layering and conversion. The layering of instruments was the dominant mode of change, for example the introduction of governmental deliberations, regional development agendas and the MIRT investigation as policy instruments prior to the start of the explorative study. Furthermore, the social cost–benefit analysis, the national mobility and accessibility analysis, the integrated strategic plan, the strategic impact assessment, the implementation strategy, and the sustainability check were introduced in the explorative study. Similarly, the market scan, water management check, delivery test and the program-oriented planning approach were added to the project study. Besides layering, there were numerous examples of instrumental conversion: the purpose and scope of existing instruments were redefined, formal decisionmaking moments were renamed and repositioned in the decision-making process, and information requirements for making these decisions were revised. Contrary to the numerous instances of layering and conversion, our document analysis did not show any examples of replacement and exhaustion.

Our data provided concrete evidence of the influence of instrumental dynamics on instrumental consistency. In this article, consistency is defined as the extent to which incentives and disincentives created by the different instruments are aligned and mutually supportive. Within the period under study, numerous instruments introduced to the PPB system served a variety of purposes. In turn, these instruments introduced a wider variety of incentives, which sometimes counteracted one another. In the 1990s, the PPB system was introduced as a mix of instruments for transport infrastructure investments to stimulate transparent and informed decision-making in infrastructure developments in line with the national transport policy (V&W, 1988). Gradually, there was an increasing focus on efficient project delivery, which was reflected in the preference for public–private partnerships from 2004 onwards as well as in process optimizations adopted in 2011. Subsequently, from 2009 onwards, the PPB system became increasingly concerned with regional policy formulation and integration. The conversion of existing instruments helped to maintain consistency with newly developed instruments.

Multiple respondents have reflected on how instrumental layering affected the instrument mix. Respondents 41 & 44 observed that the instrument mix has become "top-heavy" and has deviated from its original function, namely infrastructure programing and budgeting. Furthermore, it was noted that the layering of instruments created inconsistencies that affected instrumental success. For example, Respondent 35 stated that in the way the instrument mix works "it is all about infrastructure investments. As a result, the infrastructure component remains very dominant and governmental deliberations are primarily concerned with acquiring funding for infrastructure development projects." Respondent 7 gave another example, by stating that "the explorative study ends with a route decision. A route decision can only be taken for the development of infrastructure [...] so in fact you need a mobility problem that can be solved through infrastructure. Otherwise you cannot use the MIRT procedure." Respondent 17 explained that these inconsistencies cause "the Regional Development Agendas not to function as they should." Respondent 20 highlighted another inconsistency between an old and a new instrument: the national mobility and accessibility analysis that predicts future bottle-necks on national transport networks and provides possible infrastructure solutions counteracts the Regional Development Agenda, which is directed at finding integrated land use and transport solutions at the regional level. Additionally, it is interesting to note that it was frequently suggested that institutional influences such as organizational fragmentation and administrative and political culture prevented the instrument mix from functioning optimally. Respondent 45 stated that "it is due to the institutional setting in which the MIRT is embedded" that some policy instruments are not yet functioning as they are intended.

## Congruence between goals and instruments

Figure 4.2 summarizes the results of the longitudinal analysis of the Dutch national transport planning policy design, showing how policy goals and instruments have developed over time. What stands out from the figure is that both policy elements are characterized by distinct development trajectories. Whereas goals have evolved relatively flexibly by means of periodic replacement, the instruments have developed more incrementally by means of layering and conversion. Furthermore, it becomes clear from the figure that the elements developed in consecutive order. Interviews provided more in-depth insight into this process of policy design development. Respondents 1, 13, and 20 all stated that policy goals are defined first and that subsequently the instrument mix is adapted accordingly. Furthermore, Respondents 3 and 13 stated that although both processes are coordinated by the same ministerial organization, goals, and instruments are largely developed in separated trajectories by different teams. Interestingly, respondents highlighted that policy outcomes do not

play a leading role in this design process as "feedback from monitoring and evaluation is not established" (Respondent 13), even though, as Respondent 51 put it, "it is essential in dynamic processes of policy making and implementation."

As a result of the ongoing development of the Dutch national transport policy design, the congruence between goals and instruments was constantly changing. When the Dutch PPB system was introduced as an integrated national transport budgeting instrument, it had a clear focus on delivering transport infrastructure. Initially, drift occurred as NoMO was adopted in 2004, progressively emphasizing regional policy integration, and the incongruence between policy goals and instruments grew. Through instrumental layering and instrumental conversion, these processes of drift were counteracted, and congruence between the two elements of policy design incrementally improved when the PPB system was revised in 2009 and 2011. This process was repeated when the incongruences that arose during the adoption of the SVIR in 2012 were partly restored during the revision of the PPB system in 2016. However, despite these improvements, Respondent 20 commented that several old instruments hinder the realization of current policy goals.

## 4.5 **DISCUSSION**

This study sheds more light on how policy dynamics have influenced policy design fit in the field of transport infrastructure planning. Overall, the results reveal an ongoing interplay between policy design dynamics and policy design fit; processes of layering, drift, conversion and replacement constantly influence goal coherence, instrumental consistency, and congruence between goals and instruments.

# Policy design dynamics: the development of goals and instruments over time

In Dutch national infrastructure planning, policy goals and instruments have evolved in distinct ways. Policy goals have developed through the wholesale replacement of coherent strategies, with only minimal influence of preexisting design elements; in contrast, policy instruments have developed showing strong path-dependency as a result of the persistency of existing instruments. Due to the rigidity of these established instruments, the instrument mix has evolved incrementally by means of layering and conversion, causing it to expand considerably over time. This study has also revealed that goals and instruments generally develop separately. Even though the PPB system was formally introduced to realize national policy goals on infrastructure development, after being adopted it developed more or less autonomously from national policy goals and was aimed more at regional policy integration and effective project delivery. Comparing these policy dynamics with other case studies (e.g. Howlett & Rayner, 2004; Rayner et al., 2017; Reichardt & Rogge, 2016; Rogge et al., 2017), we see interesting differences and similarities in how policy designs evolve in different sectors and different countries. This reflects the highly context-specific nature of policy design dynamics. Different studies highlight different dynamics of and interplay between goals and instruments. Interestingly, our observation that goals and instruments develop in distinct ways was not reported in other studies. Kern & Howlett (2009), Kern et al. (2017), and Rayner et al., (2017) identified layering as the dominant mode of change for both policy goals and policy nstruments, while others uncovered the guiding influence of preexisting elements on the evolution of a policy design (e.g. Howlett et al., 2015; Kern & Howlett, 2009; Rayner et al., 2017). In line with Howlett et al., (2018), we found that the existing landscape of policy elements reduces the flexibility necessary for innovation and adaptation of policy designs. In our study, however, this guiding influence was only found in the trajectory of instrumental development.

## Ongoing fitting process of policy design elements

The study supports the idea that over time, processes of policy design development affect policy design coherence, consistency and congruence (e.g. Howlett et al., 2018; Howlett & Rayner, 2013; Kern et al., 2017; Rayner et al., 2017). One objective of this research was to provide more insight into this relatively unexplored interplay between policy design dynamics and policy design fit. Our longitudinal analysis reveals an ongoing fitting process in which the continuous and intricate evolution of policy goals and instruments is constantly redefining the coherence, consistency, and congruence of a policy design. These outcomes help us to understand that any moment of fit is temporary, and that maintaining or improving fit requires ongoing attention as goals and instruments are continuously developing over time.

In the case of Dutch national infrastructure planning, the observed process of fitting is characterized by flexible evolution of policy goals, followed by the incremental adaptation of the underlying instrumental mix. Our results show that, policy goals were characterized by an increased focus on land use transport policy integration, and they were being formulated with a growing level of abstraction. Goals were increasingly left open for further operationalization at the regional level in coordination with regional and local land use and transport policy goals. Following this trend, the instrument mix underwent considerable changes. By means of layering, new policy instruments were added to the mix, thus, complementing its initially sole focus on programing and delivery of national transport infrastructure with regional policy formulation and integration. Even though this form of policy stretching managed to successfully improve the congruence of the policy design, it also gave rise to inconsistencies between old and new instruments, for example the inconsistency between the transport-oriented appraisal instruments and regional development agendas that were directed at policy integration (van Geet et al., 2019a). Conversion helped reduce some of these inconsistencies, for example the explorative study that was revised in 2009 to allow for a combination of land use and transport projects to be included.

## External influences on policy design dynamics

Recent studies have described how the embeddedness of policy designs causes their development to be susceptible to the influences of the political, administrative and legal institutional context (e.g. Bahn-Walkowiak & Wilts, 2017; Falcone et al., 2017; Howlett, 2014b; Howlett & Rayner, 2004; Lieu et al., 2018; Rayner et al., 2017; Rogge & Reichardt, 2016). The institutional context influences the formulation process of design elements and their alignment (Chindarkar et al., 2017; Flanagan et al., 2011; Howlett et al., 2015). Although contextual influence on policy design dynamics was not specifically part of this research design, evidence was found that indicates that this influence may partly explain the policy design fitting process that was observed.

The growing abstraction of policy goals, for example, can be seen as a consequence of the decentralization of roles and responsibilities in spatial planning. These formal institutional changes have considerably reduced the role of the national government and stimulated the need for collaboration between national and regional governments. Moreover, the separated development of policy goals and instruments may be institutional by nature. Formulating a new policy strategy and revising the PPB system are institutionally different trajectories which involve different actors and follow different administrative and legal processes. Furthermore, the outcomes of van Geet et al.'s (2019a) as 'rules of the game'. However, institutions do not always align. As a result of changes in strategy and operation, institutional incongruence can emerge as old and new institutions conflict or as actors perceive and apply institutions in a different manner. In this article, we aim to gain insight in the concept of institutional incongruence and the way it shapes transport planning policy and implementation. To this end, we analyse the role of institutional congruence in the case of land use transport integration (LUTI) institutional analysis on the Dutch national transport planning helps us understand the incremental instrumental development process observed in this study. The rigidity of formal budgeting and participation jurisdiction, together with informal political rules, generate powerful incentives to maintain traditional sectoral instruments that do not support contemporary policy goals on regional land use and transport integration (van Geet et al., 2019a). This corresponds with Rayner et al.'s, (2017) finding that a design element remains inherently embedded in the political and institutional history of the jurisdiction that created it. The contextual influence on the evolution of a policy design is, therefore, an important issue for future research.

## Implications of our findings for policy design

Policy designs are deliberately devised mixes of goals and instruments that strive to attain predetermined outcomes. In line with previous research, this study illustrates how such policy designs can evolve into sub-optimal configurations due to temporal processes (see Howlett et al., 2018; Howlett & Rayner, 2013). People who engage in policy design must take these dynamics into account as disregarding them may result in "poorer outcomes than anticipated" (Kern & Howlett, 2009, p. 404). The obtained insights into the case's fitting process between policy goals and instruments raises two main implications for policy design practice.

First, the study confirms earlier findings that practitioners pay limited attention to deliberately devising integrated mixes of policy goals and instruments (e.g. Rayner et al., 2017; Rayner & Howlett, 2009). Linking the development of policy goals and policy instruments by integrating decision-making on policy design elements appears to be an essential first step. In the case of Dutch national infrastructure planning, this can be observed in the separate development of policy goals and instruments. Goals were established first, which resulted in drift. Subsequently, the instrument mix was adapted to restore congruence between goals and instruments, which gave rise to an intricate and ongoing fitting process between policy elements that was primarily led by the development of goals. Surprisingly, policy design outcomes had only minimal impact on this fitting process. This finding is diverges from other studies (see Capano & Woo, 2018; del Río, 2014; Rogge, 2018) that underline monitoring and evaluation as a central component in dynamic processes of policy design.

Second, regarding approaches to policy design, literature refers to patching and packaging as main alternatives. Theoretically, packaging is the preferred mode of design because it negates any negative influences of past design choices (Howlett & Rayner, 2013). The observed development trajectory of policy goals further supports this notion; by replacement, coherence was maintained, and the limited influence of preexisting elements allowed policy goals to develop flexibly. In line with Rayner et al., (2017), our results also corroborate that applying smart patches can be helpful when the rigidity of existing policy elements makes replacement too time-consuming or even impossible. On an instrumental level, a combination of layering and conversion was used. This illustrated the two-sided aspect of policy layering as a strategy, which has been discussed in literature (Gunningham & Sinclair, 1999; Howlett et al., 2018). On the one hand, it can help to reduce incongruences that developed as a result of policy stretching. Figure 4.2 shows how the introduction of policy instruments in the policy formation stage accommodated policy goals on the regional integration of land use and transport planning. On the other hand, layering gave rise to tensions between old and new instruments. Conversion was successfully used to resolve some of these instrumental inconsistencies. However, the rigidity of some policy instruments did not allow for conversion to occur.

## 4.6 **CONCLUSION**

The objective of this study was to gain insight into the interplay between policy design dynamics and policy design fit, and to formulate practical implications. To this end, we performed a single in-depth longitudinal case study of Dutch national transport planning. As the transport sector has not received much attention in policy design studies, it has

allowed for cross-sectoral comparison with other studies. Furthermore, the single case study focus allowed for a more in-depth perspective on the intricate and ongoing fitting process between policy goals and instruments. In this way, the present study aims to contribute to the understanding and implications of temporality in new policy design theory and practice.

Theoretically, this study finds that policy designs are constantly developing over time in an ongoing fitting process between goals and instruments, in which every moment of fit -i.e.goal coherence, instrumental consistency and congruence between goals and instruments - is temporary. Comparing our findings with previous studies, it may be concluded that these processes of policy design fitting are inherently case-specific since they are inherently shaped by contextual influences such as past design choices and institutional setting. However, over time, policy design tends to expand and become increasingly complex. In the context of Dutch national infrastructure planning, the process of policy design fitting was shaped by a dynamic mix of goals and instruments that developed along distinct trajectories. This development process was guided by policy goals; these changed quite flexibly through replacement, and subsequently, the mix of instruments was tailored to fit these new goals by means of layering and conversion. In other words, first the adoption of new policy strategies created policy drift, but this was incrementally restored by means of patches in the instrument mix. Even though these patches were successful in restoring congruence in a "stretching" policy design, they gave rise to inconsistencies between old and new instruments that could only be partly restored through conversion, due to the rigidity of some on the established policy instruments.

From the perspective of policy design practice, these theoretical findings carry a number of implications. First, they suggest that new policy design thinking has remained a predominantly theoretical notion. Integrating decision-making on the policy goals and instruments is an essential initial step. Furthermore, the study shows once more that the evolution of a policy design is an ongoing process, which implies that policy designing should also be an ongoing process: a continuous effort at maintaining policy design fit in the face of these dynamics. Monitoring and evaluation of policy design outcomes should be incorporated as a key element of policy design process; if a design does not deliver the intended outcomes, this should be a reason to engage in policy redesign. Finally, the study reveals which policy design approach could be used to improve policy design fit. It appears that policy packaging is the preferred mode of policy design, as it allows elements to be formulated afresh as a coordinated unity. However, the study also illustrates that when designers are dealing with rigid preexisting policy elements, smart policy patches can successfully improve congruence between goals and instruments. This study also shows that this approach to improving policy design fit can give rise to tradeoffs between old and new policy instruments. Supplementing layering with conversion can be a strategy for resolving these inconsistencies.

The single in-depth case study allowed for a detailed examination of the interplay between policy design dynamics and fit, and it suited the context-dependent nature of policy design study; however, this type of research makes it difficult to generalize findings to other cases.
This should be borne in mind when reading our conclusions; nevertheless, we tried to strengthen these by comparing our findings to similar case studies from other disciplines. Furthermore, this study revealed some other worthwhile areas for future research that would benefit policy design practice. First, the outcomes suggested that the institutional context played a prominent role, not only in how policy designs evolve over time but also in the way in which institutions influence how instruments are used to produce policy outcomes. The field of policy design would benefit from more insight into the interplay between policy designs and policy design context. Second, this study's outcomes imply that further research should be undertaken on the monitoring and evaluation of policy design outcomes and on how this may serve as input for policy design processes.



UNDERSTANDING THE ONGOING STRUGGLE FOR LAND USE AND TRANSPORT INTEGRATION: INSTITUTIONAL INCONGRUENCE IN THE DUTCH NATIONAL PLANNING PROCESS

# ABSTRACT

Formal and informal institutions help shape processes of planning, as 'rules of the game'. However, institutions do not always align. As a result of changes in strategy and operation, institutional incongruence can emerge as old and new institutions conflict or as actors perceive and apply institutions in a different manner. In this article, we aim to gain insight in the concept of institutional incongruence and the way it shapes transport planning policy and implementation. To this end, we analyse the role of institutional congruence in the case of land use and transport integration (LUTI) in the Netherlands. Although LUTI creates opportunities for beneficial synergies and helps avoid unwanted consequences, such as project time and project cost overruns, examples of successful deployment remain scarce. Through an institutional analysis of the Dutch national Planning, Programming and Budgeting (PPB) System for road infrastructure, we assess the ways in which LUTI is enabled or obstructed by formal and informal institutions. The one-year research project involves a triangulation of literature research, policy analysis, 22 expert interviews, focus groups and workshops. The findings illustrate that strategy and operation each present distinct formal and informal institutional incongruence that negatively influence land-use transport integration. We conclude that several instances of institutional incongruence can be found throughout the Dutch national planning process. These are partly inevitable because institutional change occurs gradually to reflect developments in society and manifests itself in both formal and informal rules. Therefore we recommend that, in order to achieve LUTI, the full institutional configuration of formal and informal rules, at strategic and operational level should be analysed, redesigned and aligned.

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# 5.1 INTRODUCTION

Even though land use and transport integration (LUTI) has been a topic of research for decades, the planning of land use and transport still tends to exist in separate silos (UN-Habitat, 2013; Wegener & Fürst, 1999). As a result, there are many potential economic, social and environmental benefits of LUTI that are now being missed (Arts, et al., 2016; Heeres et al., 2012). Several scholars have emphasized the need to adopt an institutional perspective to understand the difficulties in achieving LUTI (e.g. Curtis & James, 2004; Hall, 2010; Marsden & May, 2006). Recently, Isaksson et al. (2017) have addressed the need for more in-depth understanding of the multifaceted institutional conditions that play a role in the integration of land use and transport planning. Other scholars have specifically focused on the influence of institutional frameworks for appraisal, funding and delivery on the implementation of integrated transport policies (e.g. Hatzopoulou & Miller, 2008; Hull, 2009; Smith, 2014). These so-called Planning Programming and Budgeting (PPB) systems function as institutional vehicles structuring the aggregate process of policy formation, adoption, execution and evaluation.

PPB systems have increasingly influenced the planning and development of transport infrastructure. They originated in the 1960s, when they were first introduced in the defence sector to ensure expenditure control, promote administrative accountability and enable the long-range programming of investments (Greenhouse, 1966; Lee et al., 2013). Later, they were also implemented in other fields (Lee et al., 2013; Schick, 1973). Today, PPB systems are widely used in public management for budgeting public goods such as transport infrastructure. International comparisons show that transport infrastructure PPB systems are generally well established and that they vary between countries to fit specific national legislative and cultural contexts (Gühnemann et al., 2006; de Jong, 1999; Mackie & Worsley, 2013; OECD, 2011). The Dutch PPB system is called the Long-range Programme on Infrastructure, Space and Transport (Meerjarenprogramma Infrastructuur, Ruimte en Transport in Dutch, abbreviated as MIRT). MIRT was introduced in the 1990s and currently organises future national infrastructure investments up until 2030.

In current practices of transport infrastructure planning, programming and budgeting, the integration with land use planning seems to be inadequate on a global scale (UN-Habitat, 2013). This also applies to the Netherlands; even though the Dutch national government adopted LUTI as an objective as early as the 1970s (V&W, 1977), it has still not been fully implemented (Duffhues & Bertolini, 2016; Lamberigts et al., 2016). So far, few studies have studied the PPB process from an institutional perspective to explain this implementation deficit. Using an extensive institutional analysis, this study seeks to provide a more detailed understanding of how institutional incongruence within the transport PPB process (i.e. the Dutch MIRT) might negatively affect integration with land use planning.

This paper elaborates on an extensive body of literature that discusses how institutions hamper land use and transport integration in various national contexts (e.g. Curtis & James, 2004; Hull, 2010; Johansson et al., 2018; Tan et al., 2014). Where existing literature predominantly focuses on identifying institutional barriers in specific phases of the policy process, we aim to develop a more comprehensive and in-depth perspective. To achieve this goal, we adopt an analytical framework that takes into account the full process of policy development and implementation and that provides insight into how these institutional barriers are formed.

# 5.2 ANALYTICAL FRAMEWORK

## Conceptualizing land use and transport integration

Characterized by a sector-oriented, technocratic predict-and-provide approach, transportation planning has traditionally resulted in narrowly defined infrastructure projects aimed solely at enhancing network performance (Bliemer et al., 2016; May et al., 2006; WRR, 1998). Increased environmental awareness, emergence of the network society, scarcity of space and changing financial-economic contexts triggered two concurrent processes of integration (Heeres et al., 2012), namely (1) intermodal integration through the coordination between different transport networks and (2) integration of transport planning with other spatial sectors. The latter trend emphasized the reciprocity between transport systems and land use systems as stressed by for example Kelly (1994) and Wegener & Fürst (1999). As a result, internationally, transportation planning policy is increasingly promoting a more integrated approach (Button & Hensher, 2005; UN-Habitat, 2013).

The concept of LUTI captures this contemporary perspective on transport planning. In line with several other scholars, LUTI is conceptualized in this study by differentiating between the strategic and operational level (e.g. Cowell & Martin, 2003; Gudmundsson et al., 2015; Heeres et al., 2012; May et al., 2006). Strategic LUTI is defined as the integration of land use polices and transport policies to 'contribute to an optimum spatial organization of activities and a well-balanced transport system linking these activities in an efficient and sustainable way' (Wegener and Fürst, 1999, p. 76); accessibility is considered the integrative objective (Hull, 2010). Strategically aligning land use and transport systems may contribute to more sustainable mobility (Banister, 2008) and a more efficient use of the transport system (Bertolini, Le Clercq, et al., 2005). Operational LUTI aims at integrating infrastructure development with adjacent land use development into area development projects. Our conception of operational LUTI is in line with the area-oriented approach conceptualized by Heeres (2017). This type of integration is associated with better, faster and cheaper achievement of multiple stakeholder interests (Heeres, 2017, p. 14). Several researchers have shown how combining transport infrastructure development (e.g. roads and railways) with other local land use developments (e.g. housing, energy and recreation) can improve the societal, economic and

environmental revenue of projects (Arts et al., 2014; Bertolini et al., 2005; Elverding et al., 2008).

Besides a differentiation between the strategic and the operational level, LUTI scholars generally distinguish between horizontal (intersectoral, intra-sectoral, and cross-territorial) and vertical (between different layers of government) dimensions of integration (e.g. Geerlings & Stead, 2003; Greiving & Kemper, 1999; Hatzopoulou & Miller, 2008). This paper argues, in line with e.g. Greiving & Kemper, (1999), that LUTI, whether at the strategic or the operational level, comprises both the horizontal and the vertical dimensions simultaneously.

## Institutional perspective and analysis

Numerous authors have highlighted how institutions affect land use and transport integration (e.g. Banister & Marshall, 2000; Curtis & Low, 2012; Hull, 2010; Johansson et al., 2018; Marsden & Rye, 2010; Marsden & May, 2006; Smith, 2014; Stead & Meijers, 2009). Conceptually, this effect can be explained as follows. Integration is considered to be an outcome of social interaction processes (Stead, 2008; Stead et al., 2004); at the same time, institutions structure interaction (Ostrom, 2005) and thereby influence the extent to which integration is achieved. Institutions, often referred to as 'the rules of the game', are defined here as any form of human-devised rule structuring social interactions (North, 1990). By prescribing what is permitted, obliged or forbidden, institutions influence actor behavior in processes of designing, negotiating and funding policies (March & Olsen, 1989; Ostrom, 2005). Any process of policy formation and implementation is influenced by different sets of 'nested' institutional contexts (Alexander, 2005). Institutions may be formal or informal. In line with Helmke & Levitsky (2004, p. 727) formal institutions are defined as rules that are created, communicated and enforced through formal governmental channels such as courts, legislatures and bureaucracies. Informal institutions are socially shared rules that may be unwritten and are created, communicated and enforced outside formally sanctioned channels. This study focuses on both types of institutions as this helps to acquire a comprehensive overview of incentives and restrictions underlying actor behavior (Helmke & Levitsky, 2004; OECD, 2007; Tan et al., 2014).

Institutional congruence is adopted in this article as a key concept to gain a deeper understanding on how institutions affect LUTI outcomes. The concept endorses the idea that institutions are inherently dynamic, constantly developing and adapting to fit the ever-changing demands of the system they serve (March & Olsen, 1989). Genschel (1997) and Lanzara (1998) provide insight into the mechanisms driving this ongoing institutional change. Their work helps to understand how a society can be considered 'replete with multiple layers of institutions [...] providing footholds for many courses of action' (Hall, 2010, p. 217). These layers of institutions are formed during a process of institutionalization that is described as a 'historic accretion of culturally specific forms and practices with their origins and diffusion related to their specific contexts: sectors, societies and subcultures' (Alexander, 2005, p. 212). As such, the development of institutions is regarded as a path-dependent process, resulting in intended as well as unintended outcomes (Hall & Taylor, 1996; Thelen, 1999). This new institutionalist perspective clarifies how choices made during the adoption of an institution will have a continuing influence on future decision-making processes (Peters, 1999) and how they can constrain changes as well as the implementation of new processes (Healey, 2006), as different layers of institutions justify different, sometimes conflicting, patterns of behavior.

Institutional congruence is a concept that may be used to evaluate the interrelation between institutions (Buitelaar et al., 2011; de Jong, 2008). De Jong (2008) states that institutions can either reinforce, have no impact on, or weaken each other's effect. If institutions push in opposite directions and are thus mutually counteractive, the term 'institutional incongruence' is used. Inspired by Buitelaar et al. (2011), de Jong (2008) and Genschel (1997), institutional incongruence can be linked to either of two classifications. First, there is 'temporal incongruence', i.e. a misfit between institutions which have developed consecutively, within a single path, but in different timeframes, from varying rationales. The second type is 'contextual incongruence', i.e. a misfit between institutions which have developed separately, in different development paths, but which interrelate because actors, influenced by different institutions, collectively produce decision outcomes (e.g. policy versus decision makers). Both types can entail a misfit between formal and formal, formal and informal, or informal and informal institutions.

# 5.3 **RESEARCH DESIGN**

## Institutional analysis

For this study, institutional analysis was used as research methodology. Institutional analysis aims to expose the underlying rules which structure human behavior in decisionmaking. There are multiple approaches to performing an institutional analysis (Hollingsworth, 2000), and we have chosen to adopt Ostrom's (2011) Institutional Analysis and Development (IAD) framework. First, it is an acknowledged framework that allows for a detailed and structured analysis (Ostrom, 2008). Second, the framework can be adapted to specific research goals. Third, the rationale behind the IAD framework fits this study's underlying theoretical principles, as it focuses on how institutions shape interaction patterns and produce outcomes.

Ostrom's framework studies how interaction outcomes of what she calls 'action situations' are shaped by three external variables: biophysical conditions, attributes of the community and rules-in-use. Following previous studies, our analysis focuses on rules-in-use, i.e. the formal or informal institutions that structure interaction in an action situation. Ostrom (2005) differentiates between seven rules-in-use that, based on Ostrom (2011) and Ostrom & Basurto (2011), are be defined as follows:

- I. Position rules establish positions that may be taken by actors
- II. Boundary rules determine who may enter or exit a position and how.
- III. Choice rules specify what a participant occupying a position must, must not, or may do at a particular point in a decision process
- IV. Aggregation rules determine 'who is to decide' which action or set of activities is to be undertaken
- V. Information rules affect the level of information available to actors by authorizing channels of information flow
- VI. Payoff rules affect the benefits and costs assigned to actors in light of the outcomes
- VII. Scope rules delimit the potential outcomes of the action situation.

Fig. 5.1 presents the institutional analysis framework used to study the MIRT process. It frames the four phases of the policy development and implementation process as consecutive action situations. The outcome of an action situation provides the input for the subsequent action situation. As such, the final outcomes will be constructed incrementally by these connected action situations. Land use and transport integration is defined here as the desired final outcome. The delineation of each action situation is based on the formal administrative MIRT rule book.

Ostrom (2008) underlines that it may be challenging to reveal rules-in-use; they have often developed over long periods of time and are implicitly understood by participants rather than explicitly written down. To overcome this challenge, a research design was constructed which triangulates literature research, legal and policy document analysis, in-depth interviews, focus groups and workshops. This design allows for extensive exchange and discussion with and among practitioners to distinguish and verify different ways in which rules-in-use influence the outcomes of the four action situations.

## Data collection and analysis

The process of data collection included four subsequent steps. As a first step, a legal and policy document analysis was conducted on (i) the Spatial Planning Act (Wet ruimtelijke ordening in Dutch), (ii) the Route Act (Tracéwet in Dutch) and (iii) a series of documents: the National Environmental Strategy (Nationale Omgevingsvisie in Dutch), the Longrange Programme for Infrastructure, Spatial Development and Transport (Structuurvisie Infrastructuur, Ruimte en Transport in Dutch), and supporting policy documents.

The document analysis provided input for Step 2, which consisted of semi-structured interviews with 21 respondents. The interviews led to a structured discussion of relevant outcomes of the literature study, while giving interviewees sufficient scope to introduce new experiences and conversation topics (Liamputtong & Ezzy, 2005). The interviewees were experts working for the Ministry of Infrastructure and the Environment (Ministerie IenM in Dutch) or the Directorate-General for Public Works and Water Management (Rijkswaterstaat in Dutch). All were closely involved in implementing national planning and infrastructure policies or engaged in the revision of the PPB system. Step 3 involved the discussion in

two focus groups of the findings from the interviews and document analysis. Focus groups combine observations of interaction between participants with in-depth interviewing of a group of participants on topics of which they have in-depth knowledge and experience (Morgan & Spanish, 1984). The participants were from the Ministry of Infrastructure and the Environment or from Rijkswaterstaat, and they were oriented towards a specific phase of the MIRT procedure. The focus group discussions had statements derived from the document analysis and the interviews as their starting points. Step 4 consisted of two workshops, which were organized to reflect on interim findings. During these meetings, the research progress was discussed, sources and contacts were disclosed and avenues for future research were identified.

Data from the interviews, focus groups and the workshops was transcribed and analyzed in ATLAS.ti 8. Passages were coded based on the seven rules-in-use and the different phases of the policy cycle. The results of the analysis present an overview of the configuration of formal and informal rules influencing LUTI outcomes per PPB stage, which are referred to in the text by three character codes (e.g. FS1) and which can be found in Appendix D1. In addition to the coded results of the institutional analysis for each phase, Appendix D2 includes the list of responds, document list, interview guide, focus group discussion guide and the workshop set-up. It is important to mention here that we by no means aim to provide an exhaustive overview of the institutional context embedding the PPB process. In line with the research goal, we explicitly focus on the rules-in-use that affect LUTI outcomes and which were mentioned by respondents or in the documents analyzed.





# 5.4 THE INSTITUTIONAL SETTING OF DUTCH PPB SYSTEM MIRT

#### Case introduction: a historical perspective

The Dutch national government is legally responsible for planning, building and maintaining the national road infrastructure. The Infrastructure Fund is an annual national budget providing financial resources for this task. Decision-making on the allocation of this fund is guided by a set of formal administrative institutions defined in the MIRT rule book. The MIRT process works as a funnel, as it concludes different decision-making phases with formal agreements, thus incrementally limiting the scope of decision-making. Since its adoption in the early 1990s, MIRT has been periodically revised. These revisions reflect the gradual policy shift on national level from sectoral transport planning to integrated land use and transport planning (Lenferink et al., 2017). During a period of New Public Management, MIT (1991) was introduced as the precursor of the current MIRT. MIT was a transport PPB System to operationalize political control, transparency and output control. MIT was designed to move away from a planning system which was considered bureaucratic and which was increasingly receiving social criticism (van den Brink, 2009). In line with private organizational management principles, policy-making at the ministerial level was separated from policy delivery, which became the core responsibility of executive agency Rijkswaterstaat. Alongside the incremental adoption of New Public Management principles, a shift occurred towards integrated planning (Heeres et al., 2012). Land use and transport integration gradually became a central policy goal of Dutch national government, uniting two disciplines with divergent rationales that had for decades been developing in largely separated institutional contexts (Arts et al., 2016a; Smith, 2014; WRR, 1998).

In 2008, the 'R' (for Dutch Ruimte, i.e. Space) was formally included in MIRT and the process was redesigned to achieve better LUTI outcomes. Nevertheless, public officials remained dissatisfied with the continuing top-down and sector-oriented decision-making practices in MIRT (Respondent 19; Lamberigts et al., 2016). In 2016, this resulted in another revision of the MIRT procedure based on the LUTI-oriented principles 'broad scope', 'tailor-made' and 'collaboration' (I&M, 2016). Fig. 5.2 visualizes how the front-end stage (i.e. policy formation) of the Dutch national transport PPB framework was structurally redesigned to stimulate LUTI outcomes. These structural changes were underpinned by changes in administrative rules throughout the whole process. Nevertheless, multiple respondents stressed the ongoing influence of past institutions on contemporary MIRT practices. Respondent 2 asserts that 'the [line-oriented] infrastructure planning culture of the 1960s and 1970s has disappeared, although remnants of this practice are still, to varying degrees, visible in contemporary projects, in culture as well as in process design'.

## The MIRT procedure

The administrative procedure set out by the I&M (2016) provides the main outline of the PPB process, and thus defines the studied action situations (see Fig. 5.1). The formation phase is institutionalized by Regional Development Agendas, governmental deliberations and MIRT investigations. Regional Development Agendas are described as shared policy agendas of national and regional governments, which integrate land use and transport. The agendas are required to be updated at least every four years, and they provide input for formal decision-making during governmental deliberations which are periodically organized for each of the five MIRT regions. In I&M (2016), such governmental deliberations are described as strategic meetings where national and regional representatives as well as relevant market and civil society actors define and prioritize shared policy issues. If a more detailed understanding is required of the issue at hand, a MIRT investigation may be started. A 'start decision' marks the formal adoption of a policy issue and provides the first delineation of its scope.

The start decision initiates the adoption phase, which consists of a MIRT Explorative Study and a MIRT Project Study. The Explorative Study is a comprehensive study, which starts with an integrated problem analysis and is followed by a process of developing and evaluating possible solutions, which finally converge towards a desired alternative, including a clear project scope (Rijkswaterstaat, 2010). Rules prescribe that in this stage at least one non-infrastructural solution should be considered as an alternative. Outcomes of the Explorative Study should be reported in accordance with criteria formulated in the MIRT rule book (e.g. inclusion of a social cost benefit analysis, a procurement strategy, and a Strategic Environmental Assessment or an Environmental Impact Assessment). When a positive decision on the preferred solution has been reached, the initiative enters the MIRT Project Study stage. Here, the chosen alternative is further prepared for realization by defining a timetable, formulating responsibilities (including financial responsibilities) and acquiring permits. This phase is concluded with a project decision, which should be taken within two years of reaching the decision on the preferred solution.

The subsequent execution phase, i.e. the MIRT Realization, focuses on project delivery. This phase is strongly bounded by the contractual arrangements resulting from the procurement process. The execution phase is concluded with a decision on completion, which provides accountability on project time and budget, realized scope and realization process. The decision on completion can be made when both (i) the final settlement meets the contractual arrangements and (ii) the information criteria associated with the decision have been fulfilled. The Dutch House of Representatives and the provincial and municipal governmental bodies involved are notified when a decision on delivery has been taken by the associated Directorate-General. After this decision has been made, the project is officially delivered and put into operation by the commissioning party. At this stage, the project is included in existing asset management.

The MIRT rules on monitoring and evaluation are limited to a completion test. This test is only mandatory for projects which require a Strategic Environmental Assessment (SEA). A completion test is performed one year after project delivery and assesses whether legal norms have been met, for example on air pollution and noise levels. The outcomes are reported to the Dutch House of Representatives. Additional measures are formulated if the results show that legal norms have been exceeded, so as to ensure that the norms will be met in future. In the decision on delivery, it is stated if, when and on which indicators a completion test has been performed.



# FIGURE 5.2 THE DEVELOPMENT OF THE MIRT PROCESS 1997-2016. BASED ON (I&M, (2016), V&W (1997) AND V&W AND VROM (2009).

## Institutional incongruence in planning, programming and budgeting

The results of the institutional analysis, which can be found in the appendix, illustrate the comprehensive set of formal and informal rules affecting LUTI throughout the PPB process. The setting comprises a diversity of institutions that complement the administrative MIRT rules and varies between the phases of infrastructure planning, programming and budgeting. The qualitative data from interviews, focus groups and workshops helps to give meaning to these results. These data help not only to identify rules within this extensive configuration that are incongruent from a LUTI perspective but also to understand how these incongruences impede LUTI outcomes.

Analyzing the rules from the coded data and the institutional analysis lead to some general observations. First, the number of rules associated to each phase/action situation

(formation: 35 rules, adoption: 38 rules, execution: 17 rules and evaluation: 8 rules) suggests a clear emphasis on the formation and adoption phases with regard to achieving LUTI. This focus on the rules of these first two phases was also recognized in the respondents' data. Secondly, specific configurations of rules that affect LUTI outcomes were identified for each PPB phase. When discussing LUTI in the formation, adoption and execution phases, respondents predominantly referred to the influence of scope, position, choice and payoff rules; in the monitoring and evaluation phases, respondents mostly mentioned information rules. A third and final general observation is that rules can apply in multiple action situations but with different effects. For example, financial regulations limit the scope of the agenda setting during the policy formation phase, as well as the opportunities for project integration in later phases (see also 4.3.2). Besides these general observations, the data provides more detailed and specific understanding of how LUTI outcomes are hampered by specific institutional incongruences at the strategic level (4.3.1) and operational level (4.3.2).

#### Strategic level

Strategic LUTI is emphatically associated with the front-end stage of the PPB process: the policy formation and policy adoption (see Fig. 5.2). During the policy adoption phase, in preparation for the decision on the preferred solution, a gradual shift occurs from a strategic to an operational focus. During the interviews, focus groups and workshops, respondents highlighted a range of institutional incongruences associated with the integration of land use and transport planning at the strategic level. From these incongruences, five main findings that affect LUTI outcomes can be inferred.

First, official decision-making in the MIRT procedure occurs during governmental deliberations. The MIRT rule book underlines the importance of these strategy-oriented deliberations in formulating an integrating perspective on land use and transport planning (FS3). In practice, however, governmental deliberations are highly politicized and policy integration plays only a limited role. As Respondent 13 states, 'strategic deliberation takes place at a different level between policy makers'. Our data shows that the dominant influence of political negotiations on decision outcomes is enforced by a comprehensive configuration of formal and informal institutions. A combination of position (FP5), boundary (FB2), choice (FC1;FC2) and aggregation rules (FA2;FA4) creates a setting in which decisions are made by politically elected public officials. Strategic policy makers have no direct influence on this deliberation process. This is confirmed by Respondent 17, who states that 'political will [to achieve strategic LUTI outcomes] is fundamental here; this is currently the crux'. At present, these officials are influenced by several payoff (FY2;FY3;FY4;FY5;AY2;AY6) and scope (F52;FS6) rules, which make it attractive to focus on their sectoral portfolios. They use the MIRT process for lobbying, so as to mobilize support for national investments in infrastructural mobility solutions in the region they represent. 'At the moment MIRT is basically a pile of money, with different regions lobbying to acquire funding for their region. This is a direct result of the way the process has been designed' (Respondent 20). 'As a result people behave in a certain way [...]; as long as this game setting prevails [..] not much will change' (Respondent 20). Respondent 25 reflects on the cause of this behavior, by stating that 'members of parliament demand projects, and city

councilors in the big cities also demand projects [...]; as such, it is easier to profile yourself through projects'. This type of political negotiation, driven by personal agendas and political mandates, is institutionally facilitated by a combination of scope <sup>(FS4;AS8)</sup> and choice rules <sup>(FC3;FC4)</sup>.

The second finding involves the budgeting rules that discourage LUTI decision-making. The MIRT framework is inherently connected to the Infrastructure Fund. Legal scope rules (FS6;AS6;AS7) confine the allocation of these funds to the construction, management, maintenance and operation of transport infrastructure for people and goods of national importance. Throughout the adoption phase, this scope is maintained (AS4;AS6;AS7). Solutions which do not fit the scope may not proceed in the MIRT process as a preferred solution. As Respondent 35 commented, 'how do you include other topics such as area development to the MIRT discussions if you cannot link them to investments?'.

The third finding considers the institutions for appraisal, a recurring topic highlighted by respondents. Two specific appraisal instruments were mentioned: the National Mobility and Accessibility Analysis (NMCA) and the Social Cost Benefit Analysis (SCBA). The NMCA is used to prioritize MIRT investments using lost vehicle hours as indicator <sup>(FI3)</sup>. This creates a situation in which 'the objective is to improve accessibility by means of area development, but the point of departure is still a mobility issue' (Respondent 17). Respondent 20 suggests 'incrementally broadening the mobility-oriented NMCA by for example incorporating accessibility and proximity indicators'. The second instrument, SCBA, is a mandatory <sup>(AS2)</sup> assessment instrument which currently dominates decision outcomes. 'At the moment, outcomes of a SCBA are considered to be sacred [by decision-makers]' (Respondent 9). However, multiple respondents were critical of the current scope of the SCBA, as it considers outcomes based on monetary values and neglects several values that can be obtained through LUTI but which cannot be monetized. Respondent 18 states that 'it remains a struggle to include qualitative social values such as livability, perception and spatial quality in SCBA'.

The fourth finding on strategic level incongruence relates to evaluation. Despite widespread consensus among respondents on the importance of monitoring and evaluation, our data reveals that these are poorly secured in the MIRT procedure. Existing information <sup>(MI1;MI2)</sup> and scope <sup>(MS1)</sup> rules are to some degree optional and focus on project evaluation based on environmental impact indicators. Respondent 2 states that following the monitoring in MIRT, it 'is not really part of our [Rijkswaterstaat] culture to pay much attention to this. We simply move on to the next campaign'. Due to position rules <sup>(MP1)</sup>, policy evaluation is coordinated by the Ministry rather than by Rijkswaterstaat, which implements policy. Evaluation is carried out by external public assessment agencies. The MIRT procedure is not included in this analysis. Respondent 13 reveals that the outcomes of this evaluation is not ensured in the organization'. Political ambitions to institutionalize the monitoring of policy defined in Regional Development Agendas <sup>(MI2)</sup> are impeded by a lack of support from participants. As Respondent 25 puts it, 'the Minister has demanded monitoring of these regional agendas at

administrative consultations [...], but this will probably not succeed due to resistance, also from regional partners'. Another issue is the broad scope of the current regional agendas, which is hard to translate into measurable indicators. 'So we want to make the Regional Development Agendas more specific to enable evaluation. [...] in all honesty, this is impossible at the moment' (Respondent 25).

The fifth and final finding at the strategic level is strongly associated to position rules (FP4;AP3). These highlight the horizontal and vertical separation of roles, responsibilities and budgets on transport and land use planning. The effect of these rules is illustrated by Respondent 31, who states that '[as a ministry] we have limited opportunities to influence land use developments. We do not possess the authority to cancel housing developments even if they will create bottlenecks on the motorway networks'. This distribution of responsibilities stresses the need for multilevel and cross-sectoral agenda setting to achieve LUTI at a strategic level. Through the Regional Development Agendas and position rules (FP1;FP2;AP1), the MIRT provides a platform for strategic policy integration on a regional scale in which 'national and regional governments define shared goals and ambitions' (I&M, 2016). The data shows how the performance of these rules are negated by other, incongruent, institutions. A frequently mentioned example is the inequality in decision-making power and financial resources between national and regional partners <sup>(FC2;FA2;AC2)</sup>. Respondent 31 regards it as difficult that MIRT is connected to a national fund and that regional funding plays only a minor role. This creates the perverse incentive leading to regional authorities wishing solely to cooperate with the national government in order to secure national funding. Respondent 6 also refers to the lack of financial reciprocity: 'In all fairness, at the moment mobility [...] is the only sector that provides money. Sustainability or environmental concerns simply do not have the money to realize policy goals'. Additionally, Respondent 10 states that 'in all kinds of ways regionalization is occurring [...], but the public financing system is not adapted'. Besides the institutions stimulating inequality between participants, multiple other rules can be identified which contribute to a general lack of commitment to these regional agendas from other departments, ministries and regional governments (FB4;FC5;AP4;AB1).

#### **Operational level**

The operational level consists of the policy adoption, policy execution and policy monitoring and evaluation phases of the MIRT procedure (see Fig. 5.2). In the adoption phase, operational LUTI is becoming a growing concern. As alternatives are being developed and explored, the integration of infrastructural solutions into the existing local landscape and the possibilities for adjacent spatial development are being considered. Once a decision on the preferred solution has been made, the MIRT procedure fully commits to the further operationalization and execution of the chosen alternative. Our analysis shows that due to contractually bound choice rules <sup>(EC2)</sup>, the execution phase leaves only limited room for integration. Hence, integration at project level is predominantly achieved during the adoption phase. A specific MIRT aggregation rule <sup>(AA5)</sup> and scope rule <sup>(A55)</sup> aim at facilitating this form of integration by requiring an implementation strategy and stimulating the adoption of a program management approach. Our data reveals multiple institutional incongruences which can be linked to three main issues.

Rijkswaterstaat occupies a central position <sup>(AP6;EP2)</sup> in the development and delivery of infrastructure projects. Despite its ambition to take an area-oriented approach and to strive for integrated and sustainable solutions, our data shows that formal and informal payoff <sup>(AY5;EY3)</sup> and scope <sup>(AS10;ES2;ES3)</sup> rules create incentives to focus primarily on the sectoral responsibilities <sup>(AP6;EP2)</sup> for which project managers carry formal responsibility (Respondent 2). As such, their prime concern remains delivering, within budget and time, road projects that contribute to the robustness of the network (Respondent 31). Respondents explained how LUTI is unattractive as it makes infrastructure projects more complicated and more challenging to manage.

This was illustrated by Respondent 6, who states that 'we believe in not taking extralegal project integration measures'. Multiple respondents elaborated on the tension between effective project delivery and operational integration. Integration adds to the complexity of a project, making it more challenging to deliver within budget and time. As one respondent puts it: 'if you want something to be realized [...] it is smart to keep it sectoral' (Respondent 27). Another respondent commented that 'I construct a road to enhance the robustness of the network, not because I want to make it beautiful' (Responded 31).

Multiple respondents referred to the effect of scope rules <sup>(ES2)</sup>, which stress the sectoral mandate of Rijkswaterstaat. A second issue, related to this mandate, is that Rijkswaterstaat can only invest in infrastructure related integration measures, such as road design, road surface and sound barriers (Respondent 27). Operational LUTI outcomes are thereby largely dependent on investment from other stakeholders. In practice these actors simple do not have the financial capacity (Respondent 23). Respondent 8 reflected that 'if you have integrated policy ambitions, you might have to consider a form of integrated execution'. Besides the sectoral mandate and the financial capacity, a third finding in the data is the separated legal procedures on land use development and national infrastructure development. Choice rules on infrastructure development and land use development are different as they are defined by legislation <sup>(AC5)</sup>. This makes the development of integrated land use and transport projects legally more complex than sectoral projects.

# 5.5 **DISCUSSION**

## Institutional incongruence and LUTI implementation

Our analysis reveals that an extensive set of rules-in-use affect land use and transport integration throughout the Dutch PPB process. The formal administrative rules laid down in the MIRT rule book, which provides the general outline of the process, interrelates with various formal and informal political, budgeting and public administrative institutions. Within this comprehensive institutional configuration, multiple incongruences were identified that weaken LUTI outcomes. These institutional incongruences offer a potential explanation for the ongoing difficulties in implementing LUTI in the Dutch context as described by e.g. Duffhues and Bertolini (2016). Generally, the incongruences identified can be attributed to one of two main classifications: (i) temporal incongruence, a misfit between institutions which developed within the same development path but in different timeframes or (ii) contextual incongruence, a misfit between institutions which developed in separate development paths which interrelate in multi-actor action situations.

The historical development of the MIRT procedure, discussed in section 5.4, is useful for understanding temporal incongruences. The development of MIRT may be seen as a process of institutional accretion such as described by Alexander (2005). The changes in the MIRT procedure illustrate an incremental shift from a New Public Management (NPM) and transport-oriented framework based on financial accountability, administrative efficiency and output control, towards a LUTI oriented design, pursuing multilevel and cross-sectoral integration. In contrast to the administrative MIRT institutions, which have shown to adapt to changing policy ambitions, multiple formal and informal institutions have remained transport-oriented. Our results clearly illustrate how these more rigid institutions, such as, the Infrastructure Fund and political portfolios, weaken the effect of new administrative rules and thus hamper LUTI. Several examples of this temporal incongruence have been identified. Firstly, respondents have indicated how the sectoral and top-down-oriented budgeting rules (e.g. as formulated in the 1993 Route Act) impede integrated shared agenda setting and integrated infrastructure and land use development. Another example involves traditional institutions on policy appraisal. Several respondents have highlighted the fact that the National Mobility and Accessibility Analysis and the Social Cost Benefit Analysis discourage LUTI outcomes because they encourage a mobility- and economy-oriented attitude during MIRT governmental deliberations. The third example is related to the different formal and informal rules defining the role, mandate and responsibility of Rijkswaterstaat. These strongly NPM-oriented institutions impede LUTI by pushing for a focus on infrastructure and on an efficient project delivery.

The structural revisions of the MIRT process have contributed to its comprehensive and versatile institutional context but have also given rise to contextual institutional incongruences. As the emphasis on multi-level and cross-sectoral collaboration grew at the regional level, the MIRT process included a growing number of stakeholders from different institutional contexts. Our results show how LUTI is affected by incongruences between institutions associated to the different interacting participants. Arts et al. (2016a) and WRR (1998) describe how for a long time, transport and land use planning developed in separated institutional contexts embedded in different rationales. Integration of both disciplines in MIRT processes resulted in the merging of the technocratic rationale of transport planning approach with the communicative rationale of land use planning. Traces of both rationales can be recognized in contemporary MIRT design and practice (e.g. technocratic accessibility analysis versus deliberative MIRT investigation). Contextual incongruences between formal and informal rules on political deliberation can also be accredited to this classification. Decision-making is highly politicized, as national public officials carry formal decisionmaking power. Subsequently, decision outcomes are affected by the political institutions that encourage informal lobbying, the pursuit of political portfolios, personal profiling by means of infrastructure projects and the emphasis on personal political agendas. The final example of contextual incongruence that was identified is related to the rules that define the relationship between national and regional governments in MIRT. LUTI requires multi-level collaboration because, in the Netherlands, land use planning has been decentralized to regional governments. The MIRT process includes platforms for this interaction to occur, but equal collaboration is obstructed by institutions which secure the existing hierarchy between national and regional government in political mandate and financial capacity. In our study this inequality appears to be one of the underlying reasons why collaboration in the Regional Development Agendas is still predominantly infrastructure-oriented and money-driven. This may be considered problematic, as in the literature the key role of regional governments in implementing integrated transport policies is emphasized (Curtis, 2008; Hatzopoulou & Miller, 2008; Marshall & Banister, 2007).

Our results provide numerous other examples of how these two types of incongruence negatively affect LUTI. These will be used to illustrate how institutional incongruence affect the integration of land use and transport throughout the PPB process. Institutional incongruence can be identified within the same phase as well as between different phases.

#### Incongruences within the same phase

The MIRT PPB system was studied as four consecutive action situations, namely policy formation, adoption, execution, and monitoring and evaluation. Each phase is structured by a specific configuration of formal and informal rules and carries specific potential for LUTI. Within these institutional contexts, specific incongruences are found that are inherently linked to that phase. The front-end phase of MIRT, referred to as the formation arena, has been increasingly institutionalized to better facilitate LUTI on the strategic level. This has been done by putting in place institutions which encourage the formulation of mutual policy objectives, the identification of shared policy issues and the development of a common policy agenda. Our findings help to understand why in practice this strategic deliberation does not occur, even though these institutions have been put in place. Outcomes of this arena are still predominantly defined by means of political negotiation and bargaining for infrastructure-related investments. Informal boundary rules prevent the more strategy-oriented policy makers from influencing the decision-making process, and a combination of formal and informal, politically oriented, payoff and scope rules secure this politicized negotiation setting.

In the policy adoption phase, the focus shifts from the strategic to the operational level, as the transition is made from policy formation to implementation. Incongruences that are identified in this phase relate to institutional misfits which counteract administrative institutions that stimulate developing integrated solutions, integrated deliberation between alternative solutions and combining infrastructure development with adjacent land use development. Our results illustrate how a variety of position, boundary, choice, information,

payoff and scope rules thwart these objectives. This makes clear that the institutional setting structuring this phase is not designed to produce LUTI outcomes (e.g. policy instruments that exist outside MIRT, administrative responsibilities, appraisal methods, impact assessments, legal procedures and budgeting rules).

The execution phase is generally a straightforward process structured by contractual arrangements. Consequently, it leaves limited room to achieve LUTI. Sector-oriented executive responsibilities of Rijkswaterstaat and fast project delivery have been shown to impede integration efforts in this phase.

The final phase of monitoring and evaluating is crucial for assessing the extent to which the current MIRT framework produces LUTI outcomes. Monitoring and evaluating are only marginally institutionalized. The rules that are in place in the MIRT process focus on the evaluation of legal compliance at the project level. Policy evaluation is unrelated to the MIRT procedure. Monitoring and evaluating LUTI is hampered by a discrepancy between policy objectives and the indicators for monitoring, as well as a general lack of follow-up and interest from participants and politicians.

#### Incongruences between different phases

Besides the incongruences between institutions in the same action situation, our results also reveal three incongruences that affect LUTI between institutions of different action situations. The first relates to the design of the process which causes the outcomes of an action situation to delineate the scope of the next phase. Subsequently, the opportunities for LUTI that are currently missed in the formation phase will continue to affect the scope of the subsequent phases. The second relates to the rule that resources from the Infrastructure fund may only be allocated to the construction, management, maintenance or operation of national transport infrastructure. Even though formally, this rule applies to the adoption phase, it also influences the scope of the preceding agenda-setting process. The third incongruence relates to MIRT monitoring and evaluation. The incremental design of the MIRT process aims to establish that the actions taken in the execution phase reflect the strategic goals formulated in the formation phase. Monitoring and evaluating are fundamental components for measuring the extent to which the shared goals defined in the regional development agenda are implemented; evaluation allows us to assess the effectiveness of the design of the MIRT procedure. Existing MIRT monitoring and evaluation procedures focus on project evaluation in terms of environmental norms; the monitoring and evaluation of LUTI policy objectives has not yet been institutionalized.

# 5.6 **CONCLUSIONS**

Despite growing international attention for integrating land use and transport planning, governments are still facing an implementation gap. Elaborating on a wide body of literature on LUTI, this study has set out to provide more in-depth understanding into what Isaksson et al. (2017) refer to as the institutional conditions that underlie this implementation deficit. Although previous studies have predominantly focused on establishing the relevance of taking an institutional perspective and identifying implementation barriers, this research has pioneered in carrying out a comprehensive institutional analysis on the whole transport planning process. This study has shown how transport planning outcomes are shaped by a comprehensive and diverse configuration of formal and informal institutions which change between the different phases of the planning process. Our outcomes reveal how the effect of institutions which aim at achieving LUTI are counteracted or weakened by other, more dominant, formal and informal institutions on public administration, budgeting, appraisal and political decision-making. The relatively centralized, sectoral and economic focus of these latter institutions have shown a poor fit to LUTI principles focusing on multilevel and cross-sectoral integration at a regional level.

The examples in which interrelated institutions push for conflicting behavior have been called institutional incongruences. Incongruences occur within phases of the planning process as well as between phases. Our results indicate that the hampering effect of institutional incongruence on LUTI should be understood as a combination of two or more interrelating formal and informal institutions that weaken each other's effect. Institutional incongruence is therefore better understood by taking into account the total configuration of interrelated institutions. Based on the various incongruences that were identified in our institutional analysis, it is not surprising that, despite the efforts that have been taken in the Netherlands to stimulate LUTI, implementation remains unsatisfactory. The identified institutional misfits provide a probable explanation why, in Dutch practice, it proves difficult to achieve land use and transport integration.

Land use and transport integration is predominantly associated with the front-end stage of the planning process; during the phases of policy formation and adoption. As institutional incongruence transcends the boundaries of phases, institutions that structure the execution and monitoring and evaluation phase also have an impact on this front-end stage. LUTI is promoted at a strategic and operational level and is, at each level, associated with specific potential synergies. However, specific incongruences hamper integration at both levels. At the strategic level, the highly politicized decision-making process does not allow policy integration to occur. The focus is on political bargaining and lobbying, not on a strategic policy debate by means of formulating shared LUTI objectives and adopting shared policy issues; politics are of considerable influence on the extent to which LUTI is achieved. Furthermore, integrated strategic deliberation within MIRT seems to be frustrated by the marginal influence of more strategy-oriented policy makers and by inequality between national and regional partners in terms of finances and decision-making power. Our results clearly show how the focus shifts towards the operational level during the adoption phase, when alternative solutions are being developed and appraised. The deliberation between different alternatives is inherently a political process. It proves to be difficult for decision-making information, which should support the integrated evaluation of alternatives, to objectively represent the more qualitative benefits of operational LUTI. Appraisal methods are still predominantly economic and mobility-oriented. Furthermore, the NPM-inspired, sectoral mandate of executive agency Rijkswaterstaat does not fit the LUTI objectives. Finally, monitoring and evaluation have only been marginally institutionalized, which forms a barrier for learning how to improve the institutional design of the planning, programming and budgeting procedure, as it remains unclear to what extent the desired integration is actually achieved.

The findings of this study provide one clear recommendation for planning practice. Our results show how past efforts in stimulating LUTI in the Netherlands focused on redesigning the administrative rules structuring the PPB process. Although these efforts had a positive influence and can be considered a good first step, in order to achieve LUTI outcomes, the focus should be on establishing congruence within the total configuration of formal and informal rules associated with the PPB process. This includes a better alignment to the goal of land use and transport integration of the variety of rules on appraisal, budgeting, administration and evaluation that have been highlighted in this study. Priority should be given to enhancing strategic LUTI in the formation phase, as the opportunities for LUTI that are missed here will have a continuing influence on the scope of the subsequent phases of the PPB process. It needs to be emphasized here that political negotiations will remain inherent in the transport planning, programming and budgeting processes. As such, creating the right institutional conditions will unlikely guaranty LUTI outcomes, but it will be a prerequisite in achieving more a LUTI-oriented political negotiation.

The above conclusions and recommendations were drawn based on a single in-depth case study on Dutch national planning practice. The possibilities for generalizing findings to other contexts is limited as a sample-to-population logic does not apply here. Nevertheless, we argue that our findings are relevant for other contexts due to the analytical generalizations that may be made. The theoretical and analytical framework that was adopted here has shown to be successful in providing in-depth insights into the institutional conditions that hamper land use and transport integration. Further research could usefully explore the adoption of this analytic framework in different national contexts, or at other levels of government. Measuring the extent to which improving institutional congruence affects LUTI outcomes would be another interesting research trajectory to pursue in light of this study's findings. Finally, related to the dynamic nature of institutions, it would be interesting to perform a longitudinal institutional analysis using the IAD framework.



CONCLUSION: POLICY DESIGN FOR INTEGRATING THE PLANNING OF LAND USE AND TRANSPORT INFRASTRUCTURE

# 6.1 ADDRESSING THE ONGOING STRUGGLE FOR LAND USE AND TRANSPORT INTEGRATION

Governments widely pursue policy ambitions that require an integrated planning of land use and transport infrastructure, such as promoting sustainable travel and accessibility. However, the planning of land use and transport often remains segmented, turning integrated ambitions into fragmented outcomes. Bringing about processes of land use transport integration (LUTI) to overcome persistent fragmentised government action proves to be a struggle time and time again. Responding to a growing need for an effective approach LUTI, this research adopted a policy design approach that aims at achieving desired policy outcomes by purposively matching policy instruments and policy goals.

More specifically this study aimed to explore how a policy design of mutually supportive instruments and goals can remain effective for achieving an integrated planning of land use and transport infrastructure. In line with this aim, the following primary research question was formulated:

# How can instruments support goals in policy designs that remain effective for achieving integrated planning of land use and transport infrastructure?

This question was answered through the next four secondary research questions, each addressing a specific aspects of policy design theory. Figure 6.1 illustrates how these secondary questions interrelate by positioning them in the conceptual framework of this study.

- 1. How are mixes of policy instruments used throughout the policy process to promote land use and transport integration?
- 2. What are necessary and sufficient conditions coherent goals, consistent means, congruency of goals and means for effective policy design?
- 3. How do temporal dynamics affect the development of mixes of policy goals and instruments over time, and how does this development affect the coherence of goals, the consistence of instruments and the congruence between goals and instruments?
- 4. How does the institutional context affect the effectiveness of policy instruments for land use and transport integration?

In this chapter the main conclusions of the current study are drawn together and presented. The next section formulates answers to this study's research questions. Thereafter, the main findings of this research will be discussed in the light of the existing literature on LUTI and policy design. The chapter ends with a reflection on the research process, recommendations for future research and recommendations for policy practice.

FIGURE 6.1 THE POSITION OF THE RESEARCH QUESTIONS IN THE CONCEPTUAL FRAMEWORK



# 6.2 A POLICY DESIGN APPROACH FOR LAND USE AND TRANSPORT INTEGRATION

To develop a policy design approach for integrating land use transport planning, different complementary case studies were conducted. This section presents the findings of the individual studies by answering the secondary research questions, and provides a synthesis of our findings by answering this research's primary question.

# 1. How are mixes of policy instruments used throughout the policy process to promote land use and transport integration?

When it comes to developing and delivering integrated land use and transport policy, no single actor has all the required resources. Instead, integrated land use and transport planning is characterized by great interdependency as the resources – financial, production,

competency, knowledge and legitimacy – dispersed across horizontal – sectoral departments – and vertical dimensions – tiers of government. This interdependence can be addressed through horizontal and vertical processes of interaction, in which resources are exchanged. We conducted a regional comparative study into the Dutch provinces Friesland, Overijssel and Noord-Brabant to analyse the policy instruments these governments employ to bring about these processes of horizontal and vertical interaction in pursuit of integrated land use and transport goals – see Chapter 2.

Outcomes show that *procedural instruments* play an important role in bringing about these processes of integration. In contrast to *substantive instruments*, which either directly induce desired behaviour or prohibit unwanted behaviour, *procedural instruments* allow governments to steer policy processes by managing policy actors, their interrelationships and, most importantly, their interactions. Interestingly, we found that each of the provinces employed a unique mix of complementary procedural instruments throughout the policy process to promote LUTI. These mixes differ in terms of the design of individual instruments, the amount of instruments it consists of and the distribution of those instruments throughout the policy process. This shows that, there is no 'silver bullet' to land use and transport integration. Each of the three cases was found to have a particular 'style' for integrating land use and transport planning. Friesland's approach was pragmatic and project-oriented, whereas, Overijssel's style was a more legalistic and relied strongly on the use of legal ordinances. Lastly, Noord-Brabant's approach focussed on using informal networks to achieve LUTI by employing several collaborative platforms to bring about a high intensity of informal interaction throughout the policy process.

Overall the study shows that there is not one right tool for achieving LUTI. Instead, as shown in Chapters 2 and 5, LUTI proves to be a search into finding the right mix of policy instruments that, in line with integrated land use and transport goals, help to overcome fragmentation of resources throughout the policy process by structuring interaction patterns that simultaneously cross horizontal and vertical boundaries.

# 2. What are necessary and sufficient conditions – coherent goals, consistent means, congruency of goals and means – for effective policy design?

A policy design can be understood as a configuration of goals and instruments that span across three levels of abstraction – macro-level, meso-level and micro-level. Theory holds that governments can be more effective in attaining desired goals if they establish *policy design fit* at all levels of policy design by achieving (i) goal coherence, (ii) instrument consistency, and (iii) congruence of goals and instruments. A Qualitative Comparative Analysis was conducted on all twelve Dutch provinces to study the relationship between policy design fit and policy design effectiveness in the context of integrated transport planning.

In our QCA we did not find coherence of goals, consistency of instruments or congruence of goals and instruments, separately or in any combination, to be *necessary* for policy design

effectiveness. Instead, we found two configurations of conditions for policy design fit to be *sufficient* for policy design effectiveness. For one, a combination of coherence, consistence and congruence resulted in policy design effectiveness. Similarly, a combination of incoherence and incongruence also resulted in policy design effectiveness. The first configuration confirms the theoretical assumption that a consistent, coherent and congruent design is indeed effective. However, the second configuration illustrates that in specific situations, a policy design can still be effective despite being incoherent and incongruent. For example, the study revealed that incoherence and incongruence at only macro-level will not negatively influence policy design effectiveness as long as goals and means are aligned on meso- and micro-level. Moreover, from the individual cases it was derived that instruments of a higher degree of integration are capable of attaining goals of a lower degree of integration. These outcomes infer that criteria of *policy design fit* cannot fully account for policy effectiveness on their own.

Overall, the study shows that when it comes to promoting policy integration the relationship between policy design fit and policy design effectiveness is more intricate in practice than theory suggests; achieving policy design effectiveness is not a matter of simply matching goals and means across policy levels. In specific situations, a policy design is still effective despite being incoherent, inconsistent, or incongruent. Furthermore the study shows that there are different degrees of policy design coherence, consistency, and congruence that impact effectiveness differently.

# 3. How do temporal dynamics affect the development of mixes of policy goals and instruments over time, and how does this development affect the coherence of goals, the consistence of instruments and the congruence between goals and instruments?

A policy design hardly ever develops on a clean slate. Instead, as was shown in Chapter 4, new goals and/or instruments often built on established configurations of goals and instruments. As a result, policy designs tend to incrementally evolve over time as new goals and instruments are added but also as existing elements are removed or modified. This dynamism is important as it allows policy designs to successfully adapt to changing circumstances. However, it is essential to prevent these designs to evolve into sub-optimal configurations and uphold the supportive relationship – the fit – between the total mix of goals and instruments in terms of policy design coherence, consistence and congruence.

The longitudinal case study on Dutch national transport planning in Chapter 4, shows that the studied policy design was continuously evolving through processes of layering, drift, conversion and replacement. These dynamics were found to influence goal coherence, instrumental consistency, and the congruence of goals and instruments in an ongoing process of *fitting*. More specifically, the longitudinal analysis revealed that the evolution of the observed policy design over time was characterized by a distinct development of policy goals and policy instruments. Policy goals evolved quite flexibly through the replacement of entire policy strategies. Following these instances of replacement, the established policy instrument mix was tailored to fit the bundle of newly adopted policy goals. Contrasting the flexibility of policy goals, instruments showed strong path dependency; they changed incrementally through processes of layering and conversion. As a result of these dynamics, the adoption of new policy strategies initially caused incongruences to grow as a result of drift; goals changed while instruments initially remained the same. This process of drift proved to be incrementally restored by reforming the instrument mix through layering and conversion. Even though these efforts successfully restored congruence, they also gave rise to inconsistencies between old and new instruments. Subsequently, instruments were observed to work against each other because they were designed to serve different goals. Conversion of established instruments helped to partly resolve some of these inconsistencies.

These findings illustrate that a policy design is inherently dynamic and as result of these continuing dynamics any moment of *policy design fit* is temporary. Maintaining and improving the alignment between goals and means – i.e. *policy design fitting* – therefore requires ongoing attention.

# 4. How does the institutional context affect the effectiveness of policy instruments for land use and transport integration?

Theory holds that, in general, the compatibility, or the 'goodness of fit', of policy instruments in relation to their context will influence its effectiveness. Chapter 5 presents the outcomes of an institutional analysis on the effect of context on policy instruments. More specifically, the study adopted an institutional perspective to find a contextual explanation for why the policy instrument mix that Dutch national government has put in place to attain the integrated land use and transport policy goals was often not delivering the intended outcomes.

Aiming to improve the integration of land use and transport planning, the Dutch national government incrementally adapted its infrastructure Planning, Programming and Budgeting (PPB) System (in Dutch called MIRT, 'Meerjarenprogramma Infrastructuur, Ruimte en Transport', the Long-range Programme on Infrastructure, Spatial and Transport development). This PPB-System essentially is a mix of interrelating policy instruments and each individual instrument is made up from a set of institutions in order to steer interactions and behaviours of actors and organizations at a specific stage in the policy process. Collectively, these PPB instruments structure processes of policy formation, adoption, execution and monitoring and evaluation in order to attain integrated land use and transport goals. The analysis in Chapter 5 reveals that these instruments do not operate in a vacuum. In addition to the institutions that form the PPB policy instruments, processes of policy formation, adoption, implementation and evaluation are shaped by the wider institutional context in which the instruments are employed. This institutional context was shown to include a wide range of organisational, political, legal, professional and financial institutions, both formal and informal, that either reinforce, have no impact, or weaken the effect of the institutional design of policy instruments. To describe instances in which these institutions push in opposite directions and are thus mutually counteractive, scholars have used the term 'institutional incongruence'.

Multiple of these so-called institutional incongruences, were identified. Remarkably, the context embedding the Dutch national transport policy design was found to counteract and undermine policy instruments that encouraged integrated land use and transport planning by incentivising a sectoral transport-oriented planning tradition. For example, through formal budgeting, administrative and legislative institutions – e.g. the government fund underlying the PPB System is legally bound to be allocated to infrastructure development –, several informal political institutions – e.g. political negations in favour of infrastructure development for the sake of personal profiling – and professional culture, – project managers' principle focus on constraining time, scope and cost – were found to impede land use and transport integration. As a result, policy instruments that were in place to develop and explore integrated land use and transport policy solutions – e.g. such as the Regional Development Agenda, the MIRT Investigation and Explorative Study – were commonly not used as such. Consequently, policy outcomes are frequently the result of processes such as political and electoral bargaining driven by personal agendas, rather than the carefully crafted design of the PPB process.

The study presented in Chapter 5 finds that these incongruences can be understood from two perspectives. The first is a historical perspective. Outcomes confirm that the institutional context develops through a path dependent process. Some institutions that have formed in the past, under a more traditional, technocratic and sectoral transport planning rationale, still persist and shape current policy processes. Second, these incongruences can be understood from a professional perspective. As the focus of infrastructure planning and investment expanded to include land use, a greater variety of stakeholders were engaged in the policy process, like, national and regional policy makes and decision-makers, public officials, land use planner, transport planners and project managers. These different stakeholders adhere to different cultures, customs and traditions, which gave rise to institutional incongruences.

Overall, the study illustrates how the effectiveness of policy instruments is strongly influenced by context. The institutional analysis of Chapter 5 shows that when taking into account the broader contextual setting in which a PPB System is employed, it is not surprising that despite the carefully designed LUTI policy instruments, successful formation and implementation of integrated land use and transport goals remained unsatisfactory.

# How can instruments support goals in policy designs that remain effective for achieving integrated planning of land use and transport infrastructure?

Together, the findings above contribute to the primary aim of this study, which was to 'understand how policy instruments can support policy goals in a policy design that remains effective in the face of temporal and contextual influences for the purpose of achieving integrated planning of land use and transport infrastructure. Overall, the study found that developing such a policy design is about combining three aspects: i) tailoring a mix of mutually supportive instruments to fit specific integrated land use and transport planning goals, ii) managing ongoing policy design dynamics, and iii) designing instruments that are responsive to the broader institutional context in which they are deployed. Below, our findings with regard to these three aspects is discussed in more detail in consecutive order.

The integrated planning of land use and transport infrastructure is required to attain a wide variety of policy goals – ranging from accessibility to sustainable mobility and from transport justice to integrated area development. These goals span the domains of land use and transport. The process of achieving these integrated goals is replete with interdependencies as the necessary financial, production, competency, knowledge and legitimacy resources on land use and transport planning are dispersed within and between tiers of government – see Chapter 2. Policy instruments can help to bring about the processes of integration that allow interdependent policy actors to collectively achieve shared land use transport goals. Chapters 1 and 2 illustrate that interaction – i.e. the exchange of resources – plays a key role within such processes of land use and transport integration.

Pursuing an integrated planning of land use and transport infrastructure was found to require mixes of instruments that are employed at different stages of the policy process. Procedural instruments were found to play a prominent role in establishing processes of land use and transport integration as they can be used to steer interaction across horizontal and vertical boundaries by influencing the behaviour and interrelationships between policy actors. Examples of such instruments are an overarching decision-making body or a shared policy agenda including representatives on land use and transport policy from different government sectors and tiers. Chapters 2 and 5 illustrates that there is no silver bullet policy design and that integrated planning of land use and transport can be achieved by different instrument mixes. It is however important that the combination of instruments reinforce each other in the formation and delivery of integrated land use and transport goals; this means that the different instruments throughout the policy process complement and built on each other to form a consistent whole.

The multileveled nature of a policy design literally gives an extra dimension to establishing *fit* between goals and instrument. Policy design fit is generally expressed in goals coherence, instrumental consistency and congruence of goals and means across macro-, meso- and micro-level – see Figure 6.2. Regarding effectively attaining desired outcomes in the context of integrated transport planning, Chapter 3 shows that the presence of all three criteria for policy design fit can indeed be sufficient. However, it also shows that achieving policy effectiveness proves to be not simply matching goals and means across all three levels. The findings suggest that it is especially the fit between meso- and micro-level determines policy design effectiveness. Furthermore, Chapter 3 indicates that policy instruments that encourage integration across a wider range of policy fields than just land use and transport can also be effective for attaining integrated goals on land use and transport. In addition to these derived insights on how policy instruments can support policy goals in an effective policy design, the analysis shows that policy design fit cannot entirely account for achieving policy design effectiveness.

# FIGURE 6.2 THE SIX COMPONENTS OF A POLICY DESIGN AND THREE CRITERIA FOR POLICY DESIGN FIT.



Chapter 4 shows that policy designs are suspect to change. In effect, this study finds that this dynamism is desirable as it allows designs to adapt to broader contextual and societal changes. However, outcomes show that this dynamism may also negatively affect the fit between goals and instruments. Maintaining policy design coherence, consistence and congruence in the face of these developments requires specific and ongoing attention. This study found that in the context of Dutch national infrastructure planning, policy goals and instruments develop in different trajectories. On the one hand, goals develop quite flexibly through whole-sale replacement. Existing goals are replaced by new ones when existing goals have diverged too much to the contextual setting and no longer reflect the needs of contemporary society. In contrast, the mix of policy instruments prove to develop more rigid and incrementally. Instrumental change was found to follow the change of policy goal – see Chapter 4. To prevent flexible goals to drift away instruments, which developed more slowly and path-depend, it is important to integrate the development of goals and instruments. At this point the integrated design of policy goals and instruments, which hallmarks policy design thinking, is receiving limited attention. Ideally, outcomes of monitoring and evaluation, which are now largely ignored, serve as input for engaging in processes of policy design.

Finally, this study shows that a policy design should not be thought of a set of cogs and wheels that is capable to deliver the same outcome regardless of the setting in which it is deployed. In Chapter 5 it was found that the context in which policy designs are deployed influence the extent to which policy instruments will work as they were intended. The

'goodness of fit' principle highlights the need to coordinate the design of policy instruments to context. This study has operationalized this 'goodness of fit' principle using an institutional perspective and found that misfits between the design of a policy instrument and the institutional context can impede its effectiveness. In practice, contextual institutions can undermine the design of policy instrument by incentivising counterproductive behaviour. More specifically, the study illustrates several instances in which the institutional context is promoting sectoral transport planning action that is working against policy instruments that are designed to promote an integrated planning of land use and transport infrastructure. Hence, taking into account these institutional interrelations is a key aspect in formulating an effective policy design.

# 6.3 DISCUSSION OF RESEARCH FINDINGS

This research has adopted policy design theory to find new ways to achieve land use and transport integration. To this end, the current study applied three key principles of policy design theory to analyse the practice of land use and transport integration in the Netherlands. The first principle revolves around matching goals and means into a coherent, consistent and congruent policy design – see Chapters 2 and 3. The second principle is directed at maintaining coherence, consistence and congruence in the face of temporal dynamics – see Chapter 4. The third principle focusses on tailoring instruments to fit the particular context wherein they are employed – see Chapter 5. Below, the main findings of these four studies are discussed in the light of the wider body of literature on policy design and LUTI.

## Matching instruments to integrated land use and transport goals

# *Understanding the job at hand – integrated planning of land use and transport infrastructure*

When it comes to the integrated planning of land use and transport infrastructure, this study differentiates between *integrated land use and transport goals* and the processes of *land use and transport integration* that are required to attain such goals. In practice governments have adopted a wide variety of integrated land use and transport goals – i.e. goals that span the boundaries of land use and transport planning. Some common examples of such are: reducing car-dependency, enhancing sustainable mobility, improving accessibility, social inclusion, transit-oriented development, improve infrastructure delivery or reduce the impact of new infrastructure development on surroundings. Attaining such integrated land use and transport goals is a challenge due to the fragmentation of required resources between and across tiers of government. This fragmentation can be overcome through processes of *land use and transport integration*. Interaction – defined in this study as the transfer of government resources – was found to stand at the heart of these processes of LUTI. On basis of this study, LUTI can be seen as a concept that stretches throughout the stages of the policy process and can have a more strategic focus – aimed at integrating land

use and transport policy – as well as a more operational focus – aimed delivering integrated land use and infrastructure development projects (see also e.g. Gudmundsson et al., 2015). Developing policy instruments that help bringing about and steer these processes of LUTI, will help governments to attain integrated goals on land use and transport.

This processual understanding on land use and transport integration resonates well with May et al. (2006) as well as Curtis & Scheurer (2010), that see land use and transport integration not necessarily as a core objective in itself, but rather a means to an end. As such, this study's understanding on LUTI adds to a growing body of research on governanceoriented approaches to LUTI – in which the 'I' stands for integration. This emerging body of literature is supplementing the currently dominant technical understanding of LUTI – in which the 'l' stands for interaction. Whereas the latter is focussing on modelling the *functional* interactions between land use and transport by capturing how patterns of land use development affects travel and vice versa how transport infrastructure influences urban growth (Ewing & Cervero, 2017; Mitchell & Rapkin, 1954; Wegener & Fürst, 1999), the former has been focussing on ways in which the dialectic relationship between transport and land use can be used in the pursuit of synergies (Greiving & Kemper, 1999; May et al., 2006) and how integrated planning of land use and transport can serve broader societal objectives (Greiving & Kemper, 1999; Hull, 2010; Mu & de Jong, 2016; Santos et al., 2010). Under this broad umbrella of land use and transport integration literature many different but closely related concepts were developed, e.g.: transit oriented development (Cervero et al., 2002; Mu & de Jong, 2016; Tan, 2013), area-oriented approaches (Arts, Filarski, et al., 2016; Heeres, 2017; Heeres et al., 2012), integrated transport strategies (May et al., 2006), sustainable accessibility (Bertolini et al., 2005; Curtis, 2008), sustainable urban transport (Black et al., 2002; Hull, 2008; Sørensen & Gudmundsson, 2010) and sustainable mobility (Banister, 2008; Stead, 2016; UN-Habitat, 2013). Based on this strand of literature we suggest to conceive LUTI as a process of interaction to address interdependencies resulting from the fragmentation of land use and transport planning – see Chapters 1 and 2.

#### The role of procedural instruments in pursuing land use and transport integration

When it comes to bringing about processes of land use and transport integration, this study finds that procedural instruments play an important role because of their capacity to help address resource interdependencies by structuring horizontal and vertical processes of interaction across administrative boundaries. Hereby, procedural instruments address government fragmentation in the pursuit of integrated land use and transport planning goals. Governments were found to employ mixes of mutually supportive procedural instruments throughout the policy process.

This study once more underlines that procedural instruments play an important role in policy integration. Multiple scholars have underlined the appropriateness of procedural instruments in governance contexts that are characterized by networks of interdependent policy actors as they can link policy fields and help attain collective goals (Candel & Biesbroek, 2016; Jordan et al., 2005; Jordan & Lenschow, 2010; Majoor & Schwartz, 2015). Our findings confirm

that, procedural instruments are used to steer "policy processes in the direction government wishes through the manipulation of policy actors and their interrelationships" (Howlett, 2000, p. 424). Furthermore, in line with our findings, Salamon (2000) argued that procedural tools can be adopted in the context interdependencies for steering networks of actors on which governments are dependent; he argues that 'disparate organization have to be forged into effective networks capable of integrated action' (p.1671). In their ability to connect policy actors, procedural instrument can be adopted to broaden the narrow focus of most policy designs and to help governments to develop an more integrated understanding of complex policy problems integrated approaches for addressing them (Peters, 2018a). Especially our findings in Chapter 2, contribute to this debate by showing that the development and delivery of integrated policy requires combinations of complementary procedural instruments throughout the entire policy process.

Furthermore, our findings regarding the role of procedural instruments in LUTI add to an emerging body of literature that is engaged with employing governance instruments for integrating land use transport planning. Several studies indicate that the role of governance instruments can help encourage collective action on land use and transport by establishing new relationships between policy actors and to encourage them to achieve collective and integrated policy goals (Curtis, 2008; Johansson et al., 2018; Marsden & Docherty, 2019; Mu & de Jong, 2016; Pettersson & Hrelja, 2020; Stead, 2016; Tornberg & Odhage, 2018). In line with our findings, other scholars have underlined that promoting an integrated planning of transport and land use is about finding the right mix of instruments or policy package (Givoni, 2014; Givoni et al., 2013; Greiving & Kemper, 1999; Hull, 2010; Justen et al., 2014; May, 2013; May et al., 2012; May & Crass, 2007; Minken et al., 2003; Newman & Kenworthy, 1996; Stead, 2016) by striving for complementarity and maximizing positive synergies between the policy instruments that form a policy package (Givoni et al., 2013; Hull, 2010; May et al., 2006; Santos et al., 2010), throughout the policy process (May, 2013). Even though this study focused on the leading role of procedural instruments, the analysis in Chapter 3 and 5 revealed that the development and delivery of integrated land use and transport policy will also require substantive instruments such as, land use permitting and infrastructure investment programs. Earlier studies have also highlighted the role of substantive instruments in pursuing integrated goals on land use and transport, such as land use management tools (Hull, 2010), infrastructure programs (Greiving & Kemper, 1999), appraisal tools (Heeres et al., 2018; May, 2013) and technical decision-support instruments (Curtis & Scheurer, 2010; Papa et al., 2015).

#### Design instruments with a regional focus to land use and transport integration

Our findings highlight that the procedural instruments to encourage LUTI typically have a regional orientation. Chapters 2 and 5 show that, as a result of government fragmentation, the integrated planning of land use and transport infrastructure requires simultaneous processes of horizontal and vertical interaction. The regional level was found appropriate for promoting an integrated planning of land use and transport because of its ability to connect with national as well as local land use and transport planning. The appropriateness of the regional level for LUTI has been widely acknowledged in literature. For example, Greiving & Kemper (1999) already highlighted the importance of the regional level, by stating that 'regional plans are increasingly recognized as being of great importance to horizontal and vertical co-ordination and integration of land-use and transport planning' (p.28). This notion has found widespread support since then (see e.g. Curtis, 2008; Hatzopoulou & Miller, 2008; Marshall & Banister, 2007; OECD, 2014; Straatemeier, 2008; UN-Habitat, 2013).

## Towards an effective policy design for land use and transport integration

#### Policy design fit and policy design effectiveness

The Qualitative Comparative Analysis presented in Chapter 3 shows that, in the context of integrated transport planning, the relationship between policy designs fit and policy design effectiveness is not as straightforward as theory might suggest. Policy design fit is realized when the six components of a policy design are aligned in terms of (i) the coherence of policy aims, objectives, and targets; (ii) the consistency of policy instruments, tools, and calibrations; and (iii) the congruence of goals and means at all levels of policy design – see Figure 6.2. Our analysis of all twelve Dutch provinces illustrates that the asynchronous nature of policy integration across levels of goals and means causes that perfect policy design fit is hardly ever found. Instead, different components are often a different degree of integration. From a policy design effectiveness. Outcomes show, however, that when pursuing integrated policy goals, formulating effective designs is not simply a matter of matching goals and means across macro-, meso- and micro-level; a policy design can, in specific situations, still be effective despite being incoherent, inconsistent or incongruent.

These findings provide a relevant addition the limited body of empirical studies on the relationship between policy design fit and policy design effectiveness as they suggest that design effectiveness cannot be explained by only the presence of policy design fit. This is confirmed by other empirical studies, which present various, diverging findings when it comes to the importance of coherence, consistence and congruence for policy design effectiveness (Kern et al., 2017; Kern & Howlett, 2009; Reichardt & Rogge, 2016; Rogge & Schleich, 2018). This implies that both studying and achieving policy design effectiveness demands a perspective that goes beyond only matching goals and means. Instead, when pursuing design effectiveness, the current study suggest that scholars and practitioners should take a more holistic approach to policy design that does not only focusses on establishing policy design fit but also accounts for the influence of temporal and contextual factors.

Additionally, the results of the QCA have three implications for pursuing land use and transport integration through policy design. First, establishing policy design fit can help in attaining desired integrated transport goals, but will not guarantee effectiveness. Second, in several cases, design effectiveness was achieved despite the absence of coherence,

consistence or congruence. From these cases it was derived that policy design fit at mesoand micro-level predominantly determines policy design effectiveness. Lastly, policy instruments that encourage integration across a wider range of policy fields than just land use and transport can also be effective for attaining LUTI goals even though they are less efficient.

#### Pursuing policy design fit over time

The results of the longitudinal case study presented in Chapter 4 suggests that policy designs are inherently dynamic. The study found that in the context of Dutch national transport infrastructure planning, policy goals and means have developed differently over time through distinct and largely separated trajectories. Furthermore, the analysis reveals that these dynamics have constantly affected policy design fit – i.e. goal coherence, instrument consistence and congruence of goals and instruments. Following this finding, we conclude that the fit between goals and instruments is inherently dynamic and that any situation of fit is temporary.

Even though the development of policy designs is well documented (see e.g. Howlett et al., 2015, 2018; Rayner et al., 2017; Schmidt & Sewerin, 2018; van der Heijden, 2016), there is limited research on how these dynamics influence policy design fit. The in-depth insights of this case study contribute to a relatively small body of empirical research on the interplay between policy design dynamics and policy design fit. The study provides empirical evidence supporting, as agued by Howlett & Rayner (2007), that dynamics can cause policy design to develop into suboptimal configurations over time as processes of layering, drift and conversion may negatively affect the alignment between components of a policy design. Furthermore, our outcomes underline that maintaining policy design fit over time needs to be taken seriously and requires ongoing attention. This entails that the trajectories in which policy goals and policy instruments develop are brought together. The separation of these trajectories observed in this study accords with findings by, amongst others, Sager & Rielle (2013), and Howlett (2018a), who observed that deliberate efforts of matching goals and instruments are often absent and that policy design as an approach of purposefully formulating mixes of interrelating policy goals and instruments as an integrated whole often remains a conceptual notion.

#### The influence of institutional context on policy instruments

The institutional analysis in Chapter 5 demonstrates how contextual influences can put a spanner in the works of a perfectly designed LUTI instrument. In addition to the institutions that constitute the design of policy instruments, interaction and behaviour of policy actors in policy processes are shaped by a wider institutional context. This institutional context includes a comprehensive and diverse configuration of formal and informal legislative, political, cultural and professional institutions. Overall, this institutional context was found to provide many different footholds for – also contradictory – behaviour in processes of policy formation, adoption, implementation and evaluation. Outcomes of the analysis show various instances, throughout the policy process, in which the institutional context weakened the
effectiveness of policy instruments by incentivising action that works against behaviour that is encouraged by the instrument. These institutional incongruences prove to have a considerable impact on the effectiveness of policy instruments.

These findings contribute to a body of policy design literature that highlights the influence of context on policy instruments. Several scholars have already argued that policy designs do not operate in a vacuum and should therefore be sensitive to the context in which they are deployed. More specifically, for example, Weimer (1992) noted that 'instruments, alone or in combinations, must be crafted to fit particular substantive, organizational, and political contexts' (p.373). Moreover, Peters (2018b) states that still 'policy design is often done without regard to context. [...] If designers are excessively technocratic and/or ideological, they may assume that their favourite policies work, regardless of the institutional or social context. Those assumptions are often the recipes for policy failure' (p.28). In line with these studies, the outcomes of the institutional analysis, underwrite that a policy design cannot be understood as just a combination of gears and levers that will deliver the same outcome regardless of the setting in which it is deployed.

Within policy design literature, the term 'goodness-of-fit' is used to express the importance of compatibility between instruments and the context in which these are deployed (Howlett et al., 2015; Howlett & Rayner, 2013). Our study offer a novel way of understanding this goodness-of-fit principle and offers an alternative approach to Capano and Howlett's (2019) mechanistic perspective. Based on these study's findings, we argue that the goodness-of-fit is reflected by the extent to which the institutional design of a policy instrument is reinforced, has no impact, or is weakened by the institutional context. It is important to note that the understanding of context in this study goes beyond Howlett's (2009, 2018) conception of context as the macro-level components – i.e. the governance mode – of a policy design. Instead, our understanding of context is more in line with Justen et al. (2014) who refer to context as all exogenous influences of cultural, political, legal, organizational and economic institutions on policy formation and implementation.

Additionally, results of our study add to a body of literature addressing how institutional influences can impede LUTI. Overall, the findings of the current study correlate with existing institutional research on LUTI in other contexts. This body of research highlights that a variety of institutions disconnect the planning of land use from the planning of transport (Banister & Marshall, 2000; Curtis & Low, 2012; Heeres, 2017; Hull, 2010; Isaksson et al., 2017; Marsden & Rye, 2010; Marsden & May, 2006; Stead & Meijers, 2009; UN-Habitat, 2013). For example, the formal and informal institutional incongruences presented in Chapter 5 resonate well with the barrier effect of financial, organizational, cultural, legislative, political and technical institutions to urban transport planning described by Hull (2010). Additionally, similar to our findings, Curtis (2008) as well as Arts et al. (2016a) conclude that ingrained professional cultures prevent the more communicative-oriented land use planners and more technocratic transport engineers to work together in new ways. Furthermore, our analysis highlights that the traditional 'predict and provide' approaches to infrastructure planning

work against current efforts to encourage land use and transport integration. This is similar to what Isaksson et al. (2017) describes as parallel policy making, which is characterized by a situation in which conventional unimodal approaches and more integrated approaches to transport planning exist side by side and as a result 'explicitly stated goals/ambitions point in one direction, whereas practice has a content that is completely incompatible with the outspoken policy direction' (p.56). Hrelja et al. (2017) states that 'most [...] European regions have weak institutions for collective action, especially when it comes to the integration of regional transport and local land use planning' (p. 37). Also, outside the European context, this is a problem. For example, Curtis & Low (2012,p.6) state that when it comes to land use and transport integration 'time and time again it appears that institutions block the way'.

### 6.4 REFLECTION AND TRAJECTORIES FOR FUTURE RESEARCH

#### **Reflection on the research process**

This study was structured by a carefully developed research design that aligned research goal, research questions, the conceptual framework and a research approach – see Chapter 1. Looking back, the qualitative case-study design that was adopted helped to successfully obtain the research goal for two main reasons. First, an individual case study approaches was flexibly tailored to fit the character of each secondary research question. Second, the detailed and comprehensive theoretical framework functioned as the linking pin between the four individual cases studies, provided a clear theoretical focus for each study, and it offered a robust and consistent structure for guiding processes of data collection and analysis.

Additionally, the theoretical framework has been important in the process of generalizing case study findings. In line with its purpose to acquire in-depth understanding, the applied case study approach generalizes to theoretical propositions based on reasoning and not to populations based on statistics (Baxter & Jack, 2008; Mitchell, 1983; Yin, 2013). As a result, it is difficult to generalize findings beyond a particular time and place. As an alternative, verification of our findings was sought by comparing our findings to those of studies applying a similar theoretical approach to a different context. Furthermore, while the Dutch context may be considered a typical case, our literature review indicates that, many other countries inside and outside Europe are dealing with very similar struggles when it comes to integrating the planning of land use and transport infrastructure. Lessons derived from our study can therefore also be useful outside the Dutch context.

A case study is relatively time consuming to conduct due to its in-depth nature. Therefore, as in any research project, we were forced to make compromises on scope and depth due to the restriction of resources. The scope of this study was therefore limited to analysing

public actors in and studying the Dutch context. Furthermore, it was the reason for limiting the comparative study in Chapter 2 to include three cases and for conducting a single case study for Chapters 4 and 5. The compromises that were made leave open avenues for future research.

#### **Trajectories for future research**

On basis of the in the previous section and the reflection above, we suggest five research trajectories that future research could usefully explore.

## *Research opportunities on the role of instrument mixes in integrating land use and transport policy*

This study found that procedural instruments play a prominent role in achieving processes of land use and transport integration because these enable governments to steer interaction between interdependent policy actors. This study has adopted a qualitative approach to analysing the interaction established by procedural instruments. A logical progression of this work would be to analyse procedural instruments using Social Network Analysis. This could provide interesting insights into how procedural instruments influence density of interactions and the strength of ties between policy actors in policy processes.

Furthermore, the analysis presented in Chapter 2 was limited to studying combination of procedural instruments in processes of policy formation and delivery. The analysis of Chapter 3 and 5, as well as the discussion above revealed that procedural instruments are generally combined with substantive instruments throughout the policy process. Further research could explore how such substantive instruments can complement procedural policy instruments in encouraging an integrated planning of land use and transport infrastructure.

This research has focussed on studying policy design and LUTI in the Dutch context and limited its analysis to include either a single or two tiers of governments. Elaborating on this perspective, future research could explore how governments in other nations that pursue LUTI through policy design. Additionally, further study could also take a more comprehensive multi-level governance approach to LUTI by including national, regional and local government tiers, by including private or by including other policy sectors. It would be interesting to see how widening the network of involved actors affects the policy design.

#### Incorporating monitor and evaluation in policy design processes.

Monitoring and evaluation were identified as missing components in policy processes of land use and transport integration. Monitoring and evaluation were, however, found to be a crucial element in maintaining an effective policy design in dynamic policy processes. Further research is needed regarding the right indicators for determining the effectiveness of policy designs the underlie ambitions for land use and transport integration in order to facilitate such monitoring and evaluation. Furthermore, this study's outcomes point to the need for further research on how the monitoring and evaluation of policy design outcomes can serve as input for policy design processes. By this, further insight could be gained into the dynamics of policy design fitting, which is an important issue as our study suggests.

## Integrate the development and decision-making of policy goals and policy instruments

This study found that in the context of Dutch national infrastructure planning, decision-making on policy goals and policy instruments follow different, largely separated trajectories. Integrating the designing of policy goals and instruments is therefore an essential initial step to be taken in order to improve policy design processes. As this research predominantly focussed on policy design *as-a-noun*, these processes of policy design – i.e. policy design *as-a-verb* – have not been explored in great depth. When it comes to integrating the design of policy goals and instruments, future research could be undertaken to study the process of policy designing (policy design *as-a-verb*). More specifically, research could focus on what Howlett et al. (2015) call *design space*. Design space is the setting in which the formulation of policy goals and policy instruments take shape (Howlett & Mukherjee, 2018b).

#### Further explore how policy design can encourage policy integration

Successfully addressing most of today's pressing policy problems requires some form of policy integration as these problems cut across sectoral boundaries and levels of government. The current study found that contemporary policy design thinking offers concrete approaches for governments to get grip on processes of policy formation and delivery within governance contexts that are characterized by interdependencies. This makes policy design a relevant approach for addressing policy problems that require policy integration. So far, however, only a few studies exist that link policy design and policy integration.

#### Bring together research on policy design and institutional design

Policy instruments are the main tool through which governments give effect to their policy. Policy instruments can be understood as a set of institutions – 'a more or less coordinated set of rules and procedures that governs the interactions and behaviours of actors and organisations' (Lascoumes & Le Galès, 2007, p. 8). A shown in in Chapter 5, processes of policy making and implementation, however, are heavily influenced by other, external, formal and informal institutions. Institutional design is directed at deliberately changing these institutional characteristics that structure policy processes (Alexander, 2005; Klijn & Koppenjan, 2006, 2016). It implies that the setting in which a policy design is employed can also be manipulated. Despite their ostensible interrelation, research on institutional design and policy design has remained largely separated (Peters, 2018a). Especially in the light of in Chapter 5, which highlighted the importance of *goodness-of-fit* between policy instrument and context, it is argued here that combining institutional design and policy design could be a next step forward in making governments more effective in attaining policy goals.

# 6.5 IMPROVING LAND USE AND TRANSPORT INTEGRATION THROUGH POLICY DESIGN

Over the course of four case studies on Dutch national and regional transport infrastructure planning, an in-depth understanding has been developed on how policy design can help in achieving land use and transport integration. From the findings of these studies, several practical implications can be formulated that may support governments in becoming more successful in achieving integrated land use and transport goals. Although these recommendations are based on an examination of Dutch practice, the recommendations are relevant to a broader audience as similar LUTI and policy design issues are found in many other countries as well.

#### Designing tools for the job

Policy design revolves around the principle of matching goals and instruments to attain desired outcomes. When it comes to achieving integrated goals on land use and transport planning, three specific recommendation can be given with regard to instrument design.

## Combine procedural and substantive instruments into a consistent mix that covers the different phases of the policy process

Attaining integrated land use and transport goals requires a mix of interrelating procedural and substantive instruments that stretch across all stages of the policy process. As individual instruments have a specific functions in the policy process, it is important to take into account the interrelation between these instruments, which needs to be consistent – meaning that instruments reinforce and complement, rather than undermine each other in the pursued of integrated land use and transport goals.

Procedural instruments play a key role in managing the multilevel and multi-sector interdependencies that are associated to LUTI. Formulating and delivering integrated goals on land use and transport requires a wide variety of resources that are dispersed within and between tiers of government. Procedural instruments allow government to guide processes of interaction across horizontal and vertical boundaries and help address interdependencies. As different stages of the policy processes require specific resources, different kinds of procedural instruments need be combined. An example of such a procedural instrument mix for land use and transport integration is shown in Figure 6.3. The mix comprises an integrated policy strategy, which is adopted by individual governments but formulated in collaboration with relevant stakeholders. The policy strategies of the individual governments are the foundation upon which a shared regional policy agenda is formulated. Decision-making on the content and the implementation of these regional policy agendas takes place in shared governmental deliberations on land use and transport. Integrated policy programs on land use and transport are subsequently developed to implement regional policy agendas. In addition to these procedural instruments, substantive instruments play an important role in supporting integrated decision-making on land use transport processes – e.g. appraisal methods or decision-support tools – or give effect to concrete integrated lands use transport goals – e.g. land use development ordinances or infrastructure investment programs.





#### Take a regional perspective to integrate land use and transport

Like in many other countries, land use and transport integration in the Netherlands is inherently a regional enterprise. The widespread endorsement of subsidiarity and decentralization principles has incrementally deconcentrated parts of the administration and decision-making on land use and transport infrastructure planning. As a result, Dutch sub-national governments – the provinces and municipalities – have become key actors in LUTI. Despite these processes of devolution, national government has remained its central role in infrastructure investments. In the context of this segmentation of roles and responsibilities, LUTI requires new connections to be made between sectoral policies between and within different tiers of government on regional level.

Mixes of procedural instruments can help to establish these connections at a regional level, there is however not a silver bullet design. Even within a relatively small country as the Netherlands, regional differences demand different approaches when it comes to land use and transport integration. Ideally, provinces play a leading role in bringing about these

regional processes of land use and transport integration. Provinces have traditionally played an integrative role in Dutch spatial planning and are in the position to function as a bridge between national and local government. Furthermore, because of their long tradition in collaborating with municipalities on a wide range of policy topics, they have much experience on formulating and giving effect to shared regional goals. This is reflected in their policy designs, which have been tailored to fit this regional context. This unique position of regional governments in achieving land use and transport integration can be better used. This could be done by better connecting the national infrastructure planning programming and budgeting processes to integrated land use and transport practice that has been established at sub-national governments.

## Design policy instruments to be responsive to the context in which land use and transport integration is pursued

Policy instruments simply do not operate in a vacuum. When engaging in policy design, the compatibility of policy instruments and the broader institutional context in which they are employed requires careful consideration. Often, this contextual setting is best considered as a given due to its persistency or because influencing that context simply lays outside the influence of policy-makers. Through policy design, policy makers can make instruments responsive to the broader institutional setting make them more effective in attaining intended outcomes under the given circumstances. For example, the analysis shows how, rather than breaking down institutional barriers that separate the planning of land use and transport, procedural policy instruments, such as a shared regional policy agendas and integrated decision-making bodies can help in overcoming these institutional barriers.

Furthermore, this study shows how the 'institutional context' changes throughout the policy process; the room for achieving land use and transport integration reduces as policy processes progress towards policy implementation. This means that opportunities for land use and transport integration are ideally explored during the front-end stage of the policy process.

There is however a limit to which contextual influences can be accounted for in the design of an instrument. The full institutional context that embeds a policy design is to the messy and complex to comprehend. There will always remain some degree of uncertainty on the effectiveness of an instrument. This implies that after its adoption, policy instruments will likely require recalibration to improve the *goodness of fit* between instrument and context.

#### Maintaining effectiveness over time

Policy design hardly every occurs on a clean sheet. New policy goals and instruments typically build upon pre-existing ones as policy designs evolve over time. Similarly, configurations of goals and means will evolve in the future through processes of layering, drift, conversion, replacement and exhaustion. This dynamism is crucial for policy designs to successfully adapt to changes political, social and economic circumstances. However, if managed poorly, this dynamism may cause a policy design to evolve into a sub-optimal configuration of goals and means. This study provides three main recommendations on maintaining policy design fit in the face of temporal changes.

#### Integrate the design of goals and instruments

Goals and means are inherently interrelated but in practice hardly approached as such; deliberate and integrated efforts of matching goals and instruments are often absent. Within the observed policy design dynamics, the formulation of goals and the development of instruments occurred in largely separated trajectories, following different administrative procedures. It was observed that in the context of Dutch national transport planning, the development of goals was followed by the readjustment of policy instruments. Bringing together decision-making on the design of goals and instruments is an important first step in maintaining policy design fit in the face of temporal changes. The integrated design of goals and means will encourage government to reflect on the achievability of policy goals taking into consideration the available toolbox and find ways to adjust the toolbox if needed.

#### Develop 'smart patches' to deal with policy design dynamics

*Policy packaging* and *policy patching* are two main approaches to policy design. Packaging, which refers to the wholesale replacement of a policy design, is in theory the preferred mode of change as it negates any potentially negative influence of past design choices (Howlett and Rayner, 2013). However, in practice, existing elements often cannot simply be replaced, and policy design takes the shape of reform, in which *patches* in the form of processes of layering, drift and conversion are used as to change existing configurations of goals and instruments. If it is done well, patching can positively influence the fit of a policy design – this is called "smart patching" (Howlett & Mukherjee, 2014).

In the context of transport planning, policy goals were found to adapt flexibly whereas instruments mixes were characterized by more path-dependent and incremental change. Dealing with the path-dependent nature of policy instruments requires a specific policy design approach, which, not only revolves around introducing new instruments to the instrument mix but also around taking into consideration the policy instruments that are already in place. In this context smart patches can take the form of combined layering and conversion. Through layering, new instruments are added to the instrument mix to support newly adopted policy goals. Simultaneously, conversion can be applied to adapt the design of existing instruments to fit new goals. Ideally, changes in goals and means are adapted simultaneously.

#### Use monitoring and evaluation outcomes to drive policy design processes

Monitoring and evaluation play a prominent role in securing effectiveness in ongoing processes of policy design as they provide policy designers with crucial information on the extent to which the adopted configuration of goals and means is obtaining desired outcomes. Nonetheless, monitoring and evaluation was found to have a minimal influence on processes of policy design. Instead, the development of policy design was characterized by a process in which first new goals were adopted and subsequently the supporting instrument mix was redesign accordingly. Incorporating monitoring and evaluation in processes of policy design allows governments to move away from this goal-driven to an outcome-driven and dynamic approach to policy design. In an outcome-driven approach, the achieved policy results and policy progress are included as a key aspect of the dynamic and ongoing process of policy design. This implies that if policy goals change, governments also need to formulate appropriate indicators to track the success of their policy design over time. Such a dynamic and adaptive fitting approach to policy design aligns with the contextual interrelations and complexity of a planning field such as land use and transport integration.

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## **A: APPENDICES TO CHAPTER 2**

### Appendix A1: List of respondents

Reference	Organization	Function	Date
Expert interviews			
Respondent 1	Province of Overijssel	Project manager regional development agenda	24 May 2017
Respondent 2	Province of Overijssel	Programme manager environmental strategy	24 May 2017
Respondent 3	Province of Overijssel	Policy advisor spatial planning and accessibility	29 Jun 2017
Respondent 4	Province of Overijssel	Policy advisor spatial planning and accessibility	29 Jun 2017
Respondent 5	Province of Friesland	Policy manager environmental strategy	18 Oct 2017
Respondent 6	Province of Friesland	Policy advisor infrastructure and mobility	19 Oct 2017
Respondent 7	Province of Friesland	Policy advisor environmental strategy	19 Oct 2017
Respondent 8	Province of Friesland	Project manager N381	24 Oct 2017
Respondent 9	Province of Friesland	Policy advisor infrastructure and mobility	25 Oct 2017
Respondent 10	Province of Noord-Brabant	Coordinator spatial policy cluster	1 Jun 2017
Respondent 11	Province of Noord-Brabant	Policy advisor traffic and transport	7 Jul 2017
Respondent 12	Province of Noord-Brabant	Policy advisor mobility and infrastructure	7 Jul 2017
Respondent 13	Province of Noord-Brabant	Policy advisor spatial planning and economy	9 Aug 2017
Respondent 14	Province of Noord-Brabant	Policy advisor mobility and infrastructure	9 Aug 2017
Respondent 15	Province of Noord-Brabant	Programme manager traffic and transport	26 Oct 2017
Respondent 16	Province of Noord-Brabant	Coordinator programme infrastructure	26 Oct 2017
Focus group 1			
Respondent 17	Province of Noord-Brabant	Policy advisor mobility and infrastructure	29 Jan 2018
Respondent 18	Province of Noord-Brabant	Policy advisor mobility and infrastructure	29 Jan 2018
Respondent 19	Province of Noord-Brabant	Coordinator spatial policy cluster	29 Jan 2018
Respondent 20	Province of Noord-Brabant	Policy advisor spatial planning and economy	29 Jan 2018
Respondent 21	Province of Noord-Brabant	Coordinator programme infrastructure	29 Jan 2018
Respondent 22	Province of Noord-Brabant	Policy advisor mobility and infrastructure	29 Jan 2018
Respondent 23	Province of Noord-Brabant	Programme manager infrastructure	29 Jan 2018
Respondent 24	Province of Noord-Brabant	Coordinator BrabantCity	29 Jan 2018
Respondent 25	Province of Noord-Brabant	Programme manager traffic and transport	29 Jan 2018

Focus group 2			
Respondent 26	Province of Overijssel	Programme manager Environmental Strategy	7 Mar 2018
Respondent 27	Province of Overijssel	Project manager regional development agenda	7 Mar 2018
Respondent 28	Province of Overijssel	Policy advisor spatial planning and accessibility	7 Mar 2018
Respondent 29	Province of Overijssel	Policy advisor spatial planning and accessibility	7 Mar 2018
Respondent 30	Province of Overijssel	Account manager	7 Mar 2018
Focus group 3			
Focus group 3 Respondent 31	Province of Friesland	Programme manager	3 Apr 2018
Focus group 3 Respondent 31 Respondent 32	Province of Friesland Province of Friesland	Programme manager Project manager N381	3 Apr 2018 3 Apr 2018
Focus group 3 Respondent 31 Respondent 32 Respondent 33	Province of Friesland Province of Friesland Province of Friesland	Programme manager Project manager N381 Policy advisor infrastructure and mobility	3 Apr 2018 3 Apr 2018 3 Apr 2018
Focus group 3 Respondent 31 Respondent 32 Respondent 33 Respondent 34	Province of Friesland Province of Friesland Province of Friesland Province of Friesland	Programme manager Project manager N381 Policy advisor infrastructure and mobility Policy advisor infrastructure and mobility	3 Apr 2018 3 Apr 2018 3 Apr 2018 3 Apr 2018

#### Appendix A2: Interview guide

The interview guide included the following topics derived from a document analysis and exploratory talks. Grand tour questions were followed up by probes to flesh out details of interesting themes raised by the respondent. The sequence of themes and questions were adjusted based on the interview flow. Probes were also adapted to the interviewee's background.

- 1. Introduction and informed consent and opening question.
- 2. Topic 1: goals on integrated land use and transport planning
  - a. The role of legislation, policy and political administration in integrated planning
- 3. Topic 2: Interdependencies for achieving land use and transport integration
- 4. Topic 3: Instruments for integrated land use and transport planning
  - a. Instruments used for land use transport policy integration
  - b. Instruments used for land use transport project integration
- 5. Topic 4: Interaction and integration
  - a. Horizontal: collaboration between departments for land use and transport planning
  - b. Vertical: achieving land use and transport integration in collaboration with municipalities
- 6. Closing question and debriefing statements

#### Appendix A3: Focus group setup

Three focus group discussions were conducted. The guide below was used to structure these discussions.

This guide was formulated through deductive reasoning and inductive leads which were derived from the document analysis and interviews. Each focus group thus contained statements and follow-up questions which were tailored to the case findings. These follow-up questions were formulated to trigger the discussion when needed. Each group included a mix of experts at policy and project level, covering both ends of the policy process. The discussion was conducted by a team of three researchers: a moderator, a presenter and a note-taker. The moderator led the discussion. The presenter introduced each statement by discussing the finding on which it was built. The note-taker made observations on the interactions and group dynamics.

- 1. Introduction, informed consent and round of introduction.
- 2. Topic 1: Policy integration in shared regional policy objectives
  - a. The collective goal which integrates land use and transport
  - b. Instruments for regional policy integration
- 3. Topic 2: Collaboration at regional level with municipalities
  - a. Overcoming interdependencies between municipalities and provinces
  - b. Policy instruments for regional collaboration with municipalities
- 4. Topic 3: Implementing integrated land use and transport policy
  - a. Instruments for implementing integrated land use and transport policy
  - b. The role of policy/project programmes in achieving integrated land use and transport goals
- 5. Topic 4: Financing integrated plans and projects
  - a. Exchanging financial resources
  - b. Do integrated plans require integrated budgets?
- 6. Conclusion and wrap-up

Main code	Sub code	Туре	Description	Example from data
Fragmentation	distribution of financial resources	Deductive	The allocation of money and budgets for land use and transport planning and development	'municipalities often view us as a cash machine. They do not have the money for infrastructure and legally it is our road'
	distribution of production resources	Deductive	The allocation of land that is necessary to enable land use and infrastructure development	'we possess land to realize our policy goals on nature conservation, agriculture, energy, climate and infrastructure'
	distribution of competen- cy resources	Deductive	The allocation of formal/juridi- cal authority over land use and transport planning	'that also has to do with the roles you have as a province. Land use planning is primarily a coordinating role'
	distribution of knowledge resources	Deductive	The distribution of the know- ledge required to investigate problems and generate soluti- ons in the context of land use and transport policy.	'if you ask our partners: What does the province bring to the table? They will tell you we have knowledge'
	distribution of legitimacy resources	Deductive	The allocation of the ability to grant legitimacy to, or withhold legitimacy from, a land use and transport planning decision	'If a plan is supported by the politicians then it usually works out'
Interdepen- dency		Deductive	When organizations need each other's resources to achieve policy goals	'You have to find a common interest'
Policy instrument		Deductive	Means through which govern- ments attain their goals	'Under the Frisian Approach we collaborate with all municipalities'
Interaction dimension	Horizontal	Deductive	Intra-organizational interaction between policy departments	'we used to have nine policy depart- ments. That was reduced to four'
	Vertical	Deductive	Inter-organizational interaction between levels of government	'we aim for front-end collaboration with municipalities to explore collaboration opportunities'

### Appendix A4: Coding scheme

Interaction	Transfer of financial resources	Deductive	The interchange of money and budgets for land use and transport planning and development	'if there is a budget for nature conservation, this can be linked to an infrastructure development project. You quickly get integrated projects this way'
	Transfer of production resources	Deductive	The interchange of the land needed to enable land use and infrastructure development	'the past years the province has acquired relatively large amounts of land for realizing infrastructure projects'
	Transfer of competences resources	Deductive	The use of formal/juridical authority on land use and transport planning	'the regional agenda is a platform on which different decision-makers talk with each other and make agreements'
	Transfer of knowledge resources	Deductive	The interchange of the know- ledge required to investigate problems and generating solutions in the context of land use and transport policy.	'we organize inter-organizational knowledge meetings on mobility'
	Transfer of legitimacy resources	Deductive	The use of the ability to grant legitimacy to, or withhold le- gitimacy from, a land use and transport planning decision	"the political setting is really influential on the possibilities to achieve policy integration"

The province of Friesland				
Instrument name	Description of instrument	Interaction		
The Frisian Approach (Friese Aanpak)	The 'Frisian Approach' is a visioning process in which the province, along with nearly all its municipalities and the water board aim to formulate an integrated long-term white paper which includes a wide range of spatial planning and governance issues, including the potential integration of municipal land use policy and provincial transport policy. Managerial oversight of the visioning process is done in a joint steering group consisting of top managers from the municipal and provincial organizations. To ensure democratic legitimacy, each step in the visioning process is also consulted with the corresponding provincial and municipal councils.	Horizontal and vertical transfer of knowledge and legitimacy resources.		
'Streekwurk' regions (Streekwurk gebieden)	The province is divided into five 'Streekwurk' regions. Each region is managed by an area commission which includes public officials from the municipality, province and water board. This regional platform is the main entity structuring the interaction between public officials from provincial and municipal organizations. Every year the regions formulate a regional development plan and implementation programme based on their shared regional agenda. 'Streekwurk' regions are also used by the province for making small-scale infra- structure investments (e.g. bicycle infrastructure develop- ment) and, more importantly, reaching regional agreement on locations for future housing, retail or business develop- ment.	Horizontal and vertical transfer of financial, knowledge and legitimacy resources.		
Integrated policy issue management ( <i>Opgave-</i> <i>gestuurd</i> <i>werken</i> )	The provincial organization is divided into two parts: (i) routine operations such as the issuance of permits, enforcement and road maintenance and (ii) the formulation and resolution of cross-cutting policy problems. Regarding the latter, a 'Policy Issue Committee' within the provincial organization translates the coalition agreement established by the governing provincial political parties into integrated policy tasks. LUTI is not explicitly mentioned as one of the integrated policy tasks. The integrated policy tasks are ad- dressed by integrated project teams. Project managers ask their human resources colleagues, who function as 'pool managers', for internal project members with specific knowledge. Project members can play a role in several projects at the same time. The project manager also drafts a 'plan of action' which, if approved by the provincial council, is funded by an integrated project budget composed of different sectoral provincial budgets.	Horizontal transfer of financial, knowledge and legitimacy resources.		

### Appendix A5: A detailed account of the policy instruments

The projects encompass all large-scale road, rail and water	Horizontal and
infrastructure development projects within the province. The	vertical transfer of
provincial council instructs that value should be added to the area. To achieve this, all large infrastructure projects have a strong external orientation. The project itself serves as a plat- form for resource transfer. Project development is carried out with the stakeholders involved (both public and private), to	financial, knowl- edge, legitimacy and production resources.
explore the potential to integrate infrastructure development	
with land use developments. A project budget integrates	
financial resources from different sources. Formal decision making is carried out by an area commission including rep- resentatives of all public and private stakeholders. Acquiring land is part of the project realization process.	
	The projects encompass all large-scale road, rail and water infrastructure development projects within the province. The provincial council instructs that value should be added to the area. To achieve this, all large infrastructure projects have a strong external orientation. The project itself serves as a plat- form for resource transfer. Project development is carried out with the stakeholders involved (both public and private), to explore the potential to integrate infrastructure development with land use developments. A project budget integrates financial resources from different sources. Formal decision making is carried out by an area commission including rep- resentatives of all public and private stakeholders. Acquiring land is part of the project realization process.

APPENDICES
#### The province of Overijssel

Instrument name	Description of instrument	Interaction
Overijssel Environmental Strategy ( <i>Omgevingsvisie</i> <i>Overijssel</i> )	Overijssel has used the revision of its 2009 Environmental Strategy as a way to re-establish and further develop integrated policy goals in collaboration with municipalities. LUTI ambitions are well established. Principles such as sustainable accessibility are used to formulate integrated perspectives on future urban and infrastructure development. This is reflected by e.g. the Mobility Ladder, which formulates seven subsequent steps for dealing with traffic congestion: (i) land use planning (urban concentration and transit- oriented development); (ii) pricing; (iii) optimizing public transport; (iv) mobility management (traffic peak spreading); (v) optimizing use of existing infrastructure; (vi) adapting existing infrastructure; and (vii) building new infrastructure. A supplementary integrated network vision is being developed to establish further the interrelationship between the transport network and the land use system at the strategic level from an economic perspective. Both plans are developed in consultation with the municipal and provincial councils.	Horizontal and vertical transfer of knowledge and legitimacy resources
Regional development agenda (Gebieds- agenda)	Overijssel has a shared regional development agenda on land use and transport with the Dutch national government through which large national infrastructure development funds are obtained. This regional agenda setting process requires the province and municipalities to collectively formulate shared, cross-cutting policy challenges they wish to address in cooperation with the national government. The province assumes a coordinating role in this process and organizes administrative consultations with municipal executives.	Horizontal and vertical transfer of knowledge and legitimacy resources
Environmental ordinance (Omgevings- verordening)	LUTI policy as defined in the provincial environmental strategy is partly implemented using an area-specific environmental ordinance. This ordinance is a legal instrument supported by the <i>Overijssel Area Characteristics</i> <i>Catalogue</i> , which provides detailed qualitative area-specific conditions for land use development. It explicitly considers the land use system and transport system as interconnected systems. Subsequently, the ordinance incorporates two main planning principles to promote LUTI implementation. First, Overijssel's <i>Ladder of Sustainable Urban Development</i> is aimed at regional coordination of municipal housing and business development programs, concentration of urban development and prevention of greenfield development. Second, it prescribes that infrastructure development should be considered as an integrated area development project, to ensure that the infrastructure is carefully integrated into the existing spatial context.	Vertical transfer of competency resources c d d t t t e

Front-end collaboration (Voorkant- samenwerking)	Front-end collaboration encourages interaction with municipalities at the early stages of policy and plan formation to explore shared, cross-cutting policy problems. This is an important instrument for achieving LUTI in Overijssel, which has been implemented in the organization in a number of ways. One or more municipalities are assigned to provincial account holders. These account holders, often seconded to municipal organizations, maintain close contact with municipalities and transfer knowledge on developments in order to identify hooks for developing shared policy agendas or other forms of collaboration. The rationale behind exploring possibilities for front-end interaction is that it will lead to benefits from the flexibility still present at this stage of plan or policy formation. Integrating municipal land use policies with provincial transport policies takes place through these channels. As soon as the possibilities for integration have been identified, they are further explored and developed in close consultation with relevant municipal and provincial officials. In this way, networks emerge around a specific policy problem. Overijssel arranges strategic deliberations between provincial executives are regularly updated as the integrated policy or plan developes. The province has the formal power to intervene in municipal plans. Even though front-end collaboration reduces the need for the province to intervene formally, respondents underlined the need for having this competence as a back-up to make front-end collaboration work.	Horizontal and vertical transfer of competency, knowledge and legitimacy resources
Spatial planning and accessibi- lity teams (Eenheid ruimte en bereikbaar- heid)	Overijssel underwent an internal reorganization, integrating spatial and transport planning departments into teams for spatial planning and accessibility. The strategy team is re- sponsible for the development of LUTI policy, while the adop- tion and execution team is responsible for its implementa- tion. The province uses these teams to promote the transfer of knowledge throughout the planning process, aiming to establish a better integration between land use and transport at both the strategic and operational levels.	Horizontal trans- fer of knowledge resources
Multi-project programs ( <i>Programma's</i> )	To achieve its policy on achieving operational LUTI, Overijs- sel uses program structures to integrate land use and infra- structure development. These are multi-project programs, encompassing a combination of land use and infrastructure development projects which are interrelated through a shared programs objective. Overijssel has a special programs and projects unit, which manages these complex area devel- opments, which usually involve multiple governments. These programs are used as an instrument to integrate funding and knowledge from all the public organizations involved.	Horizontal and vertical transfer of knowledge and financial resources.

#### The province of Noord-Brabant

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Instrument name	Description of instrument	Interaction
Brabant Environmental Strategy ( <i>Brabantse</i> omgevingsvisie)	Noord-Brabant is formulating an integrated environmental strategy. The Provincial Council has ordered an inclusive visioning process involving other tiers of government. A large variety of formal and informal sessions were organized with municipalities to identify shared, cross-cutting policy problems and formulate an environmental strategy with widespread support among municipal councils. The Brabant Environmental Strategy revolves around four major policy challenges: the smart network city, a competitive and sustainable economy, climate-proof Brabant and Brabant's energy transition. The first challenge includes policy goals on urban development and accessibility. Proximity indicators and multi-functional land use strategies are adopted to decrease car-dependency and promote sustainable and clean modes of transport.	Horizontal and vertical transfer of knowledge and legitimacy resources.
Concern strategy (Concern strategie)	Linked to the formation of an integrated environmental strategy, a concern strategy is an integrated strategic policy agenda at the provincial management level, supported by the directors of the different organizational clusters. LUTI is one of the policy topics addressed in this strategy.	Horizontal transfer of knowledge and legitimacy resources.
Area-oriented policy approach (Gebieds- gerichte aanpak)	The area-oriented policy approach comprises the develop- ment of shared, cross-cutting policy problems from a regional perspective, i.e. considering the area as the relevant integration framework. Different networks of actors are involved, depending on the scope and the location of the policy problem addressed. Once a policy problem is for- mally recognized by relevant public officials, the associated network collectively formulates solutions and defines a pro- gramme to implement these solutions. These regional policy programmes are used to integrate the financial resources and organizational capacity to execute the programme.	Horizontal and vertical transfer of knowledge, legitimacy and financial resources.
BrabantCity ( <i>BrabantStad</i> )	BrabantCity is an informal collaborative network of the prov- ince and its five largest cities (Breda, Eindhoven, Helmond, 's-Hertogenbosch and Tilburg) which started operating in 2000. Its executive committee comprises one provincial and five municipal council executives. They have developed a shared strategic and executive agenda which focuses on enhancing the attractiveness, accessibility and competitive- ness of the urban network. LUTI is one of the key elements. BrabantCity Tuesdays are thematic sessions organized four times a year. During these sessions, the municipal execu- tives of the five cities meet with the provincial executives to deliberate and form informal networks. Another important role of BrabantCity is its lobby, which targets the European Union and the Dutch national government to acquire funding to achieve shared objectives.	Horizontal and vertical transfer of knowledge and legitimacy resources.

Regional development days ( <i>Brabantse</i> <i>ontwikkeldagen</i> )	At the instigation of the Provincial Council, Brabant has initiated regional development days to integrate subnational decision-making on land use and transport at the strategic and operational levels. Traditionally, such decision-making occurred in separate discussions. The province is divided into four regions: West, Middle, Northeast and Southeast. Development days are organized by the province twice a year. They involve provincial and municipal council executives, and consist of a decision-making round and a development round. The first round has a strong operational focus and is aimed at reaching agreement on the programming and prioritization of infrastructure and land use development as well as on finding ways to integrate and align planned developments. The development round is more strategic and is aimed at identifying cross-cutting regional LUTI-related policy problems and formulating a shared regional policy agenda. In the future, the province also aims to use this instrument as a platform for integrating subnational land use and transport budgets and for formulating shared regional land use and transport implementation programmes.	Horizontal and vertical transfer of knowledge and legitimacy resources.
Area-oriented project delivery (Gebieds- gerichte projecten)	At the instigation of the Provincial Council, Brabant has adopted an area-oriented approach for its latest infrastruc- ture development projects. A provincial area impulse fund was made available to support it. The area-oriented develop- ment approach implies the involvement of front-end stake- holders. As such, infrastructure development can act to kick- start adjacent land use developments. Using subcontracts, area agreements, intention agreements and conventions on implementation, stakeholders (usually public) commit financial resources and organizational capacity to integrated development projects. Involved public executives sign these interim agreements. There is a special public provincial development company for managing these complex area- development projects.	Horizontal and vertical transfer of knowledge, financial and legitimacy resources.

APPENDICES

# **B: APPENDIX TO CHAPTER 3**

# Appendix B1: Bibliography to table 3.1

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# **C: APPENDIX TO CHAPTER 4**

# C1: List of respondents

Reference	Function	Date
Expert interviews		
Respondent 1	Employee Ministry of Infrastructure and the Environment – DGB	11-10-2016
Respondent 2	Employee Rijkswaterstaat – WVL	11-10-2016
Respondent 3	Employee Ministry of Infrastructure and the Environment – DGRW	11-10-2016
Respondent 4	Employee Ministry of Infrastructure and the Environment – DGRW	17-10-2016
Respondent 5	Employee Ministry of Infrastructure and the Environment – DGMI	18-10-2016
Respondent 6	Employee Rijkswaterstaat – BS	19-10-2016
Respondent 7	Employee Rijkswaterstaat – BS	19-10-2016
Respondent 8	Employee Rijkswaterstaat – WVL	24-10-2016
Respondent 9	Employee Ministry of Infrastructure and the Environment – DGB	25-10-2016
Respondent 10	Employee Council for the Environment and Infrastructure	25-10-2016
Respondent 11	Employee Council for the Environment and Infrastructure	25-10-2016
Respondent 12	Employee Netherlands Environmental Assessment Agency	25-10-2016
Respondent 13	Employee Ministry of Infrastructure and the Environment – DGRW	26-10-2016
Respondent 14	Employee Ministry of Infrastructure and the Environment – DGRW	26-10-2016
Respondent 15	Employee Ministry of Infrastructure and the Environment – DGRW	26-10-2016
Respondent 16	Employee Ministry of Infrastructure and the Environment – HBJZ	26-10-2016
Respondent 17	Employee Ministry of Infrastructure and the Environment – DGB	1-11-2016
Respondent 18	Employee Ministry of Infrastructure and the Environment – DGRW	2-11-2016
Respondent 19	Employee Ministry of Infrastructure and the Environment – DGRW	2-11-2016
Respondent 20	Employee Netherlands Environmental Assessment Agency	8-11-2016
Respondent 21	Employee Ministry of Infrastructure and the Environment – DGMI	17-11-2016
Focus group 1		
Respondent 22	Employee Rijkswaterstaat – WVL	18-01-2017
Respondent 23	Employee Rijkswaterstaat – BS	18-01-2017
Respondent 24	Employee Rijkswaterstaat – BS	18-01-2017
Respondent 25	Employee Ministry of Infrastructure and the Environment – DGRW	18-01-2017
Respondent 26	Employee Ministry of Infrastructure and the Environment – DGB	18-01-2017
Respondent 27	Employee Rijkswaterstaat – GPO	18-01-2017
Respondent 28	Employee Ministry of Infrastructure and the Environment – DGRW	18-01-2017

Focus group 2		
Respondent 29	Employee Rijkswaterstaat – GPO	25-01-2017
Respondent 30	Employee Rijkswaterstaat – MN	25-01-2017
Respondent 31	Employee Rijkswaterstaat – GPO	25-01-2017
Respondent 32	Employee Rijkswaterstaat – WNZ	25-01-2017
Respondent 33	Employee Ministry of Infrastructure and the Environment – DGRW	25-01-2017
Respondent 34	Employee Ministry of Infrastructure and the Environment – DGRW	25-01-2017
Respondent 35	Employee Ministry of Infrastructure and the Environment – DGRW	25-01-2017
Workshop 1		
Respondent 36	Employee Ministry of Infrastructure and the Environment – DGRW	27-02-2017
Respondent 37	Employee Ministry of Infrastructure and the Environment – DGB	27-02-2017
Respondent 38	Employee Ministry of Infrastructure and the Environment – DGRW	27-02-2017
Respondent 39	Employee Rijkswaterstaat – WVL	27-02-2017
Respondent 40	Employee Ministry of Infrastructure and the Environment – DGRW	27-02-2017
Respondent 41	Employee Rijkswaterstaat – BS	27-02-2017
Respondent 42	Employee Rijkswaterstaat – WVL	27-02-2017
Respondent 43	Employee Ministry of Infrastructure and the Environment – DGRW	27-02-2017
Respondent 44	Employee Rijkswaterstaat – WVL	27-02-2017
Workshop 2		
Respondent 45	Employee Ministry of Infrastructure and the Environment – DGB	14-09-2017
Respondent 46	Employee Ministry of Infrastructure and the Environment – DGB	14-09-2017
Respondent 47	Employee Ministry of Infrastructure and the Environment – DGB	14-09-2017
Respondent 48	Employee Ministry of Infrastructure and the Environment – DGRW	14-09-2017
Respondent 49	Employee Ministry of Infrastructure and the Environment – DGRW	14-09-2017
Respondent 50	Employee Ministry of Infrastructure and the Environment – DGRW	14-09-2017
Respondent 51	Employee Rijkswaterstaat – WVL	14-09-2017

# **D: APPENDIX TO CHAPTER 5**

# Appendix D1: Results table of the institutional analysis

Rules-in-use affecting land use and transport integration in the formation, adoption, execution, and monitoring and evaluation phase. Formal institutions are indicated by regular font, informal institutions in *italic* font.

Forn	nation phase	
Posit	ion Rules – establish positions that may be taken by actors	Sources
MIRT	rules	
FP1	State, province and municipalities may be initiator; the actor who puts an issue on the agenda of administrative consultations.	D10
FP2	Market and civil society actors may file an initiative via an authorized governmental representative.	D10
FP3	The initiator must provide decision makers with the information required to make the start decision.	D10
Other	rules	
FP4	Compatibility and decentralisation principles responsibilities, policy instruments, decision-making authority and budgets on land use (housing, nature etc.) and road infrastructure development are horizontally spread between ministries and vertically between layers of government.	IN;IS;IO;IM;IA;IK ;IL;FB;FE;FA;FL;F I;FM;FN
FP5	The Minister is accountable to Dutch Parliament and civil servants are accountable to ministers	IR
Boun	dary Rules – determine who may enter or exit a position and how	Sources
MIRT	rules	
FB1	Geographic boundaries of regional development agenda's limit who is allowed to enter the MIRT formation	D10
Othe	rules	
FB2	Relation between the minister and civil servants responsible for national policymaking is formal and hierarchical.	WB; WI;
FB3	The Regional Development Agendas and Administrate Consultations receive limited commitment from other ministries	IK;WI; WA; WB
FB4	Ministries and department commit to their own responsibilities, instruments, procedu- res and methods for policy formation and implementation	IE;IK;IL;FN; WI; WK;
<b>Choic</b> partic	<b>e Rules</b> – specify what a participant occupying a position must, must not, or may do at a cular point in a decision process	Sources
MIRT	rules	
FC1	The Regional Development Agenda must formally be approved by the Dutch House of Representatives	D9;D10
FC2	Formal MIRT decisions making power lays with the Minister of Infrastructure and Environment	D9;D10
FC3	Decisions should be the outcome of a political-administrative deliberation process involving all relevant public officials done in a series of formal and informal meetings.	D9;D10

APPENDICES

#### Other rules

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FC4	Informal deliberation process is be used for political lobbying	ID;IR;IT;FE;FF;
FC5	Different policy implementation and legal instruments must be used for land-use development and transport development.	IE;IO;IM;IR;FA; FG;FN;FJ;WI;WK; WG
Aggr unde	egation Rules – determine 'who is to decide' which action or set of activities is to be rtaken	Sources
MIRT	rules	
FA1	Decision making should occur in close consultation with regional partners	D10
Othe	rrules	
FA2	Political decisions and lobbying may overrule administrative MIRT rules which are not set in legislation	IB;ID; IT; FC; FE
FA3	National government may take over decision authority from province and municipality in situations of national importance.	D15; IB; FA
FA4	Politicians may exert influence the MIRT programming during parliamentary note consultations by filing motions	IR; FE; WK
<b>Infor</b> of inf	mation Rules – affect the level of information available to actors by authorizing channels formation flow	Sources
MIRT	rules	
FI1	A start decision requires an in-depth analysis on the policy issue, possible solutions, involved actors, planning, decision-making process and finance.	D10
Fl2	A MIRT Investigation may also be started for policy issues other than mobility issues.	D10
Othe	rules	
FI3	The National Mobility and Accessibility Analysis identifies potential MIRT investments by detecting future bottleneck on national infrastructure using vehicle lost hours as	D9; D16; ID;IR; fa•
	indicator.	.,
Payo	indicator.  ff Rules – affect the benefits and costs assigned to actors in light of the outcomes	Sources
Payo MIRT	ff Rules – affect the benefits and costs assigned to actors in light of the outcomes rules	Sources
Payo <u>MIRT</u> FY1	ff Rules – affect the benefits and costs assigned to actors in light of the outcomes <i>rules</i> The start decision and decision to start an Explorative Study commits evolved actors to a policy issue and releases funds for further development.	Sources
Payo MIRT FY1 Other	indicator. <b>If Rules</b> – affect the benefits and costs assigned to actors in light of the outcomes <u>rules</u> The start decision and decision to start an Explorative Study commits evolved actors to a policy issue and releases funds for further development. <u>rrules</u>	Sources D10
Payo MIRT FY1 Othe FY2	ff Rules – affect the benefits and costs assigned to actors in light of the outcomes <i>rules</i> The start decision and decision to start an Explorative Study commits evolved actors to a policy issue and releases funds for further development. <i>rrules</i> Collaboration in the Regional Development Agenda is strongly driven by the financial incentive of attaining national investments; limited reciprocal financial commitment from provinces and municipalities	D10 IR;IQ;IU;IA;FD;F E;FF;FI;FM;FN;FJ; WB;WI;WK;
Payo MIRT FY1 Othe FY2 FY3	ff Rules – affect the benefits and costs assigned to actors in light of the outcomes rules The start decision and decision to start an Explorative Study commits evolved actors to a policy issue and releases funds for further development. rules Collaboration in the Regional Development Agenda is strongly driven by the financial incentive of attaining national investments; limited reciprocal financial commitment from provinces and municipalities The sectoral scope of the Infrastructure Fund creates reliability, financial controllability and stability multi-year programming.	D10 IR;IQ;IU;IA;FD;F E;FF;FI;FM;FN;FJ; WB;WI;WK; IR
Payo <u>MIRT</u> FY1 <u>Othe</u> FY2 FY3 FY4	ff Rules – affect the benefits and costs assigned to actors in light of the outcomes <u>rules</u> The start decision and decision to start an Explorative Study commits evolved actors to a policy issue and releases funds for further development. <u>rules</u> Collaboration in the Regional Development Agenda is strongly driven by the financial incentive of attaining national investments; limited reciprocal financial commitment from provinces and municipalities The sectoral scope of the Infrastructure Fund creates reliability, financial controllability and stability multi-year programming. Government officials are held accountable for their sectoral oriented portfolios	Sources         D10         IR;IQ;IU;IA;FD;F         E;FF;FI;FM;FN;FI;         WB;WI;WK;         IR         IM;IR;IT;FE;FN;         WO
Payo MIRT FY1 Othe FY2 FY3 FY4 FY4	indicator. <b>ff Rules</b> – affect the benefits and costs assigned to actors in light of the outcomes <i>rules</i> The start decision and decision to start an Explorative Study commits evolved actors to a policy issue and releases funds for further development. <i>rules</i> Collaboration in the Regional Development Agenda is strongly driven by the financial incentive of attaining national investments; limited reciprocal financial commitment from provinces and municipalities The sectoral scope of the Infrastructure Fund creates reliability, financial controllability and stability multi-year programming. Government officials are held accountable for their sectoral oriented portfolios MIRT rules should be interpreted as malleable administrative guidelines for guiding decision making on infrastructure investments.	Sources D10 IR;IQ;IU;IA;FD;F E;FF;FI;FM;FN;FJ; WB;WI;WK; IR IM;IR;IT;FE;FN; WO IK
Payo MIRT FY1 FY2 FY2 FY3 FY4 FY5 Scop	ff Rules – affect the benefits and costs assigned to actors in light of the outcomes rules The start decision and decision to start an Explorative Study commits evolved actors to a policy issue and releases funds for further development. rrules Collaboration in the Regional Development Agenda is strongly driven by the financial incentive of attaining national investments; limited reciprocal financial commitment from provinces and municipalities The sectoral scope of the Infrastructure Fund creates reliability, financial controllability and stability multi-year programming. Government officials are held accountable for their sectoral oriented portfolios MIRT rules should be interpreted as malleable administrative guidelines for guiding decision making on infrastructure investments. e Rules – delimit the potential outcomes of the action situation	Sources           D10           IR;IQ;IU;IA;FD;F           E;FF;FI;FM;FN;FI;           WB;WI;WK;           IR           IM;IR;IT;FE;FN;           WO           IK           Sources
Payo MIRT FY1 Othe FY2 FY3 FY4 FY5 Scop MIRT	indicator. <b>ff Rules</b> – affect the benefits and costs assigned to actors in light of the outcomes <i>rules</i> The start decision and decision to start an Explorative Study commits evolved actors to a policy issue and releases funds for further development. <i>rules</i> Collaboration in the Regional Development Agenda is strongly driven by the financial incentive of attaining national investments; limited reciprocal financial commitment from provinces and municipalities The sectoral scope of the Infrastructure Fund creates reliability, financial controllability and stability multi-year programming. Government officials are held accountable for their sectoral oriented portfolios <i>MIRT rules should be interpreted as malleable administrative guidelines for guiding decision making on infrastructure investments.</i>	Sources           D10           IR;IQ;IU;IA;FD;F           E;FF;FI;FM;FN;FI;           WB;WI;WK;           IR           IM;IR;IT;FE;FN;           WO           IK           Sources
Payo           MIRT           FY1           Othe           FY2           FY3           FY4           FY5           Scop           MIRT           FS1	<pre>indicator. indicator. ff Rules – affect the benefits and costs assigned to actors in light of the outcomes rules The start decision and decision to start an Explorative Study commits evolved actors to a policy issue and releases funds for further development. rrules Collaboration in the Regional Development Agenda is strongly driven by the financial incentive of attaining national investments; limited reciprocal financial commitment from provinces and municipalities The sectoral scope of the Infrastructure Fund creates reliability, financial controllability and stability multi-year programming. Government officials are held accountable for their sectoral oriented portfolios MIRT rules should be interpreted as malleable administrative guidelines for guiding decision making on infrastructure investments. e Rules – delimit the potential outcomes of the action situation rules Three outcomes are possible in this phase: i) decision to start a MIRT investigation, ii allow initiative to proceed to next MIRT phase with start decision, iii initiative is rejected</pre>	Sources           D10           IR;IQ;IU;IA;FD;F           E;FF;FI;FM;FN;FJ;           WB;WI;WK;           IR           IM;IR;IT;FE;FN;           WO           IK           Sources           D10
Payo           MIRT           FY1           Othe           FY2           FY3           FY4           FY5           Scop           MIRT           FS1           FS2	ff Rules – affect the benefits and costs assigned to actors in light of the outcomes rules The start decision and decision to start an Explorative Study commits evolved actors to a policy issue and releases funds for further development. rrules Collaboration in the Regional Development Agenda is strongly driven by the financial incentive of attaining national investments; limited reciprocal financial commitment from provinces and municipalities The sectoral scope of the Infrastructure Fund creates reliability, financial controllability and stability multi-year programming. Government officials are held accountable for their sectoral oriented portfolios MIRT rules should be interpreted as malleable administrative guidelines for guiding decision making on infrastructure investments. e Rules – delimit the potential outcomes of the action situation rules Three outcomes are possible in this phase: i) decision to start a MIRT investigation, ii allow initiative to proceed to next MIRT phase with start decision, iii initiative is rejected MIRT is primarily an infrastructure oriented financial investment vehicle.	Sources           D10           IR;IQ;IU;IA;FD;F           E;FF;FI;FM;FN;FJ;           WB;WI;WK;           IR           IM;IR;IT;FE;FN;           WO           IK           D10           D10           D10

#### Other rules

FS4	Personal and political agendas may shape deliberation and decision making processes	IR;IN;IJ;IT; IA;ID;FD;FE;
FS5	The allocation of the Infrastructure Fund through MIRT is legally confined to the construction, management, maintenance and operation of transport infrastructure for people and goods of national importance	D14;IR;IJ;IE;IV; IS;IT;IV;
		FL
FS6	Elected officials should chase successes within their sectoral political portfolio of which they carry responsibility	IR;INIB;ID; IK;FE;WB
FS7	Maxim of current strategic national spatial policy begs that governments should primarily focus their executing their legally assigned tasks "you are responsible or not" (In Dutch: "je gaat erover of niet")	D9;IR;IM;FC
FS8	A start decision can only be made for existing or expected accessibility issues caused by current or as a result of missing national road infrastructure.	D14; ID;IG
FS9	Shares of the Infrastructure Fund must be committed to either road, water or rail infrastructure in budget articles.	ID

### **Adoption Phase**

Positio	on Rules – establish positions that may be taken by actors	Sources
MIRT r	ules	
AP1	Both state and regional representatives should take part in the explorative study's steering committee.	D10;D8
AP2	The explorative study's project group should include state and regional officials from different sectoral departments.	D10;D8
Other	rules	
AP3	Principles of compatibility and decentralisation have spread responsibilities, policy instruments, decision-making authority and budgets on land use (housing, nature etc.) and transport (road infrastructure development, public transport) horizontally spread between ministries and vertically between layers of government.	IN;IS;IO;IM;IA; IK; IL;FB;FE;FA; FL;FI;FM;FN
AP4	Dutch public finance system is organised top-down; regional authorities are highly dependent on national government for budgets to execute their legal tasks	D1;D5;IK
AP5	As the executive agency of the Ministry of Infrastructure and Environment, Rijks- waterstaat is responsible for national infrastructure development and maintenance	D18;IH;IF;
	Its primary concern is Dutch motorway network performance in terms of traffic flow.	IG;FI;FJ
Bound	ary Rules – determine who may enter or exit a position and how	Sources
MIRT r	ules	
	-	
Other	rules	
AB1	Inequality between national and regional public authorities in budgets available for infrastructure and land use development.	IO;IF;FF;FJ;FN;
<b>Choice</b> a parti	Rules – specify what a participant occupying a position must, must not, or may do at cular point in a decision process	Sources
MIRT r	ules	
AC1	The Explorative Study should include a social cost benefit analysis	D10
AC2	Formal MIRT decision-making power lies with the Minister of Infrastructure and Environment	D10

AC3	Decisions should be the outcome of a political-administrative deliberation process involving all relevant public officials, taking place in a series of formal and informal meetings.	D10
Other	rules	
AC4	The Project Decision takes the form of a Route Decision, as described by the Route Act, if it includes national infrastructure. This should be taken no longer than two years after the start decision.	D14
AC5	Land use developments and infrastructure developments follow different legal assessments and procedures.	D14;D15;IB;IF; IG;IV
Aggre under	<b>gation Rules –</b> determine 'who is to decide' which action or set of activities is to be taken	Sources
MIRT	rules	
AA1	Development of new highways or motorway expansions including more than two lanes need to be embedded in a full spatial development strategy (formal policy document) and a Strategic Impact Assessment (SIA). An Environmental Impact Assessment (EIA) applies for all other interventions on existing motorways.	D10;D14
AA2	Decision-making should occur in close consultation with regional partners	D10
AA3	Provincial and municipal authorities should include the route in their regional land-use plans and provide the required permits to be able to start project execution.	D10;D15
AA4	The project decision provides the legal permission to start project realisation.	D10;D14
AA5	Implementation strategy should align different projects taking place in the same area.	D10
Other	rules	
AA6	National government may take over decision authority from province and municipality in situations of national importance.	D15;IB;FA
<b>Inforn</b> of info	nation Rules – affect the level of information available to actors by authorising channels ormation flow	Sources
MIRT	ules	
Alı	The decision on preferred solution must take into account information criteria on (i) problem analysis, (ii) possible solutions, (iii) stakeholders involved, (iv) financing, (v) decision-making, (vi) follow-up.	D10
Other	rules	
Al2	Social cost benefit analysis appraises alternatives from an economic perspective using journey time loss as key criterion.	D6;IC;IS
Al3	SIA, EIA and SCBA are important input for the parliamentary MIRT note consultations and political-administrative deliberation process.	IR;IK;IS
Al4	An independently operating EIA commission assesses EIA rapports on quality and completeness.	D2
AI5	Depending on the nature of the alternative, a Strategic Environmental Assessment or an Environmental Impact Assessment must present the environmental impact of the alternative.	D3;D4
Payof	<b>Rules</b> – affect the benefits and costs assigned to actors in light of outcomes	Sources
MIRT	ules	
AY1	With a positive decision on preferred solution, the initiative is officially programmed in MIRT.	D10
Other	rules	
AY2	Government officials are held accountable for their sector-oriented portfolios.	ΙК
AY3	In current administrative culture a decision to start an explorative study will result in	IR
	an infrastructure focused project.	

AY4	Involvement of Regional public officials MIRT is driven by financial incentives	IU;FE
AY5	Rijkswaterstaat project managers are held accountable for keeping within project time, money and scope.	IF;FC;FD;FE; FI;FJ;
AY6	Infrastructural solutions are politically more attractive than technical or land use measures.	IJ
Scope	Rules – delimit the potential outcomes of the action situation	Sources
MIRT ri	ules	
AS1	Started document defines the scope of the adoption phase.	D10
AS2	The project decision must include formal appraisal methods such as a social cost benefit analysis (SCBA) and EIA.	D10;D14
AS3	In the Explorative Study and the SCBA a non-infrastructural solution should be considered as an alternative.	D10
AS4	A preferred solution may only be taken in case of financial involvement of the National Government	D10;D14
AS5	A programme management approach should be adopted to manage related land use and transport development projects.	D10
Other rules		
AS6	The scope of an explorative study is limited by the legal scope of the Infrastructure Fund.	IV;WB;WH
AS7	Preferred solutions are only eligible for financing from the Infrastructure Fund if they in- clude construction, management, maintenance or operation of transport infrastructure for people and goods of national importance.	D14
AS8	Personal and political agendas shape deliberation and decision-making processes.	IJ;IR;IN;IT;IA;D; FD;FE
AS9	Shares of the Infrastructure Fund must be committed to road, water or rail infrastructure in budget articles.	D17;ID
AS10	Rijkswaterstaat should not take extralegal project integration measures	IF

# **Execution phase**

Positi	on Rules – establish positions that may be taken by actors	Sources
MIRT	rules	
EP1	A decision on delivery is taken by the associated Directorate-General.	D10
Other	rules	
EP2	As the executive agency of the Ministry of Infrastructure and Environment, Rijkswater-	D18;IH;IF;
	staat is responsible for national infrastructure development and maintenance. Its primary concern is the Dutch motorway network performance in terms of traffic flow.	IG;FI;FJ
EP3	There are different executive agencies for national road infrastructure and nation rail infrastructure development and maintenance.	D18;D19;IH
Bound	dary Rules – determine who may enter or exit a position and how	Sources
MIRT	rules	
EB1	Actors involved are contractually bound by assigned responsibilities.	D10;D13
Other	rules	
	_	

<b>Choice Rules</b> – specify what a participant occupying a position must, must not, or may do at a <b>Sources</b> particular point in a decision process		
MIRT rı	lles	
EC1	Depending on the potential financial and public value that can be achieved through early market involvement, a decision is made on the procurement method as part of the decision on preferred solution.	D10;D13
Other r	ules	
EC2	Contractual arrangements strongly delineate and contain the decision-making scope on taking measures enhancing integration.	IB;IK;FI
Aggreg underta	<b>ation Rules –</b> determine 'who is to decide' which action or set of activities is to be aken	Sources
MIRT rı	les	
EA1	After the decision on completion has been made, the infrastructure realised must be considered part the national government's infrastructure asset.	D10
Other r	ules	
EA2	Responsibility and decision-making authority on infrastructure development and land use development is divided between actors.	IH;ID;FF
Information Rules – affect the level of information available to actors by authorising channels of information flow		Sources
MIRT ru	iles	
El1	A decision on preferred solution must take into account information criteria on (i) problem analysis, (ii) possible solutions, (iii) involved stakeholders, (iv) financing, (v) decision-making, and (vi) follow-up, and includes an End Report which provides ac- countability for project time and budget, realised scope and realisation process.	D10
El2	A decision on delivery must include an End Report that provides accountability for the execution of a project	D10
El3	The Dutch House of Representatives and the provincial and municipal governing bodies involved should be notified when a decision on delivery is taken	D10
Other r	ules	
	-	
Payoff	Rules – affect the benefits and costs assigned to actors in light of the outcomes	Sources
MIRT rules		
EY1	A decision on completion may be made when (i) the final settlement meets these contractual arrangements and (ii) the information criteria associated with the decision have been fulfilled.	D10
Other rules		
EY2	Rijkswaterstaat project managers are being held accountable for keeping within project time, money and scope.	IF;FC;FE FF;FI;FJ
EY3	Performance of executive agency is assessed on their primary objective, i.e. the design, construction, management and maintenance of national road infrastructure	IF
Scope Rules – delimit the potential outcomes of the action situation Sources		
MIRT rules		
ES1	The MIRT process is designed like a funnel. The scope is defined incrementally, automatically limiting flexibility and room for negotiation.	D10

#### Other rules

ES2	Rijkswaterstaat has a sectoral mandate under the Dutch Ministry of Infrastructure and Environment.	IH;IF;FI
ES3	Rijkswaterstaat should not take extralegal project integration measures	IF
Moni	toring and Evaluation Phase	
Positio	on Rules – establish positions that may be taken by actors	Sources
MIRT r	ules	
	-	
Other	rules	
MP1	The Netherlands Environmental Assessment Agency and the Netherlands Institute for Transport Policy Analysis must produce a two-year monitor on SVIR.	D9;IN
<b>Choice Rules</b> – specify what a participant occupying a position must, must not, or may do at a particular point in a decision process		Sources
MIRT r	ules	
MC1	Completion test must be carried out a year after the project was delivered for projects which fall within the Route Act	D10
Other	rules	
	-	
Information Rules – affect the level of information available to actors by authorising channels of information flow		Sources
MIRT r	ules	
MI1	A completion test assesses whether the project meets the environmental standards as set out in the Route Decision.	
Other	rules	
MI2	An Environmental Impact Assessment must include monitoring parameters on which the impact of the plan on the environment is evaluated and reported after completion.	D2
MI3	The SVIR monitor should assess the realisation of the defined national interests compared to the policy objectives.	D11;D12
MI4	The MIRT Regional Development Agenda should be structurally monitored	FD
Payoff	Rules – affect the benefits and costs assigned to actors in light of the outcomes	Sources
MIRT r	ules	
	-	
Other	rules	
MY1	Generally there is no follow up on outcomes of MIRT monitoring and evaluation studies. New projects are given priority.	IB
Scope Rules – delimit the potential outcomes of the action situation		Sources
MIRT r	ules	
MS1	MIRT monitoring and evaluation should assess whether legal environmental thresholds are still met after project realisation.	D10
Other	rules	

APPENDICES

Reference	Function	Date
Expert interviews		
Respondent 1	Employee Ministry of Infrastructure and the Environment – DGB	11-10-2016
Respondent 2	Employee Rijkswaterstaat – WVL	11-10-2016
Respondent 3	Employee Ministry of Infrastructure and the Environment – DGRW	11-10-2016
Respondent 4	Employee Ministry of Infrastructure and the Environment – DGRW	17-10-2016
Respondent 5	Employee Ministry of Infrastructure and the Environment – DGMI	18-10-2016
Respondent 6	Employee Rijkswaterstaat – BS	19-10-2016
Respondent 7	Employee Rijkswaterstaat – BS	19-10-2016
Respondent 8	Employee Rijkswaterstaat – WVL	24-10-2016
Respondent 9	Employee Ministry of Infrastructure and the Environment – DGB	25-10-2016
Respondent 10	Employee Council for the Environment and Infrastructure	25-10-2016
Respondent 11	Employee Council for the Environment and Infrastructure	25-10-2016
Respondent 12	Employee Netherlands Environmental Assessment Agency	25-10-2016
Respondent 13	Employee Ministry of Infrastructure and the Environment – DGRW	26-10-2016
Respondent 14	Employee Ministry of Infrastructure and the Environment – DGRW	26-10-2016
Respondent 15	Employee Ministry of Infrastructure and the Environment – DGRW	26-10-2016
Respondent 16	Employee Ministry of Infrastructure and the Environment – HBJZ	26-10-2016
Respondent 17	Employee Ministry of Infrastructure and the Environment – DGB	1-11-2016
Respondent 18	Employee Ministry of Infrastructure and the Environment – DGRW	2-11-2016
Respondent 19	Employee Ministry of Infrastructure and the Environment – DGRW	2-11-2016
Respondent 20	Employee Netherlands Environmental Assessment Agency	8-11-2016
Respondent 21	Employee Ministry of Infrastructure and the Environment – DGMI	17-11-2016
Focus group 1		
Respondent 22	Employee Rijkswaterstaat – WVL	18-01-2017
Respondent 23	Employee Rijkswaterstaat – BS	18-01-2017
Respondent 24	Employee Rijkswaterstaat – BS	18-01-2017
Respondent 25	Employee Ministry of Infrastructure and the Environment – DGRW	18-01-2017
Respondent 26	Employee Ministry of Infrastructure and the Environment – DGB	18-01-2017
Respondent 27	Employee Rijkswaterstaat – GPO	18-01-2017
Respondent 28	Employee Ministry of Infrastructure and the Environment – DGRW	18-01-2017
Focus group 2		
Respondent 29	Employee Rijkswaterstaat – GPO	25-01-2017
Respondent 30	Employee Rijkswaterstaat - MN	25-01-2017
Respondent 31	Employee Rijkswaterstaat - GPO	25-01-2017
Respondent 32	Employee Rijkswaterstaat – WNZ	25-01-2017
Respondent 33	Employee Ministry of Infrastructure and the Environment – DGRW	25-01-2017

# Appendix D2: List of respondents, focus group discussion guide and the workshop set-up

Respondent 34	Employee Ministry of Infrastructure and the Environment – DGRW	25-01-2017
Respondent 35	Employee Ministry of Infrastructure and the Environment – DGRW	25-01-2017
Workshop 1		
Respondent 36	Employee Ministry of Infrastructure and the Environment – DGRW	27-02-2017
Respondent 37	Employee Ministry of Infrastructure and the Environment – DGB	27-02-2017
Respondent 38	Employee Ministry of Infrastructure and the Environment – DGRW	27-02-2017
Respondent 39	Employee Rijkswaterstaat - WVL	27-02-2017
Respondent 40	Employee Ministry of Infrastructure and the Environment – DGRW	27-02-2017
Respondent 41	Employee Rijkswaterstaat – BS	27-02-2017
Respondent 42	Employee Rijkswaterstaat - WVL	27-02-2017
Respondent 43	Employee Ministry of Infrastructure and the Environment – DGRW	27-02-2017
Respondent 44	Employee Rijkswaterstaat - WVL	27-02-2017
Workshop 2		
Respondent 45	Employee Ministry of Infrastructure and the Environment – DGB	14-09-2017
Respondent 46	Employee Ministry of Infrastructure and the Environment – DGB	14-09-2017
Respondent 47	Employee Ministry of Infrastructure and the Environment – DGB	14-09-2017
Respondent 48	Employee Ministry of Infrastructure and the Environment – DGRW	14-09-2017
Respondent 49	Employee Ministry of Infrastructure and the Environment – DGRW	14-09-2017
Respondent 50	Employee Ministry of Infrastructure and the Environment – DGRW	14-09-2017
Respondent 51	Employee Rijkswaterstaat – WVL	14-09-2017

#### List of respondents

Code	Document name
D1	Dutch Constitution 1815
D2	Environmental Management Act 1979
D3	European Commission's Environmental Impact Assessment Directive (85/337/EEC)
D4	European Commission's Strategic Environmental Assessment Directive (2001/42/EC)
D5	Financial Proportionality Act 1996
D6	Ministry of Transport, Public Works and Water Management & Ministry of Economic Affairs (2000) Evaluatie van grote infrastructuurprojecten Leidraad voor kosten-baten analyse. Den Haag
D7	Ministry of Transport, Public Works and Water Management (2009) Spelregels van het Meerjaren- programma Infrastructuur, Ruimte en Transport. Den Haag
D8	Ministry of Infrastructure and Environment (2011) Spelregels van het Meerjarenprogramma Infrastructuur, Ruimte en Transport (MIRT). Den Haag
D9	Ministry of Infrastructure and Environment (2012) Structuurvisie Infrastructuur en Ruimte: Nederland concurrerend, bereikbaar, leefbaar en veilig. Den Haag
D10	Ministry of Infrastructure and Environment (2016) Spelregels van het Meerjarenprogramma Infrastructuur, Ruimte en Transport. Den Haag
D11	PBL (2014) Monitor Infrastructuur en ruimte 2014. Zicht op de effecten van de Structuurvisie Infrastructuur en Ruimte. Den Haag
D12	PBL (2016) Monitor Infrastructuur en ruimte 2016. Zicht op de effecten van de Structuurvisie Infrastructuur en Ruimte. Den Haag
D13	Rijkswaterstaat (2010) Handreiking MIRT-verkenning. Den Haag
D14	Route Act 1993
D15	Spatial Planning Act 2006
D16	Ministry of Infrastructure and Environment (2017) Nationale Markt- en Capaciteitanalyse 2017 (NMCA) Hoofdrapport. Den Haag
D17	Ministry of Infrastructure and Environment (2017) Rijksbegroting 2017 A Infrastructuurfonds. Den Haag
D18	Decision on installation Rijkswaterstaat Traffic and Water Management (2012)
D19	Decision on mandate, proxy and authorisation ProRail concerning competences Railway Act (2012)

#### List of analysed documents

#### Interview guide

The interview guide included the following topics, which were derived from a document analysis and exploratory talks. Grand tour questions were followed-up by probes to flesh out details of interesting themes that were covered by the respondent. The sequence of themes and questions were adjusted based on the flow of the interview. Furthermore, probes were changed to fit the background of an interviewee.

- 1. Introduction and informed consent
- 2. Legal, policy and political administrative perspective on integrated planning
  - a. The role legislation, policy and political administration on integrated planning.
- 3. Integrating land use and transport planning
  - a. Reflecting on the governmental ambition for integrating land use and transport planning.

- 4. MIRT institutions and land use transport integration
  - a. How the MIRT design supports and/or hampers integration of land use and transport planning.
- 5. Changing MIRT-related institutions to improve LUTI
  - a. Making MIRT-related institutional changes to improve LUTI outcomes.
- 6. Closing question and debriefing statements

## Focus group discussion guide

Two focus groups discussions were conducted. The guide below was adopted to structure these discussions. This guide was formulated through deductive reasoning and inductive leads that are derived from the document analysis and interviews. Their main outcomes are reflected by the four topics and their corresponding statements. Follow-up questions were formulated for each statement to trigger the discussion when needed. Each group included a mix of experts on strategic and operational level, covering all phases of the MIRT process. The discussion was conducted by a team of three researchers: a moderator, a presenter and a note-taker. The moderator led the discussion. The presenter introduced each statement by discussing the finding on which they were build. The note-taker made observations on interactions and group dynamics.

- 1. Introduction, informed consent and round of introduction
- 2. Topic 1: Integrating land use and transport in horizontal and vertical dimensions during the PPB process
  - a. Achieving horizontal integration in MIRT is more difficult than achieving vertical integration.
    - i. Which barriers are experienced in current MIRT practice?
    - ii. How can the aimed integration be achieved in the different MIRT phases?
- 3. Topic 2: Using MIRT as an instrument to achieve land use and transport integration
  - a. MIRT should be the instrument to achieve land use and transport integration.
    - i. Does the integration of integrated spatial policy require 1 integrated instrument or multiple sectoral instruments?
    - ii. Should MIRT confine itself to projects that are financed by national government?
- 4. Topic 3: The role of an integrated policy framework for LUTI implementation
  - a. Without a strong integrated LUTI strategy, the operational focus in MIRT remains dominant.
    - i. Which requirement do infrastructure deliverers have for a LUTI policy strategy?
    - ii. How should a national LUTI policy strategy interrelate to regional and local policy strategies on LUTI?
- 5. Topic 4: Changing informal institutions
  - a. The only yardstick for collaboration and trust can be found at operational level.
    - i. Does the self-binding nature of governmental policy impede collaboration across tiers of government?
    - ii. What is required to achieve cultural change in the different phases of the MIRT process?
- 6. Conclusion and wrap-up

#### Workshop set-ups

The outcomes of the document analysis, interviews, and focus groups were discussed in two workshops. During these workshops, participants were asked to reflect on the research findings. The first workshop included managers from departments of the ministry and Rijkswaterstaat that are closely involved with the MIRT process on strategic and operational level. The second workshop included manager level of the ministry. During these workshops, participants were asked to reflect on proposals for suggestions on institutional adaptations to stimulate land use and transport integration. Proposals included all phases of the MIRT process and comprised both formal and informal design proposals. Workshops were conducted by a team of two researchers including a moderator and a note-taker. The moderator introduced and explained the design proposals and asked follow-up questions. The note-taker made observations on group dynamics.

- Use the MIRT regional development agenda to formulate LUTI policy at strategic level though an adaptive policy design process involving multiple tiers of government and structurally monitor and evaluate them.
- 2. Illustrate LUTI strategy with best practices to narrow the implementation gap.
- 3. Encourage co-financing of developments formulated in the regional development agenda.
- 4. Expand the scope of the MIRT explorative study by exploring mobility as well as land use solutions.
- 5. Create partial decision making during the MIRT explorative study.
- 6. Create an integrated fund that can be used for investing in infrastructure development as well as land use development solutions.
- 7. Structurally incorporate monitoring and evaluation in the decision-making process.
- 8. Introduce reciprocity as foundation for collaboration.

# SUMMARY

#### The interrelatedness of land use and transport

Transport planning has always been a prominent topic within public policy as transport infrastructure networks are often considered to be the backbone of society. To adapt to changing societal needs, transport planning has incrementally shifted its scope over time towards an advanced level of integration. Traditionally, transport planning has been characterized by a unimodal planning approach, which is characterized by highly specialized and technocratic predict-and-provide thinking in which the planning of roads, railways and waterways is segmented. General trends – such as increased environmental awareness, the emergence of the network society, scarcity of space, changing financialeconomic contexts and an increased understanding of the interrelationships between different modes of transport and the interactions between land use and transport – have triggered the development of multimodal approaches, as well as of integrated land use and transport planning approaches. The multimodal approach focuses on the entire transport system and regards the different transport modes and infrastructure networks as functioning as an integrated whole. Integrated land use and transport planning goes one step further, in that it also includes the reciprocal relationship between the multimodal transport system and land use. It focuses on 'people' and 'places', by acknowledging not only that travel is a means used to engage in activities such as meeting people, working and shopping, but also that transport infrastructure connects the different spatial functions where these activities take place. The latter approach combines transport planning measures (e.g. investment in infrastructure network development) and land use planning measures (e.g. mixed-use planning, urban density, proximity and area development) to achieve broad policy goals, such as improving accessibility or promoting sustainable mobility.

Nowadays, the need for and benefits of land use and transport integration (LUTI) have been generally acknowledged. This is reflected in the widely adopted policies that integrate the planning of land use and transport at a strategic as well as an operational level. At a strategic level, ambitions of integrating land use policy and transport policy are principally associated with the notion that the access provided by infrastructure networks influences urban development patterns, while at the same time transport patterns, volumes and modal split are largely a function of land use distributions. At an operational level, LUTI emerged as a scheme to improve project delivery by finding synergies in combining land use and infrastructure development. Traditional sectoral or 'line-oriented' approaches to infrastructure development have been shown to often give rise to intersectoral conflicts, social resistance, and budget and time overruns. Combining infrastructure development

with other land use developments, such as housing, energy, nature and recreation, may benefit project lead time by reducing conflicts and resistance as it allows different interests to be combined. Furthermore, combining transport infrastructure development (e.g. roads and railways) with local land use developments has been shown to improve the societal, economic and environmental revenue of projects. Despite these integrative ambitions, policy processes often remain fragmented, causing potential benefits to be missed.

# Chapter 1. A policy design approach to land use and transport integration

To address the implementation gap in LUTI, Chapter 1 introduces a policy design perspective to promoting land use and transport integration, which acts as the overarching framework structuring the current thesis. A policy design refers to a mix of multiple interrelating policy goals and instruments. Policy design takes a specific interest in deliberately matching goals and instruments to effectively produce desired policy outcomes. This research focuses on three policy design attributes that have been linked to effectiveness, and it applies them to study transport planning practice. The first attribute is 'policy design fit', which focuses on aligning goals and instruments and which highlights the complementarity effects of achieving goal coherence, instrumental consistence and the congruence of goals and instruments. The second attribute is 'temporal influence', which focuses on maintaining effectiveness over time by sustaining policy design fit. Mixes of goals and means evolve, as new elements are added onto the foundations of earlier design choices, and as existing elements adapt to new contexts or are removed. If managed poorly, these dynamics can cause a policy design to evolve into suboptimal configurations. The third attribute is 'goodness-of-fit', which refers to contextual influences on instrumental effectiveness and to how these can be taken into account in designing effective instruments.

In line with the above framework, this study aims to explore how instruments can support goals in policy designs that remain effective for achieving integrated planning of land use and transport infrastructure. To pursue this research aim, the following primary research question was formulated:

• How can instruments support goals in policy designs that remain effective for achieving the integrated planning of land use and transport infrastructure?

This question was answered using the following four secondary research questions, each addressing a specific component of the research framework:

- How are mixes of policy instruments used throughout the policy process to promote land use and transport integration? Chapter 2
- What are the necessary and/or sufficient conditions coherent goals, consistent means, and congruence of goals and means for a policy design to effectively promote desired policy integration? Chapter 3

SUMMARY

- How do temporal dynamics affect the development of mixes of policy goals and instruments over time, and how does this development affect the coherence of goals, the consistence of instruments, and the congruence between goals and instruments? – Chapter 4
- How does the institutional context affect the effectiveness of policy instruments for land use and transport integration? Chapter 5

Chapter 1 provides a more detailed account of the research design underlying this thesis and of the case study designs that were tailored to answer each of these secondary research questions. The following sections provide a summary of the individual chapters that make up this thesis.

## Chapters 2-3. Technical specifics of a policy design that is to integrate the planning of land use and transport.

A key aspect that hallmarks current policy design thinking is the conscious effort to bring configurations of interrelating policy goals and instruments into alignment, so as to effectively achieve the intended outcomes. Chapters 2 and 3 present two case studies on the technical specifics of policy designs that are to integrate the planning of land use and transport effectively. Chapter 2 adopts an instrumental perspective, and Chapter 3 focuses on the importance of policy design fit for achieving the desired transport policy integration.

#### Chapter 2.

#### Land use and transport integration: finding the right tools for the job

Much progress has been made both in understanding the intricate reciprocal relationship between land use and transport, and in identifying the main institutional barriers that segment the planning of land use and transport. However, the question how desired integration can be achieved has received only limited attention. To address this question, Chapter 2 of this thesis aims to further develop an instrumental approach to LUTI by adopting a policy design perspective. A policy design analysis was conducted as a new approach to addressing the 'how' question on LUTI. To this end, Chapter 2 adopts an analytical framework which combines insights into both policy integration and policy instruments, in order to study the way in which mixes of policy instruments are used throughout the policy process to achieve LUTI. The study focuses on three Dutch provinces, namely Friesland, Overijssel and Noord-Brabant. This regional focus was adopted because LUTI is considered an inherently regional enterprise, as mobility issues predominantly manifest themselves at this level, and because regions are considered key actors in developing and delivering integrated land use and transport strategies.

Finding the appropriate tools for LUTI requires an understanding of the specific job at hand. Chapter 2 illustrates that attaining integrated ambitions on land use and transport, such as goals on improved accessibility or promoting sustainable forms of transport, requires processes of land use and transport integration. In this context, LUTI refers to the processes of interaction – i.e. exchanges of resources – that are needed to deal with the fragmented organization of land use and transport. The analysis shows that the resources that are needed to develop and deliver integrated land use and transport policies are dispersed within and between government tiers. This gives rise to intra-organizational interdependencies between departments and inter-organizational interdependencies between local and regional governments. When it comes to guiding such processes of integration, Chapter 2 highlights the appropriateness of procedural instruments – softer type of instruments that steer how the implementation process unfolds by shaping interaction – rather than substantive instruments – command-and-control type instruments that make direct use of government resources to induce the desired behaviour or prohibit certain unwanted behaviour.

This study identified three distinct instrument mixes comprising a total of seventeen procedural policy instruments used to promote LUTI throughout the policy process. The outcomes illustrate that governments deploy mixes of complementary instruments that are tailored to the regional context and approach. Whereas the province of Friesland pursues a pragmatic and project-oriented approach to LUTI, Overijssel's style is aimed at achieving both policy and project integration but in a more formalized, hierarchical manner that relies heavily on the use of competency resources. Alternatively, Noord-Brabant has the same combined policy and project focus, but this province aims to achieve LUTI by fostering a high intensity of informal interaction throughout the policy process. These differences between the cases underline that there is no silver bullet for achieving LUTI. The design of policy instruments needs to be sensitive to the policy environment in which they are employed.

#### Chapter 3.

#### The importance of policy design fit for achieving desired integration

Even though policy design thinking has expanded considerably over the years, a key component has always focused on producing intended policy outcomes by consciously matching goals and means – i.e. by establishing policy design fit. In this context, policy design fit is expressed as the sum of coherence of goals, consistency of means, and congruence of goals and means. The evidence of the positive relationship between policy design fit and policy design effectiveness has been predominantly of a theoretical nature. Chapter 3 provides the first systematic empirical analysis that investigates whether the coherence of goals, the consistency of means, and the congruence of goals and means — or combinations of these three attributes — are necessary and/or sufficient for effective policy integration. To this end, a Qualitative Comparative Analysis (QCA) was conducted, which included the transport policy designs of all twelve Dutch provinces.

The theoretical framework underpinning the analysis in Chapter 3 brings together literature on policy design and policy integration. The multi-level framework on policy design introduced by Michael Howlett was adopted to define the three attributes of policy design fit. According to this framework, policy goals and means – the two core components of a policy design – can be understood as three nested levels of policy abstraction: the macro-level, meso-level and micro-level. From this multi-level perspective, policy design *coherence* is achieved when goals at all three levels can be pursued at the same time without trade-offs. The *consistency* of a policy design reflects how well means are aligned across the macro-, meso- and micro-levels. *Congruence* reflects the extent to which policy goals and means are mutually supportive and successful at working together towards achieving corresponding goals at all levels of abstraction. Integration was subsequently used in this chapter to operationalize the multi-level framework. In line with existing theory, Chapter 3 poses that policy integration is an ongoing process that often takes place asynchronously across the dimensions of policy goals and instruments ranging from a low to a high degree of integration. These mismatches between the different dimensions give rise to policy design incoherence, inconsistency and incongruence. Such discrepancies are the rule rather than the exception within Dutch regional policy designs on transport. The degree of integration of the different components within a single policy design has shown to range from sectoral specialization – unimodal planning – to intra-sectoral integration on a transport.

Regarding the impact of these mismatches on effectiveness, the QCA finds that the relationship between policy design fit and effectiveness is more intricate in practice than theory suggests. On the one hand, the study provides evidence in that when the goals and means of a policy design are of the same degree of integration across all three policy levels, this will be sufficient to promote the desired policy integration. However, the results also show that achieving policy design effectiveness is not a matter of simply matching goals and means across policy levels. In some cases, the desired integration was effectively achieved despite the policy design being incoherent, inconsistent or incongruent. For example, it was found that mismatches between macro- and meso-level policy design components did not necessarily impede design effectiveness if meso- and micro-level components were aligned. In other words, there are different degrees of policy design coherence, consistency and congruence that have a different impact on effectiveness. Furthermore, when policy means are incongruent to policy but show a higher degree of integration, these means can still be effective even though this makes them less efficient in achieving the desired outcomes.

## Chapter 4. Temporal influences on the alignment of policy goals and means

Within policy design literature, several studies show that the dynamic character of policy making can cause policy designs to evolve into sub-optimal mixes. Elaborating on these findings, Chapter 4 explored how policy dynamics influenced policy design fit in the context of Dutch national transport policy to find ways in which policy design fit can be maintained in the face of temporal influences. To this end, Chapter 4 presents a historical analysis of the evolution of Dutch national transport planning policy goals and policy instruments from 1997 to 2018. This period was selected as it was a time when the national transport policy design underwent considerable changes: policy goals changed as the planning approach shifted from a sectoral transport orientation to an integrated land use and transport planning orientation, and policy instruments were thoroughly revised. Chapter 4 illustrates that a policy design can develop over time, through processes of layering, drift, conversion, replacement and exhaustion. *Layering* entails the process of adding goals and/or instruments without replacing or adjusting existing design elements. *Drift* describes a situation in which policy goals change, but the instruments to implement the policy do not. *Conversion* refers to a situation in which an existing instrument is used differently in response to changed goals. *Replacement* occurs when new design elements are deliberately put in the place of old ones, which may happen abruptly or gradually, depending on the rigidity of existing elements. *Exhaustion* refers to a process of breakdown or fading away rather than actual change, and describes situations in which older design elements are undermined because they do not function satisfactorily in the light of newer policy elements.

Chapter 4 describes how these policy dynamics have constantly influenced goal coherence, instrument consistency and congruence of goals and instruments of the Dutch national transport policy design. Policy goals were found to develop through periodical replacement. New policy strategies were formulated as a comprehensive and coherent package of mutually supportive goals that worked together toward an overarching policy aim. As a new strategy was adopted, its predecessor automatically expired; this allowed coherence to be maintained as goals developed relatively flexibly without much influence of past design choices. Alternatively, the instrument mix evolved incrementally during an intricate process of layering and conversion. Processes of layering incrementally expanded the scope of the instrument mix as new instruments were added - e.g. regional policy agendas and integrated strategic plans – to promote strategic policy integration. This gave rise to inconsistencies, as the more traditional instruments that were geared towards infrastructure development counteracted the integrative instruments that were introduced. Conversion helped to reduce some of these inconsistencies by redesigning the purpose, scope and role of the traditional instruments. In addition, it was found that congruence was constantly changing because policy goals and means developed in distinct and largely separate development trajectories. Goals evolved relatively flexibly by means of periodic replacement while instruments developed more incrementally by means of layering and conversion. Furthermore, the analysis revealed that policy goals are defined first and that subsequently the instrument mix is adapted accordingly.

Through these findings, Chapter 4 contributes to understanding the interplay between policy design dynamics and policy design fit, and to formulating practical implications for maintaining policy fit over time. The observations from Dutch transport planning practice show that integrating decision-making on the policy goals and instruments is an essential initial step to be taken. The chapter confirms that policy designs are constantly developing over time in an ongoing fitting process between goals and instruments, in which every moment of fit is temporary. Consequently, it is argued that policy design fit in the face of these dynamics. Monitoring and evaluation of policy design outcomes should be incorporated as a key element of the policy design process; if a design does not deliver the intended outcomes, this should be a reason to engage in policy redesign. However, the chapter also illustrates

that if designers are dealing with rigid pre-existing policy elements, smart patches – updates to existing design elements – can successfully restore the fit between goals and instruments. Supplementing layering with conversion can also be a an example of successful policy design patching.

# Chapter 5. The influence of context on the effectiveness of policy instruments

A policy design does not operate in a vacuum. This is illustrated in Chapter 5, which presents the outcomes of a comprehensive institutional analysis of the whole Dutch national transport planning process to illustrate the interplay between policy instruments and the broader context in which they are deployed. The in-depth case study shows how contextual influences can disrupt the working of a policy instrument designed to promote LUTI. The chapter uses Elinor Ostrom's Institutional Analysis and Development framework to analyse the 'goodness of fit' attribute in policy design, by illustrating how the specificities of a particular context can counteract instruments in delivering the intended outcomes. Furthermore, the chapter provides new in-depth understanding of the multifaceted institutional conditions that play a role in hampering the integration of land use and transport. The analysis reveals how policy processes and outcomes are not only shaped by the policy instruments that government employ. Instead, a variety of other 'nested' institutional contexts guide these policy processes. These can be seen as multiple layers of institutions – which may be formal or informal – and provide individual policy actors with various footholds for action as they justify different, sometimes conflicting, patterns of behaviour. Institutional incongruence is used as a concept to evaluate the interrelationship between different institutions as it describes a situation where institutions push in opposite directions and are thus mutually counteractive.

The results of the institutional analysis illustrate that processes of land use and transport integration in the stages of policy formation, adoption, implementation and evaluation are shaped by a comprehensive set of formal and informal institutions. Various examples were found of interrelating institutions pushing for conflicting behaviour, thereby hampering the unfolding of processes of integration. In several of such instances, the institutional design of policy instruments that were to promote LUTI were overruled by external rules that encourage sectoral or infrastructure-focused decision-making. Some examples of such incongruences are informal rules on political lobbying, the sectoral scope of the infrastructure investment fund, the economic focus of appraisal methods and the sectoral mandate of *Rijkswaterstaat* – the executive agency of the development and maintenance of national infrastructure.

Interestingly, the findings illustrate that such incongruences occur within as well as between the different phases of the policy process. Generally, the incongruences identified can be attributed to one of two main classifications: (i) temporal incongruence, a misfit between institutions which developed within the same policy subsystem but in different timeframes, or (ii) contextual incongruence, a misfit between institutions which developed in separate policy subsystems and disciplines which interrelate in multi-actor action situations. Overall, it is concluded that based on the various incongruences that were identified in the institutional analysis, it is not surprising that implementation remains unsatisfactory, despite the efforts that have been taken in the Netherlands to stimulate LUTI.

# Chapter 6. Conclusion: Policy design for integrating the planning of land use and transport infrastructure

Chapter 6 draws together and presents the main conclusions of the different case studies that are presented in this thesis and provides an answer to this study's primary research question: '*How can instruments support goals in policy designs that remain effective for achieving the integrated planning of land use and transport infrastructure?*' Overall, the study found that developing such a policy design requires the consideration of three aspects: (i) tailoring a mix of mutually supportive instruments to fit specific integrated land use and transport planning goals, (ii) managing ongoing policy design dynamics, and (iii) designing instruments that are responsive to the broader institutional context in which they are deployed.

With regard to the first aspect, it can be concluded that pursuing an integrated planning of land use and transport infrastructure requires mixes of complementary instruments that are employed at different stages of the policy process. Procedural instruments play a prominent role in establishing processes of land use and transport integration as they can help to overcome the resource interdependencies associated with the development and delivery of integrated goals on land use and transport by steering interaction in policy networks. There is, however, no one magic policy design as LUTI can be achieved by different instrument mixes. When it comes to promoting the desired integration, goal coherence, instrumental consistency and congruence of goals and means can indeed be sufficient for effectiveness. Interestingly, to be effective, policy instruments can also have a higher degree of integration than policy goals. Regarding the temporal influences on a policy design, it is concluded that dynamism is imperative as it allows policy designs to successfully adapt to changing circumstances. However, it is also essential to prevent these designs from evolving into sub-optimal configurations, as the dynamics of a policy design were found to continuously influence goal coherence, instrumental consistency, and the congruence of goals and instruments in an ongoing process of *fitting*. The findings illustrate that a policy design is inherently dynamic and as a result of these continuing dynamics any moment of *policy design* fit is temporary. Consequently, maintaining and improving the alignment between goals and means requires ongoing attention. Regarding the third aspect, the contextual influences, it was found that the effectiveness of policy instruments is strongly influenced by the context in which they are employed. Multiple institutional incongruences were found between context and instruments that counteract procedural instruments that are designed to promote LUTI. In line with these conclusions, Chapter 6 presents six recommendations on how policy makers can improve the integration of land use and transport through policy design.

# SAMENVATTING

#### De vervlechting van infrastructuurplanning en ruimtelijke ordening

Om in te kunnen spelen op een veranderende maatschappij heeft infrastructuurplanning zich moeten aanpassen. Traditioneel wordt transportplanning gekenmerkt door een technocratische infrastructuurgerichte benadering. Hierbij lag de nadruk vooral op het uitbreiden en optimaliseren van de afzonderlijke infrastructuurnetwerken. Mede door de toenemende aandacht voor milieu- en duurzaamheidsaspecten rondom transport, de stijgende druk op de beschikbare ruimte, de opkomende netwerksamenleving en de veranderende economische situatie kwam deze lijngerichte planningstraditie onder druk te staan.

Dit leidde tot de opkomst van een multimodale en een integrale ruimtelijke en infrastructurele planningsbenadering. Multimodale planning kenmerkt zich door intersectorale integratie en is gericht op het verbeteren van de multimodale mobiliteit en het benutten van de complementariteit van spoor-, weg- en waterinfrastructuur. Integrale ruimtelijke en infrastructurele planning gaat daarentegen een stap verder. Vanuit een intra-sectorale blik worden transportmaatregelen (bijv. investeringen in infrastructuurontwikkeling) en ruimtelijke ordeningsmaatregelen (bijv. meervoudig landgebruik, bouwen in verhoogde stedelijk dichtheid, gebiedsontwikkeling en verstedelijking nabij infrastructuur) gecombineerd om overkoepelende doelstellingen te realiseren, zoals het verbeteren van bereikbaarheid, het stimuleren van duurzaam transport of het verminderen van de impact van infrastructuur op de omgeving. Het bevorderen van deze intra-sectorale benadering is waar dit proefschrift zich op richt.

Het nut en de noodzaak van een integrale ruimtelijke en infrastructurele planning worden zowel in de wetenschap als in de praktijk breed erkend. Dit blijkt bijvoorbeeld uit het integrale beleid rondom infrastructuurplanning en verstedelijking en de nadruk op gebiedsgerichte infrastructuurontwikkeling. Op *beleidsniveau* komen integrale ambities voort uit de wederkerige invloed tussen ruimtelijke ordening en transport. De bereikbaarheid van een locatie via het transportnetwerk bepaald de geschiktheid en de aantrekkelijkheid van deze locatie voor ruimtelijke functies. Daarnaast oefent de ruimtelijke ordening van een gebied (zoals landgebruik, stedelijke dichtheid en de spreiding van functies) sterke invloed uit op de benodigde infrastructuurcapaciteit, hoe vervoersstromen lopen en de *modal split*. Ook op *projectniveau* is er een sterke samenhang tussen infrastructuur en het omliggende gebied. Het combineren van infrastructuurontwikkelingen en ruimtelijke ontwikkeling (bijv. woningbouw, energie, natuur of recreatie) kan positieve invloed hebben op de doorlooptijd en het draagvlak van een infraproject doordat sectorale belangen met elkaar worden verweven en daarmee het sociale, economische en milieutechnische rendement van een infrastructuurproject wordt verhoogd.

Met andere woorden, op zowel beleids- als op projectniveau zijn ruimtelijk planning en infrastructuurplanning met elkaar vervlochten geraakt. Ondanks de breed gedragen ambitie om de planning en ontwikkeling van ruimte en infrastructuur met elkaar te integreren blijft de besluitvorming hierover vaak gescheiden. In deze studie wordt dit vraagstuk vanuit een beleidsontwerp-perspectief onderzocht.

## Hoofdstuk 1. De integratie van ruimtelijke en infrastructuurplanning vanuit een beleidsontwerp-perspectief

In hoofdstuk 1 worden de verschillende facetten van beleidsontwerp besproken die relevant zijn voor het verbeteren van de integratie tussen ruimtelijke ordening en infrastructuurplanning. Een beleidsontwerp is erop gericht om beoogde uitkomsten te realiseren door het bewust afstemmen van beleidsdoelen en -instrumenten. In hoofdstuk 1 ligt de nadruk op drie centrale, vanuit de literatuur bepaalde, attributen die van invloed zijn op de effectiviteit van een beleidsontwerp. Het eerste attribuut is afstemming tussen de beleidsdoelen en instrumenten in een beleidsontwerp. Deze afstemming wordt in de literatuur uitgedrukt als de som van coherentie tussen beleidsdoelen, consistentie tussen instrumenten en congruentie tussen doelen en instrumenten. Het tweede attribuut is het in stand houden van deze afstemming in de tijd. Een beleidsontwerp is dynamisch: in de loop van tijd worden elementen aan het ontwerp toegevoegd of worden bestaande doelen en instrumenten aangepast of geschrapt. Wanneer deze dynamiek niet goed wordt gemanaged, kan een beleidsontwerp zich ongewenst ontwikkelen tot een suboptimale samenstelling van doelen en instrumenten. Het derde attribuut is afstemming van het instrumentarium op de context. In dit proefschrift wordt voor elk van deze attributen onderzocht hoe deze effectief kan bijdragen aan de integratie van ruimtelijke en infrastructurele planning.

Op basis van het bovenstaande theoretische perspectief is de doelstelling van deze studie: 'te analyseren hoe de instrumenten van een beleidsontwerp ter integratie van ruimtelijke en infrastructurele planning de doelen kunnen ondersteunen zodat het ontwerp blijvend effectief is'. Deze doelstelling is vertaald naar de volgende hoofdvraag:

• Hoe kunnen de instrumenten van een beleidsontwerp ter integratie van ruimtelijke en infrastructurele planning de doelen ondersteunen zodat het ontwerp blijvend effectief is?

De volgende deelvragen dragen bij aan de beantwoording van de hoofdvraag:

• Hoe worden combinaties van instrumenten door het beleidsproces ingezet ter integratie van ruimtelijke en infrastructurele planning? (Hoofdstuk 2)

SAMENVATTING
- Welke kenmerken van een effectief beleidsontwerp (coherente doelen, consistente instrumenten, en congruentie van doelen en instrumenten) zijn noodzakelijk en/of voldoende om beoogde beleidsintegratie te realiseren? (Hoofstuk 3)
- Hoe ontwikkelt een beleidsontwerp zich in de loop van tijd en hoe beïnvloedt deze ontwikkeling de coherentie van doelen, de consistentie van instrumenten en de congruentie van doelen en instrumenten? (Hoofdstuk 4)

• Hoe wordt de effectiviteit van instrumenten ter integratie van ruimtelijke en infrastructuurplanning beïnvloed door de institutionele context? (Hoofdstuk 5)

Ten slotte bevat hoofdstuk 1 een gedetailleerde uitwerking van de onderzoeksopzet van deze thesis.

#### Hoofdstukken 2-3. De technische eigenschappen van een beleidsontwerp ter integratie van ruimtelijke en infrastructuurplanning

Een beleidsontwerp is een configuratie van aan elkaar gerelateerde beleidsdoelen en instrumenten. Door deze configuratie doelbewust op elkaar af te stemmen wordt effectiviteit nagestreefd. De studies in hoofdstukken 2 en 3 gaan in op de technische kenmerken van een beleidsontwerp voor het realiseren van integrale ruimtelijke en infrastructuurplanning. In hoofdstuk 2 komen de eigenschappen van het instrumentarium waarmee dergelijke integratieprocessen gestimuleerd kunnen worden aan bod. Hoofdstuk 3 is gericht op het belang van de afstemming tussen doelen en instrumenten voor het bereiken van beoogde integratie.

#### Hoofdstuk 2. Integrale ruimtelijke ordening en infrastructuurplanning; op zoek naar de juiste tools voor de job.

Er is al veel bekend over de sterke wederkerige relatie tussen ruimtelijke ordening en infrastructuurplanning, alsmede over de institutionele barrières die een integrale benadering van ruimte en infra bemoeilijken. Desondanks is er beperkte aandacht voor de 'hoe-vraag' van integrale ruimtelijke en infrastructuurplanning. In hoofdstuk 2 wordt hierop ingegaan door middel van een analytisch raamwerk dat theorie over beleidsintegratie en beleidsinstrumenten met elkaar verbindt. Door het toepassen van die raamwerk wordt onderzocht hoe door de provincies Friesland, Overijssel en Noord-Brabant combinaties van instrumenten worden ingezet om de integratie van ruimtelijke ordening en infrastructuurplanning op regionale schaal te sturen.

Het vinden van de juiste 'tools' vraagt om begrip van wat de 'job' precies inhoudt. In hoofdstuk 2 wordt de integratie tussen ruimtelijke ordening en infrastructuurplanning beschreven als een interactieproces dat noodzakelijk is om doelstellingen te realiseren die beide sectoren overstijgen (bijv. rondom bereikbaarheid, duurzame mobiliteit of de ruimtelijke inpassing van infrastructuur). Tijdens interactieprocessen wisselen beleidsactoren resources met elkaar uit. Vijf typen resources worden hierbij onderscheiden: financieel, productie, bevoegdheid, kennis en legitimiteit. Interactie is noodzakelijk voor het ontwikkelen en implementeren van integraal ruimtelijk en infrastructuurbeleid omdat de resources hiervoor zijn verspreid binnen en tussen overheidslagen. Interactie staat zodoende centraal in processen van integratie.

Het sturen van integratie draait in essentie dus om het invloed uitoefenen op interactieprocessen. Hiervoor zijn vooral zogenaamde procedurele instrumenten geschikt; deze sturen indirect op resultaten door het structureren van interactiepatronen tussen actoren. Hiermee zijn procedurele instrumenten over het algemeen zachter van aard dan inhoudelijke instrumenten, welke met de inzet van overheidsmiddelen (geld, wetgeving, etc.) direct sturen op resultaat door (on)gewenst gedrag te stimuleren of te ontmoedigen.

Uit de analyse in hoofdstuk 2 komt naar voren dat Friesland, Overijssel en Noord-Brabant elk een eigen mix van complementaire procedurele instrumenten inzetten om sturing te geven aan de integratie van ruimtelijk en infrastructuurplanning. Deze mixen hebben elk een eigen karakter omdat ze zijn ontwikkeld vanuit de regionale context en bestuurscultuur. Het beleidsontwerp van Friesland kenmerkt zich door pragmatisme en is gericht op projectintegratie. Het Overijssels instrumentarium is formeler van karakter en stuurt op integratie met behulp van verordeningen en 'voorkantsamenwerking' (samenwerking in de voorfase van het beleidsproces). Noord-Brabant stuurt op informelere wijze met een instrumentarium dat is gericht op een hoge intensiteit aan informele interactie. Deze regionale verschillen, of dialecten, in sturing wijzen waarop dat er meerdere manieren zijn waarop integratie kan worden beïnvloed. Daarnaast onderstreept het de waarde van een instrumentarium dat afgesteld is op de setting waarin het wordt toegepast.

## *Hoofdstuk 3. Het belang afstemming binnen een beleidsontwerp voor het realiseren van beoogde integratie*

Hoewel de scope van studies naar beleidsontwerp aanzienlijk is verbreed, blijft het streven naar effectiviteit door het afstemmen van doelen en instrumenten een centraal onderwerp in de literatuur omtrent beleidsontwerp. In deze studie wordt afstemming of *fit* uitgedrukt als de som van coherentie tussen doelen, consistentie tussen instrumenten en congruentie tussen doelen en het instrumentarium. In hoofdstuk 3 wordt onderzoek gedaan naar de mate waarin de coherentie, consistentie en congruentie van een beleidsontwerp, individueel of in combinatie met elkaar, voldoende en/of noodzakelijk zijn voor het bereiken van beoogde integratie. Dit is onderzocht door middel van een Qualitative Comparative Analysis (QCA) van de beleidsontwerpen van alle Nederlandse provincies.

In het theoretisch raamwerk dat ten grondslag ligt aan deze analyse worden componenten uit de literatuur van beleidsontwerp en beleidsintegratie gecombineerd. Michael Howletts multi-level perspectief op beleidsontwerp wordt gebruikt om het begrip *fit* te definiëren. Howlett stelt dat een beleidsontwerp beschouwd dient te worden als een combinatie van twee elementen (beleidsdoelen en beleidsinstrumenten) die elk op drie verschillende, maar aan elkaar gerelateerde, niveaus kunnen worden geduid, namelijk het macro-level, het meso-level en het micro-level. Met betrekking tot de beleidsdoelen verwijst het macrolevel naar de beginselen die ten grondslag liggen aan beleidsontwikkeling, het meso-level naar de doelen die het geformuleerde beleid nastreeft en het micro-level naar de praktische benodigdheden en uitwerking van het beleid. Voor beleidsinstrumenten omvat het macrolevel de voorkeur voor het type instrumentarium, het meso-level de mix aan instrumenten die wordt ingezet en het micro-level de technische eigenschappen van de instrumenten. Vanuit dit multi-level perspectief is een beleidsontwerp coherent als de doelen zonder compromissen op elk schaalniveau kunnen worden gerealiseerd. Daarnaast wordt consistentie gerealiseerd wanneer het instrumentarium op alle niveaus is uitgelijnd. Tot slot is een beleidsontwerp congruent wanneer, op alle drie de beleidsniveaus, doelen en middelen elkaar ondersteunen en versterken.

Beleidsintegratietheorie is vervolgens gebruikt om dit multi-level raamwerk te operationaliseren. Volgens de literatuur verloopt beleidsintegratie vaak asynchroon binnen een beleidsontwerp. Hierdoor kunnen er verschillen ontstaan in de mate van integraliteit tussen doelen en instrumenten. Dergelijke discrepanties komen in de transportplanningspraktijk regelmatig voor; daar varieert de integraliteit van de doelen en middelen op de verschillende niveaus van een beleidsontwerp tussen sectorale specialisatie (unimodaal gericht), intra-sectorale integratie (multimodaal gericht), intersectorale integratie (gericht op integrale ruimtelijke en infrastructurele planning). Deze verschillen in integraliteit kunnen binnen een beleidsontwerp leiden tot incoherentie, inconsistentie en/of incongruentie.

De resultaten van de QCA tonen aan dat in de context van beleidsintegratie, de relatie tussen de *fit* en effectiviteit van een beleidsontwerp minder voor de hand liggend is wordt gesuggereerd in de theorie. Enerzijds blijkt dat indien de doelen en instrumenten van een beleidsontwerp op alle niveaus van dezelfde mate van integraliteit zijn, dit voldoende is voor het realiseren van de beoogde integratie. Anderzijds laten de resultaten zien dat het behalen van beoogde integratie niet zomaar een kwestie is van het afstemmen van doelen en middelen op de drie beleidsniveaus. In sommige cases werd de beoogde integratie behaald ondanks dat er sprake was van een incoherent, inconsistent en/of incongruent beleidsontwerp. Zo zijn er cases die aantonen dat integraliteit kan worden behaald, ondanks discrepanties tussen macro-level en meso-level. Deze uitkomsten wijzen erop dat er verschillende gradaties van coherentie, consistentie en congruentie bestaan die op verschillende wijze invloed uitoefenen op de effectiviteit van een beleidsontwerp. Tot slot wordt geconcludeerd dat een incongruent beleidsontwerp effectief kan zijn mits de instrumenten integraler zijn dan de doelen. In een dergelijke situatie gaat de effectiviteit wel ten koste van de efficiëntie van het beleidsontwerp.

#### Hoofdstuk 4. De invloed van tijd op de afstemming van beleidsdoelen en middelen

De dynamische aard van een beleidsontwerp kan ertoe leiden dat een configuratie van doelen en middelen zich tot een suboptimale samenstelling ontwikkelt. In hoofdstuk 4 wordt onderzocht hoe de dynamiek binnen een beleidsontwerp van invloed is op de afstemming tussen doelen en instrumenten en wat beleidsmakers kunnen doen om deze afstemming te behouden. Hiertoe is er een historische analyse uitgevoerd omtrent de ontwikkeling van het Nederlandse transportbeleidsontwerp op nationaal niveau tussen 1997 en 2018. In die periode heeft het Rijksbeleid zich stapsgewijs ontwikkeld van een sectorale infrastructuurbenadering naar een integrale benadering op ruimtelijke ordening en transport. In lijn met deze ontwikkeling is het onderliggende plannings-, programmerings- en budgetteringsinstrumentarium 'MIRT' (Meerjarenprogramma Infrastructuur Ruimte en Transport) meermaals herzien.

In hoofdstuk 4 wordt beschreven hoe in de literatuur veranderingen in een beleidsontwerp worden aangeduid met de termen *layering* (stapeling), *drift* (afdrijven), *conversion* (omzetten), *replacement* (vervangen) en *exhaustion* (verzwakking). *Layering* beschrijft een proces waarin doelen en instrumenten worden toegevoegd aan een beleidsontwerp zonder dat bestaande componenten worden aangepast of vervangen. Men spreekt van *drift* wanneer de doelen veranderen, maar het instrumentarium hetzelfde blijft. *Conversion* vindt plaats wanneer bestaande instrumenten worden herzien of op een andere manier worden ingezet, om zo in te spelen op veranderde doelen. *Replacement* refereert naar het vervangen van de doelen en/of instrumenten binnen een beleidsontwerp. *Exhaustion* beschrijft een situatie waarin de werking van oudere componenten van een beleidsontwerp worden ondermijnd, omdat ze niet langer naar wens functioneren vanwege nieuwe doelen en/of middelen die zijn toegevoegd.

De historische analyse laat zien dat als gevolg van de dynamiek binnen het bestudeerde nationale beleidsontwerp, ook de coherentie, consistentie en congruentie tussen doelen en instrumenten constant aan verandering onderhevig was. Aan de ene kant werden beleidsdoelen periodiek vervangen (replacement). Nieuwe beleidskaders werden in de vorm van een plan, nota of structuurvisie ingevoerd die vanuit een overkoepelende ambitie met elkaar werden verbonden. Met de invoering van een nieuw beleidskader kwam het vigerende beleid te vervallen. Hierdoor werd coherentie tussen doelen gewaarborgd en kon het beleid zich betrekkelijk flexibel en autonoom ontwikkelen. Anderzijds ontwikkelde het instrumentarium zich incrementeel en padafhankelijk via een proces van lavering en conversion. Doordat nieuwe instrumenten aan de mix werden toegevoegd verbreedde het bereik van het instrumentarium omdat bijvoorbeeld nieuwe actoren werden betrokken of bredere afwegingen werden gemaakt in besluitvorming. De introductie van nieuwe instrumenten leidde tot inconsistenties binnen het MIRT instrumentarium: de traditionele infrastructuurgerichte instrumenten (zoals het infrastructuurfonds, de nationale markt en capaciteitsanalyse en sectorale afwegingsinstrumenten) werkten nieuwe strategische instrumenten ter bevordering van een integrale ruimtelijke en infrastructuurplanning (zoals de Gebiedsagenda's en het MIRT onderzoek) tegen. Conversion heeft geholpen om deze inconsistentie op termijn te reduceren door het ontwerp van de oudere instrumenten op onderdelen aan te passen.

Dit verschil in dynamiek tussen de flexibele doelen en het rigide instrumentarium had een negatieve invloed op de congruentie van het beleidsontwerp. Deze invloed werd versterkt doordat doelen en instrumenten grotendeels los van elkaar werden ontwikkeld aan de hand van een patroon waarin beleidsdoelen eerst werden geformuleerd en vervolgens het instrumentarium hierop werd aangepast. Hierdoor leidde de invoering van nieuw beleid tot incongruentie van het beleidsontwerp. Deze incongruentie werd vervolgens door de aanpassingen aan het instrumentarium incrementeel hersteld.

Aan de hand van deze bevindingen geeft de studie (hoofdstuk 4) inzicht in de wijze waarop de dynamiek van een beleidsontwerp van invloed is op de afstemming tussen doelen en middelen. In dit hoofdstuk wordt aangetoond dat dynamiek inherent is aan een beleidsontwerp, dat doelen en instrumenten zich verschillend ontwikkelen en dat, mede hierdoor, elke vorm van afstemming/*fit* in een beleidsontwerp slechts tijdelijk van aard is.

Hieruit kunnen een aantal praktische implicaties worden geformuleerd voor beleidsmakers waarmee de afstemming tussen doelen en middelen in de tijd kan worden geborgd. Ten eerste is het belangrijk dat de processen waarin doelen worden geformuleerd en instrumenten worden ontworpen samen worden gebracht. Daarnaast vraagt het borgen van de afstemming om blijvende aandacht. Continue monitoring en evaluatie van de resultaten van een ontwerp is fundamenteel voor het in stand houden van de afstemming binnen een beleidsontwerp. Indien de beoogde resultaten niet worden behaald, zou dit aanleiding moeten zijn om het beleidsontwerp te herzien. Verder laat de analyse in hoofdstuk 4 zien dat de rigiditeit van bestaande instrumenten het aanpassen van een softwarematige *patch* – (bijvoorbeeld een combinatie van *layering* en *coversion*) een strategie zijn om de *fit* te herstellen.

Hoofdstuk 5. De invloed van context op de effectiviteit van beleidsinstrumenten Een beleidsontwerp opereert niet in een vacuüm. In hoofdstuk 5 wordt, door middel van een institutionele analyse van het Nederlandse planning, programmering, en budgetteringsproces, aangetoond hoe de werking van beleidsinstrumenten wordt beïnvloed door de context waarin ze worden toegepast. Door toepassing van het *Institutional Analysis and Development Framework* van Elinor Ostrom wordt aangetoond hoe de effectiviteit van beleidsinstrumenten kan worden tegengewerkt door contextuele invloeden. De institutionele analyse laat zien dat een veelzijdigheid aan institutionele condities een rol spelen in het belemmeren van de integratie van ruimtelijke ordening en infrastructuurplanning. Beleidsprocessen en uitkomsten worden namelijk niet alleen gevormd door het instrumentarium. Verschillende lagen van (formele/informele) instituties beïnvloeden hoe beleidsprocessen zich ontvouwen door het gedrag van (individuele) actoren te veranderen. Institutionele congruentie wordt in hoofdstuk 5 gebruikt om situaties te duiden waarin verschillende instituties elkaar belemmeren doordat ze conflicterend gedrag stimuleren. Het onderzoek in hoofdstuk 5 toont aan dat de integratie tussen ruimtelijke ordening en infrastructuurplanning in de fasen van beleidsontwikkeling, -adoptie, -implementatie en -evaluatie wordt beïnvloed door een groot aantal formele en informele instituties. Er zijn meerdere instituties geïdentificeerd die de integratie tussen ruimtelijk ordening en infrastructuurplanning tegenwerken. Deze institutionele incongruenties komen enerzijds voort uit inconsistenties tussen de verschillende instrumenten (zie hoofdstuk 4). Anderzijds zijn er meerdere gevallen waarin het ontwerp van een instrument ter bevordering van integrale ruimtelijke en infrastructurele planning wordt belemmerd door externe instituties die aansturen op sectoraal en infrastructuurgerichte besluitvorming. Deze institutionele incongruenties bestaan zowel binnen als tussen de fasen van het beleidsproces.

De geïdentificeerde institutionele incongruenties kunnen worden toegewezen aan twee oorzaken. Enerzijds zijn er de 'temporele incongruenties'; dit zijn instituties die binnen hetzelfde beleidssubsysteem zijn ontwikkeld maar vanuit een tegenstrijdige ideologie of tijdgeest. Anderzijds zijn er de 'contextuele institutionele incongruenties'; dit zijn instituties die elkaar tegenwerken omdat ze zijn ontwikkeld vanuit de rationaliteit van verschillende subsystemen of beleidsdisciplines. De verschillende incongruenties helpen om te verklaren waarom het logisch is dat de integratie van ruimtelijke ordening en infrastructuurplanning moeizaam verloopt.

#### Hoofdstuk 6. Conclusie: Een beleidsontwerp ter integratie van ruimtelijke en infrastructurele planning

In hoofdstuk 6 wordt antwoord gegeven op de hoofdvraag 'hoe kunnen de instrumenten van een beleidsontwerp ter integratie van ruimtelijke en infrastructurele planning de doelen dusdanig ondersteunen dat het ontwerp blijvend effectief is?'. Voor een effectief beleidsontwerp zijn drie aspecten van belang: (i) een mix van wederzijds ondersteunende instrumenten die is afgestemd op integrale ruimtelijke en infrastructurele beleidsdoelen, (ii) er wordt dusdanig omgegaan met de dynamiek binnen beleidsontwerp dat de afstemming van doelen en instrumenten wordt behouden, en (iii) het instrumentarium is geschikt voor de institutionele context waarbinnen het wordt toegepast.

Met betrekking tot het eerste aspect wordt geconcludeerd dat het verbeteren van de integratie tussen ruimtelijke ordening en infrastructuurplanning vraagt om een mix van complementaire beleidsinstrumenten die door het beleidsproces heen wordt ingezet. Procedurele instrumenten spelen een prominente rol in het sturen van integratieprocessen, terwijl inhoudelijke instrumenten nodig zijn om de effectiviteit van het beleidsontwerp te waarborgen. Er is er niet één volmaakt beleidsontwerp waarmee integrale ruimtelijke en infrastructurele planning kan worden gerealiseerd; het juiste instrumentarium hangt af van de contextuele setting waarin het wordt toegepast. De mate van afstemming tussen doelen en instrumenten is van belang bij het realiseren van beoogde integratie; een beleidsontwerp met coherente doelen, een consistent instrumentarium en congruentie tussen doelen en instrumenten helpt om beoogde integratie te bereiken. Echter, een incongruent beleidsontwerp, waarin het instrumentarium integraler is dan de doelen, kan ook effectief zijn. Met betrekking tot de ontwikkeling van een beleidsontwerp in de tijd kan worden geconcludeerd dat dynamiek essentieel is voor een beleidsontwerp om zich aan te passen aan veranderende maatschappelijke behoeften en omstandigheden. Omgaan met deze dynamiek is geen sinecure: het is van belang dat een beleidsontwerp zich niet tot een suboptimale samenstelling van doelen en instrumenten ontwikkelt. Dit vraag voortdurende aandacht van beleidsmakers omdat elke vorm van *afstemming* slechts tijdelijk van aard is. Ook de context oefent invloed uit de effectiviteit van een beleidsontwerp. Incongruenties tussen context en instrumentarium kunnen de werking van procedurele instrumenten ter integratie van ruimtelijke en infrastructurele planning verhinderen. Het is daarom van belang dat het instrumentarium is afgestemd op de context waarin het wordt toegepast.

Wanneer vanuit een beleidsontwerp-perspectief wordt gekeken naar de prakrijk van integrale ruimtelijke en infrastructuurplanning is het niet verwonderlijk dat deze integratie stroef verloopt. Binnen elk facet van beleidsontwerp dat hierboven is besproken is er ruimte voor optimalisatie. In hoofdstuk 6 worden zes aanbevelingen gedaan voor beleidsmakers hoe ze met behulp van beleidsontwerp de integratie tussen ruimtelijke ordening en infrastructuurplanning kunnen verbeteren.

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Naast deze expliciete inhoudelijke relaties zijn er veel verbanden die onscherp, indirect en moeilijk te traceren zijn. Toch zijn deze minstens zo belangrijk en bepalend geweest. Hierbij denk ik in de eerste plaats aan mijn ouders. Mam, je helpt me dingen in perspectief te plaatsen door te laten zien dat er in essentie weinig nodig is om gelukkig te zijn, en pap, ik weet hoe ontzettend trots je op me was; een krachtigere drijfveer kan ik me niet bedenken. Ook denk ik hierbij aan mijn goede vrienden uit Huissen en van de Fefa. Tot slot, dank aan alle fijne collega's van de Faculteit Ruimtelijke Wetenschappen. Ik heb ervaren dat tijdens een promotieonderzoek de grenzen tussen werk en privé vervagen. Misschien heeft deze verstoorde balans iets kansloos, maar dat begrip heeft voor mij een hele nieuwe betekenis gekregen. In dit grijze gebied tussen werk en privé ontstaan namelijk hechte vriendschappen.

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# POLICY DESIGN AND INFRASTRUCTURE PLANNING

Governments have widely adopted policy goals that span the domains of land use and transport, such as promoting accessibility and reducing the environmental impact of transport. Despite these crosscutting ambitions, government action often remains fragmented as it has persistently proven to be a struggle to overcome the segmented organization of land use and transport planning. Responding to a growing need for an effective approach to land use and transport integration (LUTI), this research adopts a policy design perspective that revolves around the conscious effort of matching policy instruments to policy goals in order to attain desired outcomes. Using four interrelated in-depth cases studies, this study combines an institutional analysis, a longitudinal analysis, a comparative case study and a qualitative comparative analysis of Dutch national and regional transport planning with the aim of determining how policy design thinking can help to bring together the planning of land use and transport infrastructure. Overall, the study finds that a policy design approach to LUTI is more than simply matching goals and instruments. Instead, it involves tailoring a mix of mutually supportive procedural and substantive instruments to fit specific integrated land use and transport goals, while at the same time preventing policy designs to develop into sub-optimal configurations by managing ongoing design dynamics, and making policy instruments responsive to the contextual setting in which they are employed. The four case studies presented in this thesis provide insight into why LUTI remains a struggle and how policy design can be applied to promote such integration.

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