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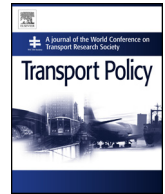
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Understanding the ongoing struggle for land use and transport integration: Institutional incongruence in the Dutch national planning process

Marijn Thomas van Geet^{a,*}, Sander Lenferink^a, Jos Arts^{a,b}, Wim Leendertse^{a,b}

^a University of Groningen, Faculty of Spatial Sciences, Landleven 1, Groningen, 9700, AV, the Netherlands

^b Ministry of Infrastructure & the Environment, Rijkswaterstaat, Griffioenlaan 2, Utrecht, 3526, LA, the Netherlands

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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 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 institutional incongruence is 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.

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 (Wegener and Fürst, 1999; UN-Habitat, 2013). As a result, there are many potential economic, social and environmental benefits of LUTI that are now being missed (Arts et al., 2016b; Heeres et al., 2012). Several scholars have emphasised the need to adopt an institutional perspective to understand the difficulties in achieving LUTI (e.g. Curtis and James, 2004; Hall, 2010; Marsden and 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 and 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 (e.g. De Jong, 1999; Gühnemann et al., 2006; Mackie and Worsley, 2013; OECD, 2011). The Dutch PPB system is called the Long-range Programme on Infrastructure, Space and Transport (*Meerjarenprogramma*

* Corresponding author.

E-mail address: m.t.van.geet@rug.nl (M.T. van Geet).

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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 (Ministry of Transport, Public Works and Water Management, 1977), it has still not been fully implemented (Duffhues and 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 transport integration in various national contexts (e.g. Curtis and 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.

2. Analytical framework

2.1. Conceptualising land use and transport integration

Characterised 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 emphasised the reciprocity between transport systems and land use systems as stressed by for example Kelly (1994) and Wegener and Fürst (1999). As a result, internationally, transportation planning policy is increasingly promoting a more integrated approach (Button and Hensher, 2005; UN-Habitat, 2013).

The concept of LUTI captures this contemporary perspective on transport planning. In line with several other scholars, LUTI is conceptualised in this study by differentiating between the strategic and operational level (e.g. Cowell and Martin, 2003; Gudmundsson et al., 2016; Heeres et al., 2012; May et al., 2006). Strategic LUTI is defined as the integration of land use policies and transport policies to ‘contribute to an optimum spatial organisation 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 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 conceptualised 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 (inter-sectoral, intra-sectoral, and cross-territorial) and vertical (between different layers of government) dimensions of integration (e.g. Geerlings and Stead, 2003; Greiving and Kemper, 1999; Hatzopoulou and Miller, 2008). This paper argues, in line with e.g. Greiving and Kemper (1999), that LUTI, whether at the strategic or the operational level, comprises both the horizontal and the vertical dimensions simultaneously.

2.2. Institutional perspective and analysis

Numerous authors have highlighted how institutions affect land use and transport integration (e.g. Banister and Marshall, 2000; Curtis and Low, 2016; Hall, 2010; Johansson et al., 2018; Marsden and Rye, 2010; Marsden and May, 2006; Smith, 2014; Stead and 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 behaviour in processes of designing, negotiating and funding policies (March and 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 and 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 behaviour (Helmke and 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 and 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 institutionalisation 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 and 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 behaviour.

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.

3. Research design

3.1. Institutional analysis

For this study, institutional analysis was used as research methodology. Institutional analysis aims to expose the underlying rules which structure human behaviour in decision-making. There are multiple approaches to performing an institutional analysis (Hollingsworth, 2000), and we have chosen to adopt Ostrom (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 and Basurto (2011), are 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 authorising 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. 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.

3.2. 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 Long-range 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 and 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 and 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 organised 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 analysed 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 the appendix. In addition to the coded results of the institutional analysis for each phase, the appendix 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 analysed.

4. The institutional setting of Dutch PPB system MIRT

4.1. 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

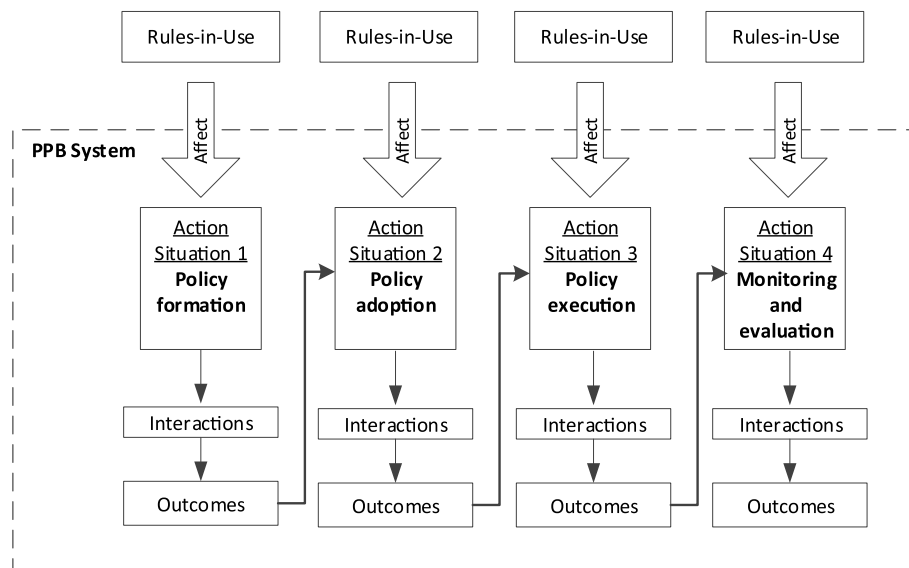


Fig. 1. The institutional analysis framework adopted for this study, based on Ostrom (2005, 2011), regards the PPB system as four consecutive, interrelated action situations.

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 operationalise 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’ and ‘collaboration’ (Ministry of I & E, 2016). Fig. 2 visualises 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’.

4.2. The MIRT procedure

The administrative procedure set out by the Ministry of I&E (2016) provides the main outline of the PPB process, and thus defines the studied action situations (see Fig. 1). The formation phase is institutionalised 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 organised for each of the five MIRT regions. In Ministry of I&E (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 prioritise 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-infrastructure 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 realisation 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 Realisation, 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, realised scope and realisation 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

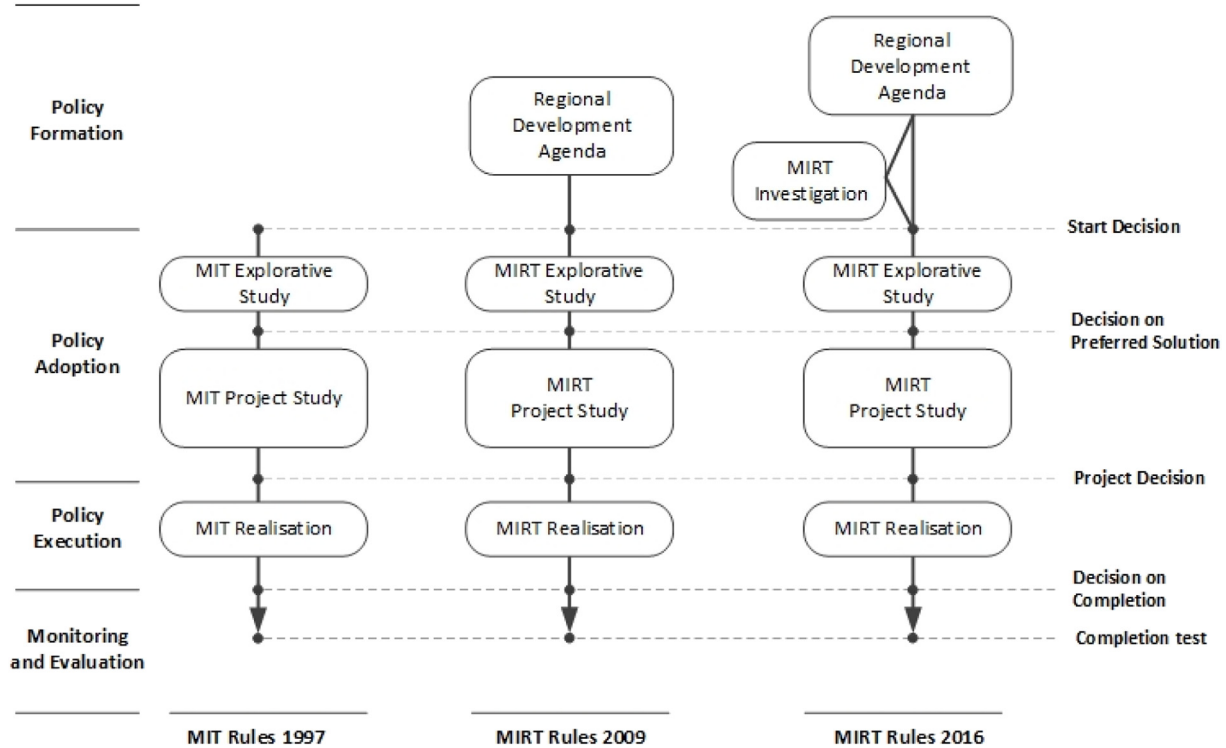


Fig. 2. The development of the MIRT process 1997–2016. Based on Ministry of Transport, Public Works and Water Management (1997, 2009) and Ministry of I&E (2016).

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.

4.3. 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.

Analysing 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 recognised 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).

4.3.1. Strategic level

Strategic LUTI is emphatically associated with the front-end stage of the PPB process: the policy formation and policy adoption (see Fig. 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 politicised 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 (FS2;FS6) rules, which make it attractive to focus on their sectoral portfolios. They use the MIRT process for lobbying, so as to mobilise 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 behaviour, by stating that ‘members of parliament demand projects, and city councillors 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 (FS4;AS8) and choice rules (FC3;FC4).

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 prioritise MIRT investments using lost vehicle hours as indicator (F13). 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 (AS2) 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 monetised. Respondent 18 states that ‘it remains a struggle to include qualitative social values such as liveability, 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 (MI1;MI2) and scope (MS1) 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 (MP1), 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 receive limited follow-up; moreover, this respondent states that ‘monitoring and evaluation is not ensured in the organisation’. Political ambitions to institutionalise the monitoring of policy defined in Regional Development Agendas (MI2) 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’ (Ministry of I&E, 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 (FC2;FA2;AC2). 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 realise policy goals’. Additionally, Respondent 10 states that ‘in all kinds of ways regionalisation 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).

4.3.2. Operational level

The operational level consists of the policy adoption, policy execution and policy monitoring and evaluation phases of the MIRT procedure (see Fig. 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 operationalisation and execution of the chosen alternative. Our analysis shows that due to contractually bound choice rules (EC2), 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 (AA5) and scope rule (AS5) aim at facilitating this form of integration by requiring an implementation strategy and stimulating the adoption of a programme management approach. Our data reveals multiple institutional incongruences which can be linked to three main issues.

Rijkswaterstaat occupies a central position (AP6;EP2) 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 (AY5;EY3) and scope (AS10;ES2;ES3) rules create incentives to focus primarily on the sectoral responsibilities (AP6;EP2) 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 realised [...] 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' (Respondent 31).

Multiple respondents referred to the effect of scope rules^(ES2), 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 simply 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^(AC5). This makes the development of integrated land use and transport projects legally more complex than sectoral projects.

5. Discussion

5.1. Institutional incongruence and LUTI implementation

Our analysis reveals that an extensive set of rules-in-use affect land-use 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 4.1, 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. \(2016\)](#) 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 recognised 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 politicised, as national public officials carry formal decision-making 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 decentralised 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 emphasised ([Curtis, 2008](#); [Hatzopoulou and Miller, 2008](#); [Marshall and 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.

5.2. 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 institutionalised 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 politicised 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 institutionalised. 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.

5.3. 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 institutionalised.

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 centralised, sectoral and economic focus of these latter institutions have shown a poor fit to LUTI principles focusing on multi-level and cross-sectoral integration at a regional level.

The examples in which interrelated institutions push for conflicting behaviour 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 politicised 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 institutionalised, 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 emphasised 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 generalising 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 generalisations 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 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.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.tranpol.2018.11.001>.

Appendix

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Results formation phase

Table A1

Rules-in-use affecting LUTI in the formation phase. Formal institutions are indicated by regular font, informal institutions in *italic font*

Formation phase	
Position Rules – establish positions that may be taken by actors	Sources
<i>MIRT rules</i>	
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
<i>Other rules</i>	
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; FI; FM; FN
FP5 The Minister is accountable to Dutch Parliament and civil servants are accountable to ministers	IR
Boundary Rules – determine who may enter or exit a position and how	Sources
<i>MIRT rules</i>	
FB1 Geographic boundaries of regional development agenda's limit who is allowed to enter the MIRT formation	D10
<i>Other rules</i>	
FB2 <i>Relation between the minister and civil servants responsible for national policymaking is formal and hierarchical.</i>	WB; WI;
FB3 <i>The Regional Development Agendas and Administrative Consultations receive limited commitment from other ministries</i>	IK; WI; WA; WB
FB4 <i>Ministries and department commit to their own responsibilities, instruments, procedures and methods for policy formation and implementation</i>	IE; IK; IL; FN; WI; WK;
Choice Rules – specify what a participant occupying a position must, must not, or may do at a particular point in a decision process	Sources
<i>MIRT rules</i>	
FC1 The Regional Development Agenda must formally be approved by the Dutch House of Representatives	D9; D10

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Table A1 (*continued*)

Formation phase		
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
<i>Other rules</i>		
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
Aggregation Rules – determine ‘who is to decide’ which action or set of activities is to be undertaken		Sources
<i>MIRT rules</i>		
FA1	Decision making should occur in close consultation with regional partners	D10
<i>Other rules</i>		
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
Information Rules – affect the level of information available to actors by authorising channels of information flow		Sources
<i>MIRT rules</i>		
FI1	A start decision requires an in-depth analysis on the policy issue, possible solutions, involved actors, planning, decision-making process and finance.	D10
FI2	A MIRT Investigation may also be started for policy issues other than mobility issues.	D10
<i>Other rules</i>		
FI3	The National Mobility and Accessibility Analysis identifies potential MIRT investments by detecting future bottleneck on national infrastructure using vehicle lost hours as indicator.	D9; D16; ID; IR; FA;
Payoff Rules – affect the benefits and costs assigned to actors in light of the outcomes		Sources
<i>MIRT rules</i>		
FY1	The start decision and decision to start an Explorative Study commits evolved actors to a policy issue and releases funds for further development.	D10
<i>Other rules</i>		
FY2	<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</i>	IR; IQ; IU; IA; FD; FE; FF; FI; FM; FN; FJ; WB; WI; WK;
FY3	The sectoral scope of the Infrastructure Fund creates reliability, financial controllability and stability multi-year programming.	IR
FY4	Government officials are held accountable for their sectoral oriented portfolios	IM; IR; IT; FE; FN; WO
FY5	<i>MIRT rules should be interpreted as malleable administrative guidelines for guiding decision making on infrastructure investments.</i>	IK
Scope Rules – delimit the potential outcomes of the action situation		Sources
<i>MIRT rules</i>		
FS1	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	D10
FS2	MIRT is primarily an infrastructure oriented financial investment vehicle.	D10
FS3	Front end MIRT stage should be used for strategic deliberation between national and regional parties on shared policy issues.	D10
<i>Other rules</i>		
FS4	<i>Personal and political agendas may shape deliberation and decision making processes</i>	IR; IN; LJ; 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; LJ; 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

Results adoption phase

Table A2

Rules-in-use affecting LUTI in the adoption phase. Formal institutions are indicated by regular font, informal institutions in *italic font*

Adoption Phase		
Position Rules – establish positions that may be taken by actors		Sources
<i>MIRT rules</i>		
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

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Table A2 (continued)

Adoption Phase		
<u>Other rules</u>		
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 the Environment, Rijkswaterstaat is responsible for national infrastructure development and maintenance. Its primary concern is Dutch motorway network performance in terms of traffic flow.	D18; IH; IF; IG; FI; FJ
Boundary Rules – determine who may enter or exit a position and how		Sources
<u>MIRT rules</u>		
–		
<u>Other rules</u>		
AB1	Inequality between national and regional public authorities in budgets available for infrastructure and land use development.	IO; IF; FF; FJ; FN;
Choice Rules – specify what a participant occupying a position must, must not, or may do at a particular point in a decision process		Sources
<u>MIRT rules</u>		
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
<u>Other rules</u>		
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
Aggregation Rules – determine ‘who is to decide’ which action or set of activities is to be undertaken		Sources
<u>MIRT rules</u>		
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
<u>Other rules</u>		
AA6	National government may take over decision authority from province and municipality in situations of national importance.	D15; IB; FA
Information Rules – affect the level of information available to actors by authorising channels of information flow		Sources
<u>MIRT rules</u>		
AI1	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
<u>Other rules</u>		
AI2	Social cost benefit analysis appraises alternatives from an economic perspective using journey time loss as key criterion.	D6; IC; IS
AI3	<i>SIA, EIA and SCBA are important input for the parliamentary MIRT note consultations and political-administrative deliberation process.</i>	IR; IK; IS
AI4	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
Payoff Rules – affect the benefits and costs assigned to actors in light of outcomes		Sources
<u>MIRT rules</u>		
AY1	With a positive decision on preferred solution, the initiative is officially programmed in MIRT.	D10
<u>Other rules</u>		
AY2	Government officials are held accountable for their sector-oriented portfolios.	IK
AY3	In current administrative culture a decision to start an explorative study will result in an infrastructure focused project.	IR
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	<i>Infrastructural solutions are politically more attractive than technical or land use measures.</i>	IJ
Scope Rules – delimit the potential outcomes of the action situation		Sources
<u>MIRT rules</u>		
AS1	Started document defines the scope of the adoption phase.	D10

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Table A2 (*continued*)

Adoption Phase		
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-infrastructure 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 include 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; ID; FD; FE
AS9	Shares of the Infrastructure Fund must be committed to road, water or rail infrastructure in budget articles.	D17; ID
AS10	<i>Rijkswaterstaat should not take extralegal project integration measures</i>	IF

Results execution phase

Table A3

Rules-in-use affecting LUTI in the execution phase. Formal institutions are indicated by regular font, informal institutions in *italic font*

Execution phase		
Position Rules – establish positions that may be taken by actors		Sources
<u>MIRT rules</u>		
EP1	A decision on delivery is taken by the associated Directorate-General.	D10
<u>Other rules</u>		
EP2	As the executive agency of the Ministry of Infrastructure and the Environment, Rijkswaterstaat is responsible for national infrastructure development and maintenance. Its primary concern is the Dutch motorway network performance in terms of traffic flow.	D18; IH; IF; IG; FI; FJ
EP3	There are different executive agencies for national road infrastructure and nation rail infrastructure development and maintenance.	D18; D19; IH
Boundary Rules – determine who may enter or exit a position and how		Sources
<u>MIRT rules</u>		
EB1	Actors involved are contractually bound by assigned responsibilities.	D10; D13
<u>Other rules</u>		
–		
Choice Rules – specify what a participant occupying a position must, must not, or may do at a particular point in a decision process		Sources
<u>MIRT rules</u>		
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
<u>Other rules</u>		
EC2	Contractual arrangements strongly delineate and contain the decision-making scope on taking measures enhancing integration.	IB; IK; FI
Aggregation Rules – determine ‘who is to decide’ which action or set of activities is to be undertaken		Sources
<u>MIRT rules</u>		
EA1	After the decision on completion has been made, the infrastructure realised must be considered part the national government's infrastructure asset.	D10
<u>Other rules</u>		
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
<u>MIRT rules</u>		
EI1	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 accountability for project time and budget, realised scope and realisation process.	D10
EI2	A decision on delivery must include an End Report that provides accountability for the execution of a project	D10
EI3	The Dutch House of Representatives and the provincial and municipal governing bodies involved should be notified when a decision on delivery is taken	D10
<u>Other rules</u>		
–		
Payoff Rules – affect the benefits and costs assigned to actors in light of the outcomes		Sources
<u>MIRT rules</u>		
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
<u>Other rules</u>		
EY2	<i>Rijkswaterstaat project managers are being held accountable for keeping within project time, money and scope.</i>	IF; FC; FEFF; FI; FJ
EY3		IF

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Table A3 (*continued*)

Execution phase	
<i>Performance of executive agency is assessed on their primary objective, i.e. the design, construction, management and maintenance of national road infrastructure</i>	
Scope Rules – delimit the potential outcomes of the action situation	Sources
<u>MIRT rules</u>	
ES1 The MIRT process is designed like a funnel. The scope is defined incrementally, automatically limiting flexibility and room for negotiation.	D10
<u>Other rules</u>	
ES2 Rijkswaterstaat has a sectoral mandate under the Dutch Ministry of Infrastructure and the Environment.	IH; IF; FI
ES3 <i>Rijkswaterstaat should not take extralegal project integration measures</i>	IF

Results monitoring and evaluation phase

Table A4

Rules-in-use affecting LUTI in the monitoring and evaluation phase. Formal institutions are indicated by regular font, informal institutions in *italic font*

Monitoring and Evaluation Phase	
Position Rules – establish positions that may be taken by actors	Sources
<u>MIRT rules</u>	
–	
<u>Other rules</u>	
MP1 The Netherlands Environmental Assessment Agency and the Netherlands Institute for Transport Policy Analysis must produce a two-year monitor on SVIR.	D9; IN
Choice Rules – specify what a participant occupying a position must, must not, or may do at a particular point in a decision process	Sources
<u>MIRT rules</u>	
MC1 Completion test must be carried out a year after the project was delivered for projects which fall within the Route Act	D10
<u>Other rules</u>	
–	
Information Rules – affect the level of information available to actors by authorising channels of information flow	Sources
<u>MIRT rules</u>	
MI1 A completion test assesses whether the project meets the environmental standards as set out in the Route Decision.	
<u>Other rules</u>	
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 <i>The MIRT Regional Development Agenda should be structurally monitored</i>	FD
Payoff Rules – affect the benefits and costs assigned to actors in light of the outcomes	Sources
<u>MIRT rules</u>	
–	
<u>Other rules</u>	
MY1 <i>Generally there is no follow up on outcomes of MIRT monitoring and evaluation studies. New projects are given priority.</i>	IB
Scope Rules – delimit the potential outcomes of the action situation	Sources
<u>MIRT rules</u>	
MS1 MIRT monitoring and evaluation should assess whether legal environmental thresholds are still met after project realisation.	D10
<u>Other rules</u>	
–	

List of respondents

Table A5

Interviews, focus groups and workshops

Code	Reference	Works at	Date
Expert interviews			
IA	Respondent 1	Ministry of Infrastructure and the Environment – DGB	11 Oct 2016
IB	Respondent 2	Rijkswaterstaat – WVL	11 Oct 2016
IC	Respondent 3	Ministry of Infrastructure and the Environment – DGRW	11 Oct 2016
ID	Respondent 4	Ministry of Infrastructure and the Environment – DGRW	17 Oct 2016

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Table A5 (continued)

Code	Reference	Works at	Date
IE	Respondent 5	Ministry of Infrastructure and the Environment – DGMI	18 Oct 2016
IF	Respondent 6	Rijkswaterstaat – BS	19 Oct 2016
IG	Respondent 7	Rijkswaterstaat – BS	19 Oct 2016
IH	Respondent 8	Rijkswaterstaat – WVL	24 Oct 2016
IJ	Respondent 9	Ministry of Infrastructure and the Environment – DGB	25 Oct 2016
IK	Respondent 10	Council for the Environment and Infrastructure	25 Oct 2016
IL	Respondent 11	Council for the Environment and Infrastructure	25 Oct 2016
IM	Respondent 12	Netherlands Environmental Assessment Agency	25 Oct 2016
IN	Respondent 13	Ministry of Infrastructure and the Environment – DGRW	26 Oct 2016
IO	Respondent 14	Ministry of Infrastructure and the Environment – DGRW	26 Oct 2016
IP	Respondent 15	Ministry of Infrastructure and the Environment – DGRW	26 Oct 2016
IQ	Respondent 16	Ministry of Infrastructure and the Environment – HBJZ	26 Oct 2016
IR	Respondent 17	Ministry of Infrastructure and the Environment – DGB	1 Nov 2016
IS	Respondent 18	Ministry of Infrastructure and the Environment – DGRW	2 Nov 2016
IT	Respondent 19	Ministry of Infrastructure and the Environment – DGRW	2 Nov 2016
IU	Respondent 20	Netherlands Environmental Assessment Agency	8 Nov 2016
IV	Respondent 21	Ministry of Infrastructure and the Environment – DGMI	17 Nov 2016
Focus group 1			
FA	Respondent 22	Rijkswaterstaat – WVL	18 Jan 2017
FB	Respondent 23	Rijkswaterstaat – BS	18 Jan 2017
FC	Respondent 24	Rijkswaterstaat – BS	18 Jan 2017
FD	Respondent 25	Ministry of Infrastructure and the Environment – DGRW	18 Jan 2017
FE	Respondent 26	Ministry of Infrastructure and the Environment – DGB	18 Jan 2017
FF	Respondent 27	Rijkswaterstaat – GPO	18 Jan 2017
FG	Respondent 28	Ministry of Infrastructure and the Environment – DGRW	18 Jan 2017
Focus group 2			
FH	Respondent 29	Rijkswaterstaat – GPO	25 Jan 2017
FI	Respondent 30	Rijkswaterstaat – MN	25 Jan 2017
FJ	Respondent 31	Rijkswaterstaat – GPO	25 Jan 2017
FK	Respondent 32	Rijkswaterstaat – WNZ	25 Jan 2017
FL	Respondent 33	Ministry of Infrastructure and the Environment – DGRW	25 Jan 2017
FM	Respondent 34	Ministry of Infrastructure and the Environment – DGRW	25 Jan 2017
FN	Respondent 35	Ministry of Infrastructure and the Environment – DGRW	25 Jan 2017
Workshop 1			
WA	Respondent 36	Ministry of Infrastructure and the Environment – DGRW	27 Feb 2017
WB	Respondent 37	Ministry of Infrastructure and the Environment – DGB	27 Feb 2017
WC	Respondent 38	Ministry of Infrastructure and the Environment – DGRW	27 Feb 2017
WD	Respondent 39	Rijkswaterstaat – WVL	27 Feb 2017
WE	Respondent 40	Ministry of Infrastructure and the Environment – DGRW	27 Feb 2017
WF	Respondent 41	Rijkswaterstaat – BS	27 Feb 2017
WG	Respondent 42	Rijkswaterstaat – WVL	27 Feb 2017
WH	Respondent 43	Ministry of Infrastructure and the Environment – DGRW	27 Feb 2017
Workshop 2			
WI	Respondent 44	Ministry of Infrastructure and the Environment – DGB	14 Sep 2017
WJ	Respondent 45	Ministry of Infrastructure and the Environment – DGB	14 Sep 2017
WK	Respondent 46	Ministry of Infrastructure and the Environment – DGB	14 Sep 2017
WL	Respondent 47	Ministry of Infrastructure and the Environment – DGRW	14 Sep 2017
WM	Respondent 48	Ministry of Infrastructure and the Environment – DGRW	14 Sep 2017
WN	Respondent 49	Ministry of Infrastructure and the Environment – DGRW	14 Sep 2017

*List of analysed documents*Table A6
Documents

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 Meerjarenprogramma Infrastructuur, Ruimte en Transport. Den Haag

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Table A6 (continued)

Code	Document name
D8	Ministry of Infrastructure and the Environment (2011) Spelregels van het Meerjarenprogramma Infrastructuur, Ruimte en Transport (MIRT). Den Haag
D9	Ministry of Infrastructure and the Environment (2012) Structuurvisie Infrastructuur en Ruimte: Nederland concurrerend, bereikbaar, leefbaar en veilig. Den Haag
D10	Ministry of Infrastructure and the 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 the Environment (2017) Nationale Markt- en Capaciteitanalyse 2017 (NMCA) Hoofdrapport. Den Haag
D17	Ministry of Infrastructure and the 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)

Interview guide, focus group guide and workshop set-up

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 the 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 introductionintroduction
- 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 transport integration
 - a MIRT should be the instrument to achieve land use 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 reflected on proposals for suggestions on institutional adaptations to stimulate land use 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.

- 1 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.

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