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Risk management in public land development projects: comparative case study in Finland, and the Netherlands

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Abstract

Public land development is an approach where the public authority acquires land for development, services the land with public infrastructure, and transfers the serviced building plots to private building developers or self-developing end-users. Motivations to use public land development can be divided to planning goal related motivations and financial motivations. In this paper, we study management of public risks related to the use of public land development by analysing case studies located in Finland and the Netherlands, countries known to have strong tradition in public land development. Our findings indicate that, whereas public land development has efficiencies in managing the risks related to the achievement of public planning goals, the management of the financial risks related to the public land development approach can be remarkably difficult even in countries with wide experience in public land development.

Keywords: Public land development; Risk management; Finland; The Netherlands; Planning goals; Value capturing

1. Introduction

Land development can be described, following Needham and Verhage (1998), as an activity of producing serviced building plots for subsequent building development activities. Different approaches of land development exist (see. e.g. Dransfeld and Voss, 1993; Needham and Verhage, 1998; Samsura et al., 2010; van der Krabben and Jacobs, 2013), the main differences concerning land ownership, public infrastructure provision and public and private stakeholders' shares in development gain.

In public land development, public authority acts as a land developer, i.e. acquires and services the land, and transfers the serviced building plots to building developers, in contrast to various forms of more private-oriented land development. Public land development is not extensively used in many countries with private land markets (van der Krabben and Jacobs, 2013). In Europe, its extensive use seems to be limited to Finland (see e.g. Viitanen et al., 2003), the Netherlands (see e.g. Needham, 1992) and Sweden (see e.g. Caesar, 2016). While in these three countries public land development has been the dominant development strategy for long, land development strategies led by private sector can be (and are) used as well. So, local authorities in these countries choose to act as land developers.

In the existing literature, public land development has been addressed in many perspectives including the functioning of land and property markets (Needham, 1992; van der Krabben and Lambooy, 1993; Needham, 1997; Needham and Verhage, 1998; Priemus and Louw, 2003; El Araby, 2003; Turk and Korthals Altes, 2010; Yan et al., 2014), efficiency (Roberts, 1975; Lefcoe, 1977; Buitelaar, 2004; Louw, 2008; Korthals Altes, 2010; van der Krabben and Jacobs, 2013), urban governance (Louw et al., 2003; Tan et al., 2009), competition regulation (Korthals Altes, 2006; Tasan-kok and Korthals Altes, 2012; Tasan-kok et al., 2013), connection to land-use planning (Kalbro, 2000; Verhage, 2003; van Rij and Korthals Altes, 2010; van Dijk and van der Vlist, 2015; Hartman and Spit, 2015; Buitelaar and Bregman, 2016), employment of compulsory purchase (Korthals Altes, 2014), contextual changes (Buitelaar, 2010), provision of social housing (Buitelaar and de Kam, 2012), property rights (Havel, 2009; Muñoz Gielen, 2014; Havel, 2014), development negotiations (Samsura et al., 2014, 2015; Glumac et al., 2015), public accountability (Kang and Korthals Altes, 2015), public value capturing (Passow, 1970; van der Krabben and Needham, 2008; Alterman, 2012), and developer selections (Caesar, 2015). The majority of the literature on public land development is focused on the Netherlands, while other countries have remained quite scarcely studied (however, see Lefcoe, 1977; Buitelaar, 2010; Van der Krabben and Jacobs, 2013; Buitelaar and Bregman, 2016; Caesar, 2016).

In this paper, we take a different perspective. The literature on public land development identifies a variety of motivations for the municipality to use public land development as a strategy to enable urban development. These motivations involve the increased control on plan implementation and quality, as well as the potential to capture the land development gain. The general discussion on the financial aspects of public land development often focuses on seeing public land development as an income source for the public authorities, largely ignoring the financial risk involved in it.

The aim of this paper is to analyse how the municipalities acting as land developers balance their spatial planning-related and societal motivations with the financial risks involved in that role. This boils down to the questions of what kind of tools public authorities can use to control or transfer the financial risk of land development, how effective these tools are, and what are the costs of using these tools in relation to the public interests motivating the use of public land development.

We study the above matters in a setting of two case studies located in Finland and the Netherlands respectively. The projects are representative examples of public land development taking place in the countries involved, where it is a dominant approach with related well-established institutions and practical experience. By studying public land development in an actual project context, the necessary details concerning risk management can be revealed. Furthermore, by studying the projects with different institutional frameworks in the background, we are able to compare the effect of different institutional arrangements on the risk management.

To enable focus on risk management we analyse cases that were on their execution stage at the time of the 2007-2009 Global Financial Crisis (GFC). The GFC had significant negative impact on the housing markets of both countries. As a result private sector demand for serviced building plots to develop new dwellings dropped dramatically, which left many municipalities with unsold building plots, increasing capital costs and lots of uncertainties about future recovery of the housing market. The two case studies particularly address the GFC-caused financial trouble for the municipalities, the extent to which they had anticipated on these risks, and the way they dealt them after the consequences of the crisis had become clear.

Our study contributes to the discussion concerning the advantages and disadvantages of public land development. To our knowledge, market risk control and its trade-offs with the public interests are novel perspectives to approach this land development strategy. It provides information on practices in Finland and the Netherlands, where public land development is used extensively. However, the relevance of our study is not limited to these countries alone. Discussion concerning the potential of the public land development approach in countries relying on more private-oriented land development, such as the US and the UK, has emerged occasionally (Lefcoe, 1977; Passow, 1970; Roberts, 1975; van der Krabben and Jacobs, 2013; Adams, 2015). We believe our study provides insights also for academics and practitioners deliberating if and how public land development should be used in their countries.

The article is structured as follows. First, motivations and risks of public land development are discussed based on existing literature providing theoretical background for the empirical analysis (section 2). Second, the methodology and selection of case studies (section 3) and the results (section 4) are presented. Section 5 provides then a comparative discussion of the case findings, while concluding comments follow in section 6.

2. Motivations for and risks of public land development

When a public authority acts as a land developer it takes the risk related to the achievement of land development gain. Following Needham and Verhage (1998) land development gain can be defined as the total market value of the serviced building plots from which the land development costs and value of the land in its existing use are subtracted. Land development costs consist of planning costs and building plot servicing costs including provision of both on-site and off-site public infrastructures. The institutional framework defines how land development gain and building plot-servicing costs are shared between the landowner and the public authority, i.e. eventually the taxpayers, within different land development approaches.

When the public authority decides to use a public land development approach it purposefully decides to take the financial risks related to the business of land development in exchange for the possible rewards. These rewards mainly consist of the advantages related to additional public control of development and property markets, advantages related to enhanced public value capturing, and expectations to create an (additional) source of income (van der Krabben and Needham, 2008). Next, we discuss these main motivations in more detail.

2.1. Additional public control via public land development

Due to the inefficiencies of land and property markets, the government should probably always have some control over the allowed uses of different land areas (Alexander, 2014). When such control is imposed via urban planning, the public authority limits the maximum amount of land that can be supplied for different uses. However, control via planning is looser than control via public landownership (Yan et al., 2014). The public authorities (in democracies) cannot control via planning when and by whom exactly the plans are implemented. These decisions remain with the landowner. Public authority can, of course, make voluntary agreements with the landowners to limit their freedom after the agreement. However, by having the position of a landowner, the public authority can avoid the uncertainty of these negotiations.

Arguably, a number of market efficiencies related to public land ownership can be identified. The allocation of benefits and costs caused by planning decisions is more efficient. When the planning authority owns the

land, the benefits and costs arising from the public planning decisions are internal. The same actor making the planning decisions also carries their benefits and costs (except the effects for the landowners outside the plan area), whereas in private land development they are externalities (see e.g. Webster and Lai, 2003 for discussion of externalities in urban planning). Thus, when the land is owned by the public authority until legally-binding plan exists, private developers do not need to take the risk of getting unfavourable planning decision from the public authority when acquiring land for their development purposes. To compensate this risk the private developers would need to receive higher profits which would lead to higher prices of serviced building plots and subsequently higher prices of developed properties (Needham and Verhage, 1998). In addition to the better position of controlling planning risks, the public authority may be in a better position to acquire land in a context of fragmented ownership and avoid the possible hold-out problems because of its statutory powers of expropriation (Adams et al., 2001; van der Krabben and Needham, 2008; van der Krabben and Jacobs, 2013).

However, to reach these benefits related to public land ownership, the public authority does not have to act as a land developer also servicing the land. It could transfer the land, with additional servicing responsibilities to private land/property developers (see Needham and Verhage, 1998). Other motivations must, therefore, explain public land development. First, a public goods argument may be used (van der Krabben and Jacobs, 2013): under certain market conditions, the market may fail to provide sufficient quantity and quality of building plots. In other words, the approved development plan may be unattractive to the private sector, and local authorities may decide to produce building plots as they were public goods, hoping or anticipating that the market conditions would improve for the private developers to develop the area according to the plan.

Second, public land development provides also an opportunity to control land and property markets to a larger extent than only via public land ownership. By becoming a monopolistic supplier of building plots the public authority can eliminate the land development gains and allow only gains from building development to occur (Needham, 1992; Needham and Verhage, 1998). Thus, it is probably rational to presume that if building plots are supplied efficiently by public authority, the price elasticity of the building land should be close to perfect elasticity (if the land servicing quality would remain constant and there is no limiting scarcity

of raw land) leading to a higher price elasticity of the housing supply. The question that arises then is of course whether public authorities are able to answer to the property market demand by the supply of building plots more efficiently than the private market actors. This might not be the case due to the challenging duty to predict the future demand in the property markets, pressures to make profit from land development to finance other municipality activities, and lack of needed resources to service the building plots with public infrastructure (see e.g. Yan et al., 2014 for a wider review).

Third, the position of monopolistic building land supplier gives the public authority also other forms of control than only the control of quantity of building plots supplied. The public authority can influence the conditions for competition within the property markets via the selection of building developers. However, this control is not without problems since the decisions may have low transparency (Caesar, 2016). Furthermore, if provision of public infrastructure is set in the legislation as a public responsibility, then, at least in the EU, transfers of publicly owned land with servicing responsibilities would possibly require formal public tendering processes set in the EU legislation (Tasan-Kok and Korthals Altes, 2012).

Finally, the public authority can regulate, via the building plot transfers, the plan qualities, such as size of the building plots, types of buildings, target groups, housing mix and amount of social housing, beyond the regulation of the statutory plans (Priemus and Louw, 2003; Louw et al., 2003; van der Krabben and Jacobs, 2013). The additional quality control is probably more relevant in a plan-led planning system, where development control is imposed via wider legally-binding zoning plans, than in a development-led planning system, where site-specific development proposals are made by the developers and judged discretionarily on their merits by public authority (see e.g. Nadin and Stead, 2008; Muñoz Gielen and Tasan-kok, 2010 for wider review of the systems). Moreover, the plot transfer agreement conditions enable the public authority to prevent the private developers holding the transferred building plots undeveloped.

2.2. Public value capturing and cost recovery

Public value capturing relates to capturing the share of land value increment caused by actions of others than the landowner to the public (see e.g. van der Krabben and Needham, 2008; Muñoz Gielen and Tasan-kok, 2010). This share of land value increment can be regarded as an unearned positive externality for the landowner that should benefit the society instead of the landowner (see Webster and Lai, 2003; van der

Krabben and Needham, 2008). The ideas of capturing the unearned land value increments can be tracked back at least to Henry George's ideas in 19th century (Brown, 1997; Alterman, 2012).

Public cost recovery refers to recovering the public authority's building plot servicing costs. There are links between public cost recovery and value capturing since the public land servicing costs (including planning costs) cause the unearned land value increment for the landowner (van der Krabben and Needham, 2008). However, public land servicing costs may be higher or lower than the land value increment resulting from land servicing (including planning).

Public land value capturing and cost recovery can be based either on public land development, private voluntary contracts between a public authority and a landowner, or on statutory charges imposed to the landowner (Dransfeld and Voss, 1993; Needham and Verhage, 1998). The (national) institutional framework defines the statutory tools available as an alternative to voluntary contracts. It also settles the requirements for the landowners to participate in servicing the private building plots with public infrastructure.

By using public land development, public authority can avoid settling the cost recovery and value capturing issues with the landowner. Statutory cost recovery tools often do not allow full recovery of land servicing costs. If cost recovery and value capturing is settled in voluntary agreements, the negotiation outcome is highly uncertain (Samsura et al., 2010). The negotiations can also cause transparency and legitimacy problems concerning planning process and public planning decisions both in plan-led (Falleth et al., 2010; Mäntysalo and Saglie, 2010) and development-led planning systems (Crow, 1998; Fox-Rogers and Murphy, 2015). Thus, public authority has an incentive to use public land development to avoid these negotiation-related issues. This incentive is diminished if full public cost recovery is guaranteed by the institutional framework.

However, in practice, full recovery of value increasing public land servicing costs is quite impossible via statutory rules because eventually the whole infrastructure network provided by public authority within its jurisdiction can be regarded as a value increasing component. A line must be drawn somewhere (see e.g. Needham and Verhage 1998 for discussion concerning the difficulties in this). If public land development is used instead, the necessity to define project related public land-servicing costs becomes less relevant.

However, the necessary land acquisitions and related capital costs mean that the public authority needs to recover some additional costs in the public land development approach. These public costs are avoided if the public authority decides to not act as a land developer.

The ability to capture unearned value increments, in turn, depends on the size of the premiums over the existing use value paid by the public authority to the original landowner. If premiums are paid, then the value increment is shared between the original landowner and the public authority (Needham and Verhage, 1998). The regulation concerning expropriation and other statutory land acquisition influence the value capturing possibilities by affecting on the price and demand of land with development potential (van der Krabben and Jacobs, 2013).

Finally, if the public authority would decide to sell building land, together with a legally-binding plan, to be serviced by a private actor, the land value increment from the planning decision could be captured without exposing the public authority to the risk related to the recovery of the land servicing costs. Note, as mentioned in section 2.1., that such arrangements might require the use of a public tendering process to meet with EU legislation, which may reduce the public authority's means to further control implementation.

2.3. Public land development as a source of income

Public land development can also be used to create an (additional) income source for public authorities. Public authorities may be tempted to reap land development gains, by selling building plots higher than the land acquisition and servicing costs, in order to finance other public expenses (see e.g. Evans, 2008; Korthals Altes, 2010). Moreover, public authorities, acting as market players, may be confronted with a conflict of interest or 'double hats dilemma' (Needham, 2007): a certain planning decision may be wise from a planning perspective, but can be less attractive from a financial perspective. These conflicts of interests may concern both optimal planning decisions (van Rij and Korthals Altes, 2010) and fair treatment of other competing landowners (van Dijk and van der Vilst, 2015).

Using public land development as a source of income can be risky. Recent evidence of public land development in the Netherlands shows the two sides of the story. Korthals Altes (2008) shows that in 2005 on average 12 per cent of the annual income of Dutch municipalities was received from land development

revenues, providing an incentive to favour public land development from public finance perspective. An additional motivation for Dutch municipalities to use public land development as an income source concerns the municipal finance mechanisms in the Netherlands: municipalities have only few possibilities to raise additional income via alternative mechanisms. However, the profits come with a market risk. If building plot demand dries out, public authorities can start to lose money in their land development projects. As an effect of the GFC and its negative impact on the demand for new housebuilding, Dutch municipalities lost between 2008 and 2013 roughly between 4 and 6 billion euros on their investments in public land development, due to a remarkable drop and delays in building plots sales and related increased interest costs over their loans (Deloitte, 2011).

2.4. Public risks in public land development

The discussion above shows that the motivations to use public land development can be divided into control (to secure public planning goals) and public finance related ones. Control-related motivations boil down to the public control born from the position of a building land supplier. It allows control of land and property markets in wider level and specific development projects in more detailed level. Motivations related to public finance relate to concepts of public cost recovery and value capturing, and to the municipal finance mechanisms.

We argue, that the motivations implicitly translate to the risks related to land development from public authority's point of view, and to the interest of the public authority to manage these risks through their land development decisions. These risks, which form the risk framework for our empirical analysis reported in the following sections, consist of risks of not reaching specific public planning goals and financial risks taken in the public land development approach. The risks related to the unachieved planning goals include unbalanced housing supply, monopolies in housing supply, insufficient plan quality (in regard of e.g. housing mix, environmental sustainability, visual form etc.), and insufficient capture of unearned value increment. The financial risks of public land development boil down to a question if the incomes from selling the building plots can cover the land development costs consisting of land servicing, land acquisition, and capital costs. Thus, the risks can be divided to higher than expected land servicing and capital costs

(usually land acquisition costs are already sunk costs from project risk management perspective) and lower than expected incomes from selling the building plots, i.e the general real estate market risk.

3. Methodology

In this paper we study risk management tools and their effectiveness in public land development. Our empirical analysis consists of a comparative case study of two large-scale urban development projects in two countries where public land development is extensively used, i.e. Finland and the Netherlands.

To analyse the risk management tools applied and their effectiveness in controlling the risks related to public land development strategy, we chose to analyse projects that were already under implementation when the 2007-2009 GFC occurred. The GFC provides a fruitful empirical setup for investigation, as it had a significant effect on the European economies causing the real estate market risk to realize in many European development projects.

The case studies seek to provide answers to the following questions

1. What was the motivation for the municipality to execute the project through public land development?
2. Which risk management tools were used in the projects to control and transfer risks?
3. How did the GFC affect the project and how successful were the risk management tools in controlling and transferring the risks when the real estate market risk realized due to the GFC?

General literature on risk management divides it into three main components: risk/loss control, risk transfer and loss financing (e.g. Dorfman and Cather, 2012). The case studies focus on the risk control and transfer strategies applied by the municipalities in the project. It should be noted that risk control includes both the activities to reduce the likelihood of the down-side risks to be realized but also the activities reducing the losses in case they are realized. We address these by analysing the decisions made before the GFC and after the GFC.

The analysis of risk management in case projects was carried out by employing the risks derived in section 2. The risk management tools used in the projects were allocated to the recognized risks in regard to their purpose to manage each risk. The data for the case studies was collected by interviews with the key staff in

the projects. To complement the interview data, published documents related to the projects were used as secondary data sources.

Before moving on to the case studies, background for the case studies is provided by discussing briefly the institutional framework of both countries. This is necessary since the differences in the institutional framework affect both the risks of the municipalities in different land development approaches and the tools available to manage them.

3.1. Institutional framework for public land development in the case countries

In many respects, the institutional framework and development culture in Finland and the Netherlands is constructed to support the use of public land development. Next, the key institutional factors in these countries affecting the public risks in land development and their management are discussed.

3.1.1. Municipality as a planner

In both Finland and the Netherlands, the municipalities' position as controllers of the development is strong. Practically, no significant development can happen if not allowed by the municipality in a legally binding zoning plan. The municipality decides alone which areas are planned. The plan regulations restricting the allowed use of one's land are practically unlimited as long as they can be regarded necessary for the achievement of the public planning aims decided by the municipality. In the Netherlands, however, the allowed regulations were much more limited until 2008 (our case projects were initiated already in 1990s). Furthermore, in the Netherlands the province can force the municipalities to update their land-use plans to follow the regional plans. In Finland, the regional councils have no authority to force the municipalities to update the plans. A municipality only needs to follow the guidance of the existing regional plan when it decides to prepare a new plan for a particular area.

As already discussed in section 2, in the public land development approach, the position of a landowner gives the municipality an alternative route to regulate allowed developments. Instead of including some regulations in the plans, the municipality can add them in the land transfer contracts. This gives the municipality an opportunity to provide zoning plans with less regulations and more flexibility still retaining the same level of development control.

3.1.2. Landowners' participation to public infrastructure provision

When it comes to the landowners' responsibilities to participate in public infrastructure provision, the situation in the Netherlands and Finland is nowadays quite similar. In both countries, municipalities can collect statutory development charges from the private landowners. In Finland this has been possible since 2003 and in the Netherlands since 2008. Before the statutory development charges were included to the legislation, in both countries, voluntary agreements were the only possibility to settle the landowner participation to infrastructure provision (our case projects were initiated in the 1990s, thus under the old legislation).

Due to the limitations set for the statutory development charges, they do not appear an attractive alternative for agreement based landowner participation or for public land development. In both countries, the costs for which the statutory charges can be collected are narrowed down to technical infrastructure (thus public service buildings excluded) and capped by land value increment. In Finland, the statutory development charge cannot exceed 60% of the land value increment caused by the new plan and related public infrastructure provision. In the Netherlands, the legislation requires more vaguely that the landowner must be able to have a reasonable profit from the new plan after the statutory charge. In both countries, also the situations when the statutory charge must be paid are limited. Voluntary development agreements do not have such restrictions but instead the infrastructure provision responsibilities and development gains can be negotiated freely between the parties.

Although the municipality's position as a planner gives it a relatively strong negotiation position towards the landowner, the negotiation outcomes are always uncertain. By conducting public land development, the municipality can avoid the risks related to the negotiation uncertainty, such as delays in the planning process and the landowners' conflicting planning goals. Statutory development charge would provide an opportunity to avoid the risks related to the negotiation outcome as well. However, due to the limitations of the development charge, the public land development approach can in most cases be more tempting manner to avoid the negotiations with the landowners both in Finland and in the Netherlands.

3.1.3. Expropriation rights

The expropriation rights of the municipalities differ quite significantly between Finland and the Netherlands. In Finland, the municipality can practically always get a permission to expropriate land for urban development. Landowners' status and abilities do not matter. In the Netherlands, the land-owning professional developers can prevent the municipality from expropriating their land by claiming that they can themselves realize the plans. As a result, in Finland, private developers' interest to land without building rights can be eliminated by systematically using active land policy, whereas, in the Netherlands, this cannot be achieved. The Finnish municipalities unlike the Dutch ones do not have to compete against the developers for the land without building rights. Therefore, the municipalities in Finland are in a better position to capture land value increments when using public land development than the municipalities in the Netherlands.

Furthermore in Finland, the land value increment (up to seven years' time) occurring after and caused by the decision to draft a local detailed plan is subtracted from the market value when expropriation compensation is determined. In the Netherlands, the expropriation compensation is based on the market value without such subtraction. However, as long as the municipality acquires the land before a decision to prepare a local detailed plan, the expropriation compensation differences between the countries remain irrelevant.

3.1.4. Municipality's position in the government framework

Concerning public land development, the position of the municipalities is quite different in the studied countries. In Finland, the municipalities have complete autonomy in land development (as well as in many other actions). In the Netherlands, the municipalities need to report the financial performance and risks of the public land development projects. Thus, in Finland it is easier for the municipality to continue public land development projects even with financial deficits if other public goals call for it.

Furthermore, the taxation rights of the municipalities in these countries are quite different. In the Netherlands, the state collects income taxes, and redistributes some of the tax incomes to the municipalities. Additionally, municipalities collect property taxes, but they have only limited autonomy how to spend them (the majority is redistributed amongst municipalities through a national fund for municipalities). In Finland the municipalities collect all property taxes and major share of income and minor share of corporate profit

taxes. Thus, in Finland, due to the income taxation, the municipality's indirect tax incomes related to land development are very significant, whereas, in the Netherlands, they are of less importance.

3.2. Case projects

Table 1 summarizes key information of the studied case projects. They are both located in secondary cities: in Tampere, Finland and Nijmegen, the Netherlands. The selection was intentional, as the effects of the GFC were probably more severe in the secondary cities.

Table 1: Information of the case projects

	Vuores, Tampere	Waalsprong, Nijmegen
Population (country)	ca. 5.5 M	ca. 17 M
Population (metropolitan area)	ca. 390,000 (Tampere sub-region)	ca. 740,000 (Arnhem-Nijmegen metropolitan region)
Number of municipalities in MA	10 (Tampere sub-region)	17 (Arnhem-Nijmegen metropolitan region)
Population (municipality)	ca. 230,000	ca. 170,000
Housing construction target (number of dwellings)	ca. 4,900	ca. 11,200 (initially) ca. 12,500 (after adaptations)
Size of master plan area	ca. 850 ha	ca. 1,300 ha
Building land in master plan	ca. 210 ha	ca. 380 ha
Master plan ready	2005 (court appeals rejected 2006)	1998 (adaptations: early 2000s, 2007 and 2013)
Estimated finish	2020 originally 2029 currently	2016 originally 2029 currently

The housing markets weakened in both of the studied cities. In Nijmegen the effect of GFC has been more severe. In Tampere, the decrease in apartment prices has been small in magnitude, but the difference to the quickly increasing apartment prices prior to GFC is notable (see Figure 1 for housing price development in Tampere and Nijmegen).

Figure 1: Housing price development in Tampere and Nijmegen

Both projects, Vuores in Tampere and Waalsprong in Nijmegen, are of significant scale. The population targets are ca. 10,200 ca. 30,000 respectively. The master plan for Waalsprong was approved first time 1998. Master plan for Vuores was approved first time 2003 by the municipality. Because Vuores master plan was covering areas within the jurisdictions of two municipalities (Tampere and Lempäälä), the state Ministry of Environment had to rule on final approval which was received in 2005. The master plan was also challenged in the court (not rare in Finland with land-use plans) and the appeals were rejected in 2006.

In Waalsprong, housing construction had already been delayed in the beginning of the 2000s due to environmental issues and a necessary adjustment to the master plan because of flooding risks. In late 2008, when 2007-2009 GFC, which originated in the US, transmitted to Europe in full scale, the projects were still in the early phases of implementation. In Vuores, the process to prepare the first local detailed plans were already on-going before the master plan became legally binding. Thus, the construction of the first private building plots were about to begin in the middle of the turmoil caused by the GFC. The housing construction had a negative start from which the whole implementation of the project has suffered. In Waalsprong, a substantial reduction in demand for new housing caused by the GFC brought the project almost to a

standstill, and the weakened market conditions have led to two consecutive adaptations to the master plan in 2007 and 2013.

4. Case studies

4.1. Vuores, Tampere (Finland)

4.1.1. The motivation to use public land development

The city of Tampere has, for a long time, actively acquired undeveloped land for future development. Due to this, most parts of Vuores master plan area (on Tampere side) were already in the municipality's ownership before the project started. The municipality acquired the remaining land by voluntary transactions during the master plan process. The main motivation for the municipality to acquire the land was to avoid the difficulties arising from private landownership during the planning and development process. These difficulties are mainly related to the uncertain negotiation outcomes with the private landowners and reduced opportunity to control the implementation of the master plan. As noted, it was also in line with a long-standing policy of the municipality from which the deviations are merely exceptions.

4.1.2. How the risks related to the project have been managed?

The master plan for the project, prepared by two municipalities jointly, is quite detailed including limitations for the building densities and building types in designated areas. The master plan was the last chance for the two municipalities to control each other's behaviour probably explaining partly the amount of details.

However, only the subsequent local detailed plans concretely define permitted land uses and which kind of building plots the municipality can offer to the markets. To secure the demand for the building plots the municipality has used, in several (but not all) local detailed plans, so-called partnership planning. In partnership planning, the municipality selects private property developers to prepare a local detailed plan in cooperation with the municipality and reserves them specific building plots that they are supposed to develop. In Vuores project, this was done for the first time in the City of Tampere.

In its position as the landowner, the municipality has the opportunity to secure the qualitative planning goals. In the project, it has imposed this control by requiring all the building development proposals to go through a so-called quality group assessment before the building plots could have been acquired, and building permits

sought and given. The quality group procedure has allowed the municipality to draft local detailed plans with less regulation. On the other hand, in partnership planning projects the plan regulations concerning private building plots have had stronger influence from the partner developers' specific ideas limiting the flexibility of these plans. Furthermore, as a landowner, the municipality has an opportunity to affect the competitiveness of the development market (and subsequently the property market) via its building plot transfers. In the project, the building plots have been transferred to dozens of property developers, preventing monopolies in housing supply to arise in the area.

Implementation of the master plan has been phased to ca. 20 local detailed plans offering a chance to phase the public works as well. However, several infrastructures were already required in the early stages of the project, making the investments front-loaded. The phasing of on-site infrastructure provision within a single local detailed plan area is usually also limited by the fact that the streets in the plan area may be needed already before all building plots in the plan area are transferred to the developers. Furthermore, the policy of the municipality to lease most of the building plots has made the investments significantly front-loaded regardless of any phasing of the development.

The further development of the transferred building plots have been mainly controlled in the land transfer agreements and preceding developer selection process. The agreements have contained additional duties not required in the plans. The municipality has also prevented postponement of development by including time limits for actual development taking place. Furthermore, the municipality has tried to control the real estate market risk by planning a diversified housing mix with different types of buildings, variable sized dwellings and many types of occupation. The housing mix itself has, of course, also been an important planning goal, not only a vehicle to control the real estate market risk. Land transfer agreements and preceding developer selection process have been the main tools to control the housing mix as it is not strictly defined by the legally binding plans.

To predict and follow the financial balance of the project the municipality prepared, in 2007 when the implementation started, a project budget including project costs and revenue estimations. Since then, the project budget has been updated regularly. Table 2 shows a summary of the land development costs and

incomes in the project as presented in the master plan, 2007 project budget and the latest available project budget from 2015. All the figures have been converted to represent general price level of 2015.

Table 2 Land development costs and incomes in Vuores

	Master plan	Project budget 2007	Project budget 2015
Land acquisition costs ^a	6.5	6.5	6.5
Planning costs	N/A	11	10
Streets and other public spaces	58 ^b	73	78
Plot leases (fully leased)	N/A	3.9	2.9
Capitalized plot leases ^c	N/A	87	65
Plot sales	N/A	5.7	5.3
Land development gain	N/A	1.4	-24
Estimated completion	N/A	2020	2029
<p>a: Based on a rough estimate of the real estate director of Tampere of the average acquisition prices.</p> <p>b: Based on an assumption that Tampere municipality covers 4/5 of the total costs because the costs were not separated between Tampere and Lempäälä municipalities in the master plan.</p> <p>c: The capitalization ratio was calculated based on the capitalization ratios of 4 per cent for the residential plots and 6 per cent for the commercial plots. The ratios were retrieved from the publicized land policy guidelines of the City of Tampere for 2014-2017. It was assumed that approximately three quarters of the building right will be assigned in total for residential use. The assumption was based on the estimate given by the municipal project manager concerning the building rights in the whole Vuores area.</p>			

As Table 2 shows the costs in the existing budget are estimated to exceed the original master plan estimations by ca. 35 per cent, and the respective cost estimations of the first project budget from 2007 by ca. 6.5 per cent. It should be noted that due to the rather global cost estimations in the master plan (e.g. how the total costs are estimated to be divided between the two municipalities), their comparability to project budget estimations are limited. The lack of details concerning the costs and the lack of revenue estimates regarding building plot transfers make the transparency of the master plan in regard to its economic consequences relatively low. It seems evident, however, that the costs were significantly underestimated in the master plan.

The incomes in turn have decreased significantly between the project budget of 2007 and 2015. The capitalized plot leases are ca. 25 per cent lower in 2015 than in 2007. Together the estimated land development costs and incomes produced a profit of ca. 1.4 million euros in 2007 which has turned to a deficit of ca. 24 million euros in the 2015 budget. Taking into account the decline in the incomes and the

significant delay in the implementation, it can be concluded that the market risk has realized to a notable extent in the project.

4.1.3. How successful has risk management been in the project?

Partnership planning, as conducted in the case project, has actually rather increased than decreased the real estate market risk for the municipality. The municipality did not make binding contracts with the partner developers about the acquisition of the reserved building plots, and partner developers were able to postpone the acquisition of the building plots without any financial penalties when GFC changed the real estate market conditions. Since 2010, the municipality has started to reserve the building plots to the developers via official reservation contracts where the reservation holder needs to pay an annual reservation payment. Thus, the municipality has updated its policies in the project to be able to transfer some of the real estate market risk to the partner developers.

Just after GFC, the municipality remained rather flexible with the partner developers and did not cancel the plot reservations of those who postponed the plan implementation. Due to the real estate market conditions, the demand for these building plots was assumed low in general. Also since the local detailed plans have been based on the partner developers' development schemes, it has been difficult to attract other developers to acquire the building plots after the partner developers themselves had decided not to acquire them. Recently, the municipality has become more demanding and some of the undeveloped partnership-planned building plots have been transferred to other developers.

Binding time restrictions to the development of the plots with notable financial sanctions in the reservation contracts (if had been even made) could have theoretically prevented the postponement of implementation. However, in practice, it would have been politically difficult to force developers to supply properties into declining markets by threatening with the sanctions when the property developers had claimed that the GFC was out of their control. One could claim that such economic shocks are just part of the property developers' business risk. In addition, as reported in section 3.2., the prices in housing market of Tampere did not collapse even due to GFC but rather stopped their quick increase.

The project budget estimations have not caused any major effects on the planned development. Albeit the project finances are significantly weaker because of the GFC, the development has followed the original masterplan without notable deviations from it. Thus, the regulations in the master plan have effectively secured the achievement of the qualitative planning goals set already at the master plan stage. Minor trade-offs from spatial planning goals have been made, however, to reduce the losses from realized real estate market risk. The municipality has e.g. allowed higher share of smaller dwellings for which higher demand exists and lower share of less profitable social housing.

4.2. Waalsprong, Nijmegen (the Netherlands)

4.2.1. The motivation to use public land development

The Waalsprong development is one of the so-called Vinex-locations in the Netherlands, appointed by the national government in the early 1990s, as part of a national strategy to meet with an anticipated strong demand for new housing in the next ten to twenty years. This national strategy aimed at building around 835,000 new houses on large greenfield locations close to existing cities between 1995 and 2010. The city of Nijmegen was asked by both the central and provincial government to develop the Waalsprong according to these ideas.

Although public land development was not “demanded” by the higher authorities as part of the Vinex policy plans, it was nevertheless by all public stakeholders considered as the way to do it – as it had been the default development strategy since WWII. The municipality did not have many concerns about the financial risks associated with the public land development strategy, because it expected a steady increase of housing prices during the implementation of the project, which would lead, in turn, to increase of market value of land and would further raise income from building plot sales. Moreover, substantial national subsidies for social housing were available, taking away most of the financial risks – as it was expected at that time. In line with this, the national bank for municipalities easily provided loans to Nijmegen to finance the substantial investments.

Similar to most other Dutch cities, the local authority assumed that the public land development strategy would enable the city to implement the Waalsprong plan in an efficient way. Acquisition of all land in the

Waalsprong area at the start of the project – primarily based on voluntary agreements with landowners, if necessary accompanied with municipal pre-emption rights and expropriation powers - made it possible to put in the large off-site infrastructures serving the whole development area at once and was expected to increase project efficiency. As already explained in section 3.1.2., it also helped the local authority to overcome the gaps in the “old” planning law. The municipality was afraid that, if it would not acquire all land in the Waalsprong at the start of project, private sector “free riders” would buy land and develop that land in the most profitable way, not taking into consideration any societal objectives of the plan and not willing to contribute to public infrastructure costs. Finally, no private developer showed interest to take the role of land developer for the whole area of the Waalsprong instead of the municipality.

4.2.2. How the risks related to the project have been managed?

At the start of the project, in 1996, the city council decided on a detailed masterplan, defining the exact number of houses to be built (11,214 according to the plans in 1996), the housing mix (75% owner-occupied; 25% social housing), and the timing of the project (an average of 900 houses built annually until 2005; 600 houses average per year after 2005; completion foreseen in 2016). The municipality invited a number of private developers and local housing associations to enter a public private partnership joint venture to develop the Waalsprong - a common strategy used by municipalities in most Vinex-locations. The main motivation for the municipality to do so was to be able to share the real estate market risk related to land development and also to have less uncertainty about future demand for the building plots.

Five private developers and two local housing associations, together with the municipality, established in 1997 a development company responsible for all land developments in the Waalsprong for residential use. The company, with 50% ownership by the municipality and 50% joint ownership by the private developers and housing associations, was to acquire all land necessary for development and to provide the on-site infrastructure for each detailed plan areas. Building plot sales would generate income, which was expected to be sufficient to cover all land servicing costs except the off-site infrastructure. The off-site infrastructure and land development for non-residential use in the Waalsprong was agreed to remain outside the PPP to be developed by the municipality on its own. Detailed agreements on the housing mix were part of the PPP

contract. It was agreed that 62.5% of all building sites for residential use would go to the private developers, 28.5% would go to the housing associations, and 9% would be in use as public space.

To prevent speculative land acquisitions by other developers the partnership decided to acquire, if possible, all land prior to plan implementation. The private developers and the housing associations received the exclusive right to buy all building plots (divided among them) that would become available in the Waalsprong, based on indexed prices at the pre-sale agreements.

It was calculated that the sale of building plots would generate sufficient income to cover the building site servicing costs excluding the off-site infrastructure. The building site sale contracts contained further specifications on, among other things, building design and the type of houses to be built (price categories). Since a few private developers (not participating in the partnership) had been able to acquire smaller pieces of land before the start of the project, the municipality decided to sign separate contracts with these developers specifying the houses that they were going to build.

To manage the financial risks related to the public land development strategy, the municipality had to meet up with the accounting rules specifically set for local authorities for this purpose. These rules require the municipalities to develop a separate financial exploitation for the project, to provide the annual assessment of the financial risks related to the project, to immediately adjust the plan if it appears to be unrealistic (including financial consequences), and to keep a financial reserve within the municipal land department to compensate for insufficient cost recovery by building site sales.

4.2.3. How successful has risk management been in the project?

After the GFC had emerged, a substantial drop in demand for new housing had a significant effect on the Waalsprong project. For a few years, building plot sales reduced to almost zero. Soon it appeared that the partnership joint venture, one of the main cornerstones of the risk management strategy for the project, failed to provide the expected guarantee in the project regarding income from plot sales for the partners. While the private developers and housing associations held the exclusive right to obtain all development rights in the Waalsprong, the obligation to buy was however not part of the partnership contract. Understandably the partners of the municipality decided for the time being not to buy, without being able to give the

municipality any prospect on when they would resume buying. The result was that the revenue from land sales dropped to almost nothing. In the end all the partners therefore agreed to terminate the partnership joint venture, which meant that all financial risks related to the public land development strategy returned to the municipality. As a consequence, the municipality can now sell building sites to whichever party that is interested to buy.

When it became clear that the completion of the project had to be postponed with quite some years, which would lead to substantial additional capital costs (close to €40,000 additional interest costs for every extra day of delay in the project), and that the prices of the building sites would not develop in the coming years as had been expected, the municipality was obliged to adjust the financial exploitation for the plan. Due to the enormous impact of the GFC on the expected income from building plot sales, the financial reserve of the municipal land department was not sufficient to compensate for the loss. Additionally, the municipality had to decide on supplementary cuts in the municipal budget to provide even more compensation.

Due to the poor financial performance of the project (in 2013 the municipality calculated a unforeseen loss of more than € 100 million, mainly due to the GFC with no guarantee yet that this is the end of it), the municipality also decided to modify the masterplan, increasing its flexibility (to deal with further changes in demand in the future), and adjusting housing mix, number of houses to be built (total number of houses levelled up, to compensate for lost income) and phasing of the project (completion postponed to 2027). Together with neighbouring municipalities, Nijmegen also agreed on regional coordination across municipalities on housing supply, leading to the postponement and cancellation of some “competing” plans for residential development and, thus, creating a certain extent of scarcity of available land for housing development. Finally, on a more general level, the city council decided for more extensive control of the municipal land department and to reconsider public land development policies for future projects.

5. Discussion

In this section we analyse and summarize our findings concerning the risk management activities. Table 3 summarizes the risk management tools found in the projects of which details have been already discussed in Section 4.

The risk management patterns in public land development have been notably similar in the studied cases located in different institutional frameworks – although differences exist as well. In both of the projects, the public land development approach has clearly been an essential strategy for securing the planning goals of the municipalities. Especially the regulations in the master plans and land transfer contracts have been important in securing several, mainly qualitative, planning goals. These goals have included e.g. sufficient housing supply, spatial quality of the area and the housing mix, competition stimulation of the property development markets, and capturing of “unearned” land value increments caused by the new development opportunities. Landowner position has provided the municipalities with complete control over these planning goals. They have been able to shape the master plan to follow the planning goals without negotiations with the landowners. When transferring the building plots to the private developers they have been able to control further the forthcoming development in the land transfer contracts. Even before making the contracts, they have had an opportunity to affect the competition conditions in the property markets when selecting developers. Furthermore, the plots can have been transferred to such developers that present a development scheme which accords with the municipalities’ planning goals.

Whereas public land development has provided the municipality an efficient approach to manage the risks related to achievement of the planning goals, management of financial risks included to public land development approach has been challenging in both studied cases. The approaches of the municipalities to manage these risks have been to some extent different, however rather inefficient in both cases. It seems that the municipalities have remained without real opportunities to transfer the real estate market risk to the private developers. In both cases this is mainly caused by deficiencies in the formal agreements made with the private developers. However, even if the agreements would have allowed the municipality to force property developers to acquire the building plots, it might have been politically difficult for the municipality as a public actor to do so in practice.

All in all, it seems that the real estate market risk endangering the financial profitability of land development is quite unavoidable in the public land development strategy. This is not surprising, since land development is eventually risky economic activity. However, the studied cases point out that the attempts to share this risk with private developers fail easily. These risk transfer and control attempts might just improve the private

developer's position in the competition for building plots with municipality still eventually carrying the risk of the land development. One of the main difficulties in such risk transfer and control seems to be that when challenges in the markets occur the municipality often has an incentive not to cause severe problems to the private developers, e.g. making them to suffer notable financial losses. Thus, the municipality faces a significant pressure to back up the developers in case of market decline.

Taking into account the challenge for the municipality to control and transfer the real estate market risk via partnership agreements, it is also important to pay attention to the possible trade-offs from original planning goals as a loss control tool. In this regard, the studied cases differed from each other. Whereas, in the Waalsprong case, the original master plan has been adjusted twice to address the losses, in the Vuores case the masterplan has remained untouched and the municipality seems to have accepted the weaker financial outlook of the project. This is probably best explained by the institutional differences regarding the importance of the financial performance of the public land development projects. The importance of financial performance is probably affected by the institutional differences regarding municipal incomes. For the Finnish municipalities, direct incomes from land transfers are only a minor part of total revenues arising from land development. The income and property tax revenues realized due to the development provide much larger share of the total revenues related to the land development. Thus, the pressures to trade off non-monetary planning goals for improving the financial performance of the land development projects are most probably much smaller for the Finnish municipalities.

The different reactions to the decreased property market demand points out the difficult balancing between planning goals and the financial risk in land development. Typical manners available for the municipality to improve project finances are to decrease the costs of public infrastructure by downgrading their quality or increase the density of the plan, i.e. decreasing the infrastructure costs per dwelling, or decrease the land uses of lower value, usually social housing in the area. All these actions can cause severe conflicts with the planning goals of the municipality. In Finland, they may in the end have also negative effect for the total revenues if they have negative effect for income tax projections.

The challenge related to balancing the planning goals with public land development profits actually provides a point for criticism of the public land development approach. As our case examples show from the planning

point of view, the original planning goals can only be reached, when the demand in the property markets weakens, if the municipality can afford to keep them. If the municipality were only in the role of public authority regulating land-uses, it would most probably be easier to stick to the original qualitative planning goals even in declining property markets. Thus, by using the public land development strategy, the municipality may easily end up in losing some of the qualitative planning goals of which securing was one of the main reasons to use public land development in first place. Our cases suggest that this does not necessarily happen but it can easily happen, especially if the direct land transfer revenues form almost all projected total revenues from the public land development project to the municipality.

Table 3 Risk management tools in public land development

		Risk management tools: Vuores	Risk management tools: Waalsprong
Risks related to the achievement of the planning goals	Housing supply not meeting housing demand	<ul style="list-style-type: none"> Detailed masterplan for the plan area based on population forecasts (C) Conditions in building plot transfer contracts (C) Letters of intent with the state and metropolitan area municipalities setting targets (not limits) for regional housing supply (C, A) 	<ul style="list-style-type: none"> Detailed masterplan for the plan area based on population forecasts (C) Conditions in building plot transfer contracts (C) Adjustments to the master plan twice with involvement of (future) residents (C, A) Regional coordination across municipalities on housing supply (C, A)
	Qualitative planning goals not reached (housing mix, public spaces, visual quality etc.)	<ul style="list-style-type: none"> Plan regulations in the master plan and succeeding local detailed plans (C) Qualitative requirements in building plot transfer contract conditions (C) Selection of developers based on their building project plans (C) Quality group approval for a building development before building plot transfer (C) 	<ul style="list-style-type: none"> Plan regulations in the master plan and succeeding detailed zoning plans (C) Qualitative requirements in partnership contract conditions (C) Qualitative requirements in building plot transfer contract conditions (C)
	Monopolies in housing supply	<ul style="list-style-type: none"> Acquisition of all land in the project area prior to the approval of the master plan (C) Developer selection process for partnership planning (C) Developer selection process for building plot transfers (C) 	<ul style="list-style-type: none"> Acquisition of almost all land in the project area prior to master plan implementation (C) Developer selection process for partnership (C) Developer selection process for building plot transfer (C, A)
	Insufficient capture of unearned value increment	<ul style="list-style-type: none"> Acquisition of all land in the project area prior to the approval of the master plan (C) 	<ul style="list-style-type: none"> Acquisition of almost all land in the project area prior to master plan implementation (C) Separate contracts with a few private developers outside the partnership for remaining land (C)
Financial risks related to the public land development approach	Underestimated land servicing costs	<ul style="list-style-type: none"> Annually updated project plan including project budget estimation and monitoring (C) 	<ul style="list-style-type: none"> Annual financial risk assessment by municipal land department of all PLD projects (C) Municipality's financial reserve dedicated to PLD-related risks (F)
	Overestimated building plot transfer incomes -real estate market risk	<ul style="list-style-type: none"> Annually updated project plan including project budget estimation and monitoring (C) Partnership planning with selected developers in preparing some local detailed plans (C) Reduced regulations in the local detailed plans (C) Variety of the housing mix (C) Detailed master plan limiting the development opportunities also on the neighbouring municipality's jurisdiction (C) Plot reservation contracts in partnership planning with reservation fees (T, A) Some adjustments to housing mix requirements that were possible without adjusting the master plan (C, A) 	<ul style="list-style-type: none"> Annual financial risk assessment by municipal land department of all PLD projects (C) Municipality's financial reserve dedicated to PLD-related risks (F) Establishment of the partnership with presale agreement of building sites (T) Cost reducing adjustments to planned infrastructure (C, A) Adjustments to the master plan twice with involvement of (future) residents (C, A) Adjustments to housing mix, timing of development and number of building plots for sale (C, A) Regional coordination across municipalities on housing supply (C, A)
	Delayed building plot transfers – increased capital costs	<ul style="list-style-type: none"> Annually updated project plan including project budget estimation and monitoring (C) 	<ul style="list-style-type: none"> Annual financial risk assessment by municipal land department of all PLD projects (C) Municipality's financial reserve dedicated to PLD-related risks (F) Adjustments to loan structure (C, A)
C = Risk/loss control, T = Risk transfer, F= Loss financing, A = After GFC measure			

6. Conclusions

In this paper, we have addressed the tools available for public authorities to manage the risks related to public land development. We approached the topic by two case studies conducted in Finland and the Netherlands. Our findings rely on the analysis of the institutional frameworks for public land development in these countries as well as the risk management in the selected two case projects.

Our findings indicate that the municipalities have used several tools available in the public land development strategy to manage the risks related to the achievement of the municipal planning goals. This has involved a relatively detailed master plan but also contractual arrangements together with developer selection in both cases. The findings suggest that the contractual management of the financial risks related to public land development strategy has been severely limited. It seems that the municipalities were not effectively prepared for property market demand related shocks, such as the 2007-2009 GFC, which occurred during the implementation of the projects.

The partnership arrangements used in the case projects appear to lead into favourable situations for the private property developers benefitting from reduced competition for building plots, while the municipality still carries the real estate market downside risk. Furthermore, at least the Finnish case raises concern on cost overruns in these kind of large-scale public projects, at least in regard to the master plan stage cost estimations.

Finally, the risk management on institutional level included the most significant difference between the cases. In the Netherlands, the risk management of the public land development projects has been formally institutionalized. The Dutch municipalities need to assess the risks of each land development project, reserve funds for possible losses and provide annual reports to the city council on financial performance of the projects. In Finland, such institutionalized reporting does not exist making the land development project finances generally less transparent to the public. Furthermore, the responses to the decreased profitability caused by the realized real estate market risks suggest that in Finland the profitability of land development is not as important in the decision making as in the Netherlands.

It can be concluded from our study, that both the institutional framework and everyday planning and development practices determine the success of risk management in the public land development approach. In both countries, the institutional framework and planning and development practices supported management of risks related to the achievement of the planning goals but had limitations on managing financial risks related to the public land development approach. However, from the planning perspective, the Dutch willingness to adjust notably the qualitative planning goals for improved financial performance of public land development raises concern of the planning integrity in public land development. The planning goals could survive better with other approaches than public land development in declining markets. After all, it is easier for the municipalities to hold the qualitative planning goals when they have not tied their capital on the land subject for development.

References

- Adams, D., 2015. Urban Land Reform Briefing Paper No 4: Explaining Public Interest Led Development. Policy Scotland, University of Glasgow, 2 pp.
- Adams, D., Disberry, A., Hutchison, N., Munjoma, T., 2001. Ownership Constraints to Brownfield Redevelopment. *Environ. and Plan. A* 33 (3), 453-477, doi:10.1068/a33200.
- Alexander, E.R., 2014. Land-property markets and planning: A special case. *Land Use Policy* 41, 533-540, doi:10.1016/j.landusepol.2014.04.009.
- Alterman, R., 2012. Land Use Regulations and Property Values: The 'Windfalls Capture' Idea Revisited. In: Brooks, N., Donaghy, K., Knaap, G. (Eds.), *The Oxford Handbook of Urban Economics and Planning*, Oxford University Press, Oxford, pp. 755-786, <http://ssrn.com/abstract=2309571>.
- Brown, H.J., 1997. Henry George's Contributions to Contemporary Studies of Land Use and Taxation. In: Brown, H.J (Ed.), *Land Use & Taxation: Applying the Insights of Henry George*, 1-6. Lincoln Institute of Land Policy, Cambridge, Massachusetts, pp. 1-6.
- Buitelaar, E., 2004. A transaction-cost analysis of the land development process. *Urban Stud.* 41 (13), 2539-2553, doi:10.1080/0042098042000294556.
- Buitelaar, E., 2010. Window on the Netherlands: Cracks in the myth: Challenges to land policy in the Netherlands. *Tijdschr. voor economische en soc. geografie.* 101 (3), 349-356, doi:10.1111/j.1467-9663.2010.00604.x.
- Buitelaar, E., Bregman, A., 2016. Dutch land development institutions in the face of crisis: trembling pillars in the planners' paradise. *European Plan. Stud.* 24 (7), 1281-1294, doi:10.1080/09654313.2016.1168785.
- Buitelaar, E., De Kam, G., 2012. The Emergence of Inclusionary Housing: Continuity and Change in the Provision of Land for Social Housing in the Netherlands. *Hous., Theory and Society.* 29 (1), 56-74, doi:10.1080/14036096.2011.592214.
- Caesar, C., 2016. Municipal land allocations: integrating planning and selection of developers while transferring public land for housing in Sweden. *J. of Hous. and the Built Environ.* 31 (2), 257-275, doi:10.1007/s10901-015-9457-2.
- Crow, S., 1998. Planning gain: there must be a better way. *Plan. Perspectives.* 13 (4), 357-372, doi:10.1080/026654398364383.
- Dransfeld, E., Voss, W., 1993. Funktionsweise städtischer Bodenmärkte in Mitgliedstaaten der Europäischen Gemeinschaft: ein Systemvergleich. Bundesministerium für Raumordnung, Bauwesen und Städtebau, <http://hdl.handle.net/10068/216838>.
- Deloitte Real Estate Advisory, 2011. Financiële effecten crisis bij gemeentelijke grondbedrijven: update. VNG, Den Haag.
- Dorfman, M.S., Cather, D., 2012. Introduction to risk management and insurance, (10th ed.). Pearson Higher Education, Upper Saddle River, New Jersey, 459 pp.
- El Araby, M.M., 2003. The role of the state in managing urban land supply and prices in Egypt. *Habitat Int.* 27 (3), 429-458, doi:10.1016/S0197-3975(02)00068-1.
- Evans, A.W., 2008. Economics, real estate and the supply of land. Blackwell Publishing, Oxford, UK, 276 pp.
- Falleth, E.I., Hanssen, G.S., Saglie, I.L., 2010. Challenges to Democracy in Market-Oriented Urban Planning in Norway. *European Plan. Stud.* 18 (5), 737-753, doi:10.1080/09654311003607729.
- Fox-Rogers, L., Murphy, E., 2015. From brown envelopes to community benefits: The co-option of planning gain agreements under deepening neoliberalism. *Geoforum*, 67, 41-50, doi:10.1016/j.geoforum.2015.09.015.

- Glumac, B., Han, Q., Schaefer, W., van der Krabben, E., 2015. Negotiation issues in forming public–private partnerships for brownfield redevelopment: Applying a game theoretical experiment. *Land Use Policy* 47, 66-77, doi:10.1016/j.landusepol.2015.03.018.
- Hartmann, T., Spit, T., 2015. Dilemmas of involvement in land management – Comparing an active (Dutch) and a passive (German) approach. *Land Use Policy* 42, 729-737, doi:10.1016/j.landusepol.2014.10.004.
- Havel, M.B., 2009. Property rights regime in land development – Analysis of the influence of institutions on land development in terms of the property rights theory. Helsinki University of Technology, Espoo, 313 pp.
- Havel, M.B., 2014. Delineation of property rights as institutional foundations for urban land markets in transition. *Land Use Policy* 38, 615-626, doi:10.1016/j.landusepol.2014.01.004.
- Kang, V., Korthals Altes, W.K., 2015. Flexibility and Public Accountability in Public Land Development Projects in Progress. *European Plan. Stud.* 23 (8), 1609-1626, doi:10.1080/09654313.2014.941792.
- Kalbro, T., 2000. Property development and land-use planning processes in Sweden. In: Böhme, K., Lange, B., Hansen, M. (Eds.) *Property Development and Land-use Planning Around The Baltic Sea*. Nordregio, Stockholm, pp. 95-110.
- Korthals Altes, W.K., 2006. The Single European Market and Land Development. *Plan. Theory & Pract.* 7 (3), 247-266, doi:10.1080/14649350600841412.
- Korthals Altes, W.K., 2008. Actief grondbeleid betaalt zich terug. *Property Res. Q.* 7 (1), 22-27.
- Korthals Altes, W.K., 2010. The Financial Estimates and Results of Servicing Land in the Netherlands. *Environ. and Plan. B: Plan. and Des.* 37 (5), 929-941, doi:10.1068/b36027.
- Korthals Altes, W.K., 2014. Taking planning seriously: Compulsory purchase for urban planning in the Netherlands. *Cities* 41, 71-80, doi:10.1016/j.cities.2014.05.011.
- Lefcoe, G., 1977. When Governments Become Land Developers: Notes on the Public-Sector Experience in the Netherlands and California. *South. Calif. Law Rev.* 51, 165–263.
- Louw, E., 2008. Land assembly for urban transformation—The case of ‘s-Hertogenbosch in The Netherlands. *Land Use Policy* 25 (1), 69-80, doi:10.1016/j.landusepol.2006.09.002.
- Louw, E., van der Krabben, E., Priemus, H., 2003. Spatial development policy: changing roles for local and regional authorities in the Netherlands. *Land Use Policy* 20 (4), 357-366, doi:10.1016/S0264-8377(03)00059-0.
- Muñoz-Gielen, D., Tasan-Kok, T., 2010. Flexibility in Planning and the Consequences for Public-value Capturing in UK, Spain and the Netherlands. *European Plan. Stud.* 18 (7), 1097-1131, doi:10.1080/09654311003744191.
- Muñoz-Gielen, D., 2014. Urban governance, property rights, land readjustment and public value capturing. *European Urban and Regional Stud.* 21 (1), 60-78, doi:10.1177/0969776412440543.
- Mäntysalo, R., Saglie, I.L., 2010. Private Influence Preceding Public Involvement: Strategies for Legitimizing Preliminary Partnership Arrangements in Urban Housing Planning in Norway and Finland. *Plan. Theory & Pract.* 11 (3), 317-338, doi:10.1080/14649357.2010.500123.
- Nadin, V., Stead, D., 2008. European Spatial Planning Systems, Social Models and Learning. *disP-The Plan. Rev.* 44 (172), 35-47, doi:10.1080/02513625.2008.10557001.
- Needham, B., 1992. A Theory of Land Prices When Land is Supplied Publicly: The Case of the Netherlands. *Urban Stud.* 29 (5), 669-686, doi:10.1080/00420989220080621.
- Needham, B., 1997. Land Policy in the Netherlands. *Tijdschr. voor economische en soc. geografie.* 88 (3), 291-296, doi:10.1111/j.1467-9663.1997.tb01606.x.

- Needham, B., 2007. Dutch Land-use Planning: Planning and Managing Land-use in the Netherlands, the Principles and the Practice. Sdu Uitgevers, The Hague, 299 pp.
- Needham, B., Verhage, R., 1998. The Effects of Land Policy: Quantity as well as Quality is Important. *Urban Stud.* 35 (1), 25-44, doi:10.1080/0042098985050.
- Passow, S.S., 1970. Land Reserves and Teamwork in Planning Stockholm. *J. of the Am. Plan. Association.* 36 (3), 179-188, doi:10.1080/01944367008977304.
- Priemus, H., Louw, E., 2003. Changes in Dutch Land Policy: From Monopoly towards Competition in the Building Market. *Environ. and Plan. B: Plan. and Des.* 30 (3), 369-378, doi:10.1068/b12982.
- Roberts, N., 1975. Land Storage—The Swedish Example. *The Mod. Law Rev.* 38 (2), 121-138, doi:10.1111/j.1468-2230.1975.tb01406.x.
- Samsura, D.A.A., van Deemen, A., van der Krabben, E., van der Heijden, R., 2014. An experimental study of computer-based negotiation in property development processes. *Int. J. of Strategic Prop. Manag.* 18 (4), 344-355, doi:10.3846/1648715X.2014.970597.
- Samsura, D.A.A., van der Krabben, E., van Deemen, A.M.A., 2010. A game theory approach to the analysis of land and property development processes. *Land Use Policy* 27 (2), 564-578, doi:10.1016/j.landusepol.2009.07.012.
- Samsura, D.A.A., van der Krabben, E., van Deemen, A.M.A., van der Heijden, R.E.C.M., 2015. Negotiation processes in land and property development: an experimental study. *J. of Prop. Res.* 32 (2), 173-191, doi:10.1080/09599916.2015.1009846.
- Tan, R., Beckmann, V., van den Berg, L., Qu, F., 2009. Governing farmland conversion: Comparing China with the Netherlands and Germany. *Land Use Policy* 26 (4), 961-974, doi:10.1016/j.landusepol.2008.11.009.
- Taşan-Kok, T., Groetelaers, D.A., Haffner, M.E.A., van der Heijden, H.M.H., Korthals Altes, W.K., 2013. Providing Cheap Land for Social Housing: Breaching the State Aid Regulations of the Single European Market?. *Regional studies* 47 (4), 628-642, doi:10.1080/00343404.2011.581654.
- Taşan-kok, T., Korthals Altes, W.K., 2012. Rescaling Europe: Effects of Single European Market Regulations on Localized Networks of Governance in Land Development. *Int. J. of Urban and Reg. Res.* 36 (6), 1268-1287, doi:10.1111/j.1468-2427.2012.001141.x.
- Turk, S.S., Korthals Altes, W.K., 2010. Institutional capacities in the land development for housing on greenfield sites in Istanbul. *Habitat Int.* 34 (2), 183-195, doi:10.1016/j.habitatint.2009.09.002.
- van der Krabben, E., Jacobs, H.M., 2013. Public land development as a strategic tool for redevelopment: Reflections on the Dutch experience. *Land Use Policy* 30 (1), 774-783, doi:10.1016/j.landusepol.2012.06.002.
- van der Krabben, E., Needham, B., 2008. Land readjustment for value capturing: A new planning tool for urban redevelopment. *Town Plan. Rev.* 79 (6), 651-672. doi:10.3828/tpr.79.6.4.
- van der Krabben, E., Lambooy, J.G., 1993. A Theoretical Framework for the Functioning of the Dutch Property Market. *Urban Stud.* 30 (8), 1381-1397, doi:10.1080/00420989320081321.
- van Dijk, T., van der Vlist, A., 2015. On the interaction between landownership and regional designs for land development. *Urban Stud.* 52 (10), 1899-1914, doi:10.1177/0042098014544764.
- van Rij, E., Korthals Altes, W., 2010. Looking for the optimum relationship between spatial planning and land development. *Town Plan. Rev.* 81 (3), 283-306, doi:10.3828/tpr.2010.2.
- Verhage, R., 2003. The Role of the Public Sector in Urban Development: Lessons from Leidsche Rijn Utrecht (The Netherlands). *Plan. Theory & Pract.* 4 (1), 29-44. doi:10.1080/1464935032000057191.

Viitanen, K., Palmu, J., Kasso, M., Hakkarainen, E., Falkenbach, H., 2003. Real estate in Finland. Helsinki University of Technology, Espoo, 68 pp.

Webster, C.J., Lai, L.W.C., 2003. Property rights, planning and markets: Managing spontaneous cities. Edward Elgar Publishing, Cheltenham, 249 pp.

Yan, S., Ge, X.J., Wu, Q., 2014. Government intervention in land market and its impacts on land supply and new housing supply: Evidence from major Chinese markets. *Habitat Int.* 44, 517-527, doi:10.1016/j.habitatint.2014.10.009