

MASTER

The road towards sustainable mobility

a study of the major governance challenges for a transition towards sustainable mobility on the A15 and the potential for regional coalitions as a transition management tool

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The road towards sustainable mobility

A study of the major governance challenges
for a transition towards sustainable mobility on
the A15 and the potential for regional coalitions
as a transition management tool

Masters Thesis
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PREFACE

I am proud to present my Masters Thesis ‘The road towards sustainable mobility’. I am proud for two reasons: first of all I am very pleased with the result; secondly the thesis shows what I have learned during my studies. But above all, it embodies a topic of great personal interest. In 1998 I started ‘Techniek & Maatschappij’ at the Eindhoven University of Technology, with construction engineering as my technical specialization. Although very interesting, I started to realize that my interests were not exactly covered by this specialization; two courses at the Delft University of Technology confirmed my fascination for large infrastructure projects. The chance to extend my international semester to a whole year was more than welcome for that reason. It provided me with the opportunity to complete the one year Masters in ‘Transportation Engineering’ at the University of California in Berkeley. This proved to be a very good preparation for this Masters Thesis.

I am grateful for the research possibility provided by TNO Built Environment and Geosciences. The first plan was to do something with the complexity of delta regions, collaborations, the A15, and transitions. Many times I wondered how these aspects would ever fit together. Now I know they do, but it took a lot of hard work and discussion to figure that out. The investigation of the potential of regional coalitions as a transition management tool in the context of a transition towards sustainable mobility on the A15 proved to be a complex, but very interesting topic. I got the opportunity to speak with many organizations and companies about practical and very relevant societal issues, where at the same time a substantial academic level was present.

I am thankful to all who supported and helped me during this Masters Thesis process. My supervisors Gijs Mom, Lorí Tavasszy, and Harry Geerlings I would like to thank for their discussions, suggestions, and inspiration during the process. Jon Rheume, Anne-mie Sponselee, Paul Enders, Jacques Wijnoogst, and Paul van den Berg have been reading my report very critically, which helped to make the report as it is; thank you. Furthermore I really appreciate the help of my dad and his Bonnemayer Architecten for printing this report. Last but not least I would like to thank Niels, my family, and my friends for their ongoing interest in what I am doing.

I hope you will enjoy reading the report as much as I enjoyed working on it.

Loes Bonnemayer

Eindhoven, June 2005

EXECUTIVE SUMMARY

Sustainable mobility is needed to keep the Dutch delta economically healthy, accessible, livable, and safe. Not only technological changes are needed in this regard, but the whole mobility system needs to innovate. A transition towards sustainable mobility has to result in a fundamental change of the transportation sector. Many organizations recognize this need and invest in so called 'transition management'. This research investigates the potential of regional coalitions as a transition management tool. Regional coalitions are a very intense form of working together, already used to better fulfill the complex job of public planning. The research is performed in the context of the A15 in the Rotterdam region, for which the major governance challenges at the beginning of the sustainable mobility transition are investigated at the same time. The main research question also highlights these two goals:

What is the potential of regional coalitions as a transition management tool and what are the major governance challenges in the process towards sustainable mobility on the A15 in the Rotterdam region, based on the opportunities and bottlenecks for a regional coalition that can stimulate a transition towards sustainable mobility on the A15?

The dynamic multi-level perspective of transition processes forms the theoretical framework for the research. The framework shows the complexity of a regime and illustrates how niche development can break through or replace a regime. The dynamic stability of regimes and the landscape development create windows of opportunities for niches; the framework also shows how these niches get closer to the regime.

The existing A15 regime shows a major freight gateway for the port of Rotterdam with a very complex governance system. The economic developments of the port have long been the starting point for improvements of the A15. Economic developments however, are not the only aspect to consider anymore; a transition towards sustainable mobility is in the take-off phase. Capacity boundaries, insufficient safety, and new European environmental norms are the major incentives for sustainable mobility in this case. Landscape developments such as 'globalization', 'sense of urgency for sustainability', 'a stronger European Union', and 'computerization' also support this. The dynamic stability of the regime shows that the responsibilities and resources of the regime players are changing; Rijkswaterstaat Zuid Holland has to focus more on their primary tasks and private organizations are supposed to take more responsibilities. Examples however show that not all stakeholders have accepted their new role yet. The regime is also changing because mobility plans are more and more dependent on spatial plans. To reach a sustainable mobility regime on the long term more than one sustainable solution is needed, but for now the niche developments are not yet linked and everything is still

possible. The traffic characteristics and changing responsibilities however, indicate that a modal shift and extra infrastructure solutions will be hard to realize.

Theoretically a regional coalition seems a useful tool to manage a transition towards sustainable mobility on the A15. Firstly regional coalitions meet the three building blocks of transition management ‘problem driven’, ‘long term focus’, and ‘multi-actor process’. Secondly the complex governance of the A15 regime makes a tool that explicitly focuses on collaboration necessary. Thirdly regional coalitions explain how a shared vision can be realized; at this point tools developed especially to manage transition are lacking. Experiences in the Rotterdam region with cooperations on a regional scale support the usefulness of regional coalitions. The diversity of stakeholders involved, the negotiation power of the stakeholders, and an initiator are important prerequisites of a regional coalition. When these prerequisites are met, a collaborative dialogue based on reciprocity, relationships, learning, and creativity has to result in a shared long term vision, agreement on financing, and agreement on the internal organization.

To further investigate the potential of regional coalitions the opportunities and bottlenecks for the realization of an A15-regional coalition are important. Interviews with important stakeholders are used to detect these challenges. A conceptual framework is developed and formed the basis for the research methodology of the interviews. The conceptual framework describes how and in what form a regional coalition can stimulate a transition towards sustainable mobility on the A15. When regime players start talking about sustainable mobility and when they see collaboration as a necessary element, a niche might develop. This niche tries to develop a shared long term vision and might become a regional coalition that moves together with the other niches towards the regime. There are two options how a regional coalition can interlink with the regime. It can become part of the regime and operate alongside the formal process, or it can replace the regime and gets the authority of the whole process. The first option seems the most reasonable, also when the collaboration is still a niche. The form elements of a regional coalition of importance are the prerequisites and the agenda setting elements. The negotiation power of the stakeholder, the stakeholders’ long term visions, and the possibilities of consensus on financing and the internal organization are investigated with the interviews in this respect.

The stakeholders interviewedⁱ all agree that problems on the A15 exist. Several of the stakeholders for that reason participate in a Transumo-project that focuses on reaching sustainable mobility on the A15.ⁱⁱ The Transumo-project can be seen as the needed

ⁱ ANWB, DCMR, Deltalinqs, dS+V, ECT, Environmental federation Zuid Holland, Gemeentewerken, NDL, P&O Ferries, Port authority, Province of Zuid Holland, Rijkswaterstaat Zuid Holland, ROM-Rijnmond, RR2020, Shell Chemicals, Stadshavens, Stadsregio, TLN, Vopak

ⁱⁱ DCMR, Deltalinqs, dS+V, ECT, Gemeentewerken, P&O Ferries, Port authority, Rijkswaterstaat Zuid Holland, Shell Chemicals, Stadsregio, Vopak

initiative for a regional coalition; still the regime is more diverse and for that reason the other stakeholders are interviewed as well. Most stakeholders identify a shared problem definition as the most important element of a collaboration, regional coalition or not. Although the stakeholders agree on the existence of ‘problems’, different A15 perspectives exist. The variation in the range of perspectives highly affects the chance a shared definition is reached. A major bottleneck in this respect is the discrepancy between the perspective of Rijkswaterstaat and the economic related stakeholders (the port industry, Deltalinqs, and the Port authority). This latter group of stakeholders sees accessibility and a lack of alternative routes as major problems and they favor extra infrastructure based on a network analysis to solve this, but Rijkswaterstaat does not recognize the problem on the short term and favors the planned expansion of the A15 as a solution. The changing responsibilities of the stakeholders make this bottleneck even more complex. The economic related stakeholders have not yet adopted their perceived responsibilities and although Rijkswaterstaat wants others to take responsibility, they do not favor a network analysis, because that might affect the plans they already made.

Opportunities exist to tackle or mitigate this bottleneck. The broad recognition of the air quality issues can get stakeholders talking. The aim to further develop a modal shift can have the same result, although the traffic characteristic trends and the Port authority identify it as a hard to realize solution. The recognition of many stakeholders that a shared definition is the starting point might also help. Experiences of these stakeholders highlight four important aspects that influence the shared definition process: interests are more important than opinions, trust, personality, and clarity of definitions. The collaborative dialogue that characterizes a regional coalition also provides an important opportunity. In order to use this opportunity the prerequisites must be met. As the Transumo-project can be seen as an initiative, the diversity of the stakeholders involved is compared to the diversity of the regime to see whether this prerequisite is met. The power of strength can be improved by involving more central government stakeholders, users, interest groups, process supporters, and existing collaborations. This might also help to mitigate the negative effects of the Dutch polder culture. Regarding negotiation power, the lack of recognition by the stakeholders of their interdependency is a bottleneck. The Transumo-project on itself is an opportunity to tackle these prerequisite bottlenecks by paying attention to it.

As said, for most stakeholders a shared problem definition is the most important element to solve problems existing on the A15. They even feel that the realization of such a definition is more important than the agreement on the internal organization of a collaboration; reaching agreement on the structure and intensity of an organization is easier when the problem is well defined. The experiences of stakeholders differ from literature at this point. In practice the process probably develops through interaction and an iterative process. An opportunity for the development of an A15-regional coalition in this regard is that most stakeholders feel the need for a more intense collaboration. They also see the Transumo-project as a possible starting point. The different expectations

stakeholders have of the project might be a bottleneck for the development of a shared vision, which illustrates the correlation between this agenda setting element and agreement on the internal organization. The expectations differ on the following points: Deltalinqs and the port industry hope the Transumo-project provides a breakthrough for the desired extra infrastructure, where Rijkswaterstaat does not see the project as the place to discuss that. The scope stakeholders expect the project to have also differs; the Port authority for example favors a long term scope and the Rotterdam municipality a mixed scope. Furthermore the expectations at the level of involvement of the participants differ.

Based on the above regional coalitions have potential as a transition management tool, however a shared problem definition seems a critical success factor. In other words: focusing on realizing a shared definition seems to have more potential for transition management than a regional coalition. How to realize agreement on a definition is not well described in literature and it is recommended to perform further research on this topic. Regional coalition theory and experiences of A15 stakeholders provide valuable inputs at this point. Based on the above the major governance challenges for sustainable mobility on the A15 can also be discussed. The major challenge is to create a shared problem definition of course; to do that the major A15 perspective bottleneck needs to be tackled. Getting a diverse group of stakeholders involved, making them aware of their interdependence, and formalizing a collaboration when a shared vision is reached that can continue the work might help in that respect. It is recommended that the Transumo-project pays attention to these elements, as well as it has to clarify and level the expectations of the stakeholders involved. That way the transition towards sustainable mobility on the A15 might get a little closer.

SAMENVATTING

Duurzame mobiliteit is nodig om de Nederlandse delta economisch gezond, bereikbaar, leefbaar en veilig te houden. Hiervoor zijn niet alleen technologische veranderingen nodig, maar zal het hele mobiliteitssysteem moeten innoveren. Een transitie naar duurzame mobiliteit moet resulteren in een fundamentele verandering van de transport sector. Vele organisaties erkennen dat dit nodig is en investeren in zogenaamd ‘transitiemanagement’. Dit onderzoek richt zich op de potentie van regionale coalities als transitiemanagement instrument. Regionale coalities zijn een heel vergaande vorm van samenwerken, welke al gebruikt wordt in de ruimtelijke ordening. Het onderzoek is uitgevoerd in de context van de A15 in de regio Rotterdam, waarvoor tegelijkertijd de belangrijkste bestuurlijke uitdagingen voor het begin van de transitie naar duurzame mobiliteit zijn onderzocht. In de hoofdvraag komen deze twee doelen ook naar voren:

Wat is de potentie van regionale coalities als een transitiemanagement instrument en wat zijn de belangrijkste bestuurlijke uitdagingen in het proces richting duurzame mobiliteit op de A15 in de Rotterdamse regio, gebaseerd op de kansen en belemmeringen voor een regionale coalitie die een transitie naar duurzame mobiliteit kan stimuleren op de A15?

Het dynamische multi level perspectief van transitie vormt het theoretisch raamwerk voor het onderzoek. Het raamwerk laat de complexiteit van een regime zien en illustreert hoe een niche ontwikkeling kan doorbreken in een regime of hoe het een regime kan vervangen. De dynamische stabiliteit van regimes en de landschap ontwikkelingen creëren ‘windows of opportunities’ voor de niches; het raamwerk laat ook zien hoe deze niches zich dichterbij het regime toe bewegen.

Het bestaande A15 regime laat een belangrijke vrachtverbinding van de Rotterdamse haven naar het achterland zien met een zeer complex bestuurlijk systeem. De economische ontwikkelingen van de haven zijn lange tijd het uitgangspunt geweest van verbeteringen aan de A15. Tegenwoordig zijn er echter meerdere aspecten van belang; een transitie naar duurzame mobiliteit is in de take-off fase. In dit geval zijn capaciteitsgrenzen, onvoldoende veiligheid en nieuwe Europese milieunormen de belangrijkste redenen voor duurzame mobiliteit. De landschapontwikkelingen ‘globalisering’, ‘sense of urgency voor duurzaamheid’, ‘een sterker Europa’ en ‘informatisering’ ondersteunen dit. De dynamische stabiliteit van het regime laat verder zien dat de verantwoordelijkheden en bronnen van de regime spelers aan het veranderen zijn; Rijkswaterstaat Zuid Holland moet zich bijvoorbeeld meer richten op zijn primaire taken; private partijen worden geacht meer verantwoordelijkheden te nemen. Voorbeelden laten echter zien dat niet alle partijen hun nieuwe rol al hebben geaccepteerd. Het regime verandert ook omdat mobiliteitsbeleid meer en meer afhankelijk wordt van ruimtelijk beleid. Om op lange termijn duurzame mobiliteit te

bereiken zijn er meerdere, verschillende duurzame oplossingen nodig, maar tot nu toe zijn de niche ontwikkelingen nog niet gelinkt aan elkaar en is dus alles nog mogelijk. De verkeerskarakteristieken en veranderende verantwoordelijkheden laten echter wel zien dat een verdere modal shift en extra infrastructuur oplossingen moeilijk te realiseren zullen zijn.

Theoretisch gezien lijken regionale coalitie zeer geschikt als instrument om een transitie naar duurzame mobiliteit op de A15 te managen. Ten eerste omdat regionale coalities voldoen aan de drie bouwstenen van transitie management 'probleem gedreven', 'lange termijn focus' en 'multi-actor proces'. Ten tweede maakt de complexe bestuurlijke situatie van het A15 regime een instrument dat expliciet focust op een collaboratief proces noodzakelijk. Ten derde legt de regionale coalitie theorie uit hoe een gezamenlijke visie bereikt kan worden; op dit punt komen instrumenten die speciaal ontwikkelt zijn om transities te managen tekort. Ervaringen met samenwerken op regionaal niveau in de regio Rotterdam ondersteunen de geschiktheid van regionale coalities. Diversiteit aan betrokken partijen, de onderhandelingswaarde van deze partijen en een initiatief zijn belangrijke randvoorwaarden voor een regionale coalitie. Als aan deze randvoorwaarden voldaan is, moet een collaboratieve dialoog gebaseerd op reciprociteit, relaties, leren en creativiteit resulteren in een gezamenlijke lange termijn visie, overeenstemming over de financiën en over de interne organisatie.

Om de potentie van regionale coalities verder te onderzoeken zijn de kansen en belemmeringen voor het tot stand komen van een A15 regionale coalitie belangrijk. In dit geval zijn interviews met belangrijke partijen gebruikt om deze uitdagingen te achterhalen. Er is een conceptueel raamwerk ontwikkeld welke is gebruikt als basis voor de onderzoeksmethodologie van de interviews. Het conceptueel raamwerk laat zien hoe en in welke vorm een regionale coalitie een transitie naar duurzame mobiliteit kan stimuleren. Op het moment dat regime spelers gaan praten over duurzame mobiliteit en als ze samenwerking zien als noodzakelijk daarvoor, kan zich een niche ontwikkelen. Deze niche probeert dan een gezamenlijke lange termijn visie te ontwikkelen en kan uitgroeien tot een regionale coalitie die samen met de andere niches richting het regime beweegt. Er zijn vervolgens twee opties voor hoe een regionale coalitie contact maakt met het regime. De niche kan opgenomen worden in het regime, in dat geval opereert het als ware naast het formele proces. De niche kan ook het regime vervangen en dan de autoriteit met betrekking tot het proces overnemen. Het eerste alternatief lijkt het meest realistisch, ook in het geval de coalitie nog in de niche fase verkeerd. Voor de vorm van een regionale coalitie zijn de randvoorwaarden en de agenda elementen van belang. De onderhandelingswaarde van partijen, de lange termijn visie van partijen en mogelijkheden om consensus te bereiken over de financiering en de interne organisatie zijn daartoe onderzocht in de interviews.

De geïnterviewde partijenⁱⁱⁱ zijn het allemaal eens dat de grenzen van het A15 regime (bijna) bereikt zijn. Verschillende partijen participeren daarom in een Transumo-project dat focust op het bereiken van duurzame mobiliteit op de A15.^{iv} Het Transumo-project kan gezien worden als het benodigde initiatief voor een regionale coalitie; omdat het regime echter diverser is, zijn ook andere partijen geïnterviewd. De meeste partijen identificeren een gezamenlijke probleemdefinitie als het belangrijkste element van een samenwerking, een regionale coalitie of niet. Hoewel de partijen het eens zijn dat er 'problemen' zijn, verschillende de A15 perspectieven. De variatie in deze perspectieven beïnvloedt de kans dat een gezamenlijke definitie wordt bereikt. Een belangrijke belemmering hierbij is de discrepantie tussen het perspectief van Rijkswaterstaat en de economisch gerelateerde partijen (de industrie in de haven, Deltalinqs en het havenbedrijf). Deze laatste groep ziet een verslechterde bereikbaarheid en een gebrek aan alternatieve routes als belangrijke problemen en zij geven dan ook de voorkeur aan extra infrastructuur gebaseerd op een netwerk analyse als oplossing, maar Rijkswaterstaat erkent deze problemen niet op de korte termijn en geven een voorkeur aan de geplande uitbreiding van de A15. De veranderende verantwoordelijkheden zorgen ervoor dat deze belemmering nog complexer wordt. De economisch gerelateerde partijen hebben de van hun verwachte verantwoordelijkheden nog niet geaccepteerd, daarnaast wil Rijkswaterstaat wel dat ze betalen, maar hebben ze liever niet dat er een netwerk analyse wordt uitgevoerd, omdat dat de al gemaakte plannen zou kunnen dwarsbomen.

Er bestaan kansen om deze belemmering te tackelen of te verminderen. De brede erkenning voor de luchtkwaliteit issues kunnen ervoor zorgen dat partijen om de tafel gaan zitten. Het doel om een verdere modal shift te ontwikkelen, kan hetzelfde effect hebben, hoewel de verkeerskarakteristieken en het Havenbedrijf aangeven dat dit heel moeilijk zal zijn. De erkenning van vele partijen dat een gezamenlijke definitie het uitgangspunt van een samenwerking moet zijn kan ook helpen. Ervaringen van deze partijen brengen vier belangrijke aspecten aan het licht die het bereiken van een gezamenlijke definitie kunnen beïnvloeden: belangen zijn belangrijker dan standpunten, vertrouwen, persoonlijkheid en duidelijkheid over de gebruikte definities. De collaboratieve dialoog die regionale coalities karakteriseert biedt ook kansen. Om deze kansen echter te kunnen benutten moet aan de randvoorwaarden van een regionale coalitie worden voldaan. Omdat het Transumo-project gezien kan worden als het initiatief is de diversiteit van het project vergeleken met de diversiteit van het regime. De slagkracht van het Transumo-project kan verbeterd worden door meer landelijke overheden, gebruikers, belangengroeperingen, proces ondersteuners en bestaande samenwerkingsverbanden erbij te betrekken. Dit helpt waarschijnlijk ook om de

ⁱⁱⁱ ANWB, DCMR, Deltalinqs, dS+V, ECT, Gemeentewerken, Havenbedrijf, Milieufederatie Zuid Holland, NDL, P&O Ferries, Provincie Zuid Holland, Rijkswaterstaat Zuid Holland, ROM-Rijnmond, RR2020, Shell Chemicals, Stadshavens, Stadsregio, TLN, Vopak

^{iv} DCMR, Deltalinqs, dS+V, ECT, Gemeentewerken, Havenbedrijf, P&O Ferries, Rijkswaterstaat Zuid Holland, Shell Chemicals, Stadsregio, Vopak

negatieve effecten van de Nederlandse poldercultuur te verminderen. Wat betreft onderhandelingswaarde vormt het gebrek aan de erkenning van de onderlinge afhankelijkheid een belemmering. Door aandacht aan deze belemmeringen te besteden is het Transumo-project zelf een kans ze te tackelen.

Zoals gezegd is voor de meeste partijen een gezamenlijke probleemdefinitie het belangrijkste element om problemen als op de A15 op te lossen. Ze vinden het bereiken van zo'n definitie zelfs belangrijker dan het bereiken van overeenstemming over de interne organisatie van een samenwerkingsverband; overeenstemming bereiken over de structuur en intensiteit van een samenwerking wordt gemakkelijker geacht als het probleem goed gedefinieerd is. De ervaringen van partijen verschillen hiermee van de literatuur. In de praktijk zal het proces waarschijnlijk meer gebaseerd zijn op interactie en een iteratief proces. Een kans voor de ontwikkeling van een A15 regionale coalitie in deze context is dat de meeste partijen behoefte hebben aan een meer intense vorm van samenwerken. Ze zien het Transumo-project ook als een mogelijk uitgangspunt daarvoor. De verschillende verwachtingen die partijen hebben met betrekking tot het project kunnen wel nog een belemmering zijn voor het ontwikkelen van een gezamenlijke visie; dit illustreert nog eens de correlatie tussen dit agendapunt en de overeenstemming over de interne organisatie. De verwachtingen verschillen op de volgende punten: Deltalinqs en de industrie in de haven hopen dat het Transumo-project een doorbraak kan veroorzaken met betrekking tot de gewilde extra infrastructuur. Rijkswaterstaat vindt het project niet de plaats om daarover te discussiëren. Partijen hebben verder verschillende verwachtingen ten aanzien van de scope van het project; het Havenbedrijf geeft bijvoorbeeld de voorkeur aan een lange termijn scope, terwijl de gemeente Rotterdam een meer gemixte scope verwacht. Verder verschillen de verwachtingen ten aanzien van de betrokkenheid van participanten.

Gebaseerd op het bovenstaande hebben regionale coalities potentie als transitie-management instrument, maar een gezamenlijke probleemdefinitie lijkt een kritische succesfactor. Met andere woorden: focussen op de realisatie van een gezamenlijke definitie lijkt meer potentie te hebben voor transitie-management dan regionale coalities. Echter is in de literatuur niet goed beschreven hoe tot een gezamenlijke probleemdefinitie gekomen kan worden en het is dan ook aanbevolen verder onderzoek te verrichten naar dit onderwerp. De theorie over regionale coalities en de ervaringen van de A15 partijen bieden daarvoor waardevolle aanknopingspunten. Uit het bovenstaande kunnen verder de belangrijkste bestuurlijke uitdagingen voor duurzame mobiliteit op de A15 gehaald worden. De belangrijkste uitdaging is natuurlijk het ontwikkelen van een gezamenlijke probleemdefinitie. Om dat te kunnen doen moet de belemmering met betrekking tot de verschillende A15 perspectieven getackeld worden. Een diverse groep partijen betrokken krijgen, hen bewust maken van hun afhankelijkheid en een samenwerking formaliseren die het werk kan voortzetten op het moment dat een gezamenlijke visie is bereikt, kunnen daarbij helpen. Het is daarom aan te bevelen dat het Transumo-project aandacht besteed aan deze elementen en dat ze de verwachtingen die

de partijen hebben op elkaar afstemmen. Op die manier kan een transitie naar duurzame mobiliteit weer een stapje verder komen.

REPORT OUTLINE

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CHAPTER 1

INTRODUCTION

1.1 Research motive

Spatial developments and mobility growth are clashing all over the world. In the Netherlands this happens at a more extreme level, because a part of the country is situated in a delta region. A high population density, a dense infrastructure network, a high degree of urbanization, and highly intensive agriculture are common characteristics of deltas. “The intensity of these features means that problems, which are known from other areas of the world, are clashing and culminating in delta regions.” [WUR] A recent development and a recent event clearly illustrate these difficulties.

New European air quality norms and the interpretation of the *Raad van State* (Council of State) of these norms make it almost impossible to execute new building plans and road works. With the construction of peak hour lanes and new industrial complexes the norms of particulate matter (PM) and NO_x are exceeded and as a result the Raad van State prohibited the construction of several plans already. [Milieuloket]

The port of Rotterdam and the Island Voorne-Putten (in the south-west corner of the Province of Zuid-Holland) only have one main access road, national highway 15 (A15). When something happens there is no alternative or way out. On February 2nd 2005 this was painfully illustrated when a technical failure of a tunnel system and an accident with a truck a little further down the road caused two major traffic jams. During the morning peak hours 27 and 28 kilometers of congestion blocked the highway in eastern direction. [RTL]

To keep the Dutch delta economically healthy, accessible, livable, and safe, something needs to change. *Sustainable mobility* seems more than needed in this respect.^v To reach sustainable mobility not only technological changes are needed, but the whole system needs to innovate. Transformation processes in which a society or a complex subsystem of society changes in a fundamental way are called *transition* processes. [Rotmans et al., 2000 a]

The Dutch Ministry of Housing, Spatial Planning, and the Environment (VROM) also recognizes the need for a transition towards sustainable mobility. In the ‘Nota NMP4’, which describes the fourth national environmental policy plan, four transitions are

^v A definition of sustainable mobility can be found in the list of abbreviations, translations, and jargon; chapter 3 goes into this topic in more detail.

identified as needed for a sustainable environment. A transition towards sustainable mobility is one of these four. VROM is particularly interested in how these processes can be influenced. [VROM a] This is also a main drive of Transumo (Transition towards sustainable mobility), a consortium of both public and private organizations that works on innovations that have to lead to a more efficient transport and infrastructure system, based on a research program. [Transumo, 2004] Also research institute TNO and Erasmus University try to further develop transition management together in their KCT (Knowledge Centre for Transitions). The research described in this report fits into these developments as well. It investigates the potential of *regional coalitions* as a transition management tool. At the same time the major governance challenges at the beginning of the sustainable mobility transition in the Rotterdam region are identified.

This research is performed for TNO Built Environment and Geosciences. They are involved in a project that focuses on reaching sustainable mobility on the Rotterdam port hinterland connection A15. (The project is expected to become a Transumo-project. While writing this report the project proposal is expected to be accepted by Transumo at any time. In this report the project will be referred to as ‘Transumo-project’; APPENDIX A gives a more detailed description of the project.) TNO is in a phase in which they are acquiring deeper understanding of what transition management is or what it should be. The Transumo-project provides an excellent case to investigate this a little further, while gaining some valuable inputs for the process towards sustainable mobility in the Rotterdam region and for the project organization at the same time. The choice to investigate the potential of regional coalitions is based on the interest of TNO as well. Regional coalitions are a very intense form of working together used to better fulfill the complex job of public planning. In that regard TNO has studied and used this tool before and felt that it could be of use in the A15 sustainable mobility process.^{vi}

1.2 Research objectives

The research objectives can be divided into a research goal and research questions. The research questions consist of a main question and related sub questions. The sub questions are needed to answer the main question.

Research goal:

Investigate the potential of regional coalitions as a transition management tool based on the process towards sustainable mobility on the A15 in the Rotterdam region, and identify the major governance challenges of this process.

^{vi} Horrevoets, M. & Bouma, G. (2004); Door de dialoog kennis delen, maken en verzilveren, de praktijk van het collaboratieve proces; Paper Plandag 2004, Delft: TNO Inro
Citizen First (2005); Social Inclusiveness: cluster concepts and collaborative strategies; concept report

Main research question:

What is the potential of regional coalitions as a transition management tool and what are the major governance challenges in the process towards sustainable mobility on the A15 in the Rotterdam region, based on the opportunities and bottlenecks for a regional coalition that can stimulate a transition towards sustainable mobility on the A15?

Sub questions:

- 1) Why is the A15 in the Rotterdam region such an interesting case to look at from this perspective?
- 2) Why are regional coalitions a useful transition management tool with regard to the need for a transition towards sustainable mobility on the A15?
- 3) How and in what form can a regional coalition stimulate a transition towards sustainable mobility on the A15?
- 4) Which opportunities and bottlenecks for the realization of a regional coalition exist in the process towards sustainable mobility?
 - How can the opportunities and bottlenecks for the realization of a regional coalition that can stimulate a transition towards sustainable mobility on the A15 be identified?

1.3 Research design

The research consists of a theoretical and an empirical part, part A and part B. The theoretical part provides the inputs for a framework that conceptualizes how and in what form a regional coalition can help to solve and mitigate the problems of the A15. The conceptual framework forms the basis for the empirical research and for that reason can be found in part B. The basis for the conceptualization is formed by a theoretical framework: the dynamic multi-level perspective of transition processes (*chapter 2*). Sustainable mobility seems needed on the A15 in the Rotterdam region; the theoretical framework places the process to reach sustainability in a theoretical perspective. An analysis of historical developments and trends, and prognoses for the future help to understand why the A15 is such an interesting case to look at when conceptualizing the potential of regional coalitions to stimulate transitions. At the same time the analysis provides valuable inputs for this conceptualization (*chapter 3*). Literature on transition management, regional coalitions, and experiences of the A15 stakeholders in working together, provides the other major input (*chapter 4*). In the empirical part of the research the opportunities and bottlenecks in the process towards sustainable mobility are investigated based on the conceptual framework. This part of the research is mainly based on interviews. The research methodology of these interviews will be discussed in chapter 5, as it is based on the framework. The research can be classified as an explorative study; the potential of regional coalitions and the major governance challenges in the process towards sustainable mobility have not been investigated in the context of transition management before. The data used to explore these issues are

mainly qualitative and for the empirical part collected by half open structured interviews, authorized by the respondents. Figure 1.1 visualizes the research design.

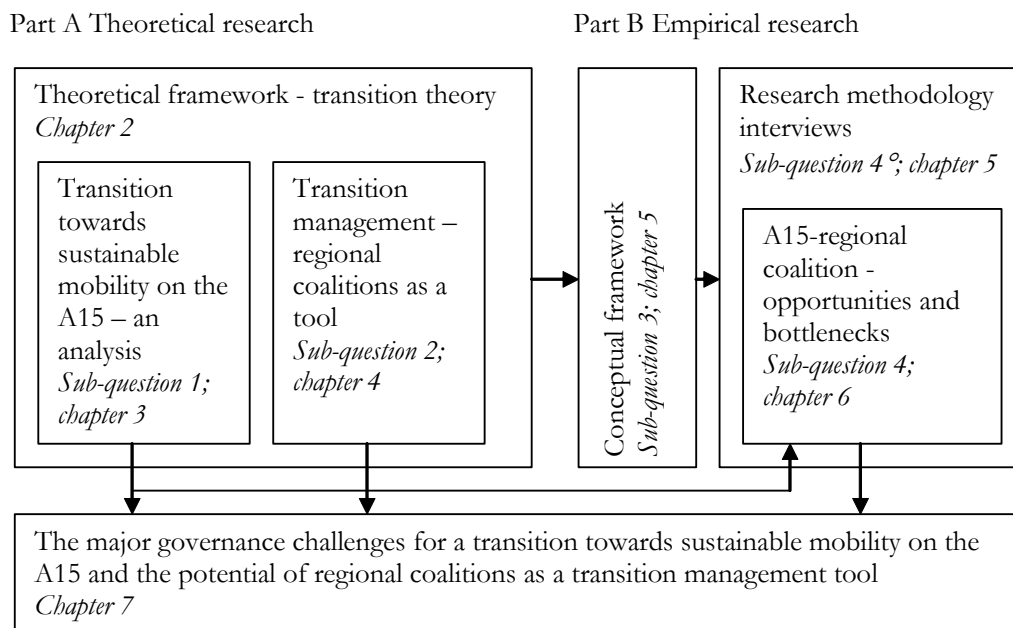


Figure 1.1: Visualization of research design

1.4 Added value of the research

The added value of this research is twofold. First of all it contributes to the knowledge building about transitions and transition management. The research investigates the potential of an already existing instrument as a transition management tool. As theory about transition management is in development this research might help to get further in this process. In this regard the research is interesting for TNO as a participant in the KCT and it might also be interesting for other knowledge institutes working on this topic. On a more practical level, this research can add value to the transition towards sustainable mobility on the A15 and to the Transumo-project group and TNO in specific. Technically sustainable mobility can be reached already. Solutions such as hybrid cars, modal shift, double decker highways and road pricing can technically be implemented right away. Societal pressure regarding external safety and livability, and financial restrictions make that these solutions cannot be implemented so easily. This is a typical problem of today's complex society, where more is needed than only technological innovations. This research recognizes this and investigates the major governance challenges of the A15 sustainable mobility process. By doing that sustainable mobility might get a little closer.

1.5 Outline of the report

Part A consists of chapter 2, chapter 3, and chapter 4. First of all in chapter 2 the theoretical framework is discussed. The concept of transitions and the theoretical background are explained in this regard. Transitions theoretically have three dimensions; the framework is based on one of them. It is explained why this dimension is the most useful when looking at the process towards sustainable mobility. In chapter 3 national highway 15 is introduced. An analysis of the historical development, trends, prognoses, and the governance situation provides the answer to the first sub question. The second sub question is answered in chapter 4. The existing ideas about transition management are linked with the theory and experiences with regional coalitions. The advantages of this tool are also supported by the lessons from previous collaborations in the Rotterdam region. Part B continues with the empirical chapters 5 and 6. The findings of chapter 3 and 4 are used to answer how and in what form a regional coalition can stimulate a transition towards sustainable mobility on the national highway 15. Chapter 5 also discusses the methodology used to find the governance opportunities and bottlenecks of the A15 case. The results, analysis and discussion of this empirical study are described in chapter 6, followed by the conclusions and recommendations in chapter 7.

PART A
THEORETICAL RESEARCH

CHAPTER 2

TRANSITION THEORY: THEORETICAL FRAMEWORK

2.1 Introduction

“Transitions are transformation processes in which a society or a complex subsystem of society changes in a fundamental way over an extended period of time (more than one generation, i.e. 25 years or more).” [Rotmans et al., 2000 a] A transition towards sustainable mobility is needed in the Dutch delta, because the current mobility system cannot accommodate the growing demand and assure a good accessibility, livability, and safety at the same time. [V&W] Mobility can be described as the movement of people and goods between places; a mobility system can be described by its elements ‘vehicles’, ‘infrastructure’, ‘services’, and ‘rules’. Mobility in itself is not a problem, but it is an essential prerequisite for the economy. The negative effects of the current mobility system are not beneficial for this economy. [Rotmans, 2003; 197] Figure 2.1 graphically illustrates the difficulties of the current system and the chances a transition towards sustainable mobility provides.

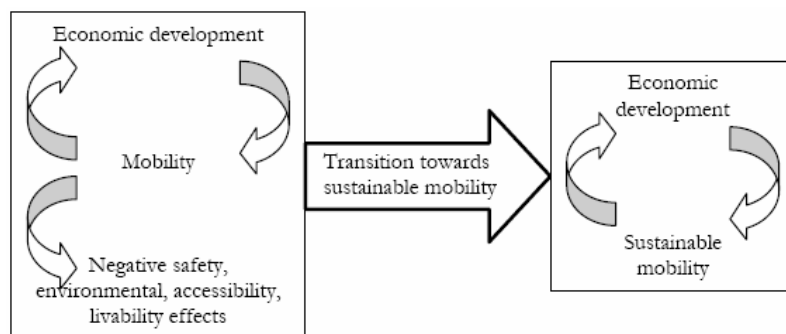


Figure 2.1: Economic development in relation to mobility

The concept of transitions is not new, but the recognition of the need for a transition and the willingness to direct and manage it is a relatively recent development in the field of innovation policy. VROM, Transumo, and others^{vii} recognize the need for a transition towards sustainable mobility. This research studies a possible transition management tool; a tool that can stimulate a transition process. This chapter focuses on these transition processes. First the concept of transitions is explained with help of a historical example of a transition. The theoretical background of transitions is discussed and linked to the different dimensions, which are explained as well. The multi-level dimension proves to be very useful as a theoretical framework to build on in this research.

^{vii} E.g. TNO, KSI (Knowledge network System Innovations: transitions towards sustainable societies), and ICIS (International Centre for Integrative Studies)

2.2 The concept of transitions

The concept of transitions can be made understandable by explaining the historical transition from horse-and-carriages to the car. The example clearly illustrates that “a prerequisite for transitions to happen, is that several developments in different domains (ecological, socio-cultural, economic, institutional, technological) interact in such a way that they positively reinforce each other.” [Brugge van der et al., 2004; 6] In the 1860’s horse related transport was very common, but was put under pressure by the hygiene problems it caused. Alternative modes of transportation were developed: bikes, electrical trams, steam cars, electrical cars, and fuel cars. Bikes and trams were the most popular at first, but with the road improvements that started in the 1890’s, the car became an alternative again. Still it would take until the 1920’s before the car became the dominant mode of transport in urban areas; in between 1890 and 1920 the three modes of transportation were equally used. Not only technological innovations made the car the dominant mode, also social, cultural, and political developments influenced the process. Experiences with bikes, for example, made that people developed a new mobility preference for individual and flexible transportation. Trams made the population familiar with higher speeds, and from social hangout spot, roads became transport axes. A process of sub-urbanization also highly influenced the transition. [Geels, 2002; 420-423] In the period from 1860 to 1930 the mobility system had transformed from a system with horse-and-carriages to a system with cars. The infrastructure had changed; services such as gas stations were born, as well as, for example, rules for speed.

The example shows that a transition is a system change. It also illustrates that “a system is a correlated set of parts that affect each other in a certain direction.” [Rotmans, 2003; 14] In the 1860’s nobody could have imagined how the mobility system would look like in 1920. The same counts for our vision of a sustainable mobility system. A major difference though is that the need for a transition towards sustainable mobility is recognized and being analyzed, and it is tried to manage the transition. In contrast with historical transitions, so called transition visions, possible images and possible direction pathways, exist. [Kemp, Loorbach, 2004; 10] The path to get to sustainable mobility, and what sustainable mobility exactly is, is not known, but a direction can be given. For the A15 this direction will be discussed in chapter 3.

2.3 Theoretical background

2.3.1 Introduction

A transition process describes the development path from one state to another of a sector that fulfills a societal function, transportation in this case. The fundamental change of a sector that fulfills a societal function will effect the societal system, but will not change it fundamentally like a transition on society level would have done; e.g. the transition from a rural, agrarian society to an urban industrial one. [Geels, 2002; 11]

Technical innovations play a key role in the development path towards the new state. “An innovation is an idea, practice, or object that is perceived new by an individual or other unit of adoption.” [Rogers, 1995; 11] This definition has to be extended as many new ideas, practices, and objects are developed, but only a few are economical and/or societal successfully. For that reason Schumpeter defined a technical innovation as: “an invention that has actually resulted in an economical and/or societal successful new technology” [Schumpeter, 1934]. A technology in this context is “a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving a desired outcome” [Rogers, 1995; 12]. Although technical innovations play a key role in the transformation process in which a societal function changes, it is only one domain of change. Transition theory, in contrast to many other theories that deal with technological innovation, recognizes that some technology changes have system wide implications and that some problems need a system wide solution; these cases should be dealt with from a system perspective. In other words: “transitions require system innovations: organization exceeding, qualitative innovations, which are realized by a variety of participants within the system and which fundamentally change both the structure and the relation among participants. It is within these systematic innovations that innovations at the individual level occur, in terms of product, process and project innovations.” [Weaver et al., 2000]

The fact that the transition theory recognizes the system perspectives of technological innovations does not mean it is a totally new theory. The concept of transitions has a theoretical background in different literatures as it is a complex phenomenon. Geels indicates two processes that are very important in a transition path, technological substitution and co-evolution. Both processes have been studied extensively and are used as an input for other theories. These theories and studies on its turn say something about the transition process, phases, patterns, and mechanisms. [Geels, 2002; 21] The remainder of this section will highlight some important concepts to give an idea of the conceptual basis of transitions. For a more extensive and more complete description of the different literature ‘Understanding the dynamics of technological transitions’ by Geels [2002] gives an overview.

2.3.2 Technological substitution

Technological substitution means that a new technology replaces an old one. Figure 2.2 shows that an old technology loses market share to a new one. Of this simple representation three approaches consist: point source, replacement, and transformation. Point source approaches provide relevant insights with regard to the emergence and diffusion of a technology. The birth of a novelty and the other life cycle phases are described in this approach, Figure 2.3 shows this product life cycle. [Geels, 2002; 21, 23, 25-26] The cycle typically has an S-shape; the use of a technology starts of slow, accelerates then, and slows down again until a saturation point. [Boschma et al., 2002; 61] Rotmans applied this approach to the transition theory by distinguishing four phases in a

transition: the pre-development phase, the take-off phase, the acceleration phase, and the stabilization phase. [Geels, 2002; 27]

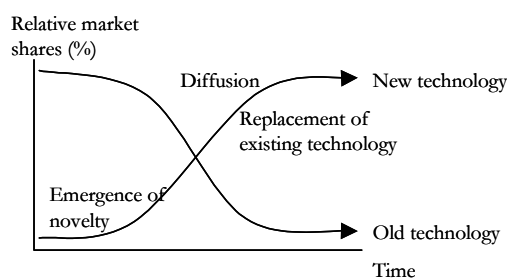


Figure 2.2: Simple representation of technological substitution

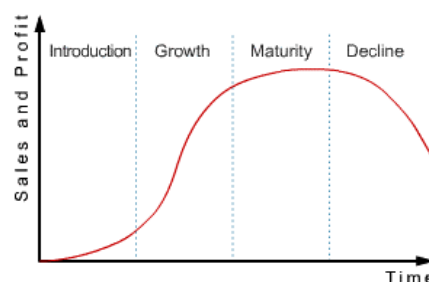


Figure 2.3: Product life cycle

The replacement approach focuses on technology and markets, and the replacement of technologies based on economic competition. [Geels, 2002; 23] Grübler proposes that long-term technological substitutions are replacement processes. He illustrates and supports his opinion with the rise and fall of infrastructures. A new innovation, in his illustration a new transport mode, competes with the old ones for market share and replaces the old modes after a while. Figure 2.4 shows the growth rates of different transport modes. It can be seen that a new innovation is born when the previous one has almost reached its saturation point.

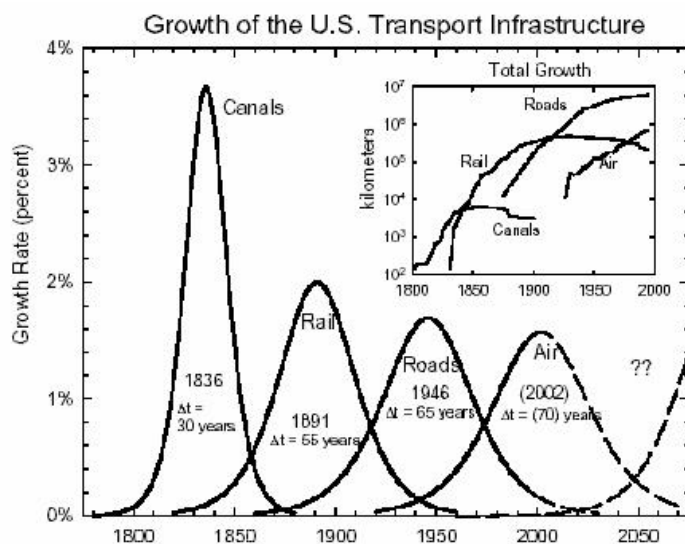


Figure 2.4: Growth of US transport infrastructure [Grübler, 1990]

Evolutionary economy is another replacement approach. It recognizes that new technologies are of major importance for economic growth and development. Evolutionary economy uses insights and models of evolutionary biology to describe the dynamics of economic events, in contrast with the neo-classical approach that is based on mechanical and physical principles. [Boschma et al., 2002; 11-12] Box 2.1 gives a short description of the essence of evolutionary economy.

Box 2.1: Evolutionary economy in short

Evolutionary economy is a theory of economic change and adaptation. It tries to describe how and why the economic structure changes constantly by influence of economic conjuncture developments, technological innovations, and changing societal structures. Evolutionary economy analyses:

- how new *variation* in the economy is reached and how this results in *change* of technology, market structure, sector structure, and institutions
- how the *selection environment*, which consists of both markets and institutions, determines which variation survives, and how this leads to a certain degree of *stability* (lock-in)
- how radical innovations in technology and organizational structures correlate with changes in the selection environment in a process of *co-evolution*
- how changing processes can develop *irreversible* and *path dependent*
- how economic behavior can have *sub optimal*, *unforeseeable*, and *multiple results*

[Boschma et al., 2002; 13-14]

Radical innovations are the central theme in both Grübler's approach and evolutionary economy. Evolutionary economy for example explains the non-equilibrium and changes of sector structures with radical innovations. [Boschma et al., 2002; 14] The transition theory also recognizes radical innovations as a jump on the transition development path. This is also one of the biggest critique points addressed to the idea of transitions. Geels argues for example that the assumption that new technologies operate and compete in the same markets as the old technologies is questionable. Trains, planes, and cars are not automatically a substitute for each other; they can also complement another mode of transportation. [Geels, 2002; 41] Mom argues that innovations are a process of incremental changes; in history no evidence can be found for jumps and small changes seem to be the rule rather than the exception. [Mom, 2004]

The transformation approach of the technological substitution process focuses on the emergence of new technologies. The assumption of this approach is that new technologies grow out of old ones. [Geels, 2002; 25] This approach addresses the critiques on the replacement approach, but it does not mean it did not influence the transition theory. "Literature on transformation approaches mainly focuses on the early phases of new technologies, how new technologies emerge in particular contexts, are interpreted with old categories and rules, and gradually emancipate from them." [Geels, 2002; 60] Socio-technical approaches can be classified as transformation approaches. They focus on existing networks and state that new technologies emerge in the context of old technologies, they are first perceived with concepts and perceptions related to the old technology before they gradually grow into their own. When a new technology is introduced in an existing network, this may trigger further changes and transformations.

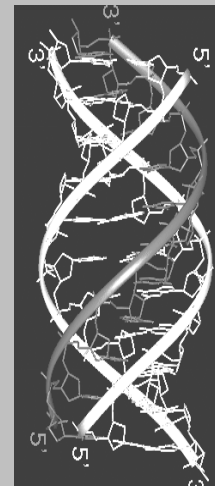
[Geels, 2002; 24, 69] This process forms the basis for the dynamic equilibrium that is a characteristic of both the start and end state of a transition.

2.3.3 Co-evolution

Co-evolution is the second process of importance during a transition path. Co-evolution can be defined as positive or negative dependency between evolving entities. When two technologies have a positive dependence relationship they enrich each others' niche. [Boschma et al., 2002; 63] The emphasis of the co-evolution concept is on seamless webs, emerging linkages between heterogeneous elements, and co-construction. [Geels, 2002; 69] "In the co-construction approach the emergence and diffusion of new technologies is analyzed as a construction or alignment process, gradually linking heterogeneous elements together into a 'working' configuration." [Geels, 2002; 24] Transitions are an interaction process of several domains. "The different domains are relatively autonomous, but they are also interdependent. It is the co-evolution of these domains that generate the possibility of mismatch and of radical (institutional) innovations." [Geels, 2002; 84] Although transition processes consist of more than three domains, the triple helix perspective provides a good illustration of the co-evolution concept. Box 2.2 explains this perspective.

Box 2.2: Triple helix perspective

The focus in the triple helix perspective is on three groups on the supply side of innovations: academia/university, government/state, and industry/firms. The important point of the triple helix perspective is the co-evolution between the dynamics within these elements. The figure shows these dynamics. The figure not only shows three helices, but also communication networks and linkages between them. An important consequence of the co-evolution between three dynamics is endless innovation. Perturbations in one sphere will trigger changes in the other. During the co-evolution process tensions and a-synchronicities may emerge. Uncertainties in the relations between the helices open windows of potential innovations (and conflict) in (sub) systems that otherwise have to be reproduced. [Geels, 2002; 83]



2.4 Dimensions of transitions

The concept and theoretical background of transitions already gave some insights in transition processes. This section will go into this process in more detail by discussing the dimensions of a transition. Three dimensions of transitions are recognized in literature: time, scale, and nature. These dimensions are conceptualized by multi-stage, multi-level,

and multi-domain. The latter one is the least explained in literature but is already discussed extensively in the previous sections. It is more a characteristic in itself; transitions are changes on several domains at the same time such as technology, economy, institutions, etc. [Rotmans et al., 2000 b] The multi-stage characteristic of transitions explains that transitions have periods of quick change and periods of slow development. This concept is derived from the product life cycle concept, which is discussed in the background section. It is of importance because each phase of a transition has its own characteristics. Figure 2.5 shows the four stages in the development process of transitions; pre-development phase, take-off phase, acceleration phase, and stabilization phase. The development process of the phases is well described by Rotmans.

1. “a pre-development phase of dynamic equilibrium where the status quo does not visibly change but changes take place under the surface;
2. a take-off phase in which thresholds are reached and the state of the system begins to shift;
3. an acceleration phase where visible structural changes take place rapidly through an accumulation of socio-cultural, economic, ecological and institutional changes that reinforce each other;
4. a stabilization phase where the speed of social change decreases and a new dynamic equilibrium is reached.” [Rotmans et al., 2000 c]

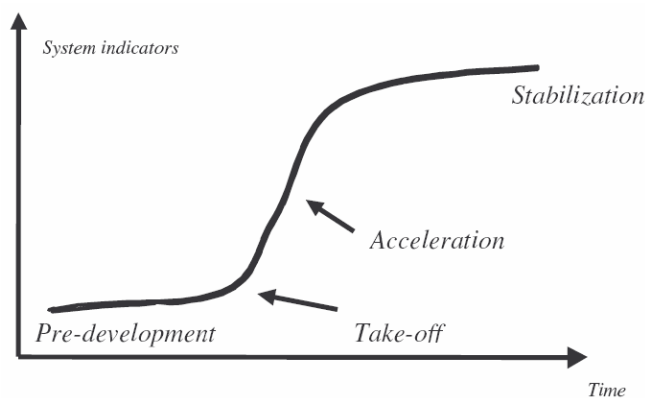


Figure 2.5: The different phases of a transition [Rotmans et al., 2000 c]

It should be noted that transitions itself develop smoothly over a long period of time, but in the short run the development goes with a lot of small and bigger shocks. These shocks, the radical innovations the replacement approaches assumed, can result in a jump on the development path, but can also mean a step backwards. The transition towards sustainable mobility, of major importance in this research, is still in the take-off stage or not even there, as can be derived from a paper by Kemp and Rotmans [2002] and Rotmans' book about transition management [2003]. This means that there is a dynamic state equilibrium, but the system is reaching its boundaries.

The last conceptualized dimension to be explained is the multi-level characteristic of a transition. This characteristic is found based on studies of historical transitions. Geels and Kemp found three levels: the micro-level of niches, the meso-level of socio technical

regimes, and the macro-level of a socio technical landscape. [Geels, Kemp, 2000; 7] The relation between these three levels is well illustrated by Figure 2.6.

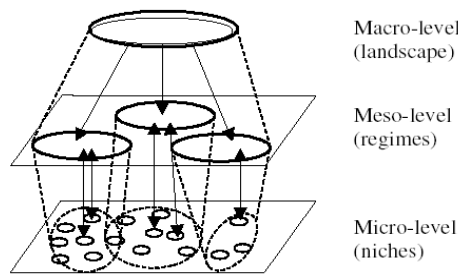


Figure 2.6: Interaction between different scale levels [Geels, Kemp, 2000; 17]

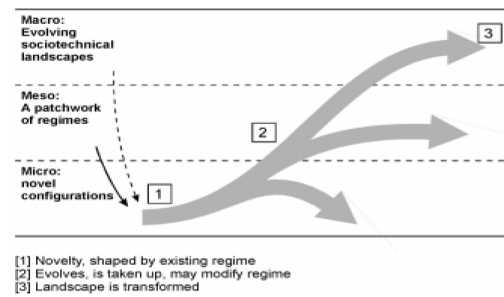


Figure 2.7: Development path innovation in a transition [Geels, Kemp, 2000; 17]

The regime level represents the established socio technical system meant to fulfill a societal function. This regime does not only contain the artifact, but also the administration, user behavior and preferences, infrastructure etc. The technical developments on the regime level are mostly incremental and have the goal to optimize the system. The transformation approaches describe the innovation process in this system. The landscape forms the broader context of the regime. Some developments on the landscape level stabilize the regime, other developments put pressure on it. The niches form the level where alternative technologies are developed. These niches create pressure for the regime from the bottom and try to break through. [Geels, Kemp, 2000; 17-18] Developments on the niche level are the starting point for most transitions; niches either break through and replace the existing regime, or they become part of the regime.

For this research the multi-level dimension is the most important. It illustrates how transition theory sees the path of innovations towards usage. And as the outcome of the study has to give insight in how regional coalitions can stimulate this process of diffusion, adoption, and implementation, this dimension forms an important framework. The representation in niches, regimes, and landscape gives a feeling for the elements in a transition process, but it does not explain what the assumed path of innovations is. This innovation path is often assumed to be as graphically illustrated in Figure 2.7. Technological developments in existing regimes are incremental, like the transformation approach states. Radical innovations develop in niches, but as long as the existing regime is stable it is very hard for new technologies to get out of the niche, because windows of opportunity in the regime will be scarce. A regime is said to create more windows by pressure of the regime, internal problems, or when the developments on the niche level correlate with existing technologies. According to Geels these dynamics of the process are not taken into account in this representation of the development path of innovations. For example, only one technology is taken into account, whereas it is more likely that several technologies are being developed. Also the ongoing process in the regimes is not explained. [Geels, 2002; 413] Geels developed and tested a dynamic multi-level

perspective that addresses these weaknesses. This representation of the development path of innovations in a transition will be used as the theoretical framework in this research because it is closer to reality; Figure 2.8 gives this framework, Figure 2.9 highlights the dimensions of socio-technical regimes.

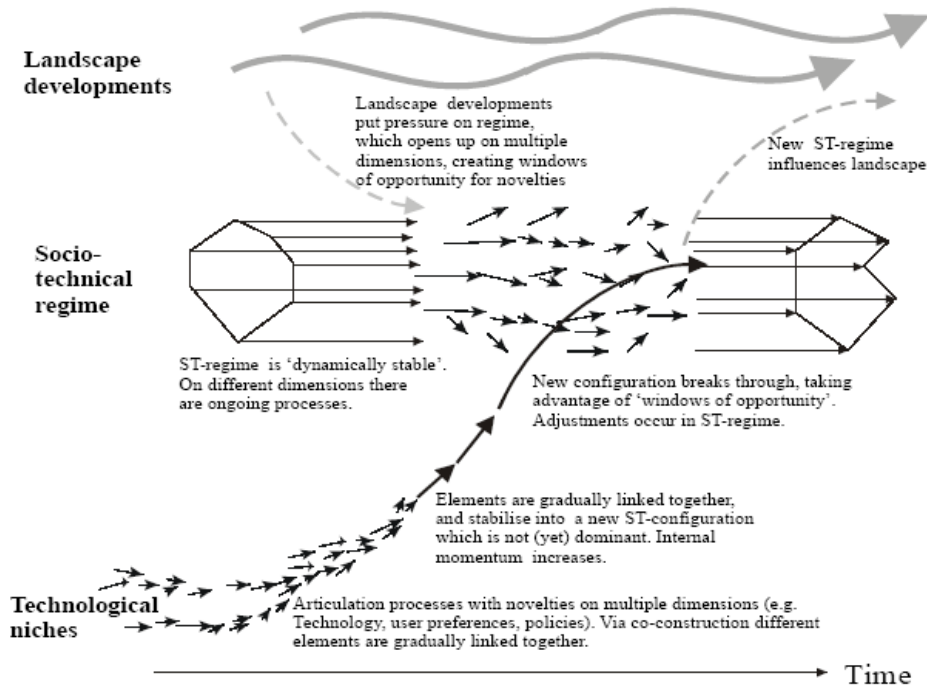


Figure 2.8: Dynamic multi-level perspective [Geels, 2002; 110]

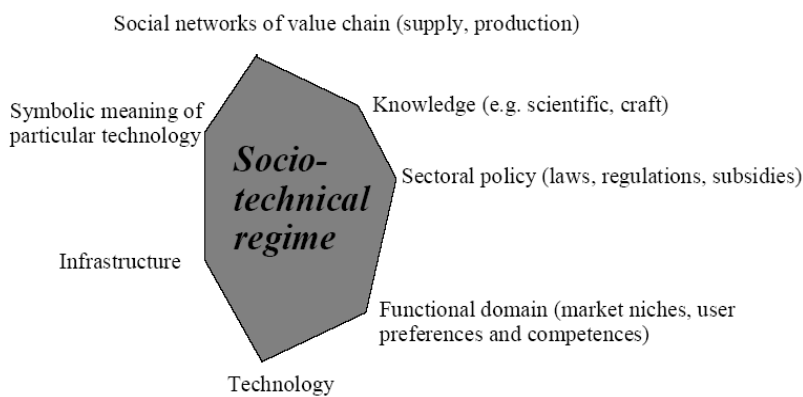


Figure 2.9: Dimensions of socio-technical regime [Geels, 2002; 108]

The figures show and explain the complexity of a regime and illustrate how niche developments can break through or replace the regime. Because of the dynamic elements of the model it better describes how windows of opportunities develop and how niche developments get closer to a regime. When it is tried to manage such a process these elements are very important. For that reason the dynamic multi-level perspective is very useful in the context of this research.

CHAPTER 3

TRANSITION TOWARDS SUSTAINABLE MOBILITY: ANALYZING NATIONAL HIGHWAY 15

3.1 Introduction

National highway 15 in the Rotterdam region is a very useful case in the theoretical context of this report. A transition towards sustainable mobility is needed here, this chapter explains why. Secondly the analysis performed provides useful inputs to find the opportunities and bottlenecks of this process. The A15 is the major freight gateway by road of the port of Rotterdam. For a large part of the port, as well as for the towns on the island Voorne-Putten, it is the only access by road, Figure 3.1 illustrates this. APPENDIX B provides more detailed maps of the A15, which contains references to all locations called upon in this chapter.

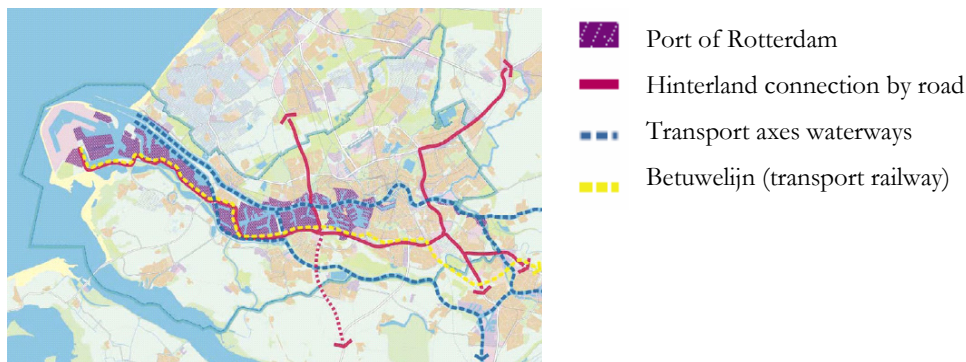


Figure 3.1: Hinterland freight transport connections [Stadsregio, 2003; 62]

The economic importance of the road for the port, the region, and the country, the environmental and especially the air quality issues, the spatial development plans, and of course the mobility policies on all levels of government, effect the development of and around this highway. In order to better understand the analysis discussed in this chapter, as well as the empirical part of the research, APPENDIX C gives a short description of the policies related to the A15; developments such as *Maasvlakte 2* (second port landfill) and the *Betuwelijn* (transport railway) are discussed in this regard as well.

3.2 Development of a major freight gateway

3.2.1 Introduction

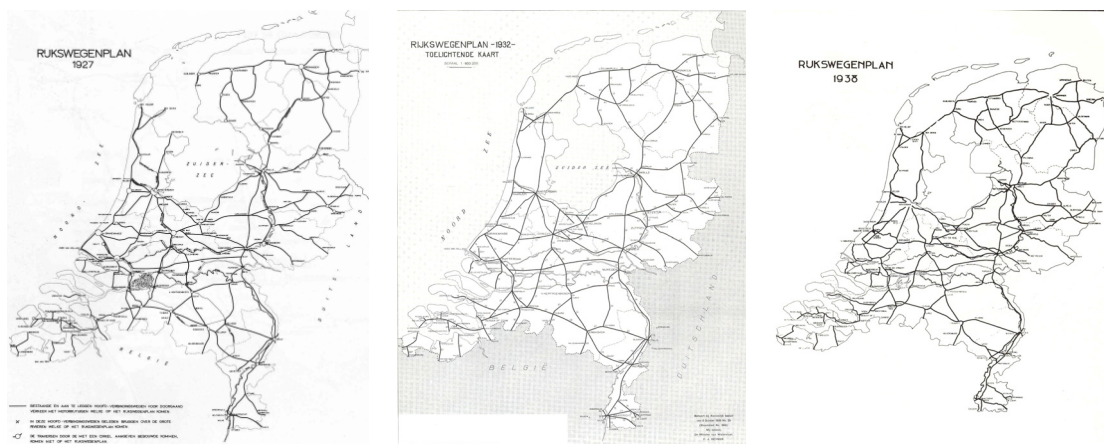
As the major freight gateway, being accessible by road is important for the competitive position of the port. It helps to maintain the good economic position of the port itself, as well as for the region and the country as a whole. The Port Industrial Complex (PIC)

contributed 6.8% to the Dutch GDP (Gross Domestic Product) and 25% to the region's GRP (Gross Regional Product) in 2002. The employment effects also clearly illustrate the economic importance of this *mainport*; the contribution to the national employment is 5.4%, to the regional 16%. [Havenplan 2020, 2004; 30] The macro economic position of the port is still immense, but the market share of the handled freight in the Hamburg – Le Havre range has declined from 44% in 1992 to 38.4 % in 2002 [Havenplan 2020, 2004; 28], and the port is no longer the largest port in the world [Weerwoord].

In order to stay competitive, good hinterland connections are of major importance. Along with the developments in the port, the A15 has become the major freight gateway by road. This outcome forms the starting point of the transition towards sustainable mobility. This section explains how the highway has become so important, which helps to get a picture of the current regime and its internal dynamics.

3.2.2 Planning and construction

The A15 is a national highway, a *rijksweg* in Dutch. The policy and planning for these roads is done by the national government, and presented in the so called *Rijkswegenplan*. In 1927 the first Rijkswegenplan came out. A road tax was introduced in 1926 and this forced the government to develop the first plan for a road network. The first plan focused on an improvement and expansion of existing roads, and in the west of the Netherlands some new roads were built. The authority of the government ended at the city borders, so the cities itself were responsible for the links between the two ends of a highway. In Rotterdam a study by Witteveen in 1928 (*Studie voor den algemeenen uitleg van Rotterdam*) described the road network situation in the city. In this plan the later A15 appeared for the first time, but in a totally different form than it has today. The plan was based on equal distribution of traffic over all roads; beltways were not thought of. [Provoost, 1996; 15, 21, 23] Although the A15 appeared in a 1928 document for the first time, it would take until the Rijkswegenplan of 1958 before a trajectory south of Rotterdam was planned. [Provoost, 1996; 103] Figure 3.2 gives an overview of the plans between 1927 and 1984 (enlargements can be found in APPENDIX D).



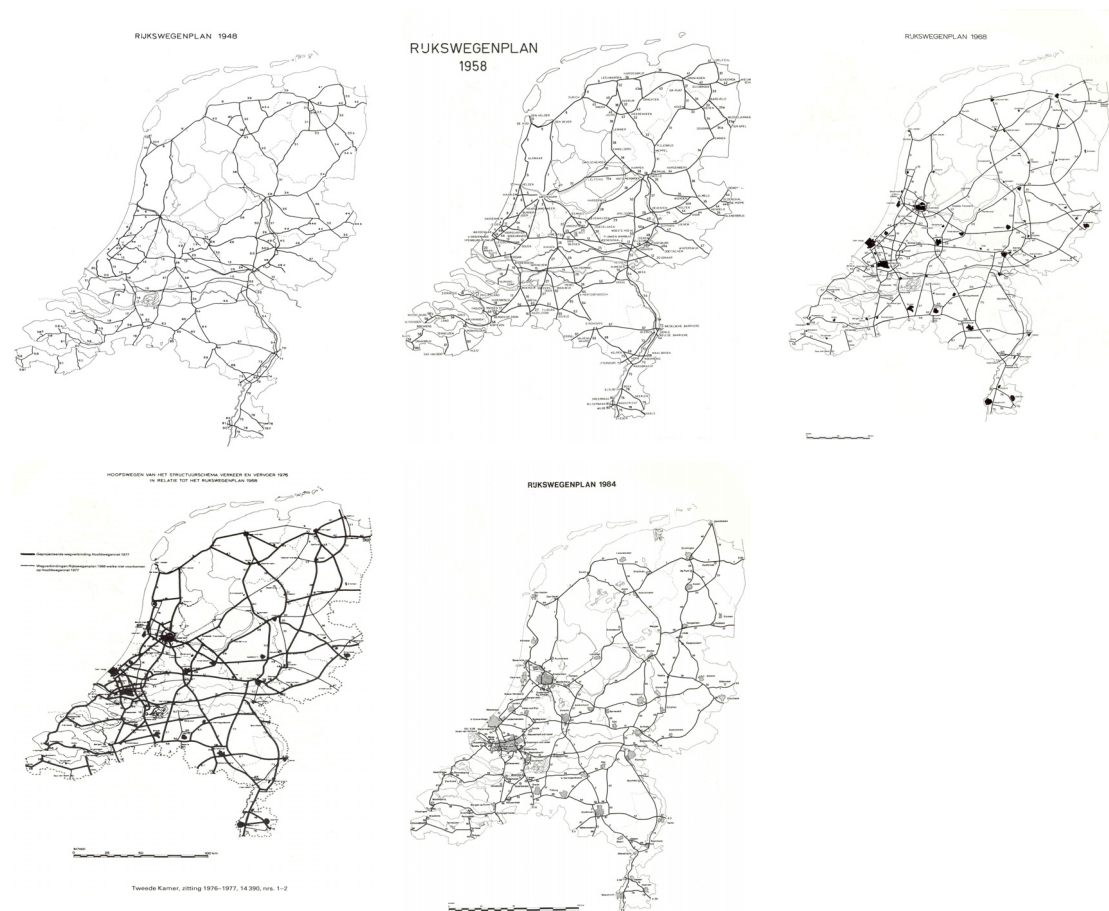


Figure 3.2: Rijkswegenplannen 1927 – 1984 [Ligtermoet, 1990 a]

The A15 is nowadays part of the ‘Ruit’ (rectangular beltway around Rotterdam). Although the roads of the Ruit are national highways now, it does not mean only national plans effected its development. The Rotterdam region together with the Port authority recognized the economic importance of good infrastructure before any form of beltway was planned by the national government. They tried to fill the gaps *Rijkswaterstaat* (the executive agency of the ministry) left behind, but the west side of the city did not get a lot of attention at the beginning. It seems that nobody expected the immense growth of the port in the western direction. [Provoost, 1996; 36] After World War II a new city planner realized that the city was likely to grow along the river instead of the centric shape that was planned so far. The roads were planned according to this stretched river city plan; roads parallel and perpendicular on the river. [Provoost, 1996; 49] Rijkswaterstaat also continued planning and came to similar plans, but other post-war reconstructions got priority; it would even take until 1966 before the make up of backlogs in the road network could start. Of course some work had been done before 1966, mainly because the local governments recognized the importance, but the financing was often problematic. [Provoost, 1996; 61] Despite these problems the economic power of the port resulted in 1957 in the start of the super structure, the Ruit around Rotterdam.

The different roads of the Ruit have been separate roads for a long time, but in 1973 the whole structure was completed. [Provoost, 1996; 105] The road that we now call A15 has

always been part of the Ruit, but when the structure was opened in 1973 it was called road 21. Road 15 at that time already was an east west trajectory and it was planned to get a link with road 29 (a road towards Antwerp) just south of Rotterdam. Of the whole number 15 road only the part between the crossing with road 16 and the link with road 29 was still in design, this part was planned parallel to the southern road of the Ruit. However, this piece of highway has never been built and what was called national highway 21 has been renamed road 15 in 1977. [Cappendijk, 1977] They probably have chosen to rename the road as the planned part of road 21 in northeastern direction has never been built either. [Wegen, 1972; 128] Figure 3.3 shows the situation as it was just before the structure was completed.

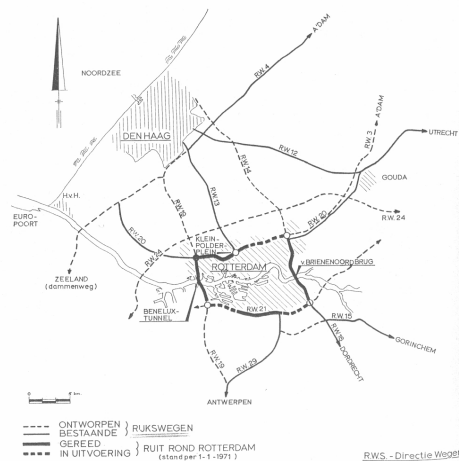


Figure 3.3: Design Ruit around Rotterdam 1972 [Wegen, 1972; 128]

3.2.3 1973-1990: a period of little change

In 1973, a large and important part of the highway was finished, but west of the Ruit work still needed to be done. Along with the development of the port in western direction, the road was completed further. [Cappendijk, 1977]

In 1977, the work from the southwest corner of the Ruit to the crossing with the Welplaatweg was still in progress. [Cappendijk, 1977] From the Welplaatweg to the crossing with the A57 (now N57) the road was planned, but it has never been built this way. It took until the mid 80's before this part became a real highway [Letters RWS, 1986 a]. In the planning process, a connection with the Volgerweg in Rozenburg caused some problems. The space available was not sufficient to construct a highway, there was a lot of uncertainty about the future function of the road, and the construction of the Blankenburgtunnel (a connection between the two banks of the Nieuwe Waterweg) was not sure yet either. These issues resulted in an alternative solution where the A15 ended just before the Calandbridge (near the Volgerweg) and the road continued as a secondary road, called N15. [Letters RWS, 1986 a] On the east side of the Ruit a new connection between the crossings Ridderkerk and Terbregseplein was opened in 1985. [Letters RWS, 1985] This new connection improved the accessibility of both the A15 and A16 because they did not have to share one highway anymore.

Besides the construction of these segments of the highway, only small changes were made. Road signs were replaced to add directions to new living areas and industrial complexes [Letters RWS, 1982], lighting was added [Letters RWS, 1980], and periodical maintenance was performed [Letters RWS, 1986 b]. This period of little change in the road might have been a direct result of the port developments in this period. After the port expansion with Europoort and Maasvlakte in the 60's, the oil crisis in 1973 forced the authorities to change their policies. The need for new complexes declined and reinforcing the existing container terminals was the only alternative. [Laar van de, 1999; 493-507]

3.2.4 Actions to guarantee accessibility

Since the late 80's and early 90's times have changed again. The port developments of that time opened the discussion about expansion of the port again. [MinVenW, 1995; 21] Mobility, livability, and environment conflicted more and more regarding needed space. In the Rotterdam region, 47 projects were initiated to “reinforce the Port Industrial Complex as a mainport and to improve the quality of residential and living areas” [MinVenW, 1995; 1]. Maricor was one of these projects and it investigated how the capacity demand on the Maasvlakte – Ridderkerk corridor on the long term could be met. [MinVenW, 1995; 1] According to the Maricor study, an expansion of the A15 was the best option to improve the accessibility. This outcome has resulted in the start of a MER (environmental effect report) procedure for this road, in favor of the other alternatives ‘Oranjetunnel’, ‘Blankenburgtunnel’, ‘A29’, and ‘A4-Zuid’. [MinVenW, 1995; 50-55] Although the start notion was signed in 1996, it would take until 2000 before the procedure was finished. [MinVenW, 2000]

The completed MER procedure was only one important milestone in the whole policy process of expanding the A15. As for now, an expansion from 3 to 5 lanes is planned between Benelux and Vaanplein. In the new situation, 3 lanes will be used for express traffic or freight transport to and from the port, the other 2 lanes can be used by local traffic. [MinVenW, 2004 a] This distinction in traffic types has to result in a better accessibility of the port; it is also expected to have a positive effects on the livability and safety. Between the Maasvlakte and Benelux three more road works are planned:

- The road between the Maasvlakte and the N57 will be upgraded as a highway. Right now it still is a secondary road and called N15.
- The A15 between the N57 and Spijkernisse will be expanded from 2 to 3 lanes.
- A second Botlek tunnel will be built, depending on feasibility studies. [MinVenW, 2004 a]

The time scheme in which these works have to take place is 2006 – 2015. In 2006 the Minister of Transport, Public Works, and Water Management (V&W) is supposed to make a trajectory decision, the next important milestone. This decision represents the start of all the procedures needed to get the legal work done. In 2008 they are expected to start the actual work, which has to be finished by 2015. [MinVenW, 2004 a]

Besides talking about these plans, two major road works have taken place the last couple of years. In 1998 Rijkswaterstaat started the improvement of the N15. Where, in the 70's a secondary road was a good alternative, now a highway became necessary. A new tunnel under the Caland canal, three bridges, and solutions for four crossings were part of the project. In 2005 these road works will be finished and the A15 then goes all the way to the Maasvlakte. [MinVenW a] Near Sliedrecht/ Hardinxveld-Giessendam the A15 is being widened and new exits are being made. Urban development and the impossibility of closing the road make this a very challenging project. Two lanes are still forecasted to be sufficient here, but the existing 2 lanes were too narrow. The new construction can easily be changed in a 3-lane alternative when needed in the future. These road works are still in progress and are planned to be finished in 2006. [MinVenW b]

The A15 in the Rotterdam region physically still looks like the originally built road. The port developments and the growing importance of this road for the port made it necessary to extend the highway towards the west. Now these same kind of developments form the basis for the major physical change to 5 lanes. Historically the road was not really bounded by any other constraints than the economic interests of the port, which seems to be changing.

3.3 Sustainable mobility the only solution for the A15 regime

3.3.1 Introduction

The planned expansion seems sufficient in the middle long term, but important stakeholders do not expect it to help in the long run. They expect that congestion, livability and environmental issues will (continue to) be a problem after the opening of the second Maasvlakte (750 hectares of landfill [Portofrotterdam a], see APPENDIX C). The problem is that after the expansion of the highway to 5 lanes another expansion to 6, 7 or even more lanes seems very unrealistic. Capacity boundaries, safety aspects, and new EU environmental norms make that sustainable mobility is needed. Before going into these three incentives for sustainability, first sustainable mobility itself is explained. Although a transition process is long and it is not known yet which innovation will be developed in niches, a direction of these solutions can be given. Together with already existing sustainable solutions, these potential solutions are discussed along with an explanation why sustainable mobility is the only solution in this case. The section will be concluded with a discussion of the landscape developments that support the need for a regime based on sustainable mobility.

3.3.2 Sustainable mobility

Sustainable development according to the Brundtland Commission (World Commission on Environment and Development) is a “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [Wikipedia a]. Although this definition is very broad it should be noted that economic,

social, and ecological aspects are all part of sustainability, and that a development is sustainable when people are to fulfill their needs while biodiversity and the natural ecosystems are preserved. [Wikipedia b] For sustainable mobility, such a general accepted definition of what it is does not exist. Box 3.1 gives an impression of the variety of definitions that are given to sustainable mobility.

Box 3.1: Definitions of sustainable mobility

World Business Council for Sustainable Development (WBCSD)

Sustainable Mobility is the ability to meet the needs of society to move freely, gain access, communicate, trade, and establish relationships without sacrificing other essential human or ecological values today or in the future. [WBCSD a]

Transumo

Sustainable mobility is mobility without negative effects such as congestion, environmental threats, and unsafety, but also more cost efficient and more attractive for the users. [Transumo]

Duurzame-mobiliteit.nl

Sustainable mobility means a responsible economic decline of polluted gases and noise, and it fulfills the mobility needs of the current generation, without neglecting the needs of future generations. [Duurzame-mobiliteit]

Ministry of Housing, Spatial Planning, and the Environment (VROM)

Mobility is sustainable when the needs of the current generation are fulfilled without declining the possibilities of future generations by environmental pollution and using up all natural sources. [VROM b]

European Union

Sustainable mobility is a transport system and transport patterns that can provide the means and opportunities to meet economic, environmental and social needs efficiently and equitably, while minimizing avoidable or unnecessary adverse impacts and their associated costs, over relevant space and time scales. [Atlantic]

World Summit on Sustainable Development (WSSD)

Sustainable mobility in the long term entails safe, emission-free transport that guarantees a reasonable level of accessibility. [MinVROM, 2003; 13]

Besides definitions, indicators for sustainable mobility are often given. The Ministry of V&W identifies six indicators: accessibility, safety, zero-emission, spatial quality, excellent living environment, and security of energy supply. [MinVenW, 2002] The World Business Council for Sustainable Development describes 12 indicators in their 'Mobility 2030' [WBCSD b; 18-23].

- accessibility
- financial outlay required of users
- travel time
- reliability
- safety
- security
- greenhouse gas emissions
- impact on the environment and on public well-being
- resource use
- equity implications
- impact on public revenues and expenditures
- prospective rate of return to private business

All individual indicators seem reasonable, but a conflict of interests between the social, economic, and environmental aspects (the sustainability criteria) makes that sustainable mobility is a very complex concept.

For the purpose of this report the sustainability criteria, together with indicators that are part of it, are more useful than an exact definition. As the path and endpoint of a transition towards sustainable mobility are not known, and as doors should not be closed this early in the transition process, a way to describe solutions, situations, and ideas is much more useful. Figure 3.4 gives the sustainable mobility framework as it will be used in this report. The sustainability criteria are presented in the form of three E's, economy, environment, and equity. For sustainable development a prosperous economy, good quality of the environment, and social equity are very important. [Bayareaalliance] The indicators are a combination of the Ministry of V&W and Mobility 2030 indicators, and they make the framework mobility specific.

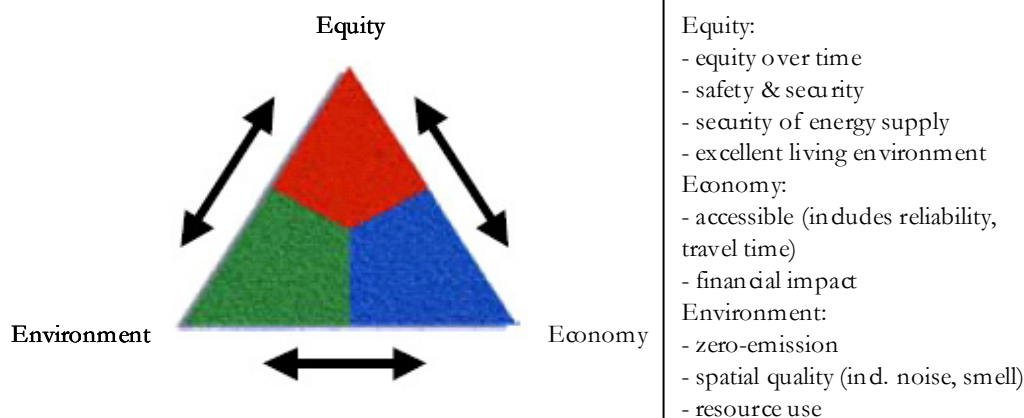


Figure 3.4: Sustainable mobility framework

3.3.3 Sustainable mobility incentives A15

Capacity boundaries

Sustainable mobility is needed because the amount of traffic is forecasted to grow, where at the same time the road cannot be expanded any further. The port policy document 'Havenplan 2020' forecasts a growth of the port from 267 million tons in 1995 to 459 million tons in 2020, of this freight 160 million tons will be transported by road, compared to 71 million tons in 1995. [Transumo-project proposal] Especially the

accessibility during peak hours will not benefit long when no sustainable action is taken. The figure below gives the travel times during peak hours in 2000, in 2010 when the planned road works with that time horizon are finished, and in 2020 after all planned actions are finished and no further action is taken.

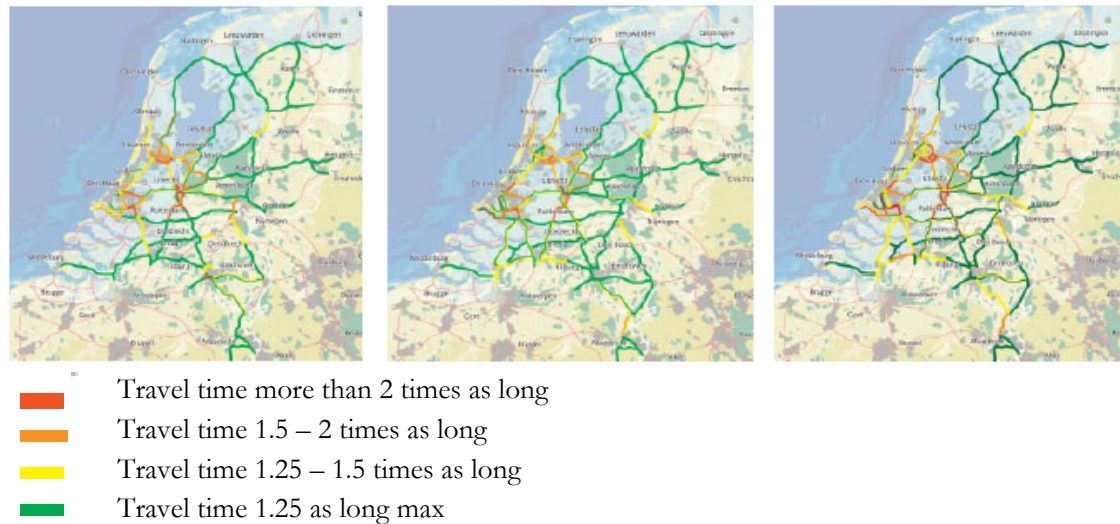


Figure 3.5: Travel times during peak hours in 2000, 2010, and 2020 [MinVenW, 2004 b; 35]

As can be seen in the figures, the travel times on the A15 in the Rotterdam region by 2020 are expected to be the same as in 2000. Although the expansion seems not sufficient in the long term, the A15 does relatively well compared to other roads. When the average speed it looked at, the same picture arises (see Figure 3.6). This relative good situation has two drawbacks:

- After the expansion to 5 lanes, the capacity boundaries are reached, with an ongoing growth in traffic [Bovenkerk, Iding, Bogers, 2004] the situation is likely to worsen after 2020.
- The road is the only access to and from a large part of the port and when something happens these areas become less or even inaccessible.



Figure 3.6: Average speeds in 2001 [Stadsregio, 2003; 14]

Sustainable mobility solutions are needed to solve these accessibility issues, as the capacity of the road cannot be stretched any further. A decline in accessibility has negative effects on economic growth.^{viii} For the Rotterdam region it is even more important to take action to solve these issues as the costs of congestion for the industry are relatively high compared to other regions in the Netherlands; in 2003 83 million euros. [OBR, 2004; 76] Some more traditional solutions such as an extra river bank connection or a double decker highway might help to keep the region accessible. These solutions, however, only fulfill the economic sustainability criterion.

Safety

Sustainable mobility is also needed because the safety on and around the A15 is not sufficient. Safety can be split in internal and external safety. Internal safety refers to the safety of the users of the road. On average the internal safety on the A15 is worse than on other highways in the Netherlands, which is indicated by a higher safety index. Dutch roads with 3 lanes have a safety index number of 0.09; roads with 2 lanes have an index of 0.11. Although the internal safety on the road in the Rotterdam region differs from place to place, the A15 has an average of over 0.19. This low internal safety is caused by an unclear traffic situation and excessive travel speeds. [MinVenW, 2000; 11] Action is needed not only to change this dangerous situation, but also because of the vulnerability of the road as the only access to a large part of the port.

The safety aspects for non-users are called external safety. People who live or work close to the road, for example, have a certain risk of getting involved in an accident just by being there. Depending on the situation the risk is higher or lower. Figure 3.7 gives the situation around Rotterdam in 1998.

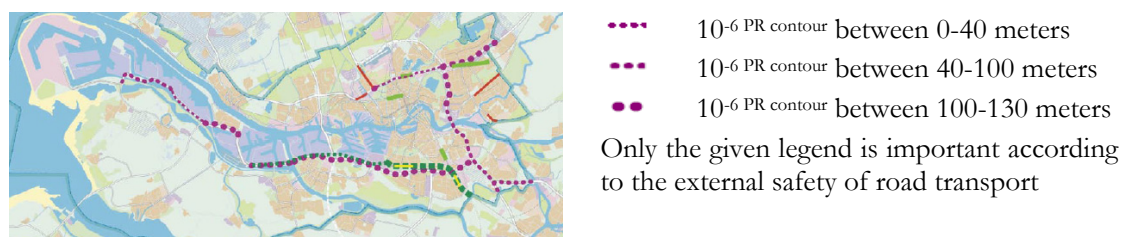


Figure 3.7: External safety [Stadsregio, 2003; 54]

The 10⁻⁶ contour means people have a chance of 1 out of a million to get injured as a result of the external source within the given distance. [Luchtvaartbeleid] In the figure it can be seen that the A15 is one of the region's most dangerous infrastructures. Almost along the whole trajectory, the 10⁻⁶ contour is present in a range from 0 to 130 meters. The importance of this road for freight transport is the major cause of the relatively high risk. External safety affects construction possibilities along the road; in between the road and the boundaries of the contours no new plans can be developed. [Stadsregio, 2003;

^{viii} Calculated for the Rotterdam region during a research of Tavasszy and Koike, TNO, Oktober 2004

55] This, however, does not mean nothing is built there; already existing buildings and buildings part of plans that got a norm exception can be found just next to the highway.

Environmental norms

Like external safety, new environmental norms affect the space that is available for infrastructure and residential areas. Non-sustainable mobility will not be able to meet the new norms for livability set by the EU. Air quality, emissions and noise are the most important indicators to describe livability. [MinVenW, 1995; 12] For air quality, nitrogen dioxide is of major importance along a road. [MinVenW, 1995; 12] The norms for air quality are set by the European Union on $40 \mu\text{g}/\text{m}^3$ average per year. [RIVM] Figure 3.8 shows the concentration of NO_2 around the major roads in the Rotterdam region. These concentrations show that along the trajectory of the A15 the norms for NO_2 are exceeded. NO_2 however, is not the biggest problem. Over the years cars have become much cleaner; in 1995 the norm was $135 \mu\text{g}/\text{m}^3$ and it was expected that in 2010 the yearly average would exceed $80 \mu\text{g}/\text{m}^3$. [Milieumonitor, 2004; 37] Figure 3.9 suggests that particulate matter (PM, *fijn stof*) is not a problem any more, but the Port authority and Raad van State statements argue the opposite. [Port of Rotterdam, 2003; 26] Figure 3.10 supports this and shows that PM will continue to be a problem.

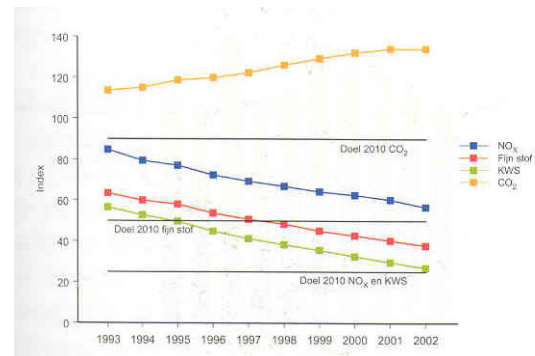
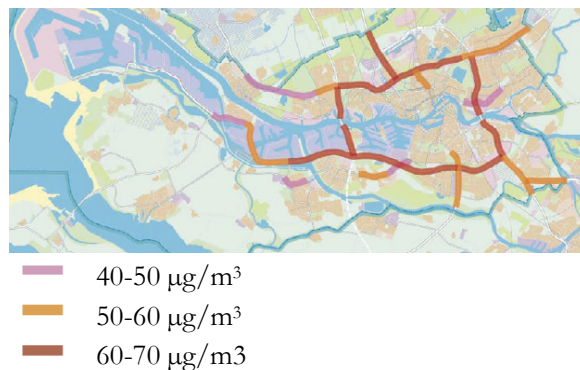


Figure 3.8: Average year concentration NO_2 2010 current policy [Stadsregio, 2003; 62]

Figure 3.9: Emissions road traffic [Milieumonitor, 2004; 37]

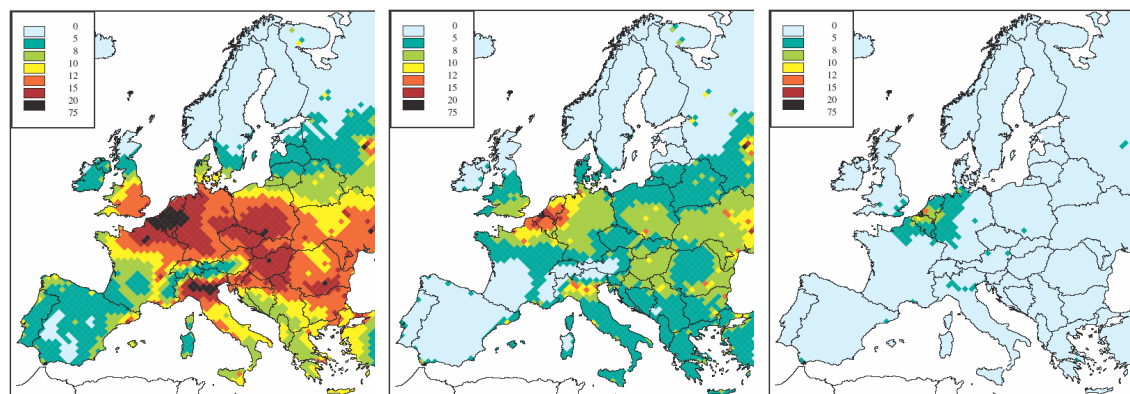


Figure 3.10: $\text{PM}_{2.5}$ concentrations (annual $\mu\text{g}/\text{m}^3$) for the emissions of the year 2000, the expected situation in 2020 when action is taken, and the maximum feasible reduction in 2020 [IIASA]

Besides PM, CO₂ emissions and noise now cause the biggest problems. A decrease of 10% of CO₂ emissions was the goal set for the period 1986-2010; however, until now only an increase can be seen (Figure 3.9 illustrates this). [Milieumonitor, 2004; 37] For noise 40 dB(A) is the maximum allowed noise level [Milieumonitor, 2004; 43], which already is much lower than the 50 dB(A) that was allowed in 1995 [MinVenW, 1995; 13]. Still, the livability of 16.500 people in the neighborhood of the A15 is affected by noise annoyance and the number of people is expected to increase to 23.500. [Transumo-project proposal] Most people experience noise as the worst source of pollution. [MinVenW, 1995; 13] Solutions and policy measures such as sound walls, technical innovations in vehicles, and speed restrictions have to result in less inconvenience for the people residing near the road; on the contrary it is expected that more people will hear traffic noise in the future. [Transumo-project proposal]

3.3.4 Niche developments: sustainable solutions

For the A15 a lot of sustainable solutions that could be used already exist. Others are in development and expected to be implemented in 10 to 20 years. This section indicates different solutions that might affect sustainable mobility on highway 15. It should be noted that this description is not more than an indication, as it is impossible to be complete and exact. The challenges for sustainable solutions lie in closing the circle between economic growth and mobility while not producing negative effects for accessibility, livability, safety, and the environment. Figure 3.11 illustrates this graphically.

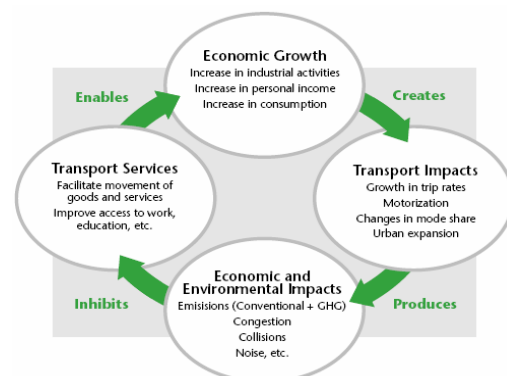


Figure 3.11: The challenge of making mobility sustainable [WBCSD b; 13]

Explanation:

Economic growth creates transport impact, which can be translated into more mobility. More mobility in turn increases pollution; and here the real challenge starts. The negative effects should challenge innovators, policymakers, transport providers etc. to make their transport services more sustainable. These more sustainable solutions close the circle again because they gain economic growth.

Alternative sustainable solutions can be classified in five groups. In theory four groups of sustainable solutions exist [Geerlings, 2002; 23], which should be complemented with 'other'. For each group some sustainable options are discussed and checked according to the indicators of the sustainable mobility framework. The first group of solutions focuses on a reduction of the total transport volume by a decline in travel demand (fewer people and goods) and logistic solutions (fewer kilometers). Road pricing, regulation and better use of telecommunication are some examples that can help to reach a reduction in the transport volume. [European Commission a] Multi-modal transport [European Commission a] and logistic solution that reduce the amount of empty trucks

[Transportation Research Board] are also examples for this group, but focus more on the actual transportation, where the first three solutions are softer solutions. When these solutions work well the economic criteria of sustainable mobility are favored best. Less traffic will also affect emissions, resources used, and the spatial quality, but not as much as technological solutions do [European Commission a].

Modal shift is the second group of sustainable mobility solutions. A shift from the road to rail, inland waterways or short sea would result in less freight transported by road. Like for the first group of solutions, the economic indicator ‘accessibility’ positively relates to these options. Furthermore the environmental and equity criteria do benefit. Technology solutions, the third group, on the contrary do not necessary create less traffic and improve accessibility, but can realize zero emissions and better safety and security; hybrid cars and intelligent transport systems are developments that are worked on [Brandstofcel].

Better spatial planning is the fourth and most far reaching group of solutions. Placing more service related activities on the 2nd Maasvlakte, creating low emission zones [Brandstofcel], and placing distribution centers on a more logistic optimum position could help to reduce the traffic demand and realize a better spatial quality and living environment. [MinVenW c] The last group of solutions contains alternatives that do not fit in one of the other groups. Sound walls, speed limits, a relatively new traffic fleet [Wachs, Deakin, 2003], and purpose lanes are examples.

This indication of solutions shows that more than one solution is needed to realize sustainability in all of its facets. Which group of solutions will be best for the A15 depends on the traffic situation, the new (technological) developments, the landscape developments, and the responsibilities and resources available to the stakeholders to implement different solutions.

3.3.5 Landscape developments

The landscape developments ‘globalization’, ‘sense of urgency for sustainability’, ‘a stronger European Union’, and ‘computerization’ support the need for sustainable mobility. “Globalization describes the political, economic, and cultural atmosphere of today.” [Globalization] The world, all its citizens, industries, and institutions are interconnected more than ever. “There is a rapid evolution of the international division of labor, increased trade and foreign direct investment.” [Montgomery et al., 2003] Regions can specialize because there is no need to be self-supportive any more. This highly affects cities and regions. “Globalization has reactivated city-regions’ significance as bases of all forms of productive activity”, regarding to Scott. [Scott et al., 2001] These regions are competing with cities all over the world for a good economic position that enables them to create broad social welfare gains. [World Bank, 2000] Rotterdam is competing in the worldwide logistic network. As one of the largest ports in the world,

Rotterdam is very important in this network, but to be competitive the processes in the port and the logistics to and from the port need to be of good quality. The norms, laws, and directives that are developed by the EU are also important in that regard. Within the European Union, a liberalization of trade is present that affects all ports in the union. [Bosma et al., 2003] Furthermore, the market in which the port of Rotterdam operates, changes because of ongoing computerization. Knowledge and information are transparent and easy to access. Companies can locate wherever they want; companies have greater freedom of mobility. Declining transport costs is one of the causes, as well as a shorter production cycle, a broader offer of products and services, shorter times to market, individualization, and more competition. [Bosma et al., 2003] Transportation is one of the aspects with which the port can make a difference compared to other European ports. Transportation should at least be good enough to not have a disadvantage in that regard.

3.4 Regime trends

3.4.1 Traffic characteristics

Traffic intensities

The total traffic intensities for the A15 and some crossing roads in the Rotterdam region are presented in Figure 3.12. A little over 40% increase in traffic from 1986 to 2002 can be seen in the chart. The roads close to the Maasvlakte (N15 Europaweg and N218 Brielse Maasdam) have a steeper trend, caused by the opening of this first sea-expansion of the port. These intensities represent all vehicles, port related passenger traffic, non-port related passenger traffic, and port and non-port freight traffic. Figure 3.13 shows the shares of these different traffic types in 1995.

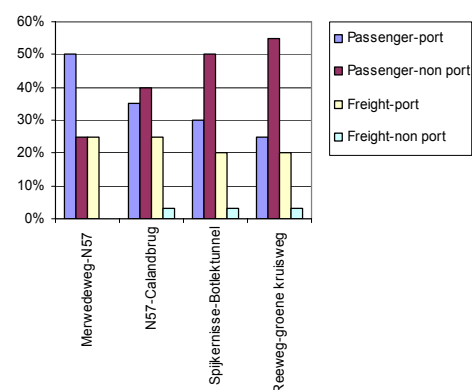
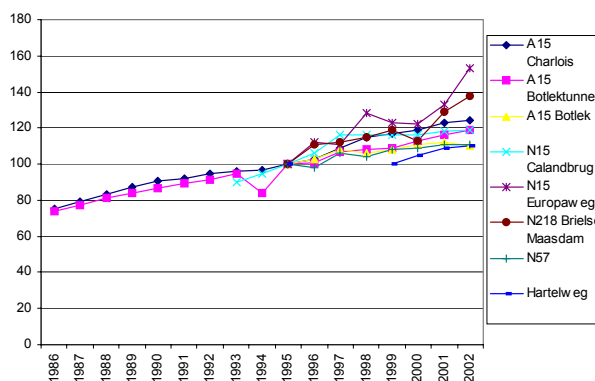


Figure 3.12^{ix}: Development total intensities average working day 0-24 hours (1995=100) [Gemeente Rotterdam, 2003; MinVenW, 2000]

Figure 3.13: Distribution of traffic types [MinVenW, 2000]

^{ix} The chart is based on two other charts; no exact numbers were available.

The percentage of trucks (port and non-port together) has declined a little over the years. When Figure 3.14 and Figure 3.15 are compared it can be seen that in 1995 around 25% of the traffic on the A15 were trucks; in 2001 this has declined to less than 20%. This is a large share in comparison with the other roads of the Ruit, where on average 10% of the vehicles are trucks. [Gemeente Rotterdam, 2003; 28] But it also means that the passenger traffic has grown faster than the freight traffic. [Port of Rotterdam, 2003; 15] Closer to the Maasvlakte there is relatively more freight in both cases and here the freight traffic has grown faster. As was the case with the intensities, this is caused by the use of Maasvlakte 1.

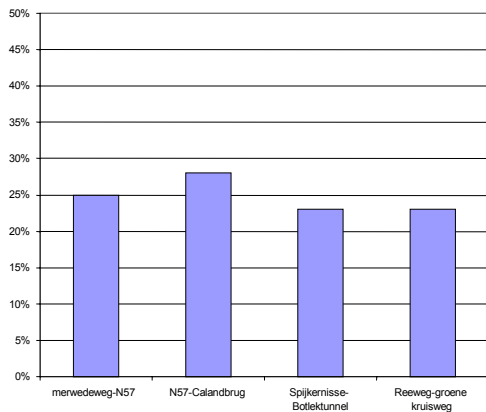


Figure 3.14: Share of freight traffic 1995 [MinVenW, 2000; 8]

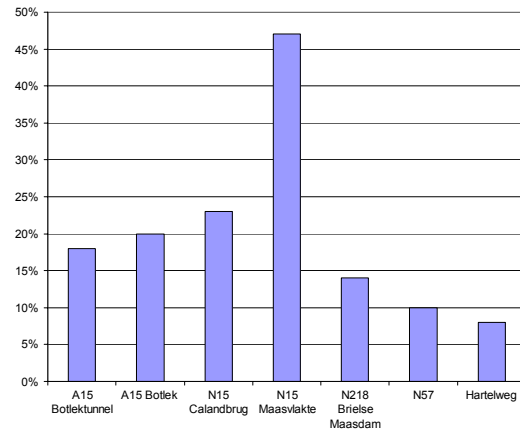


Figure 3.15: Share of freight traffic average working day 2001 (0-24 hours) [Gemeente Rotterdam, 2003; 12]

Modal shift

The traffic intensities in the period 1995-2002 grew by 20%. Because the share of trucks declined, it can be concluded that freight transportation on the A15 grew less than 20%. Of all this freight traffic, around 25% are containers. [Port of Rotterdam, 2003; 28-32] The containers handled in the port in the period between 1995 and 2003 grew by almost 40%. [Portofrotterdam b] This means that a modal shift must have taken place from road to other modes of transportation.

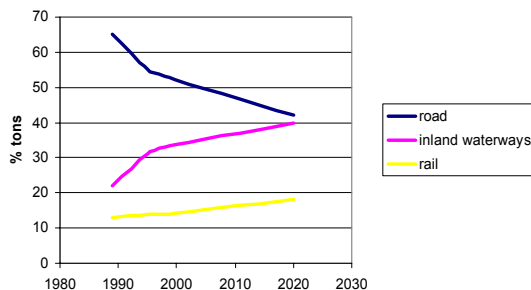


Figure 3.16: Modal shift containers in tons [Bovenkerk, Iding, Bogers, 2003; 49; Port of Rotterdam, 2003; 32]

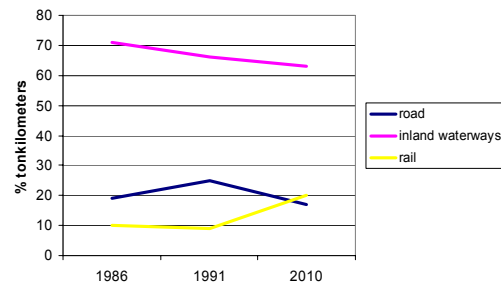


Figure 3.17: Modal shift in ton kilometers [MinVenW, 1995; appendix 6; MinVenW, 2000]

Figure 3.16 and Figure 3.17 show the development of the modal split since the late 80's. The first modal split clearly shows that most containers are transported by road, but that a shift towards rail and waterways has taken place. This shift is fully realized by a decline of freight transported to outside the Netherlands; from 23 % in 1989 to 10 % in 1998. Within the Netherlands the percentage of transported containers grew from 24 to 30%. [Bovenkerk, Iding, Bogers, 2003; 49] For sustainability however, the modal shift in ton-kilometers gives a better picture, because it is a measure for pollution. [MinVenW, 1995; appendix 6] This modal split also shows a decline of the ton-kilometers by road since the early 90's. It should be noted that the ton-kilometer information relates to the total tons of freight, not only containers. This is not a problem for the analysis because only in the container business a significant modal shift is expected. [Port of Rotterdam, 2003; 28-32]

The other major product group transported by road is general cargo. Of all goods transported by road, general cargo accounts for around 50%. In contrast with containers, general cargo shows an increase in the percentage transported by road (89% in 1995, 92% in 2020); no modal shift towards rail and inland waterways is expected. At the same time containers and general cargo are the two port product groups that are expected to grow the most; containers from 33 million tons in 1995 to 117 million tons in 2020, and general cargo from 38 to 91 million tons. [Port of Rotterdam, 2003; 28-32] This growth results in more tons transported by road in absolute numbers, but for containers this growth of the port is not expected to result in a larger share of trucks, where it does for general cargo. The fact that general cargo has the largest road share with its 50% does not make it any better. Whereas the trend for containers is promising, the trend for general cargo is not. (APPENDIX E gives a more detailed overview of the statistics used.)

Average driving distance

It is important to know if the modal shift of containers can move further, and the modal shift of general cargo can be turned from road to inland waterways and rail. The average driving distance of trucks can help to investigate this, see the figures below.

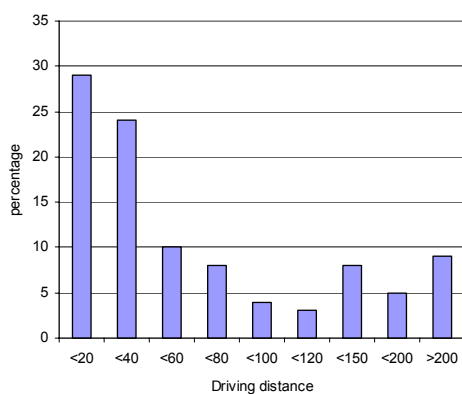


Figure 3.18: Average driving distance trucks at Botlek tunnel 1991

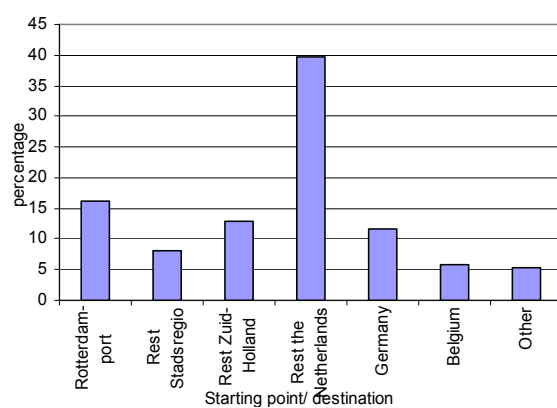


Figure 3.19: Starting point/ destination trucks 2000

The two figures show the same trend; most freight traffic is local traffic. Around 40% of the trucks have a destination or starting point within the Province of Zuid Holland. (From the port of Rotterdam the rest of the Province of Zuid Holland is within a circle of 40 km.) Another 40% travels within the Netherlands; the rest goes to Germany, Belgium, and further. For local freight transport rail or water are often not flexible enough, and/or destinations cannot be accessed; a modal shift within the Netherlands seems hard to realize. Things that could be done relate to the traffic within the port, which also goes over the A15 for a large extent; different internal port logistics could provide some opportunities. For the traffic to Germany, Belgium, and some parts of the Netherlands other modes are also an option. Improving logistics can also help to realize a modal shift on shorter distances.

3.4.2 Changing responsibilities and resources

The responsibilities and available resources of A15 related stakeholders are changing. Rijkswaterstaat has to focus more on its primary tasks: planning, building, and maintaining infrastructure and how it fits in the environment. Two examples of developments during the preparation of the MER procedure Maasvlakte – Vaanplein illustrate this. The examples show that a lack of resources forced Rijkswaterstaat to not adopt several ideas developed by the city region and the Rotterdam municipality, which could be intertwined with the plans for the N15 or the expansion to 5 lanes. Based on the available resources Rijkswaterstaat also tries to create Public Private Partnership to give private stakeholders such as the Port authority and industry more responsibilities. The difficulties in this respect are also discussed in this section.

The planned expansion to 5 lanes and the construction of the Betuwelijn will increase the barrier effect of the A15 corridor. At the same time new Rotterdam region living areas, industrial complexes, and recreational areas are developed south of this corridor. To minimize the barrier effect and maximize the connection between the city and the new southern suburbs, the *Stadsregio* (city region council) and the Rotterdam municipality proposed a better integration of the A15 in the landscape. This could be done by tunneling the A15 for half a kilometer and developing green facilities on top. Studies indicated that the norms for internal and external safety could be met and that road pricing could cover the expenses in less than 2 years. [Hoeven van der, 1999] Despite these seemingly positive prognoses Rijkswaterstaat did not adopt the ideas in the alternatives for the MER procedure of the A15 expansion. [MinVenW, 2000] Although the Stadsregio was willing to cooperate financially, financial reasons and safety issues were the main reasons to choose other alternatives. Rijkswaterstaat, the Stadsregio, and the Rotterdam municipality now compromised on so called ‘recreaducts’, a green viaduct. [Leeuw de, 2005] This example shows that the responsibility of Rijkswaterstaat is primarily infrastructure related, limited by its financial resources. Even with financial support of the Stadsregio these plans were expected to increase the costs for Rijkswaterstaat, something the resources did not allow.

In the 1990's the Rotterdam municipality together with Rijkswaterstaat developed the 'Select System'. This tool should have helped to improve the spatial quality by reducing the mobility while still providing opportunities for economic growth. The essence of the system was to offer facilities to selected groups of road users. [RWS ZH, dS+V, 1992] For the A15 designated lanes for freight traffic and better public transport facilities were thought of; the port would be better accessible this way as well as the towns on the island Voorne-Putten. [RWS ZH, Stadsregio, 1996] Studies by Rijkswaterstaat proved that the system was feasible. [RWS ZH et al., 1997] Still Rijkswaterstaat could not continue with the development of the tool, because then they would have overcommitted themselves. [Raalte van, Storper, 2005] A lack of resources and the fact that the system was not a primary responsibility forced them to abandon the project.

To increase the responsibility of private stakeholders and to increase the resources available for infrastructure projects Rijkswaterstaat tries to cooperate with private stakeholders who benefit from it. Although all stakeholders agree that economic growth, which they produce, creates more mobility and that more mobility in turn creates more economic growth, Rijkswaterstaat is held responsible for the improvement of the infrastructure needed because of the mobility growth. The Port authority for example lobbied very hard to get Maasvlakte 2, now they look at Rijkswaterstaat for the needed extra infrastructure capacity. This example shows that private partners have not adopted their perceived new responsibilities yet, but trends are moving in that direction.

3.5 Complex governance of A15 regime asks for cooperation

3.5.1 Planning and policy complexity

Introduction

The A15 is a national highway, which means that the central government is the major policy and decision making authority. The 'Nota Mobiliteit' is the most recent policy document by the Ministry of V&W. The policies and plans of this document are closely related to the work of the spatial planning ministry, the Ministry for Economic affairs (EZ), and the Ministry of Agriculture, Nature, and Food Quality (LNV). The spatial planning policy document 'Nota Ruimte' gives the main ideas, whereas the mobility document fills in the more transport and infrastructure specific elements. The exact plans for the A15 can be found in the mobility policy documents, but the argumentation why something needs to be done, is part of the spatial planning document: "Where bottlenecks ask for solutions, the government gives priority to the main connection axes (such as the A15), and within this group it gives the 'triple A' axes the most attention, A2, A4, and A12" [MinVROM, 2004 b; 16]. Although the A15 is not the most important regarding the central government, in European context the road is an important link of the Trans European Network (TEN); as the hinterland connection of Europe's largest port, it is an important corridor to the rest of Europe. [MinVenW, 2004; 41]

On a more regional level, policies and plans regarding the A15 are made in the regional traffic and transport plan. Like the central government, the Stadsregio recognizes that congestion will still be a problem in 2020 when nothing more than the expansion is done. In contrast with the 'Nota Mobiliteit', the city region does give an argument for why the problems will not be solved and with this argumentation they give a solution as well. A lack of alternative routes is a major cause of the problems on the road; the A15 is the only route from the Maasvlakte to the hinterland. For this reason, the city region wants to invest in an extra bridge or tunnel connection from the south bank to north bank of the port. [Stadsregio, 2003; 18] The most important elements that make this policy and planning process so complex will be discussed now.

Road planning versus spatial planning

At the time the Ruit around Rotterdam was built, the plans of the Rijkswegenplan were pure technocratic actions; only transport engineering considerations were taken into account. [Schuyt, Taverne, 2000] Rijkswaterstaat at this time tried to accommodate the immense growth of traffic, which resulted in a large expansion of the highway network in the Netherlands. During this time Rijkswaterstaat had a very good reputation. Their work was supported by the public and they planned, designed, and built infrastructure in high speed. [Geels et al., 2003]

In the 70's, the environment became more important and people wanted more involvement. This resulted in the development of new decision procedures. In 1974 the parliament adopted the *Planologische Kernbeslissing* (PKB, procedure for major infrastructure projects that arranged public involvement). This procedure made it harder for Rijkswaterstaat to get started with infrastructure works, because even after the procedure was followed, the plans need to be incorporated in the local spatial plans (*bestemmingsplan*). This was the first time a tension between road planning and spatial planning was felt, instead of planning the space around a road, the road needed to fit in the spatial plan. [Ligtermoet, 1990 b]

In the 1980's, the speed of infrastructure developments of the past decades could not be continued anymore. The vehicle park continued to grow and the government changed its policies to 'steering' instead of 'accommodating' the car park growth. The policies had to result in a shift from car to public transport by increasing the taxes for example. [Ligtermoet, 1990 b] Although proposed, besides the tax increase no concrete measures were adopted in the first structure scheme for traffic and transport (SVV-1); the modal shift was not reached. The negative effects of road traffic were growing. [Ham van der, 1999]

The second SVV in 1988 tried to come to an integral policy that linked the conflicting aspects 'accessibility', 'livability', and 'environment' for the first time. [Ligtermoet, 1990 b] The SVV-2, like the previous documents, did not succeed in adopting instruments that

could affect the transportation demand. The modal shift ambitious was abandoned in the 90's when the economic importance of infrastructure became more important. Accessibility became the new goal with livability as a prerequisite. The policies were less integral as a result of that and infrastructure policies started to be dependent on spatial planning. [Geels, 2004] This trend continued; the most recent mobility policy document is fully based bounded by the spatial plans described in the Nota Ruimte.

Development trajectory for big infrastructure projects

The realization of highways takes, on average, 17 years of planning and decision making. This is the period from the agenda setting till the start of actual work. Discussions about the societal need and value of a project, the participation of civilians and societal organizations, and the distribution of decision making over several levels of government, make it a long term process. [Lintsen et al.]

The initiative for projects such as a sustainable A15 can be taken by all kinds of stakeholders. Rijkswaterstaat, the Ministry of V&W, the parliament, interest groups, and local organizations are just some examples of possible initiators. This process is hard to grab, and it may take years before a responsible government (most often a minister) starts the actual formal planning process. The responsible authority gives out an assignment to make the first studies and plans. These and other studies in the process are often assigned to the regional direction of Rijkswaterstaat. Political and societal arenas often get involved when the first studies are done, and start to discuss, negotiate, and plan the project. When organizations want to be involved in this process they need to get on the agenda of one of the arenas. [Lintsen et al.] The Ministry of V&W needs to start a PKB procedure then and decide on it as well. After this decision an environmental effect study (MER) is prepared. [Magneetzweefbaan] Since 2000, for infrastructure projects of national importance also an integral effect overview conform the OEEI-principle (*Onderzoeksprogramma Economische Effecten Infrastructuur* – research program economic effects infrastructure) must be performed as part of a cost benefit analysis. [CPB, 2003] The planned A15 expansion can not be classified as a project of national importance, but a sustainable A15 might be such a project. In that case along with the MER procedure an integral effect overview must be made. A draft trajectory decision and the actual MER are the last steps towards the trajectory decision that is made by the minister. [Overheid] Figure 3.20 graphically illustrates this process.

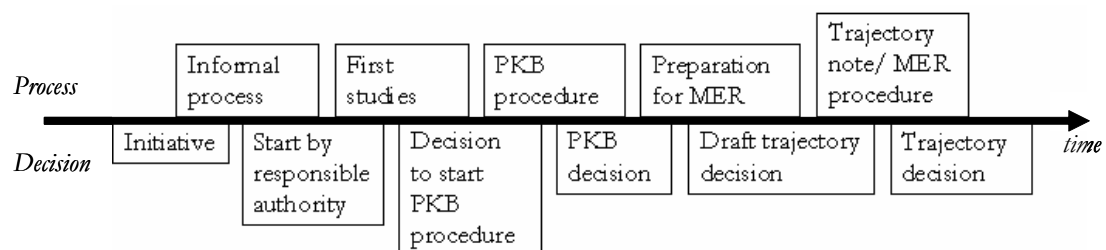


Figure 3.20: Time line public process big infrastructure project

The content of the trajectory decision does not only depend on the public procedure as described above. For financial reasons often public private cooperation is needed. [Lintsen et al.] Often public private partnership constructions are developed at the same time as the public process is proceeding. [Magneetzweefbaan] Both processes are even more complex because of the continuous involvement and participation of politics, civilians, and societal organizations.

Power of the Stadsregio

The city region Rotterdam has a special institution status, and for that reason, also a special role in the governance of the A15. In the field of traffic and transport the city region has the authority that normally would be part of the Province of Zuid Holland. A share of the finances that normally would go to the province now goes directly to the Stadsregio. [Stadsregio a] Although the city region does not have any direct influence on the policy and planning of a national highway, with the financing that goes along with the responsibility for traffic and transport they can influence the plans to a certain extent. For infrastructure project up to 225 million euros the city region does not have to ask permission to the minister. As a regional government, it should not be spending on national infrastructure, but in combined projects the financial power of the Stadsregio could make a difference. [Stadsregio b]

3.5.2 Economy, environment, equity

The policy and planning making process is not only very complex because of the internal public difficulties, but also because of external influences that favor one of the sustainability criteria, from a sustainability viewpoint or not. The Port authority, the companies in the port, and the users of the road all have an economic incentive to keep the A15 accessible. The regional environmental authority DCMR and the environmental federation Zuid Holland want to be involved in the policy and planning process in this case, because the livability and environmental quality of the surrounding areas are in danger.

The economic power of the Port authority and the companies in the port has resulted in policy changes in the past. Section 3.2 clearly showed that the development of the A15 over the years was closely related to the needs of the port. For future plans regarding sustainable mobility, their power will continue to be there. Because of the new EU environmental norms for air quality planners, DCMR and the environmental federation can put pressure on the policies for the A15. Besides this planning power DCMR is also involved in the governance because they grant permits to the companies in the port. When companies do not meet the environmental criteria they have to stop their activities; the responsible authorities could use this power.

The table below gives an overview of the stakeholders that are not directly involved in the decision making, but have an influence on it because of their economic importance

or environmental and livability pressure. It should be noted that the stakeholders are grouped according to the most favored sustainability criterion; it does not mean they do not pay attention to the other criteria. The stakeholders are all interviewed for the empirical part of this research; APPENDIX F gives an introduction on the stakeholders in that regard.

Table 3.1: Important non-policy making stakeholders

Economy	Environment and equity
Port authority	DCMR
Deltalinqs	Environmental federation Zuid Holland
Companies in the port	ANWB
TLN	
NDL	

3.6 Summary

A transition towards sustainable mobility on the A15 is in the take-off phase, the sustainable incentives show this. A lack of space makes it very hard to further increase the infrastructure after the planned expansion to five lanes. With the forecasted growth of traffic, the capacity will not be sufficient anymore. Furthermore, the lack of alternative routes makes the A15 very vulnerable. The current mobility system in relation to the industry function along the road is not able to decrease the internal and external safety risks. Sustainable mobility is also needed to be able to meet the new environmental norms. Air quality and noise levels negatively affect the construction of both residential areas and infrastructure. The boundaries of the current system are reached, which makes a transition needed. This is also supported by the landscape developments in the direction of ongoing globalization, computerization, and a stronger EU.

The historical development of the A15 in the Rotterdam region identifies the development of the port is very important with respect to a transition. The economic importance of an infrastructure improvement has been the starting point of most road constructions. This regime characteristic is not expected to change, but responsibilities and resources are. Trends show that Rijkswaterstaat has fewer resources for infrastructure improvements, as it is the central government's opinion that stakeholders that benefit from infrastructure should contribute in the costs as well. Although private stakeholders have not yet adopted these responsibilities, the trend is expected to continue.

Another regime development that can be recognized is the changing relation between mobility and spatial policy. Mobility plans are more and more dependent on the spatial ones. This and other elements make the governance within the A15 regime very complex. The specific position of the Stadsregio for example adds an extra policy maker to the

already complex development trajectory of big infrastructure projects. The influence of economic, environmental, and equity related stakeholders makes it even 'worse'. Although the regime does not really focus on sustainable mobility, trends of traffic characteristic show that a modal shift has taken place. The majority of trucks now driving on the A15 are local bounded, which makes it harder realize a further shift. Other niches developments (sustainable solutions) however might prove to be promising. But in correlation with being in the take-off phase, the niche developments are not yet linked to each other. A regional coalition might help to manage and direct this process.

CHAPTER 4

USEFULNESS OF REGIONAL COALITIONS AS A TRANSITION MANAGEMENT TOOL

4.1 Introduction transition management

Chapter 3 makes clear that a transition towards sustainable mobility is needed on the A15 in the Rotterdam region. Managing this process is the next step. From the analysis it becomes evident as well that regional collaboration is an important element in this regard. The complex governance situation forces the different stakeholders to work together. This has been recognized previously and many cooperations do exist or have been there. To manage a transition however, a new type of tools seems needed. Managing a transition can not be done with a classic ‘command and control’ tool. According to Rotmans and Loorbach an evolutionary tool is needed; a tool based on correcting, influencing, and adapting as its main elements. “In practice this means shaping conditions and prerequisites that provide societal change to happen through initiatives at the right time.” [Rotmans, Loorbach, 2001 a] Shaping prerequisites and conditions can be done by influencing the direction and speed of a transition through various types of steering and coordination. [Loorbach, Rotmans, 2004; 9] Figure 4.1 gives a graphical representation of the differences between current policy and transition management; Table 4.1 explains them in words.

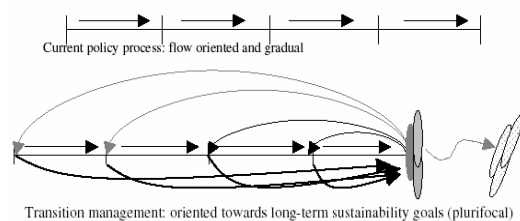


Figure 4.1: Current policy process versus transition management process [Loorbach, Rotmans, 2004; 10]

Table 4.1: Current versus transition policy [Brugge van der et al., 2004]

Current Policy	Transition ‘Policy’
Short time horizon (5-10 years)	Long time horizon (25-50 years)
Facet approach	Integrated approach
- limited number of actors	- multi-actor
- one scale-level	- multi-level
- one domain	- multi-domain
Aimed at incremental change	Aimed at innovation for sustainable development
Regular steering mechanisms	New steering mechanisms
Political arena	Transition-arena
Linear knowledge development and dissemination	Learning-by-doing and doing-by-learning

A generic recipe for managing transitions does not exist, but three building blocks can be given. Transition management needs to be problem driven. Of for many societal problems, there is no consensus about what the problem is, let alone what the best solution is. When such issues are looked at from a transition management perspective first consensus about the problem definition needs to be built. Transition management also needs to have a long-term vision. On the short term, solutions might seem optimal, because there is uncertainty about what is going to happen in the long run. This uncertainty needs to be the starting point and long-term visions evolve with this uncertainty. The last building block is the need for a multi-actor process. A transition

problem affects all kinds of people and organizations and they are all needed to get things changed. [Rotmans, Loorbach, 2001 b; 3-5]

The most important challenge of transition management is to create a problem definition that is adopted by the different players, resulting in working towards the same goal. [Rotmans et al., 2004; 24-25] Transition-arenas are the most important entity of transition management in this perspective and such a network should result in consensus between the different stakeholders. “Transition arenas are networks of innovators and visionaries that develop long-term visions and images that, in turn, are the basis for the development of transition-agendas and transition-experiments, involving growing numbers of actors.” [Loorbach, Rotmans, 2004; 9] In order to fulfill this challenge Rotmans developed a sort of shopping list with road signs to direct the transition management process. The steps are clustered in four main activities which evolve in a cyclical and iterative way: the design and development of a transition arena, the development of long term perspectives by this arena, directing learning processes and knowledge building, and monitoring and evaluating of the transition process. “The establishment and organization of a transition-arena forms the basis of the transition management process. The selection of participants for the transition-arena is of vital importance; they need to reflect the complexity of the transition at hand.” [Loorbach, Rotmans, 2004; 12] This seems reasonable, but in practice an arena develops out of champions and pioneers in the field who meet with each other. It is hard to pin point a starting time and date for an arena, it just develops and is there at some point. In such a process selection is not the case, organizing and planning this selection seems unrealistic.

Another point that is lacking in the tool ‘transition-arenas’ is the internal organization. The idea of the evolving and cyclical steps is as follows:

“In the participatory setting of a transition-arena a selective number of representatives from various societal groups and domains cooperate in creative sessions formulating a common problem perception and exploring desired futures. Then, several transition pathways that lead to these future visions are developed and explored through the use of scenarios, risk- and uncertainty-assessments and trend-analyses. Actively communicating this shared vision and transition pathways into other networks should stimulate people to join the innovation network to build joint strategic agenda’s. This so-called innovation network is a small but open network and consists of frontrunners, visionary people who are willing to put a considerable effort in conducting joint transition experiments. If each frontrunner would be able to set up an own transition-arena the visionary ideas can evolve rapidly and spread unchecked.” [Brugge van der et al., 2004; 11-12]

These ideas explain how transition visions should become widespread, but it does not explain how the arena should be organized in order to be able to work as imagined.

This chapter describes why regional coalitions are useful as transition management tool and why it answers to the critics on transition-arenas. Before turning to an explanation

about regional coalitions, the experiences in working together on a regional scale are discussed. These aspects are important because a transition management tool in favor of sustainable mobility on the A15 does not only have to fulfill the demands of a transition management tool, but it also needs to fulfill the need to work together on a regional scale caused by the complex governance.

4.2 Experiences in working together on a regional scale

4.2.1 Introduction

Western countries are developing from an industrial society towards a network society. [Castells, 1995] This development results in very dynamic societies. The economy becomes more knowledge intensive and information and telecommunication technology together with globalization makes the world a smaller place. In the European Union and with regard to the ongoing globalization, (city) regions become more and more important. [Scott et al., 2001] In line with these societal changes spatial and environmental planning has changed over time. Different political eras have been in place during the last century. Until the 1950's, localities received little aid from higher levels of government. They had limited resources and were generally reactive in their capital investment strategies. During the late 1950's and the 1960's, massive investment programs were launched and a lot of mega-projects were built without much debate. This changed when community and environmental impacts of these programs provoked intense citizen protest. From the mid 70's on a balance was found. Public investment in mega-projects remained substantial, but not as much as during the 60's. By participation and public involvement it was tried to avoid or fully mitigate any significant disruptions. [Altshuler, Luberoff, 2003; 8] Participation continued to be important, also because financial incentives forced stakeholders to do so. The importance of regions and the need for sustainability are the other latest trends. [RPB, 2004] In the Rotterdam region these trends become evident in several collaborations. Three of these experiences are discussed in this section to get a feeling for what kind of collaborations work and what not. First different types of collaboration are introduced.

4.2.2 Working together classified

This section gives three different classifications of working together. The first one is developed by Innes and Booher. They give four models of planning and policy making (see Figure 4.2) of which the collaborative model is expected to become “the dominant one in the next decades and the dominant way of involving the public in planning decisions because it is the only one that can accommodate the enormous fragmentation of interests and values” of today's public planning. At the same time the other three models are dominant right now and make attempts for collaborative planning a hard job. [Innes, Booher, 2000 a]

well as one labor market, makes it important to speak and act together. [Stadsregio a] This collaboration however is one-sided, it can be classified as a coordination according to the classification of Bouma and Horrevoets, or a converting process according to Innes and Booher's typology. And although the Stadsregio definitely does have power, more stakeholders are needed to find and implement solutions for the regional mobility system. The projects 'Incomaas', 'RIL', and 'Fileplan' all had (and Fileplan still has) a broader basis.

Under the auspices of the Center for Transport Technology (now Connekt^x) the project Incomaas, Infrurastructure Container handling Maasvlakte, was carried out in 1995/1996. The project can be classified as a corporation; despite the diverse group of participants and the interdependency between them, stakeholders handled out of their own interests and efficiency. The project developed a long term vision for the infrastructure of containers handled on the Maasvlakte. New logistic concepts and technologies needed to be developed because of the expected growth of the container industry and the scarce land available. [Connektrack; incomaas] The follow up of the project was a new research project, Incodelta, which first focused on the accommodation of the container growth on the hinterland corridors [Brugge ter et al., 1997; 2], and from 1998 more generally focused on bottlenecks on economic important infrastructure corridors [MinVenW d]. Although the Incodelta research program has emerged to a more practical and implementation focused organization, the efforts of the Incomaas project did not result in the implementation of sustainable solutions. [Incodelta]

The Rotterdam Internal Logistics project (RIL) had a more practical focus from the beginning. In 1995 the organization started with the goal to increase the efficiency of the internal port logistic and the transport to the hinterland. The projects they performed were on market demand or own initiative. The main stakeholders were the Port authority and Deltalinqs, but as a ROM-Rijnmond project the different government authorities and the industry were involved as well. [ROM-Rijnmond a] Although RIL realized the implementation of several innovations, in 2001 it had to merge with Port CommuNITy Rotterdam. Similar activities and the market demand for a single institution for collaboration projects related to logistics caused this fusion. [ROM-Rijnmond b] In 2003 this newly formed organization was dismantled, because it was not able to provide efficient communication between the different stakeholders; the collaboration was not binding enough. [ACNL] According to the typology of Wiechmann, the strategic planning of the project might have been not participative enough and not able to adapt to new situations.

Fileplan, in contrast to the other two examples, still exists and works very well. Since 1996 different stakeholders, the Stadsregio, Rijkswaterstaat Zuid Holland, the Province

^x Connekt is an innovation network for transport and infrastructure. With research it tries to contribute to the implementation of innovative and sustainable solutions for the mobility system. [Connekt]

of Zuid Holland, the Rotterdam municipality, the Port authority, but also private partners, work together to improve the accessibility of the Rotterdam region. The first two are the most involved, but that can directly be related to their interest in reducing congestion in the region. The other stakeholders get involved in projects based on solutions that affect their interests. [Fileplan, 2004] In 2005 Fileplan has merged with the 'Pilot Luteijn Noordflank' into Nexus. This pilot from the Stadsregio tests the Luteijn approach, an approach focused on consensus building between all stakeholders, including users. In Nexus the different governments, private partners, and consumers have committed to work together on regional accessibility problems. [Fileplan] Nexus can be classified as collaborative and for that reason it is not surprising that this collaboration is still working.

The experiences of these three projects clarify that for a collaboration on a regional scale to be successful a very diverse group of stakeholders, that have a high interdependency, should be involved. But more important they illustrate that when the collaboration is not intense enough or when no attention is paid to the follow up process of a project, ideas do not get implemented. From the experiences it should not be concluded that other forms of working together than a collaborative form cannot work. Consultative bodies such as Govera and Bestuurlijk Platform Zuidvleugel for example (see APPENDIX F) are not as intense, but play a role. Their influence and power however, is not as large.

4.3 Regional coalitions

4.3.1 Introduction

Regional coalitions seem a very useful tool for the management of a transition towards sustainable mobility on the A15. Only this form of collaboration is able to accommodate the participation between the needed diverse group of stakeholders with a high degree of interdependency. At the same time it is an adaptive tool, which provides a problem driven and long-term approach. The incentive to develop shared visions and ideas supports this further. Individual stakeholder's values and structures are replaced by new shared ones.

A collaborative planning process should be a social as well as a technical practice, in which all stakeholders involved in related projects work together on strategies, policy goals, and plans in order to come to a shared goal. [Belspo] In this report such collaborations will be called regional coalitions, but it should be noted that many other names are used to indicate the same. Co-production and interactive decision making are just some examples. Experiences with these collaborations can in particular be found in the field of urban planning. Societal developments and the consequences for spatial and environmental planning formed the context in which the theory of regional coalitions became important. In the same context, new, more general urban theories tried to deal with the need for more regionalism, participation, and sustainability in public planning.

Regional coalitions and these new urban theories have a lot in common. In the theory about regional coalitions also elements of the network theory can be recognized. After an explanation about this network theory and a new urban theory the theoretical elements of regional coalitions are discussed. The prerequisites, the collaborative process, and the preferred outcomes of this process are described. In contrast with transition management tools, a variety of experiences with regional coalitions can be found. These experiences highlight some elements that are overlooked in literature.

4.3.2 Theoretical background

Network theory

The economic network theory describes economic structures in terms of networks and tries to understand the action of actors within the network by the position they have in the network. Most important in the theory are the actors and the relationships between them. Actors can be persons, objects, or events. The relationships depend on the context of the relation and the intrinsic characteristics of the actors. The embedded-ness perspective^{xi} of the economic network theory is the most suitable with regard to regional coalitions. The relationships in this context depend on the costs of the exchange, the prize of the exchanged goods, and the costs to realize the exchange. In the embedded-ness perspective relationships in the network have more dimensions than only the exchange; continuity, interdependency, degree of formalization, influence, contact frequency, information and knowledge exchange, and trust. [Oerlemans, Jacobs, 1997; 67-73] Besides the relationships the actors of the network are important. According to Håkansson actors have five important characteristics. The activities executed in a network are performed and controlled by the actor. Secondly actors also control the resources in the network and base their activities on that. Every actor also uses other actors' resources through strong and weak linkages with others in the network. Furthermore actors are goal oriented and have network specific knowledge. [Oerlemans, Jacobs, 1997; 79]

Ontwikkelingsplanologie

New urban planning theories are developed as a reaction on the societal shift towards a more dynamic society and the growing importance of regionalism, participation, and sustainability as a result of that. A discrepancy between the traditional way of working and the needs of the new political era created four gaps: 1) top-down gap, 2) abstract-concrete gap, 3) place-place gap, and 4) the sustainable development gap. The first gap deals with the discrepancy between the top level planning and decision making authorities and the down level needs and problems. The abstract-concrete gap illustrates the discrepancy between theory and practice, whereas the place-place gap is between the distinct abodes of the local professionals and the organizations of the inhabitants. The

^{xi} The economic network theory recognizes two perspectives to conceptualize it: the embedded-ness perspective and the transactional perspective. In the latter perspective the exchange is the only dimension of the relationship. [Oerlemans, Jacobs, 1997; 69]

sustainability gap relates to the conflict between the three sustainability criteria. [Stenberg, 2002] The new urban theory described here, as well as regional coalitions, is a way to bridge the top-down gap.

In the Netherlands the so called *ontwikkelingsplanologie* (development planning) is in development. The more traditional way of planning determines what can be built where and what not; *ontwikkelingsplanologie* starts with the actual demand, or need for space. [RPB, 2004; 7] According to the Ministry of VROM the following characteristics of *ontwikkelingsplanologie* can be given [RPB, 2004; 25]:

- Integral regional development
- Multi-actor process
- Involvement of diverse range of stakeholders
- Spatial quality as the shared vision
- Execution and financing of project in coherence

It is said that these characteristics can only be met when the governance on the regional level is sufficient. In the Netherlands this is not yet the case. At the same time this lack of institutional power provides regional innovative networks to develop. [RPB, 2004; 29] Still, these networks also need some sort of competence to act. This does not need to be institutionalized, but the ability to ‘experiment’ with new forms of governance is required. For these networks to be effective, their institutional capacity needs to be large enough. This institutional capacity exists of organizations, the communication between them, and the shared visions and ideas they have. To increase the institutional capacity the different stakeholders need to collaborate. [RPB, 2004; 37] The idea of regional coalitions is developed in line with *ontwikkelingsplanologie*; the characteristics of *ontwikkelingsplanologie* also count for regional coalitions. Regional coalitions concentrate on the need to collaborate.

4.3.3 Prerequisites, collaborative process, and outcomes

Booher and Innes developed a model that conceptualizes the conditions that need to be met in order for stakeholders to collaborate, the process of this collaboration, and the outcomes when the process worked well (Figure 4.4 gives this model). [Booher, Innes, 2000] One of the critics on tools developed as transition management instrument is the lack of attention paid to the internal process. The model shows that the internal process is not a black box here; the collaborative process explains how this tool should be organized.

The first condition that needs to be fulfilled in order to get a collaborative process is that “agents in the network should be diverse in a way that is consistent with the full range of interests and knowledge relevant to the issues at hand”. The second condition that is needed is that “agents be in a situation where their ability to fulfill their interests depends on each others’ actions and where they recognize this interdependence”. [Booher, Innes, 2000; 15] In a broader perspective stakeholders who participate in regional coalitions

should recognize the range and variety of stakeholders involved in the same issue in order to best collaborate. All these players have their own social networks, cultural background, system of meaning, and complex power relations between them. [Healey, 1997; 288]

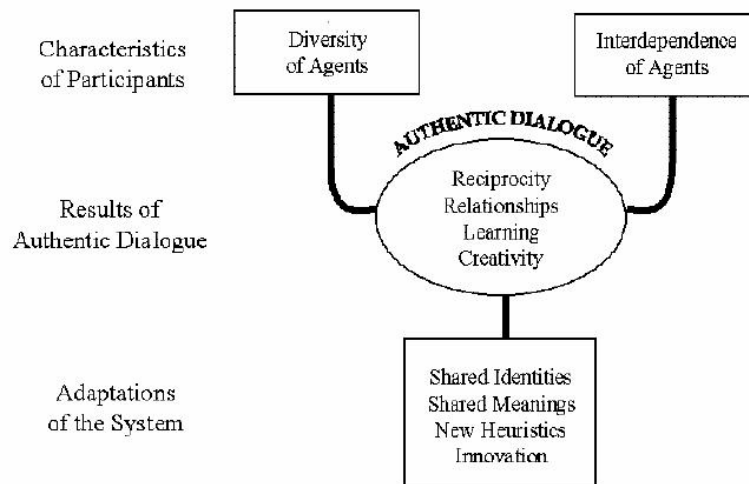


Figure 4.4: Network dynamics [Innes, Booher, 2000 b]

Recognizing the variety of stakeholders involved and recognizing the interdependency is not sufficient to realize a successful regional coalition. Without a dialogue that allows all agents to speak openly and in an informed way about their interests and understanding no benefits can be reached. Furthermore all stakeholders need to be taken seriously as a partner by the others. [Booher, Innes, 2000; 21] In order for collaborative networks to create innovative choices they need to fully utilize the diversity of the network. A dialogue focused on reciprocity, relationships, learning, and creativity offers the best perspective. Reciprocal relationships are built when the participants of a collaborative dialogue develop understanding of their interdependence. "They learn that it is in their self interest, not only to work together, but also to offer something to others because others have something to offer them." [Innes, Booher, 2000 b; 10]

The outcomes of a successful collaborative process are shared identities and meaning, new heuristics, and innovations. For less intense forms of collaboration it is not likely to reach this 'shared' level; vote down their goals and visions is the highest level feasible. The added value of regional coalitions lies in this ability to realize vision and ideas that are adopted by all stakeholders, which makes it easier to realize the goals that satisfy all. An important prerequisite to reach this is not part of the described model. According to Edelenbos however, collaborative planning has five levels of involvement: informing, consulting, advising, co-producing, and deciding. [Edelenbos, 2000; 53] The intense form of collaboration of regional coalitions does not mean all stakeholders need to decide or co-produce. What is important is that the stakeholders are satisfied with their level of involvement.

The described prerequisites, process, and outcomes are internal or niche elements of the regional coalitions. As said in the discussion about ontwikkelingsplanologie, regional coalitions need to have a large enough institutional capacity to be effective. Healey defines two criteria to assess the institutional capacity of new regional governance initiatives, such as regional coalitions. First initiatives need to attract sufficient legitimacy, authority and capability in relation to other already existing governance institutions to affect the flow of resource allocation. Secondly, they need to establish innovative policy agendas and new modes of governance.” [Wiechmann] These criteria can be seen as external directed elements needed to make a regional coalition succeed. In other words: regime elements that influence the windows of opportunity.

4.3.4 Experiences

Innes and Booher studied a lot of cases to test and verify their network dynamics model. The degree to which the collaborative processes studied engage multiple stakeholders varies, but the cases show that it has encouraged the growth of much more interactive conversations among public officials, interests, and individual citizens. One of the examples is the CALFED. This are dialogues between federal and state agencies in California that deal with the politically complex and difficult statewide water issues. One of the projects that was set up based on these dialogues is the San Francisco Estuary Project. It was initiated and funded by the US Environmental Protection Agency, along with the public agencies that control and regulate this massive estuary. [Innes, Booher, 2000 a; 20]

Another promising experience with regional coalitions can be found in New York. “The Port authority of New York and New Jersey in 1986 formed a voluntary partnership of the key operating agencies in the New York region to act as a mechanism to exchange information on construction schedules. This original collaboration has now evolved into a regional information clearinghouse that disseminates system performance information to 16 members agencies and 100 affiliates, as well as serving as a test bed for the application of new technologies. The reasons for forming and the continuing evolution of what is called TRANSCOM were primarily the mutual perception of a regional need and the perception that information exchange needed a common home.” [Meyer et al., 2005]

Brenner [2002] argues that the development of US regional coalitions is not a product of the growing importance of regionalism, but a product of place-specific political responses to a new form of socio-spatial polarization and uneven geographical development. For that reason he argues that regional coalitions are “extremely heterogeneous, both institutionally and politically, and are permeated by significant internal conflicts and contradictions”. Based on this argumentation it seems hard to use regional coalitions as a tool, but even if this were true the conceptual elements of a regional coalition provide opportunities.

Although worth studying, the US examples have to be seen in their context. In the United States the government is not as powerful in spatial planning as in Europe. For that reason it is also valuable to look at European experiences, though also within Europe important differences exist. The Netherlands can be classified as a decentralized unitary state. In addition to the national government the province, as well as municipal governments, has the power to regulate their own affairs, as long as they stay within the rules and regulations laid down by a higher authority. The Dutch system seems like a solid edifice in which fundamental changes rarely take place. In reality the relative stability of this formal system does not imply that general agreement exists about its functionality. Although the 'regional-gap' has never been filled and changes may not easily percolate down to the level of 'government structure', it is quite easy for ideas to permeate the 'culture of governance'. [Hendriks et al., 2005; 22-23] The chances for regional coalitions to succeed in the Netherlands should be placed in this context. As long as the existing institutions provide some 'marge de expérimente' [Brabant], regional coalitions can work within the Dutch system.

Besides the lessons that a regional coalition does not need to be working in the most extreme form and that experimenting space is needed, the fact that an initiator is important is another aspect experiences taught. In the so-called 'Agenda 21' German regions showed that they could be very collaborative. The incentive however was a competition announced by the Ministry for Regional Planning, Building and Urban Development. Pushed by this initiative, regions built self-supporting structures for sustainable development. [Wiechmann] Several pilot projects of the Citizen First project also support the need for an initiator. In these projects the initiatives were not constructed, but need based. Banks, health care units, and supermarkets for example initiated one-stop-shops in small towns in 'rural' areas in the Netherlands. For each of the participants it was unprofitable to serve these areas themselves, but all services in one shop proved to be sufficient for all. The projects were all pushed by at least one stakeholder. [Citizen First, 2005]

4.4 Summary

Regional coalitions are a useful transition management tool with regard to the need for a transition towards sustainable mobility on the A15. First of all regional coalitions meet the building blocks 'problem driven', 'long term focus', and 'multi-actor process'. Secondly the complex governance of the A15 regime makes a tool that explicitly focuses on collaboration necessary. Although tools such as transition arena's, developed as transition management tool, are also participative, theory on regional coalitions does explain how a shared vision can be reached. Transition management only states that this is needed, but does not go into the elements needed to realize it. According to regional

coalition theory a dialogue based on reciprocity, relationships, learning, and creativity is needed.

Experiences in the Rotterdam region with cooperations on a regional scale identify the need for a collaboration that is able to accommodate the participation between the needed diverse group of stakeholders with a high degree of interdependency. At the same time it has to be an adaptive tool, which provides a problem driven and long-term approach. The experiences also show that when the collaboration is not intense enough or when no attention is paid to the follow up process of a project, ideas do not get implemented. Regional coalitions fulfill all these needs.

Although regional coalitions seem a very useful tool from the above perspectives, to say something about the potential to stimulate a transition towards sustainable mobility on the A15, the chance that an A15-regional coalition will emerge needs to be investigated. In order to do that, the prerequisites of a regional coalition must be known, as well as the important agenda elements stakeholders must agree on. The network dynamics model by Innes and Booher identifies two prerequisites, diversity of stakeholders and interdependency between them. The willingness to trade however, is also very important; together with interdependency this can be combined in the prerequisite 'negotiation power of stakeholders'. Experiences with regional coalitions highlight two more prerequisites, the need for an initiator and the need for sufficient institutional capacity. The agenda setting elements of importance are 'a shared long term vision', 'consensus on financing', and 'consensus on the internal organization'. Regional coalition theory focuses on the shared vision, but according to Edelenbos agreement on the internal organization is very important as well. Agreement on the organization can even be seen as a prerequisite to create a shared vision. The importance of financing becomes evident in the A15 analysis; in history many projects failed due to financial reasons and the changing responsibilities and resources make it even more important to agree on this aspect.

This chapter focused on what regional coalitions are and why it is useful for transition management on the A15. How and in which form an A15-regional coalition can stimulate sustainable mobility is conceptualized in the next chapter.

PART B
EMPIRICAL RESEARCH

CHAPTER 5

A15-REGIONAL COALITION: CONCEPTUAL FRAMEWORK AND METHODOLOGY TO INVESTIGATE EMPIRICALLY

5.1 Introduction

The theoretical framework describes a general transition process. To answer the research question a case specific framework is needed to be able to identify the opportunities and bottlenecks that exist for the realization of a regional coalition. The conceptual framework described in this chapter extends the dynamic multi-level perspective to a framework that describes how and in what form a regional coalition can stimulate a transition towards sustainable mobility on the national highway 15 in the Rotterdam region. The analyses performed in the previous chapters are the inputs; the conceptual framework on its turn is used as a fundament for the methodology of the empirical research. The conceptual framework focuses on the role of regional coalitions in the transition process. Collaboration between stakeholders forms the basis for this possible transition management tool. For that reason the actors are the most important entity of a regime in the context of this research. In the theoretical framework a regimes is described with help of its dimensions (see Figure 2.9). These dimensions need to be translated into groups of stakeholders to be useful for the conceptual framework. Table 5.1 gives the dimensions and the related groups of stakeholders, plus it makes clear who these stakeholders are in the Rotterdam region. (APPENDIX F introduces these stakeholders where needed)

Table 5.1: Regime dimensions and related stakeholders

Regime dimension	Stakeholder group	A15 related stakeholders
Social networks of value chain	Market	<ul style="list-style-type: none"> ◦ Port authority ◦ Port industry
Knowledge	Knowledge institutes	<ul style="list-style-type: none"> ◦ Research centers ◦ Universities
Sectoral policy	◦ Policy makers	<ul style="list-style-type: none"> ◦ Ministry of VROM ◦ Ministry of V&W ◦ Ministry of EZ ◦ Province of Zuid Holland ◦ Stadsregio ◦ Rotterdam municipality (dS+V)
	◦ Regulators	<ul style="list-style-type: none"> ◦ Dutch central government ◦ European Union ◦ DCMR

Function domain	<ul style="list-style-type: none"> ◦ Users ◦ Interest groups 	<ul style="list-style-type: none"> ◦ TLN ◦ EVO ◦ ANWB ◦ Residents ◦ Environmental federation
Infrastructure	<ul style="list-style-type: none"> ◦ Process supporters ◦ Existing collaborations 	<ul style="list-style-type: none"> ◦ ROM-Rijnmond ◦ Deltalinqs ◦ NDL ◦ Govera ◦ Nexus ◦ Bestuurlijk Platform Zuidvleugel
Technology	Technologists	Rijkswaterstaat Zuid Holland
Symbolic meaning of particular technology		

5.2 Conceptual framework

The conceptual framework consists of two elements. The first element is the most closely linked to the theoretical framework and conceptualizes *how* a regional coalition can stimulate a transition. The second element focuses on which prerequisites are needed for a regional coalitions and what the important agenda setting elements should be. With help of these aspects the *form* in which a regional coalition can stimulate a transition is conceptualized.

For a regional coalition to develop one stakeholder needs to take the initiative. When a diverse group of regime players starts talking about a problem they all feel, and when this dialogue is based on reciprocity, relationships, learning, and creativity, a regional coalition or collaborative process may develop. Although in this collaboration long term visions and shared identities are developed it does not mean that the regime stakeholders have the same problem perception. The collaborative process can better be seen as a niche that tries to realize sustainable mobility on the A15 by working together. Like for many other niches that work on sustainable mobility, this niche has to find its direction and goals. This means that in the early phase of a transition, like where the transition towards sustainable mobility on the A15 is now, it is a chaos of niche developments and goals they are aiming for. A regional coalition in this phase can not only help to develop a shared problem definition among the regime players, but it can also help to move the niche developments in the same direction. Along this process the stream of niches gets closer and closer to the regime. The dynamic stability of the regime and the pressure of the landscape developments create windows of opportunities for the regional coalition to either break through and replace the existing regime, or become part of it. Figure 5.1 graphically shows this process and Figure 5.2 illustrates the two options of how a regional coalition can interlink with the regime. Number 1 of Figure 5.2 corresponds to 'becoming part of the regime'. A regional coalition in that case operates along side the

formal process and tries to accelerate and positively influence this process by building consensus among all stakeholders. In the second option a regional coalition replaces the regime, which means the coalition gets the authority of the whole process. These two options are possibilities when niche developments use a window of opportunity in the regime. When the collaborative process does still take place in niches, however, it is likely that the regional coalition acts as in option 1.

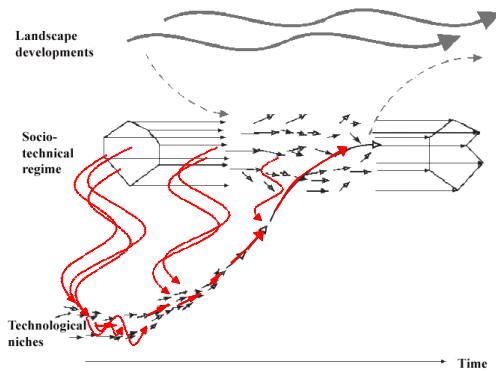


Figure 5.1: Process how a regional coalition can stimulate a transition

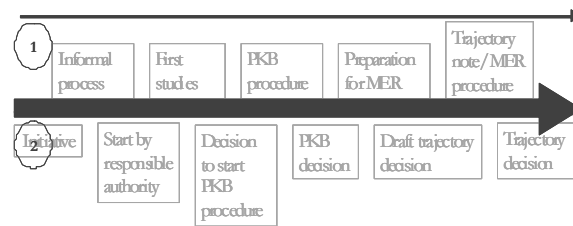


Figure 5.2: Two options how a regional coalition can stimulate a transition

The Transumo-project, but also the already existing collaborations are possible starting points for a regional coalition. It can be seen as a niche that works on the realization of sustainable mobility and this process can emerge to a collaborative planning process, during the project or as a follow up of the project. For a regional coalition to develop, a collaboration needs to meet several prerequisites and agree on important agenda setting elements. The theory and experiences on regional coalitions described in the previous chapter indicated these aspects, Table 5.2 gives an overview.

Table 5.2: Form of a regional coalition: prerequisites and agenda setting

Prerequisites	<ul style="list-style-type: none"> ◦ Initiator or initiative ◦ Diversity of stakeholders ◦ Negotiation power of stakeholder ◦ Sufficient institutional capacity
Agenda setting	<ul style="list-style-type: none"> ◦ Shared long term vision ◦ Consensus on financing ◦ Internal organization

The first prerequisite of a regional coalition is the need for an initiator or initiative. Furthermore the stakeholders involved need to be diverse and represent all aspects of the network. Stakeholders from all dimensions of the A15 regime as well as niche players should be involved. These stakeholders need to have negotiation power, which means that there has to be interdependency between them and they must be willing to trade. Sufficient institutional capacity based on sufficient legitimacy, authority, capability, and

the ability to establish innovative policy agendas is the last important prerequisite to realize a regional coalition. A collaborative process however, is not guaranteed when these criteria are met. The stakeholders need to agree on the long term vision, which includes the problem definition, the goals to reach, the solutions to get there, and, in this case, the definition of sustainable mobility. The analysis of national highway 15 indicated that many projects failed on financial issues; a regional coalition should build consensus on this point. The internal organization is the last agenda setting element of importance. The stakeholders need to be satisfied with their own level of involvement as well as the degree of participation of others. Furthermore agreement on who participates is needed. The structure how a regional coalition should stimulate is also an aspect of this part of the agenda.

5.3 Research methodology interviews

5.3.1 Interview indicators

A regional coalition can provide chances in the process to reach a sustainable mobility system. In order to detect the opportunities and bottlenecks present in the current system that affect the development of a regional coalition, open half structured interviews are used. Although all prerequisites are of importance, the interview focuses on the negotiation power and the agenda setting elements. The need for an initiative is indirectly taken into account in the consensus on the internal organization. The fact that the Transumo-project can be seen as a sort of initiative takes away the need to question this directly. Sufficient institutional capacity is not taken into account because of time constraints. The choice to not investigate this prerequisite in favor of the others is caused by the lack of contacts at the ministries, which are the major stakeholders in relation to this aspect. At the same time TNO and the Transumo-project provided easily accessible and representative contacts for almost all other important stakeholders. This provided such a diverse range of stakeholders that the first prerequisite is covered. The interview indicators are directly linked to the conceptual framework. Table 5.3 gives the interview structure that systematically shows what is explained in the previous section.

Table 5.3: Interview structure

Form-element	Dimension	Indicator
Prerequisites regional coalition	Negotiation power	Interdependency
		Willingness to trade
Agenda setting regional coalition	Shared long term vision	Problem definition
		Goals
		Solutions
		Definition of sustainable mobility
	Consensus on financing	Responsibility
		Own commitment
	Internal organization	Participants
		Level of participation
		Structure

5.3.2 Respondents

Nineteen stakeholders are interviewed in the context of this research. APPENDIX F gives an introduction of the organizations^{xiii}; in this section the choice for the interviewed stakeholders is explained. Of the market group the Port authority (1) and four companies, Shell Chemicals (2), P&O Ferries (3), ECT (4), and Vopak (5) are questioned. The Province of Zuid Holland (6), the Stadsregio (7), and dS+V (8) and Gemeentewerken (9) of the Rotterdam municipality are the policy makers that participated. The plans developed by these policy makers mostly indirectly affect the A15. The regional spatial plan RR2020 and the plans around Stadshavens are important in that regard. To get more background information, the project organizations that design these plans (10, 11) are interviewed in the same context, where the ministries are left behind. In the group of regulation stakeholders the Dutch central government and European Union are not expected to have any negotiation power, at least no willingness to trade. For that reason only DCMR (12) is taken into account. Of the users and interest groups TLN (13), ANWB (14), and the Environmental federation (15) are interviewed. 'Residents' is a very difficult group to interview and because the Stadsregio speaks for all regional municipalities, it is not tried to get in touch with them. The EVO is simply not approached because TLN was. Furthermore ROM-Rijnmond (16), Deltalinqs (17), NDL (18), and Rijkswaterstaat Zuid Holland (19) have participated. The existing collaborations are not interviewed because Govera and Bestuurlijk Platform Zuidvleugel do not have direct links with the problems on the A15 and Nexus is discussed with the different stakeholders in their interviews.

Although both regime players as well as niche players are important in a regional coalition these respondents are all regime players. In this early stage of the transition towards sustainable mobility however, niches are still working out their path. Also niches do not focus on the A15, but have a broader scope, which makes it hard to discuss the specific topic for this research. Time constraints as a third reason resulted in the choice to focus on the regime. In Table 5.1 knowledge institutes are also classified as a regime stakeholder. They are, but their work is basically performed in niches and for that reason they are not questioned as part of the empirical research.

The respondents are approached by email to make an appointment. A second email three days before the interview gave an introduction on the research and the interview. Most respondents are familiar with the Transumo-project, which made an extensive introduction unnecessary. The stakeholders who do not participate in the project do know the issues related to the Rotterdam region and the A15.

^{xiii} An introduction of the actual respondents can be found in the interview report, see 'reference' where these can be found.

5.3.3 Procedure

The interviews started with some introduction on the research, the organization, and the function of the respondent. The actual questionnaire started with a question about the shared long term vision. The stakeholder's view on the A15 related problems was questioned, followed by the goals related to this piece of infrastructure and the possible solutions they see to reach these goals and solve the expected problems. The second part focused on the interdependency between stakeholders. "Who do you need to reach your goals and why do you need them?" This question can also be turned around: "who needs you?" The willingness to trade followed from these questions. It is tried to detect the negotiation bottlenecks and come up with a list of important agenda setting elements. Of these elements and the ones found in literature the power and willingness of the stakeholder to influence them is explored. The willingness to trade regarding the shared long term vision is based on the definition of sustainable mobility. For the consensus on financing the first question is: "who is responsible?" Secondly the possibilities, responsibilities, and requirements of the respondents' organization are discussed. For the internal organization the different stakeholders needed, and the wanted and expected level of participation is important. The potential of a regional coalition is discussed in the last part of the interview. The interview concluded with the expectations regarding the Transumo-project in case the stakeholder is involved or interested. APPENDIX G gives the complete interview structure and the actual questionnaire (both in Dutch). The report of an interview was sent to the respondent and in all but one case the report has been authorized.^{xiii}

^{xiii} Only the Environmental federation Zuid Holland has not authorized the interview report.

CHAPTER 6

A15-REGIONAL COALITION: OPPORTUNITIES AND BOTTLENECKS

6.1 Introduction

This chapter is based on, and discusses the results of the interviews performed to identify the opportunities and bottlenecks for the realization of a regional coalition in the context of sustainable mobility on the A15 [Interview reports]. Many stakeholders recognize that the A15 regime is reaching its boundaries, which can be seen as a shared general problem perspective. However, when looking at these perspectives in more detail, it can be seen that many different ideas exist. For that reason this chapter discusses the different A15 perspectives present in the regime. Despite these different problem perceptions, several stakeholders have committed themselves in the Transumo-project to work together on sustainable mobility on the A15. This niche development can be seen as a possible initiative for a regional coalition. To be able to say something about the chances that this, or other niche developments, will become a regional coalition the ideas of the stakeholders regarding a long term vision, financing, and the internal organization are compared. The opportunities and bottlenecks of the consensus building process related to these agenda setting elements are discussed, as well as the windows of opportunities that the trends within the regime and the landscape developments provide. Although these opportunities and bottlenecks will show the chances for an A15-regional coalition, stakeholders perceive a shared problem definition as the most critical aspect to pay attention to in the process towards sustainable mobility. This opinion differs from literature and needs to be discussed for that reason, but the challenges to build consensus are the same as for the long term vision, as well as the starting point of the different A15 perspectives is the same.

6.2 A15 perspectives present in the regime

6.2.1 Problem perspectives

Within the A15 regime, stakeholders agree on the idea that the regime is reaching its boundaries, but different ideas exist on what these boundaries exactly are. The ideas differ on the problem perspective, the solution perspectives, the time horizon stakeholders set goals, and the sustainable mobility ideas they have. The problem and solution perspectives are the main components of the overall A15 perspective; the time horizon and sustainability ideas highlight the nuances of the perspective. This section starts of with the problem perspectives of the different stakeholders.

The analysis of the A15 described three incentives for sustainable mobility (section 3.3.3). The first incentive ‘capacity boundaries’ is expected to affect travel time and speed, but also the ability to further expand the road. Most stakeholders do not mention these measures, and only the respondents that are familiar with the Transumo-project proposal recognize the lack of space. More common perceived problems in this respect are ‘accessibility’ and ‘no alternative routes’. Environmental problems, when perceived, are based on the same arguments as given in the A15 analysis; air quality and noise are the two problem perspectives mentioned. The same counts for safety. Besides these incentive related problem perspectives, some stakeholders see passenger traffic as the major cause of the problems on the A15. This does not mean freight traffic is not seen as a problem, but passenger traffic should not be taken as an exogenous effect according to these stakeholders.

Stakeholders often ‘favor’ more than one of the six causes. Figure 6.1 - Figure 6.4 illustrate the problem perceptions of the different stakeholders by grouping them according to the three types of stakeholders identified in the discussion about the complex governance situation (section 3.5). Policy and planning related stakeholders, economy related stakeholders, and environment and equity related stakeholders are expected to perceive different kinds of problems. In the figures 3 means ‘major problem’, 2 means ‘problem’, 1 means ‘neutral/ not known’, and 0 means ‘no problem’. It has to be noted that the stakeholders did not directly score the different perspectives. For the agenda setting process of a possible regional coalition it is preferred to know the stakeholders’ perception, providing pre-developed choices would interrupt this view. The outcome of six perspectives supports this working method, but as a result the figures can only give an impression. It should also be noted that not all interviewed regime players fit in the three types of stakeholders. The process supporters ROM-Rijnmond and NDL have a more general viewpoint and for that reason they do not have a downright A15 perspective. In case of a collaboration they will base their problem opinion on objective studies. TLN will also do this, but as they see passenger traffic as a major cause, TLN can be found in the charts. In contrast to the other process supporters, Deltalinqs does have an A15 perspective. Their role as port industry supporter makes that they do not look at the problem from a general viewpoint.

The policy and planning making stakeholders ‘Rotterdam municipality’ and ‘Stadsregio’ have the same problem perception. Both recognize the capacity boundaries and see accessibility and the lack of alternative routes as major problems. The Province of Zuid Holland agrees with the Stadsregio and the Rotterdam municipality on headlines, but has a more environmental oriented perspective. This has two main reasons. First of all the provinces are more closely related to central government policies, where air quality is a topic of high importance. Secondly the respondents are working for the environmental department, which makes it more likely they see the problem from an environmental perspective. It is very well possible that when an employee of the transportation and

infrastructure department is questioned, like for the Rotterdam municipality and the Stadsregio, the perspective would be similar to these stakeholders. In contrast to these regional stakeholders' perspectives, Rijkswaterstaat Zuid Holland is very neutral about the A15 situation. This does not have to mean they do not recognize any problems, but their A15 scope is much more on the short term. Rijkswaterstaat does have a long term scope in general; they know which road works they want to execute when and in which order. For the A15, however, this means they have a short term scope, because the road works are already planned. On this short term infrastructure improvements mitigate the accessibility problems and with solutions such as speed limits and sound walls Rijkswaterstaat tries to mitigate the negative effects for the environment, livability, and safety.

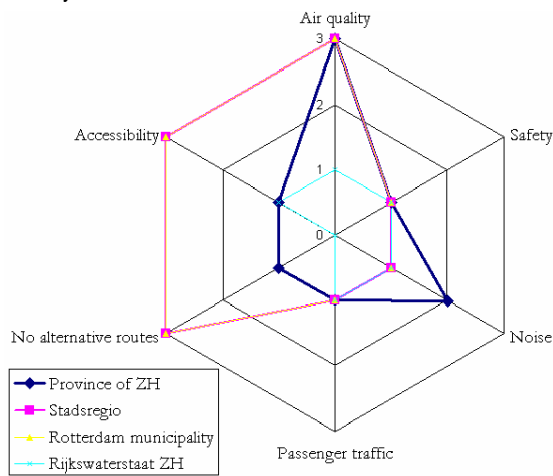


Figure 6.1: Problem perception of policy and planning making stakeholders

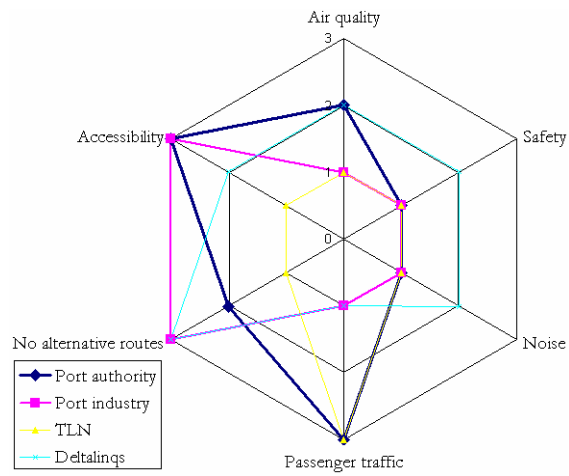


Figure 6.2: Problem perception of economic related stakeholders

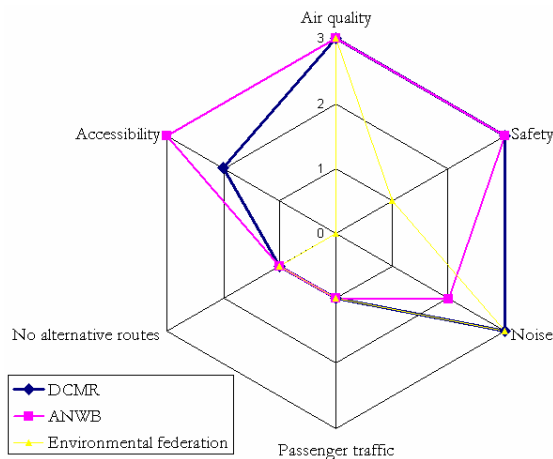


Figure 6.3: Problem perception of environmental/equity related stakeholders

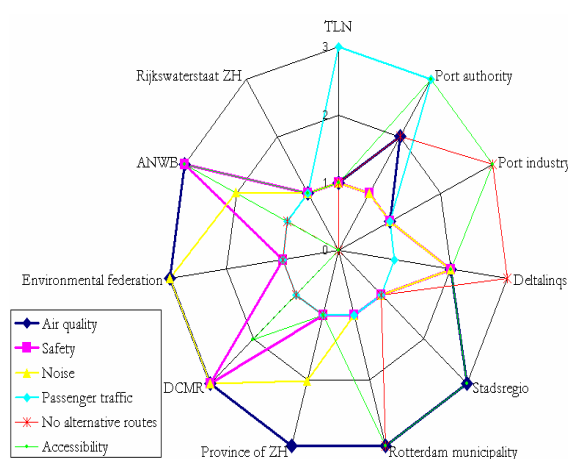


Figure 6.4: Problem perception support

The perspective of the economic related stakeholders corresponds with the more economic related problems. The Port authority and the port industry both see accessibility as a major problem. This is partly caused by the just in time strategy used by a large part of the industry. For the same reason, the port industry and Deltalinqs also

feel the lack of alternative routes as a major problem. Besides this recognition, Deltalinqs has a rather broad scope. Furthermore the Port authority states that not only freight traffic causes problems; TLN also sees passenger traffic as a major problem. The existence of other problems might be supported by TLN as well, when based on an objective analysis. Compared to the policy and planning making stakeholders, the economic related stakeholders pay less attention to the air quality problem, but they do recognize it as a problem. On the contrary the environmental and equity related stakeholders do feel air quality as a major problem. The ANWB and DCMR have a similar perspective, where DCMR is a little more focused on the environmental issues and the ANWB on the economic problems. The Environmental federation does not agree with the economic problem. However, they are conscious that only moving against the stream does not help, cooperation based on a network wide infrastructure analysis (see solution perspectives in the next section) might result in the support and recognition by the Environmental federation that 'no alternative routes available' is a problem.

When the support of the different problem perspectives is looked at for all stakeholders together, air quality is seen as a problem on the A15 by almost all stakeholders. Of the more economic incentive related problems 'accessibility' is the most recognized, but the Environmental federation does not see it as a problem at all. According to them an urban region can be characterized by more congestion, and in that respect the A15 does very well. The lack of alternative routes is particularly supported by economic related stakeholders, but Rijkswaterstaat does not recognize it as a problem. Noise and safety are more often recognized as a problem by environmental and equity stakeholders, but other stakeholders do not disagree. The ideas on the influence of passenger traffic on the contrary, differ again.

6.2.2 Solution perspectives

Besides a perception of the problem most stakeholders have ideas on how their problem can be solved. Five groups of sustainable solutions are discussed in chapter 3, modal shift, travel demand reduction, better spatial planning, technology, and other solutions. Like for the problem perception, stakeholders had to come up with solutions themselves; the results fit very well in the described typology. ROM-Rijnmond does not favor a particular solution because they have a more objective view; the same counts for NDL. TLN does not have a solution perspective as they state that a problem needs to be well defined first.

Figure 6.5 shows the modal split solution perspective of the remaining stakeholders, where 3 means 'major solution', 2 means 'possible solution', 1 means 'neutral or not known', and 0 means 'no solution'. A modal shift towards rail and inland waterways is seen as a solution by all but the Port authority. The long term vision of the Port authority and their opinion that the possibilities of a modal shift are used to its optimum by 2020, make that they see much more potential for innovative new solutions. Together with the

ANWB they also favor solutions that improve passenger traffic. The Port authority does so from its problem perspective; the ANWB is a passenger traffic related organization. The other stakeholders that see improvement of alternative modes as a solution at the same time favor a modal shift. The improvements they propose are more related to technological improvements of inland waterways. Furthermore the alternative modes should not only be improved but also extended, according to the ANWB and the Stadsregio. This opinion can directly be linked to their more general transportation and infrastructure viewpoint.

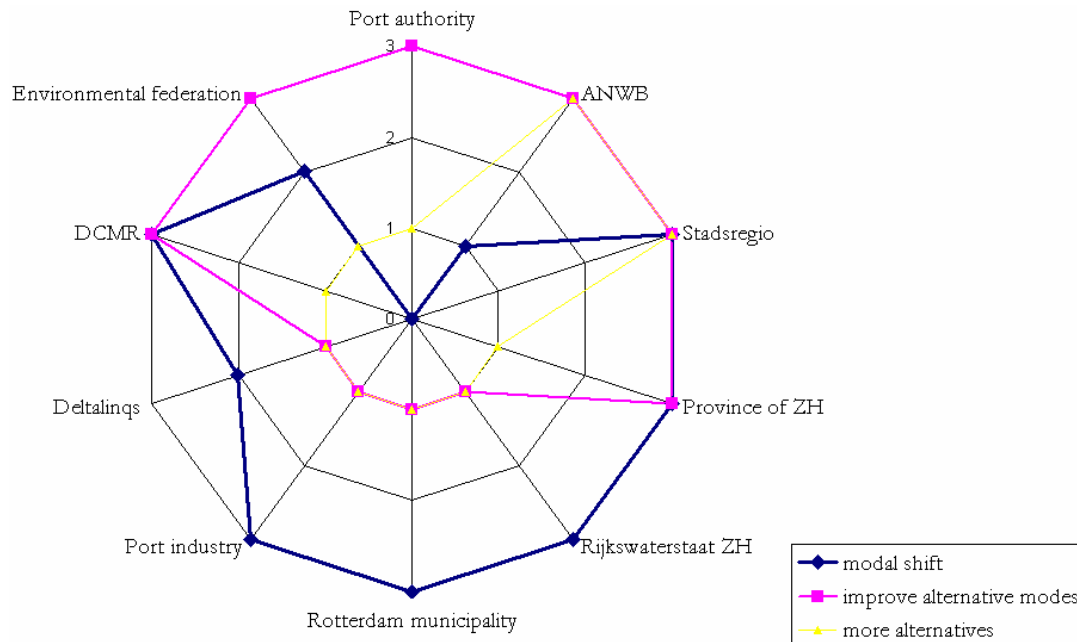


Figure 6.5: Modal split solution perception

Figure 6.6 gives the spatial planning and technological solution perception. New technologies such as cleaner cars and road trains are seen as a solution by many stakeholders, but except for DCMR and the ANWB it is not seen as the major solution. The development and implementation of technological improvements ask for a level playing field on a European scale. According to Deltalinqs, adopting these solutions in the Rotterdam region without a level playing field can have negative effects on the competitive position of the industry, because it is expected to cost a little extra. Many stakeholders agree that more is needed than new technologies, and as many ideas exist on what that should be. A better spatial planning is one of the preferred solutions of the Environmental federation. Deltalinqs, the Port authority, and the Province of Zuid Holland also think spatial planning solution could help, but they prefer a different form than the Environmental federation. These stakeholders rather see the Port Industrial Complex as an area with its own norms for noise and air quality, where the Environmental federation and DCMR would like to discuss the location of industries, residential areas, and public transport. The Rotterdam municipality and the Port authority also think that to solve the perceived problems on the long term new futuristic ideas are necessary; Deltalinqs sees it more as a possible solution.

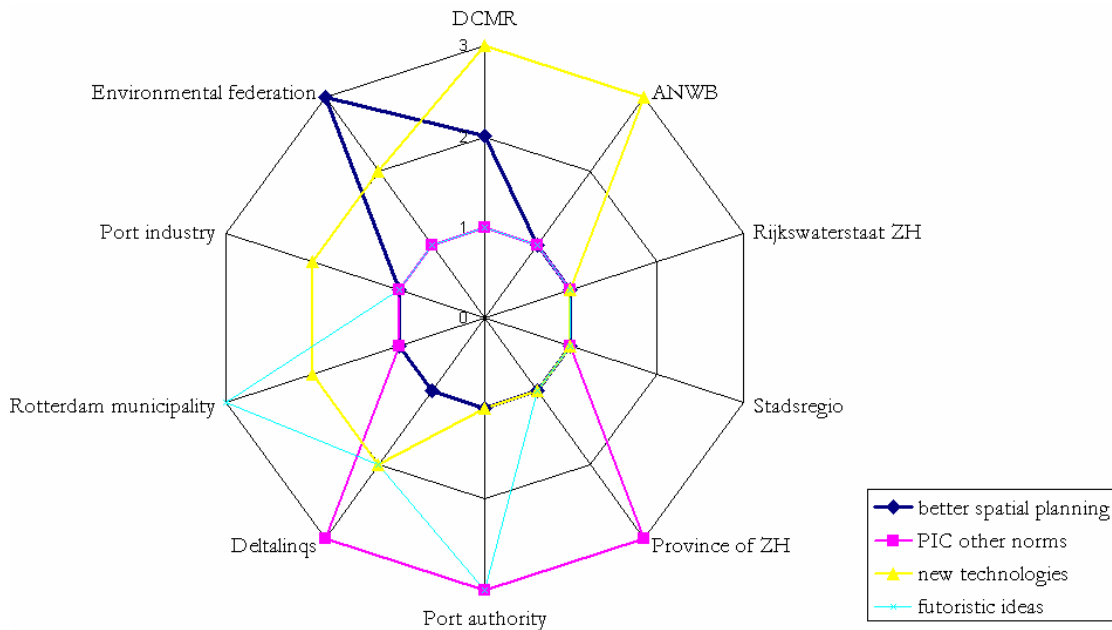


Figure 6.6: Spatial planning and technological solution perception

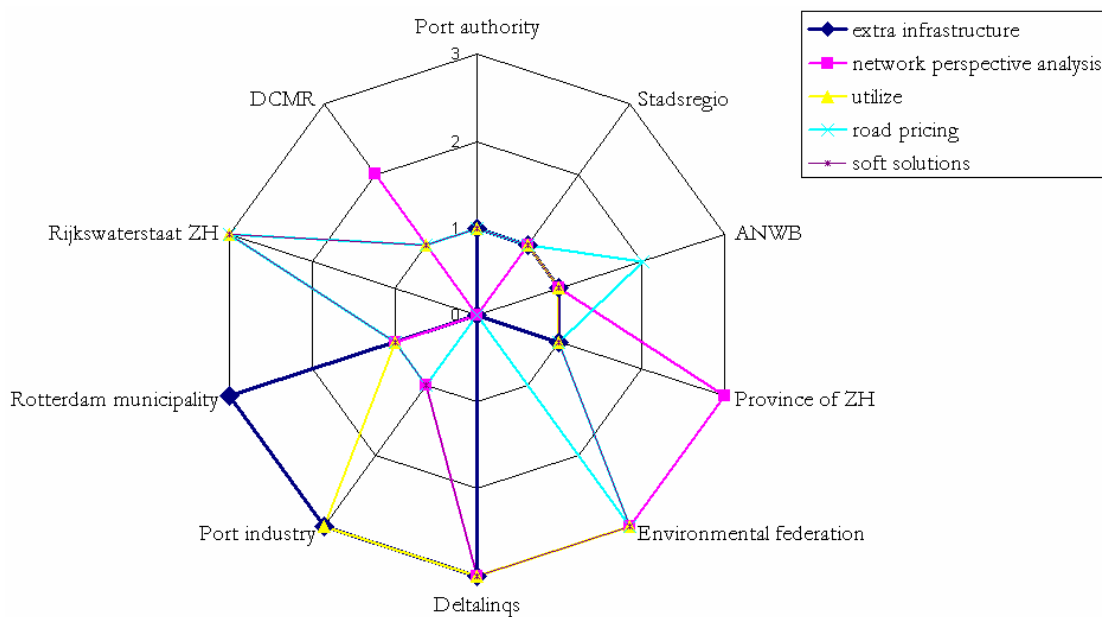


Figure 6.7: Travel demand reduction and other solution perception

The travel demand reduction and ‘other’ solutions show the most diverse picture (see Figure 6.7). The port industry, Deltalinqs, and the Rotterdam municipality see extra infrastructure, especially an extra tunnel, as the major solution. In particular the port industry sees extra infrastructure as definitely necessary, where they see new technologies as just a nice way to be socially involved. Some other stakeholders might also favor extra infrastructure when a network wide infrastructure analysis shows the need and advantages. The Environmental federation and DCMR do not favor extra infrastructure, but when a network wide analysis proves the sustainable effect of an infrastructure improvement for the whole system, these solutions might be adopted. DCMR however, does not think a network analysis will show the need for extra infrastructure.

Rijkswaterstaat does not see extra infrastructure and a network analysis as solutions. Extra infrastructure is not a solution because it might delay or even cancel the planned expansion to five lanes. According to some other stakeholders Rijkswaterstaat is not willing to perform a network analysis for the same reason. On the contrary, better utilize the existing infrastructure and solutions such as ‘keep your lane’ and speed limits can count on the support of Rijkswaterstaat. Road pricing may also count on support of Rijkswaterstaat, but this solution calls on a lot of discussion. Deltalinqs thinks it will not help at all; people and trucks have to drive there anyway. The ANWB thinks it might help, but a prerequisite is a transparent price. The Port authority does not even take it into account as a solution, as it will already be there at the long term they look at.

6.2.3 Overall A15 perspectives

The A15 perspectives of the stakeholders are a combined picture of the problem and solution perspectives, nuanced by the time frame used and the sustainable mobility ideas. The solution ideas of the stakeholders in general correspond with the problems they feel. Stakeholders who feel economic related problems, favor economic related solutions; stakeholders who feel environmental related problems, favor solutions such as new technologies and better utilization of existing infrastructure. The time frame used by the stakeholders to look at the problems, makes these different ideas about the A15 even stronger. The Port authority for example has a very long term scope regarding the A15 issues; solutions such as modal shift and road pricing are not a solution for them, where they would be on the short term. The mainly economic perspective of the port industry and their short term scope make that they favor more traditional solutions instead of new sustainable solutions. But even when stakeholders do have a long term perspective ‘solving the expected problems’ seems more important than ‘solving them sustainably’. Sustainable mobility is rather a measure than a goal; sustainable solutions are only favored when they are proven to be more cost efficient.

Regarding the overall A15 perspectives, it can be said that the different ideas stakeholders have about what the problem is, are closely related to the type of stakeholder they are. The same counts for the favored solutions, although a little more variation exists. Also the differences in time frame used can be linked to the type of stakeholder. It are these differences in scope, more than the resulting differences in perspective, that are expected to make it hard to build consensus on an A15 perspective.

6.3 Niches develop to work together on sustainable mobility

6.3.1 Transumo-project

Introduction

The different A15 perspectives within the regime and the idea that solutions are needed instead of sustainable mobility, does not mean no niche development concerning sustainable mobility are present. The Transumo-project can be classified as such a

development. It can be classified as a niche that focuses on reaching sustainable mobility on the A15 by working together. It might be the starting point of a regional coalition. For developments such as the Transumo-project to become a regional coalition four prerequisites need to be met. According to the regional coalition literature a diverse group of stakeholders with a high degree of negotiation power must be involved. Experiences also taught that an initiative or initiator is needed and that sufficient institutional capacity must be around. The interviews focused on the first two prerequisites and assumed that the initiative prerequisite is met by the Transumo-project itself. In order for the Transumo-project to also meet the diversity and negotiation power prerequisites, the diversity of the stakeholders needs to be managed well and the stakeholders need to be made aware of their interdependency. The diversity of stakeholders involved in the project does not cover the whole regime, which is a bottleneck for the power of strength of the process directly. Indirectly it may increase the bureaucratic bother that characterizes many Dutch planning and policy making trajectories. The so called *polder culture* can slow down processes because of the multiplicity of objection possibilities. The prerequisite 'negotiation power' is not fully met, but one of the indicators is; the A15 stakeholders are interdependent. The willingness to trade however, is not always present. The actual bottleneck here is not the lack of willingness of stakeholders, but the fact that many stakeholders do not recognize their interdependency. The next section describes these bottlenecks and the opportunities to tackle them in more detail. First the expectations stakeholders have concerning the Transumo-project are discussed.

Expectations

The assumption that the Transumo-project fulfills the initiative prerequisite does not mean no difficulties exist. Stakeholders have different expectations regarding the outcome and process of the project, which can be a bottleneck for the project to perform as a real initiative. To tackle this bottleneck and to fully meet the prerequisite, a project coordinator should start of with clarifying these expectations. The interviews already highlighted three important discrepancies. The first one can directly be related to the different A15 perspectives; Deltalinqs and the Port authority hope the project provides a breakthrough for the desired extra infrastructure, where Rijkswaterstaat does not see the Transumo-project as the place to discuss that. Secondly, the Port authority expects the project to focus on the long term; the Rotterdam municipality thinks both short and long term goals should be included in the project. A last point of importance in this respect is that the level of participation of the stakeholders is not clear. The role of TLN, ROM-Rijnmond, Shell, and the Environmental federation, for example, needs to be clarified. Other stakeholders, the Stadsregio for example, have not decided on their role yet, but others do not realize that.

6.3.2 Meeting the prerequisites of a regional coalition

Diversity of stakeholders

A diverse range of stakeholders is involved in the Transumo-project; still, when compared to the regime dimensions and related stakeholders (Table 5.1) the diversity of stakeholders involved in the Transumo-project can be improved. First of all for the policy and planning making of national highway projects, the national government is an important player. Working towards sustainable mobility on the A15 involves many procedures and decisions on the level of ministries. The Ministries of VROM and V&W, but also the Ministry of Economic Affairs, should preferably be represented in a project such as the Transumo-project. In the future Stadshavens might also be an important stakeholder to consult, because their policies affect the traffic on the A15. Now they are still financially dependent on the Rotterdam municipality and the Port authority, but in the future they are expected to become land owners and be self-sufficient as a result of that.

Secondly, not one A15 user is represented in the project. TLN and EVO could add value to the project by their knowledge and ability to create support among the trucking companies. The Transumo-project proposal describes the intention to ask TLN to join; at the time of interviewing they had not yet been asked. Besides trucks, many passenger traffic (80% of all traffic) drives over the A15. Some stakeholders think it is useful to take passenger traffic into account in the project as they see it as a major problem. In that case it would be useful to consult the ANWB. Also when it is decided to focus on just freight transport the ANWB might add value. Their process experience with intense collaborations and ability to create support among both drivers and consumers could be very valuable.

Like for the users, none of the interest groups is actually participating in the Transumo-project. The role of the Environmental federation is not clear yet; the Transumo-project sees them as a participant, but the contact with the federation should be better managed. That no environmental organization is directly participating yet, can cause bottlenecks. The Environmental federation for example, is a cooperative organization that is willing to talk about infrastructure construction and agree on it under conditions. However, the Environmental federation is often informed at the moment a project is near completion. This results in a less cooperative attitude, which in turn often results in an objection brought forward to the Raad van State. For that reason, the Transumo-project should make sure they pay active attention to the participation of the Environmental federation. Residents can also object at the Raad van State, which makes it important to construct a participative process where residents can be informed as well as where they can actually participate. Besides the ANWB, Deltalinqs and the local policy makers have regular contact with resident committees. The Transumo-project does not need to have residents directly involved, but it should use the contacts that are available to their maximum.

A fourth point for improvement might be to involve more process supporters in the project, although Deltalinqs is already participating. ROM-Rijnmond as well as NDL have process experience and as an objective stakeholder they could be very useful to aggregate sensitive information. Knowledge institutions can also take this role, but do not have as much process experience. Like for the Environmental federation, the contacts with ROM-Rijnmond should be more carefully managed. A last point in the context of diversity is called upon by many stakeholders. Already many collaborations exist, it is suggested that also these collaborations are involved in the project in some way. When the different collaborations are more linked to each other it is expected to add value to the region.

Polder culture

The polder culture in the Netherlands can negatively affect the agenda setting and decision making process. Some A15 stakeholders identify these negative effects as a bottleneck. Participation and objection of residents and environmental organizations and changing political statements are the most important in this regard. The recognition of the bottleneck itself by the ANWB, the Rotterdam municipality, Deltalinqs, ECT, and the Province of Zuid Holland provides opportunities, the contacts the first three stakeholders have does that as well. According to the ANWB and Deltalinqs it is very important to inform stakeholders on their own responsibilities and consequences of consumer behavior. Deltalinqs for example makes residents aware that living in an industrial area has both advantages and disadvantages. Living there means living close to available work, but noise and air quality levels can negatively affect the spatial quality. It is also explained that freight movements partly grow because of consumer demand; when people ask for more goods, more frequently trucks need to drive down the A15 to transport it. Deltalinqs' experience with this interaction is positive and should be used to mitigate the negative effect of the polder culture.

Changing political statements is common in the Netherlands. Every four years elections on local, provincial, and central government level can give power to different political streams. To get reelected politicians often focus on projects that can have a positive result within the four years. Changing priorities and a short term focus are the resulting bottlenecks for a transition towards sustainable mobility, as it has a very long term focus. Setting goals on both short and long term can tackle this bottleneck. The Rotterdam municipality has positive experiences with this tactic, which is also used in the 'Pilot Luteijn Noordflank'. This might also partly solve the problems that arise because of the short term A15 scope of Rijkswaterstaat. It might provide them with more security about the expansion and as a result create opportunities for Rijkswaterstaat to think on a more long term. The Port authority however, wants to focus on the long term, as they do not expect short term solutions to help to solve the long term problems.

Interdependency

The A15 stakeholders are interdependent, but most stakeholders, however, do not fully recognize this. The A15 analysis of chapter 3 and the translation of the regime dimensions in stakeholders illustrate why the stakeholders are interdependent. Although stakeholders answered the interview question “which stakeholders do you need/need you or are you dependent on?” with a list of stakeholders, the interpretation of the interviews suggests stakeholders are not aware of their interdependency. It seems that stakeholders work together with others on all sorts of projects all the time. Based on these experiences they could come up with a list of stakeholders relatively easy, but the actual reason of this question, being interdependent, seemed not taken into account in most cases. The often heard “you need everybody, just because” supports this even further; stakeholders do recognize they cannot solve the problem on their own, but cannot identify who exactly they do need and why.

Two reasons might cause that stakeholders do not fully recognize the interdependency between them. First of all it is possible they never thought of who they need, because when they need them, they can easily find them. Stakeholders have many formal links and even more informal contacts. When a problem arises or when a stakeholder takes the initiative to start a project, they do not pay explicit attention to the stakeholders that should be consulted. Often collaborations start off in an informal setting or familiar stakeholders are asked to collaborate. Interdependency does not seem to play a top of mind role in this process, although of course the interdependency does form the basis of collaborations. A second reason why the interdependency is not fully recognized might be the lack of a complete overview of the problem. Stakeholders have their own perspective on the A15, which might not cover the issues in its full range. The list of stakeholders the interview respondents did mention supports this possibility. Rijkswaterstaat, the Rotterdam municipality, and the Stadsregio (by Deltalinqs and the port industry taken together as ‘government’) and the Port authority are recognized as important by all stakeholders. The Environmental federation, DCMR, and the users are overlooked by most other stakeholders, where just these stakeholders do recognize the interdependency the most. The economic perspective on the A15 problem seems to dominate, and historically the economic perspective also was the only incentive. However, times are changing and sustainable mobility is needed, which makes it important that the environmental and equity issues are not overlooked.

A transition towards sustainable mobility makes it necessary to look at the entire problem. In order to do that, stakeholders need to become more aware of their interdependence. It might also be the case that a representative of an organization is not aware of the interdependency, where the organization itself is. The Transumo-project provides a good opportunity to make the representative or the organization itself aware of their interdependency. According to the Port authority and the ANWB, the informal

setting of the project is very important in this respect. The Transumo-project however, has to be aware of this task, otherwise this aspect might easily be overlooked.

6.4 Challenges of the development path of an A15 niche

6.4.1 Introduction

The Transumo-project seems a good starting point for a regional coalition as with a little attention for the different expectation, the diversity of the stakeholders involved, and the interdependency between them, the investigated prerequisites can be met. Meeting the prerequisites, however, does not guarantee success. For an A15 niche to develop further, the stakeholders need to agree on the three agenda setting element (see Table 5.2). This section discusses the bottlenecks and opportunities that might affect the consensus building process. Furthermore the development path of a niche also depends on the windows of opportunities provided by the regime. Although a transition is a very long term process, and a transition towards sustainable mobility is in the take-off phase, the regime trends and landscape developments place the consensus building challenges in a better context. It should be noted that the findings discussed in this section do not only count for the Transumo-project, but might be applicable to all sorts of collaborations related to sustainable mobility in the Rotterdam region.

6.4.2 Shared long term vision

The described A15 perspectives show a major bottleneck in the realization of a shared long term vision. The perception of the economic related stakeholders of a lack of alternative routes and the wish for extra infrastructure to solve this, conflicts with the ideas Rijkswaterstaat has. The air quality issues on the other side provide a good opportunity to get stakeholders talking. The aim to further develop a modal shift can have the same result, but has four drawbacks. First of all, the Port authority states that a further modal shift is not a solution for the problems on the long term. Secondly, the A15 analysis of chapter 3 showed that a further modal shift will be difficult to realize. Thirdly the policy and planning making stakeholders state they cannot influence the modal shift and point at the economic related stakeholders for responsibility. These stakeholders, however, do favor a modal shift, but it is not expected that they will take care of all costs. A last drawback is given by TLN. They state that collaborations should be careful with using a solution idea as their basis, because too often emotions instead of objective arguments are used to decide for a solution. Still it seems a perspective that can be agreed on quite easily. A network analysis would be very useful in this respect and with respect to the need for extra infrastructure. However, not all stakeholders are willing to undertake such an analysis. Also in this context the opposite opinions of Rijkswaterstaat and the economic related stakeholders are expected to cause the most difficulties.

Besides the opportunities the air quality issues provide, the recognition of many stakeholders^{xiv} that a shared definition should be the starting point of a collaboration might also help. The ANWB, ROM-Rijnmond, TLN, and to a lesser extent the Rotterdam municipality and the Stadsregio have experiences with collaborations that started of with the development a shared vision. The ANWB, ROM-Rijnmond, and TLN highlight four important aspects that influence this shared definition development process: 1) interests are more important than opinion, 2) trust, 3) personality of the collaborators, and 4) clarity about definitions used. However, the initiative to work together on the A15 problems in the Transumo-project does not include these stakeholders. Contracting these stakeholders would not only diverse the actors, but also increase the process experience in the project. Furthermore the collaborative dialogue tools, ‘reciprocity’, ‘relationships’, ‘learning’, and ‘creativity’, provided by Innes and Booher, can also be considered as an opportunity to tackle the major A15 perspective bottleneck.

6.4.3 Consensus on financing

Budgets for large infrastructure projects have always been a problem. Financial constraints often forced governments to choose less optimal solutions. Although large infrastructure projects often have a major societal need, consumers and industries are not very willing to share costs. At the same time, the central government wants stakeholders who benefit to share. This controversy however, is either so well known and accepted, or this trend is not recognized, that stakeholders do not identify it as a bottleneck. During the interviews respondents were asked what the major negotiation bottlenecks are for large infrastructure projects. Only a few of the stakeholders gave financing as a constraint. In the other cases the next question was: “Is financing a bottleneck?” To that question all stakeholders agreed. This agreement however, did not relate to the controversy, but to the actual expected financial constraints to realize sustainable mobility. However, when asking further, the controversy appears to be a bottleneck for the realization of an A15-regional coalition.

All stakeholders hold Rijkswaterstaat and the Ministry of V&W responsible for the financing of sustainable mobility. On the contrary, Rijkswaterstaat Zuid Holland is changing their policies according to central government policies and tries to work together with other stakeholders to get projects financed. Some stakeholders such as the Stadsregio and the Rotterdam municipality are willing to cooperate financially, but only when their infrastructure and residential areas are taken into account as well. Other stakeholders are not willing to contribute, either because they do not see it as their job and not have the possibilities, or because they feel they pay enough through tax. Stakeholders such as DCMR and process supporters do not have the financial

^{xiv} The ANWB, the Rotterdam municipality, DCMR, Deltalinqs, the Environmental federation, the Port authority, ROM-Rijnmond, the Stadsregio, and TLN

possibilities, and probably also do not see it as their job. The same counts for the Environmental federation, but they do have ideas how to tackle this problem. According to the Environmental federation, infrastructure problems should be seen in a broader perspective. Infrastructure improvements often result in increased land and real estate values; the owners of this land and real estate should be involved in the financing process as they benefit from the improvements. Fingers are also often pointed at the industry for co-financing, but the port industry does not feel responsible. Firstly they pay taxes that should be used for infrastructure improvements, but the price quality ratio is not satisfying yet. Industry sees a contribution to the financing of infrastructure projects as an extra tax, which even worsens this ratio. Secondly, the margins for the port industry are very small. Investing in infrastructure could cause major drawbacks for the business' economy. TLN recognizes these problems and favors a different paying system. TLN argues that the industry will pay when they see that investing in new infrastructure is cheaper than congestion. When this is not the case, TLN states that no new infrastructure should be built.

Besides the efforts of TLN two more opportunities exist to tackle the financial bottleneck for the A15 case. When the stakeholders were asked who is responsible for the financing of suggested solutions, stakeholders automatically focused on the infrastructure related solutions. Sustainable mobility and the solutions they gave are much broader than that. The financing of new technologies and modal shift for example, might be easier to realize in cooperation, as it is more directly linked to the primary process of the industry. Another opportunity is the experience of stakeholders that a shared definition makes it easier to realize agreement on other bottlenecks. And as for the shared long term vision, a collaborative dialogue provides opportunities to make stakeholders more aware of the changing responsibilities and resources.

6.4.4 Internal organization

Regional coalitions are a very intense form of collaboration. Most stakeholders feel the need for such a cooperation in the Rotterdam region, but they differ on the level of intensity and the need for an actual new collaboration. The conceptual framework described two types of regional coalitions, a more informal coalition alongside the formal development trajectory and a coalition that has decision power. The framework identified the first option as the most likely, most stakeholders agree. The complex government situation and polder culture in the Netherlands however, makes that private stakeholders also see advantages in a governmental regional collaboration that has decision power. The policy and planning making stakeholders on their turn, argue that existing collaborations such as Nexus and ROM-Rijnmond are intense enough and provide an opportunity to fulfill the need for an intense collaboration focusing on the A15 with a broader scope.

Although the stakeholders differ on the need for an actual new collaboration and the structure of it, most stakeholders do agree on the need for a shared problem definition. In contrast with literature, the stakeholders feel that the realization of such a definition is more important than the agreement on the internal organization of a collaboration. According to the A15 stakeholders the internal organization is not as important as a shared vision, as they expect reaching agreement on the organization is easier when the problem is well defined. Experiences of the ANWB support that a shared vision provides opportunities to tackle these bottlenecks. In that respect it is a major opportunity that most stakeholders agree on the need for an intense collaboration that can stimulate sustainable mobility on the A15. But the affect of the lack of consensus on the internal organization can be questioned.

As most stakeholders see much more advantages in reaching a shared problem definition than reaching agreement on the internal organization, they do not seem to realize that some prerequisites need to be met to be able to develop such a shared vision. According to the literature on regional coalitions this would be a bottleneck, but recent experiences of the stakeholders show that the internal organization of a collaboration follows from the shared definition. Reality probably is somewhere in the middle. Bottleneck or not, keeping in mind that a shared definition is not likely to change anything without some sort of formalized collaboration, and in this case preferably an intense form of collaboration, is an opportunity in itself.

6.4.5 Regime trends and landscape developments

Regime trends and landscape developments can create windows of opportunities for niches to break through and replace the regime or become part of it. Although the niches developments discussed here are not close to the regime yet, the regime trends and landscape developments can affect the niche developments. First of all, the changing responsibilities and resources within the regime make the perspective discrepancy between Rijkswaterstaat and the economic related stakeholders more complex. Rijkswaterstaat wants stakeholders who benefit from infrastructure improvements to take responsibilities regarding this infrastructure as well. The stakeholders who benefit, mostly the economic related stakeholders, are not yet willing to adopt this new responsibility. They are willing to talk about which infrastructure should get priority, based on a network analysis. This might be a start to fulfill the new responsibilities. Rijkswaterstaat, however, does not seem willing to perform such a network analysis. These passive and risk avoidant attitudes do not benefit the niche developments.

Secondly, the landscape development 'a stronger European Union' may positively affect the niche developments that focus on working together on sustainable mobility. The European environmental norms, for example, make that all stakeholders agree on the air quality problems. As said, this is an opportunity to get stakeholders talking; it almost forces stakeholders to cooperate. The stronger the European Union gets, the more topics

will be dominated by the European Union and forces stakeholders to collaborate. As cooperation is needed to realize sustainable mobility, this is a positive development.

6.5 Most critical aspect: a shared problem definition

The discussion about the internal organization already highlighted the perceived importance of a shared problem definition. Based on experiences with collaborations in the Rotterdam region, as well as collaborations in other parts of the country, many A15 stakeholders characterize a shared problem definition as the most critical aspect of a collaboration. For them, meeting the prerequisites of a regional coalition, or any other form of working together, is not a specific goal. More in general it can be said that stakeholders do not pay special attention to the prerequisites of a collaboration. In practice however, building consensus on the agenda setting element and meeting the prerequisites, is an iterative process based on interaction. This means that although the stakeholders perceive a shared definition as the starting point, many other aspects are important to pay attention to as they influence the process to get there. Fortunately some A15 stakeholders do recognize the importance of diversity and interdependency in this context, but in contrast with literature these stakeholders see the different perspectives or ideas of a long term vision as the starting point to meet the prerequisites. The following example illustrates the complex correlation between reaching a shared problem definition and meeting the prerequisites.

Stakeholders need to become aware of their interdependency in order to meet the prerequisites and be able to develop a shared long term vision. The process of realizing a shared vision however, forces the stakeholders to put their interests on the table, which might help to make stakeholders more conscious and aware of their interdependency. Being aware of the interdependency and building consensus on a shared long term vision are intertwined with each other.

Although the development process of a shared problem definition can not be seen apart from other collaboration elements, it can be classified as a critical success factor. Without a shared A15 perspective sustainable mobility on the A15 cannot be realized. Furthermore a shared problem definition is expected to provide opportunities to tackle the financial constraints and internal organization bottlenecks that exist. In case of the A15 the perceived importance of a shared problem definition by the stakeholders is a major opportunity to reach a shared definition, as it will get a lot of attention. Other opportunities are the aspects highlighted by the experiences of some stakeholders: interests, trust, personality, clarity about definitions, and a collaborative dialogue. According to the stakeholders a shared problem definition is the best foundation to manage the transition towards sustainable mobility. For that reason, according to the stakeholders, the opportunities should also be used to reach agreement on the definition, instead of reaching agreement on an A15-regional coalition.

6.6 Summary

Bottlenecks and opportunities for the realization of an A15-regional coalition can be found on the level of prerequisites that need to be met and agenda setting elements that need to be agreed on. The first prerequisite, a needed initiative, is met by the Transumo-project. The other two studied prerequisites are not fully met. The range of stakeholders involved in the Transumo-project is not diverse enough. Several dimensions of the A15 regime are not, or not enough, involved in the project. This bottleneck seems not hard to take away. The negotiation power bottleneck might be harder to tackle. The lack of recognition by the stakeholders of their interdependency causes the economic perspective of the problem to dominate. Although this seems harder to solve, the Transumo-project itself provides opportunities. The informal setting and especially the recognition of the need for a shared problem definition are important in this respect. The development of a shared vision and making stakeholders aware of their interdependency are closely related.

The bottlenecks for a shared long term vision are identified with help of the description of the different A15 perspectives stakeholders have. The discrepancy between the perspectives of the economic related stakeholders and Rijkswaterstaat will be the hardest to reach consensus on. Especially because of the changing responsibilities and resources and the consequences this has for the financial responsibility for infrastructure projects. Besides the awareness of the interdependency, the process experiences stakeholders have provide opportunities, as well as the dialogue aspects of the regional coalition theory. Furthermore all stakeholders agree on the problems air quality causes, which is a major opportunity to get stakeholders talking.

According to the internal organization stakeholders agree on the need for an intense form of collaboration. The structure and the need for a new collaboration is point of discussion. The importance stakeholders give to a shared problem definition partly causes this discrepancy. Although a shared problem definition can be classified as a critical success factor to reach sustainable mobility on the A15, stakeholders should not forget to pay attention to the surrounding elements. Especially the prerequisite bottlenecks are relatively easy to tackle and when tackled, they might prove to be valuable opportunities to reach a shared definition and by that manage the transition towards sustainable mobility on the A15.

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

“What is the potential of regional coalitions as a transition management tool and what are the major governance challenges in the process towards sustainable mobility on the A15 in the Rotterdam region, based on the opportunities and bottlenecks for a regional coalition that can stimulate a transition towards sustainable mobility on the A15?” The answer to this main research question is discussed in this chapter in two parts. As the question indicates, the governance challenges follow the answers on the sub questions directly; the potential of regional coalitions on the other side is more indirectly supported. The research is case specific and for that reason the potential of an A15-regional coalition can be given based on the research, but for a more general conclusion the A15 case needs to be representative for other regions that need a transition managed. Chapter 3 described why this is the case.

This chapter also discusses the recommendations for further research and the Transumo-project. The major governance challenges provide a good point of departure for the organization and agenda setting of the Transumo-project. These recommendations however, could also be useful for other existing or future collaborations in the region. The recommendations for further research are based on the conclusions on the potential of regional coalitions.

7.2 Potential of regional coalitions to manage a transition

Theoretically regional coalitions seem very promising as a transition management tool. Regional coalitions are problem driven and try to create a problem definition that is adopted by the different players. It has the long term vision needed and it is a multi-actor process. When they work well, regional coalitions are able to accommodate the participation between the stakeholders and develop understanding of their interdependency needed to develop an intense form of collaboration. Experiences taught that often the intensity of collaboration caused projects to fail. According to the literature, regional coalitions also have the advantage that ideas exist on how a collaboration should be organized to make it work; tools developed in the context of transition management are lacking at this point. Although these tools do recognize the need for the involvement of many stakeholders, regional coalition theory makes this more explicit by saying a diverse group of participants is needed and that it should be as diverse as the issue at hand. The need for interdependent stakeholders and a dialogue

based on reciprocity, relationships, learning, and creativity also characterize the ideas about regional coalitions.

The potential of this tool, however, not only depends on these theoretical aspects. The chances that a regional coalition will develop in a practical situation are also an important indicator. The opportunities and bottlenecks of an A15-regional coalition help to get a feeling at this point. Both the regime analysis of national highway 15, as the problem perspectives of the stakeholders present in the regime, indicate that a transition towards sustainable mobility is in the take-off phase on the A15. In the context of the Transumo-project a diverse group of regime players started talking on the need for sustainable mobility; it can be characterized as a niche development. A regional coalition has not developed yet in this case, but an initiative is taken. This makes it a very useful situation to investigate the development chances a regional coalition has.

Many bottlenecks exist, but also many opportunities are around to tackle them. Of all bottlenecks, the discrepancy between the different A15 perspectives will be hardest tackle. At the same time, a shared problem definition is identified as being most important by many A15 stakeholders. A well working regional coalition provides opportunities to develop a shared vision on the problem. According to experiences of the stakeholders however, developing a shared problem definition is more important than developing a particular sort of collaboration. In other words, an intense form of collaboration is more likely to evolve when a shared idea is agreed on, than that a shared idea evolves out of a form of collaboration that is arranged. The experiences of Incomaas and RIL also illustrate the importance of a shared problem definition. A shared problem definition is also expected to reduce the other bottlenecks or make them easier to handle. However, stakeholders need to be aware of the need for a certain level of formalization within a collaboration.

A shared problem definition seems a critical success factor to manage transitions. The potential that such a shared vision can be agreed upon seems more useful in the context of transition management than the potential of a regional coalition to develop. Meeting the prerequisites of a regional coalition and meeting the dialogue elements that characterize a collaborative process however, increase the potential of a shared definition to develop. In that sense the ideas about regional coalitions are a very useful addition to the development of transition management tools, because transition management tools try to come to a broadly adopted problem definition, but the process and important aspects to do that are not well described.

In case of the A15 the Transumo-project provides opportunities to meet the prerequisites of a regional coalition. The informal setting of the project and the willingness of most stakeholders to perform an objective problem analysis make it a good setting to develop shared ideas. For these reasons the chances that these ideas will develop, related to the A15 in the Rotterdam region, are positive, but the stakeholders do

differ on what the follow up of an agreement on the problem definition should be. As the A15 it is already difficult to forecast the structure of a follow up, it is even harder to do so on a more aggregate level. What can be aggregated, is that a diverse as possible group of stakeholders, interdependency between them, trust, clarity about definitions, more attention for interests than opinions, reciprocal relationships, a creative and learning process, an informal setting, and an objective problem analysis are important aspects to improve the development process of a shared problem definition.

Summarizing, an A15-regional coalition does have potential to manage a transition towards sustainable mobility. Opportunities exist to meet the prerequisites and agree on the agenda setting elements. The most attention however should be given to the development of a shared problem definition. Although regional coalitions do have potential, a shared problem definition is a critical success factor for transition management. How to realize agreement on a definition is not well described in literature; transition management theory only says it is needed to create a problem definition that is adopted by the different players, but it does not explain how this can be created. Regional coalition theory provides valuable inputs at this point as well as the experiences of the A15 stakeholders.

7.3 Major challenges for sustainable mobility on the A15

Creating a shared problem definition among a diverse group of stakeholders is the most important governance challenge in the process towards sustainable mobility. The A15 perspectives of the different stakeholders differ. The policy and planning making stakeholders see accessibility, a lack of alternative routes, and air quality as the major problems on the A15, except for Rijkswaterstaat, which has a much shorter scope. More economic related stakeholders also see accessibility and a lack of alternatives as a major problem, but the air quality and other environmental aspects are not felt as important. The share of passenger traffic on the contrary is also felt as a problem by some of them. Environmental and equity stakeholders of course have a more environmental related perspective. The solution perspectives of the stakeholders correspond with these problem perspectives, resulting in a major challenge to get Rijkswaterstaat and the more economic related stakeholder on one line, while respecting the perspectives of the environmental and equity related stakeholders at the same time. In order to meet this major challenge other challenges need to be dealt with.

First of all a diverse group of stakeholders has to be involved in the process towards sustainable mobility. The complex governance of the A15 regime makes it even more important to do so. When the diversity is too low sustainable mobility in its full range will be hard to realize. Economic aspect, environmental aspects, and equity aspects all need to be present in a sustainable mobility system. Another result of a low diversity might be an increase of bureaucratic bother. The polder culture in the Netherlands provides many

opportunities for stakeholders not involved to object to plans, which will slow down the process.

Making stakeholders more aware of their interdependence is the second important challenge. Recognizing interdependency is important because it makes stakeholders aware that it is in their own interest to work together and to offer something to others, because others have something to offer them. The A15 stakeholders do not recognize their interdependency yet. This results in a dominating economic perspective on the A15 problems, because the environmental and equity related stakeholders are often left out. Historically the economic perspective also dominated, but as the boundaries of the regime are reached, all sustainable mobility criteria need to be met. The interdependency challenge is closely related to the challenge to realize a shared problem definition, they reinforce each other.

A third challenge is to formalize a collaboration when a shared definition is reached that can continue the work. Stakeholders focus on the shared vision and seem to forget what has to come next. This is partly caused by the positive experiences of some stakeholders that agreement on the problem definition makes it much easier to agree on other agenda setting elements. Literature and historical experiences on working together, however, state that a follow up is very important as well. The last important challenge is to use the opportunities that are present. Experiences of stakeholders and initiatives such as the Transumo-project provide chances that can make the difference between sustainable mobility or not.

7.4 Recommendations

7.4.1 Recommendations for further research

Further research is needed on how a shared problem definition can be reached. In the context of transition management this is very valuable, because transition management theory only explains *that* and not *how* a problem definition adopted by different players must be created. The conclusion on the potential of regional coalitions provides a valuable input for this suggested research. In this research however, some choices have been made in what to investigate and what not. For that reason it would also be valuable to pay attention to the elements of regional coalitions that are not taken into account. Further research on who can best take the initiative for collaborations and how or if sufficient institutional capability is present in the Netherlands will give more insights in the potential of regional coalitions. Taking the niche players into account will have the same effect. This research could not identify a significant advantage of regional coalitions in favor of other transition management tools or intense forms of collaboration. Further research on the two prerequisites and a more diverse group of stakeholders might result in a different conclusion. The conclusion on the importance of realizing a shared problem definition however, is not expected to change. Based on the experiences of the

A15 stakeholders it is also expected that this conclusion will not change when the same kind of research is performed based on a different case study, which could also be a valuable investigation. The conclusion on the potential of a regional coalition may differ when another case is investigated.

7.4.2 Recommendations for the Transumo-project

The Transumo-project provides opportunities to tackle the existing bottlenecks and meet the challenges for sustainable mobility on the A15. To benefit the most from these opportunities the project should be aware of some bottlenecks. The diversity of the stakeholders involved can be improved. Policy makers on a national level, users, interest groups, and existing collaboration are not involved. Furthermore only one process supporter is participating at the moment. It is also important to make the stakeholders more aware of their interdependency. The informal setting can help to realize this, but a process coordinator of the project needs to initiate it; it is too easy to keep it the way it is. The process coordinator should also clarify the expectations of the different stakeholders. Furthermore attention should also be paid to the roles and levels of involvement of the stakeholders, as that is not clear yet for all stakeholders. This way the Transumo-project might help to get a little further on the transition path towards sustainable mobility on the A15.

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ABBREVIATIONS, TRANSLATIONS, AND JARGON

Abbreviations

A15	National highway 15
CO ₂	Carbonate dioxide
EU	European Union
EZ	(ministry of) Economic Affairs (<i>(ministerie van) Economische Zaken</i>)
GDP	Gross Domestic Product
GRP	Gross Regional Product
KCT	Knowledge Centre for Transitions
LNV	(ministry of) Agriculture, Nature, and Food quality (<i>(ministerie van) Landbouw, Natuurbeheer en Voedselkwaliteit</i>)
MER	Environmental effect report (<i>Milieu Effect Rapportage</i>)
MIT	Multi-year program infrastructure and transport (<i>Meerjarenprogramma Infrastructuur en Transport</i>)
NMP4	Fourth National Environmental policy Plan (<i>Nationaal Milieubeleidplan 4</i>)
NO _x	Nitrogen Oxides
OEEI	Research program economic effects infrastructure (<i>Onderzoeksprogramma Economische Effecten Infrastructuur</i>)
PIC	Port Industrial Complex
PKB	Planologische Kernbeslissing
PM	Particulate Matter
PMR	Project Mainport Rotterdam
PVVP	Provincial Traffic and Transport Plan (<i>Provinciaal Verkeer- en Vervoersplan</i>)
RVVP	Regional Traffic and Transport Plan (<i>Regionaal Verkeer- en Vervoersplan</i>)
SVV	Structure scheme for traffic and transport (<i>Structuur Schema Verkeer en Vervoer</i>)
TEN	Trans European Network
TNO	Dutch research institute (<i>Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek</i>)
V&W	(ministry of) Transport, Public Works, and Water management (<i>(ministerie van) Verkeer en Waterstaat</i>)
VROM	(ministry of) Housing, Spatial Planning, and the Environment (<i>(ministerie van) Volkshuisvesting, Ruimtelijke Ordening en Milieu</i>)
WBCSD	World Business Council for Sustainable Development
WSSD	World Summit on Sustainable Development

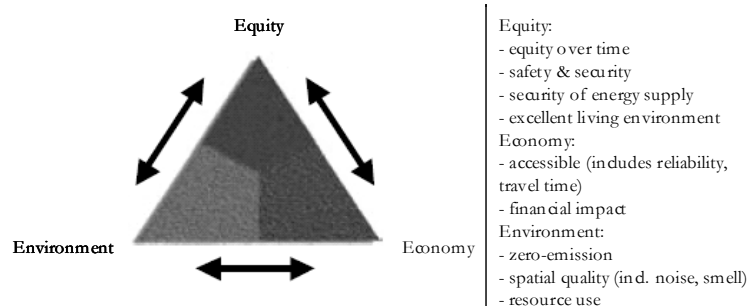
Translations

Bestemmingsplan	Local spatial plan
Betuwelijn	Name for a new freight transport railway
Fijn stof	Particulate Matter
Maasvlakte 2	Name for a second port landfill

Mainport	Main port for the Netherlands
Ontwikkelingsplanologie	Development planning
Planologische Kernbeslissing	Procedure for major infrastructure projects that arranged public involvement
Polder cultuur	Bureaucratic bother that characterizes many Dutch planning and policy making trajectories
Proeftuin	Experimenting garden
Raad van State	Council of State, which advises the Dutch government and parliament on legislation and governance and is the country's highest administrative court. [Raadvanstate]
Rijkswaterstaat	Executive agency of the ministry; Part of the Ministry of V&W responsible for planning, building, and maintaining the road network
Rijksweg	National highway
Rijkswegenplan	National highway plan
Ruit	Rectangular beltway
Studie voor den algemeenen uitleg van Rotterdam	Study that describes a general plan for the City of Rotterdam

Jargon

Regional coalition	A very intense form of working together used to better fulfill the complex job of public planning
Sustainable mobility	For the purpose of this report the sustainability criteria 'equity', 'economy', and 'environment', together with indicators that are part of it, are more useful than an exact definition



Transition	Transformation process in which a society or a complex subsystem of society changes in a fundamental way over an extended period of time [Rotmans et al., 2000 a]
Transumo	<u>Transition</u> towards <u>sustainable mobility</u> : a consortium of both public and private organizations that works on innovations that have to lead to a more efficient transport and infrastructure system, based on a research program

APPENDICES

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APPENDIX A

TRANSUMO-PROJECT

The Transumo-project is expected to be accepted by Transumo at any time. The Transumo consortium holds six types of projects, see Figure A 1. The Transumo-project is supposed to become a *proeftuin* (experimenting garden). A proeftuin is a concrete case that covers more than one cluster and can be used to test and experiment with innovative ideas developed in the case itself and in the regular cluster programs of Transumo. [Transumo, 2004] The Transumo-project has the closest link to the freight traffic & logistics cluster, but ideas developed in other clusters might also affect the sustainability on the A15.

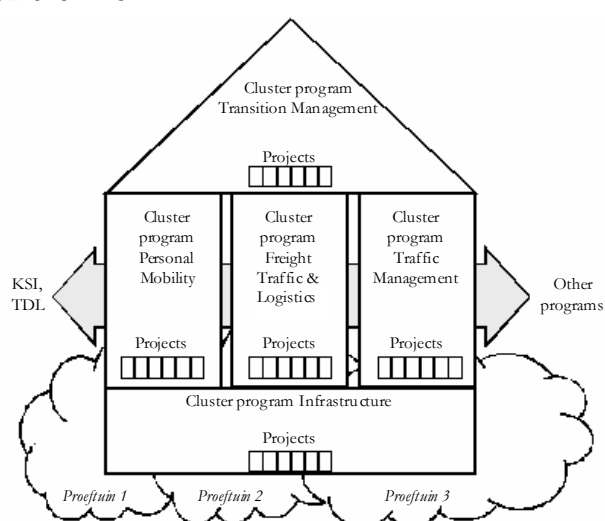


Figure A 1: Structure Transumo consortium [Transumo, 2004]

The Transumo-project has both a societal and academic challenge of which the first one can be seen as the starting point. The expected accessibility problems on the long term as well as the resulting pressure on the residential areas, together with the expected air quality, noise, and safety problems form this societal challenge. To keep the port accessible and to improve the spatial quality, the project focuses on the development of far reaching measures on a broad scale. The recognition that collaboration between public and private organizations is necessary to realize optimal solutions gives the Transumo-project the right to exist. A broad range of participants brings different expertise and knowledge into the project, which means that both practical as well as academic knowledge is present in the project. The range of participants consists of: port industries (e.g. Shell, Esso, Lyondell, P&O Nedlloyd, ECT), the Port authority, governments (Rijkswaterstaat, the Stadsregio, Province of Zuid-Holland, DCMR), societal organizations (e.g. the Environmental federation Zuid Holland), and research institutes (Eramus University Rotterdam, Delft University of Technology, TNO). The research institutes have to bring academic knowledge and expertise into the project. For that reason, one or two PhD students should investigate the complexity of implementing

technologies and the complexity of the governance situation. The practical developed ideas and processes are supposed to form a good reference in that regard. [Transumo-project proposal] Figure A 2 summarizes the project proposal graphically.

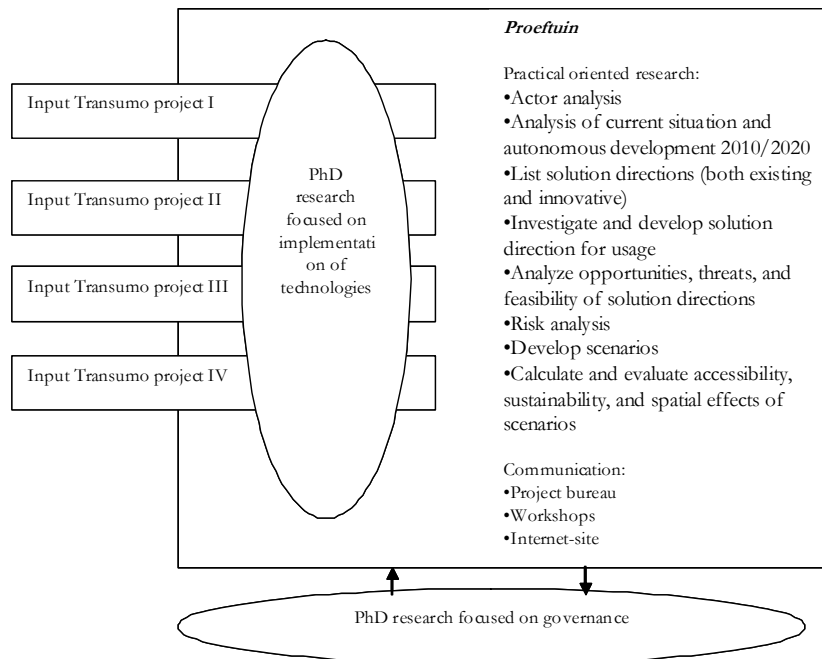


Figure A 2: Summary Transumo-project [Transumo-project proposal]

APPENDIX B

MAPS OF THE A15 IN THE ROTTERDAM REGION



Figure A 3: Maps of the A15 in the Rotterdam region

APPENDIX C

A15 RELATED POLICIES

Mobility policies

On European, national, provincial, and regional scale mobility policies affect and discuss the A15. Within the European context the Trans-European Networks (TENs) are important; the A15 is part of the trans-European road network. On the national level the Nota Mobiliteit describes the plans for the national highway system on headlines. Detailed plans and projects are explained in the multi-year program infrastructure and transportation (MIT); the planned road works between Maasvlakte and Vaanplein are described in that respect. The Provincial Traffic and Transport Plan (PVVP, *Provinciaal Verkeer- en Vervoersplan*) can not directly plan the developments of the A15. The quality of the secondary road network, however, can influence and is influenced by the development of the A15. The ideas of the Regional Traffic and Transport Plan (RVVP, *Regionaal Verkeer- en Vervoersplan*) have the same level of influence as the provincial plans.

Spatial policies

Mobility policies are more and more dependent on the spatial policies. The spatial policies important in the context of the A15 are the Nota Ruimte, RR2020, and the developments around Stadshavens. The Nota Ruimte is important because it describes the general ideas and plans for the public space. RR2020 gives a more detailed idea of the spatial planning of the region. It reserves space for infrastructure and selects locations for residential and recreational areas. The most detailed spatial plans are the bestemmingplannen; all municipalities have one of more of such plans that together cover the whole municipal area. Rotterdam has several bestemmingsplannen; Stadshavens is such a local spatial plan. Stadshavens is an area that was formerly used as port, but will be transformed into an area with more mixed functions. The plans for this transformation are expected to affect the traffic stream on the A15.

Port policies

The A15 is a major freight gateway for the port of Rotterdam, the port policies for that reason affect the road developments. Three port related policies are important: the priority the Port authority gives to the A15, Project Mainport Rotterdam (PMR), and construction of the Betuwelijn. The port policy 'Havenplan 2020' identifies the A15 as one of the five spatial priorities. The first spatial priority is the construction of Maasvlakte 2. This expansion of the port is part of PMR, of which new nature and recreational areas are part as well. Figure A 4 shows the situation with and without Maasvlakte 2. The third important development is the Betuwelijn. This freight railway from the Maasvlakte towards Germany improves the rail capacity of the port, which might improve the accessibility on the road as well because of a modal shift. In 2007 the

first freight will travel over the Betuwelijn, but there is a lot of discussion about the actual performance of the railway. [Betuweroute]

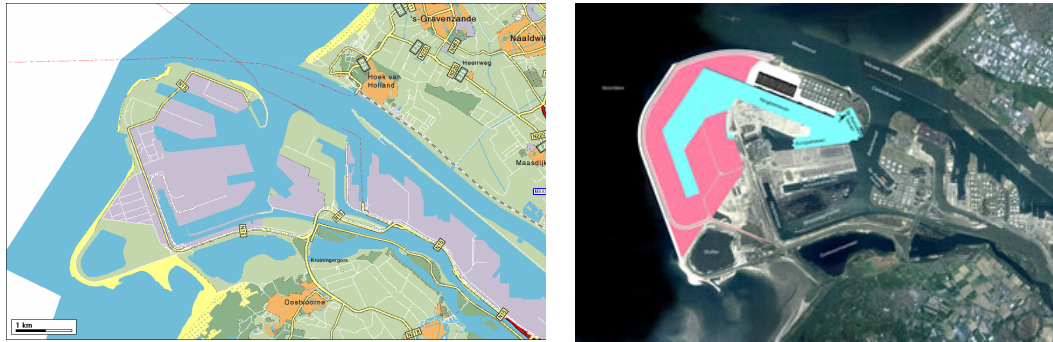


Figure A 4: Situation with and without Maasvlakte 2 [Maasvlakte2]

Economic policies

The port of Rotterdam is of economic importance for the Dutch economy. The accessibility of the port affects this. The national economic policy document 'Pieken in de Delta' classifies the port as one of the two mainports of the country and classifies infrastructure bottlenecks of economic importance. These classifications make that improvements of the A15 are supported from an economic point of view. On a more regional scale the same arguments are used to get the A15 improved. [EDBR, 2005]

Environmental policies

Environmental policies in general and environmental policies in relation to transportation are important with respect to the A15. Of the general policies the EU air quality norms are the most important by far. The Netherlands has not been able to meet the norms for particulate matter set for 2005; delays and cancellations of construction plans are the result. Environmental policies in relation to transportation, of importance for the A15, focus on sustainable mobility. The European Commission indicates that Europe is at a crossroad and that we should take the sustainable exit. "Every day 7500 kilometers of European highways are blocked by traffic jams, and congestion on roads and at airports adds 6% to the EU's fuel bill with corresponding rise in pollution levels." [European Commission b] On the national level the Fourth National Environmental policy Plan (NMP4, *Nationaal Milieubeleidplan 4*) even recognizes the need for a transition towards sustainable mobility.

Integral projects

The A15 is talked about in many different kinds of policies. This broad and complex situation makes the A15 an interesting case to look at. The Transumo-project is one example of an integral project that not focuses on one specific sector policy. Recently the A15 is also used as a proeftuin in the Habiforum program, a research programme that focuses on new types of spatial planning. Together with Habiforum Charlois, a sub municipality of Rotterdam, TNO, and Erasmus University Rotterdam performed a study on how the A15-zone near Charlois could be integrated. [Bouma et al., 2004]

APPENDIX D

RIJKSWEGENPLANS ENLARGED

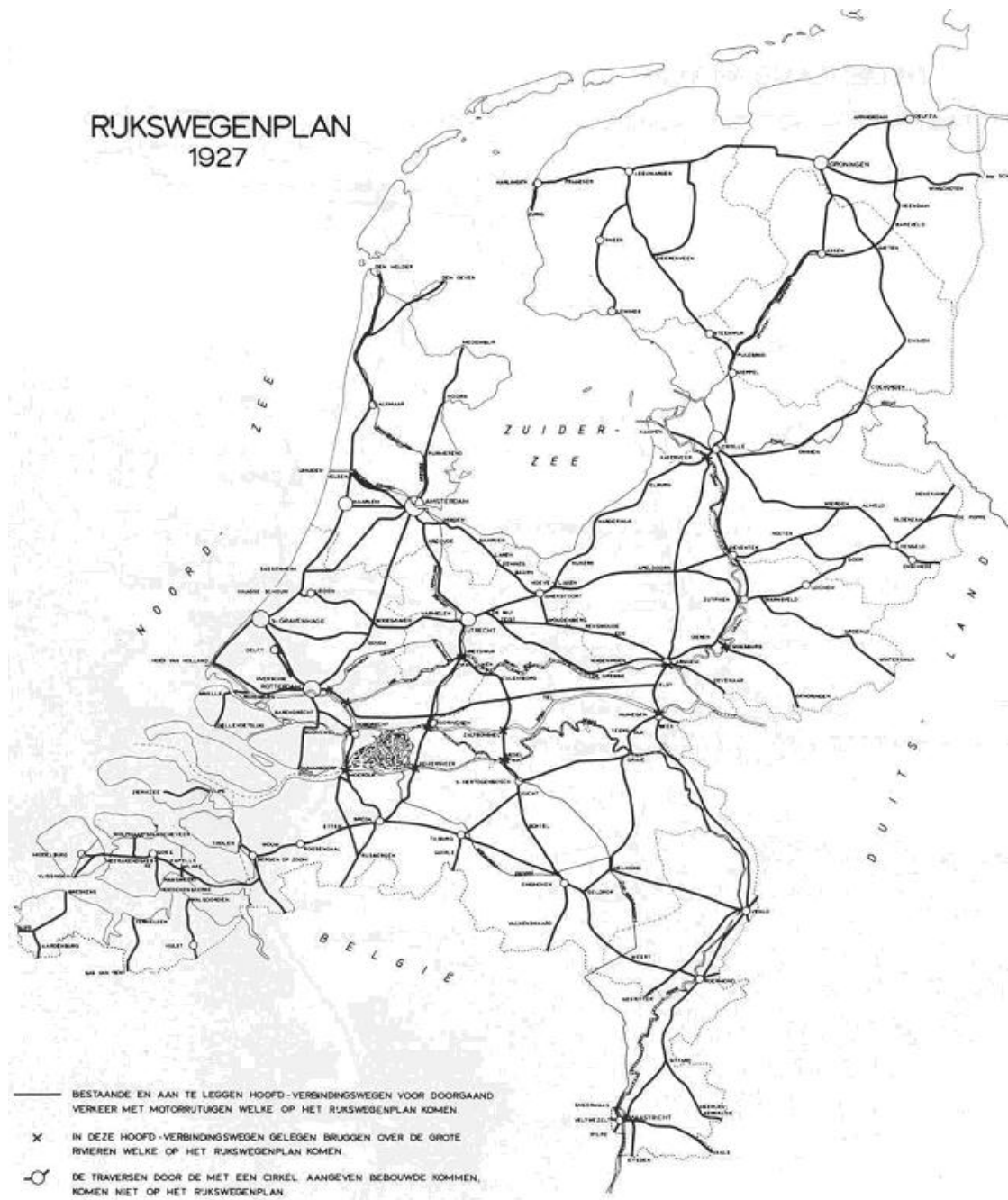


Figure A 5: Rijkswegenplan 1927 enlarged

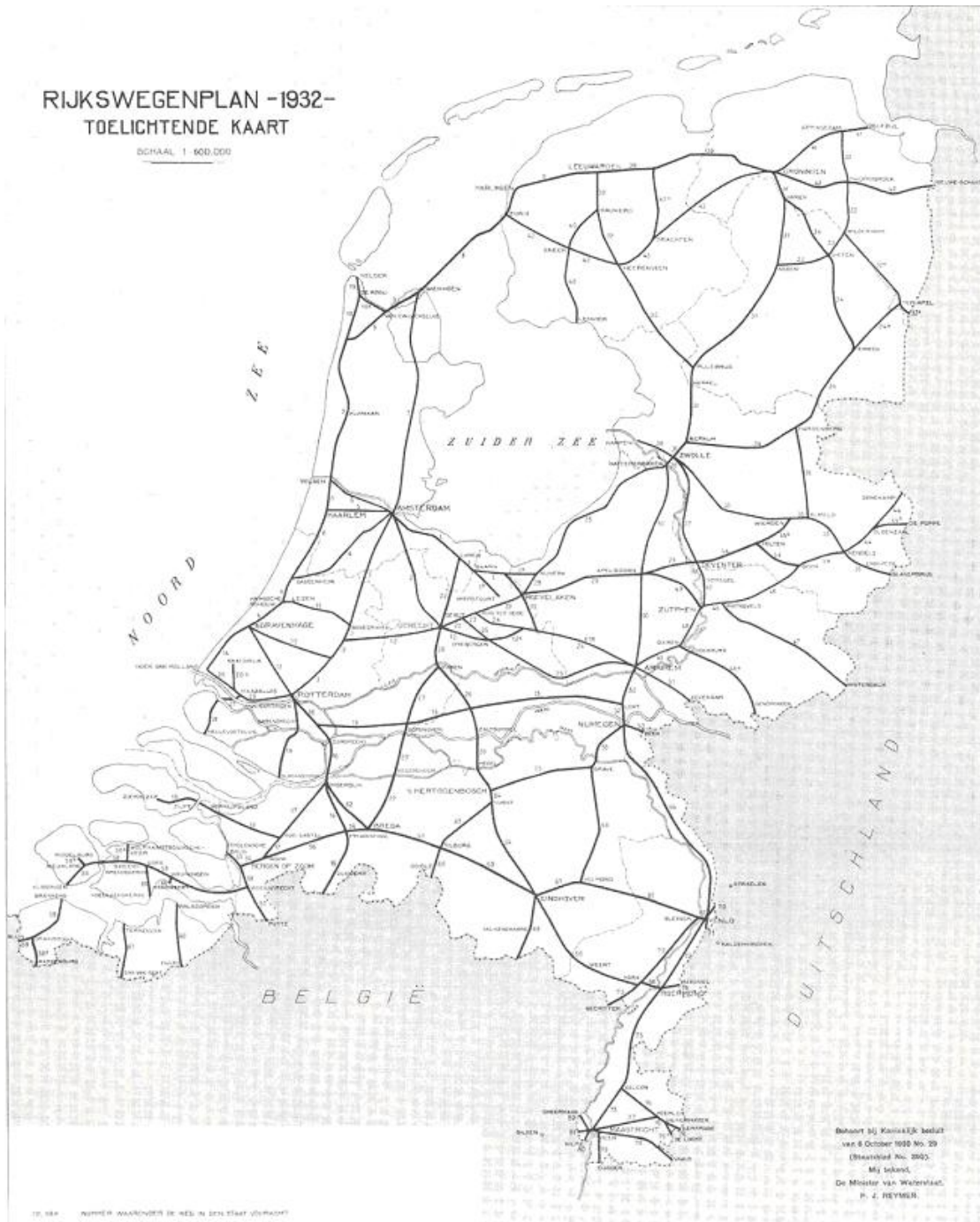


Figure A 6: Rijkswegenplan 1932 enlarged

RUKSWEGENPLAN
1938

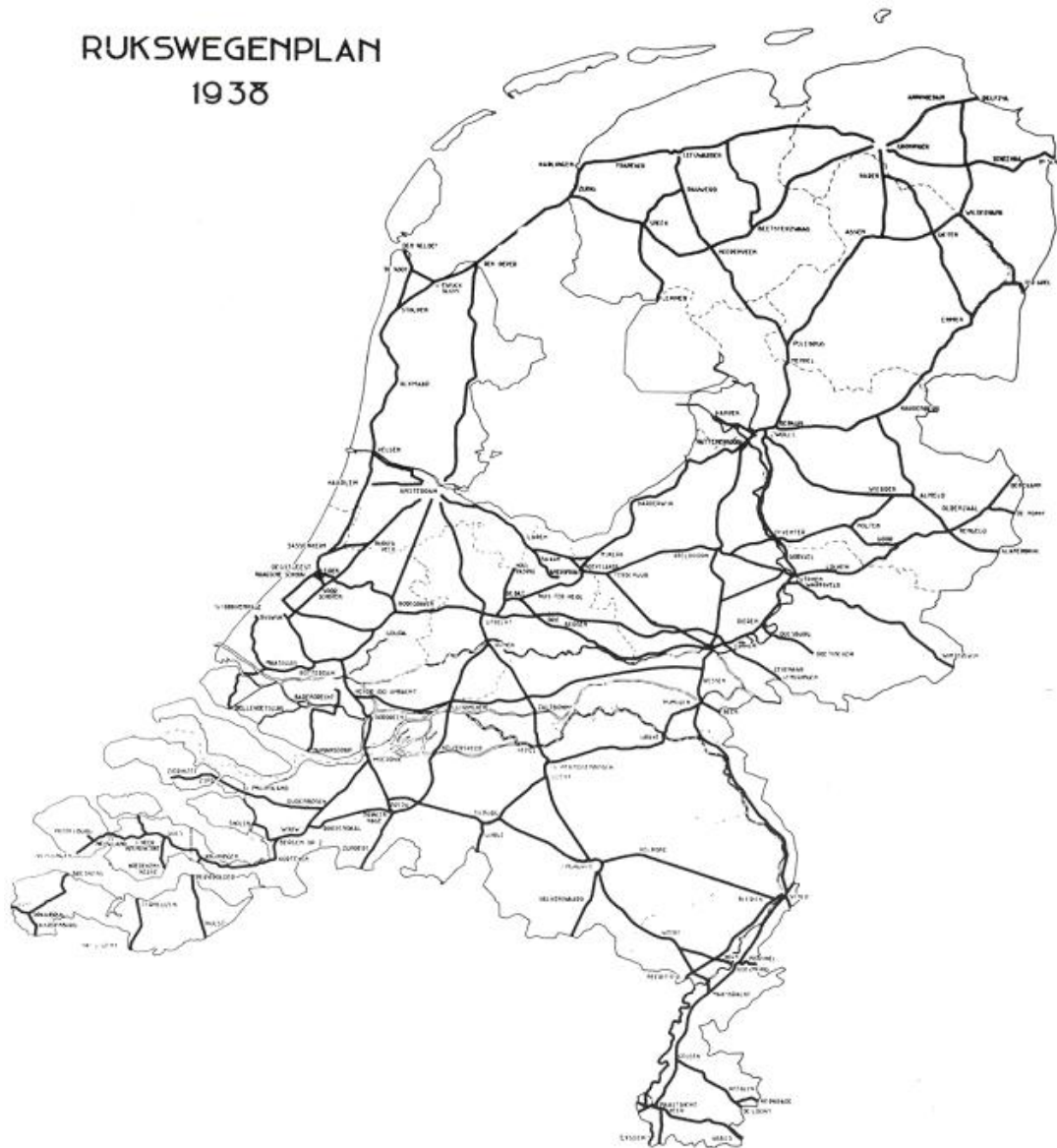


Figure A 7: Rijkswegenplan 1938 enlarged

RIJKSWEGENPLAN 1948



Figure A 8: Rijkswegenplan 1948 enlarged

RIJKSWEGENPLAN 1958

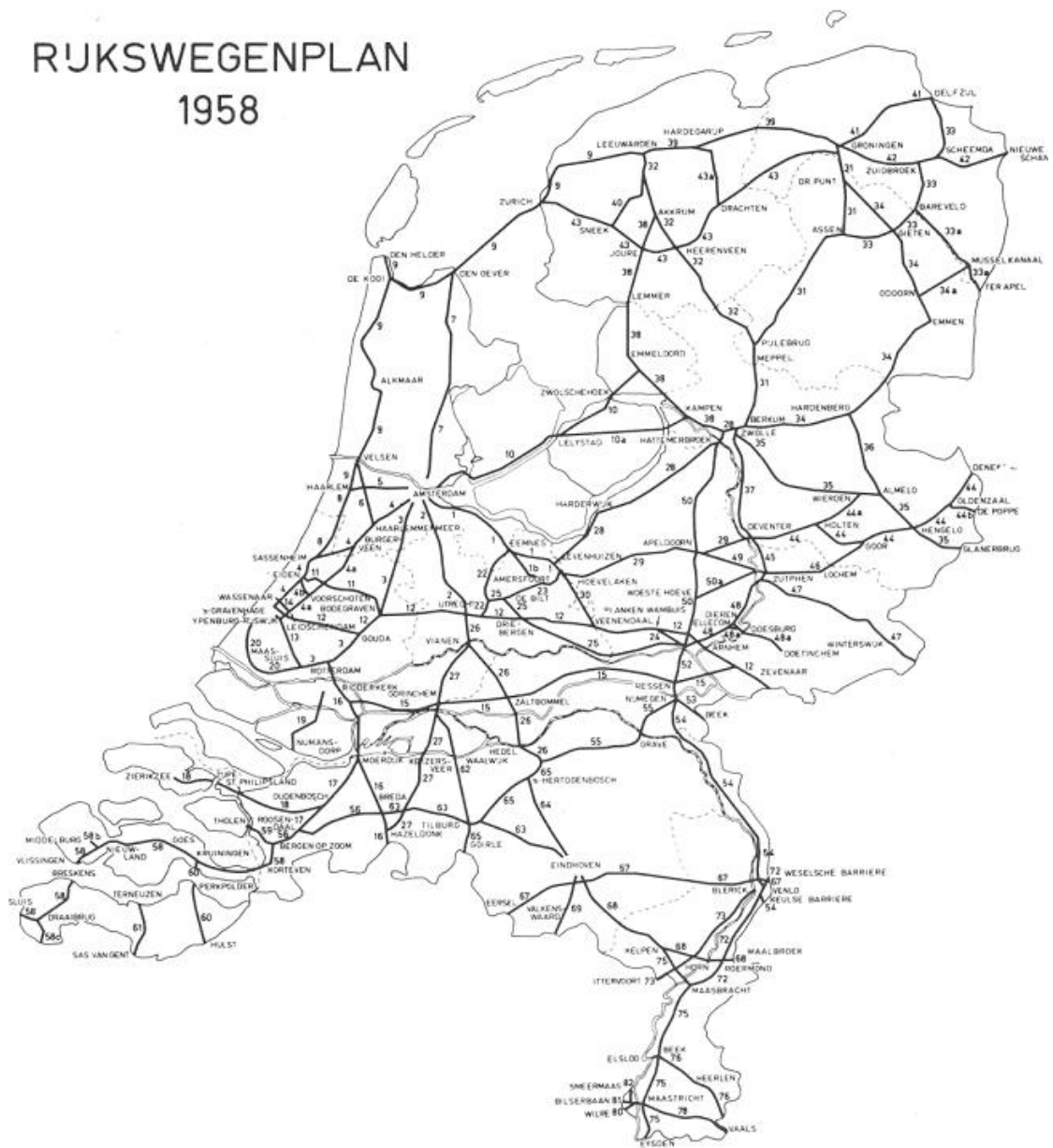


Figure A 9: Rijkswegenplan 1958 enlarged

RJKSWEGENPLAN 1968



Figure A 10:Rijkswegenplan 1968 enlarged

HOOFDWEGEN VAN HET STRUCTUURSCHEMA VERKEER EN VERVOER 1976
IN RELATIE TOT HET RIJKSWEGENPLAN 1968



Tweede Kamer, zitting 1976–1977, 14 390, nrs. 1–2

Figure A 11: Rijkswegenplan 1976 enlarged

RJUKSWEGENPLAN 1984



Figure A 12: Rijkswegenplan 1984 enlarged

APPENDIX E

MODAL SPLIT PORT PRODUCT GROUPS

The port of Rotterdam handles four types of products, wet bulk, dry bulk, containers, and general cargo. In 1995 bulk was handled most, but the prognoses for 2020 forecast a large growth of containers and general cargo; Table A 1 shows this. For both 1995 and 2020 the Port authority also forecasted the modal split per product, as well as for all good together; Figure A 13 gives these modal splits.

Table A 1: Handled goods in million tons [Port of Rotterdam, 2003; 69]

	Wet bulk	Dry bulk	Containers	General cargo	Total
1995	103	93	33	38	267
2020	141	110	117	91	459

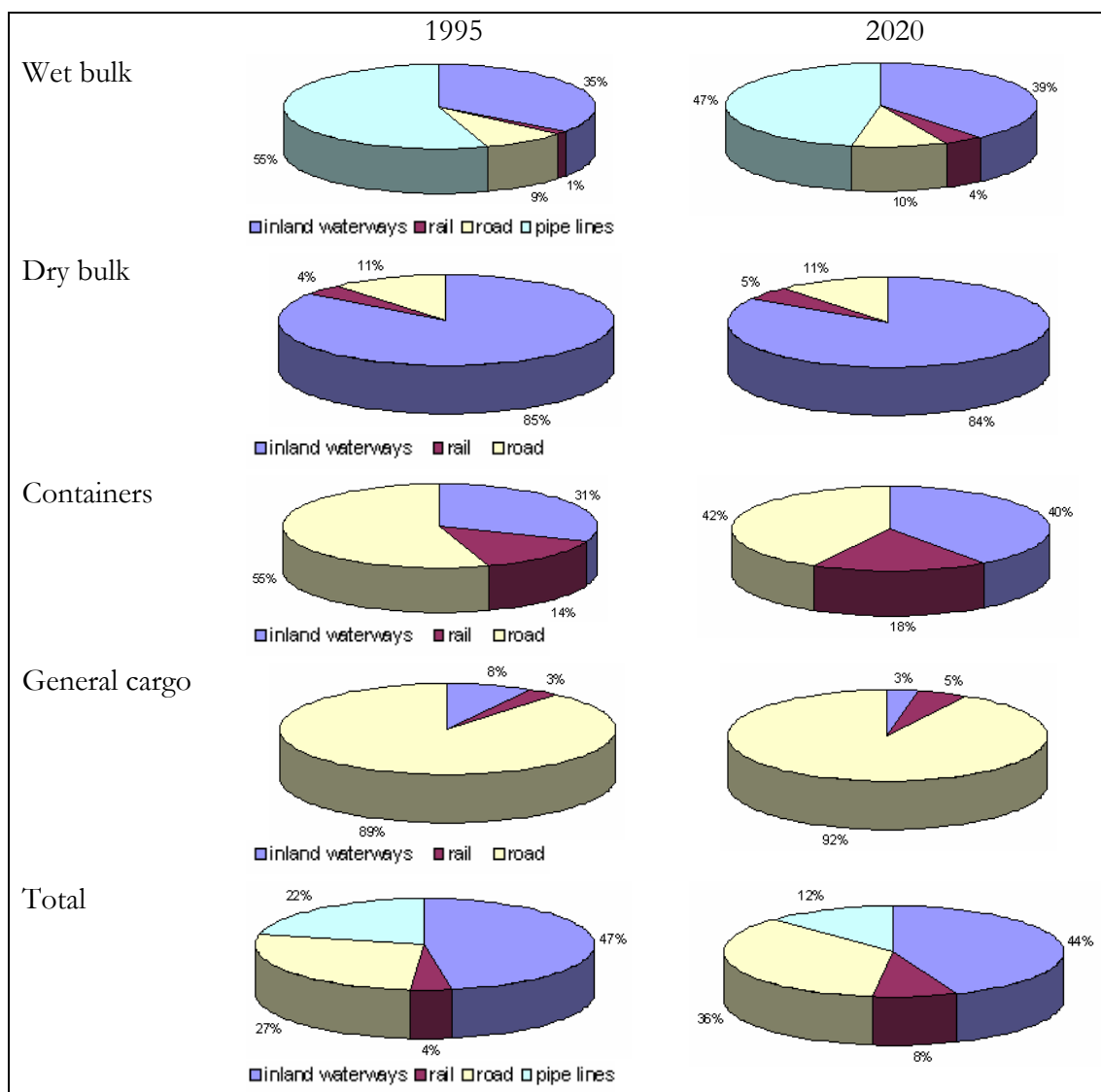


Figure A 13: Modal split port product groups [Port of Rotterdam, 2003; 28-32]

The largest share of containers and general cargo is transported by road. When Table A 1 and Figure A 13 are combined, the share of these product groups of all road transport can be calculated. In Table A 2 it can be seen that because of the expected growth in containers and general cargo and because of their modal split, the share of these product groups will grow. The expected modal shift of containers from road to inland waterways and rail cannot compete with the growth of containers.

Table A 2: Share of product group of goods transported by road in %

	1995	2020
Wet bulk	13	9
Dry bulk	14	8
Containers	25	31
General cargo	47	53

APPENDIX F

INTRODUCTION A15 RELATED STAKEHOLDERS

F.1 Interview respondents

ANWB

The Royal Dutch Tourist Club ANWB is founded in 1883. They look after the interest of the 3.8 million members in the fields of traffic, transportation, recreation and tourism. In this process special attention is given to the environment and places of cultural and historical value. [ANWB, 2005]

DCMR

“The DCMR Environmental Protection Agency Rijnmond is the Regional Environmental Protection Agency of the local and regional governments operating in the larger Rotterdam region. It is the governmental organisation for environmental licensing, inspection and enforcement and has large experience and expertise in regional environmental protection.” [DCMR]

Deltalinqs

“Deltalinqs represents both the port and industrial companies in Rotterdam in important issues of common interest. They focus on strengthening the competitive position and the sustainable development of the port and industrial area, and advancing the political and social support for the activities of the participants. Deltalinqs represents approximately 600 companies active in the main port of Rotterdam.” [Deltalinqs]

dS+V

DS+V is the spatial planning department of the Rotterdam municipality. They develop the construction, spatial planning, and traffic and transport policy for the city. DS+V has a long time horizon, but has an eye for today’s problems as well. [DSV]

ECT

ECT is a large container terminal operator in Europe, handling almost three-quarters of all the containers that pass through the port of Rotterdam. In the port of Rotterdam they have three terminals, the ECT Delta Terminal at the Maasvlakte, the ECT Home Terminal, and the ECT Hanno Terminal in the Waalhaven/Eemhaven. ECT strongly focuses on the development of a network of inland terminals to facilitate optimum intermodal transport between Rotterdam and the European hinterland. [ECT]

Environmental federation Zuid Holland

The Environmental federation Zuid Holland is an independent organization that works for a qualitative and quantitative good environment. They support sustainable

development and quality improvement of the living environment to reach equilibrium between economic, environmental, and equity. The Environmental federation tries to link individuals and other organizations to develop a sustainable future. [Milieufederatie]

Gemeentewerken

Gemeentewerken is a department of the Rotterdam municipality. It is an operating agency that takes care of the infrastructure and public space of the city. [GW a] The sub division of Gemeentewerken of most important in the context of this report is the engineering department. This consultancy agency has a lot of knowledge about metropolitan issue and is familiar with governance processes. [GW b]

NDL

Nederland Distributie Land (NDL) is a private, non-profit organization providing matchmaking services for logistics partnerships in Europe. NDL represents the logistics sector in the Netherlands and helps international companies to make a smooth entry into the European market. [NDL]

Port authority

“The aim of the Port authority is to strengthen the port and industrial complex in Rotterdam. As manager of the port, the Port authority leases sites to businesses and bears responsibility for the efficient and safe handling of shipping traffic. They also take care of the infrastructure of waterways, roads, quays and other facilities for users of the port area. In addition to its traditional role as ‘lessor of commercial sites’, the Port authority is also an international service provider, stimulating and facilitating economic activity in the port area.” [Portofrotterdam c]

P&O Ferries

P&O Ferries is a shipping agency with lines Rotterdam to Portsmouth and Hull. Since 15 October 2002 P&O Ferries exists; the English Channel and North Sea ferry operations of the P&O Group merged. [Poferries]

Province of Zuid Holland

The provincial administration of the Province of Zuid Holland is the second level governance in the Netherlands. The province has 3.5 million inhabitants on an area of 2900 km². This most densely populated province within the Netherlands is very important for the Dutch economy; the port of Rotterdam is one of the reasons why. [PZH a]

Rijkswaterstaat Zuid Holland

Rijkswaterstaat Zuid Holland is the executive agency of the Ministry of Transport, Public Works and Water Management. They are responsible for the planning, building, and maintaining the road network in the Province of Zuid Holland. Furthermore they look

after the waterways of the province and protect the country against the water by maintaining water specific infrastructure. [Rijkswaterstaat]

ROM-Rijnmond

“ROM-Rijnmond is a partnership between the Dutch Ministry of Transport, Public Works and Water Management, the Ministry of Housing, Spatial Planning and the Environment, the Ministry of Economic Affairs and the Ministry of Agriculture, Nature Management and Fisheries, the Province of Zuid-Holland, the Rotterdam Metropolitan Region, the Rotterdam municipality and the other local authorities in the region, the Rotterdam Chamber of Commerce and Deltalinqs. ROM-Rijnmond has a dual objective: to enhance the Rotterdam ‘mainport’ and to improve the quality of life and living conditions in the region.” [ROM-Rijnmond c]

RR2020

RR2020 (*Ruimtelijk plan regio Rotterdam 2020*; spatial plan Rotterdam region 2020) is the regional spatial policy plan for the Rotterdam region. The Province of Zuid Holland and the Stadsregio together develop the plan, which should be working at the end of 2005. The plan described where can be built, where infrastructure should be placed, and where recreational areas are located. [PZH b]

Shell Chemicals

“Shell Chemicals focuses on the production of bulk petrochemicals and their delivery to large industrial customers. The Rotterdam port site of Shell Chemicals is located in Pernis, it is a joint oil refinery/chemicals manufacturing site. At this location, Shell Nederland Chemie BV manufactures lower olefins, methyl tertiary butyl ether, chemical solvents, hydrocarbon solvents, brake fluids and polyols.” [Shellchemicals]

Stadshavens

Development corporation Stadshavens Rotterdam exists since January 2004. The Rotterdam municipality and the Port authority are the two stakeholders. Stadshavens is responsible for a large port transformation project in the port of Rotterdam. [Stadshavensrotterdam]

Stadsregio

The Stadsregio is a regional administration formed by the municipalities of the Rotterdam region. The national government has given this administration responsibilities on the field of traffic and transport, spatial planning, construction, and youth care. [Stadsregio a]

TLN

Transport en Logistiek Nederland (TLN) looks after the interest of their members, freight transporters by road and logistics suppliers. TLN has 6500 members; services are provided on the individual and collective level. [TLN]

Vopak

“Royal Vopak provides independent tank terminal capacity over the whole world to the chemical and oil industries for the storage of liquid chemical products and oil products. Related to this, Vopak also provides a wide range of value-added logistic services, such as tanker shipping, barging and warehousing, independently or in cooperation with strategic partners.” [Vopak a] In the port of Rotterdam Vopak has three chemicals terminals. [Interview reports]

F.2 Other stakeholders

Bestuurlijk Platform Zuidvleugel

Bestuurlijk Platform Zuidvleugel is a collaboration of the Province of Zuid Holland, the city regions of Rotterdam and The Hague, municipalities, and the Ministries of EZ, LNV, V&W, and VROM. The aim is to develop a vision of the social economic and spatial future of the south-western part of the Province of Zuid Holland. [Zuidvleugel]

EVO

EVO is an interest group for freight transporters, receivers, and private transporters in retail trade, the construction, industry, agrarian sector, and business services. EVO tries to improve the accessibility as well as the efficiency of the logistics. [EVO]

Govera

Govera (*GoederenVERvoer Randstad*; freight transport Randstad) is an organization that works together with private companies to solve the freight mobility problems in the Randstad (groups of cities in the western part of the Netherlands). Govera was the initiative of four provinces, Noord Holland, Zuid Holland, Utrecht, Flevoland, and the four departments of Rijkswaterstaat of these provinces. TLN, EVO, and the major cities in the Randstad are partners now as well. [GOVERA]

Nexus

Nexus is a collaboration that tries to improve the accessibility of the Rotterdam region. Since January 2005 Fileplan and Pilot Luteijn Noordflank merged and formed Nexus. Besides the already participating stakeholders, the Stadsregio, Rijkswaterstaat, and the Province of Zuid Holland, also consumer organizations, municipalities, and the industry are involved. [nexusregiorotterdam]

APPENDIX G

INTERVIEW QUESTIONNAIRE *(IN DUTCH)*

G.1 Interview schema

Voorwaarden regionale coalitie	Onderhandelingswaarde	Afhankelijkheid	<ul style="list-style-type: none"> ◦ Wie, wat, waarom ◦ Hoe
		Bereidheid tot onderhandelen	<ul style="list-style-type: none"> ◦ Macht ◦ Onderhandelingsruimte ◦ Bereidheid ◦ Eisen ◦ Ervaringen
Agendasetting	Samenhangende lange termijn visie	Probleem	
		Doelstellingen	
		Oplossingen	
		Definitie duurzame mobiliteit	
	Financiën	Verantwoordelijkheid	Wie, waarom
		Eigen commitment	<ul style="list-style-type: none"> ◦ Mogelijkheid ◦ Verantwoording ◦ Bereidheid ◦ Eisen ◦ Ervaringen
	Zelforganiserend vermogen	Participeren	Wie, waarom
		Participatiegraad	<ul style="list-style-type: none"> ◦ Verwacht ◦ Gewenst (Keuze uit: informeren, raadplegen, adviseren, coproduceren, meebeslissen)
		Initiatiefnemer/trekker	<ul style="list-style-type: none"> ◦ Wie, waarom ◦ Eigen rol ◦ Transumo-project
		Vormgeving	<ul style="list-style-type: none"> ◦ Verwacht type regionale coalitie ◦ Voorkeurs type ◦ Voorkeur structuur algemeen

G.2 Vragenlijst

Allereerst een aantal vragen m.b.t. de A15 en welke rol deze speelt voor uw bedrijf

1. Waar zit voor uw bedrijf het probleem m.b.t. de A15 op de lange termijn? / Wat zou in het belang van het bedrijf veranderd moeten worden aan de A15?
2. Welke gevolgen hebben deze problemen voor uw bedrijf?
3. Heeft uw bedrijf zich doelstellingen gesteld m.b.t. het oplossen van de problematiek zoals u die beschreven heeft?
4. Welke oplossingsrichtingen ziet u/ gaat uw voorkeur naar uit om dit op te lossen?

Om deze problematiek aan te pakken bent u waarschijnlijk afhankelijk van andere partijen, de volgende vragen gaan hierop in

5. Van wie bent u afhankelijk, en wie is van u afhankelijk?; wat betreft die afhankelijkheid?; waarom bestaat deze afhankelijkheid? (denk bijvoorbeeld aan regelgeving, traditie etc.)
6. Hoe wordt op dit moment met die afhankelijkheden omgaan? (niet kan als duurzame mobiliteit bijv. geen issue is)

M.b.t. de afhankelijkheden en de ervaringen met samenwerken:

7. Welke van de genoemde afhankelijkheden leveren problemen op, waar zitten de bottlenecks? (ook op basis van ervaringen met samenwerkingen)

Lijstje maken met onderhandelingspunten, komt voort uit antwoorden op vraag 7

Met dit interview wil ik proberen te achterhalen hoe hardnekkig deze bottlenecks zijn, daarvoor zullen we ze een voor een doorlopen, daarnaast zullen ook de volgende uit de literatuur komende aspecten besproken worden: samenhangende lange termijn visie, financiën, zelforganiserend vermogen

8. Bottleneck afhankelijkheden/ onderhandelingspunten:
 - a. In hoeverre is uw bedrijf bij machte deze afhankelijkheid te bepalen?
 - b. Wat is de onderhandelingsruimte van uw bedrijf in dit geval? / Heeft u iets te geven?
 - c. Wat is de bereidheid tot onderhandelen m.b.t. dit punt? / Heeft uw bedrijf eisen m.b.t. de uitkomst van de onderhandelingspunten? In welke richting?
 - d. Heeft u al eens onderhandeld over deze punten in voorgaande projecten en pogingen tot samenwerken?; waarom is het niet gelukt?; waarop stukgelopen?
9. Samenhangende lange termijn visie:
 - a. Als u ervan uitgaat dat duurzame mobiliteit de enige oplossingsrichting is, wat verstaat u dan onder duurzame mobiliteit en welke duurzame oplossingen zouden uw problemen kunnen oplossen?

- b. Bent u bereid uw definitie van duurzame mobiliteit aan te passen of uit te breiden in het belang van het 'systeem'? Welke eisen stelt uw bedrijf daaraan en waarom?

10. Financiën:

- a. Financiën zijn vaak bottlenecks geweest of hebben een uitgekledde oplossing gegeven; wie is/zijn er volgens u verantwoordelijk voor de financiering? Waarom?
- b. Heeft u zelf financiële mogelijkheden voor zulk soort projecten en dient u daarvoor verantwoording af te leggen aan een hogere instantie?
- c. Wat is de bereidheid van uw bedrijf om financieel bij te dragen en welke voorwaarden of eisen horen daarbij? Hoe hard zijn die eisen?
- d. Wat zijn uw ervaringen bij de onderhandelingen over financiën in het verleden?

11. Zelforganiserend vermogen:

- a. Zou uw bedrijf deel willen nemen aan een samenwerking of een samenwerking+ die zich bezig houdt met deze problematiek? (in geval van betrokken bij transumo-project: ziet uw bedrijf het transumo-project als zo'n samenwerking? Nee → gewone vraag, Ja → voldoende)
- b. Met welke partijen zou uw bedrijf samen willen werken om de problematiek aan te pakken? Waarom?
- c. Zijn er al samenwerkingen op dit gebied (geweest)? Waarom juist met die partijen?
- d. Wat is de rol die u verwacht te krijgen in een regionale coalitie? En welke rol zou u willen hebben? (antwoord: informeren, raadplegen, adviseren, coproduceren, meebeslissen)
- e. Wie zou zo'n samenwerking moeten trekken en waarom?; hoe ziet u uw eigen rol m.b.t. tot nemen van initiatief en waarom?; hoe ziet u de rol van het transumo-project in dit kader?
- f. Stel er wordt een regionale coalitie opgezet, naar welk alternatief gaat dan uw voorkeur? En welke verwacht u? (antwoord theoretisch raamwerk type 1 of 2) Naar wat voor vorm om tot oplossingen te komen gaat uw voorkeur uit? (hoeft dus geen regionale coalitie te zijn). In hoeverre is uw bedrijf bereid deze ideeën te wijzigen en welke eisen worden daaraan gesteld?