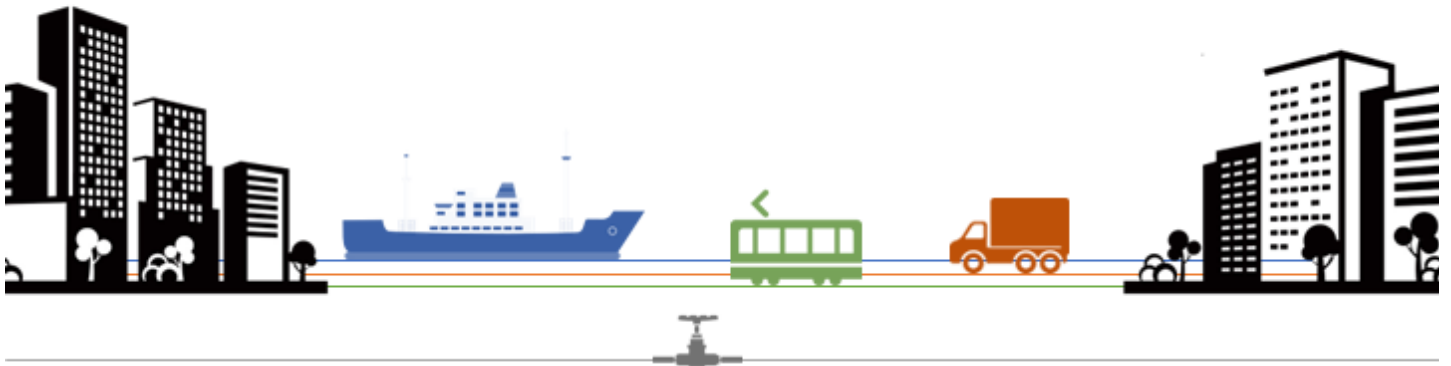# Dealing with infrastructure multiplicity

Exploring institutional arrangements for corridor planning

Master's Thesis Society, Sustainability & Planning

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ABSTRACT

Infrastructure such as roads and waterways already exists for millennia. While concepts such as connectivity and accessibility gained more prominence, infrastructure became more and more connected, developing into transport infrastructure networks, with the Trans-European Transport Network (TEN-T) as an important example. The TEN-T network can be classified as a bundle of corridors as corridors are defined as "*narrow bundles of infrastructure which are connecting two or more urban regions dispersed over a certain physical space*". However, planning of infrastructure, especially on the scale of transnational corridor development, has a high level of complexity, due to the multi-dimensional nature of infrastructure planning. It is of a multi-scalar nature, as it has the possibility to span multiple geographical boundaries. Aside from its multi-scalar nature, transport infrastructure also contains different governmental levels (multi-level) and policy sectors (multi-sectoral). Next to that many actors are involved in the infrastructure planning process (multi-actor). Counteracting the lack of integrated treatment of corridor planning, several challenges were posed that are central to overcoming this issue:

I.   Aiming for a multi-level governance (MLG) approach to prevent institutional fragmentation, and;
II.   Aiming for the enhancement of the integration of land use and transport infrastructure developments, to increase the connectivity and accessibility of the nodes and with that the corridor, and;
III. Employing a programmatic approach towards corridor planning, to ensure coordination between different projects, localities, and sectors within the corridor.

Trying to find institutional arrangements that are needed to enhance programmatic corridor planning that connects (cross)national transport needs and local land use needs, addressing the multiplicity of infrastructure, three practices of corridor planning were researched. By conducting a literature review, a policy document analysis, and semi-structured interviews, the cases of Rail Baltica (Estonia), Nya Stambanor (Sweden), and Topcorridors (the Netherlands) were investigated, using the Institutional Analysis and Development (IAD) framework.

This study has shown that at first it is important to take a programmatic approach that includes all relevant governmental levels, while closely cooperating with, but not including, non-governmental actors, and EU-related actors. However, it must also be ensured that the opinions of and effects on non-included actors and nodes are actively investigated. Furthermore, while taking a programmatic approach, either the programme, or a certain party, must be responsible for actively enforcing Land Use-Transport Interaction (LUTI). Not only should sectoral land use and transport development practices be counteracted, but also sectoral financing should be prevented, to ensure that programmatic thinking flows down into all developments/projects. Lastly, in guiding decision-making, formal, tiered environmental assessments are essential, that can connect different scales. Based on the previous recommendations to future practices of corridor planning, these future practices can be enhanced so that (cross)national transport needs and local land use needs become connected, while making use of and overcoming the multiplicity of infrastructure planning.

Keywords: corridor planning; multiplicity; TEN-T; land use-transport interaction; multi-level governance; programmatic planning; environmental assessments; IAD framework.

CONTENTS

LIST OF ABBREVIATIONS

CEF	Connecting Europe Funds
EC	European Commission
EIA	Environmental Impact Assessment
EU	European Union
HSR	High Speed Rail
IAD	Institutional Analysis and Development
LUTI	Land Use-Transport Interaction
MIRT	Meerjarenprogramma Infrastructuur, Ruimte en Transport (EN: Multi-Year Programme for Infrastructure, Spatial Planning and Transport)
MLG	Multi-level Governance
NDSP	National Designated Spatial Plan
NGO	Non-Governmental Organization
NPTI	National Plan for Transport Infrastructure
NSP	National Spatial Plan
NUVit	Networking for Urban Vitality
SEA	Strategic Environmental Assessment
SQ	Secondary Research Question
TEN-T	Trans-European Transport Network

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1 INTRODUCTION

Infrastructure such as roads and waterways already exists for millennia, albeit in substantially smaller amount than the current infrastructure that also regards railways, pipelines, etc. Infrastructure always functioned as the underlying structure that is supporting the activities on top of it (Arts et al., 2021). Generally, the activities – e.g., housing, energy – that are supported are related to transport. With globalization becoming more influential and networks of countries and regions gaining more prominence, connectivity and accessibility became two terms with increasing importance in policies and practices regarding spatial development, and specifically transport infrastructure. Throughout the course of time infrastructure became more and more connected, developing into transport infrastructure networks, with the Trans-European Transport Network (TEN-T) as an important example. The TEN-T network (see European Commission, 2021) was set up in the late 90's of the previous century by the European Union (EU) with the aim to counteract congestion on European infrastructure and to improve the connectivity of the European transportation network (European Parliament & Council of the European Union, 1996).

This network should amongst others "*ensure the sustainable mobility of persons and goods within an area without internal frontiers under the best possible social and safety conditions, while helping to achieve the Community's objectives, particularly in regard to the environment and competition, and contribute to strengthening economic and social cohesion*" (European Parliament & Council of the European Union, 1996). In 2013, in their second follow-up of Decision No 1692/96/EC, the EU amplified their original statement about creating the TEN-T network, by emphasizing the need to improve the trans-European transport network (European Parliament & Council of the European Union, 2013). At this time, Europe faced a constantly increasing pressure on its infrastructure, affecting the connectivity within and between the EU Member States.

The TEN-T network that back then has been created as a theoretical policy concept by the EU can be classified as a bundle of corridors as, according to Witte (2014), corridors are defined as "*narrow bundles of infrastructure which are connecting two or more urban regions dispersed over a certain physical space*" (p. 20). However, planning of infrastructure, especially on the scale of transnational corridor development, has a high level of complexity (Arts et al., 2021; De Roo, 2010), which will be explained below.

1.1 MULTIPLICITY OF INFRASTRUCTURE PLANNING

The rising influence of connectivity as an objective of transport infrastructure and the emergence of intra-regional and intranational networks makes that transport infrastructure planning is of a multi-scalar nature (Witte, 2014), as it has the possibility to span multiple geographical boundaries. Aside from its multi-scalar nature, transport infrastructure also contains different governmental levels (multi-level) (Arts et al., 2021; De Bruijne, 2005) and policy sectors (multi-sectoral) (Arts et al., 2021; De Vries & Priemus, 2003). Next to that many actors – such as governmental agencies, transport administrations, and environmental agencies – are involved in the infrastructure planning process (multi-actor) (Allmendinger, 2017; Arts et al., 2021). The following paragraphs will elaborate on these four multi-dimensional issues – interchangeably called multiplicity – related to infrastructure planning.

Multi-scalar

Infrastructure networks are of a relatively large scale, consisting "*of nested subnetworks at various geographical scales*" (Arts et al., 2021, p. 360). However, dealing with the existence of infrastructure networks on different scales is difficult, as they become stuck between the global and the local scale (Albrechts & Coppens, 2003). It often occurs that corridor developments differ on different scales. As Witte (2014) mentioned, aims related to developments on an interregional scale – such as economic development and transport – need to be aligned with aims related to developments on the local scale (e.g., environmental issues). Next to this, in the perspective of corridor development, local land use developments need to be aligned with (trans)national transport developments (Faith-Ell et al., 2020).

So, what is experienced in current practices of infrastructure development, and especially corridor development, is that alignment between different scales is needed to overcome the current difficulties in combining these different scales. In this way, the benefits and costs, which are all too often unequally distributed across different scales (Bertolini & Spit, 1998), are better addressed, as currently benefits regarding connectivity are often experienced at a larger scale, while environmental impacts are largely felt at the local scale (Arts et al., 2021). Doing so will need a holistic perspective to corridor development (Witte, 2014), addressing the diversity of issues through more integration (Faith-Ell et al., 2020).

Multi-sectoral

As mentioned above, infrastructure development deals with aligning different issues on different scales. Thus, infrastructure development not only involves transport-related issues, but also relates to other issues, such as land use, and energy. In short, many policy sectors are involved, making infrastructure planning a complex endeavour (Arts et al., 2021). De Vries & Priemus (2003) also identified that in transnational corridor developments, different policy sectors need to be aligned in order to solve problems such as communication problems. These communication problems relate to differences in terming 'corridor'. Different meanings are given to the same term, which creates issues of alignment. It is thus of importance to align the terminology used between all policy sectors. Integrating different sectors can guide infrastructure development towards more alignment between all sectors (Faith-Ell et al., 2020; Witte, 2014), ensuring the connection of spatial functions within corridor developments, while overcoming the translation issues between the different sectors.

Multi-actor

Since many actors are involved – such as governments, Non-Governmental Organizations (NGOs) and private organizations (De Vries & Priemus, 2003) – in the planning process of infrastructure developments, who all stand in relation to each other, infrastructure planning becomes complex (Allmendinger, 2017; Arts et al., 2021). The presence of many actors causes that there are multiple different views on how the planning process will impact the future. The level of influence of certain actors can therefore influence how a planning process will change the future of an infrastructure system/development (Allmendinger, 2017). According to Allmendinger (2017), this interaction between other actors such as environmental agencies and 'the planner', is an "*iterative and interactive process*" (p. 187) that will facilitate the creation of different possible futures. Researching such complex infrastructure planning processes, it is important to understand the multiple relationships that a certain planning process has with other actors, situations, and systems (Byrne, 2003, by Allmendinger, 2017).

Multi-level

The previous parts have shown that planning does not merely consist of developing the infrastructure network itself. Careful integration with the surrounding localities, and with other policy sectors is also of importance. The current problem that is often occurring is that planning for infrastructure is mostly dealt with on a national or even transnational (European) level, whereas land use planning is happening on a municipal or provincial level. The development of the TEN-T network is a clear example of this, as it contains multiple corridors that are developed as a theoretical policy concept by the EU, making it a transnational concept. However, as infrastructure networks span different levels, this means different institutions at hand, and thus different adjustment to the local legal circumstances. Especially in the case of cross-border infrastructure networks, difference in regulations, technicalities, or governance can cause serious implications for an effective cross-border connection between two nodes. De Bruijne (2005) therefore argued that in such integrated infrastructure networks, information needed to be exchanged in order to coordinate actions that ensure a well-functioning infrastructure network. To conclude, the question that remains is how to deal with the planning of infrastructure networks when the planning of infrastructure itself occurs on a high level of governance, while the land use-planning takes place on a lower level.

Towards dealing with infrastructure multiplicity

Overall, what can be seen is that the multiplicity of transport infrastructure makes it very complex, when dealing with functional interrelatedness (multi-scalar and multi-sectoral), and institutional interdependencies (multi-actor and multi-level) (Heeres, 2017). To overcome this multiplicity, integrated planning is opted as an approach to deal with the complex circumstances of transport infrastructure (Heeres et al., 2012). Corridor planning aims to take this integrated approach into account, but this integration is often limited from taking place. De Vries & Priemus (2003) rightly state that "*[i]ntegrating interests from different policy sectors, different countries and different scales in a specific area, may help to solve the problems associated with corridors*" (pp. 231-232).

1.2 OVERCOMING THE ISSUES RELATED TO MULTI-DIMENSIONAL CORRIDOR PLANNING

Reflecting on current practices of corridor development within Europe, Faith-Ell et al. (2020) acknowledged the problem of multiplicity as stated before and raise the issue that current corridor developments are not treated on a corridor level. On the contrary, planning within a corridor is often performed on a project-base, solely looking at local land use-problems, thereby neglecting the overall multiplicity of infrastructure (i.e., corridor) planning. Counteracting this lack of integrated treatment of corridor planning, Faith-Ell et al. (2020) posed several challenges that are central to overcoming this issue:

I.   Aiming for a multi-level governance (MLG) approach to prevent institutional fragmentation, and;

II.   Aiming for the enhancement of the integration of land use and transport infrastructure developments, to increase the connectivity and accessibility of the nodes and with that the corridor, and;

III. Employing a programmatic approach towards corridor planning, to ensure coordination between different projects, localities, and sectors within the corridor.

As Faith-Ell et al. (2020) have already exploratively discussed some of the implications that stand at the basis of programmatic corridor planning and the related land use-transport interaction, this research will build upon their research and tries to unravel what mechanisms function as a limiting or enabling factor in programmatic corridor planning. This research thus aims to examine institutional arrangements that will guide programmatic corridor planning in the right direction.

Building on the research of Faith-Ell et al. (2020), this research uses the same cases, namely Rail Baltica in Estonia, Nya Stambanor in Sweden, and Topcorridors in the Netherlands. Those three cases have been subject to research previously in the research programme Networking for Urban Vitality (NUVit) (Networking for Urban Vitality, 2021).

Since Faith-Ell et al. (2020) stated that their research was of an issue-raising nature, the challenges reported by them for corridor infrastructure development clearly demonstrate the societal relevance of performing future research. Especially since these challenges are based on experiences from current practice, which are also the same cases as the to-be-researched cases in this research, this research will link up to the current debate on large scale corridor infrastructure development in Europe.

Additionally, the increase in demand for transport and development that are related to corridor planning creates environmental impacts (Witte, 2014). Therefore, Decision 884/2004/EC states that Member States must consider the environmental protection during the planning and construction phase of infrastructure projects. This decision specifically states that "*an environmental assessment of the plans and programmes leading to such projects, especially where they concern new routes or other important nodal infrastructure development, shall be carried out by Member States*" (European Parliament & Council of the European Union, 2004). This is in line with the statement of Witte (2014) that environmental protection at a local level has to take place in case of development at a larger spatial level.

As aiming for the integration of the environment in transport networks is deemed important (Bina, 2001; European Parliament & Council of the European Union, 1996; 2004; Thérivel & González, 2019), environmental assessments are used to envision and overcome issues related to the environments. Current debates are mostly focused on two types of environmental assessments: the Strategic Environmental Assessment (SEA) and the Environmental Impact Assessment (EIA). SEA is most often used at earlier decision-making levels, being more enabling on a larger spatial scale, as it is more visionary, takes place on a longer term, and entails more vagueness. EIA is often used at a later phase in the process, where the focus is more on details, as it is more detailed, direct, operational, and linked to specific locations (BEACON, 2005).

To summarize, not only does the multiplicity of infrastructure complicates corridor development, but there are also difficulties with the scope (project vs. programme) in case of corridor development. Aside to this, the coordination of supportive planning tools such as environmental assessments (SEA and EIA) is also not properly working, due to the misalignment between both types of environmental assessments and their related level of planning. Thus, heading towards a good functioning corridor planning process, all these difficulties must be overcome. The question remains, however, what is the best way to perform such corridor planning.

1.3 RESEARCH QUESTIONS

The problem as outlined above leads to the need of exploring what institutional arrangements are suitable for enhancing corridor planning, so to make use of and overcome the multiplicity of infrastructure. In this sense the main research question of this report is as follows:

"Which institutional arrangements are needed for programmatic corridor planning that connects (cross)national transport needs and local land use needs, addressing the multiplicity of infrastructure?"

In order to obtain an explanation to this problem, the following secondary research questions (SQ) are constructed to guide this research towards an answer on the main research question:

[SQ1] *"What are relevant theoretical concepts that might underpin multi-dimensional corridor planning?"*

[SQ2] *"How do the three cases plan for the interaction between land use and transport developments?"*

[SQ3] *"To which extent is multi-level governance present in corridor planning, in the three cases?"*

[SQ4] *"To which extent is corridor planning performed in a programmatic approach, in the three cases?"*

[SQ5] *"How can (tiering of) SEA and EIA play a role supporting programmatic corridor planning?"*

[SQ6] *"What institutional arrangements function as barriers, enablers and conditions of corridor planning?"*

In this way, this study aims to provide an insight in the barriers, enablers, and conditions of corridor planning (SQ6), using the theoretical concepts of LUTI (SQ2), multi-level governance (MLG) (SQ3), programmatic planning (SQ4), and (tiering of) environmental assessments (SQ5).

1.4 READER GUIDE

Throughout the remainder of this paper Chapter 2 will first shed a light on the available theories that will lead to a conceptual model standing at the basis of this research, thereby providing an answer to SQ1. Themes to be discussed in Chapter 2 are: Corridor Planning in Europe (2.1), Land Use-Transport Interaction (LUTI) (2.2), Multi-level Governance (MLG) (2.3), Programmatic Corridor Planning (2.4), Environmental Assessments (2.5), the Institutional Analysis and Development (IAD) framework (2.6), and the Conceptual Model (2.7). Then, Chapter 3 will give an overview of the methodology used. After this description of the data collection and data analysis methods, Chapter 4-6 will summarize the results for the Estonian (Rail Baltica), Swedish (Nya Stambanor), and Dutch (Topcorridors) case respectively, obtained from the research and reflect upon them using the conceptual model of Chapter 2. Then, Chapter 7 will compare the results of all three cases and start with an overall analysis on the institutional arrangements needed for corridor planning. Chapter 8 will give a critical discussion on the obtained results while connecting them to the theoretical concepts. Finally, Chapter 9 answers all sub-questions, and the main research question, concluding with recommendations for future research and some final reflections.

2 THEORETICAL FRAMEWORK

Throughout this chapter, an overview will be given of the theories that form the basis of this research. In trying to answer the main research question, this chapter will provide the theoretical framework for the research. This will be done as explained below.

First, the multi-scalar, and multi-sectoral side of infrastructure planning are approached in Chapters 2.1 and 2.2, looking into the functional interrelatedness of corridor planning, and discussing respectively European practices of corridor planning, and the interaction between land use and transport development. Second, by looking at the MLG perspective on corridor planning, and on programmatic approaches to corridor planning, Chapters 2.3 and 2.4 explore the institutional interdependencies of corridor planning, by looking at the multi-actor and multi-level side of infrastructure planning. After Chapter 2.5 has discussed how environmental assessments can be used in corridor planning, Chapter 2.6 elaborates on the analytical framework (i.e., IAD framework) that is used in this study. Finally, Chapter 2.7 comes up with the conceptual model, discussing all concepts used in Chapters 2.1 - 2.6. It shows how the different concepts and theories can be explored using the IAD framework. Chapter 2 in its entirety will thus function as the theoretical framework for the remainder of this research.

2.1 CORRIDOR PLANNING IN EUROPE

Corridors, as mentioned before, are defined as "*narrow bundles of infrastructure which are connecting two or more urban regions dispersed over a certain physical space*" (Witte, 2014, p. 20). Disentangling this definition, two key characteristics of corridors can be distinguished. These two characteristics are best elaborated upon in relation to the multi-scalar nature of corridors, as, since corridors occur at different spatial levels (Witte, 2014), their meaning is changed regarding the spatial level (De Vries & Priemus, 2003). First, corridors are connecting different nodes. Being part of a transnational transport network, corridors, at a supranational level, lead to economic development (De Vries & Priemus, 2003; European Parliament & Council of the European Union, 2013). Second, corridors are dispersed over space, causing both negative and positive effects at a lower spatial scale. Positive effects relate to enabling urbanization (De Vries & Priemus, 2003) and infrastructure development (Witte, 2014). Unfortunately, most negative effects are also experienced at a lower spatial scale (Arts et al., 2021), relating mostly to spatial fragmentation and environmental impact (Arts, 2007). This variety of meanings that can possibly be addressed to corridors makes it difficult to research the variety of issues at hand.

So, corridors are seen as concepts prone to different meanings, different scales, etc. (Multiplicity, see Chapter 1.1). But how did such a view of corridors come about? To understand this development, a short view on the history of the concept of corridors will be provided. According to Chapman et al. (2003), already in the 1880s, a Spanish engineer – Soria y Mata – came up with the idea to develop (part of) a city according to a linear plan. This idea soon sparked the interests of several other planners in Europe, leading to plans of other linear developments of European towns. The highly visible spatial structure of these plans became the trademark of linear developments (Priemus & Zonneveld, 2003), with the Finger Plan of Copenhagen as one of its most iconic structures, as all fingers are a form of linear development, starting in the city center of Copenhagen, going towards the outskirts.

However, because of globalization, the scale of corridors also increased. Corridors were less seen as concepts on a city level, but more on a (trans)national level (Witte, 2014). For example, the EU created the TEN-T network with the aim of establishing a higher degree of connectivity and accessibility in its territory, while also aiming at increasing the economic performance of the union as a result of this network of corridors. This is where the aforementioned multiplicity of corridors come in. Due to its size the corridors span several countries, and with that several other larger scales, and the related levels and sectors of government, also being influenced and influencing a different set of actors.

2.2 LAND USE-TRANSPORT INTERACTION (LUTI)

The integration of land use and transport issues has been on the planning agenda for many decades as emphasized in Chapter 1.1, where the multisectoral issue of corridor planning is highlighted. As explained before, one of the functions of infrastructure is to improve both the connectivity and accessibility. Accessibility can be defined as "the potential for interaction" (Hansen, 1959) which is influenced by both the land use system and the transport system (Straatemeier, 2019). In this sense, aiming for an improved accessibility can best be guided by an integration of land use and transport developments (Banister et al., 2007; Straatemeier, 2019). Switzer (2019) agreed with this notion and stated that changes in transportation influence changes in land use and vice versa. In other words, land use developments and transportation developments are inherently connected to each other (Van Geet, 2021; Heeres, 2017), and thus policy regarding both sectors must occur in interaction, especially since this interaction is currently institutionally lacking (Bertolini et al., 2005). This interaction is reflected in the transport land use feedback cycle as proposed by Bertolini (2012) (Figure 2.1).
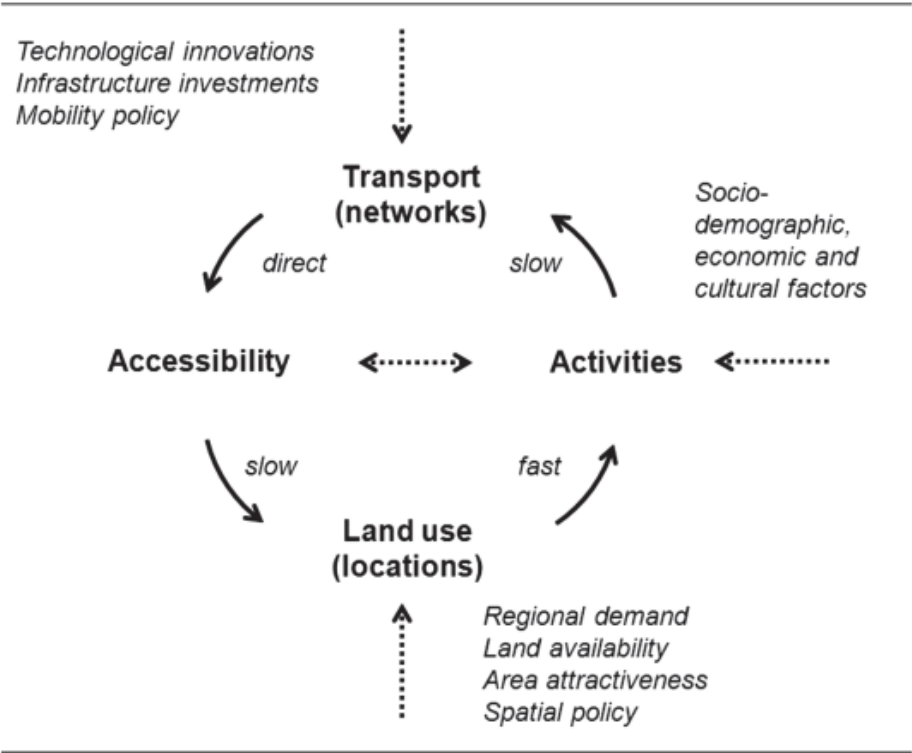

Figure 2.1. Transport land use feedback cycle (Bertolini, 2012).

The cyclical nature of this model reflects two often-occurring practices within spatial developments that deal with both land use and transport developments. First, transport plans are often developed by the national government, only after which land use plans can be created on a lower scale, by more and smaller actors. So, in this situation transport plans are needed to enable land use developments. Second, transport plans often are to be developed based on the already created land use development plans, by this neglecting the integration of both. This is due to limited attention paid to infrastructure during land use developments.

Basically, what is arising from the previous paragraph is a lacking integration between both developments. Dealing with environmental issues, Curtis & Scheurer (2010) pointed to the problem of lacking integration within LUTI-practices, nevertheless of the fact that integration of land use and transportation developments was widely recognized as being essential to achieve sustainable development (Bertolini et al., 2005). Curtis & Scheurer (2010) stated that when planners are trying to implement sustainable objectives within LUTI-practices, they often develop land use plans and transport plans more or less separately.

To address the issue of LUTI, several concepts have emerged ranging from 'integrated planning' to 'area-oriented planning' (Heeres, 2017). The main thought behind these concepts is that a more place-based perspective is needed that better coordinates land use developments with transportation developments, in order to better make use of infrastructure planning, thereby addressing the multi-sectoral issue of infrastructure planning.

However, another issue occurring within LUTI-practices is the misalignment between ambitions and actual policy outcomes (Van Geet, 2021). Where often the goals for more interaction between land use and transportation developments are clearly laid out, actual policy outcomes do not seem able to meet the expectations of the ambitions. Furthermore, Te Brömmelstroet & Bertolini (2010) point to various institutional barriers limiting the integration of land use and transportation issues. In such situations, it turns out that fragmentation still plays a substantially large role, with good interaction seeming a mere delusion (Curtis & Scheurer, 2010).

Heeres et al. (2012; 2016), while aiming to come up with some directions in which the interaction of land use and transport developments can best be guided, mentioned two points of interest in integrated planning. Firstly, 'functional interrelatedness' is posed as relevant for better interaction between different sectors. In order to integrate 'functional interrelatedness' into LUTI-practices, a widened functional and spatial scope is needed, improving other issues (e.g., liveability and sustainability) within a larger area (Heeres et al., 2016).

Secondly, Heeres et al. (2016) point to dealing with institutional interdependency. Since a large number of actors with a variety of different interests is present within LUTI-practices, it is of importance to pursue a type of governance which is coined 'open governance' by the authors. Open governance relates to "*networked decision-making and planning based on interaction between the actors involved*" (Heeres et al., 2016, p. 426). Heading towards a situation where multiple actors are involved, and a high level of integration is performed, more interdependency of actors is needed. Thus, a situation where institutional interdependency plays an important role is needed to deal with LUTI-practices. Additionally, since "*integration is a multilevel effort*" (Heeres, 2017, p. 79), the following section will further elaborate upon this institutional interdependency, in relation to MLG.

2.3 MULTI-LEVEL GOVERNANCE (MLG)

Historically, transport, and particularly infrastructure, planning was dealt with in a top-down manner, with usually the national government being the major party present in the planning and development process. However, the rise of the network society (Castells, 2000) caused that transport planning became more complex, as it came to involve more actors (De Bruijne, 2005), thereby, as mentioned before, causing (institutional) interdependency between actors. Ostrom (1998) identified in this situation that there was a discrepancy in the way different levels of government governed problems of different scales. According to Ostrom (1998), governments are too big to deal with the small-scale issues, whereas the larger (transnational) problems are too big for a government to properly govern. This caused a shift in the view of how to deal with transport planning towards MLG, with multiple actors being present in the planning process (Marsden & Rye, 2010). This shift is commonly called the shift "*from government to governance*" (Romein et al., 2003, pp. 205-206), with the term 'governance' referring to "*the various institutionalized modes of social coordination to produce and implement collective binding rules or to provide collective goods*" (Börzel & Risse, 2010, p. 114). Hooghe & Marks (2003) even call this characterization of governance 'multi-level governance', as this type of governance is characteristic for a world full of "*multiple levels of governance among overlapping societies at diverse scales*" (Hooghe & Marks, 2020, p. 821).

This shift in perspective stands in line with the development of the European TEN-T networks. First, national policies were mainly focused on national transportation networks, but with the development of the supranational TEN-T network, integrating the national network with the European network also became of importance for national governments, because of the interconnectedness of the economies of all countries (Romein et al., 2003). In this sense, actors related to the EU become of an increasingly importance (De Vries & Priemus, 2003). Corridors that are part of the TEN-T network span several administrative boundaries, and therefore are tied to multiple administrative (i.e., regional and local governments) and governmental actors, making infrastructure development on the corridor level a multi-scalar and multi-actor planning process (Marsden & Rye, 2010; Romein et al., 2003). This is in line with the conclusions of De Vries & Priemus (2003) in their research on governance within corridors in north-west Europe, that not only the national government or the governmental departments needed to be included in corridor planning, but also private parties, or public-private partnerships. Bache & Flinders (2004) agree with this notion and state that "*[d]ecision making at various levels is characterized by the increased participation of non-state actors*" (p. 197).

The previous outlined shift from government to governance entails two important aspects. First, there was a shift in the level of government taking part in planning. Whereas previously planning was mostly performed by the national authority, the decentralization process resulted in the involvement of different levels of government in planning, thereby decreasing the influence of national governments in the policy formation. Second, with the reallocation of responsibilities from the national government towards other actors, non-governmental actors took over some of the responsibilities, with that also participating in planning.

So, aiming to enhance the planning of corridors, coordination between multiple jurisdictions is needed (Hooghe & Marks, 2003), in order to reach a common policy objective (Mathieu et al., 2017). The following chapter (2.4) will provide a perspective by which coordination in corridor planning can be enhanced.

2.4 PROGRAMMATIC CORRIDOR PLANNING

Corridor planning, as explained before, has a multi-dimensional nature (see Chapter 1.1). This multi-dimensional nature does not align with current practices of corridor development, as they are often performed on a project base, neglecting the multi-dimensional nature of a corridor, as an integrated network of nodes and infrastructure (De Vries & Priemus, 2003; Faith-Ell et al., 2020). Infrastructure planning (for developing (parts of) corridors) is commonly practiced on a project base because a project management approach has a great ability to define the scope of the project, and the problems related to it (Van Buuren et al., 2010). However, project-oriented corridor planning does not work with an overall aim for the total corridor, rather it is more about working in several sub-parts, thereby underestimating both the interconnectedness of all projects and the related costs of this connection. Therefore, a programmatic approach is needed that combinedly develops all projects of a corridor, addressing the interconnectedness of projects and actors within the corridor.

Programme management can ensure that different projects within a large spatial development are kept aligning each other (Pellegrinelli, 2011), thereby ensuring the interconnectedness of the corridor, its actors, and its policy fields (Busscher, 2014). This coordination of projects and actors highlights the need for programme management, which should be performed in an integrative manner (PMI, 2013), as otherwise, without this integration, the additional benefits – such as being able to work with situations of high complexity within dynamic environments (Pellegrinelli, 2011; Pellegrinelli et al., 2007; Van Buuren et al., 2010) – realized cannot be obtained. In other words, a holistic approach to connect projects into a programmatic approach needs to be developed (Buijs & Edelenbos, 2012). The concepts of "beads on a string" (De Vries & Priemus, 2003), "necklace of beads" (Chapman et al., 2003), or "string of perfect pearls" (Faith-Ell et al., 2020) – to coordinate and connect the various projects and developments at a corridor by a programmatic approach – metaphorically captures this integration perfectly.

Although the relevance and importance of programme management is widely recognized nowadays, proper management capabilities of both programmes and projects are often lacking (Patanakul & Pinto, 2017). Patanakul & Pinto (2017), therefore came up with the most important guidelines towards good programme management which can be used to identify whether current practices of corridor planning are performed in a programmatic manner:

1) The complex, multi-dimensional nature of a corridor needs to be managed;
2) Objectives must constantly be aligned with the constantly changing political context;
3) In relation to the first, the management of all stakeholders is of key importance;
4) The programme has to clearly state the to be achieved objectives and benefits, which need evaluation as to check whether they have been met;
5) The corridor must be created in a way that it will also be adaptive to the necessities of the future. It must be futureproof;
6) The relevant government authority needs to create processes that ensure the correct enforcement of project and programme management.

Concludingly, a programmatic approach into corridor planning is needed to ensure that different projects are aligned under the umbrella of that specific programme. In order to ensure that programme management is performed in the right manner, adherence to the six previously mentioned guidelines is needed by planning authorities to guide a programmatic corridor planning approach into the right direction.

2.5 ENVIRONMENTAL ASSESSMENTS

Chapter 2.1 explained that corridor planning comes with both positive and negative effects. Overcoming the negative effects (e.g., spatial fragmentation and environmental impact) of corridor planning, requires a thorough investigation of these effects. On various levels of government institutional frameworks have been developed for analysing the negative effects. Environmental assessments are one type of tools that analyse the potential negative effects of corridor planning, guiding decision-making for corridor planning (Coutinho et al., 2019).

Currently, two types of environmental assessments exist – SEA and EIA – which are both used to assess the environmental impacts related to infrastructure planning, albeit in different levels of decision-making. On a supranational scale the EU has obliged the performance of SEA and EIA through two Directives respectively to ensure "*the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development*" (European Parliament & Council of the European Union, 2001, p.3), and when a project is "*likely to have significant effects on the environment*" (European Parliament & Council of the European Union, 2014, p.7). Thus, performing a SEA or an EIA is a legal requirement for large-scale infrastructure developments.

The EU Directives show the difference between the nature of SEA and EIA. SEAs are related to sustainable developments in plans and programmes, thereby being of a strategic nature, whereas EIAs are to be performed on a project-level, thereby being of a more operational nature (Morgan, 2012). However, research has shown a mismatch in the alignment of SEA and EIA in developing infrastructure networks (Arts et al., 2005). Therefore, SEA and EIA need to be aligned within programmatic corridor developments (ECMT, 2000), ensuring coordination between strategic issues at a programme level, and operational issues at a project level.

Overcoming the misalignment between SEA and EIA, tiering is brought forward as a concept to guide the coordination between both assessments. Tiering is "*the deliberate, organized transfer of information and issues from one level of planning to another*" (Arts et al., 2011, p. 417). The different levels of planning are called 'tiers'. Various categorizations for tiering have yet been used (see e.g., Arts et al., 2005; Fischer, 2006; Therivel & González, 2021). This research will use the following three levels: 1) plans and policies for networks; 2) programmes for corridors, and; 3) projects. The first two tiers are subject to SEA, whereas the third one is subject to EIA. Faith-Ell & Fischer (2021) stress the importance of all tiers being present in the governance related to transport developments at corridors, since the assessment on a certain tier can influence the assessment at a next tier (Therivel & González, 2021). So, with one tier missing, one important level of the development will be left undiscovered, whereas it is also of importance of the total planning process.

Thus, with previous research having shown the need of performing environmental assessments (Dom, 1998; Fischer, 2006), using tiering as an approach in infrastructure developments ensures that environmental assessments cover not only one moment of time, but a larger timespan (Coutinho et al., 2019; Therivel & González, 2021). Tiering, in this way, "*can ensure that potentially significant impacts are considered at all stages of planning*" (Therivel & González, 2021, p. 9). This is especially relevant in the case of transport planning, as it works with a long timespan. When developing over such a long period it can become visible during the project phase that some limitations are present within the policy, plan, or programme (Coutinho et al., 2019).

2.6 INSTITUTIONAL ANALYSIS AND DEVELOPMENT FRAMEWORK

Looking at which theoretical concepts might underpin corridor planning, Chapters 2.1 until 2.5 provided an answer on SQ1. These chapters showed that when aiming for integrated programmatic corridor planning, the multi-level nature together with tiering of environmental assessments are importance aspects that need to be dealt with. In aiming to find an answer into how this multi-dimensional nature of corridor planning can be integrated with programmatic corridor planning, the IAD framework of Ostrom (2005) is a suitable analytic framework to use for this study.

The IAD framework looks at the capabilities of individuals within a certain institutional arrangement (Ostrom, 2011). Taking this perspective is relevant as it is best to use an institutional perspective when trying to understand the complex, multi-dimensional nature of corridor planning (Van Geet, 2021). Alexander (2005) adds to this that it is needed to understand the institutional design of newly developed programmes or projects. When trying to understand the institutional arrangements related to corridor planning, it is first important to identify the action arena encompassing the institutional arrangements (Ostrom, 2011). The action arena consists of the action situation together with the actors. According to Ostrom, "*action situations are the social spaces where individuals interact, exchange goods and services, solve problems, dominate one another, or fight*" (2011, p. 11). The action arena this study will focus on is the policy formation phase, which basically entails everything up until the construction. This is useful since all three cases are or have been operating in the policy formation phase yet. However, this study will focus on the action situation within the action arena (i.e., the policy formation phase) for all three cases.
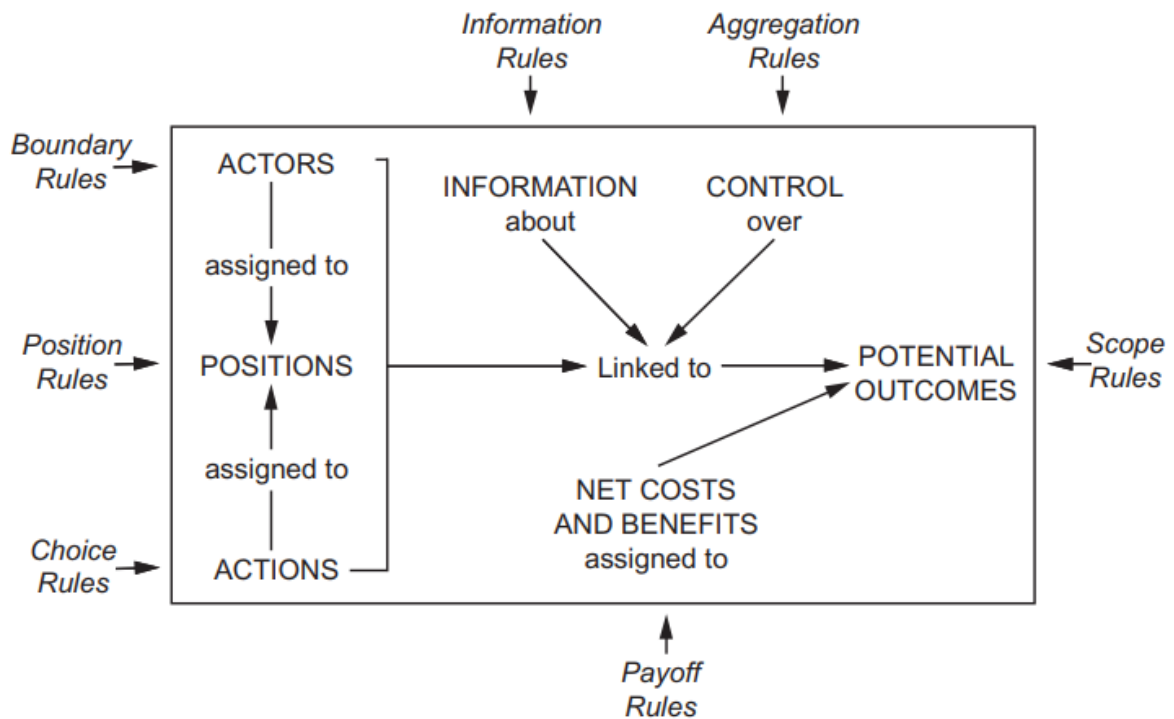
Figure 2.2. The structure of an action situation, depending on the rules that influence the action situation (adapted from Ostrom, 2005).

Within the action situation there are seven rules-in-use which affect the action situation (Ostrom, 2005). In trying to provide an answer on the main research question, this study uses these rules-in-use during the research. According to Ostrom & Basurto (2011) it is the configuration of rules that can help explain complexity. Thus, researching the different configuration of rules applicable to different corridor developments can show the difference in institutional arrangements for the three researched corridors. Table 2.1 provides an overview of the seven rules-in-use accompanied by a description of each rule, based on the work of Ostrom (2005), Ostrom & Basurto (2011) and Spijkerboer (2021).

So, this study will research the rules-in-use of the action situation within the action arena of policy formation. While doing so, certain rules can provide (parts of the) answers on certain sub-questions. Table 2.2 shows how different rules-in-use are related to the different sub-questions, together with the different parts of the theoretical framework that forms the basis of this research. Having researched the rules-in-use for all three cases of corridor planning, possible similarities and differences between the configuration of rules for the three cases provide an insight in the difference or similarity in the institutional arrangements of all three corridor developments.

Table 2.1*. Rules-in-use in relation to the research questions.*

Rules	Action verb based on Spijkerboer (2021)	Determine …
Boundary Rules	Enter / leave	the type and number of actors able to enter or leave the action situation, and in what way they are able to do so
Position Rules	Be	what positions an actor can take within an action situation
Choice Rules	Do	the choices an actor can make towards a certain action
Information Rules	Send / receive	the level of information-sharing, in relation to the amount of information and the scope of actors receiving the information
Aggregation Rules	Jointly affect	which actors will decide on what (set of) action(s)
Scope Rules	Occur	the possible outcomes, thereby delimiting the scope of the action situation
Payoff Rules	Pay / receive	the costs and benefits for actors related to the chosen actions and outcomes

Table 2.2. *Overview of rules of the IAD framework in relation to the questions that they could provide answers to.*

Sub-question	Concepts	Boundary Rules	Position Rules	Choice Rules	Information Rules	Aggregation Rules	Scope Rules	Payoff Rules
SQ2	Land Use-Transport Interaction		✖	×			×	✖	×
SQ3	Multi-level Governance	✖		✖	×	✖	×	✖
SQ4	Programmatic planning	×	×	×	×	✖	✖	✖
SQ5	Environmental Assessments		×		✖		×	×

2.7 CONCEPTUAL MODEL

In Chapter 1 the multi-dimensional nature of infrastructure planning was discussed. It was shown that infrastructure developments deal with multi-scalar, multi-sectoral, multi-actor, and multi-level issues. Dealing with both the multi-scalar and multi-sectoral issues of infrastructure developments, Chapter 2.2 has shown the need for more interaction between local land use-planning and (supra)national transport planning. So, since infrastructure planning deals with issue at several scales and in different sectors, it was experienced that a new type of governance was needed to deal with the larger number of actors becoming part of the planning process. In this sense, Chapter 2.3 proposed MLG as being the type of governance able to deal with the issues related to infrastructure planning, thereby reflecting on the multi-level and the multi-actor issues of infrastructure planning. However, research showed that more LUTI and taking a MLG perspective are not sufficing towards proper corridor planning. Current practices of corridor planning are all too often project-oriented, thereby not being able to cope with the multi-dimensional nature of corridor planning. Therefore, Chapter 2.4 proposed taking a programmatic approach towards corridor planning, being able to deal with all issues of multiplicity, as visualised in Figure 2.3. Lastly, since programmatic corridor planning not only comes with benefits, but also is exposed to potential negative impacts, there is a need to perform environmental assessments, so that potential environmental impacts can be detected, and mitigated. However, due to the programmatic approach, two types of environmental assessments are needed when guiding the decision-making process for a corridor. SEAs are needed at the programme-level, whereas EIAs need to be performed at a project-level. By applying these theories to the IAD framework, institutional arrangements suitable for corridor planning of the three cases are explored.
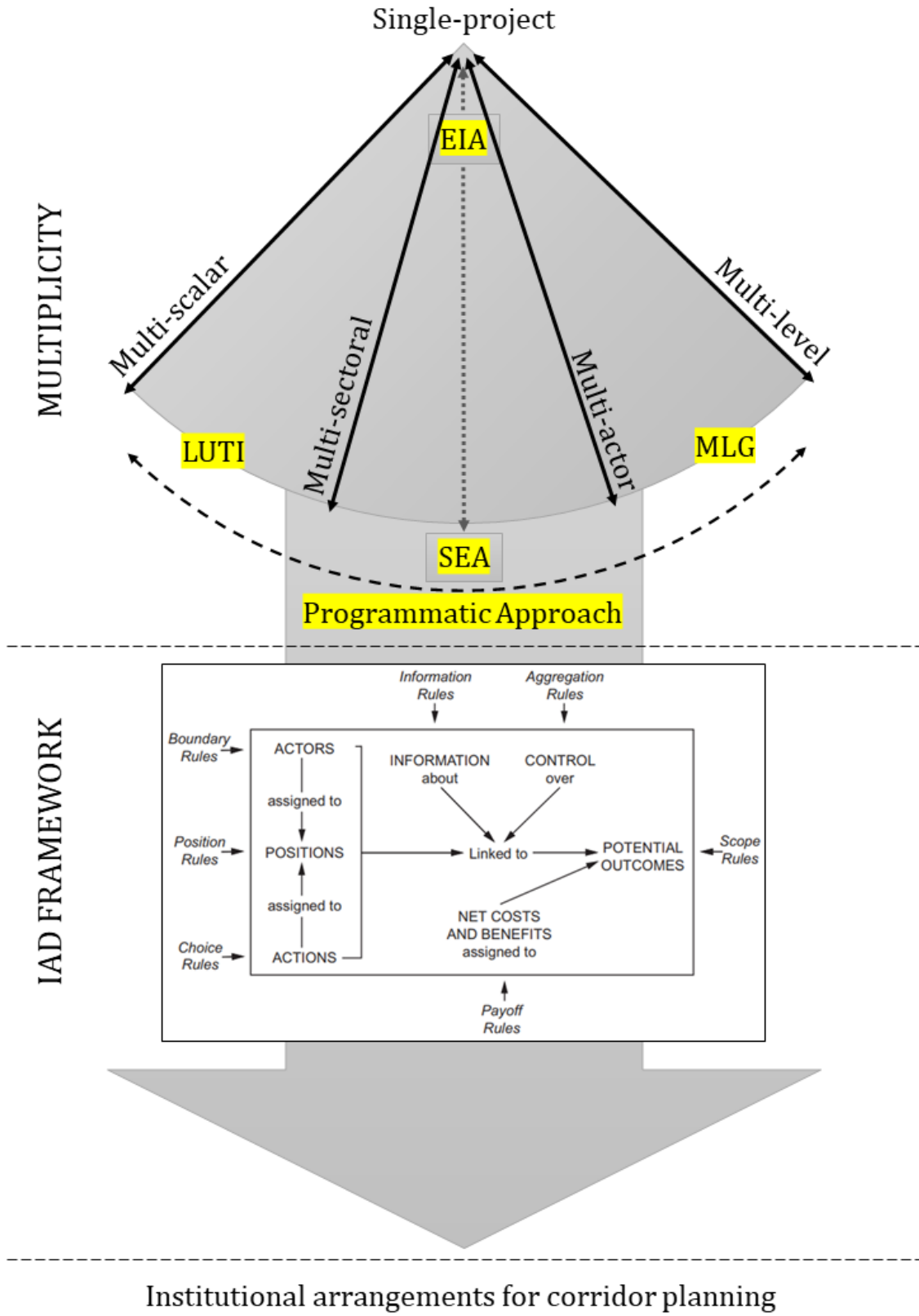
Figure 2.3. Conceptual model.

3 METHODOLOGY

This chapter provides an overview of the research methods that form the basis of this study, and upon which the research was performed, in order to address the aim of exploring what institutional arrangements are suitable to enhance corridor planning. In this way, a methodological elaboration is given upon the conceptual framework (see Chapter 2) to analyse current practices of corridor planning. First, an explanation is given for the choice for a multiple case study as a research methodology (3.1). Second, the choice for the three cases is explained, after which a short introduction into the three cases is provided (3.2). After that the research methods are explained one-by-one in the following order: literature review (3.3), policy document analysis (3.4), and semi-structured interviews (3.5). Showing the data collection techniques and data analysis techniques are both addressed in this explanation of the research methods. Finally, this chapter is concluded with ethical considerations and positionality issues (3.6), relevant to this research.

3.1 CASE STUDY AS A RESEARCH METHODOLOGY

This study draws upon a comparative case study, as three transport corridors are used to compare their institutional arrangements linked to corridor planning. Using a qualitative case study as methodology is particularly suitable for this occasion, as a such case study approach can explore the topic at hand in-depth focusing on the 'how' and 'why' questions (Taylor, 2016). In this way, a good understanding could be obtained of the three different transport corridors (Rail Baltica in Estonia, Nya Stambanor in Sweden, and Topcorridors in the Netherlands). These three transport corridors were selected in order to build upon earlier studies and knowledge about these three cases (see e.g., Faith-Ell et al., 2020; Networking for Urban Vitality, 2021). Taylor (2016) pointed out that performing the case study with more than one case on different locations can give a richer insight into the topic. This justified the choice of having three cases of corridor planning.

Since this research focused at the corridor level, the comparative analysis employed a relatively high level of abstraction in order to obtain an understanding how best can be arranged for corridor planning. The researched topic can be considered as a topic of a wider issue, spanning corridor planning in general. On such occasions Taylor (2016) pointed out that a trade-off between the breadth and depth of the research must be made. Therefore, this research did not go into detail that much, staying mostly on the level of institutional analysis. In other words, the research focused on the general rather than on the particular (Stake, 1995).

To enhance the quality of a case study, multiple methods were used to improve the quality of the data collection (Yin, 2014). Taylor (2016) pointed out that often used data collection methods for qualitative case study research are semi-structured interviews, focus groups, and document analysis. This research was developed modular, as it uses semi-structured interviews, a document analysis together with a literature review – adopted for developing the theoretical basis and conceptual framework (see Chapter 2) –, which will be elaborated upon in sections 3.3 until 3.6. It was also planned to perform a focus group discussion, but due to time limitations as a result of COVID-19 – data collection cost more time – the focus group discussion was left out of the study. This caused that it was not able to gain the positive effects of triangulation, which had been the situation if a focus group discussion had been performed.

3.2 UNIT OF ANALYSIS

As previously mentioned, the research focused on three different transport corridors, of which all are located within EU Member States, and all are part of the TEN-T network (European Commission, 2021): Rail Baltica in Estonia, Nya Stambanor in Sweden, and Topcorridors in the Netherlands. Thereby this study builds upon the work of Faith-Ell et al. (2021).

Due to the multi-scalar nature of infrastructure networks (i.e., corridors), the exact spatial boundary of the cases could not be defined during the research process, since everything pertaining to these corridors are very broad practices, hard to limit to a specific temporal or spatial boundary. This corresponds with the findings of Martín et al. (2021) that current literature on transport networks did not show "*how to delimit the scope of the study areas, networks and corridors for SEAs*" (p.2). However, it can be said that all three corridors have a (supra-)national scope.

As data collection took place late 2021, and early 2022, answers and views of stakeholders were subject to their perception on the corridors at that time, and interviews were held online due to COVID-regulations at the time. Differences in phases of planning between the three different corridors can thus lead to different perceptions of the stakeholders on the respective corridor. Triangulation was used to overcome different perceptions due to differences in phases of planning. Appendices I, II and III provide a timeline for each case, providing overview of different phases.

To better understand how corridor planning was done in more detail in all three cases, each case used a specific in-depth focus on a particular city – 'urban node' – positioned on the corridor. The cities of Pärnu, Norrköping, and Venlo were chosen as nodes for a local focus on respectively Rail Baltica, Nya Stambanor, and Topcorridors.

3.3 LITERATURE REVIEW

Aiming to develop a conceptual framework that forms the theoretical basis of this research, a literature review has been performed based on the topics of 'corridor', 'corridor planning', 'land use-transport interaction', 'multi-level governance', 'programmatic planning', 'environmental assessments', 'tiering', and 'institutional analysis and development framework'. Most of these concepts were chosen, as this research built upon the work of Faith-Ell et al. (2020) and recent European-level studies (see e.g., Vital Nodes, Collaborative Planning, Fluxnet, Networking for Urban Vitality) that are also discussed by these authors, using similar concepts compared to their research. This resulted in a broad overview of the relevant knowledge available, adding value as it clarified how certain variables of different theoretical concepts related, and showed the literature gaps (Van Wee & Banister, 2016). Constantly adding and adapting the conceptual model and introduction based on information retrieved from the literature review created "*an iterative process of refining the aims, research questions, theoretical perspective and methods of the research*" (Taylor, 2016, p. 584), which was beneficial in adding more detail to the research. In order to provide an analytical framework to study the issue of corridor planning, the IAD framework developed by Ostrom (2005) was used as it fits the study of institutional issues (see Chapter 2.7).

Search engines used for this literature review were Scopus, SmartCat, and Google Scholar. The aforementioned topics, or similar terms, were used as search queries. Aside to this, backward and forward snowballing was used to retrieve further articles linking to the topic that was searched for. This created a substantial additional amount of literature useful for this research.

3.4 POLICY DOCUMENT ANALYSIS

Policy documents (see Appendix IV) were researched and coded (see Appendix V) to get a grip on the background and the basic information of all cases. For each case, corridor-specific policy documents were researched as well as regional and/or national policy documents relevant to the corridors. Researching these documents was subject to availability: whether information was publicly available in Dutch or English documents. Aside to this, policy documents were also sometimes provided or pointed to by interviewees, which were then also used. Not all of the relevant policy documents were available in Dutch or English. Therefore, Google Translate was needed to translate – mostly Estonian and Swedish – documents to English, in order to obtain information from these documents. Chapters 4.1, 5.1, and 6.1 provide an overview of the information retrieved from these policy documents and Chapters 4.3, 5.3, and 6.3 link the case information to the theoretical framework of Chapter 2. In this way, the policy documents provided important background information and guidance useful during the interviews.

3.5 SEMI-STRUCTURED INTERVIEWS

Adding to the data triangulation, two rounds of interviews were held. First, two open orientation interviews were held with an expert per case, in order to get a broad understanding of corridor practices for each case. Following this, semi-structured interviews were performed to retrieve information from actors within the policy formation phase of corridor planning. Not only did this show the different views various actors – with different roles in the planning process – have, but it also provided relevant additional information that was not captured in policy documents or other materials.

Connected to the IAD framework, the questions (see Appendix VI) were asked linking to the seven rules of the framework (see Table 2.1, & Chapter 2.7). In this way, institutional arrangements underlying the policy formation phase would become visible. The questions underwent multiple rounds of review. First, in discussion with an academic researcher experienced in institutional analysis, questions were slightly rephrased, so that the aimed-for outcomes of the questions became better aligned with the rules of the IAD framework. Second, questions were proofread by fellow students with limited knowledge about the research. This was done under the following hypothesis: if someone who has no or limited theoretical knowledge about the research and the related theories, but who does need to understand the way the questions are phrased, then the questions must also be understandable for experts on this topic. Following this second round of review, questions were adapted when needed.

Aiming for a large variety of perspectives on corridor planning, five expert actors per case related to five different topics and roles in the planning process were interviewed. Expertise's that were covered comprised: environmental assessment, transport, land use, programme management, and politics, which is in line with the conceptual model (see Chapter 2.7) that lay at the foundation of this research. Interviews were conducted with actors that had the following functions, or a function close to this (see Appendix VII for the list of interviewees):

- EIA/SEA project leader
- Project/programme manager
- Local professional involved in transport and land use-issues (node specific)
- Spatial development professional
- Stakeholder manager.

Unfortunately, for Sweden only three interviewees could be arranged, but two of the Swedish interviewees could apply to two functions, thereby still covering all five functions for Sweden. Aside to these five actors, it was also aimed to interview a secretary of a TEN-T coordinator (i.e., the Rhine-Alpine corridor), which would have been more general in nature as it would have been used to analyse whether general EU-policy formation cohered with policy formation for each corridor.

Data retrieved from the interviews was transcribed and subsequently coded according to the deductive code-tree that was based on the seven rules of the IAD framework (see Appendix V for codebook) and valuable information was extracted from it. Aside to this, emerging codes were also added to Appendix V, after becoming prevalent through multiple interviews. Coding was done using colour codes on printed versions of the transcripts. Data from all interviews was compared between the three cases, and (dis)similarities were explored.

3.6 ETHICAL CONSIDERATIONS

Since interviews were conducted for this research, it is important to reflect on the ethical issues that lay at the foundation of this. First, information retrieved from the interviews was treated with thorough attention for anonymity, as argued by Longhurst (2016). Therefore, only the function of the interviewee is provided, in relation to the case to which the interviewee belonged. Further information pertaining to the interviewee was anonymized.

Second, interviewees were treated with respect and it was ensured that they were feeling comfortable while taking part in the interviews, which is deemed essential by Hay (2016). For example, in situations where interviewees were uncertain whether their input would be beneficial for this research, or whether they had the right information for this research, they were assured that they were carefully selected based on their expertise, and thus with high certainty most of their answers and perspectives would be of any use to this research. Aside to this, at the start of each interview, interviewees were asked whether they agreed with recording of the interview. All interviewees gave consent on this. Since all interviewees were professionals related to the topic of corridor planning, vulnerability of the interviewees was less prominent in this research, as everything related to the interviews was in relation to their function at the time. However, due to the research being performed in times of COVID-19, all interviews were held online. Performing online interviews mostly creates more distance between the interviewee and the researcher, than in situations of physical interviews. This could have potentially impacted the research, as it could have been that interviewees felt less comfortable during the interviews.

A final point that needs some attention is that for both the Dutch as the Estonian case, one of the interviewees of the second round of interviews also took part in the first round of interviews. This caused that they had prior knowledge about the set-up of the interview, which both positively and potentially negatively affected the results. Positively in a way that they already had knowledge about (the aim of) the research, so that their answers could contribute to the research. However, also potentially negatively, as in this sense they could have been biased in their given answers, focusing on specific topics, thereby neglecting other potentially interesting aspects of the policy formation process of the corridor. Corroboration was used to overcome the negative impacts of bias, as answers of different interviewees were compared against each other, while also comparing them with the results of the policy document analysis.

4 RESULTS ESTONIA: RAIL BALTICA

4.1 BACKGROUND ON RAIL BALTICA

After the restoration of Estonian independence on August 20, 1991, and especially after entering the EU on May 1, 2004, Estonia aimed at reconfiguring their infrastructure network towards the EU instead of towards Russia. This demand came in the same period of Decision No 884/2004/EC by the European Commission (EC) that "*Estonia, Latvia, and Lithuania should be fully integrated in a wider railway transport system*" (Rail Baltic KSH Programm, 2014, p. 7), with Rail Baltica regarded as a priority project. Acting on this, the Estonian, Latvian, and Lithuanian Prime Ministers signed a joint declaration on the development of Rail Baltica. Thus, the whole to-be-developed railway connection from Tallinn towards the Polish border was brought together under one programme, with all three countries cooperating. Aside to this the connection with Poland and Finland was investigated and linked to the programme, of which the latter one was one of the priorities in the next National Spatial Plan (NSP), since this connection was posed as vital for further transnational economic development of the Baltic region (Estonian Ministry of the Interior, 2013). Railway being the mode of infrastructure here is specifically pointed towards since Estonia and the EU were already better connected by road infrastructure through the Via Baltica. Due to the Via Baltica having capacity problems, Rail Baltica was seen as a solution of a thriving corridor. By implementing Rail Baltica, Estonia and the EU would become better connected, especially since the corridor would become part of the TEN-T network of the EU, being part of a well-connected international infrastructure network.
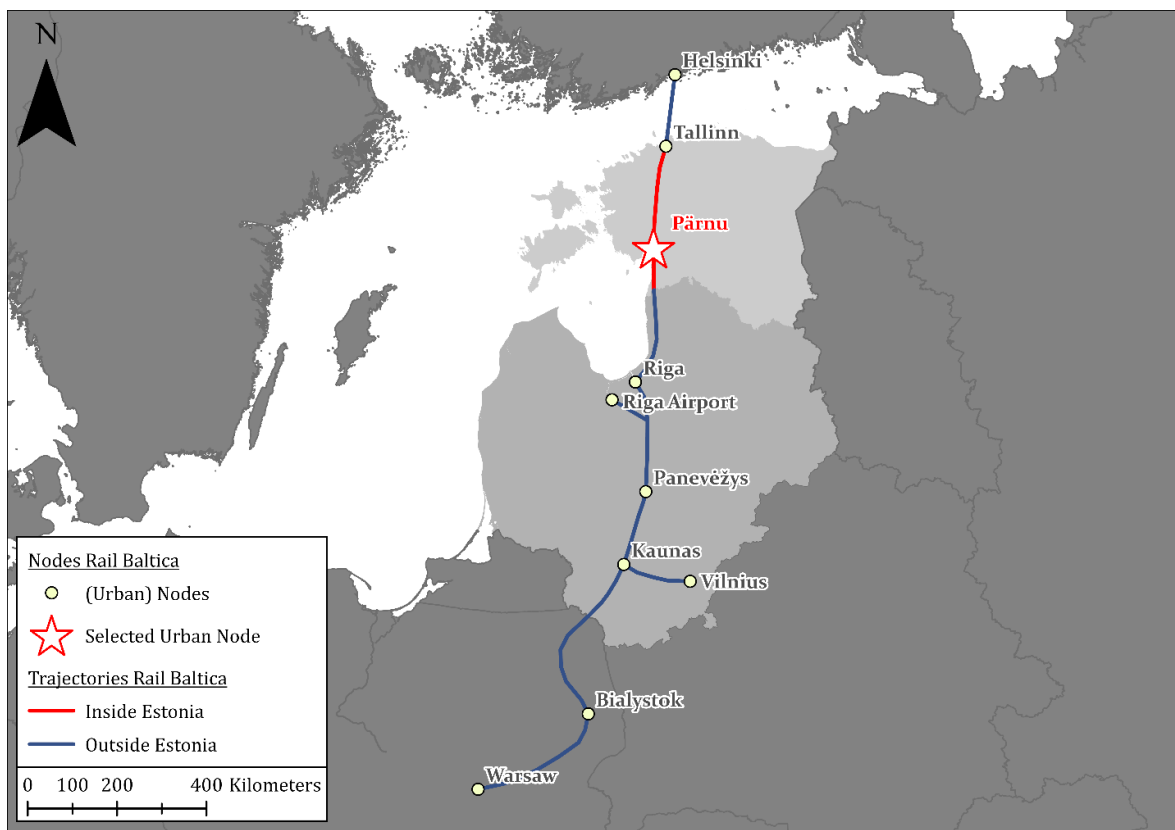

Figure 4.1. Map of Rail Baltica (based on RailTech.com, 2021).

Looking at the planning phase of Rail Baltica, it is largely a governmental process. With the first plans developed at (supra)national level, in Estonia order No. 173 initiated county-wide spatial planning in order to find a suitable location for the Rail Baltica corridor (Riigi Teataja, 2015). This order included that all relevant counties – Harju, Rapla, and Pärnu County – had to perform a SEA on the county-wide spatial plan. Following the SEAs of the three counties, public consultations were held, and authorities and local governments were offered the chance to give a statement regarding the SEA programme (Rail Baltic KSH Programm, 2014).

Highlighting the (national) importance of the development of a corridor, a National Designated Spatial Plan (NDSP) was compiled for Rail Baltica in 2018. NDSPs are used for buildings or infrastructure which have "*a significant spatial impact and a significant national or international interest*" (VASAB, 2018, p. 3), providing a legal frame for county planning, which enables counties to explore local consequences. This is of importance as challenges and benefits differ between counties. The NDSP differed from the NSP, in the way that the NSP was posing all challenges and directions related to spatial planning that Estonia had to deal with, whereas the NDSP was focused on one particular development; Rail Baltica.

Unfortunately, after the NDSP for Rail Baltica was created, the Supreme Court of Estonia stated in 2020 that some of the conclusions of the county plan SEAs were not correct, causing the need to rework the county plans and SEAs of Pärnu county again, which at the time of writing was a still ongoing process. This was the situation of Rail Baltica at the time this study was performed.

4.2 RESULTS
Throughout this chapter, the seven rules of the IAD framework will be explained one by one, based on the results from the interviews and the policy document analysis. Every rule is concluded with a final statement summarizing the most important information pertaining to this rule.

4.2.1 Boundary rules
After it was supranationally decided in 2004 by the EC that the Baltic States should be better integrated in the European railway transport network, planning for the railway in Estonia was primarily performed on a county level, as no (supra)national spatial plan was applicable yet to Rail Baltica. Only in 2013 and 2014, two major changes in the governance of the policy formation occurred. First, in 2013, in Estonia, the NSP was developed by the Estonian Ministry of the Interior, as a nation-wide spatial plan. This NSP stood at the foundation of larger-scale policy applicable to Rail Baltica developments (e.g., the NDSP), flowing into county levels and into the detailed plan, according to interviewees EE1 and EE2. This hierarchical way of policy formation was stated in law, as for example the City of Pärnu was obliged by Estonian law to develop a detailed plan, after it was decided that Rail Baltica would run through Pärnu. However, interviewee EE3 also mentioned that policies at a lower level were also influencing higher level policies. Secondly, in 2014, Rail Baltica was set up as a programme coordinating all corridor-related activities, thereby taking a more programmatic approach in developing the corridor.

When starting the policy formation process, it was experienced beneficial to have a large number of parties at the table so *"that you map who is going to be benefited in what level and then you will build up organization based on that assumption"* (EE5).

Due to the hierarchy in the policy formation, reflected in the situation that policy level issues (e.g., national or corridor policies) were dealt with first, after which more detailed issues (e.g., detailed plans) were taken up, not all actors stayed involved over time. Although a large variety of parties was involved during the policy formation process (the EU, the Estonian state, counties, municipalities, ministries, Environmental Boards, city representatives, Transport Administration, city architects, and the public), having them not involved throughout the whole process was beneficial, as it was possible to ask for certain parties whenever they were needed.

Regarding public involvement, interviewee EE5 mentioned the importance of including the public (e.g., residents, and NGOs), especially those who could potentially be negatively influenced by the corridor, for two reasons. First, it gave an overview of various arguments, either positive or negative, regarding the development of Rail Baltica. Second, being transparent, even it would negatively impact parts of the public, ensured a smoother and faster process as the public knew what they were up to, limiting the chances of going to court later on. In this sense, interviewee EE3 stated that throughout the entire process it was possible for the public – even from areas in Estonia not in vicinity of the corridor – to express their opinion on studies, decisions, or solutions made.

So, in principle all parties were (in)directly involved in the policy formation of Rail Baltica. However, this did not prevent court cases from occurring, as mentioned before. This resulted in a substantial slowdown of the policy formation process.

4.2.2   Position rules

Overall, the central aim of Rail Baltica was to improve the connectivity, within Estonia itself, but also between the Baltic States, and with the broader EU. In light of the NSP the Ministry of the Interior functioned as the coordinator of Rail Baltica, having developed the goals and policy objectives that stand at the foundation of the corridor. Based on these larger policies, local counties and cities had to make respectively county-wide spatial plans, and detailed plans. By means of the detailed plan, the City of Pärnu was able to get their goals – connecting themselves better within Estonia, and establishing themselves as a logistics centre instead of a tourist centre – into Rail Baltica, as *"we could make a proposal for policy […] It is basically our influence according to current politics […] what was our demanding, and what we are afraid of"* (EE4).

Since Rail Baltica was not only running through Estonia, but also through Latvia and Lithuania, different countries were included, having their own objectives, aside to the central objective of connectivity. In order to align these different objectives, the EU is joining the development of Rail Baltica as a coordinator. According to interviewee EE3 the role of the EU is extremely important, as without the EU Rail Baltica would probably not have been developed.

With connectivity as the main goal of Rail Baltica, the plan was to build a new railway trajectory for Rail Baltica, coming with environmental impacts. SEAs were performed, as was obliged by Estonian law, in order to find ways to mitigate these impacts. Therefore, *"the role of SEA is to generate the good arguments for the policy development"* (EE5) in order to guide decision-making, showing what the price of connectivity would be in relation to environmental quality.

So, with connectivity posed as the central aim of Rail Baltica, there was room for integration of other positions, and functions within the plan, although this was mostly taken up by local governments.

4.2.3 Choice rules

Looking at the policy formation process for Rail Baltica, important decisions regarding for example the location of the railway, were largely enforced by the state. Behind this enforcement, local authorities were coming up with this decision, or as interviewee EE3 put it: *"the enforcement is made by the minister, the decision is made by the authorities mostly"* (EE3). So, for example in the SEA process, the minister of the Environment was doing the enforcement, but only after the approval of, amongst others, local authorities and the Environmental Board.

Aside to this, corridor-level choices and local choices were made by different parties. For example, for the routing of the corridor, it was decided by the state, in collaboration with Latvia, as the position of the corridor in the different countries needed to match at the border. After the position of Rail Baltica was decided (supra)nationally, counties and cities could develop respectively their own county plans and detailed plans according to their own aims, but within the guidelines set by the national plan – framing the room for detailed decision-making. In this sense, interviewee EE2 described that the detailed plans were influenced by the higher-level plans (national, and county level). Detailed plans linked to Rail Baltica only had to be made when it concerned more general developments in an area which were not directly affecting the corridor itself – mostly pertaining land use development, reflecting the potential for LUTI.

So, in essence it was the national government deciding where the corridor would be positioned, and then local governments could integrate into their own localities, based on their own goals, reflecting both the programmatic nature of the corridor, and the MLG approach.

4.2.4 Information rules

Throughout the policy formation process all interviewees agreed that information sharing occurred on a wide basis; through information and consultation sessions, via the website, via the media. Not only with participating parties, but also with the public in both directions. Informing the affected parties was obliged by law, as *"Estonian procedure persists that designs are distributed and opinions asked by the permitting authority from the affected parties"* (EE3).

According to interviewee EE1 it was a very open process, even doing more than legally obliged. However, according to interviewee EE3 sometimes perhaps too much information was shared. For example, the provision of additional information regarding Natura2000, which was not legally obliged, confused the public, as they thought that this was an appropriate assessment. Contrarily, interviewee EE3 also indicated that it was important to keep sharing information with the wider public. Through this, answers could be provided on questions raised by the public, which were then also integrated in the designs, plans, etc. So, interviewee EE3 argued that it is important to find a balance in providing enough information but not too much.

With SEA being the tool of deleting the environmentally most unfeasible alternatives, this was one topic of which information was constantly shared with the public, and also with the clients (i.e., Rail Baltica team, and governments). To keep transparency throughout the process, decisions about which alternatives were not considered anymore were constantly shared. This was only in early phases of planning for the corridor. When getting more in detail, EIAs were guiding the decision-making process. However, interviewee EE4 stated that once decisions were made, and the detailed plan was set up, not everyone was informed anymore.

So, not only was informing affected parties obliged by law, it was experienced that it occurred frequently. However, during more detailed phases most parties were less informed.

4.2.5 Aggregation rules

In early phases of policy formation, much cooperation occurred between the three Baltic States and the EU, according to interviewee EE3, especially as route sections had to match at the borders. After the position of Rail Baltica was (roughly) determined, interviewee EE1 mentioned that the NSP was influencing lower-level policies, reflecting the MLG approach in policy formation for Rail Baltica. At the same time, interviewee EE4 experienced that for the City of Pärnu, no party had a higher say in the decision-making process. The only exception in this is the opinion of the city which was valued as the most important one within the detailed plan made by the City of Pärnu, as the city is making the final decision in this case. The importance of the opinion of a party is also reflected by interviewee EE5, who stated that *"of course the decision-maker looks who is talking. […] That if there is some authority giving opinion, of course it's more important than local people"*.

In that regard, interviewee EE5 mentioned that not all opinions were treated equally, also pointing to the situation where the one who shouted louder, is heard more. However, the thorough discussion of all ideas during the process of policy formation was regarded by all interviewees. This discussion was valued positively by interviewee EE2, expressing it as follows: *"This big cooperation. Lot of people, specialists in one project cooperating. This is really necessary"*.

So, although in the end, the final decision was often made or influenced by the most important party, the process was considered to be of a collaborative nature, reflecting on the opinions of all actors. However, both interviewees EE1 and EE5 remarked that public consultation was overdone in early stages of the policy formation process, slowing down the process.

4.2.6 Scope rules

Reflecting on the overall aim of Rail Baltica – improving connectivity – this was widely agreed upon by all parties, especially by the Estonian government and Europe, according to interviewee EE1. For example, for Pärnu, goals related to becoming a logistics hub were also of importance. But looking at how this connectivity policy did interact with other policies; it was stated that often national policies are conflicting. For example, the connectivity policy stood in conflict with environmental policies (e.g., Natura2000). Avoiding this conflict meant weighing of connectivity benefits versus environmental costs. Doing so meant going into the specifics, which had to be done on a local level. But as interviewee EE5 mentioned, transforming national policies into local policies caused translation issues. For example, environmental and transport policies were designed nationally, but integrating them locally could create conflicts, as was shown in the aforementioned court decision, where Natura2000 regulations were conflicting with the transport objective related to the corridor development. In these situations, SEA was used as a tool to overcome this translation issue. In Estonia, *"traditionally SEA is connecting different scales and being more flexible"* (EE5), which ensured that plans with SEAs are giving more quality than plans without SEAs, as SEA was used as a tool which deleted the least (environmentally) feasible alternatives, leading to a selection of the best alternatives concerning the location of the corridor. Next to this, for the detailed issues (e.g., building permits) EIAs were performed.

So, on the corridor level, connectivity as a central/national objective proved to be hard to integrate with other policy objectives. This led to the need to integrate the other objectives at the local level. SEA was used to translate these objectives from the national to the local level.

4.2.7 Payoff rules

As mentioned before, Rail Baltica has been dealing with the trade-off between connectivity and the price of connectivity, either environmentally or monetary, looking at how far investments should go to mitigate environmental impacts. But who should pay for this mitigation, or other measures regarding Rail Baltica? According to interviewees EE3 and EE1 Rail Baltica was mainly financed by the EC, using the Connecting Europe Funds (CEF), for up to 85 percent of the total costs. Further financing was provided by the state, covering costs directly related to the corridor. Cities did not finance any part of Rail Baltica, as reflected by interviewee EE4: *"for the city side it is not important who is paying, it is only important we are not paying. […] We want to have that the planning process is going very well, and someone is paying, but not us".*

However, looking at developments related to Rail Baltica, but not integrated in the corridor itself (e.g., developments linked to the detailed plan), this was partially financed by the city or private investors (EE1). This is due to the nature of the agreement with the EC; that the EC only finances the main line, which directly adds to improving the connectivity with the EU (EE3).

Although it was agreed beforehand that the EC financed parts of the main line, interviewee EE4 stated that it would be beneficial for the process if beforehand a financing scheme would have been developed stating who is going to finance what part of the corridor. Whether dividing the costs beforehand would have worked out smoothly can be doubted, as it was very hard to foresee who was benefitting, when and wherefrom (EE5). The benefits only became known over the course of the process. Reflecting on the benefits, interviewee EE3 mentioned that mainly the Baltic States, but also the EU was benefitting from improved connectivity.

So, although Rail Baltica was largely financed by the EC and partially by the state, the main benefits were for the Baltic States. Financing related to local developments not taken up in the corridor approach were largely covered by the state, and partially by the city.

4.2.8 Perspectives on future corridor planning

Looking at what the interviewees would have done differently in a future situation of corridor planning, there are two aspects of the corridor planning process which could be improved.

First, to ensure a smoothly organized policy formation process, and to oversee what the process will look like, it was proposed by interviewees EE4 and EE5 that mapping beforehand could be useful to know; which steps to take; who is going to be benefitted, and; how it is going to be financed. This would create more certainty for all involved parties, which was deemed useful as corridor planning is working in different spatial and stakeholder levels. So, having a large organization of stakeholders at the start of the process of corridor planning is beneficial in ensuring an organized policy formation process.

Second, reflecting on the decision-making process in current corridor planning for Rail Baltica, both interviewees EE1 and EE3 stated that public consultation was overdone in early stages. For interviewee EE3 this meant finding a balance in providing enough, but not too much information, and for interviewee EE1 this was about a trade-off between the variety of arguments gained, and less delays in case of less public consultation.

In essence, in future situations more structure and less intensive public consultation are two aspects of corridor planning that were brought forward by the interviewees that can be improved, although it must be careful weighed off against their alternatives.

4.3 PRELIMINARY FINDINGS

The previous paragraphs illustrated that there was a difference in the way that was dealt with corridor developments and local developments. The Payoff rules have shown that corridor developments were largely paid by the EU, and partially by the state. This was done as the EU was mainly concerned with the large-scale aim of connectivity (Position rules). Locally more room was left for the integration of land use developments within the larger corridor developments. However, as was reflected by the Scope rules, the large-scale aim of connectivity seemed hard to integrate with other policies. SEA was used to overcome this mismatch in policies. By translating policies from the national to the local scale, policies could become better aligned. So, here again the difference between national issues of corridor development, and local issues of land use development was highlighted. This difference also caused that decisions for corridor developments were made by the national government, whereas decisions for local land use developments were made by the local governments (i.e., counties and cities), which was coming out of the Choice rules.

Although the previous part demonstrated that there was a clear distinction between local land use developments and (supra)national corridor developments, the Information rules showed that overall information-sharing was occurring frequently, with a large variety of actors. This large variety of actors was also pointed out by the Boundary rules, showing that basically everyone willing to be involved in corridor planning, could enter the process, up to a certain extent. Having a large variety of actors, together with the extensive way of information-sharing made corridor planning for Rail Baltica a very open collaborative process, as shown by the Aggregation rules.

5 RESULTS SWEDEN: NYA STAMBANOR

5.1 BACKGROUND ON NYA STAMBANOR

About 30 years ago, first ideas for improving the railway connection between Södertälje and Linköping – currently known as Ostlänken (East Link) – were developed, as Swedish railways were heavily congested (Trafikverket, 2021). After that also developments for the trajectories Gothenburg – Borås and Malmö – Lund – Hässleholm were proposed. Only in 2018 were these three different trajectories combined into one national plan regarding railway improvement: Nya Stambanor, in order to reduce travel times, to promote sustainable travel and transport, and to create good conditions for regional development (Trafikverket, 2021). Consequently, in 2021 a proposal for the National Plan for Transport Infrastructure (NPTI) was developed, which indicated that the policy aim was to take a holistic perspective on corridor planning. With the NPTI, the Swedish government together with Trafikverket (Swedish Transport Administration) aimed to overcome several issues related to corridor planning for Nya Stambanor that occurred before.

First, in combining the three trajectories into one plan, it was aimed to overcome decentralized and project-oriented planning which occurred before. For example, for the Ostlänken trajectory, no national strategy was developed for the planning of the corridor, being solely based on local initiatives and municipal planning, making corridor planning very decentralized. Hence, municipalities were mainly the sole party taking part in planning.
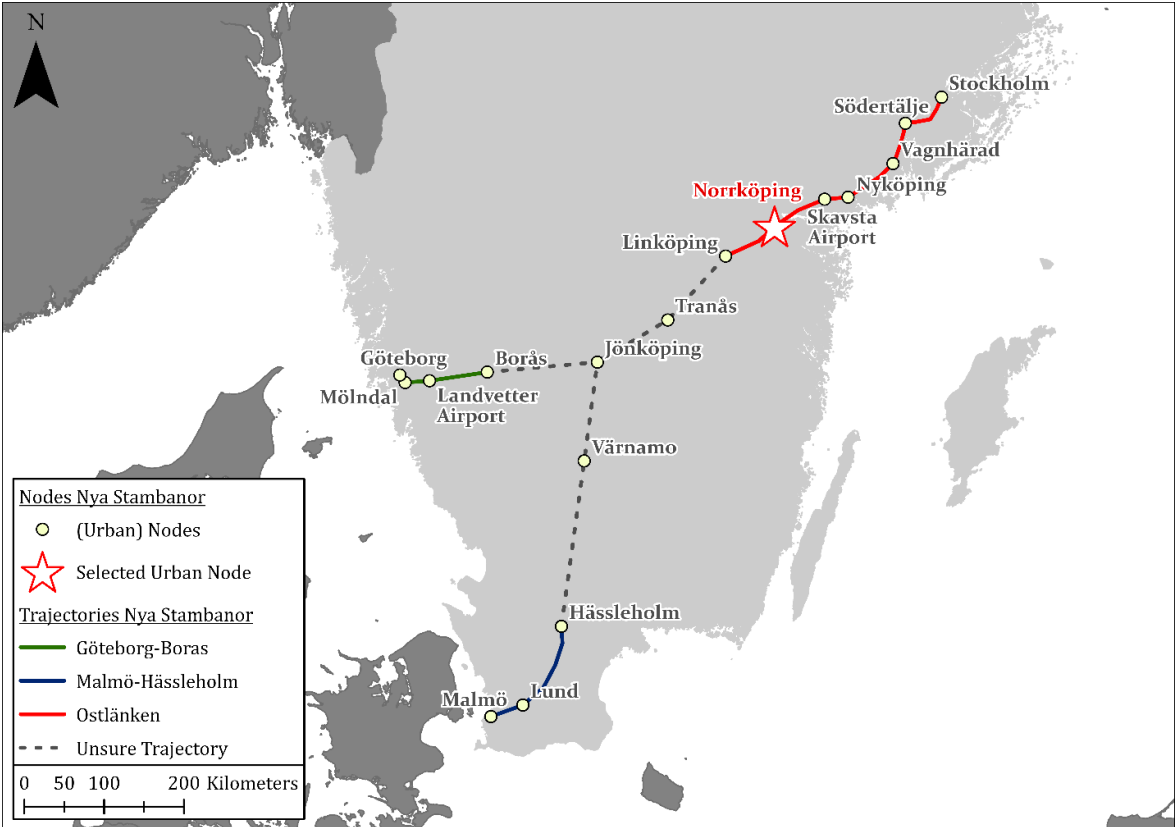

Figure 5.1. Map of Nya Stambanor (based on Trafikverket, 2021).

Second, by developing a central aim towards the corridor, it was aimed to overcome the decoupling of land use and transport developments. For example, on the trajectory towards Malmö, the processes of regional development and railway development occurred simultaneously but not in alignment with each other (see also Faith-Ell et al., 2020). On the one hand, Trafikverket looked into the presence of corridors, and whether there were any technical difficulties related to the corridors, and the associated railway development. On the other hand, negotiation between Swedish national authorities and local municipalities occurred related to the development of train stations. During these negotiations municipalities were only promised the development of a railway station along the to-be-built High-Speed Rail network, if the municipality would also plan for more and good housing in the vicinity of the new railway station. This led to competitiveness between municipalities.

So, in two decades of improving the Swedish railway system, the Swedish government hardly integrated transport planning with other policy sectors, with planning for corridor development being very decentralized. Only with the NPTI the Swedish government aimed to overcome these issues, taking a holistic perspective on corridor planning for Nya Stambanor, which was already reflected by the first corridor-wide performed SEA that is published within the NPTI. Also, Nya Stambanor was even being attributed its own budget area.

5.2 RESULTS

Throughout this chapter, the seven rules of the IAD framework will be explained one by one, based on the results from the interviews and the policy document analysis. Every rule is concluded with a final statement summarizing the most important information pertaining to this rule.

5.2.1 Boundary rules

As follows from Chapter 5.1, three governmental layers were involved in the process due to the scale of the corridor, namely the state government, the regions, and the municipalities. As part of the state government, the Ministry of Infrastructure and Trafikverket were the parties involved in corridor planning, according to interviewee SE4. Other parties directly involved due to the trajectory of the corridor were directly affected landowners and Jernhusen, who was owner of all railway stations, and owned by the Swedish government.

Over time, interviewees experienced that there was no significant change in the actors involved. Only as the scale of the corridor increased, more actors became involved (e.g., more municipalities), but no new type of actors became involved. However, within Trafikverket the 'Major projects' group was first responsible for tasks related to the corridor, but from the moment that all three trajectories were integrated into one, these responsibilities were transferred to the newly formed 'Nya Stambanor'-group within Trafikverket.

Looking at the actors not directly involved, the public and businesses need to be mentioned. Businesses were only involved if they were directly involved in rail development, or as a consultant. The public was also not directly involved. They could only at certain moments express their opinions on the corridor and related topics.

So, planning for Nya Stambanor was mainly performed by governmental parties (state government, regions, municipalities, Ministry of Infrastructure, and Trafikverket). Other parties (e.g., public and businesses) were not actively involved in the planning.

5.2.2 Position rules

With all parties agreeing upon the goals of improving connectivity between cities, thereby strengthening the cities itself, interviewee SE3 experienced that central goal-setting was useful, but only if it occurred through cooperation and close contact.

However, since different parties held responsibilities for different aspects of corridor planning, this caused different opinions on how to achieve an improved connectivity. For example, Trafikverket was the executing party on behalf of the Ministry, responsible for all planning and building related to the corridor. Regions, on the other hand, carried the responsibility concerning environmental issues. In essence, the regions controlled Trafikverket on environmental topics. Furthermore, interviewee SE4 mentioned that municipalities were largely dealing with local developments, with that negotiating with Trafikverket on developing residential and commercial areas.

So, although all parties agreed on the objectives of improving the connectivity and strengthening the cities, a clear distinction in responsibilities was present, causing differences in perspective on how these objectives could be achieved. Trafikverket was mainly dealing with issues directly related to the corridor, whereas municipalities were mainly concerned with local development (e.g., housing), albeit sometimes influenced by or influencing the corridor.

5.2.3 Choice rules

In order to be legally able to start planning for the corridor, the Ministry had to make a decision to include the corridor within the national plan for infrastructure investments. For example, in 2012/2013 the Ministry had decided that Ostlänken would be built. According to interviewee SE3, the process became quite intensive from that time onwards. Then Trafikverket was obliged by law to perform the planning of the corridor; comparing different routings of the corridor. Within these different routings, Trafikverket had to decide on different track lines in the Railway Plan. However, these decisions were influenced by environmental consultants, and needed to be approved by the regions. Concerning the environmental consultants, they "*cannot make any decisions, but the project can together have a recommendation for our client [Trafikverket]*" (SE5), as long as they fit within the earlier decided upon corridor routing. However, those recommendations did not always need to be followed entirely by Trafikverket. As long as the proposed track lines by Trafikverket were approved by the regions, it was deemed that enough mitigation of the environmental impacts was considered for the track lines, although this could mean that not all recommendations were taken up. If eventually appeals were made against this decision of the track lines, the Ministry was dealing with the appeals and could decide whether Trafikverket could proceed, or needed adjustment of the track lines. Finally, concerning the track lines, the state government was providing a permission to keep on the planning in case the track lines were approved, after which detailed planning could start for the corridor.

Over the course of the whole process cooperation with municipalities for the position of the corridor was important, as "*the municipalities they have a strong mandate to decide what to use the land for*" (SE4). This meant that Trafikverket was the party making decisions on the corridor, but they needed approval of the municipalities within for the track lines.

So, concerning the corridor planning it was Trafikverket making the decisions on corridor level (e.g., track lines), and municipalities making decisions on local developments (e.g., housing).

5.2.4   Information rules

Within the planning for the corridor "*there are a lot of meetings with the public, and a lot of documentations*" (SE4). For example, within the Railway Plan there are several moments in which the public can express their opinion on the plan. Providing the public the opportunity to express their opinion on the plan, caused that it became a very long process. Although all interviewees agreed that a lot of meetings with the public occurred, interviewee SE5 felt that this did not result in many new perspectives.

Aside to this, information-sharing also occurred between Trafikverket and the regions, because, as mentioned before, Trafikverket needed the approval of the regions related to the track lines and their environmental impacts. The outcomes of how environmental impacts were taken care of within the track line decision were also shared with the wider public through an environmental consequence description. In addition to this, the 'Nya Stambanor' department within Trafikverket had information available that was valuable for the Trafikverket-regions, when making locals plans (e.g., concerning public transport). According to interviewee SE3, this stresses the importance of internal cooperation within Trafikverket.

So, information-sharing between corridor parties, and between corridor parties and the public occurred on a large-scale, although very structured in predetermined meetings or documents.

5.2.5   Aggregation rules

As explained in Chapter 5.2.2, the parties had various different responsibilities related to planning for the corridor. All interviewees mentioned that cooperation and negotiation was important to ensure that all parties were kept on the same track. Interviewee SE3 added to this that "*het is veel beter om dus een steering group te hebben, dat je, al deze acteurs zijn dan mee van het begin af aan [it is better to have a steering group, so that all actors are included from the beginning onwards]*. Interviewee SE3 used the example of Norrköping, where a new railway station must be built. Here it occurred that Jernhusen and the municipality discussed with each other, and Trafikverket was discussing with Jernhusen and the municipality separately. According to interviewee SE3 it would have been better to have all three parties at the table from the start onwards. Otherwise, "*dan wordt het in plaats van een samenwerking wordt het echt een soort schaakspel [it will become a game of chess instead of a cooperation]*" (SE3). While performing environmental assessments, Trafikverket functioned as a steering group as such according to interviewee SE5, gathering all relevant authorities and environmental consultants in meetings on important environmental issues. Within Trafikverket, the Nya Stambanor-department was responsible for cooperation between the Trafikverket-regions, but also between the Trafikverket-regions and the municipalities. This was important as it concerned different parts of the organization both inside and outside of Trafikverket (SE3).

Although cooperation and negotiation were regarded as important principles in the planning of Nya Stambanor, interviewee SE4 mentioned that the municipalities had a very strong mandate what to use the land for; that they even had a veto. However, interviewee SE4 also stated that there always was a solution, but it only was a negotiation between the municipality, Trafikverket, and the market in order to find the optimal location for the railway (station).

So, whereas it was Trafikverket making the decisions concerning planning for the corridor, corridor planning usually occurred through cooperation and negotiation, as Trafikverket needed approval of the regions, state government, and municipalities (which even had a veto).

5.2.6 Scope rules

With the central aims of improving connectivity, thereby strengthening the cities, interviewee SE5 stated that highlighting these central aims was important for the planning of the corridors, as "*everybody has the same goal to strive to*" (SE5), and then "*everybody tries to find a solution*" (SE4). Although everybody regarded connectivity as the way forward, interviewee SE4 mentioned that there were different opinions on how to accomplish this central aim.

Looking for a shared solution, aligning different aspects (e.g., nature, rail, and logistics) was done using environmental assessments, particularly EIAs (SE5). However, environmental assessments also limited getting to an agreed solution as it had to deal with environmental, historical, industrial and military issues, which according to interviewee SE4 became detailed over time. Solutions were also not easily found as different topics were of relevance at different scales, linked to. differences in responsibilities (see 5.2.2), causing that proposed solutions were in line with the objectives a party had within the planning for Nya Stambanor. On a larger scale, often regional development was the most important topic, looking at connectivity; better connecting different cities to each other (SE4). On a smaller scale, within cities, interviewee SE3 mentioned that often discussions occurred on topics that were not directly linked to the development of the railway, with municipalities often wanting more than just the railway. According to interviewee SE3, this could cause conflicts as planning for the corridor occurred based on the current situation, whereas municipal planning was sometimes based on the future situation. Early cooperation, aligning the aims of all relevant parties, could solve this problem.

So, different responsibilities of parties, and different aims at different scales ensured that central goal setting was needed to ensure that everybody was looking towards a solution. In this, environmental assessments were used to align the different topics.

5.2.7 Payoff rules

Planning for the corridor can only start when the development of the corridor was included within the national plan for transport investments, which is determined for twelve years, and revised every four years. Therefore, the Ministry of Infrastructure decided how much money was put into the plan. However, interviewees SE3 and SE4 mentioned that this money only accounted to developments of or directly related to the corridor. But "*als de gemeente samen met Jernhusen een nieuw station wil bouwen, en wat andere dingen wil doen [...] dan moeten zij de meerkosten betalen daarvan [if the municipality wants to build a new railway station together with Jernhusen, and wants to do some things differently [...] they need to pay the additional costs of it*" (SE3). The way that these costs are divided perfectly reflected the benefits received by these parties, according to interviewee SE4, as Trafikverket on behalf of the Ministry took care of the national benefits (i.e., improved connectivity), using national financing. "*But those kind of things that the municipalities are wanting to have done is often to make their area more attractive [...]. So, I think it's rather fair that they are paying for those kind of things*" (SE4).

Furthermore, there was also the possibility to apply for funding from the EU, but interviewee SE4 stated that this was rather difficult, as Nya Stambanor is quite unmature yet, since hardly any concrete decisions were made. After it had been decided that Ostlänken will be built, interviewee SE4 expected that this would result in more ease in applying for European funding.

So, with costs directly related to the corridor being paid by the Ministry, and additional costs being paid by the municipality, this reflected the benefits received by the different parties.

5.2.8   Perspectives on future corridor planning

Reflecting on how corridor planning could be improved in future situations, several points of improvement were mentioned by the interviewees. First, enabling financing earlier on in the process. Interviewee SE3 mentioned that making more money free for earlier studies ensures better quality of the exploratory studies performed early in the process, which creates more quality later in the process, and also more insight into potential costs and benefits. Second, also having special notice for the municipalities that will not have a station is relevant, thereby enlarging the scope of corridor planning. According to interviewee SE4 it is important to help them understand what is the benefit for them. This could for example be done by showing that they have a good connection with a city that does get a train station, or by highlighting the decrease in travel time spent from A to B. Third, good documentation was mentioned by interviewees SE4 and SE5. Both interviewees point to good documentation of track lines, either selected or not selected ones. Documenting the choices that were made ensures that they can be referred to later on, when needed, strengthening information-sharing from corridor parties towards other interested parties.

5.3   PRELIMINARY FINDINGS

Planning for Nya Stambanor was predominantly done by governmental parties; the Ministry of Infrastructure decided by means of the National Transport Plan that planning for Nya Stambanor would be one of the topics for which financing would be arranged; planning for the corridor itself was arranged by Trafikverket, on behalf of the Ministry of Infrastructure; planning for local developments (in relation to the corridor) was arranged by the municipalities. Thus, each governmental level had its own responsibilities related to the development of Nya Stambanor, reflecting the MLG nature of corridor planning for Nya Stambanor. Because of the different responsibilities and objectives (Position rules) of the parties within the planning process for Nya Stambanor (Boundary rules), this aligned with the outcomes of the Choice, Scope and Payoff rules. For the Choice rules this was reflected in the fact that parties were mostly able to decide about development concerning their own responsibilities or objectives. For example, Trafikverket was able to decide on large-scale corridor developments, thereby aiming to improve the connectivity. Looking at the Payoff rules parties had to pay for the developments that they were responsible for. Trafikverket was paying for the corridor itself, on behalf of the Ministry, whereas the municipality was paying for the additional local developments. Concerning the Scope rules, the responsibilities are reflected in the different topics dealt with by different parties on different scales. For example, connectivity was dealt with on a large scale by Trafikverket. However, connectivity was also the central aim for the corridor on which all parties agreed, but since all parties had different opinions on how to accomplish this, negotiation and cooperation (Aggregation rules) were regarded as important during the policy formation for Nya Stambanor. Aiming to do so, environmental assessments, and especially EIAs, were proposed as a useful tool in combining different objectives.

6 RESULTS NETHERLANDS: TOPCORRIDORS

6.1 BACKGROUND ON TOPCORRIDORS

Dealing with issues of connectivity, and freight transport, the Topcorridors programme was set up in 2017 based on a MIRT ('Meerjarenprogramma Infrastructuur, Ruimte en Transport')-process. Within a MIRT-process, the national government is working together with local governments on issues related to the spatial development of the Netherlands, from problem-setting towards realization. In 2015, a MIRT-investigation – which is usually used to further explore the topic at hand, to gain more insight in the scope, themes, and stakeholders at hand – on the logistic corridors East and Southeast was started, which resulted in the publication of its outcomes in 2017 (Ministerie van Infrastructuur en Waterstaat, 2021). Corridor East spans from Rotterdam – Arnhem/Nijmegen – Germany (see Figure 6.1), making it an important part of the TEN-T corridor Rhine-Alpine, but it is also part of the TEN-T corridors North Sea-Baltic and North Sea-Mediterranean. The corridor focused three modalities: road, rail, and inland-shipping. Corridor Southeast is positioned on the axis Rotterdam – Noord-Brabant/Limburg – Germany, thereby also being part of the three aforementioned TEN-T corridors. Aside to the three modalities where corridor East is focusing on, corridor Southeast focuses also on a fourth modality: pipelines (Ministerie van Infrastructuur en Milieu, 2017). Although for both corridors a separate MIRT-investigation was performed, both corridors were merged together in the report of these investigations that was published by the Ministry of Infrastructure and the Environment, reflecting the joint programmatic approach of the Topcorridors programme.
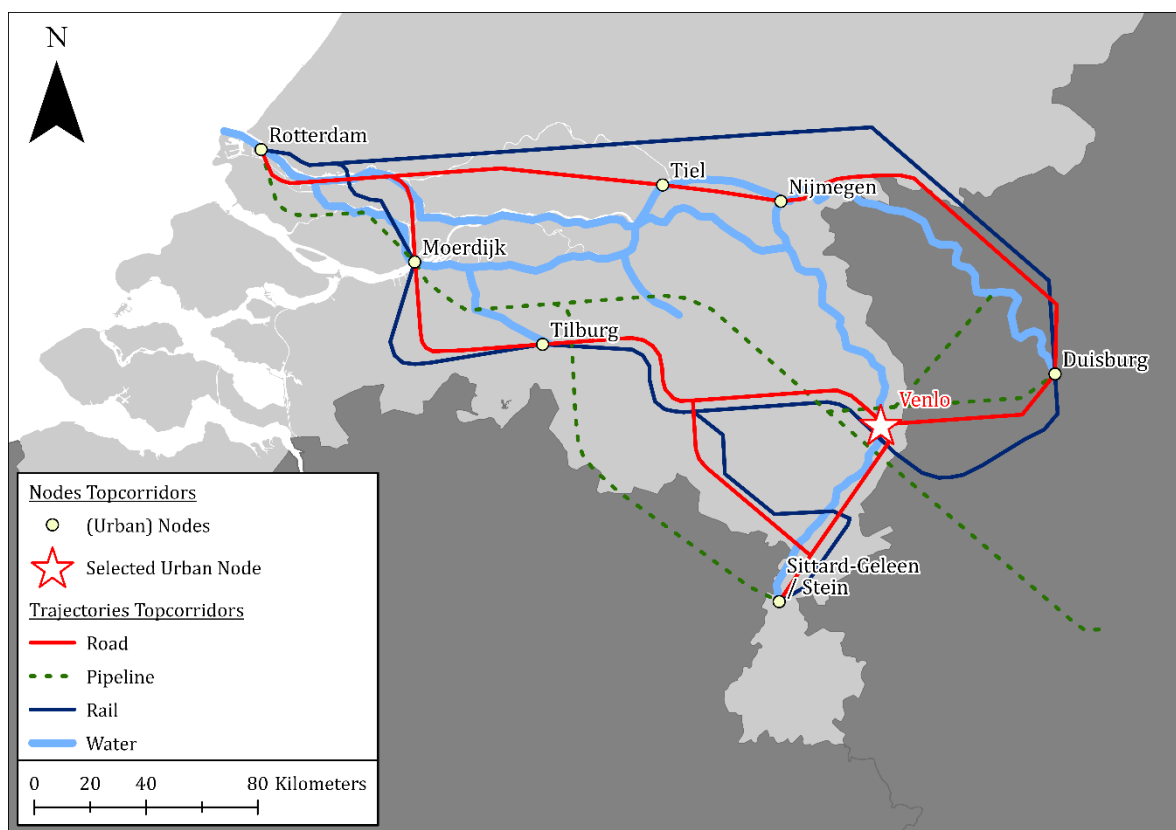

Figure 6.1. Map of Topcorridors (based on Programmaraad goederenvervoercorridors Oost en Zuidoost, 2021).

Based on this MIRT-investigation, a Governance plan and an Action plan were developed (Ministerie van Infrastructuur en Milieu, 2017). The former one explained how involved public and private partners were planning to collaborate in developing and implementing the Topcorridors programme, in order to realize the policy aims of the programme (Topcorridors, 2019). In the Governance plan it was mentioned that the governance should support integrated and programmatic thinking on a corridor level, while enforcing reciprocity, equality, and unity. In this, the above-average nodes are playing a crucial role, which are the cities shown in Figure 6.1. The latter one, the Action plan, focused on which actions to perform within the programme (Topcorridors, 2017). Actions relate to the vision that the Topcorridors would facilitate a reliable, robust, safe, and sustainable logistics corridor that contributes to economic growth (Topcorridors, 2022a). After the Governmental Deliberations on the MIRT 2020, and based on these two plans, the Future Agenda was developed, elaborating on the actions posed in the Action plan and the MIRT-investigation-report. Translating the actions to a future pathway, five pillars were developed (Topcorridors, 2022b):

I.   Futureproof connections between Mainport Rotterdam and the European hinterland;
II.   International multimodal accessibility of strategic nodes;
III.   Sustainable spatial-economic development of strategic nodes;
IV.   Making the East and Southeast corridors sustainable, and;
V.   State of the art digital facilities.

So, the process can be distinguished in four different steps. From research, to having a programme, towards developing the Future Agenda, which on its turn was implemented within the programme. In order to keep the programme going, coordination occurred on the project level with private organizations because they wanted concrete projects, and were less interested in programme-thinking, and on national level to coordinate provincial policy, policy between provinces, but also within provinces, between sectors. In the light of action II, the corridor was extended towards Duisburg, to enable cooperation with Europe, and to ensure good integration within the international network (i.e., TEN-T network).

6.2 RESULTS

Throughout this chapter, the seven rules of the IAD framework will be explained one by one, based on the results from the interviews and the policy document analysis. Every rule is concluded with a final statement summarizing the most important information pertaining to this rule.

6.2.1 Boundary rules

Based on a MIRT-investigation started in 2015 on the East and Southeast logistic corridors, the Topcorridors programme was set up in 2017 with the aim of overcoming potential bottlenecks on the two corridors, as was defined during the MIRT-process. For this programme, a programme manager from within the Ministry was appointed to oversee the process. Covering different jurisdictions, the programme was developed so that different governments were collaborating within the programme, reflecting MLG. Although other parties such as Rijkswaterstaat, ProRail, Topsector Logistics and Havenbedrijf Rotterdam were also included in the project, because their influence in relation to the corridor was considered early in the process, the programme consisted largely of governance parties, as mentioned by interviewees NL1 & NL4: *"Het is voornamelijk een overhedenfeestje. [It mainly is a governmental party.]"*.

Due to the set-up of the programme, interviewees often mentioned businesses, local communities, the EU, the EC, Belgium, and Germany as important actors less present in the planning phase for Topcorridors. Interviewees NL1, NL2, NL3 and NL4 agreed that more collaboration with these actors would benefit the policy formation process. Businesses often wanted to start building concrete projects, which did not correspond with the programmatic set-up. Interviewee NL1 pointed out that earlier development of concrete projects would create examples of what could be achieved within the programme, giving some guidance.

Aside to that, since the actors collaborating within the programme collectively developed goals and aims for planning of the corridors, there was hardly any change in actors over time. Thus, enabling the entry of other parties caused either the obligation of the new actor to adhere to the developed aims and goals, or the entire programme must be willing to widen the scope of the programme. However, in line with the MIRT-rules the programme started with more vertical collaboration, creating collaborations with the municipalities of the six above average nodes. However, as the municipalities did not become part of the programme, collaboration was limited. Nevertheless, the interviewees agreed that the programmatic set-up benefitted good collaboration between programme partners and municipalities, and amongst each other.

Lastly, interviewee NL2 mentioned that although overall there was a quite stable list of parties involved, the representatives of these actors sometimes changed, since the timespan of the planning of the corridor consists of multiple political cycles. This influenced the focus of these parties on the programme, as their time active was shorter that the duration of the programme.

So, while the programme included mainly governmental parties, it was regarded that more collaboration with businesses, the EU, and neighbouring countries would also be beneficial.

6.2.2   Position rules
When setting up the Topcorridors programme in 2017, the goal was to overcome potential bottlenecks and to strengthen the transport of logistics. Since there was no predefined aim when starting the process of policy formation for the programme, *"eigenlijk hebben we pas gaandeweg het traject beleidsvorming georganiseerd over wat vinden we belangrijk en hoe doen we dat dan met elkaar. [actually, only during the trajectory we have organised policy formation about what do we regard as important and how will we do that together.]"* (NL1).

Looking for ways to govern the programme, and developing aims and goals of the corridors, the involved provinces gained their seat in the governance of the programme, which was important as their policy goals could be of influence for the programme. Reflecting on the themes included in the goals, interviewee NL4 states the following: *"de doelstellingen zijn eigenlijk heel vaak tweeledig: economische ontwikkeling, en leefbaarheid en duurzaamheid. [the goals are actually often twofold: economic development, and liveability and sustainability.]"* These themes were also on programmatic level considered as important goals in the policy formation for Topcorridors. In that sense it was also experienced that aligning the goals of all actors into overarching goals was beneficial for the programmatic approach of Topcorridors. However, policy goals of businesses were often neglected in the policy formation phase of Topcorridors. Interviewees NL2 and NL4 mentioned that better integration of businesses in the programme could overcome the aforementioned issues.

So, within the programme, central policy goals were set up, on which all programme parties agreed. However, alignment with policy objectives of businesses was largely missing.

6.2.3   Choice rules

Although unanimity was regarded as highly relevant in the governance of the corridor, when it came about actually making decisions, especially decisions concerning money, this was up to the governors. Decisions on financing were for example made during the Governmental Deliberations about the MIRT, where the Minister discussed with parties of the programme team (i.e., the Ministry, the responsible provinces (Gelderland, Limburg, Noord-Brabant, and Zuid-Holland), and Havenbedrijf Rotterdam). Thus, businesses and municipalities were not directly involved in the decision-making process. *"[H]et is wel innovatief dat ook het havenbedrijf in het MIRT-overleg zit." [It is innovative that the Havenbedrijf also takes part in the MIRT-discussions.]* (NL3), as non-governmental actors are usually not included in the decision-making process. However, Havenbedrijf Rotterdam was considered such an important actor that they also earned their seat in the Governmental Deliberations about the MIRT, becoming able to take part in the decision-making process.

While often the mandate of all actors was clear, situations with conflicting opinions about the responsibilities occurred. As policy formation for Topcorridors mostly occurred in the domain of accessibility (NL1), it was hard to put spatial or integrated issues on the agenda, as other governors were responsible for these issues. This limits a smooth process of policy formation.

So, most decisions, especially on programme level were made by governors. However, making decisions about integrated issues was hard, due to conflicting opinions about responsibilities.

6.2.4   Information rules

Information-sharing occurred in three ways. First, in terms of internal communication, periodic meetings were planned to talk about the progress made, to make financial decisions, and to set priorities. Furthermore, periodic information-sharing between programme parties occurred. Second, external communication occurred through providing relevant documents on for example the Topcorridors website, which was accessible to everyone. However, *"Daar moet je natuurlijk naar op zoek gaan om dat te zien" [You have to search for it to look into it.]* (NL1). Third, evaluation occurred on three levels throughout the process of policy formation. The content of all three evaluations was explained respectively as follows: *"Hoe staat die actie ervoor, [...] doen we de goede dingen, [...] wat dient zich aan in de wereld straks. [How is the action doing, [...] are we doing the right things, [...] what is soon about to happen in the world.]"* (NL5).

Interviewees thought the way of information-sharing positively influenced policy formation. It was mostly seen as a feedback-loop, reflecting on and strengthening programme-thinking, what otherwise would have been regularly neglected according to interviewee NL3. However, it appeared to be difficult to communicate between programme level and project level, due to the fact that project-thinking used to be the way of thinking, whereas thinking on a programme-level was mostly new to project leaders and businesses. Enforcing and optimizing (the communication between project and) programme thinking was therefore one of the aims of the Topcorridors programme. Finally, interviewees NL4 and NL5 stated that reflection and evaluation could be better. Interviewee NL5 suggested that enforcing 'smart' formulation of policy goals could be beneficial for evaluation, as 'smart' policy goals can be measured.

So, information-sharing between programme parties was quite extensive, which was deemed beneficial for the policy formation. However, this programmatic approach did not align with the project-thinking of businesses, eager to start with concrete projects early on in the process.

6.2.5   Aggregation rules

At the time the programme was set up, unanimity was regarded as a key principle in the policy formation process of the Topcorridors programme (NL2; NL3; NL5). But within the programme not all parties were included (see Chapter 6.2.1). Parties like provinces or Havenbedrijf Rotterdam were having their own specific relevant issues at hand, and therefore more often had a stronger opinion in the policy formation process. So, interviewee NL1 stated that there was a relative equality between the involved parties, reflected in the following quotation: *"als ministerie niet wil en twijfelt of dingen afhoudt, gebeurt er niks, maar als ministerie iets wil en er komt niemand met een subsidieaanvraag, […] dan heb je nog niks." [in case that the Ministry does not want to or is doubting and is holding off things, nothing happens, but if Ministry does want something and no one is coming with a subsidy application, […] then you still have got nothing]* (NL3)*. Interviewee NL5 adds to this from a decision-making perspective that the Ministry had a relatively high vote, but also reflected on unanimity as key point. However, sometimes the one who shouted loudest, got his right, according to interviewee NL4.

Looking at parties left out of the programme, municipalities and businesses were mentioned. Municipalities could pass on their opinion to the deputies of the province, who on their turn passed it on to for example the Governmental Deliberations (NL2). So, "*de gedeputeerde is een soort spokesman voor de hele regio dan [the deputy is some kind of spokesman for the whole region]*" (NL3). In relation to businesses, interviewee NL4 mentioned that it was important to create a community of businesses, researchers, and governments within each node, giving renewed energy to projects. However, within the nodes not all actions were discussed on programme level. Interviewee NL2 stated that several actions were small enough not needing to be discussed on programme level. According to interviewee NL4 the predominant focus is on the above average nodes (e.g., Venlo). So, development in other nodes was not actively supported by the programme.

So, within the Topcorridors programme, unanimity was regarded amongst the programme partners as key principle in decision-making. However, alignment with businesses (non-programme partners) could ease the decision-making process.

6.2.6   Scope rules

The perspective taken within the Topcorridors programme was of an integrated nature. Although a variety of topics (infrastructure, logistics, spatial development, digitalization, sustainability) were included, interviewees NL1, NL3, and NL4 experienced that it was organized too sectoral, with some decision-makers making choices in the domain of accessibility, not considering the wider, integrated perspective. Interviewee NL4 stated in this regard that three blood types are needed to overcome this sectoral approach: mobility, spatial development, and economic affairs. Sectoral practices were caused by conflicts in responsibilities (NL2). Policy makers were too often thinking in terms of their own sector, working in projects. Explaining the larger-scale importance, and thus cohesion, of the local projects, was difficult, as programme thinking only seemed to be working within the programme team. So, *"Programma-denken en dat je duidelijk kunt maken in de communicatie ook, kijk eens dit is het pakket wat samenhangt. […] Dat is eigenlijk heel belangrijk." [Programme-thinking and that you are able to express in the communication also, look, this is the coherent package […] That really is important].* (NL3). Therefore, translating the local importance towards national benefits by thinking in different scales was of importance:

"Je kunt op het schaalniveau van de wereld kijken, of van Europa, of landen-schaalniveau. Maar daar kun je bijna ook steeds je Matrushka-pop weer openklappen tot op provincie niveau en op gemeentelijk niveau, en op locatie-niveau per bedrijventerrein. [You can look at the scale of the world, or of Europe, or country-scale. But there you can almost constantly open up your Matrushka-doll until the province-scale and on municipal scale, and on location scale per commercial area.] (NL1)"

Lastly, the international connection – one of the central themes – must be strengthened, according to most interviewees. Hardly any cooperation with Germany and Belgium existed, whereas the corridor was drawn until Duisburg. Venlo being positioned in the area of influence of Duisburg could be a potential problem for good cooperation with Germany, as developments in Venlo could negatively influence Duisburg, according to interviewee NL4.

So, as the Topcorridors programme took an integrated perspective on corridor planning, several topics were included in the programme. However, this programmatic thinking was not yet taken up by local policy officers, which were all too often working sectoral.

6.2.7 Payoff rules

What became clear at first was that Topcorridors was a programme without budget. The interviewees agreed that having no prior budget caused that the process became slightly more difficult and slower, as for each new project financing had to be arranged. However, projects could easily be added to the programme, as no strict budget was set up beforehand, enabling the possibility of finding funding for new projects. Financing was arranged more easily when developing concrete projects (NL3). Interviewee NL2 agreed on this while mentioning that constant energy had to be put in the programme, and results also needed to be made, as otherwise attention would have faded away, so financial support, *"dat is natuurlijk essentieel. Zonder geld wordt er niks gebouwd en zonder projecten heb je ook geen goederencorridor. Dan blijft het een papieren tijger. [of course, that is essential. Without money nothing will be built, and without projects there will be no logistics corridor. It will remain a paper tiger]"* (NL2).

When looking at how finances should be divided, interviewees agreed that this was difficult, especially when making one budget for the entire corridor. Uncertainties about the ownership, responsibilities, and benefits were issues related to this. So, financing differed per situation. Interviewee NL4 stated that the largest share was paid for by businesses, whereas interviewee NL3 stated that projects were co-financed by the municipality, the province and Europe, and interviewee NL1 mentioned that usually lower levels of governance looked up to the Ministry for financing, as it was well known that the Ministry had the largest budget of all parties.

All interviewees agreed that subsidies from the EU, via the so-called CEF, which is linked to the TEN-T network, were often used. However, interviewees did not agree on the nature of the CEF, as interviewee NL3 explained that they successfully applied for the CEF, while interviewees NL1 and NL4 mentioned that the CEF was merely focused on infrastructure projects; *"om integrale subsidies binnen te halen, is al schier onmogelijk ook binnen de werkwijze van Brussel." [to retrieve integral subsidies, is almost impossible within the way of working of Brussels.]* (NL1). Contrastingly, interviewee NL2 stated that it was easier to apply for the CEF, when you were able to show the integrality of projects to the EU.

So, as a programme without budget, financing had to be arranged constantly. This differed per situation. However, the CEF was often used as a useful tool to retrieve funding for the corridor.

6.2.8 Perspectives on future corridor planning

Reflecting on how corridor planning could be improved in future situations, several points of improvement were mentioned by the interviewees. First, interviewee NL4 mentioned more inclusion of businesses and international partners, as now they are largely left out of the programme. Interviewee NL2 agreed with this, and stated that adding international partners is important, since the international component is essential if you really want to achieve something. Second, ensuring that everyone stays focused is brought forward. Doing so can be facilitated by creating exemplary projects early on in the programme, according to interviewee NL1. Interviewee NL3 also points to the MLG of the programme as being beneficial to keeping the focus, as this MLG ensured that parties are kept in contact with each other about the programme. Third, in relation to ex post evaluation, interviewee NL5 mentioned that the goals set within the programme must be set smart; being quantitatively measurable. In this way the programme can be better evaluated.

6.3 PRELIMINARY FINDINGS

At the time the Topcorridors programme was broadly set up, the Ministry of Infrastructure and Water Management, the relevant provinces (Gelderland, Limburg, Noord-Brabant, and Zuid-Limburg), Havenbedrijf Rotterdam, ProRail, Rijkswaterstaat, and Topsector Logistics were involved. Together, they initially were the main parties taking part in the process of policy formation. However, other parties such as businesses, the EU, and neighbouring countries were left out of the programme. These results of the Boundary rules are reflected in the Position, Choice and Aggregation rules. Looking at the Position rules, the programme parties were working in line with common objectives. However, alignment with the objectives of for example businesses was missing. Also, for Choice rules, programme parties were directly involved in the decision-making process, whereas this was not necessarily the case for not-included parties. In this case, alignment with the not-included parties would be beneficial for the decision-making process. A similar situation arose from the results of the Aggregation rules, as within the programme unanimity was regarded as a key principle within the decision-making process. However, here again, alignment with not-included parties would ensure a smooth decision-making process. In essence, what the outcomes of these four rules show is that although the programmatic approach to corridor planning had its benefits within the programme, it constantly needed alignment with the not-included parties.

Alignment with other parties also meant information-sharing with not-included parties. Whereas within the programme information-sharing was quite extensive, information-sharing with not-included parties was relatively difficult due to a different way of thinking. Because of the set-up of the Topcorridors programme, a programmatic way of thinking was employed by the programme parties. However, this way of thinking was often not understood by businesses, being used to project-thinking. This difference in thinking arising out of the Information rules became also visible in the outcomes of the Scope rules. Here, differences in responsibilities caused that parties outside of the programme were often working in a sectoral manner, not taking into account the integrated nature of the Topcorridors programme. This sectoral approach in corridor planning was also present within the Payoff rules. As the Topcorridors was a programme set up without a budget, financing constantly had to be arranged. However, it was experienced that sometimes it was difficult to retrieve (European) funding for projects with an integrated nature. So, also funding was arranged sectoral in some situations.

So, in essence two overarching divisions arose from the seven rules. The first being included versus not-included parties, causing the need of alignment between both groups. The second being programme-thinking versus project-thinking, or in other words an integrated approach versus a sectoral approach. In this situation, ensuring the enforcement of programme-thinking is of importance.

Overcoming the problems related to these two divisions can strengthen the institutional arrangements that stand at the basis of (good) corridor planning.

7 ANALYSING CORRIDOR PLANNING PRACTICES: (DIS)SIMILARITIES BETWEEN THE OUTCOMES OF THE IAD FRAMEWORK

Providing a first step towards suitable arrangements for corridor planning, this chapter will elaborate on and compare the outcomes of the IAD framework of all three cases (Chapters 4, 5, and 6). Doing so, this chapter will illustrate differences and similarities between the outcomes of the three cases, which are summarized in Table 7.1.

Looking into the outcomes of the **Boundary rules**, what becomes visible is that only for Topcorridors a very strict division between included and not-included parties exists. This was due the programme being set up, where from the start onwards important parties were included, whereas others were left out on purpose. In this sense, Rail Baltica is more or less the opposite of Topcorridors, with all parties being able to enter the process of policy formation at nearly every moment of the process. Nya Stambanor is positioned in between the other two cases, as not everyone was freely able to enter the process. However, the type of actors involved was not always predetermined. Based on the scope (sectors and scales) of the corridor, all governmental layers were involved.

The difference in **Boundary rules** as described above is reflected in many of the other six rules, as will largely be explained below. Before doing so, one final point regarding the **Boundary rules** will be made in relation to two often mentioned types of actors. First, businesses were not thoroughly involved in both Topcorridors, and Nya Stambanor. In Rail Baltica they could more freely participate in the policy formation process. Second, cooperation with international parties was occurring on very small base in Nya Stambanor. In Topcorridors, it did occur slightly more, but not as much as in Rail Baltica, where the nature of the corridor prescribed cooperation with the other two Baltic States, and the EU.

When looking at the aim-setting for all corridors, the ease of entering for any party willing to do so, was more or less in line with the ease of developing additional objectives aside to the central aims of the corridor. The Topcorridors programme had developed a set of aims central to their programme, and the related parties. However, local developments had to fit within the centrally developed aims, and alignment with the goals of business was most often missing. Contrastingly, for both Rail Baltica and Nya Stambanor there were possibilities of local additions to the centrally developed aim (i.e., connectivity), which is in line with both corridors being more open to entry of new parties. Thus, the openness as experienced in the **Boundary rules** is also largely reflected in the **Position rules**. Lastly, regardless of the ease of new parties entering, in all three cases agreement on the central aim was experienced, although for Rail Baltica sometimes conflicts with environmental organisations were occurring.

The aforementioned aims and objectives of parties were reflected in the outcomes of the **Choice rules** for Nya Stambanor and Rail Baltica. For both corridors connectivity was predominantly a national aim, which resulted in the situation that the national government – or the related Ministry or Transport Administration – was responsible for decisions on a corridor level. Objectives set in relation to local developments, were also decided about on a local level (i.e., municipalities and cities). For Topcorridors the decision-making process was

less reflecting the central aim-setting of the programme. Whereas aims were set on behalf of all programme parties, it was only governors within the programme making the decisions, which basically comes down to provinces and the Ministry making the decisions, jointly. On a local level, policy officers of the municipality were able to make some decisions on a project-level. However, it had to be in line with the objectives set by the programme. So, this highlights the similarity that exists between the **Position** and the **Choice rules**. The level on which a certain aim or objective had most influence also impacted which party was making the decisions regarding these aims or objectives.

With the **Choice rules** already having reflected on the choices an actor can make, the **Aggregation rules** show how these decisions are reached, and by who. What is seen in all three cases is that although it was predefined which parties would make the final decision, this is hardly the only party developing this decision, highlighting the ever-existing presence of MLG. It was aimed for in all three cases that developing a decision occurred in a collaborative way, with Topcorridors even having mentioned 'unanimity' as a key principle in their decision-making process. However, which parties were to be collaborating differed. For both Topcorridors and Nya Stambanor, collaboration meant cooperation between the included parties, with businesses and the public only playing a minor role in respectively Topcorridors and Nya Stambanor. In Estonia, collaboration was occurring more on a large scale, even including the public, businesses, and other interested parties. Thus, the way a decision is developed (**Aggregation rules**) aligned with the **Boundary rules**, since Rail Baltica was the most open process for new parties to enter. This was exactly where the **Aggregation rules** differed from the **Choice rules**. While **Choice rules** were often already predefined by the institutional background, **Aggregation rules** were influenced by the openness of corridor planning (**Boundary rules**). In other words, which party was legally allowed to decide about what topic, on what scale, was set by law, while the amount and type of parties able to have influence on the decision-making process was affected by the ease of entering the corridor planning process for a certain actor.

As mentioned regarding the **Boundary rules**, Rail Baltica was the corridor where the EU had the most important role. This was of no surprise, since Rail Baltica was initiated partially by the EU, and the corridor was also designed as an international corridor, stretching at least all three Baltic states. The international perspective was also taken up in Topcorridors and Nya Stambanor, but in a less prominent way. Thus, this part of the outcomes of the **Scope rules** clearly aligns with the **Boundary rules**. Another aspect of the **Scope rules** is the variety of topics/sectors taken into the policy formation process. For Topcorridors, as a result of the programmatic set-up, land use developments and transport developments are integrated within the programme, making Topcorridors a corridor of an integrated nature. However, this programmatic way of thinking was not always taken up by businesses, as mentioned before, since they were all too often working sectoral. Land use and transport developments were not that thoroughly integrated in Rail Baltica and Nya Stambanor. Although in earlier phases of corridor planning for Nya Stambanor land use development (i.e., housing) was taken up in the process, this was discarded when all three trajectories were taken up in the Nya Stambanor plan. Currently Nya Stambanor and Rail Baltica are largely dealing with transport developments on the national (i.e., corridor) level, whereas land use developments were dealt with locally, on a municipal level. In trying to connect these developments Nya Stambanor and Rail Baltica showed that respectively EIAs and SEAs were used to integrate both developments.

Outcomes of the **Information rules** showed that the quality and quantity of information-sharing for Topcorridors depended whether a party was included or not included in the programme. Information-sharing within the programme was quite extensive, while on the other hand it was hard to share information with for example businesses – not being included in the programme – as it seemed hard to align project-thinking of the businesses with programme-thinking of the Topcorridors programme. For Nya Stambanor and Rail Baltica information-sharing occurred on a large scale between included parties and with the wider public, not only passive information-sharing, but also active information sharing such as public consultation sessions. Occurring widely in Nya Stambanor and Rail Baltica, the way and amount of information-sharing (**Information rules**) does not correlate with the **Boundary rules** in contrast to Topcorridors.

Lastly, in the outcomes of the **Payoff rules**, clear differences in the approaches of all three corridors can be observed. For Rail Baltica, on a corridor level most financing was arranged by the EU, with the national government only adding a small amount of financing. Whereas this did not entirely align with the **Choice** and **Aggregation rules**, since the EU was not included in the decision-making process, the costs did align with the benefits received, as it was experienced that the EU and the Estonian state were the parties mostly benefitting from the corridor. The same applied for financing for local developments, with the state financing the majority, and the city only small amounts. For Nya Stambanor financing was in line with the **Choice rules**, and also with the benefits received. Here, Trafikverket financed the corridor developments, and the municipality financed local developments. The situation of Topcorridors was different from the other two corridors, as the programme was developed without a budget. Therefore, constantly new funding had to be arranged for each project, which was financed by various parties, either inside or outside the programme parties. Thus, the **Payoff rules** for Topcorridors did not necessarily align with the **Boundary rules** of the corridor. Financing not being arranged with programme parties solely caused that difficulties arose when costs were to be divided beforehand. As different non-programme parties were included at different moments it was unsure which part had to be paid by which party. Therefore, it would be beneficial if beforehand an investigation would be performed on which parties would become included at which moments of corridor planning. In this way, financing can be easier divided during early stages of corridor planning, smoothening the policy formation process.

	Rail Baltica, Estonia	**Nya Stambanor, Sweden**	**Topcorridors, Netherlands**
Boundary rules	All parties (in)directly involved, but this did not prevent court cases.	Mainly governmental. Public and businesses not actively involved.	Programme included mainly governmental parties. Businesses and EU not included.
Position rules	Connectivity as central aim, with room for integration locally.	Common objective, but municipality has more goals in land use, whereas Trafikverket is mainly focused on transport.	Within programme central policy goals were set up. Alignment with the goals of businesses was missing.
Choice rules	Position of corridor decided by national government. Local governments able to integrate further aspects based on own aims.	Trafikverket is making the decisions on corridor level. Municipalities are making decisions on local developments (e.g., housing).	Decisions mainly made by national and provincial governors. However, due to conflict in opinions about responsibilities hard to make decisions about integrated issues.
Information rules	Informing affected parties was obliged by law, as prescribed by for example the SEA process.	Information-sharing is occurring widely, and very structured. However, it did not provide many new perspectives.	Quite extensive within programme. But hard to align project-thinking of businesses with programme-thinking of the programme parties.
Aggregation rules	Collaborative nature, but final decision made by most important party. Less public consultation preferred.	Trafikverket is making the decisions, but with approval of the regions, the state, and the municipalities.	Unanimity as key principle, but alignment needed with businesses in decision-making process.
Scope rules	On corridor/national level connectivity as main focus. LUTI done locally, but translation from national to local is difficult, guided by SEA.	Variety in responsibilities, scope and topics needed a central aim. Alignment on this can be done through EIAs.	Integrated perspective by programme was not always taken up by businesses, and policy officers, working sectoral all too often.
Payoff rules	EC largely financed corridor development, Estonian state partially. State and Rail Baltica largely financed local developments. Only small parts of financing covered by cities.	Costs for corridor paid by Ministry, and additional costs paid by municipalities, reflecting costs and benefits. EU funding is difficult due to immaturity of the process.	Programme without budget. Constant need to arrange funding via for example CEF. Arranging financing was sometimes difficult because of programmatic set up.

8 DISCUSSION: TOWARDS INSTITUTIONAL ARRANGEMENTS FOR ENHANCING CORRIDOR PLANNING

This chapter will reflect upon the comparison made in Chapter 7, by connecting the outcomes to the theoretical background (Chapter 2) that stands at the basis of this study. Doing so, this chapter aims to shed a light on the barriers, enablers, and conditions of corridor planning.

8.1 LAND USE-TRANSPORT INTERACTION (LUTI)

With connectivity of the corridor as the predominant aim within all three corridors (Position rules), transport developments were particularly present in all three corridors (Scope rules). However, previous research has shown that when dealing with the multi-sectoral issue of corridor planning, integration of land use and transport developments is important (Bertolini et al., 2005), as land use developments and transport developments are inherently connected to each other (Van Geet, 2021; Heeres, 2017). Heeres et al. (2012; 2016) pointed to having a widened functional and spatial scope, together with networked decision-making as essential in dealing with integrated planning needed to deal with the multisectoral issue of corridor planning.

Topcorridors took a networked decision-making approach (Aggregation rules) with both a widened functional and spatial scope towards LUTI. On the other hand, in Rail Baltica and Nya Stambanor a widened spatial scope was lacking, as local land use developments and national corridor (i.e., transport) developments were planned for at different scales (Position, Choice, and Scope rules). Additionally, networked decision-making did not occur in Rail Baltica. Reflecting on this, in all three cases it was experienced that networked decision-making together with a widened functional and spatial scope was beneficial for or would have helped the policy formation for the planning of the corridor, in line with Heeres et al. (2012; 2016).

So, the previous part shows that the Position, Scope, and Aggregation rules are of importance for LUTI-practices. Position and Scope rules have shown that land use developments and transport developments can occur integrated, but also sectoral. Performing them in an integrated manner was experienced beneficial. Doing so, the Aggregation rules have shown that networked decision-making was deemed useful for the policy formation phase of corridor planning. Lastly, not previously mentioned, the Payoff rules have shown that dividing costs was easier when land use developments and transport developments did occur sectoral. Then, financing also occurred sectoral. In case of LUTI-practices, as performed in Topcorridors, it was experienced that arranging funding for integrated developments was difficult. How this can be optimized needs further investigation.

8.2 MULTI-LEVEL GOVERNANCE (MLG)

As mentioned in the previous paragraph, networked decision-making was positively valued in the policy formation process of a corridor. MLG was brought forward as an important concept in reflecting the nature of decision-making in corridor planning (e.g., De Vries & Priemus, 2003; Hooghe & Marks, 2003; 2020; Marsden & Rye, 2010). MLG in relation to corridor planning was characterized as follows. Different governmental levels becoming involved, non-governmental actors taking over some responsibilities, and actors related to the EU becoming of importance.

All three corridors involved multiple governmental levels (Boundary rules), which could foster networked decision-making (Aggregation rules). However, this networked decision-making was not the case for Rail Baltica and Nya Stambanor, regardless of the presence of various governmental levels. Also, in all cases non-governmental actors were not actively involved in the planning process (Boundary rules), with the exception of Havenbedrijf Rotterdam for Topcorridors. The lacking inclusion of non-governmental actors limited policy formation, as it was hard to align corridor interests with for example business interests (Position rules). The absence of businesses was also reflected in the financing and decision-making process (Payoff and Choice rules). It was experienced that whoever finances the development, also had influence on the decision-making, not involving businesses. The same situation applied to the EU/EC, except for Rail Baltica, where the EU played an important role, especially with regards to financing (Payoff). Their presence was positively valued, not only because of the financial support, but also because of the coordinating role of the EU in corridor planning for Rail Baltica.

So, the presence or absence of various governmental levels, non-governmental actors, and EU-related actors (Boundary rules), were reflected in many other rules, especially within Payoff and Aggregation rules. When actors played an important role within corridor planning, their contribution to financing the planning of the corridor (Payoff rules) was also reflected in the decision-making process (Choice and Aggregation rules). To conclude, the presence of various governmental levels, and EU-related actors was valued positively, although the way in which to deal with several levels of government needs further investigation. The presence of non-governmental actors was valued differently per case, which potentially has to deal with the approach to corridor planning; project-oriented, or programmatic.

8.3 PROGRAMMATIC CORRIDOR PLANNING

Dealing with the variety of parties that is proposed in the previous paragraph, coordination of these parties needs to be enhanced (Hooghe & Marks, 2003), in order to reach a common policy objective (Mathieu et al., 2017), and to ensure that different parts of a corridor are kept in alignment with each other (Pellegrinelli, 2011). This can be done using a programmatic approach. Patanakul & Pinto (2017) have defined six guidelines towards good programme management, which are the following; dealing with multiplicity; alignment with the political context; stakeholder management; stating the to-be-achieved benefits, and evaluation of these benefits; being futureproof; enforcement of project and programme management. The following part will elaborate and reflect on the presence of these six guidelines for all cases.

With Topcorridors being set up as a programme it is not surprising that all six guidelines were visible in the policy formation process. Every guideline was positively experienced by at least one interviewee, demonstrating that programmatic corridor planning for Topcorridors was highly valued. Although Rail Baltica can be seen as a programme, since Rail Baltica functioned as the overarching party for all corridor projects within all Baltic States, the programmatic approach towards corridor planning was less visible. Nevertheless, five out of six guidelines were present, with only the enforcement of programme management missing. Compared to the other two corridors, Nya Stambanor was performed less in a programmatic manner. Only in the last decade, more guidelines became present, as the 'Nya Stambanor' department within Trafikverket was set up, becoming more coordinative, and programmatic. Currently, all guidelines are present for Nya Stambanor, though some quite unmature.

So, while corridor planning was not performed in a full programmatic approach for every corridor, when one of the guidelines was present in the policy formation process, this was basically always positively experienced. The six guidelines stand in relation to all seven rules of the IAD framework; dealing with multiplicity relates to Boundary rules, Position rules, Choice rules, and Scope rules; alignment with the political context relates to Position rules; stakeholder management relates to Boundary rules; stating the to-be-achieved benefits relates to Position rules, and evaluation of these benefits relates to Information rules; being futureproof relates to Payoff rules, and; enforcement of project and programme management relates to Boundary rules and Aggregation rules. Thus, all rules were relevant for showing the programmatic approach taken in corridor planning for all three cases. However, enforcement of programme management, stakeholder management, and dealing with multiplicity were experienced as being slightly more relevant than the other three guidelines. Additionally, setting priorities over the course of the corridor planning process was also often valued positive for programmatic corridor planning. So, prioritizing of actions or projects can be added as a potential seventh guideline towards proper programmatic corridor planning.

8.4 ENVIRONMENTAL ASSESSMENTS

As mentioned before, environmental assessments were sometimes used to guide the decision-making process of corridor planning, while trying to mitigate the negative effects of corridor planning, also mentioned by Coutinho et al. (2019). Two types of environmental assessments were used, and legally required for large-scale infrastructure developments; SEA and EIA. Both were used in different phases, but aligning them in infrastructure networks turned out to be difficult (Arts et al., 2011), whereas it was regarded important to align both assessments (ECMT, 2000). This can be done using the concept of tiering, which is about transferring information between different levels (Arts et al., 2011). So, to explore in which degree (tiering of) SEA and EIA can support programmatic corridor planning the following three characteristics will be investigated: guiding decision-making, being a legal requirement, and tiering.

While performing corridor planning, conducting environmental assessments was legally obliged for Nya Stambanor and Rail Baltica. For Topcorridors, there was no legal requirement to perform them, but they were performed voluntarily. For Rail Baltica it was not only obliged to perform environmental assessments, but sharing the resulting information was also required (Information rules). Topcorridors also shared the information regarding their environmental assessments, which was mostly used as evaluation of their programme, thereby guiding the decision-making. However, it was experienced that this was not working optimally yet, as no guidelines for evaluation were developed, leaving it a very open process. For Nya Stambanor and Rail Baltica, the information from the environmental assessments was also used to guide decision-making. Aside to that all cases used tiering of environmental assessments (Scope rules), throughout the whole process in order to optimally mitigate negative effects (Payoff rules).

So, performing environmental assessments was experienced most positive when done in line with legal requirements, using tiering, to guide decision-making, which was especially reflected in the Information rules, but also in the Scope rules, because of the different tiers.

8.5   TOWARDS INSTITUTIONAL ARRANGEMENTS

The previous paragraphs, which are summarized in Table 8.2, show how the outcomes of the IAD framework stand in relation to the theoretical framework standing at the foundation of this study. Looking at the outcomes of the previous paragraphs, the (configuration of) rules linked to different concepts, mostly aligns with Table 2.2. This shows that the outcomes of the analysis based on the IAD framework are largely in line with the theoretical framework, as can be seen in Table 8.1. The following paragraphs will elaborate on these configurations, and will show which configurations of rules function as barriers, enablers, and conditions of corridor planning, thereby providing a first step towards answering SQ6.

8.5.1   Overall pattern

Overall, it can be seen that Boundary rules and Scope rules stand in close relation, as the larger the scope, the more actors became involved. Aside to this, Boundary rules, Aggregation rules, and Choice rules stood in close relation to each other, while being influenced by the Position rules. The position an actor, or a group of actors, took was passively influencing which choices they were willing to take. But in relation to the Aggregation and Choice rules, it was shown which networks existed in the decision-making process, and thus who could make which decision. Here it was shown that having an overarching central aim (Position rules), different types of actors (Boundary rules) could collectively make decisions (Aggregation and Choice rules) on both land use and transport developments, preferably in an integrated manner (Scope rules).

This central aim was previously lacking for Nya Stambanor, which hindered proper corridor planning. Whether these decisions were made integrated, or sectoral influenced how financing was or would have to be arranged (Payoff rules). Making choices sectoral, also caused financing to be arranged sectoral, which seemed to be working perfectly for Nya Stambanor. On the other hand, performing integrated policy formation showed that integrated financing was still difficult to arrange, as was the case for Topcorridors. This shows the connection between Choice and Payoff rules, which flows in both directions, as it could also be explained that the one who pays, decides.

Lastly, the analysis has shown that Information rules stood in relation to environmental assessments, and the evaluation of policy outcomes. In both situations, it related to the trade-off between connectivity and environmental impacts (Payoff rules), being evaluated or assessed on several scales/tiers (Scope rules), highlighting the relation of Information rules with Payoff rules and Scope rules.

8.5.2   Barriers, enablers, and conditions of corridor planning

Arising from the previous paragraphs, several configurations of rules that function as barrier, enabler, or condition can be determined. The configuration of Position, Boundary, Choice, and Aggregation rules is an essential one. As mentioned before, having an overarching central aim (Position rules), different types of actors (Boundary rules) could ensure that collectively decisions can be made (Aggregation and Choice rules) on both land use and transport developments, preferably in an integrated manner (Scope rules). The presence of EU-related actors, alignment with businesses, and central aim-setting are three topics which are enablers of corridor planning, when present in the process.

On the other hand, their absence can be a barrier towards proper corridor planning, as a lacking alignment with non-included parties can cause conflicts, thereby slowing down the corridor planning process. Aside to this, and in light of the same configuration of rules, is the essence of having a coordinating party, while multiple levels of government are present. Multiple levels of government can help deal with the variety of issues that need to be dealt with at different scales, thereby overcoming the multi-scalar issue of corridor planning. However, multiple levels of government must be coordinated by a certain actor, so that a programmatic approach is enforced that works along the centrally set aims.

Dealing with multiplicity can enable that programmatic corridor planning is properly enforced, functioning as an enabler. The presence of multiple sectors (i.e., land use and transport) is therefore of importance, being a condition for corridor planning. However, their sole presence is not sufficient for proper corridor planning. When LUTI becomes decoupled this can work as a barrier towards corridor planning, which can be solved by taking an integrated perspective towards corridor planning. But when dealing with integrated developments, it was experienced that it was hard to arrange integrated financing, which can be a barrier for corridor planning. Here, it is thus of importance to align Scope and Payoff rules to ensure that financing for integrated developments works out.

Another configuration of rules relevant for corridor planning are Information, Payoff, and Scope rules. This configuration mainly links to the performance of environmental assessments. For environmental assessments to be optimally guiding the decision-making process, the legal requirement of these assessments is an essential condition for corridor planning. Otherwise, with legal guidelines for environmental assessments missing, this can function as a barrier, as proper evaluation of benefits and environmental impacts is difficult. Lastly, tiering of environmental assessments can ensure that decision-making can be optimally guided throughout the whole process, as during different phases, different types of assessments are performed, as was also proposed by Arts et al. (2011).

Finally, overdoing public consultation was seen as a barrier for corridor planning, as it could slow down the process too much, when the broad public was too often consulted in early phases of corridor planning. This relates to the configuration of Information, Boundary, and Aggregation rules.

8.5.3   Concluding

So, the previous parts show that not all rules of the IAD framework stand in direct relation to each other, when looking at the policy formation phase for corridor planning. Only several configurations of rules become visible from the analysis, that can function as barrier, enabler, or condition of corridor planning. Some of these configurations are in line with the set-up of the IAD framework of Ostrom (2005). Building on these configurations, Chapter 9 will provide an answer on the main research question, finding institutional arrangements that function as barriers, enables, and conditions for programmatic corridor planning, building upon the previous paragraphs.

Table 8.1. Overview of rules of the IAD framework in relation to the questions that they provided answers to (red boxes indicate a relation newly brought forward by the results of the study; red crosses indicate a change in comparison to Table 2.1; crossed-through boxes indicate relations which were posed by the theoretical framework, but which were not substantiated by the results of the study).

Sub-question	Concepts	Boundary Rules	Position Rules	Choice Rules	Information Rules	Aggregation Rules	Scope Rules	Payoff Rules
SQ2	Land Use-Transport Interaction		✕	×		✕ (red)	✕	✕ (red)
SQ3	Multi-level Governance	✕	× (red)	× (red)	⊠	✕	⊠	× (red)
SQ4	Programmatic planning	×	×	×	×	✕	×	×
SQ5	Environmental Assessments		⊠		✕		✕ (red)	×

Table 8.2. Overview of the three cases in relation to the theoretical framework.

	Rail Baltica, Estonia	Nya Stambanor, Sweden	Topcorridors, the Netherlands
Land Use-Transport Interaction			
Widened functional scope	Yes	Yes	Yes
Widened spatial scope	No	No	Yes
Networked decision-making	No	Yes	Yes
Multi-level Governance			
Different governmental levels involved	Yes	Yes	Yes
Non-governmental actors taking over some responsibilities	No	No	No, except for Havenbedrijf
Actors related to the EU becoming of importance	Yes	Partially	Partially
Programmatic corridor planning			
Dealing with multiplicity	Yes	Yes	Yes
Alignment with the political context	Yes	Yes	Yes
Stakeholder management	Yes	Yes	Yes
Stating the to-be-achieved benefits, and evaluation of these benefits	Yes	Previously no, currently yes	Yes
Being futureproof	Yes	Yes	Yes
Enforcement of project and programme management	No	Previously no, currently yes	Yes
Environmental Assessments			
Guiding decision-making	Yes	Yes	Yes
Being a legal requirement	Yes	Yes	No
Tiering	Yes	Yes	Yes

9 CONCLUSION

Following Chapter 1 there is a need of exploring what institutional arrangements are suitable for enhancing corridor planning. Therefore, this chapter will be structured as follows. First, answers on the secondary research questions will be provided (9.1), after which the main research question will be answered, with the provision of recommendation for future corridor planning practices (9.2). Subsequently, recommendations for future research will be given (9.3), after which will be concluded with some reflections on the study itself (9.4).

9.1 REFLECTING ON CURRENT PRACTICES OF CORRIDOR PLANNING

9.1.1 [SQ1] "What are relevant theoretical concepts that might underpin multi-dimensional corridor planning?"

Based on the literature review, it was shown that when performing large-scale infrastructure developments LUTI was brought forward as an important concept that could describe how to coordinate local land use developments and (supra)national transport developments (Bertolini et al., 2005). In order to optimize LUTI-practices, it was stated that the concept of MLG was needed to overcome sectoral functioning of the different levels of government involved (Hooghe & Marks, 2003). Thus, a networked decision-making process was put forward as essential in corridor planning (Heeres et al., 2016). In order to ensure that LUTI and MLG become used optimally, the concept of programmatic planning was proposed for corridor planning (Pellegrinelli, 2011). Taking a programmatic approach towards corridor planning – while using LUTI and through MLG – ensures alignment between different sectors, different levels, different actors, and different scales, thus dealing with infrastructure multiplicity (Busscher, 2014; Patanakul & Pinto, 2017). Finally, in the light of dealing with the (negative) effects related to corridor planning, the concept of (tiering of) environmental assessments is important in the process of corridor planning (Fischer, 2006). Performing environmental assessments – both SEA and EIA – through different phases of the process ('tiering') is important to guide decision-making (Coutinho et al., 2019; Therivel & González, 2021).

9.1.2 [SQ2] "How do the three cases plan for the interaction between land use and transport developments?"

Aiming for interaction between land use and transport developments, Topcorridors took a networked decision-making approach, while taking care of a widened functional (e.g., sustainability) and spatial scope, which should lead to more functional interrelatedness (Heeres et al., 2016). The widened spatial scope is reflected in the fact that planning for the corridor did not only occur on the scale of the corridor, but also at the scale of nodes. Doing so, a networked decision-making approach was needed to strengthen the coherence between the different nodes and between the nodes and the corridor. Networked decision-making and having a widened functional scope were also used in the Swedish approach towards corridor planning for Nya Stambanor. For Rail Baltica, only the widened functional scope was used when planning for LUTI. The absence of a widened spatial scope in the Swedish and Estonian case was due to the difference of scale at which land use developments and transport developments were planned for, while for Topcorridors land use and transport developments were both planned for in a programmatic planning approach.

9.1.3   [SQ3] "To which extent is multi-level governance present in corridor planning, in the three cases?"

With all three corridors spanning different scales, different levels of government were involved in the planning for the corridors, demonstrating the presence of MLG in the three corridors (Hooghe & Marks, 2020). In Estonia, the national government, counties and cities were actively involved. In Sweden, most responsibilities were for the national government and municipalities, and in the Netherlands the national government together with the provinces were the most actively involved governmental layers, with municipalities playing a less prominent role. The influence of EU-related parties, as was deemed important by De Vries & Priemus, 2003, was mostly limited to Rail Baltica. Here, the EU acted as coordinator, while also financing large parts of corridor developments. In the Netherlands the role of EU-related parties was mainly limited to funding by the CEF, while in Sweden, benchmarking was the topic in which EU-related parties played the most important role. Not only EU-related parties were not always actively involved, the same applied to non-governmental parties. Contrastingly, Bache & Flinders (2004) that non-governmental parties became of increasing importance for corridor planning. In all three corridors, these parties were not actively involved, except for Havenbedrijf Rotterdam, being taken up in the Topcorridors programme. So, while all corridors clearly showed the presence of MLG, not always were other important parties (e.g., EU-related and non-governmental parties), included. This leaves room for improvement, as better alignment between the currently involved and not involved parties could be created.

9.1.4   [SQ4] "To which extent is corridor planning performed in a programmatic approach, in the three cases?"

Topcorridors was developed as a programme for dealing with the corridors. The programmatic approach is highlighted by the fact that all six guidelines for programmatic planning were present for Topcorridors: dealing with multiplicity; alignment with the political context; stakeholder management; stating the to-be-achieved benefits, and evaluation of these benefits; being futureproof, and; enforcement of project and programme management (Patanakul & Pinto, 2017). Thus, corridor planning for Topcorridors was performed using a programmatic approach, in full extent. However, Topcorridors can become more futureproof and evaluation of the stated benefits can be done better, as sustainability benefits were developed broadly, making them difficult to evaluate. Corridor planning for Rail Baltica can also be seen as a programmatic approach towards corridor planning, as only enforcement of programme management was missing as a guideline in the process. This meant that local land use developments were not coordinated between different nodes, thus lacking a holistic approach in connecting different projects in one corridor (Buijs & Edelenbos, 2012). So, with Rail Baltica as the overarching organization, corridor planning was performed in a programmatic approach to a large extent, although not fully. For Nya Stambanor, the programmatic approach only became present later on in the process. Currently, all guidelines of programmatic planning are present, whereas in earlier phases of corridor planning this was not the case. In this sense, Nya Stambanor developed a programmatic approach to corridor planning over time. Before, stating the to-be-achieved benefits, and evaluation of these benefits was missing, as no central aim was set. Also, enforcement of programme management was missing, since planning for the corridor was project-oriented. So, whereas corridor planning for Nya Stambanor previously was project-oriented, a shift occurred towards a programmatic approach for corridor planning. This confirms that corridor planning needs a programmatic approach.

9.1.5 [SQ5] "How can (tiering of) SEA and EIA play a role supporting programmatic corridor planning?"

Previous research has suggested that performing environmental assessments has to be done at different phases of the process (Arts et al., 2011; Fischer, 2006; Therivel & González, 2021), linked to the concept of tiering. During early, more abstract phases of corridor planning it was suggested that SEAs should be performed, while during later, more detailed phases, EIAs need to be performed (Faith-Ell & Fischer, 2021).

This way of using environmental assessments was reflected in all three cases, as different types of environmental assessments (i.e., SEAs and EIAs) were performed during multiple phases. However, the nature of performing these environmental assessments differed. For Rail Baltica and Nya Stambanor it was legally required to perform environmental assessments (both SEAs and EIAs), which was positively experienced by parties, as it provided a legal framework through legal guidelines. In the case of Topcorridors, environmental assessments only were performed voluntarily, causing that the topic of sustainability was not optimally taken into account. So, ensuring that performing (tiered) environmental assessments becomes a legal requirement is essential to guide decision-making in programmatic corridor planning.

9.1.6 [SQ6] "What institutional arrangements function as barriers, enablers and conditions of corridor planning?"

For corridor planning to function properly, the presence of multiple governmental levels and multiple sectors (i.e., land use and transport) is conditional to corridor planning. Making use of and overcoming this multiplicity, a networked decision-making process, in which all governmental levels, non-governmental parties, and EU-related parties are present can work as an enabler of corridor planning. A situation in which cooperation between the aforementioned parties is lacking, limits corridor planning, thus being a barrier towards corridor planning. Guiding the networked decision-making, a condition in this situation is to have a coordinating party. For all cases a national party functioned as the coordinating party, which mostly seemed to be the relevant ministry. Also, central aim-setting enables corridor planning, which on the contrary – when a central aim is missing – functions as a barrier. Central aim-setting together with a networked decision-making process can be achieved by taking a programmatic approach to corridor planning.

Furthermore, LUTI-practices function both as barrier and enabler towards corridor planning. When LUTI is decoupled, it functions as a barrier. So, an integrated approach is needed, becoming an enabler of corridor planning. On the other hand, integrated planning also requires MLG and a programmatic approach. However, arranging financing for these integrated developments seemed to be difficult, thus being a barrier.

Lastly, environmental assessments being legally required is conditional to guide the decision-making process of corridor planning. Additionally, the nature of SEA and EIA ensures that their performance on itself helps guide the decision-making process, as potential negative impact will be mitigated. However, for this to properly function, tiering of the environmental assessments is needed, together with legal guidelines for performing them. Otherwise, without legal guidelines, this might function as a barrier towards (sustainable) corridor planning.

9.2 INSTITUTIONAL ARRANGEMENTS FOR CORRIDOR PLANNING

Heading towards good functioning corridor planning practices, difficulties arising through the multiplicity of infrastructure planning must be overcome, while also making use of the multiplicity of infrastructure planning. In that sense, Chapter 1 stated that there is a need of exploring what institutional arrangements are suitable for enhancing corridor planning. So, building upon the answers provided by SQ1-6, the following part will provide an answer on the main research question: *"Which institutional arrangements are needed for programmatic corridor planning that connects (cross)national transport needs and local land use needs, addressing the multiplicity of infrastructure?"* Thus, based on this study, the following institutional arrangements can be suggested that can enhance future corridor planning practices, that make use of and overcome the multiplicity of infrastructure:

I. *Taking a programmatic approach that includes all relevant governmental levels, while closely cooperating with, but not including, non-governmental actors, and EU-related actors.* Taking a programmatic approach, with inclusion of all relevant governmental levels, is beneficial for corridor planning, as it fosters networked decision-making, reflecting the institutional interdependencies. Aside to that close alignment with businesses and EU-related actors is needed, so that project-thinking of the businesses is in coherence with programme-thinking of the programme. Here dealing with the sense of urgency of businesses is important, as businesses often want to act early on in the process, while the policy formation of programmatic corridor planning takes a long timespan. So, alignment with businesses can lead to the early development of exemplary projects, which can further strengthen programmatic thinking, as it shows what can be reached by a programmatic approach, making use of the multi-actor and multi-level nature of infrastructure.

II. *Investigating actively what the opinions of and effects on non-included actors and nodes are.* When corridor planning is undertaken in a programmatic manner, networked decision-making occurs with the included parties, and in coordination with other parties relevant to the corridor. However, corridor developments also (in)directly have impact on non-included actors, and nodes. Therefore, it is of importance to actively investigate the opinions of and effects on non-included actors, and nodes. This can be guided by tiered use of SEAs and EIAs which will provide new insights in several phases of the policy formation process. Additionally, when strictly following legal guidelines for SEA and EIA, this will limit legal risks for corridor planning, while also ensuring the enforcement of performing environmental assessments.

III. *Using tiered environmental assessments to guide decision-making, connecting different scales.* In order to overcome the negative effects of corridor planning it is essential to perform environmental assessments. To ensure their enforcement, and to ensure that they are optimally performed, the performance of environmental assessments should be legally required, as mentioned in recommendation II. Aside to that, there should be legal guidelines along which the assessments need to be performed. Since environmental assessments should guide decision-making on the trade-off between connectivity and the environment, it deals with both very specific, short-term and very broad, long-term impacts. Therefore, tiering of the environmental assessments enables optimal guidance for the decision-making process of corridor planning. In this way, throughout all phases of corridor planning environmental assessments will guide the decision-making process.

IV. *Ensuring that while taking a programmatic approach, either the programme, or a certain party, is responsible for actively enforcing LUTI.* While taking a programmatic approach, it is not only important to align local land use developments with national transport developments, with that optimally dealing with the functional interrelatedness. Doing so, the nature of infrastructure will be optimally made use of, as infrastructure is connecting different land uses, at different locations (i.e., nodes). Ensuring that their coherence will be enforced on both the level of the programme and the node is essential, as otherwise too often parties will think in terms of responsibilities, mostly linked to either transport or land use, not integrated developments. This can be regulated by the national government (or the relevant Ministry), as it often is the coordinating, steering party of the corridor planning process. Central aims set by the national government as coordinating party, can then be worked out at a national level for transport developments, and at a local level for land use developments. With each party included in or cooperating with the programme adhering to the central aims, the multi-scalar, and multi-sector issue of infrastructure planning will be overcome, as they are integrated developed and enforced.

V. *Preventing sectoral financing, to ensure that programmatic thinking flows down into all developments/projects.* Following recommendation IV, LUTI needs to be safeguarded in corridor planning. When doing so, it is essential to prevent that financing is arranged sectoral, thereby conflicting with the nature of the developments; integrated. So, financing also needs to be arranged integrated, which is reflecting the programmatic way of thinking linked to corridor planning. This can be done by either creating one fund or a predetermined division on the financing beforehand, or by arranging financing per project. The former one provides more certainty to parties about their share of the financing and is a way of programmatic steering, but has less certainty about the amount of financing needed. The latter one has more certainty about the amount of financing needed, but causes the process to be slowed down, as arranging financing every time again takes time. It is unsure which one is more suitable for corridor planning, but both options have been practiced before by Rail Baltica, and Topcorridors respectively. However, it was experienced that current financing mechanisms by the EU for the TEN-T network (i.e., CEF) were not easy to apply for in case of integrated developments. Therefore, it would ease financing for integrated corridor developments, if the CEF becomes more open to integrated practices.

9.3 RECOMMENDATIONS FOR FUTURE RESEARCH

This study has shown that uncertainty exists on how to deal with certain topics. One of these topics concerned the inclusion of non-governmental actors. It appeared that opinions on inclusion of these actors differed per case. For Nya Stambanor and Rail Baltica, opinions were held that keeping businesses out of the policy formation process was beneficial for corridor planning. However, in Topcorridors it was experienced that more inclusion of businesses would be better, to align programme-thinking with project-thinking of businesses. Therefore, researching the potential added value of including businesses could be an interesting topic. Coming with this, looking how programme-thinking and project-thinking can be aligned could be an essential part in looking for the added value. Alignment of project-thinking and programme-thinking could potentially become an additional guideline for programmatic corridor planning, thus needing further research.

Another interesting topic for further research is the way in which financing is arranged. As has arisen from the results, when doing developments sectoral, financing was also easily arranged sectoral. However, when performing integrated developments, it turned out to be difficult to arrange financing for these integrated developments, especially when they took place on a larger spatial scale. Then, parties felt that they were paying for developments, which did not bring them direct benefits. Thus, researching how financing can be arranged beforehand for integrated developments, even in situations where (specific) costs are still unclear, can add to the knowledge-base needed for finding suitable arrangements for corridor planning. The EU could play a stimulating role in this by the legal enforcement of SEAs and EIAs and potential funding from the CEF connected to this. When CEF funding only becomes available after performance of environmental assessments, decision-making is guided in a way that through early phases a programmatic approach towards corridor planning is enforced that safeguards LUTI. This can limit potential hick-ups related to integrated financing.

Furthermore, a fifth type of multiplicity needs some attention; multi-modal. Since only Topcorridors clearly included multiple modalities, this could have had an impact in which way was dealt with (programmatic) corridor planning. So, researching whether the inclusion of multiple modalities within one programmatic approach to corridor planning does affect or have an effect on programmatic corridor planning could potentially give some new insight in the institutional settings of corridor planning.

Lastly, with this study only having researched the first phase of corridor planning (i.e., policy formation), it could be useful to perform a longitudinal study on the institutional arrangements needed to enhance corridor planning throughout all phases. In this way, a broader perspective on corridor planning can be gained, potentially showing other institutional arrangements vital for other phases of corridor planning.

9.4   REFLECTIONS

Unfortunately, this study had to be performed during the COVID-19 pandemic. This hampered doing research in two ways. First, all interviews had to be held online, limiting the potential of non-verbal interaction with the interviewees. However, this did not influence the comparison, as all interviews were performed within the same online situation, in line with the regulations at that time. Second, the pandemic delayed the research as in some occasions it was hard to get in contact with potential interviewees. As a result of this, doing a focus group discussion had to be left out of the planning, due to time limitations. Having done a focus group discussion could have added value to this study, by means of triangulation of data collection methods.

With this study predominantly focusing on the multi-dimensional nature of corridor planning, the multiplicity was of enormous importance for providing institutional arrangements that could be used to enhance corridor planning. However, only while performing the interviews the interrelation between multiplicity and the concepts used became more evident. This of course is a strength of doing interviews; that they provide additional insight into how theoretical concepts are connected, by being showed their practical application. Nevertheless, having this relationship better visible before starting with the interviews could have potentially improved receiving even more valuable information out of the interviews.

Still, the results retrieved from the interviews had a high value-density, which was partially a result of working with professionals. Themes relevant for corridor planning, as defined by previous research, were mostly also commonly known by professionals working on this topic. Therefore, answers given by interviewees already were highly connected to the concepts of the conceptual model.

Being part of the conceptual model, the IAD framework of Ostrom (2005) was useful to gain insight in the institutional arrangements that stood at the basis of current corridor practices in the three cases. Although it was a challenge to get a grasp on the rules of the IAD framework, due their vagueness, over time their application became clearer, thereby becoming more useful. It also appeared that the configuration resulting out of the analysis of this research were often in line with the set-up of the IAD framework. Thus, the outcomes of this study validate the set-up of the IAD framework as a useful tool for exploring institutional arrangements in (corridor) planning practices.

Studying three cases positioned in different (inter)national settings was both beneficial and detrimental for the case comparison. It benefitted the research, as different institutional backgrounds could have potentially shed light on different institutional arrangements suitable or disadvantageous for corridor planning practices. On the other hand, as explained in Chapter 3.4, material (i.e., policy documents) were not always available in English or Dutch. Swedish and Estonian documents could be translated, but this limited the ease of performing the policy document analysis.

Finally, looking back at the whole process, and what I have learned from this study, one of the things that gained renewed realization has to do with the scope of the planning process. Whereas the scope of the planning process itself can be clearly delineated, this scope does not necessarily entail all aspects important to the planning process. Having a look at and working with situations, aspects, and parties external of the scope of the planning process is also of importance. Planning does not occur in a predefined vacuum set environment. Rather, a planning process always influences and is influenced by the larger spatial environment. Thus, investigating the influence on and of this larger environment is needed for a proper (corridor) planning process. This interconnectedness of the planning process itself with the larger environment also resembles the functioning of a corridor. It is not only the parts of the corridor that need to be developed. So, an important thing I have realized is that the different parts need to be developed in coherence with and connected to each other, as a corridor does not function as a corridor, when it is not treated as such.

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APPENDIX I – TIMELINE RAIL BALTICA

Year		Event
1991	🔵	Restoration of Estonian independence
2001		
2002		
2003		
2004	🔵🔴	Estonia becoming EU Member State Rail Baltica included in TEN-T priorities list
2005		
2006	🔴	Declaration of Intent signed by the transport ministers of the five partner countries in Rail Baltica
2007	🟡	Feasibility Study on Rail Baltica Railways
2008	🔴	Decision by EC on TEN-T co-financing for Latvian, Lithuanian, and Estonian projects
2009		
2010		
2011	🔴	Joint Statement by the three Baltic Prime Ministers
2012	🟢🔴	National Spatial Plan Estonia 2030+ Order No. 173: Initiation of county plan to locate Rail Baltica railway route
2013	🔴	Declaration on further cooperation signed by Estonian, Latvian, and Lithuanian transport ministers
2014	🟡🔵	Scoping Report for the Rail Baltic SEA RB Rail AS established
2015		
2016		
2017	🟡	Technical Summary
2018	🟢🔵	National Designated Spatial Plan (NDSP) Pärnu County Plan established Route setting and spatial territorial planning for Rail Baltica finalised in all three Baltic States
2019		
2020	🔴	Supreme Court decision that conclusions of county plan SEAs were incorrect
Future	🔵	County planning reworked again, following court decision

Legend:
- 🔵 Events
- 🔴 Decisions, agreements, etc.
- 🟡 Documents of analysis
- 🟢 Policy documents

± 1990	First ideas of improving the connection between Södertalje and Linköping (Ostlänken)
2002	
2003	Ostlänken Preliminary Study
2004	
2005	
2006	
2007	
2008	
2009	
2010	Ostlänken Feasibility Study / Need felt to come up with national perspective on corridor planning
2011	
2012	National Capacity Investigation showing the capacity needs of the transport system
2013	
2014	Elections: Ideas to build a 'new Sweden' through improved transport; first step to Nya Stambanor
2015	
2016	First preliminary aim for corridor
2017	National Transport Plan 2018 - 2029
2018	Three trajectories (Södertalje – Linköping, Malmö – Hässleholm, and Göteborg – Borås) combined into one national plan regarding railway improvement; Nya Stambanor
2019	
2020	Decision by Trafikverket on new aim for the whole HSR-system
2021	National Plan for Transport Infrastructure
2022	New National Transport Plan

Legend:
- Events (blue)
- Decisions, agreements, etc. (red)
- Documents of analysis (yellow)
- Policy documents (green)

APPENDIX III – TIMELINE TOPCORRIDORS

2015	○ (yellow)	MIRT-investigation on logistic corridors East and Southeast had started
2016	● (red)	Governmental Deliberations on the MIRT 2016: Agreement on jointly developing Topcorridors programme
2017	◑ (red/green)	Governmental Deliberations on the MIRT 2017: Development 'governance-plan' and 'action-plan'
2018	● (green)	Knooppuntenplan Venlo ('Nodes plan')
2019		
2020	◑ (red/green)	Governmental Deliberations on the MIRT 2020: Development Future Agenda
2021	○ (yellow)	Monitoring on 'implementation plan'
2022	● (green)	Future Agenda 2030 established

Legend:
- ● (blue) Events
- ● (red) Decisions, agreements, etc.
- ○ (yellow) Documents of analysis
- ● (green) Policy documents

APPENDIX IV – LIST OF POLICY DOCUMENTS

Document
Rail Baltica (Estonia)
Declaration of Intent on the TEN-T Priority Project No 27 "Rail Baltica", Brussels, 2006.
Estonian Ministry of the Interior (2013). National Spatial Plan Estonia 2030+.
European Commission (2007). Feasibility study on Rail Baltica railways.
Intergovernmental Agreement, Tallinn, 2017.
Joint Declaration, Vilnius, 2013.
Joint Statement by Baltic Prime Ministers, Tallinn, 2011.
Memorandum of Understanding on the TEN-T Priority Project No 27 "Rail Baltica". Saragossa, 2010.
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Rail Baltic KSH Programm (2014). Rail Baltic SEA Scoping Report.
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Nya Stambanor (Sweden)
Regeringens proposition 2008/09:35 – Framtidens resor och transporter – infrastruktur för hållbar tillväxt.
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Trafikverket (2018). Nya stambanor – ny generation järnväg.
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Trafikverket (2020). Projekt Hässleholm – Lund – Ny stambana Hässleholm – Lund.
Trafikverket (2021). Förslag till nationell plan för transportinfrastrukturen 2022–2033.
Trafikverket (2021). Nya Stambanor för höghastighetståg.
Topcorridors (The Netherlands)
Gemeente Venlo (2018). MIRT-programma goederenvervoercorridors, plan van aanpak knooppunt Venlo.
Ministerie van Infrastructuur en Milieu (2017). MIRT onderzoek goederenvervoercorridors Oost en Zuidoost.
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APPENDIX V – CODEBOOK

Code group	Code	Deductive (D) or Emerging (E) code	Number
Boundary rules	Multi-level	D	1.1
	Multi-actor	D	1.2
	Non-governmental parties	D	1.3
	EU-related parties	D	1.4
	Stakeholder management	D	1.5
Position rules	Sustainability	D	2.1
	Problem, aim, and benefits statements	D	2.2
	Central aim-setting	D	2.3
	Prioritizing	E	2.4
Choice rules	Networked decision-making	D	3.1
	Responsibilities	E	3.2
	Alignment with political context	D	3.3
Information rules	Environmental assessments	D	4.1
	Public involvement	E	4.2
Aggregation rules	Interdependency of actors	D	5.1
	Networked decision-making	D	5.2
	Programmatic approach	D	5.3
Scope rules	Widened functional scope	D	6.1
	Widened spatial scope	D	6.2
	Integrated planning	D	6.3
	Alignment with European context (TEN-T)	D	6.4
	Network of nodes	E	6.5
	Tiering of environmental assessments	D	6.6
Payoff rules	Futureproof	D	7.1
	Short-term vs. long-term	E	7.2
	Mitigation	E	7.3
	Funding mechanisms	E	7.4

APPENDIX VI – INTERVIEW GUIDE

[Short introduction into interview; just mentioning 'policy formation'. Narrowing it down more means possibly restricting the interviewee to explain it broad enough. Leaving it more open to interpretation has the risk of becoming too wide-angled, thereby creating the possibility of moving away from the actual point of the interview.]

Dear ..., firstly I want to welcome you and thank you for taking the time to take part in my research on corridor planning. Studying on the University of Groningen, I perform this research as my master thesis for the study of Society, Sustainability & Planning, under supervision of prof. dr. Jos Arts, who is professor Environmental and Infrastructure Planning at our Faculty of Spatial Sciences. In this research, my aim is to find how to best arrange for corridor planning, comparing three cases. Doing so, the research only focuses on the policy formation phase of the planning process. Very broadly posed, this phase is about looking for a solution for a problem. This interview, and the questions asked will therefore also stand in relation to this phase for [case]. I hope that you can answer my questions based on your information concerning the policy formation phase of [case].

[Case-specific introduction, based on Chapter 4.1, 5.1, or 6.1].

Before starting with the interview, I have three questions for you to start off with.

_____

[Introductory question to be asked in advance of the general question] -> all questions must be asked and answered.

0. For this interview we had blocked the time span of ... until .... Does this align with your time schedule?
1. Do you have any objection to me recording this interview?
2. What is your function and how are you involved in the process of corridor planning in [case]?

_____

<u>Boundary Rules</u>: determine the type and number of actors able to enter or leave the action situation, and in what way they are able to do so.

3. How did you and/or your organization get involved in the policy formation regarding <mark>[case]</mark>? *[enter]*
4. During the process, is there a change in the group of actors involved? *[leave]*

   Probes:
   - Non-governmental parties, Actors related to the EU -> MLG

<u>Position Rules</u>: determine what positions an actor can take within an action situation.

5. What are the goals of you and your organization during the formation of policy for the planning of <mark>[case]</mark>?

   Probes:
   - Problem/aims/benefits stating -> Programmatic
   - Guiding decision-making? -> Environmental Assessments
   - Sustainable development? -> LUTI

<u>Choice Rules</u>: determine the choices an actor can make towards a certain action.

6. Which actions are you allowed to decide upon? *[mandate]*
7. Which choices do you need to make during the process, and where are you not allowed to decide about? *[must & limited]*

   Probes:
   - Networked decision-making. -> LUTI
   - Alignment political context. -> Programmatic
   - Reallocation responsibilities -> MLG

<u>Information Rules</u>: determine the level of information-sharing, in relation to the amount of information and the scope of actors receiving the information.

8. Which information from your organization is and is not shared with other parties, and which parties are these? *[level & scope]*
9. In what way did the way in which information is shared influence the formation of policy for the planning of <mark>[case]</mark>? *[channel & scope] -> Did (the way of) information-sharing cause a breakthrough in the formation of policy?*

   Probes:
   - Networked decision-making -> LUTI
   - Alignment political context -> Programmatic
   - Coordination (between jurisdictions) -> MLG
   - Informing decision-making -> Environmental Assessments

<u>Aggregation Rules</u>: determine which actors will decide on what (set of) action(s).

10. How are the votes of different actors valued when developing programmes, plans or policies in the planning of <mark>[case]</mark>? *-> Does the vote of one actor weigh more or less than another actor? Or are votes equally valued?*

    Probes:
    - Networked decision-making -> LUTI
    - Interdependency of actors -> LUTI
    - Stakeholder management -> Programmatic
    - Enforcement programmatic management -> Programmatic
    - Coordination -> MLG
    - Multiplicity -> MLG
    - Tiers influencing each other -> Environmental Assessments

<u>Scope Rules</u>: determine the possible outcomes, thereby delimiting the scope of the action situation.

11. Did the actors involved have similar views on the to-be-formed policies? *-> In which way is the policy formation affected by the different or equal views of the actors involved?*

    Probes:
    - Widened functional/spatial scope -> LUTI
    - Integrated planning (or similar) -> LUTI
    - Alignment political context -> Programmatic
    - Integrating national/European networks -> MLG
    - Tiering -> Environmental Assessments

<u>Payoff Rules</u>: determine the costs and benefits for actors related to the chosen actions and outcomes.

12. In which way did financial support enable the formation of policy in the planning of <mark>[case]</mark>? *[ability to make costs]*
13. In which ways are costs and benefits divided among different actors?
14. Which trade-offs do exist when dividing the costs and benefits?

    Probes:
    - Interdependency of actors -> LUTI
    - Stakeholder management -> Programmatic
    - Futureproof? -> Programmatic
    - Multi-actor -> MLG
    - Multi-level, national vs. European -> MLG
    - Short-term vs long-term -> Environmental Assessments
    - Tiers influencing each other -> Environmental Assessments

_____

15. In line with the previously asked questions, are there any other things relevant for the process of policy formation for [case]? Or is there additional information available that you think is useful in the light of this research?
16. If you would take part in the policy formation of a corridor again, what would you do different?
17. Is there anything remaining that you wish to add to your given answers?
18. Do you think that there are other people that I also need to have a talk with for this research?
19. Do you wish to receive a copy of the final report of my research?
20. Are you fine with it if I would approach you for further contact?

_____

[Concluding remarks and word of thanks]

Thank you for your time! Do you have any final questions regarding the interview or the research?

APPENDIX VII – LIST OF INTERVIEWEES

Interviewee no. – Date	Function of interviewee in relation to corridor planning of [case]
Rail Baltica (Estonia)	
EE1 – 2022-01-07	Coordinator of Rail Baltic Project, Ministry of Economy and Communications
EE2 – 2022-02-23	Detailed Planner
EE3 – 2022-03-01	Technical Project Manager, Rail Baltica
EE4 – 2022-01-04	Head of Planning Department, City of Pärnu
EE5 – 2022-01-10	Head of the SEA Team
Nya Stambanor (Sweden)	
SE1	*Arranging an interview was not manageable*
SE2	*Arranging an interview was not manageable*
SE3 – 2022-03-09	Director of the Regions, Trafikverket
SE4 – 2022-03-18	Long-term planner, Trafikverket
SE5 – 2022-02-01	Environmental Impact Assessment Coordinator, Tyrens Consultancy
Topcorridors (The Netherlands)	
NL1 – 2022-01-12	Programme Manager, Ministry of Infrastructure and Water Management
NL2 – 2022-02-02	Policy Officer at Department of Mobility, Municipality of Venlo
NL3 – 2022-01-17	Advisor Topcorridors Programme, AT Osborne
NL4 – 2022-01-26	Senior Policy Officer at Department of Mobility, Province of Limburg
NL5 – 2022-02-10	Senior Advisor, Panteia