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Heeres, Niels; Lenferink, Sander; Tillema, Taede; Arts, Jos

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Niels Heeres, Sander Lenferink, Taede Tillema and Jos Arts

Beyond financial value capturing? Interactions between value capturing and cooperation at the interface of road infrastructure and land use planning

To deal with tensions between functional interrelatedness and institutional fragmentation, road infrastructure planning is increasingly interested in integrated planning approaches. From a value capture (VC) perspective, integration offers possibilities for financially linking road infrastructure and other land uses. Additionally, VC may be expected to have value for the cooperation between involved, but often institutionally fragmented actors. This article explores the relations between the application of different types of VC and cooperation between fragmented actors in planning at the infrastructure-land use interface. Our findings point at a positive, reciprocal relationship between partnership-based VC types and cooperation among fragmented actors.

Keywords: road infrastructure, functional interrelatedness, institutional fragmentation, value capture, cooperation, integrated planning

Introduction

In many countries, integrated planning approaches to road infrastructure works are increasingly applied, such as area-oriented planning (the Netherlands), 'Infrastruktur in der Landschaft' (Germany) or context-sensitive design (US). These approaches aim to deal with the tensions between functional interrelatedness of land uses and institutional fragmentation of responsible actors (governmental layers, public agencies and, increasingly, private actors such as landowners and developers as well; see also Spaans et al., 2011). Paying appropriate attention to interrelatedness at the infrastructure-land use interface potentially leads to synergies between road network development and regional or local land use improvements in an area. These synergies may enhance planning efficiency and overall area quality (Amekudzi and Meyer, 2006; Graham and Marvin, 2011; Kwakkel and Van Der Pas, 2011). From a financial perspective, integration efforts seem attractive as property value is expected to increase in areas where infrastructure

Niels Heeres is a PhD researcher in the Faculty of Spatial Sciences, University of Groningen, the Netherlands, and mobility advisor at Grontmij; Sander Lenferink is a researcher/lecturer at Radboud University, the Netherlands; Taede Tillema is a researcher in the Ministry of Infrastructure and Environment, KiM Netherlands Institute for Transport Policy Analysis; Jos Arts is Professor of Infrastructure Planning at the University of Groningen and strategic advisor in the department of Transport, Public Works and Water Management, Ministry of Infrastructure and the Environment; email: niels.heeres@grontmij.nl; s.lenferink@fm.ru.nl; taede.tillema@minienm.nl; e.j.m.m.arts@rug.nl

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investments are made, due to improved accessibility and area quality. Through value capturing (VC), these gains can be recouped and reinvested in public facilities, such as infrastructure (Alterman, 2012; Priemus, 2002; Samsura and Van der Krabben, 2012; VROM-Raad, 2004; RVW, 2004). VC can be understood as regaining increases in private property value that occur as the positive externalities of public investments. Examples of VC-mechanisms are taxation or obligations to invest in public facilities (Whatmore, 1994; Healey et al., 1995). The application of VC also fits a trend of decreasing central government funding for major infrastructure works. The extent to which the recouped funds may be expected to contribute to investments in major road infrastructure works is around ten to twenty per cent (Ruding, 2008; Samsura and Van der Krabben, 2011).

A precondition for the formulation and realisation of integrated projects is attention to institutional fragmentation of actors with responsibilities or roles in spatial planning (Baccarini, 1996; Turok, 2001; PBL, 2011; Verhees, 2013). Integration of interests requires open cooperation between actors representing interdependent interests. However, often these actors are strongly fragmented, e.g. across different spatial scales and with varying scopes of interest (Healey, 1998; Martens, 2007; De Jong and Spaans, 2009). A possible additional, but important effect of value capturing is improved control of planning and decision-making between these fragmented actors (Ruding, 2008). The application of VC hypothetically enhances cooperation between the fragmented actors at the interface of road infrastructure and other land uses (Rakers et al., 2010; Spaans et al., 2011). For example, more level planning arenas could be achieved by using captured values as a source of funding for overall spatial quality rather than for reinvestment in infrastructure. This could be an incentive for viable cooperation between fragmented stakeholders (see e.g. Van der Veen et al., 2010; Spaans et al., 2011; Fischer and Amekudzi, 2011). Nevertheless, literature and practice lack a nuanced understanding of the exact relationship between cooperation among institutionally fragmented actors and VC.

In order to fill this gap, this article explores the hypothetical relationship between VC (three types) and cooperation among the fragmented actors that interact in integrated infrastructure-land use developments. More specifically, we provide an analysis of the interactions between public and private actors that form the basis for cooperation in three Dutch planning projects at the interface of major infrastructure works and other land uses, in which various value capture mechanisms were applied. The Dutch planning system has undergone several institutional changes over the past decade. One of these is a revision of planning legislation, including improved provisions in public and private law for capturing surplus development values (Dutch public law 'GREX'; DeWolff, 2007). This has improved the system's suitability for the integration of road infrastructure and other land uses.

Problems due to tensions between functional interrelatedness and institutional fragmentation are a general concern for infrastructure development in western societies

and their sustainability goals (Amedkudzi and Meyer, 2006; Neuman, 2006; Hull, 2008). This requires a different approach to cooperation. The existence of various mechanisms for VC make the Dutch case a relevant case to provide first insights into the facilitation of cooperation as a relevant secondary effect of VC applications.

Theory

Cooperation between fragmented actors in integrated infrastructure planning approaches

In order to pay appropriate attention to functional interrelatedness at the infrastructure-land use interface, it is necessary to deal with institutional fragmentation (Baccarini, 1996). Addressing institutional fragmentation involves a shift from hierarchical government to open governance coalitions (Healey, 1998; Harding, 1993 in Woltjer, 2000; De Roo et al., 2001; Cameron et al., 2004). Martens (2007) argues that contemporary governance should involve a shift from closed to open governance modes. Closed governance refers to a coordinative model, whereas open governance relates to a level playing field in which public and private actors can interact to develop policy. Open governance is characterised by either competition (interaction by power relations and bargaining) or argumentation (interaction by arguments, reasoning and 'sense-making' among actors) (Busscher et al., 2014). The latter one seems especially relevant in light of the aim to exploit potential synergies at the infrastructure-land use interface.

The first and foremost factor in cooperation between organisations is interdependence (Booher and Innes, 2002; Verhees, 2013). Organisations are interdependent when outcomes are less readily available through the efforts of individual units than through collective effort (Molnar, 1978). Concerning infrastructure-land use integration, interdependence should be seen as symbiotic interdependence, a term coined by Alexander (1995). This refers to complementary differences and interlocking needs that actors cannot meet independently (see also Fenger, 2001). Synergies primarily emerge at the interface of symbiotic interests rather than at the interface of competing interests (Tjosvold, 1988). Additional factors for cooperation between organisations can be abstracted from operational literature on inter-organisational cooperation (Kaats and Opheij, 2012; Galavazi, 2012). A second factor then is sufficient attention to mutual interests. Knowledge of, and respect for, the aims of other stakeholders in the planning arena are required to transform shared goals into integrated projects. Thirdly, as cooperation processes are strongly subject to the contributions of individuals, cooperation must be explicitly regarded as a human effort. Fourthly, the institutional structures that form the practical framework for cooperation must have the capacities necessary for integrating the specific challenges at the infrastructure-land use interface. An example of such capacities can be found in Portland (USA), where the Metropolitan

Planning Organisation has been generally successful in steering spatial development from an integrated perspective, due to its position in both urban and transportation planning (Tillema, 2012). Finally, in addition to a suitable institutional structure, the management of cooperative processes should also be fitted to the integrated objectives. Fitting management is characterised by a clear idea about process control and a coordinated distribution of roles. Such aspects can be anchored in administrative agreements. Table 1 summarises the outlined parameters for cooperation in planning at infrastructure-land use interface.

Table 1 Parameters for cooperation between fragmented actors at infra-land use interface

Cooperation parameters	Role in planning at infrastructure-land use interface
Interdependent ambitions (necessary precondition)	Symbiotic interdependence between complementary ambitions.
Attention to mutual interests	Understanding and respect for mutual interests.
Cooperation as a human effort	Trust, constructive group dynamics, and unifying leadership.
Institutional capacity	Effective and efficient institutional structures.
Process management	Agreement about process control, phasing, balance between content and process, and clear distribution of roles.

Potential financial and cooperative values at the infrastructure-land use interface

The concept of value capture has long been intensively discussed in planning literature (see e.g. Rodriguez-Bachiller, Thomas and Walker 1992, Smolka and Amborski, 2000; Oxley, 2006; Alexander, 2012; Levinson and Zhao, 2012). The main argument behind the concept is that public action (policy change, development permissions etc.) not only leads to benefits for the general public and users, but also to a change in private property values, either positively (‘betterment’) or negatively (‘worsenment’) (Van der Krabben and Needham, 2008; Iacono et al., 2009; Alterman, 2012). VC is concerned with regaining unearned betterment of private property due to positive externalities. It can be understood as an opposite to compensation for negative externalities (De Wolff, 2007). It is important to note that the concept can be operationalised in different forms: (a) as a direct mechanism that recoups a share of the private value increments that follow a public action or public works or (b) as an indirect mechanism that recovers a share of the actual costs of public works, regardless of property value increase (Van der Krabben and Needham, 2008; Alterman, 2012).

An essential issue for VC is whether there are value gains to be captured and redistributed for the benefit of public investments. In integrated planning approaches, the synergy between interrelated land uses may lead to the emergence of added value.

Holland (1998) explains, in abstract terms, how added value emerges from the interaction between system elements. This reasoning assumes that the aggregated whole is more than the sum of its parts. Holland describes that such value is not present at the level of individual functions, but only when the systems are looked at as a coherent whole. In land use planning, this implies that an integrated strategy combining specific sectoral interests not only leads to sectoral results. It also generates values that cannot be related to a specific sectoral action. In less abstract terms, integration of traditionally separate spatial interventions (i.e. interventions in infrastructure, housing, water or nature) offers chances for 'scope optimisation, with lucrative and non-cost-effective spatial investments at regional level linked together' (Priemus, 2002, 461). This implies the existence of opportunities for more efficient investments, potentially resulting in plans with lower costs and equal functionality, equal costs and higher functionality, or higher perceived value (De Jong and Spaans, 2009; Hijdra, 2013). Concerning investments in infrastructure, investment could improve not only transportation, but also the development potential of a whole area. It raises the accessibility of an area and 'the image and perception of an area, thereby attracting additional private investment' (Banister and Berechman, 2001).

In addition to the financial value of VC, the application value capture mechanisms may be associated with other effects. An example is the potential influence on the cooperation between actors that are fragmented across different governmental levels and have varying scopes of interest (Rakers et al., 2010). These relationships have been little explored. Van der Veen et al. (2010) state that more distributive justice could promote joint 'improvement in infrastructure and other facilities in an area'. For example, redistribution of captured value increments can provide a source of funding for overall spatial quality (Van der Veen et al., 2010). Therefore, the possibility to capture and redistribute the additional value gains of an investment, e.g. in infrastructure, may facilitate interaction and joint action of actors. These actors do not necessarily have an interest in each other's objectives, but expect to improve their own from the attention to overall spatial quality. Also, the momentum created by adequate and efficient road infrastructure developments may function to eventually arrive at a win-win situation, in which all actors involved somehow benefit from a project (Rakers et al., 2010). Getting to this beneficial situation incentivises cooperation for optimizing integration of separate interests. Hence, a potential additional effect of VC – its cooperative value – may be the enforcement of more open governance of institutionally fragmented interests.

VC's institutional context

Another important topic for this study is how potential values may be captured. This issue touches upon the institutional side of VC. Iacono et al. (2009) distinguish

Table 2 Three different value capture types

Value capture type	Coordination mechanism	Contribution ground	Example
1. Compulsory	Taxation	Landownership or development	Public incentive – In addition to the realisation of public facilities there is nothing in return. Compulsory capture can be enforced by authorities on the basis of rules and regulation, although conditions apply.
2. Negotiated	Partnership	Landownership	Private incentive – Private landowners participate in a negotiation about the amount of value that is captured. They are aware that public stakeholders have the capacities to capture land value increments in a compulsory manner. Before that happens a negotiation takes place to come to better conditions for the public and private parties (optimisation of the agreement).
3. Voluntary	Partnership	Development	Public and private incentive – Private developers participate in VC on a voluntary basis. Capture takes place in return for the right to develop an area and serves as a way to support the additional public investments needed in the development. VC is based on the profits that these developers make. These are (in particular situations) more difficult to capture, hence an incentive for public stakeholders to participate.

different VC types based on the kind of coordination used to administer VC policy. Coordination can take the form of either compulsory measures enforced by a designated authority (i.e. taxation), or less formal partnerships. The taxation of unearned private value increments is an example of taxation, as are development obligations, i.e. allowing a public authority to compel private actors to complement investments for private interest with investments for community interests (Rodriguez-Bachiller et al., 1992; Oxley, 2006; Alexander, 2012). Partnerships have a voluntary or a negotiated character. Voluntary partnerships involve more intense cooperation between public and private actors, e.g. by actively sharing costs and revenues based on development plans. Negotiated partnerships are formed in order to involve the passive landowners in the value capture.

With regard to VC's institutional context, it is also important to understand whose 'unearned' property value increments are captured (Healey et al., 1995). The answer to this question involves a rather fundamental discussion of where unearned value increments end up: in the gains of private developers or in land and property values

(Van der Krabben and Needham, 2008)? In order to make a clear distinction, this article slightly shifts the focus of this characteristic of VC to the grounds for value capturing: ownership or development. VC contributions can then be conceived either as a property charge on landowners and users, or as a charge on the profits of private developers.

Based on the considerations above, four general VC types can be distinguished. However, in situations where taxation is applied as a coordinating mechanism, the application of VC is powerfully exercised on the contributors. Hence, in these situations it seems less relevant to differentiate on contribution grounds. This leaves two extreme types, *compulsory* and *voluntary* VC, and an intermediate type in the form of *negotiated* VC. In practice, these types are applied differently. This depends, for example, on which actor has an incentive for application of VC (see also Table 2).

Regarding the procedures that underpin these VC types in practice, a four-stage value capture cycle can be used to illustrate value capture processes (Huxley, 2009). Although different VC types should be distinguished, this process serves as the basis for practical application of VC. The use of a cycle shows that VC is a process, rather than just the capture of value increments. It also illustrates the recycling of unearned private value increments in publicly financed spatial projects.

(1) Value creation

‘The unlocking of and increase in the potential value of [...] land and/or structures as a result of public sector intervention’: such an intervention could, for example, be the announcement of a project or a formal change in the land use plan. The extent of value creation depends on the synergy effects or collaborative advantage resulting from the combination of different spatial functions and integrated planning.

(2) Value realisation

‘Subsequent private [or public] investment which ensures that potential asset value increase is realised’: the involvement of private actors who actually invest and share risks or public actors that take action following the announcement or change under step 1 (e.g. the construction of a train station or road that improve the accessibility of a location).

(3) Value capture

Use of ‘arrangements by the public sector for the acquisition of a proportion of [monetary or in-kind] private sector returns for local reinvestment’: the actual application of public arrangements for the extraction of private increments. VC could be in the form taxations or negotiated or voluntary contributions, but it may also comprehend land transfers, service or management agreements, or private investments in general facilities.

- (4) Local value recycling
‘The re-investment of acquired monetary or in-kind contributions from the private sector’ (see also literature on Cradle-to-Cradle area development: Arts and De Vaan, 2010): the actual redistribution of captured values for further investment. For VC that is regulated by legislation the purposes for which captured value can be reinvested are often included in legislation. For negotiated or voluntary capture there may be more freedom, although it may be expected that agreement on these purposes are part of the interactions that precede the actual capturing.

All four stages are relevant for planning approaches that integrate major road infrastructure works and other land uses with a regional or local character. Stages 1 and 2 primarily relate to interactive plan making processes and creating win-win situations. These stages primarily deal with the ability to cooperate. Stages 3 and 4 explicitly relate to the institutionalised procedures of a VC system for recouping and redistributing unearned value increments.

Synthesis

The review of literature on VC and cooperation in planning indicates that, in addition to the financial value of VC in integrated approaches to road infrastructure and other land uses, a potential positive relation exists between the application of VC mechanisms and cooperation: the cooperative value of VC processes (see also Figure 1).

The implied cooperative value may facilitate the transformation in the interaction between fragmented actors: from hierarchical to open governance, balancing between

Figure 1 A conceptual model: the VC-process as a means to create financial value as well as cooperative value

competitive and argument-based cooperation. In planning at the infrastructure-land use interface, such a transformation seems necessary to cope with the institutional fragmentation of actors at this interface. Five parameters for cooperation (see also Table 1) can provide insight into the conditions for formulation and realisation of integrated aims that pay appropriate attention to the functional interrelatedness of road infrastructure and other land uses.

Research approach

The Netherlands as case study

This article explores the relationship between different VC types and the cooperation among institutionally fragmented stakeholders in integrated road infrastructure projects by examining the Dutch infrastructure planning practice. In the Netherlands, an increased application of integrated strategies at the interface of major infrastructure works and other land uses can be observed. Moreover, Dutch planning seems to be undergoing a slow ‘institutional revolution’ aimed at coping with high levels of functional interrelatedness and institutional fragmentation (see e.g. Gerrits et al., 2012). Operational programmes for road infrastructure and other spatial plans were merged in 2007. In 2010, the Ministry for Infrastructure and Transport and the Ministry for Spatial Planning merged to become the Ministry of Infrastructure and the Environment, with the dual goal of improved efficiency and reduced expenditure. In 2012, the first integrated national policy statement on transport and spatial planning was introduced.

In accordance with these policy changes, planning procedures have been revised over the past decade. In 2011, the dedicated legislation that coordinates the Dutch planning process of major infrastructure works (*Tracéwet*) was updated. This update introduced an explorative stage which explores infrastructural problems in relation to other land uses, as well as options for integration. Spatial planning legislation has undergone a transformation as well. In 2008, the Dutch spatial planning law (*WRO*) was revised to address the weakly proactive character of spatial planning and to improve slow and complex decision-making (De Wolff, 2007; Buitelaar, 2010). Comprehensive overviews of the institutional system for planning in the Netherlands are provided, for example, Needham (2014) from the perspective of spatial planning and Marshall’s (2013) chapter on Dutch infrastructure planning.

While Dutch legislation for planning of major infrastructure works does not contain value capture provisions, spatial planning legislation has contained VC provisions since its 2008 revision (*GREX* legislation, see e.g. De Wolff, 2007). Recouping public investments from land owners is possible for municipalities, either through private law by means of agreements (anterior or posterior) or through public law by means of compulsory exploitation plans (Buitelaar, 2010). The recouped funds may

however never exceed the initial public investment. Moreover, the recouped funds must have a direct relationship with the private development in terms of causality, benefit and proportionality (De Wolff, 2007). This means that the Dutch system is first of all a system for cost recovery.

Case studies

To establish how different VC types facilitate cooperation between actors at the infrastructure-land use interface, we explored three integrated road infrastructure projects in which VC is applied. All projects have to deal with cooperation institutionally between fragmented actors. Each applies a different VC type: Greenportlane (compulsory capture, under the new legislative provisions), A59-corridor (negotiated capture) and A9-relocation (voluntary capture). To gain insight into the cooperation between fragmented organisations, we looked at five parameters for cooperation, as outlined in the theoretical section.

These early examples of an increasingly applied integrated planning practice were explored by means of a qualitative analysis. This analysis involved interviews with key individuals in the VC procedures and cooperation processes and archival research of project documentation (overall policy documents, project plans and available formal agreements between involved organisations). Per case study, we interviewed three individuals, representing the public and private stakeholders with key positions in the VC cycle. Moreover, to take into account the projects' progress through the planning process, the interviewees and the documents used range from involvement in the very early phases through to the current status of the projects (see Appendix A and B). The interviewees were asked to set out their experiences regarding the cooperation between stakeholders and to reflect on the relation between the course of cooperation and the applied value capture types. The use of the VC cycle as an analytical tool allows the analysis to differentiate between pre- and post-capture phases. We do not explicitly take into account the effects of the economic crisis on the cases: the financial effect of VC is not the main purpose of this paper. Moreover, the economic crisis is too large and broad to settle with a small analysis. We do feel that we can assume that in all three cases VC has taken place under the same, worsening, economic conditions.

Current practice: infrastructure-land use integration in Dutch planning

Project descriptions

Project A: Greenportlane and Greenport area development

Greenportlane comprises the construction of a new provincial road (5.3 km) as part of wider area development goals in the Venlo region. These goals are the development of a 'Greenport' (5,400 ha, appr. 13,300 acres), an area for economic activity in logistics, agro-industries (greenhouses), horticulture and manufacturing. A strategic development plan for the area has been developed. This plan underwrites long-term organic development in the area (Greenport Venlo, 2006; 2009). In 2012 the 'Floriade' world horticulture exhibition was held in the area. The exhibition resulted in the accelerated development of several elements such as Greenportlane. The first part of the road was constructed in the run-up to this event.

Greenport is being developed by a dedicated private organisation in which four local municipalities participate: Greenport development company. Greenportlane has a special position in the Greenport project, a project manager explains: 'From a functional-spatial point of view, the road is part of the wider area development goals; from an organisational perspective, however, the road development is a separate activity carried out by the province [regional infrastructure authority]'. A business case for the integrated area development has been made. Part of this business case is that the construction Greenportlane is partially financed through taxation of the owners of the surrounding lands (i.e. the Greenport area).

Project B: A59-corridor and regional development strategy

This project aims to create a viable development vision for the A59-corridor that is located between the cities of 's-Hertogenbosch and Waalwijk (ca. 20 km). The plan tackles three major challenges for the region (see also: Cooperating actors GOL, 2012; Bade and Smid, 2009):

- 'The Green River': a river flood protection initiative
- 'The Green Delta': a programme aiming to create a coherent whole of green areas around the city of 's-Hertogenbosch
- A59-corridor: an infrastructure project to improve several bottlenecks in and around highway A59

The aim is to promote better, faster and cheaper qualitative improvements for the region. An alderman mentioned that coordinated action is necessary to avoid regional stagnation and that 'by approaching local issues collectively and in an integrated manner, broad public support is generated and, for example, the province also provides a contribution' (BD, 2012). Twenty stakeholders cooperatively aim to

establish innovative links between the development objectives concerning the A59 and the surrounding area (North Brabant, 2013).

Cooperation between the involved stakeholders, is based on sense-making and is strongly argument-based. A business case has been established, containing 25 spatial interventions including traffic flow measures, bridge reconstruction, flood-water storage, ecological corridors and recreation facilities. Although the A59 is part of the national highway network, the national infrastructure planning agency is not financially involved in this project. The A59 is not a major national priority. Since the need for the investment was strongly felt in the region, the region's business community agreed to a raise of the property taxes to compensate the lack of national funding.

Project C: A9 relocation and urban development

This project comprises the relocation of a 5 km stretch of the A9 motorway in the Amsterdam region. The road has congestion problems, which the national infrastructure planning agency was planning to address through more intensive use of the same infrastructure (Stuurgroep A9 Badhoevedorp, 2006). Since the road divides the town of Badhoevedorp into two parts, local and regional authorities saw the proposed action as a window of opportunity to collectively address their interests (liveability, spatial quality). The final plan, currently in realisation, comprises relocation of the highway about 600 meters south of the town and urban redevelopment (housing, offices and green areas) of the area vacated by the highway (Haarlemmermeer, 2013).

After the initial mono-functional, traffic-oriented solution was abandoned in 2005, a coalition of public authorities and private actors reached an agreement on political and financial cooperation (Stuurgroep A9 Badhoevedorp, 2005). The core of this agreement was an innovative financial construction in which four layers of government and one private party contribute to the redevelopment of the road, in combination with urban development. However, the bulk of the investment is carried by the national infrastructure planning agency, the local municipality and the private developer. The infrastructure planning agency is investing the same amount as had been intended for the original road occupation measures, roughly half the required budget. Moreover, the area vacated by the highway is transferred to the local municipality free of charge. Together with a private developer, the local municipality will redevelop this area and invest the revenue in the relocation of the highway (ca. 50 per cent of the required budget). In a voluntary agreement the municipality and the private developer have arranged that these funds are going to be recouped from the profit that the developer makes by redeveloping the vacated grounds.

Table 3 provides an overview of the financial stakes in the projects.

Table 3 A comparative overview of project finances (based on project documentation: see Appendix B)

	Greenportlane	A59-corridor	A9 relocation
Cost (1 EUR = ca. 0,72 GBP)	<ul style="list-style-type: none"> • EUR 88 million. 	<ul style="list-style-type: none"> • EUR 101 million (ap- proximately for total area development). 	<ul style="list-style-type: none"> • EUR 318 million.
Budget available directly from stakeholders	<ul style="list-style-type: none"> • Collectively, the public stakeholders created a budget of around EUR 46.8 million for the Greenport- lane. 	<ul style="list-style-type: none"> • Provincial contribution: EUR 20 million. • Municipal contribution: ≥ EUR 28.3 million. • Water Board contribution: ≥ EUR 3.5 million 	<ul style="list-style-type: none"> • Budget originally reserved for optimisation measures from national infrastructure budget: EUR 157 million • Total contribution by others: EUR 71 million.
VC type	<ul style="list-style-type: none"> • Compulsory capture 	<ul style="list-style-type: none"> • Negotiated capture 	<ul style="list-style-type: none"> • Voluntary capture
Additional budget through VC	<ul style="list-style-type: none"> • EUR 26 million expected to be recouped from land de- velopment revenues by the development company. This leaves a gap of EUR 15.2 million (2008 figures). 	<ul style="list-style-type: none"> • Regional entrepreneurs: EUR 15 million. This leaves a gap of ≤ EUR 34.2 mil- lion (2012 figures). 	<ul style="list-style-type: none"> • Local municipality and the developer raised EUR 90 million from area develop- ment revenues.

Value capture cycle in practice

To fill the gaps between cost and available budgets, all projects attempted to attract additional funds through capture and redistribution of created value. Exploration of project finances using the VC cycle provides the following insights into the creation, realisation, capture and redistribution of added value.

The previous section illustrates that the projects explored paid explicit attention to the *creation of added value* by means of an integrated objective of (re)developing road infrastructure in combination with local land use goals. Interviewees indicate that the added financial value of integration is expected to be found in higher property values and in improved efficiency of public investments. An important distinction is the scale at which benefits are gained. The Greenport area is a comprehensive greenfield development, where area development and improved accessibility go hand in hand. Developments take place within the same area, at the same scale. In the case of A9 relocation, accessibility improvements are expected at a higher (national and regional) scale than the local urban developments. The project A59-corridor falls somewhere in between, with improved accessibility expected at higher and similar scales to the regional area development.

The *realisation of created value* takes place in different ways. In Greenportlane, private regional and local businesses are expected to profit from local quality and accessibility improvements. These businesses are expected to move to the area during the course

of development. For the A59-corridor, the same underlying business case seems valid, although private businesses are already present in the area. Furthermore, in this case national government does not prioritise the accessibility improvement as high as regional and local authorities. This means that, unlike in the other cases, not all actors with a functional stake have been mobilised to participate in the VC process. In the case of A9 relocation, the ownership of the area for redevelopment has been transferred for free from the road infrastructure agency to the local municipality. The local business and residential community is again expected to profit from local area quality improvements. A private developer is involved to invest in real estate based on expected investment benefits.

Although all cases take different approaches to *recouping* value increments, all have been able to persuade regional and local businesses to join, either through participation in area development or by making a direct financial contribution. Based on the causal relationship between public infrastructure provision and private property value increments, the Greenportlane development company has the obligation to contribute to the road infrastructure development (in accordance with GREX legislation). This taxation is eventually settled in the land prices for the businesses that are going to be the owners and users of the area. Initially, the development company anticipated a different kind of VC, aimed at longer-lasting financial partnerships between stakeholders. However, future landowners and users were not prepared for this. In the case of the A59, local and regional businesses have decided to contribute to the overall area investment, including the infrastructure. The business community has collectively asked public authorities to raise the municipal property tax. This negotiated taxation is the result of deliberation between the municipalities and entrepreneurs. It aims to secure a private contribution to the plans finances in a situation where private developments are not a part of the plan. In the case of the A9 relocation, benefits from the area development are recouped from the real estate developer by the municipality based on a private agreement. The municipality has an agreement with the infrastructure agency to forward recouped values for redevelopment of the road infrastructure.

In all three cases, the recouped funds are *reinvested* in road infrastructure (re)development. In the Greenportlane and the A9 relocation cases, the recouped funds are invested directly in road infrastructure. In the case of the A59-corridor, the situation remains somewhat unclear, as funds have not yet been specifically earmarked. The recouped funds become part of the regional development budget, which includes road infrastructure measures.

Table 4 illustrates that different VC types were applied in the cases studied. The VC in Greenportlane is an example of compulsory capture, since value increments are recouped from the owners of the land by means of taxation, as prescribed in the GREX. The landowners in the A59-corridor project are also subjected to VC. In this case, however, these owners engaged in a partnership with the developing authorities

Table 4 Value capture stages in the explored projects

VC stages	Greenportlane	A59-corridor	A9 relocation
1. Value creation	A greenfield development scheme creates a high quality and accessible business location.	An integrated approach to liveability, accessibility and safety enhances the region's position as a business location.	Relocation of a highway allows for the enhancement of accessibility, liveability and real estate development.
2. Value realisation	Regional and local businesses that are being attracted to settle in the area bring in new capital.	The present regional community considers development as inevitable to maintain its position and wish to contribute.	A consortium of private developers and the local municipality expect a high return from real estate investment.
3. Value capture	Additional funds are expected to be recouped from land development revenues, under GREX legislation.	Regional businesses provide a negotiated contribution of EUR 15 million.	Private developers and the local municipality contribute around EUR 100 million, based on area development revenues.
4. Local value recycling	Captured values are reinvested in Greenportlane infrastructure.	Captured values are reinvested in the total area development package.	Captured values are reinvested in relocation of A9 highway.

and capture is coordinated through private agreement. This case is an example of negotiated capture on the basis of landownership. Finally, the A9 case can be seen as an example of voluntary capture, as it is the private developer who is subjected to recouping development profits increments. This involves a voluntary partnership that is coordinated by private agreement.

Cooperation parameters

Regarding the necessary precondition of interdependent objectives, interviewees in the Greenportlane project indicated that interdependency of infrastructure and other land uses is clear. A project manager explains: ‘this greenfield development was going to be realised, including a plan for opening up the area for transportation. The Greenportlane thus was a consequence of the comprehensive area development’. In the case of the A59, the interdependence is also straightforward. From the beginning, planning intended to improve overall regional quality. For that purpose a wide array of interests, including interventions in the region’s road infrastructure, was necessarily pursued as a more efficient investment and lower planning effort. In the case of the A9, the official agreement between stakeholders states that ‘higher overall functionality can be better achieved by means of an integrated approach [relocation of infrastructure and urban development] than by sole traffic optimisation measures’. In the end,

improved functionality is primarily to be found in the urban objectives of the local authorities. The infrastructure planning agency, although it had a lower incentive to participate in cooperation, still participated. This was, partly, out of experimental curiosity for such innovative integrated development and cooperation.

Secondly, with regard to understanding and respect for mutual interests, it becomes clear from the study that in the case of Greenportlane these factors were infrequently experienced. Various project managers reveal that the higher goal was soon set aside: 'We had collective aims, but responsibilities were divided'. The province pursued realisation of the road infrastructure within a strict timeframe, whereas the development had broader aims concerning the whole area and a slower pace. Moreover, in the interviews, both infrastructure planners and spatial planners, expressed that they often felt a lack of respect from the other actors for their interests, due to their different frames of reference. In the case of the A59, where a win-win situation was pursued, understanding and respect for mutual interests were explicit points of departure in plan development. 'Every actor should always be able to recognise his own interests within the wider plan', explains a project manager. Similarly, in the A9 case the 'will to keep on searching and exploring the possibility to achieve someone else's interests without losing your own' was essential in the early phases, according to an interviewed project manager.

Thirdly, considering cooperation as a human effort reveals the practical consequences of a lack of shared goals in the Greenportlane project. Interviewed project managers describe a situation with different perceptions of the purpose of the planning process. An interviewee illustrates: 'People with knowledge of asphalt and concrete had to interact with people who were working on abstract visions about the structure of the area and who were creating added value through the logistic accessibility and design of the area'. This mismatch caused miscommunications and low trust among the people working on the project within the various organisations. A project manager from the A59 case pointed out that in that project 'trust is written in capital letters'. It appeared one of the crucial factors in the further specification of the goals. Finally, an A9 project manager revealed that cooperation between actors involved in that case was characterised by transparency, which facilitated a constructive dynamics. Furthermore, the courage shown within this project by the local municipality to substantially contribute was greatly appreciated by the national road infrastructure planning agency and has further promoted the collective enthusiasm.

Fourthly, the absence of an appropriate institutional framework seems to have been another crucial factors for the cumbersome cooperation around Greenportlane. Project managers question the fragmentation of responsibilities: 'To avoid [conflicts between] the multitude of interests, it would have been more efficient to have the development company responsible for the plan as whole, including the road'. Furthermore, an agenda of requirements was never determined and the project only had a cooperation agreement that was very operational, mainly intended to arrange

the project finances. In the A59 and A9 cases, project organisation seem to have been more efficient, with signed cooperation agreements, institutionalised structures for political deliberations, as well as structures for the preparation of these deliberations (Stuurgroep A9 Badhoevedorp, 2006; Cooperating actors GOL, 2012).

Finally, with regard to process management, the lack of a signed cooperation agreement in the Greenportlane case led to uncertainty and disagreement about vision and goals, responsibilities and finances. It seems to have caused many of the conflicts described above: 'we were planning without a clear framework and thus without knowing whether the plan would fit the purpose and vision', a project manager revealed. In the A59 and A9 cases, these formal agreements form solid foundations for fruitful and transparent cooperation, collaboratively making successive steps by indicating the purpose, interests and approaches, and the financial responsibilities of the parties.

Analysis: Influence of VC on multilevel cooperation

In our explorations, a compulsory type of VC, coordinated through taxation of landownership, is associated with low or even counterproductive cooperation between actors. In the explored case (Greenportlane), the institutional capacity for cooperation has been low due to diverging interests and goals. This resulted in cumbersome interactions between the provincial authorities responsible for the infrastructure, and the development company responsible for the wider area development. It is only the strong functional interdependency of road infrastructure and other land uses within this comprehensive greenfield development that suits the legal preconditions for capture of created value.

A project manager stated that this 'conventional' type of mechanism for capturing and redistributing value 'is safe and requires the least effort'. Due to the cumbersome cooperation, partnership based VC never became feasible in this project. Essentially, the effort for creating the required partnership between stakeholders for application of other VC types appeared too high. Moreover, the application of a compulsory VC type seems not to have intensified cooperation later on.

On the basis of our explorations, negotiated business cases could be associated with closer forms of cooperation. However, in the A59-corridor project case, where the regional business community provided a financial contribution for the improvement of the region's overall social, economic and environmental qualities, the application of this innovative VC mechanism seems to have only slightly enhanced cooperation between the public and private actors represented in the regional coalition. Interdependency, shared aims and a shared organisation and process already characterised the interactions between partners in this coalition in the stages before the actual capture of created value. In addition to that, a project manager mentions, the negotiated VC type seems to have improved the clarity of involved organisations'

interests for the other participating organisations: 'To have your own interests served [within the shared business case], everyone's interests needed to be clear to the others and respected as such'.

Rather, this exploration of negotiated value capture illustrates that interdependence, awareness of it and a clear and shared development aim, established through intensive cooperation, can provide a solid foundation for the application of VC. A project manager explained the regional business community's awareness of the interdependency of mutual interests like this: 'It is important that the A59 is free of traffic jams, but if the local business community wishes to continue attracting employees in the long run, the region's liveability is equally important'. Another project manager indicated that due to necessity and the broadly shared aims in the plan, 'the additional revenue that will be made through adoption of the plan is clear to the regional business community in such a way that the public effort to raise a private contribution of EUR 15 million was only minor'. Finally, a project manager revealed that the business community's willingness to contribute was further enlarged by the broad coalition of public actors and the human effort of several individuals in this project: 'Inspiring local leadership has been crucial in creating the required regional public support and in convincing local private actors of the potential value that is created through the integrated aims'.

The voluntary type of value capturing that we explored lastly illustrates a reciprocal relationship between VC and cooperation. In the A9 case, with the private developer and municipality as contributors in a partnership situation, application of VC has contributed to a solid foundation for further cooperation. Moreover, open and professional cooperation between public organisations were also a basis for capture and redistribution of added value. The application of a VC mechanism has enabled national infrastructure authorities to participate in this integrated approach to infrastructural issues and local liveability concerns. As such, the partnership-based business case under a voluntary VC mechanism appeared a basis for continuing the open cooperation in this case. Based on a considerable financial foundation (50 per cent contribution to the required budget by the local municipality and the private developer, and free transfer of ownership of the former infrastructure site) the national infrastructure providers and the local and regional actors were able to establish a constructive institutional structure for further development of their shared goals. 'Everyone's participation was based on their own interests, which is important. But, without cutting back on our own interests, we were all willing to explore how other interests could be served', a project manager emphasises understanding of mutual interest and constructive group dynamics as consequences of the redistribution of finance.

The local municipality's courageous leadership in making such a substantial commitment aroused the interest of the other participants to further pursue this innovative financial construction. 'It has been very important that the local municipality was

willing to take a certain risk with the integrated goals and intention to contribute half of the required investment. This was very convincing and was greatly appreciated, at least to the national infrastructure planning agency'. Hence, in this case there seems to be a reciprocal relationship between cooperation and value capture: application of VC and redistribution of values to promote interdependency, strengthen the ensuing cooperative process at the infrastructure-land use interface. At the same time, interdependency, the municipality's courageous attitude, shared goals and transparency all were preconditions for the application of the VC mechanisms in this project's innovative business case.

A positive relation between VC and cooperation is recognisable in partnership-based applications of VC. This relation appears to be related to the explication of value in integrated projects that takes place in VC processes. In the early stages of the VC-process, open cooperation allows for a thorough discussion and exploration of interests between functionally interrelated, but institutionally fragmented actors. From such discussions the potential becomes clear for synergies between infrastructure and other land uses. Eventually, financial exploitation of these synergy values could be an incentive for VC.

This positive relation is not observed in interactions that take place around taxation as VC type. The interviewees in the Greenportlane case explained that VC was applied in a situation that lacked cooperation in the early stages of the process. In this uncooperative process, potential synergies were not made explicit and the participants did not develop a sense for a business case based on partnership. In the later stages of the value capture process (capture and redistribution of value), the applied taxation provided no incentive to move away from hierarchical coordination.

Conclusions

The point of departure for our qualitative explorations was the hypothetical expectation that, in addition to the financial value of VC, value capturing may also have cooperative value. Our empirical study and analysis lead us to the conclusion that the application of VC could indeed be an incentive for cooperation between infrastructure providers and actors involved in regional or local land use planning. Particularly the later stages in VC processes, value capture and value redistribution, have the capacity to strengthen interactions between fragmented actors and to overcome problems with institutional fragmentation.

However, a more nuanced look at our findings reveals that the relation between VC and cooperation between fragmented actors should be seen as a reciprocal relationship, rather than a cause-effect relationship (see also figure 2). Cooperation can be regarded a precondition for application of VC. In particular for the first two stages in VC processes: value creation and realisation.

Figure 2 The reciprocal relation between VC-processes and cooperation: cooperative values are a precondition for, as well as a benefit of negotiated or voluntary VC-processes

These positive relations are not encountered in all types of VC. Especially the applied coordination mechanism seems to be an influential factor. A positive relation is observed in the cases between partnership-based VC and cooperation, whereas this positive relation is not observed in interactions that take place around taxation as VC type (illustrated at the top of Figure 2). The differences in possible contribution grounds seem to be of less relevance.

The case studies provide strong indications that the positive relationship between the partnership-based VC types and cooperation between fragmented actors may be attributed to several cooperation parameters. In the early stages, parameters such as awareness of interdependence, understanding of mutual interests and human efforts may establish the required preconditions for viable application of VC (figure 2, left side, upper box). In later stages, when values are captured and redistributed, an established shared business case and official agreements may help to maintain conditions for cooperation, by explicating and institutionalizing the interdependency of the involved organisations (figure 2, left side, lower box).

Here it must be mentioned that the additional efforts for enhancing cooperation should, at a certain point, be expected to outweigh the additional benefits of cooperation. To avoid unviable efforts for enhancing cooperation, it may be interesting to study the interactions between actors in VC-processes from a transaction cost-perspective (see e.g. Zajac and Olsen, 1993).

Although this article focuses strongly on the Netherlands, the findings are also interesting from an international perspective. Our explorations show how cooperation of fragmented actors helps to make potential synergy values explicit and exploitable. Through facilitation of cooperation between institutionally fragmented actors a different approach to dealing with interrelatedness of land uses becomes feasible. Central to this approach is a proactive focus on the exploitation of the positive effects of interrelatedness, rather than on reactively mitigating its negative consequences. This transformation fits a trend towards more cooperative, bottom-up, localised and durable modes of planning, financing, such as piecemeal organic development (Janssen-Jansen et al., 2012; RLI, 2014).

The observed mechanisms in this article are based on in-depth observation of three cases that are first experiences from a rather specific context. In the pursuit of general recommendations for dealing with the issue of functional interrelatedness and institutional fragmentation, it is essential to take the diversity of institutional planning contexts into account. Moreover, validating the relationships found, requires further research that links a classification of VC types to cooperation parameters in a more quantitative way.

Appendix A: Interviewees

Greenportlane

- Two project managers from Development Company Greenport Venlo
- Strategic project manager from Limburg Province
- Operational project manager from Limburg Province and Development Company Greenport Venlo

A59-corridor

- Project manager from Noord-Brabant Province
- Project manager from Heusden Municipality
- Project manager from national infrastructure planning agency (Rijkswaterstaat, advisory role)

A9 relocation

- Strategic project manager from national infrastructure planning agency (Rijkswaterstaat)
- Operational project manager from national infrastructure planning agency (Rijkswaterstaat)
- Project manager from Haarlemmermeer Municipality

Appendix B: Project documents studied

Greenportlane

- Greenport Venlo (2006), *Intentieovereenkomst Gebiedsontwikkeling Greenport Venlo* (Public agreement Greenport Venlo area development), 30 Jan 2006.
- Greenport Venlo (2009), *Strategisch Business Plan Gebiedsontwikkeling Klavertje 4* (Strategic plan Greenport Venlo Area development, July 2009).
- Limburg (2011), *Basisrapportage Greenportlane + Appendix* (General report Greenportlane + Appendix), Province of Limburg, Maastricht, 7 July 2011.

A59-corridor

- Bade, T. and Smid, G. (2009), *Vrij baan voor de Langstraat: Over duurzame structuurversterking als kans*, Province of North Brabant, 's-Hertogenbosch.
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- North Brabant (2013), *Samen, Slimmer, Beter werken aan de Oostelijke Langstraat*, Province of North Brabant, 's-Hertogenbosch.
- North Brabant (n.d.), *Businesscase gebiedsontwikkeling Oostelijke Langstraat: Van botsende naar verweven corridors*, Province of North Brabant, 's-Hertogenbosch.

A9 relocation

- Stuurgroep A9 Badhoevedorp (2005), *Overeenkomst omlegging A9 te Badhoevedorp* (Public agreement relocation A9 Badhoevedorp), 31 October 2005.
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