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Paper from: *Maritime Engineering and Ports III*, CA Brebbia & G Sciutto (Editors).
ISBN 1-85312-923-2

Port expansion and public-private partnership: the case of Rotterdam

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Abstract

The role of public authorities in the development of infrastructure is evident. Increasingly, private parties show interest in infrastructure projects. The relationship between public and private parties can take various shapes. From a theoretical point of view, four models of co-operation between public and private parties are discussed. The realisation of the second Maasvlakte, a large scale port expansion in Rotterdam, will serve as an example. The project started in the early 1990s as a traditional (unilateral) port planning procedure. Private involvement enters the picture for the first time in 1998. A constructing firm, container handling company and financial institution launched the Binnenmeer-plan. This innovative private initiative introduced the concept of a phased construction of the second Maasvlakte. Simultaneously, the Dutch government carried out a study project and the Combination model, which incorporates both the objectives of public parties and of the business community was developed. The Combination model can be perceived as a breakthrough because it demonstrates that solutions for problems such as existing planning procedures and EU directives can be found. Albeit the enthusiasm from both parties was overwhelming, the government exchanged the Combination model for the Parallel model. In this model, the role of central government is restricted to spatial planning and land use, regional and local government will act as project developer. At the moment two arguments in the discussion prevail: innovation and risk sharing. Therefore, parts of the project will be put on tender: Design Build Finance and Maintain (DBFM)-arrangements for the dikes and Build Operate and Transfer (BOT)-contracts for the terminals. However, it is at least doubtful whether BOT-contracts will work in the Hamburg - Le Havre range.

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1 Introduction

In the second half of the 20th century, public-private partnerships have gained in importance, first in the USA and later in Europe (Teisman [1]). These partnerships took various shapes, due to the different settings and institutional contexts in which they were developed. In the USA private companies, citizens and local governments co-operated in order to revitalise inner cities, whereas in Canada decentralisation and empowerment were important issues, which were central to partnerships. In Britain as well as in the Netherlands partnerships were put forward as a solution to budget deficits in a period of economic decline. But at the same time it is uncertain whether parties are able to successfully give shape to a public-private co-operation. Cultural and institutional differences between public and private parties and the risks attached to bringing the two together constitute a serious threat to successful public-private partnership (Jacobs [2]).

The development of successful public-private partnerships will form one of the most important challenges facing organisations in the public and private domain in the years to come. This paper deals with the need and options for creating public-private partnerships but also with the difficulties and risks involved. This problem will be illustrated by examining the public-private partnership relating to the expansion of the port of Rotterdam.

2 Public-private co-operation in infrastructure projects

The process of project development comprises various phases. In order to position the stage of a project a general scheme that contains all phases from early identification to realisation and exploitation of the project, will be employed (Twijnstra Gudde [3]):

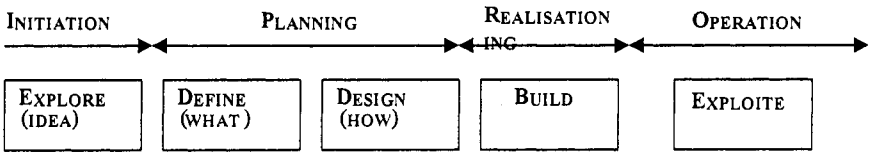

Figure 1. Project Phases

During the initiation phase the problem and potential solutions are the centre of attention; activities include (extensive) exploration of the problem and mapping the parties involved. Public-private partnership in this stage usually is without obligations. When the problem and its solution gradually become clear the project enters into the planning phase. Now the 'what' and 'how'-questions needs to be answered. In the part of definition phase the aims, scope and constraints must be defined whereas in the latter part a detailed technical design as well as

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financial arrangements are needed. When an agreement has been reached the building phase can commence. In a life cycle approach construction and maintenance are combined in the design. Ultimately, the project is ready for use. Public as well as private parties are qualified to operate infrastructure projects.

With regard to the process of project development of infrastructures, relations between public and private parties can take various shapes. In this paper four types of co-operation are distinguished: public projects being contracted out, private initiatives, public project with innovative tendering and public-private partnership.

2.1 Contracting out

Contracting out is the traditional way of developing and realising public infrastructure. The phase of conceptual development and planning is done by government and results in a public program of detailed specifications. On the basis of this program the project is put to tender. The selected private constructing company builds the project and delivers it to the public authority. Exploitation is mostly in the hands of government or tendered separately to a private party. Putting exploitation to contract is a relatively new practice (Kessides [4]).

Although governments have developed engineering departments with a lot of technical know how, they often lack knowledge of the market and their orientation on societal developments is limited. In the course of years, private constructors have become dependent on governments. They also lack a market orientation and a drive to develop and apply technological innovations. Within the specification formulated by the government, there is little room for innovation and experiments. Typical for these of projects is the separation in various phases of project development (conceiving the concept, planning, design, construction and exploitation). This restricts the quality of (the exploitation of) the infrastructure system, efficiency, and the opportunities for commercial exploitation.

2.2 Public involvement in private initiatives

During the last years a number of private initiatives were launched concerning the realisation of what traditionally is considered to be public infrastructure. In the field of building roads that were postponed due to a lack of public budget, private initiatives were presented. But also with respect to major, highly innovative projects such as the construction of a magnetic elevated train between Amsterdam and the North of the Netherlands, private plans are proposed. These private initiatives are to a certain extent the other side of the picture of the above mentioned public projects. Especially the first phases of the project are developed by private parties (Van Mill [5]). Often, commercial exploitation of the project is part of the concept. For instance, the magnetic high-speed railway

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proposals include a plan for commercial exploitation of the locations in the surrounding of the railway stations. Public parties are asked to adopt these private plans and to give formal approval for their construction. Often they are asked to provide a substantial financial contribution to the projects to cover the unprofitable (public) parts of the project. In this case, contrary to public projects where the government ex ante defines the project unilaterally, the government is asked to legitimise and subsidise private projects ex post. It is unlikely that the government will approve of such a role. However, it is difficult for private parties to accept that the government is using their proposals for their own projects. In this case, enthusiasm will evaporate quickly. So, it remains to be seen whether the recent upsurge in private initiatives is the starting point of a new practice that will result in privately developed projects and/or public-private partnerships.

2.3 Innovative tendering

Innovative tendering encompass contracts such as Design and Build (DB), Design, Build and Operate (DBO), Design, Build and Maintain (DBM) and, if financial risks are included, Design, Build, Finance and Maintain (DBFM) and Build, Operate and Transfer (BOT) (Walker and Smith [6]). Usually, public programs are not as detailed as in case of contracting out. They are formulated at the level of output specifications and functional requirements. This offers private companies the opportunity to optimise their activities within the prescribed requirements. If public authorities try to direct developments by using output criteria and contractors are allowed to keep (part of) their gained savings, this is a strong incentive for innovative behaviour at the operational level. If the exploitation phase is part of the contract, the public aim is often to generate private funds in excess of the traditional contribution.
Because the project and the functional requirements are unilaterally determined by government, it remains to be seen whether the project is suited for commercial exploitation. This may be the reason why private parties were not inclined to invest in recent public infrastructure projects

2.4 Public-private partnership

Public-private partnership occurs when public and private parties co-operate during several phases of project development, including the phases of concept development and planning. As a result the quality of the integrated design is higher than if parties had operated on their own. In the earlier discussed types of relationships public and private gains, risks, tasks and responsibilities were, more or less, kept apart. Thus a financial trade off between design, construction and exploitation becomes apparent. Partnership presupposes that they are shared (Teisman [1], Graeber [7]). Partnerships do not start out with a clear public program of functional requirements or specifications, or with a well-conceived

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private plan. It starts with a general idea that is interesting enough for public as well as private parties to enter into a joint process in which this idea is elaborated. During this process parties do not commit themselves to a detailed contract which is meant to rule out all uncertainties and risks. What they do in participating in the partnership is consciously accepting risks. The fact that parties have committed themselves to the project despite these risks is a guarantee for further investments in order to make the project successful and generates mutual trust (Hindmoor [8]).

The partnership is aimed at realising joint products: innovative projects which are characterised by synergy. In order to satisfy the societal demands innovations in the field of technology, processes, procedures and institutions must be used. Especially public parties will be concerned about the impacts of infrastructure on the environment. However, impacts of the project only become known during actual project development. Public parties should safeguard conditions for the articulation of public interest during the process of project development and make couplings between public and private parties engaged in this process. Synergy means that the unique combination of private and public efforts results in a commercial exploitation of a project that also contributes to the realisation of public interests.

3 Port Development in Rotterdam

3.1 Introduction

When the stock of port-related sites in Rotterdam started to run low in the late 1980s, the Municipal Port Management issued a warning statement. The Port Plan 2010, a future vision from 1991, anticipated that (until 2010) 1250 hectares of port acreage would be needed. This space could be found through more efficient and intensive use of existing sites, by filling in harbour basins and the construction of new port areas. In this respect, the expansion of the Maasvlakte and/or construction of a second Maasvlakte was introduced (GHR [9]). Initially, the municipal port management thought of developing this port project in the traditional unilateral way with a financial contribution of the central government. The policy objectives for the Greater Rotterdam (Rijnmond) area are:

- strengthen the position of Mainport Rotterdam by finding a solution to the shortage of space for port and industrial activities that exists in the Rotterdam docks, in Rijnmond and/or in the south-western part of the Netherlands;
- improve the quality of the living environment in Rijnmond by utilising the options which solutions to the shortage of space offer.

On the basis of the national scope of the project, a Key Planning Decision Plus procedure (KPD+) was eligable.

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3.2 The Combination model

In the summer of 1999 the progress report 'PMR on course' was published. At that moment, private involvement entered the picture for the first time (PMR [10]). A working group, consisting of 7 private and 12 public parties, studied the possibilities of public-private partnership (SPB [11]). The Private Involvement Study Project looked at which forms of co-operation are possible, which game rules apply and what contribution private parties could make. The process was described as a voyage of discovery. The PMR-director stated later: "At the first meeting everyone was watching each other closely but during the second meeting prejudices were put aside. After the third time we had come to terms. It was a nice process to experience. I remember it with pleasure." (Fukke et al. [12]).
It was recognised that private parties would not be able to realise the port expansion on their own. Preliminary calculations showed that the investment costs for the second Maasvlakte without and with its own maritime access amount to 2 and 3 million Euro respectively. The sharing of the (financial) risks in the construction and exploitation phase is the basis for public-private partnership. Three types of risks were identified: political, construction and exploitation risks.

Various models of public-private partnership were designed. Based on their intention to co-operate, private parties wanted to be involved in the plan formation phase. Several options, ranging from zero commitment to equal partnership, have been discussed. Because private parties want to influence the construction and exploitation risks, zero commitment is left out. The option of co-makership focuses on designing, constructing and exploiting the new Maasvlakte together and according to the wishes of the government. More partnership is apparent in the option partnering where parties also look for solutions together. Finally, the Combination Model was drawn up to interweave the public-private partnership in the existing planning procedure.
The Combination Model incorporates both the objectives of the government and the business community and comprises a number of phases. Initially a public programme of project specifications will be drawn up. This programme is discussed with social organisations, private parties and then with the Dutch Lower House. After the first political decision-making step, laying down the specifications for design, the status changes into a sort of pre-KPD+ part 1. On the basis of this document, the European tender takes place in two stages. First the consortium profile is examined and then the submitted plan. In this way, both content and credibility are scrutinised. Once the consortium and proposal have been selected, the public authorities will establish a public-private partnership with the consortium that then draws up KPD+ part 1.
Given the involvement of many parties in the preparation it was anticipated that it would be possible to run more quickly through the next steps of KPD+ procedure. Due to the possibility of modifications to the plans occurring during these phases,

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modification and exit rules must be laid down in order to prevent any claims being made against central government.

3.3 The Binnenmeer plan

In November 1998, a consortium comprising a constructing firm (Ballast Nedam), a container handling company (ECT) and a financial institution (ING Bank) launched the Binnenmeer concept. This plan is based on the phased construction of the second Maasvlakte. Such an approach had never been presented before and offers evident advantages. However, it remains to be seen whether the content side of the plan will altogether meet the specifications for design which has yet to be drawn up.

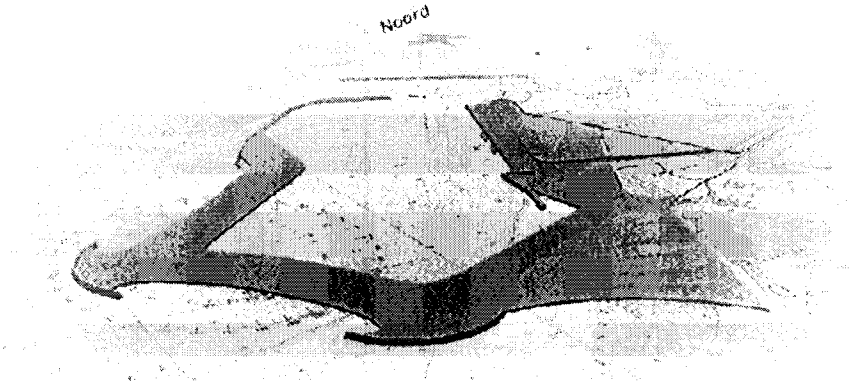

Figure 2. The Binnenmeer plan

Moreover, the plans' financial format displays a very traditional notion of the role of public and private parties; the government is held responsible for the construction of the sea walls while the construction of quays and port sites can be largely financed by private funds. As a consequence of this role division, the government must bear the greater part of the project costs and private parties enjoy the economic benefits of the project.

In the report 'PMR on course', the project organisation PMR chooses a different distribution of public and private investments than has been suggested. The government contribution requested by the consortium will be based on, among other things, of a social cost-benefit analysis. Notwithstanding its innovative concept that was copied in other plans, the Binnenmeer plan played no role in policy discussions.

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3.4 The Parallel model

Much to the disappointment of private parties, the Cabinet exchanged the Combination model for the so called Parallel model. In this model, the role of central government is restricted to spatial planning and land use, regional and local government will act as project developer. These arrangements were laid down in an official agreement that describes each party's responsibilities. For the time being, the city of Rotterdam is responsible for the development of a second Maasvlakte.

In a business case, carried out by the municipal port management, the (un)profitable parts of the project were identified. From a purely financial point of view, it seems that the construction and exploitation of a new Maasvlakte is not profitable. However, the government insists on substantial private involvement. Rough calculations suggest that, given a rate on investment of 8% for private parties, the contribution of public parties varies between 48% and 65% (CPB/NEI [13]). Meanwhile, the feasibility of an independent land and property company has been studied. Obviously, public parties will take part in this company. Future users of the new port area are precluded because of a possible conflict of interest.

Since public authorities are responsible for decisions concerning planning, grant and use of land, construction and maintenance, the question remains what the contribution of private parties might be. At the moment two arguments prevail: innovation and risk sharing. Therefore, parts of the project will be tendered. For example: the design and construction of the dikes can be combined with maintenance. This lifecycle approach may offer new concepts. If a DBFM-contract is in place, risk sharing is also included. In relation to new terminals BOT-contracts can be considered. In this way, stevedores will design, build and operate terminals on their own account. After a certain time they hand the terminal over to the land owner or exploitation company. This model resembles common practice in the port of Hong Kong.

3.5 Epilogue

In relation to the port extension of Rotterdam 4 different approaches have been suggested that come close to the archetypal forms of public-private relationship described in chapter 2. In the beginning the traditional way of project development that comes close to contracting out, was considered. The Combination model shows how public-private partnership could have played a role in the development of the port of Rotterdam. In the proposed approach, public and private parties managed to find an arrangement that gives shape to the involvement of private parties within the existing national procedures and meets the EU directives for private tenders. Thus, two important barriers to public-private partnership were removed.

The importance of the Combination model was not so much that it provided a standard type of arrangement for port projects. It is unlikely that this model is the only feasible arrangement and that it will solve every problem involved in

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partnerships. Its importance lies rather in the fact that it has produced a breakthrough in thinking about public-private partnerships.
However, public-private partnership lost momentum. Parties didn't co-operate closely enough to succeed in jointly developing a second Maasvlakte. Public as well as private parties resumed old roles (Fukke [12]). Since the Combination model was abandoned and the Parallel model is put in place, the principal-agent relationship has returned. However, innovative tendering instead of contracting out will be applied.
Between times, a private initiative (the Binnenmeer-plan) was launched too. Although the innovative design was appealing, the proposed division of tasks and risks was very traditional and the plan never played an essential role in policy discussions about public-private co-operation.

4. Conclusions

In the decision making on the involvement of private parties in the expansion of the Rotterdam port different models have been discussed. The process can be seen as a 'voyage of discovery' in which public and private parties jointly explore the possibilities for co-operation. In this interaction process both public as private parties were able to get acquainted with each other potential role in the project. Also, innovative, substantive ideas were exchanged, such as the implementation of the land reclamation in phases, which was suggested in the Binnenmeer concept and later made part of the Parallel model.

Despite these initial explorations, public parties hesitated to organise the project as a public-private partnership. This was partly due to the relatively modest financial contribution of private parties to the project. Also there was the risk of creating conflicts of interests, especially by involving future operators in the partnership. The Parallel model does not exclude the possibility of private parties joining the independent development company. But it is not at all sure that they will have an interest in doing so. The involvement of private parties in the rest of the project is organised according to the model of innovative tendering. So, the port expansion of Rotterdam ends up as a predominant public project. After an initial involvement of private parties in the conceptualisation and planning of the project, which has resulted in some innovative ideas, their further contribution to the project as a whole will be limited. Perhaps this is a typical reaction when institutional innovations are introduced. After an enthusiastic start, parties become aware of costs and risks (Kingdon [14]). Instead of finding ways to jointly accept and manage risks, they chose for risk avoidance. Risks are divided up and settled in contractual arrangements. These contracts regulate relations in such a way that interactions are discouraged in stead of furthered (Van Ham en Koppenjan [15]).

Advantages are there without doubt: reductions of risks for both public as private parties, clear demarcations of the public and private domain and so on (compare Jacobs [2]). But it also means that chances for further innovative

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project development are missed. What is more, one may wonder whether the choice for a Hong Kong like model matches with the institutional context and market position of the Rotterdam Port. After all, Hong Kong is the only major port in the region, while Rotterdam is confronted with major competitors. This gives future users a strong negotiation position. It remains to be seen whether working with Built, Operate and Transfer contracts will be as favourable for public parties as one might theoretically expect.

References

[1] Teisman G R, *New arrangements and management principles for public-private partnership*, paper presented at the Third International research Symposium on Public Management, Birmingham, 25-26 March 1999.
[2] Jacobs J, *Systems of survival; a dialogue on moral foundations of commerce and politics*, Random House, London 1992.
[3] Twijnstra Gudde, *Op de goede weg*, Amersfoort, 2000.
[4] Kessides, C, *Institutional options for the provision of infrastructure*, World Bank, Washington, 1993.
[5] Mill, B. van, *Dilemma-management bij de vorming van private consortia*, MSc-thesis, Delft University of Technology, Delft, 2000.
[6] Walker, C and Smith A J, *Privatized infrastructure: the Built Operate Transfer approach*, Thomas Telford Publications, London, 1995/6.
[7] Graeber, G, *The embedded firm: understanding networks: actors, resources and processes in interfirm co-operation*, Routledge, London, 1993.
[8] Hindmoor, *A, The importance of being trusted: transaction costs and policy network theory*, in: Public Administration, vol. 76 Spring, pp. 25-43, 1998.
[9] GHR (Municipal Port Management Rotterdam), *Havenplan 2010*, Rotterdam, 1991.
[10] PMR (Project Mainport Development Rotterdam), *PMR op koers*, The Hague, 1999.
[11] SPB (Studyproject Private Involvement), *Samen aan boord*, The Hague, 1999.
[12] Fukke, J et al., *Op de goede weg*, Twijnstra Gudde, Amersfoort, 2000.
[13] CPB/NEI (Central Planbureau / Nederlands Economisch Instituut), *Bedrijfseconomische aspecten van landaanwinning bij PMR* (notitie 00/21), The Hague, 2000.
[14] Kingdon, J W, *Agendas, policy and alternatives*, Little, Brown and Company, Boston / Longman, New York, 1984/1995.
[15] Ham J C van en Koppenjan J F M, *Building Public Private Partnerships*, In: Public Management Review, vol.3 no. 4, Routledge, London, 2001.