

DECIDING THE RIGHT USE

MAKING THE INTRINSIC LAND VALUE CREATION EXPLICIT IN
PORT AREA REDEVELOPMENT

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PREFACE

This thesis is the result of a one-year graduation process at the Technical University of Delft for the master Management in the Built Environment (formerly Real Estate and Housing). Even though I once started at the university with the idea of becoming an architect, I learned along the way that the architect is just one of the links in how our built environment is shaped. The way we manage our cities, manage the creation and transformation of real estate, and manage all the other actors involved all add to how our built environments will look like. This insight formed the basis for this thesis too.

The thesis is about the land use decision in port areas, and how the intrinsic land value is created with different actors and their different perspectives involved. This is examined through literature review and examined for two cases (i.e. RDM and M4H areas) in Rotterdam. This report presents the research and the findings in the domain or urban area development.

With this thesis I hope to contribute to the academic field of urban area development and the port-city interface, with a grasp of knowledge and findings from literature, an internship, and two port case examinations with corresponding interviews.

With a lot of joy, I have participated at Synchroon to discover the developer perspective on value creation. I would like to thank René de Witt in particular, and all the others involved, for giving me the opportunity, in spite of the difficulties of covid-19 times, to participate in ongoing projects and work on my thesis at Synchroon. In addition, I would like to thank all the others at Synchroon that helped me with interviews, non-formal chats, ideas, or any other way in my personal development or with obtaining data in regard to the developer perspective.

In particular I want to thank Karel Van den Berghe and Paul W. Chen, as mentors from the University of Delft with their feedback, and help during the process. Your input has always been genuinely appreciated.

Finally, I would like to thank everyone else, and all companies, that helped me with interviews, or in any other way in contributing to the research. It has been a challenging time, due to covid measures and restrictions, and a big compliment to all co-students and everyone else from the TU Delft in their efforts to keep everyone engaged, helping each other out, and make the completion of the master period as pleasant as possible.

Enjoy reading!

James Bal
Rotterdam, July 2021

ABSTRACT

Urban planners in Dutch cities are looking for ways to intensify the land use in cities, as a result of compact city policies and an increasing market pressure in Dutch cities. Hence, brownfield sites such as ports or other industrial or business locations are designated for redevelopment, mostly for residential or commercial use. Intensifying the use of especially redundant or neglected areas can create a lot of benefits for as well the city as the port. At the same time waterfront redevelopment sites are amongst the most complex to develop (Daamen, 2007). That is why it is important to understand why we choose for redevelopment to new or other uses.

This research examines the intrinsic land value creation for two cases in the port of Rotterdam and how the intrinsic land value was created as a result of the actor arena and the involvement and perspectives therein. Through literature is first sought how we can explain intrinsic land value and what it comprises. Thereafter, the intrinsic land value creation is examined in retrospect for the M4H and RDM sites in Rotterdam. These two related cases are particularly interesting as they resulted in a different outcome than a complete transformation from port to city, implying that different values and dynamics in the debate for land use appeared than compared to Hamburg, Havenstad and other waterfront redevelopments usually examined in port-city interface literature.

It appeared that intrinsic land value can either be affected by context changes or actively be created through development. The intrinsic value of a location or land can be described through location factors that are in nature actor-based, context-based or location-based. These can be categorized in factors from a classical, behavioral, institutional or evolutionary approach.

From the cases appeared that intrinsic land value was created incrementally over time which was subject to a lot of context impact and different strategies employed by actors to influence the actor involvement and perspectives. The port involvement has grown over time in both cases and new intrinsic value has been created for port activities due to an expansion of port activities from scale-enlargement and polluting industries to smaller-scale manufacturing with a strong added value and knowledge component to it. The main value creation aimed for is long term and strategic. This gradual perspective changes was caused by, and also in turn influenced, the port involvement in the two cases.

The different actor arena in the two cases has led to different area developments. For the RDM case, the Port of Rotterdam dominant involvement has resulted in a innovative and manufacturing cluster focused on maritime use and collaboration with educational partners. The M4H case, with the municipality as equal partner and the involvement of developers, includes a lot of residential and commercial uses too. The innovative making cluster in the M4H emerged from a mutual innovation agenda (digitalization and energy transition) and the need to enhance and diversify the economy for the port and city.

It can be concluded that all of the location factor perspectives (classical, behavioral, institutional and evolutionary) are required to understand port-city interface developments and area redevelopment in general. Also the impact of the actor arena, and the perspectives and involvement therein is an interplay, that deserves more research in the future, to understand how we come to our redevelopment outcomes in the port-city interface, as well as other inner-city redevelopment projects.

Key words – Intrinsic land value, port area developments, actor arena, actor involvement, actor perspectives, port-city interface

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SUMMARY

Introduction

Urban planners in Dutch cities are looking for ways to intensify the land use in cities. This is a result of compact city policies and an increasing market demand in Dutch cities. Brownfield sites such as ports areas or other industrial or business locations are designated for redevelopment, mostly for residential use. Intensifying the use of especially redundant or neglected areas can create a lot of benefits for as well the city as the port. At the same time waterfront redevelopment sites are amongst the most complex to develop (Daamen, 2007). Hence, it is important to understand why we choose for redevelopment to new (sometimes other) uses.

In the port-city interface and waterfront redevelopment literature it has been described how initial port redevelopments concerned redundant port areas that had become neglected as a result of scale-enlargement and specialization expansions. Wiegman and Louw (2011) demonstrated that also port areas are being redeveloped that are still in use, since the city is growing faster than the port is moving away. Merckx et al (2004) argue that the choice for port uses, urban uses or a mix depends on the *intrinsic relative land value* of the location for the port and the city, which can be explained by the presence on alternative expansion locations. The port (re)development outcome is the result of how the intrinsic land value is debated. In area redevelopment this can be highly unstructured with constant attempts to influence one another to such an extent that the comparison with an “arena” is made (Koppenjan & Klijn 2004; Daamen, 2010).

If we want to optimally integrate perspectives and obtain the most benefits from redevelopment as possible, the intrinsic land value perceptions of port and city actors should be made explicit. As redeveloping brownfield sites such as port areas are so complex and challenging, it goes without saying that it is necessary to truly understand why we choose for development and how intrinsic land value is created as outcome of the actor arena. Due to the increasing involvement of private parties and a more leading role of developers in area redevelopments, the intrinsic value perspective of the developing parties are increasingly interesting. Other than that, intrinsic land value cannot be put simply as a two-dimensional consideration between the port or city, because these two categories consist of a whole variety of actors and stakeholders.

Figure 1 demonstrates the conceptual framework for this thesis. Three key components can be identified, being: 1) the perspectives (on value creation through development, 2) the involvement (and power) and 3) the strategies within the arena to modify the influence on the development changing the intrinsic land value created.

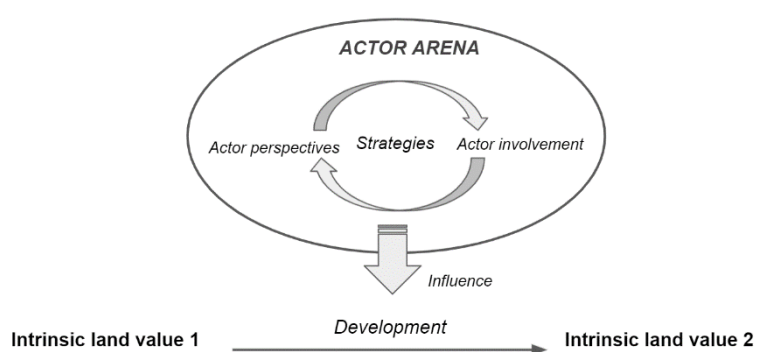


Fig. 1: Conceptual framework for intrinsic land value creation. Own illustration.

Research questions

The central question in this thesis is:

How is intrinsic land value created, in brownfield area redevelopments such as port areas, and how does the actor arena influence the eventual development?

The main question is divided into the following sub questions:

How can we understand intrinsic land value, and what does it comprise of? (THEORY)

What actors were involved and in what manner? (PRACTICE)

What are the intrinsic land value perspectives and how can they be explained? (PRACTICE)

What was the influence on the area redevelopment? (PRACTICE)

Method

A literature review is performed to answer the first sub question on how the intrinsic land value can be understood. Through the case study method two port areas in Rotterdam, the M4H and the RDM sites that are part of the overall Rotterdam Stadshavens project, the intrinsic land value creation in practice is examined. These two cases are particularly interesting as they appear to result in another redevelopment outcome than complete transformation of port use to a residential urban area. This implies different value creation and dynamics in the debate for intrinsic land value than appeared in Hamburg, Havenstad and other waterfront redevelopments usually examined in port-city interface literature. The qualitative data for the case studies is obtained through desk research and interviews, and can be divided into three main components 1) the perspectives and 2) the involvement, so that can be understood how the two impacted the development of the area, and 3) influence on development.

Literature review

Intrinsic land value can be defined as the value perception of a location as valued by a certain user and the use they represent. Intrinsic land value can be described or assessed through four categories of location factors. 1) *Hard location factors* were examined as early as in the 1800's, and are in location theory therefore categorized in the (neo)classical perspective. These concerned financial factors to land value for certain users. 2) *Soft location factors* concern factors that can be less rational or refer to appearance and image of the site, hence called behavioral factors. These are harder to quantify in monetary terms. Furthermore location theory lists 3) *institutional factors* (legislation and policy factors), and 4) *evolutionary factors* (long standing strategical factors). Location factors within the four categories can be location-based, context-based or actor-based.

In regard to the creation of value, the sequence of Hoyle has demonstrated that the context can significantly impact the intrinsic land value of a location for a certain use. On the other hand, intrinsic land value can actively be created through development. In area redevelopment debate is often about future intrinsic land value. Through development: Exchange value, use value, social value, environmental value, image value and cultural value, can be created. More types of value such as political, technical, economical and more can be added too. A theoretical framework is established, that is used for the empirical part (see figure 1), which incorporates the actor arena within the intrinsic land value creation.

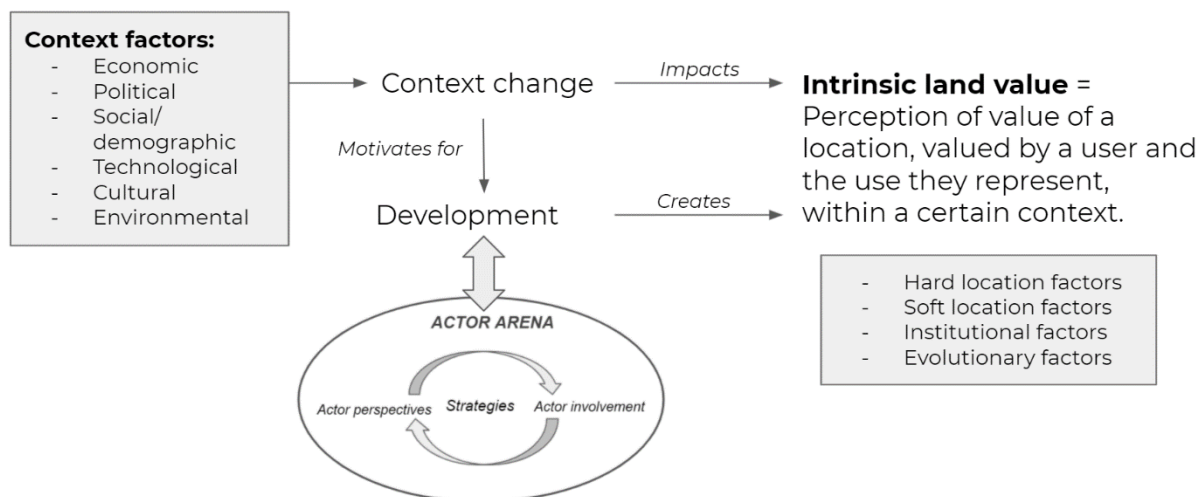


Fig. 2: Theoretical framework for intrinsic land value creation. Own illustration.

Context: Stadshavens

The RDM and M4H area redevelopment are part of the overall Stadshavens project in Rotterdam. The initiation of the project was founded on the assumption of intrinsic land value decrease for port uses, which was coerced to the port as integrated department of the municipality. The project was highly inspired by Hamburg and former port area redevelopments in Rotterdam, hence a copy-paste strategy (of a port out, city in perspective) can be identified here. After separation of the port, and thus a change in actor involvement and power, a challenge strategy of the dominant development perspective was employed by the independent port. Still a lot of the cargo and container handling was taking place in the Stadshavens port areas and there were good growth prospects. A new intrinsic land value was proposed (i.e. economic renewal) with renewed value for the city too, including offices and innovation and reintegration of city and port.

Nevertheless the Stadshavens N.V. was eventually cancelled as a result of a negative advice of the State council for the Maasvlakte 2 project, which made the Port of Rotterdam block a land transfer to the Stadshavens N.V. In general in this early Stadshavens stage certain influence strategies can be identified in the interplay between actor involvement and their perspectives:

- Copy and paste perspective from other projects
- Coerce municipal perspective on the port
- Challenge the perspective and approach by the port
- Coalition modification of the joined development company to a coordinating project office

Case study: RDM

When the coalition was modified from a development company (i.e. Stadshavens N.V.) to a development-apart-together with a coordinating project office (i.e. Stadshavens project office). Within this new coalition modification, the port obtained the lead in the RDM redevelopment and established a new coalition with solely Hogeschool and Albeda. The two had obtained a powerful partner in their coalition as the port had a lot of investment capacity and most landownership in the area. Through collecting interests, the educational organizations had convinced the Port of investing in the RDM campus concept. This brought the following argued value to the port: 1) future educated talent for the port, 2) new innovative synergies, 3) kickstarter for the RDM redevelopment and 4) RDM as a showcase for the city and society for the image of the port.

The intrinsic value creation was initiated by the unorthodox role-taking of the Hogeschool and Albeda as concept developers who convinced the Port of Rotterdam to invest in the RDM Campus concept. This comprised of the transformation of former warehouses to affordable and flexible innovation

space for start-ups, scale-ups in combination with educational locations of the two institutions. The clear location factor created would be an educational and innovative cluster, creating intrinsic land value for the port through the promotion of the port for future talent and with the project as kickstarter for redevelopment of the rest of the RDM site. For the educational organizations intrinsic land value could be created in terms of affordable education space for practical education, a quality impulse of education due to knowledge spill-overs with other educational institutions and companies, and recognition for the schools by the involvement in the Innovation Dock and Center of Expertise. To increase accessibility and connectivity for students (among others), the watershuttle was realized. For this a collaboration was established with the municipality.

The port shifted its common practices and actively started to approach potential tenants, simultaneously the Hogeschool Rotterdam initiated events on the site to promote the area. Through capability building it expanded its involvement removing the necessity to involve other actors into the coalition and steer themselves on the desired outcome as much as possible. The Port of Rotterdam has shifted from a facilitating landlord and large-project developer to an area manager, acting as (concept) developer, investor and also steering on tenants.

This involvement shift goes hand in hand with a perspective change in which the port started to realize the potential value creation of an innovative business cluster, as well as a strategical expansion of activities and how smaller scale real estate developments and urban uses can contribute to strategical port objectives.

Eventually when the economy recovered, demand for the space increased and the redevelopment appeared to become a success. The branding was changed from RDM campus (focused on the educational relation) to RDM Rotterdam (including business, events, and exposition and congress space). With guides along the innovations the area also became a showcase for the port, creating image value. The program office could eventually steer and select companies and entrepreneurs in their innovative contribution to the concept, thereby enhancing the value of the innovation cluster. This resulted in projects such as the Onderzeebootloods.

More recently, business space developments have been added to the RDM site, demonstrating the increased attractiveness of the site for companies. De Haas has expanded its ship wharf activities, the Grofsmederij (innovative manufacturing warehouse) was realized and completely rented out, and currently Het Magazijn (a new warehouses) is under development. Due to the absence of developer involvement and to a lesser extent little municipal involvement, the port could optimally steer in value creation for the innovation concept. Dominant intrinsic value creation was evolutionary and long term in nature such as port image enhancement, innovation creation and recruiting future talent, all aimed to enhance the competitiveness of the Port.

In the developments can be seen that the interplay between involvement and perspectives decided the intrinsic value creation direction in the RDM redevelopment project. In general 6 C's in the actor arena can be identified in which either the involvement and perspectives were attempted to be influenced in the intrinsic land value creation. These are:

- Coalition building
- Coalition block
- Collaboration
- Capability building
- Coerce perspective
- Collect interests

Case study: M4H

In the early stages, the port had accepted the redevelopment of the M4H area and even exchanged lease rights over the Waalhaven and Eemhaven for the M4H area. This reserved involvement was the result of a traditional port use perspective: The port activities still focused on large scale industries and expansion possibilities, and the M4H area on the other hand had become quite well-embedded in the city. Due to the neglect of the M4H site, the location factor of cheap real estate and poor attractiveness of the area, had risen the intrinsic value for small-investment initiatives such as artists and experimenting companies. The area had been designated as experimentation zone. From this dominant municipal involvement the perspective on the development was to mainly realize housing and local companies (such as the food cluster) would have to be removed.

As the municipality was lacking the financial capacity to invest, and realize agreed Stadshavens vision ambitions, the port agreed upon taking a more active role in the M4H area as investor and developer. So the coalition had to be modified with these new roles, replacing the Stadshavens project office with a program office. The Port of Rotterdam perspective in the intrinsic land value had shifted as a result of a new alignment of small-business space to strategic objectives of the port. This has been learned from the growing success of the RDM redevelopment. As a result of a poor economic climate, a clear market demand direction was missing as opportunity for the area. For some years a clear theme for the area was a topic of debate in addition to new institutional collaboration strategies and the port challenged the perspectives so far a lot with their increased involvement: 1) Is a residential development of the area still useful, and 2) isn't moving current companies too expensive as investment. The collecting of interests was eventually found in the innovation district, which was compatible with residential developments (a strong demand from the municipality) and matched the port and city mutual innovation agenda. This matched the events of an expo bid proposal and the RDM campus development. The development of the area to an innovative manufacturing zone in combination with residential development brought intrinsic land value to as well the port as the municipality from a mutual innovation agenda and ambition to expand port activities and diversify the economy. These were mainly strategic and long term in their core and can again be considered evolutionary in location theory. These evolutionary factors even were recognized by the national government, providing subsidies for soil remediation for instance.

The municipality and developers really perceive a high intrinsic land value for residential and urban use nevertheless as the area is surrounded by other urban residential areas, the presence of a large public transport hub and with the Dakpark project a lot of public facilities are already available. For this reason in the development, the municipality aims for investments in quality of life and public space attractiveness creating environmental and image value. This is in contrast to the port acting as developer and investor for their own business use projects who would also like to maintain sufficient space for businesses (expansion and positioning flexibility) and to keep the business space affordable (hard factors mainly).

In the development of the area can be seen that the interplay between involvement and perspectives decided the intrinsic value creation direction in the RDM redevelopment project. In general 8 C's as strategies in the actor arena can be identified in which either the involvement and perspectives were attempted to be influenced in the intrinsic land value creation. These are:

- Coalition building
- Coalition modification
- Coalition block
- Cooperation
- Collaboration
- Challenge
- Coerce perspective
- Collect interests

Conclusion

Intrinsic land value comes from the valuation of the location factors within a certain context. Through development the location factors can be adjusted, added or enhanced: the creation of intrinsic land value. Within the actor arena everyone involved attempts to influence the development, and thereby the creation of intrinsic land value, in their favor. Strategies are employed to impact the involvement and perspective. In both cases it can be concluded that the involvement and perspective of actors influence resulted in a different redevelopment outcome. For the M4H case the dominant residential and urban-use redevelopment shifted to an innovation making cluster, including a separate business area without residential use. The RDM case, the coerced dominant port involvement in coalition with educational organizations Hogeschool and Albeda resulted in an innovation working district with a heavy knowledge component to it, focused on maritime and off shore innovations. It can be concluded that intrinsic land value is heavily affected by context, and actor shifts. As well in regard to involvement as in perspectives. The strategies affecting those can be listed as the 10 C's identified in this thesis:

- Coalition building
- Coalition block
- Coalition modification
- Collaboration
- Cooperation
- Capability building
- Collect interests
- Challenge
- Coerce
- Copy paste

Discussion

In the Stadshavens project a significant finding is that in spite of the Maasvlakte as alternative expansion location, the RDM and M4H areas still brought new intrinsic land value to the Port of Rotterdam. Merckx et al (2004) argued that the intrinsic land value can be explained through amount of alternative locations, but it appears that the intrinsic land value cannot be understood solely by the presence of alternative expansion space. On the basis of this it could be stated that it simply is not just about the presence of alternative expansion space, but the relation between this and the demand.

The shift of the port in regard to their activities is a key finding to be included in port-city literature. Traditional port activities (such as container handling) are very much focused on scale expansion that for a long term defined the trends in intrinsic land value we saw in port-city literature, and in the starting phases of the two cases too. Now that the Port of Rotterdam has become aware of the added value of smaller companies and an innovation cluster to its strategical objectives, the port activities, and thus uses, have expanded changing their perspective on intrinsic land value. As the Port of Rotterdam has revaluated urban uses for strategic objectives of the port, the intrinsic land value for the sites close to the city has increased. These sites demand new location factors, such as knowledge spill-overs, proximity to partners, accessibility and connectivity, rather than a focus on scale-enlargement and expansion possibilities. Potentially, this could affect the port-city interface in the future. Especially when other port cities start to copy-paste this approach in their own port redevelopments. At least it affects the strict separation that is sometimes made between port uses and city uses in the literature. One that also occurs in the paper of Merckx et al (2004) categorizing port and city uses into two curves. Uses that initially would have been regarded as urban uses, now are port uses too, making the distinction harder to make. This bring a whole new phase in the interface between port and city in Rotterdam.

Daamen (2010) mentioned that the institutional structure impacts the development outcome, which is in fact perceived in the RDM and M4H case as well. A central contribution of the thesis is that we learned that the development (and the intrinsic land value creation) is influenced by the actor involvements in the actor arena and the perspectives they represent. The interplay and strategies employed to steer that interplay between involvement and perspective can put a new light on understanding developments. There is no generally approved categorization of actor strategies in the actor arena on how to persuade, block or include certain perspectives and involvement in urban area redevelopment. Hence, a new tool box needs to be developed to understand dynamics in the actor arena. This thesis identified 10 C's strategies:

1. Coalition building
2. Coalition block
3. Coalition modification
4. Collaborate
5. Capability building
6. Collect
7. Coerce
8. Copy paste
9. Challenge
10. Commit

Linking the actor arena to the port-city interface literature might be of great added value to understand developments. Pliakis (2019) started approaching port-city interface events through an institutional "actor arena" examination. This is an important step in deepening the understanding of the port-city interface. Understanding the sequence solely by looking in retrospect to context trends might not suffice as very specific arguments might result in different redevelopment outcomes nevertheless. This is for instance the case if you would compare the Stadshavens Rotterdam and Havenstad Amsterdam, both having the same social and economic context of a housing shortage and a past of redeveloping the waterfront and a westward movement of the port. It requires however an understanding of the actor arena to see how both resulted in different development outcomes and intrinsic land value creation. This comparison is very interesting for follow-up research.

The developer role had been quite modest in the two cases, which contradicts with the hypothesis of more private involvement. A reason for this can be that the port could already to a certain extent take the role that developers normally take in area redevelopment: contributing to public space, establishing a vision for the area and providing their perspective on the market demand.

In regard to the 10 C's in the actor arena it is likely that a lot more strategies potentially can be found, and the once identified might even be reformulated or recategorized in future research. These 10 only were identified in the two cases and help understand better the process and the involvement of the actor arena on the intrinsic land value creation.

In this thesis a limited amount of port representative, municipal representatives, and developers is interviewed, but a very larger group of other people have been involved too, potentially all with slightly different perspectives. This is always a threat within qualitative research. Furthermore, the identified perspectives from developers, the port and the municipality cannot be generalized for other cases in other cities, but are very specific for this particular case.

Furthermore, no hard comments can be made in regard to the port-city interface or actor perspective in general, as this thesis revolves around two single case studies. This thesis did not list all possible ways of value creation in waterfront redevelopments for actors, neither did it provide a conclusion on how certain actors prioritize certain location factors and the created value from them. This is something for additional research.

For additional research, as mentioned earlier, a comparison between Haven Stad Amsterdam and Stadshavens Rotterdam would be interesting as two cases within the same national context, but with completely different port-city interfaces perspectives resulting in a radically different redevelopment approach. This thesis was focused on the RDM and M4H cases and not on the comparison.

Furthermore, the strategies employed in the actor arena to influence the intrinsic land value creation and the perspectives and involvement of actors towards that is something to be further examined in the future. The 10 C's derived from these cases might be reformulated or categorized with the addition of strategies found in other cases to provide a new framework for future analyses of area redevelopments.

Recommendations

- 1) Realize that value can be an assumption
- 2) Consider all location factor categories
- 3) Align short term value creation with long term value creation
- 4) Find the mutual ambitions and go from there
- 5) Keep everyone engaged
- 6) Aim for transparency and collaboration
- 7) Rethink compact city policies

1. INTRODUCTION

1.1. Introduction topic

1.1.1. Pressure on the city

Currently due to compact city policies and an increasing market pressure in Dutch cities, urban planners and policy makers aim to intensify the land use in cities (Verheul, et al, 2017). In regard to the pressure in Dutch cities, the research institute ABF research investigated commissioned by the Dutch government that the Netherlands is coping with a housing shortage of 300.000 dwellings (NOS, 2021). There are a lot of reasons for that, but one of the most significant is the financial crisis that led to somewhat of a building stop. Dutch cities are choosing more and more for the redevelopment of inner-city brownfield locations, especially as a result of compact city policies. These inner-city brownfield locations include industrial, port, business or warehouse locations.

These compact city policies are the result of the particular Dutch planning practices with its pragmatic planning culture. Faludi & Van der Valk (1994) state that this is characterized by growing tensions between high ambitions and scarce resources with a strong preference for reaching a consensus. This led to the Dutch term “polderen” which finds its origin in the Dutch planning history in protecting lands from the sea. Dutch compact city policies are a perfect example of a result that follows from high ambitions together with scarce resources (i.e. land).

Port area redevelopments are an example of inner city brownfield redevelopments that receive particular interest due to the location along the water. In the two largest ports in the Netherlands plans can be found for the redevelopment of large areas close to the city (e.g. Stadshavens in Rotterdam and Havenstad in Amsterdam). The redevelopment, and in particular transformation of such sites, are extremely complex and challenging. Nevertheless, port redevelopments have happened for decades now and a whole line of research has developed around the “port-city interface” and “waterfront (re)development”.

As mentioned, inner city brownfield redevelopments have become somewhat “the way to go” and examples can be found in a long list of Dutch municipalities. De Zeeuw (2018, p178) lists some theoretical advantages of redeveloping “underused” industrial areas close to the city centers, for instance for housing:

- Old industrial areas and other underused areas get a new life
- Addition of housing
- Companies in the ‘new economy’ can establish themselves
- Existing amenities get a bigger support
- Less commuting
- Densification, clustering and mixing of functions strengthens the economic agglomeration power
- Green areas are preserved

However, inner city brownfield locations are far from the “holy grail” as it comes with a lot of challenges as mentioned before and can also turn out to be very costly. De Zeeuw (2018) states that it needs extensive, long term cooperation and commitment to be successful. An ‘all hands on deck’-approach is therefore needed, in which a lot of actor alignment is required. Verheul et al (2017) identified the main complicating factors to be overcome in inner city development:

1. **Legal barriers:** change of zoning plan, expropriation, environmental rules, pollution, housing and industry combination

2. **Government-organization barriers:** unclear vision and guidelines, political uncertainties, changing powers.
3. **Financial barriers:** unfeasibility threats, high costs for removing existing companies, cleaning soil, land speculation

For port areas in particular Daamen (2007) mentions that waterfront redevelopment sites are amongst the most complex to develop. Still, sometimes it seems that urban planners seem to ignore these challenges and through “business as usual” decide to redevelop yet another brownfield inner-city site. Pliakis (2019) showed the painful reasons for conflict in redeveloping the Havenstad area in Amsterdam, in which he concludes that a “redevelopment in spite of anything” approach in which the port perspective was merely incorporated. In Rotterdam, it appears to be a different case in which a hybrid area is proposed for the M4H and RDM areas. In these area redevelopments the port seems to hold its position to a certain extent in which port and urban uses will be combined.

1.1.2. Port-city interface discussion

As mentioned, port area redevelopments, also called waterfront redevelopments, have happened for decades now. They have taken place all over the globe since the emergence on the United States’ East coast in the late 1950’s (Daamen and Louw, 2016). In the European context, port areas redevelopments can be found in Antwerp, Hamburg, Copenhagen, Rotterdam, Amsterdam, and many more.

The question on whether an area should be redeveloped revolves all around the port-city interface. The concept of the port-city interface was first introduced by Hayuth in 1982 (back then called the *port-urban interface*). He thought of the port-city interface as a line of demarcation between port-owned land and urban zones. However, more time-oriented it could also be regarded an area of transition between port-owned land and urban land uses. In 1989, Hoyle complemented Hayuth’s interpretation of the port-city interface by including other links than just geographical use. The port-city interface also consisted of economic links (e.g. employment structures), ecological links, transport links and even as an area of conflict in policy formulation and implementation. Hoyle (1989) categorized the evolution of the port-city interface into five stages, after which Hoyle in 2000 updated this to six stages (see figure 2).

STAGE	SYMBOL ○ City ● Port	PERIOD	CHARACTERISTICS
I Primitive port/city		Ancient/medieval to 19th century	Close spatial and functional association between city and port.
II Expanding port/city		19th - early 20th century	Rapid commercial/industrial growth forces port to develop beyond city confines, with linear quays and break-bulk industries.
III Modern industrial port/city		mid - 20th century	Industrial growth (especially oil refining) and introduction of containers/ro-ro require separation/space.
IV Retreat from the waterfront		1960 s - 1980 s	Changes in maritime technology induce growth of separate maritime industrial development areas.
V Redevelopment of waterfront		1970 s - 1990 s	Large-scale modern port consumes large areas of land/water space; urban renewal of original core.
VI Renewal of port/city links		1980 s - 2000+	Globalization and intermodalism transform port roles; port-city associations renewed; urban redevelopment enhances port-city integration.

Fig. 2: Evolution of the port-city interface, according to Holye (2000, p432).

Up to the 1990's, the port areas at the waterfront were perceived as an urban redevelopment opportunity. This was the result of two phenomenon, being 1) an upcoming societal interest in the waterfront and 2) the emergence of obsolete port areas close to the city center (Norcliffe et al, 1996). These obsolete areas, *the abandoned waterfront*, was the result of a tendency of port expansions and specializations to accommodate new large scale industrial growth and scale enlargement (Hoyle, 1989; Norcliffe et al, 1996), which was in line with the economic trend following the ideas of Fordism. Migrating the port to areas outside city limits allowed them to increase the scale of their activities in order to compete with other ports in terms of cost and speed. The neglection of the areas close to the city core, that did not provide expansion of industrial activities, offered an opportunity to the city to redevelop the original harbor core as part of the city (as illustrated in figure 3).

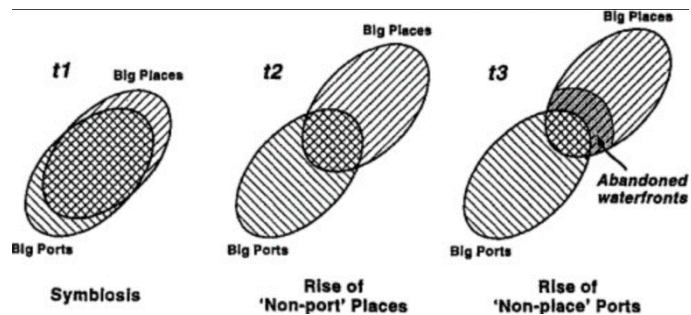


Fig. 3. Evolution and separation over time of cities and their ports according to Norcliffe et al. (1996: 126).

The new post-modernist concept of emphasizing consumption over production shifted economies of cities all over the western world with the increase of the service sector. Since then, demand for housing, offices, retail and leisure functions in central and distinct places in the city exploded. Norcliffe et al. (1996, p132) conclude that this transition led to waterfront now "mirroring the sociocultural trends of the city and its wider society, rather than the city reflecting the economic vitality of the port".

A new cause

While the redevelopment of port areas used to be the logical result of a sequence of events in the past, nowadays cities are also calling for the redevelopment of port areas that are still in use. Thus, redevelopment of port areas not longer as a result of port areas that have turned redundant. Wiegman and Louw (2011) argue that a new phase is emerging in the evolution of the port city interface. This new phase can be characterized by the context that the expansion of ports is slowing down, while the city is expanding in the direction of the port at an increasing speed. Daamen (2007) describes how not only abandoned or redundant port areas are being redeveloped for urban use, but also parts of the port that are still used for port activities are now being proposed to be redeveloped. Wiegman and Louw (2011) therefore proposed a new spatial development model, based on Norcliffe's, including the current conflict in the city-port interface (see figure 4). This new model expresses how the port has to compete for waterfront space, as the demand for waterfront space by other users (i.e. industrial, commercial, residential, and recreational) keeps growing. Specifically in Amsterdam, where Wiegman and Louw identified this new phase, the motivation to transform port areas to city areas comes from a context of an enormous housing shortage together with compact city policies to develop within the city, rather than through urban sprawl (Municipality of Amsterdam, 2011).

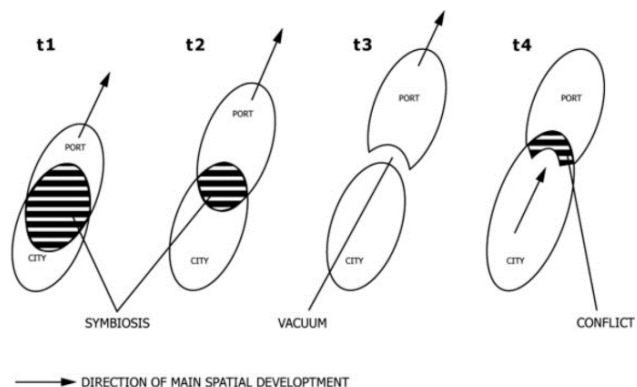


Fig. 4: New spatial development model of the city-port interface, according to Wiegman and Louw (2011)

1.1.3. Intrinsic land value

Merckx, Notteboom and Winkelmanns (2004) argue that the port-city interface sequence from Hoyle should be explained through the development and discussion of the intrinsic relative land value. They created a graph (see figure 5) reflecting the intrinsic land value developments behind the stages that Hoyle described. In figure 5 the graph is introduced, explaining the curves. Figure 6 links to the sequence phases of Hoyle and integrates this in the graph.

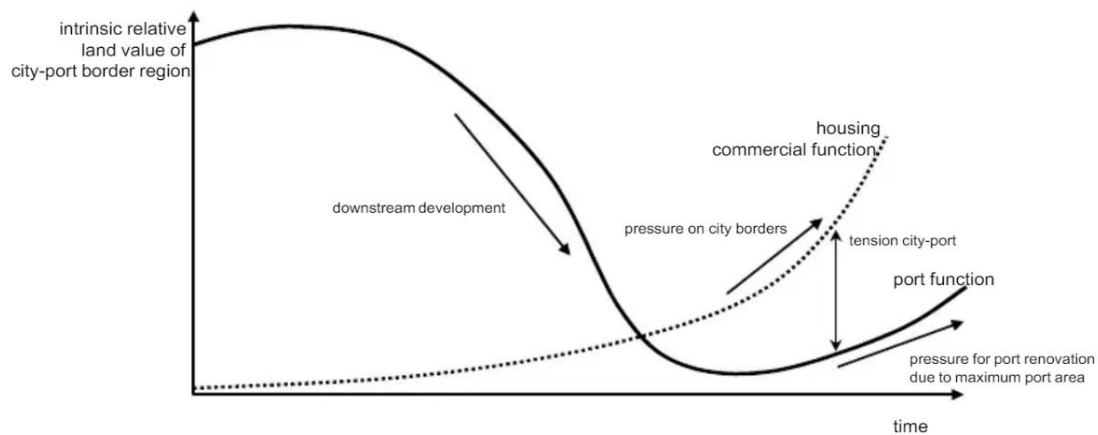


Fig. 5. Land value development for the city-port border region, according to Merckx et al (2004).

In short, what this illustrates is that the port-city interface debate is all about the intrinsic relative value of the land for both parties. According to Merckx et al., in port cities without space for port expansions, mixed-use solutions including port renovation are sought. As can be seen in figure 6, for ports with ample space available for port extensions, the relative value close to the city remains low, more often leading to a total non-port focus.

Logically, when the port does not have other alternative locations for their activities the discussion about land use for port areas will be more intense. The same goes for growth and expansion possibilities for the city. Since this is more and more the case, over the last decades as well city and port have grown mostly focused on intensifying the use of land (Verheul et al, 2017). In this case, both city and port need think of strategies to argue why their land use proposal has the most intrinsic value for the city. In regard to this, the core questions that all of us should consider in proposals for redevelopment of our waterfront should be: is it good for the port and is it beneficial for the city (Taddeo, 2002)? Khoo (2002) states that the final decision whether or not to redevelop will be based on the evaluation of three elements: physical, economic and social advantages.

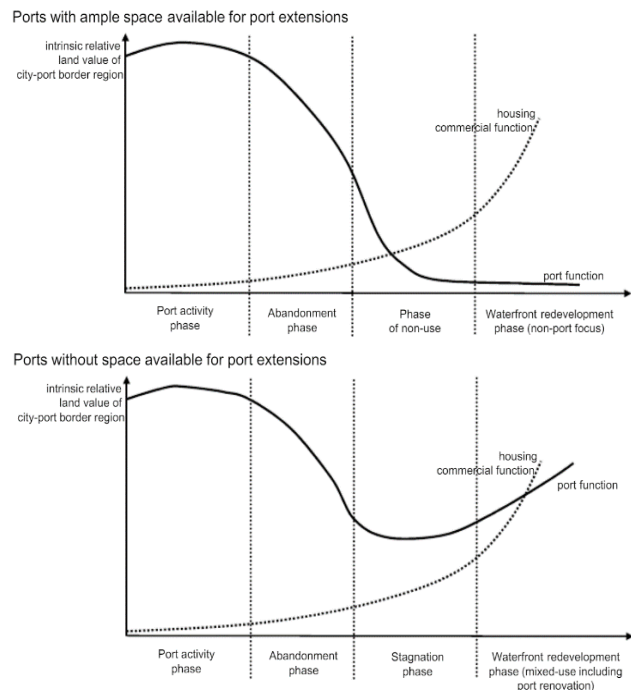


Fig. 6. Two possible constellations for the city-port border region, according to Merckx et al (2004).

As can be seen in the figures above, the intrinsic relative land value is not quantified on the y-axis, but the value is approached as relative and an approximation. This suggests that the intrinsic value is determined as a result of a discussion and perception rather than a measurable fact. There has been

very little research on this concept of the intrinsic land value and the way this is argued, often the port-city interface is just discussed in retrospect on the basis of contextual changes.

1.1.4. The actor arena

Merckx, et al conclude that the interplay between intrinsic relative land values for port functions and commercial/housing functions can determine the final outlook of a waterfront redevelopment project (2004, p18). It is therefore important to understand how the intrinsic land value is debated. In line with the port-city interface literature, the graph of Merckx categorizes all city functions in one curve and does the same for all functions of the port, while in fact these should better be seen as categories. The curve for city functions can be divided into a variety of different curves for a wide variety of city functions. The same goes for the functions that a port comprises.

In addition, the land use decision (as based on the intrinsic land value discussion) sometimes appears as if it is between the city on one hand, and the port on the other, while in fact the discussion going on is much broader. In the first place, for the port and the city goes that those overarching parties cannot be depicted as two single actors but might be represented by a group of actors. It is this institutional structure that also impacts the development outcome (Daamen, 2010). The city for instance can be divided into a combination of the municipality, public organizations, housing associations, community associations, commercial developers, businesses and a lot more. Hence, waterfront redevelopments cannot be regarded a two-dimensional discussion, but should rather be seen as a multi-actor arena.

The decision-making processes for area redevelopments have come to be defined as “inter-organizational” as a result of a wide variety of actors acting on behalf of many different organizations (Koppenjan & Klijn, 2004). Based on the work of Koppenjan & Klijn, Daamen (2010) depicts the wide variety of actors involved in area redevelopments as being in an arena with different actor orientations (see figure 7). The different actor orientations are the result of different views, values, ambitions, and interests. In spite of the differences, integration is necessary to make area redevelopments a success. Therefore actors build relationships with one another, which eventually is formulated by Koppenjan & Klijn (2004) as actor networks that constantly negotiate and attempt to influence each other which can often be highly disjointed in nature, hence the reference to the perception of an arena.

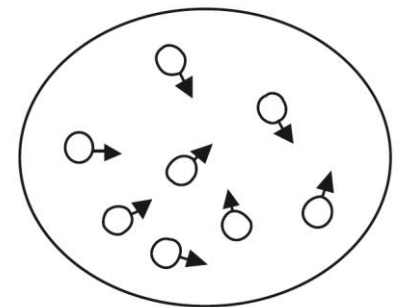


Fig. 7: Simplified depiction of an arena of actors in which the arrows indicate differing actor orientations, from Daamen (2010, p27) after Koppenjan & Klijn (2004).

However, the depiction in figure 7 is missing one important key factor: actor power. It appears as if all actors have an equal say, while in fact this can differ to a large extent. An interesting aspect therein is what strategies port and city representatives employ the either affect or influence the other actors (or their own) involvement, power or perspectives.

1.1.5. The developer involvement

Other than that, when it comes to a new area use, but also in regard to the housing vs. industry strategy, this challenge is more and more imposed to developers that are to realize projects within the area vision. The developer should therefore be considered a relevant actor in realizing the eventual land use.

What particularly makes examining the intrinsic land value discussion interesting is the recent shift between public and private actors. Historically, the public authorities found themselves above private spheres, having internal urban planners establishing masterplans with internal expertise and quite a dominant role in land acquisition and planning. In the last few decades, and even more evident since the financial crisis, public authorities have become more reserved with financial involvement and

started to take on the “facilitating role”, while private parties have become more involved in early stages of area (re)developments (De Zeeuw, 2018; Heurkens, 2012). Daamen (2010, p3) states that spatial plans and projects have become the result of a negotiation process in which governments are no longer obviously ‘in the lead’. As well private actors, as community groups and other public bodies have all become participants in improving the way land is being used and developed.

In addition, a shift has occurred in the strategy on how to define an area (re)development. In the past, it was common that urban design was part of the process very early. The result was that elaborated urban visions were established without a careful plan on target groups, concept, plan economy and uses. Nowadays, a lean and mean-process has turned around this order. First an area is defined in terms of uses, identity and qualities. In this process the zoning plan should be kept as broad and flexible as possible to respond to future events and market shifts.

So in conclusion, as the developer is increasingly involved in the selected land use realization, their intrinsic land value perception should be involved in the discussion. Since Merckx concluded that the intrinsic value discussion determines the outcome of the area redevelopment, it would be interesting to learn what the developer involvement is (and the perspective they bring) in the port-city discussion.

1.1.6. Problem statement

As introduced before, more and more inner-city brownfield locations are proposed for redevelopment, of which the waterfront areas obtain extra attention due to their location along the water. Intensifying the use of especially redundant or neglected areas can create a lot of benefits for as well the city as the port. At the same time waterfront redevelopment sites are amongst the most complex to develop (Daamen, 2007). That is why it is of importance to understand the intrinsic land value creation in development and how therein port and city actors employ strategies to the steer the actor involvement, power and perspectives to a certain intrinsic land value creation in development. The development outcome is described to be the result of the intrinsic relative land value for city and port functions (Merckx, 2004), which of course can be subject to debate in the actor arena.

Pliakis (2019) has demonstrated that the Havenstad project in Amsterdam is a good example in which the development outcome is the result of a stubborn and fixed perspective together with a dominant involvement and power of the municipality. He concludes that the port perspectives is not integrated (or valued by the city), heavily affecting the project outcome, which potentially could turn out very expensive with a great lack of support.

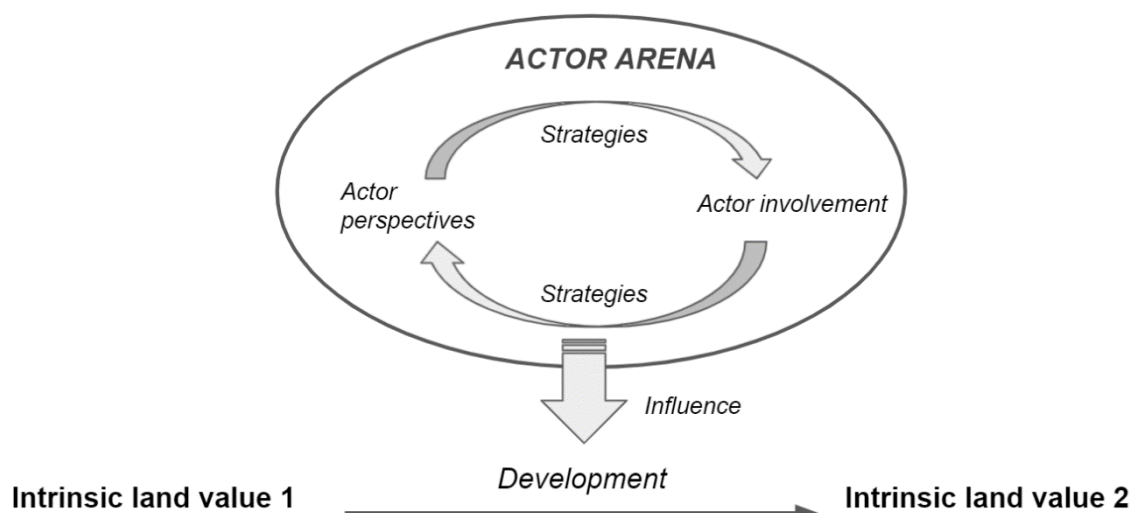


Fig. 8: Conceptual model for the intrinsic land value discussion. Own illustration.

Figure 8 shows the conceptual framework in this thesis of how the actor arena influences the intrinsic land value creation with development of the area. The development outcome is interpreted as the result of the actors involvement (including their power and role), and their perspectives (on value creation in the area). This is fought out in the actor arena which can be described as constant strategies in attempts to influence one another (either in their involvement or in their perspective). Rather than a two-sided debate it should be seen as a multi-actor arena including more than just a port and city representative, in which the right coalition is sought for the area redevelopment.

If we want to understand port area redevelopments, and obtain the most benefits from it as possible, then we need to understand how intrinsic land value is created and the discussion leading to it. **This brings us to the following research question:**

How is intrinsic land value created, in brownfield area redevelopments such as port areas, and how does it influence the eventual development?

1.2. Relevance

Scientific relevance

Daamen (2005) states how in literature regarding transformation of port terrains few attention is focused on the way waterfront developments are established. "Interests and goals of parties involved in regard to the studied areas are not discussed enough. Because of that the perspective from which a development can be called successful is unclear or limited to the authors." (Daamen, 2005, p45). This is a clearly described literature gap. If we take this one step further, it would be even more interesting to understand how port and city attempt to influence on another's perspective or even their involvement into achieving their perspective for areas in the port-city interface.

The research aims to advance our understanding of how waterfront areas are redeveloped and how the intrinsic land value can be made explicit in the actor arena in the redevelopment. For instance the role of the developer in the land-use decision is neglected due to the focus on the city on one side and the port on the other side.

This research will add to the scientific field by examining the involvement of the developers and their (strategic) activities in coming to the land use. Hereby the port-city interface literature will be deepened with a view into how redevelopment follows from an actor arena on intrinsic land value creation, on a strategical and practical level, and how different actors strategize their way between involvement and perspectives (value proposals) into a redevelopment outcome.

Societal relevance

Successful waterfront redevelopments can offer great societal benefit to as well the city and the port. In order to achieve successful area redevelopment long term actor commitment is required and contradictions should be resolved.

Making the land value perspectives explicit helps us understand the contradictions and what perceptions lie behind the contradictions or agreements in the port-city interface. This could stimulate mutual actor learning for future port, or other types of inner city brownfield, redevelopments

Specifically for the developers, we can learn how their perspective is involved in the land use decision and how their developing role can be integrated with the strategical port-city discussion. A recommendation could be how private parties, such as localities and developers should be involved more, less or differently.

2. RESEARCH DESIGN

2.1. Research goal

As described in the introduction, this research aims to advance our understanding of how waterfront areas are redeveloped and more specifically how the intrinsic land value can be made explicit in the considerations in the redevelopment. The different perspectives on the intrinsic value are examined and how this influences the eventual redevelopment.

The goal is to make explicit what the intrinsic value is based on for different actors and how these come to being. The establishment of the eventual developments is based on the front-end discussion prior to the start of projects. Hence, this thesis will focus on the front-end in examining how the land value perceptions were established.

2.2. Research questions

2.2.1. Main question

From the literature orientation in the introduction, it appeared that a key question is still to be answered. This has led to the following main question for this thesis:

How is intrinsic land value created, in industrial area redevelopments such as port areas, and how does it influence the eventual development?

2.2.2. Sub questions

This overarching question is divided into some sub questions that will be answered in such an order to provide an answer to the research question in the end.

How can we understand intrinsic land value, and what does it comprise of? (THEORY)

What actors were involved and in what way? (PRACTICE)

What were the intrinsic land value perspectives and how can they be explained? (PRACTICE)

What was the influence on the area redevelopment? (PRACTICE)

2.3. Methods

2.3.1. Qualitative approach

This research focuses on how this intrinsic value is created and how this influences the eventual area redevelopment. As the aim is to make explicit and obtain a deep understanding, qualitative research is required to obtain this in-depth data for precedent cases. The quantitative case analysis focuses on three key elements: 1) understanding the perspective, 2) understanding actor involvement (including power division), and 3) the interplay and influence on the development.

How the qualitative research method is shaped is demonstrated in figure 9 and will be explained in more into detail in the following sections. The approach for this qualitative research (in figure 9) can be divided into some components that are vertically arranged from start to finish.

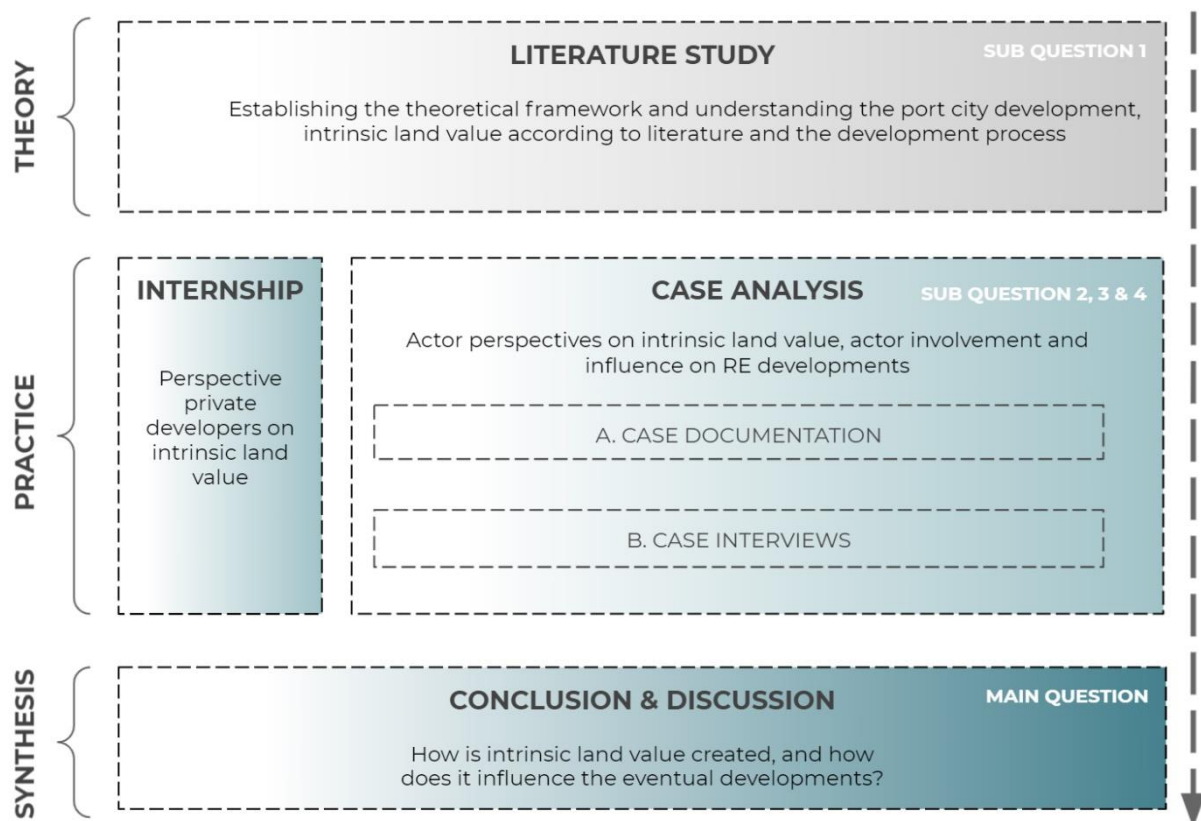


Figure 9: Research method. Own illustration.

THEORY: Literature study

This first step answers sub question 1. This step is a theoretical review of what is written about intrinsic values and land / location theory, and what it comprises. It also touches upon how this is embedded in the area redevelopment process. This step sets a theoretical framework for how we can understand intrinsic land value development that can be used for the empirical part on how intrinsic value is created in practice.

PRACTICE: Case studies

Next up two port redevelopment cases will be examined to find how intrinsic relative value is created there and the interplay between actor involvement and value creation perspectives. The cases are examined in two consecutive steps:

- 1) Exploratory step: To fathom the two cases firstly the cases will be exploratorily examined through desk research and exploratory interviews. Once the overall process, the actors involved, and events are more or less clear, the next step can be taken.
- 2) In-depth step: Interviews are carried out, with additional case documentation research to understand in-depth how the intrinsic value creation is established.

PRACTICE: Internship

Through an internship qualitative data will be obtained on the developer perspective on intrinsic land value in particular. Lessons learned from a specific project, De Faam in Breda, will be included too in the analysis. This project concerns a formerly industrial production factory for sweets and candy, which will be redeveloped to a mix of uses. This is not regarded a case that will be examined in the same way as the port areas, but solely focused on developer perspective on land use value and considerations in private-led area redevelopments.

2.3.2. Case selection

“A case study is a type of research in which the examiner seeks to obtain more insight into one or more objects or processes that take place in a certain time or place” (Verschuren & Doorewaard, 2005).

For this research two different area redevelopment cases are examined. These are the RDM and M4H area in Rotterdam. These two area redevelopment both follow from one total area redevelopment strategy called “*Stadshavens*”. Therefore this can be considered a single-case study, in which the case is divided into two different outcomes which will be investigated as two cases coming from the same initial starting city strategy.

Case criteria

The RDM and M4H cases are particularly interesting as they appear to result in another redevelopment outcome than complete transformation of port use to a residential urban area. This implies different value creation and dynamics in the debate for intrinsic land value than appeared in Hamburg, Havenstad and other waterfront redevelopments usually examined in port-city interface literature.

In general the cases are selected on the basis of the following criteria: The cases should concern industrial (port) area redevelopments. Also these should be recent or ongoing area redevelopments, so that the increased involvement of private parties is relevant. The cases should also be within the Dutch context of land scarcity, leading to an intrinsic value discussion. Logically, sufficient information should be available of the cases to make analysis possible.

These two cases are selected on the basis of their two different outcomes in use, even though they result from the same initial *Stadshavens* strategy. Hereby the subtle difference in context, location factors or actors involved can be identified and compared how the real estate developments differ as a result of that. The M4H area allows for residential uses and can be regarded as a mixed-use redevelopment. The RDM case does not concern residential developments and appears to be focused on innovation exchange mainly. Taking two cases allows to make a comparison between the cases so that a broader perspective on the intrinsic values and the actors involved leading to different outcomes can be obtained.

2.3.3. Data collection

A. Desk research (document study)

As can be seen in figure 9, the case data consists of interviews but also of desk documentation as data collection approaches. The document study entails an analysis of formal policy documents, reports, researches, visions, maps, historical formal documents, etc. Some of these documents are retrospect summaries by individuals involved in the process or by researches who looked into the process before. Also news items will be used to get a glance of the events that occurred through time.

B. Semi-structured interviews

Semi-structured interviews were carried out to obtain the in-depth data required to understand the development process of the RDM and M4H cases and how intrinsic land value creation was established over time. The interviews were set up in a semi-structured manner in order to allow the interviewee to speak freely about their narrative and provide as much information as possible about their perspective. The in-depth interviews can be divided into two parts, being 1) Making the actor involvement and process explicit, and 2) understanding perspective and influence on the development. The interviewees were selected on the basis of their involvement in the area redevelopment. Actors central in the process were interviewed: as well port-actors, city-actors and

developers. All interviewees met the main requirement that they are professionals and actors involved in the process of the two cases.

Internship

The internship as part of the graduation process provided an insight into the perspective of the developer on the intrinsic land value, which is particularly interesting as its role stands in the center for providing the developments translating the vision into projects. For this thesis an internship is done at the company Synchron, who is involved in innercity brownfield redevelopments such as: De Faam Breda, Tolhuiskade Amsterdam, Merwede Utrecht, and the Houthavens. Practice experience for De Faam and general interviews with different developer individuals for similar project will provide insight into how this actor perceives intrinsic land value.

3. LITERATURE REVIEW

Introduction

This chapter is aimed to set the foundation and definition of the thesis research, introducing the knowledge necessary to carry out the thesis. In the first place this is about understanding the creation of intrinsic land value. This actually consist of what it comprises, as well as how it can be linked to the area development process and in particular in redevelopment of port cities.

Hence it is divided into three sub-parts:

1. *How can we understand the redevelopment of port cities in terms of drivers and challenges?*
2. *What is the process in urban area development in coming to a land use decision?*
3. *What does intrinsic relative land values comprises?*

3.1. Redevelopment of port cities

3.1.1. Drivers of redevelopment

In order to understand the intrinsic land value perceptions from the actors involved in redevelopments of industrial inner-city brownfield sites, such as port areas, the driver for redevelopments must be found. This section will look into the drivers found in literature for redevelopment in (port) cities.

De Zeeuw (2018) states how area redevelopments are always fueled on a certain driver (or more at the same time). This can be market driven, government driven, or socially driven (e.g. residents' initiative). Obviously the driver differs per area development.

Area redevelopment never starts from a blank situation. As De Zeeuw (2018, p31) describes "area development is highly sensitive for context. The market and spatial economy on one side and the government (in particular the municipality) on the other side set the boundaries for area redevelopment." Adam and Tiesdel (2012) mention how in fact every development results from a certain change in the context creating new opportunities or demands for (re)development. These six context change factors, which are the drivers for development, are illustrated in figure 10. It is very well possible that a redevelopment results from a combination of context change factors forming the drivers for redevelopment.

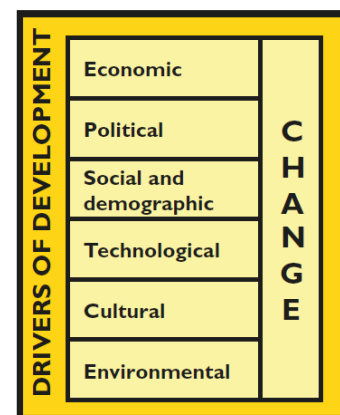


Figure 10: Real estate development process, Adam and Tiesdel (2012, p77)

3.1.2. Port area redevelopment

As introduced earlier, two overall redevelopment causes were identified. The first one being the redevelopment of inner-city waterfronts because they have turned redundant and were abandoned over time (due to a shift of the port to scale-enlargement and specialization). The second cause is cities that are growing faster than that the port is moving away, resulting in competition for land close to the city, causing port areas that are still in use to be redeveloped. This is summarized in figure 11.

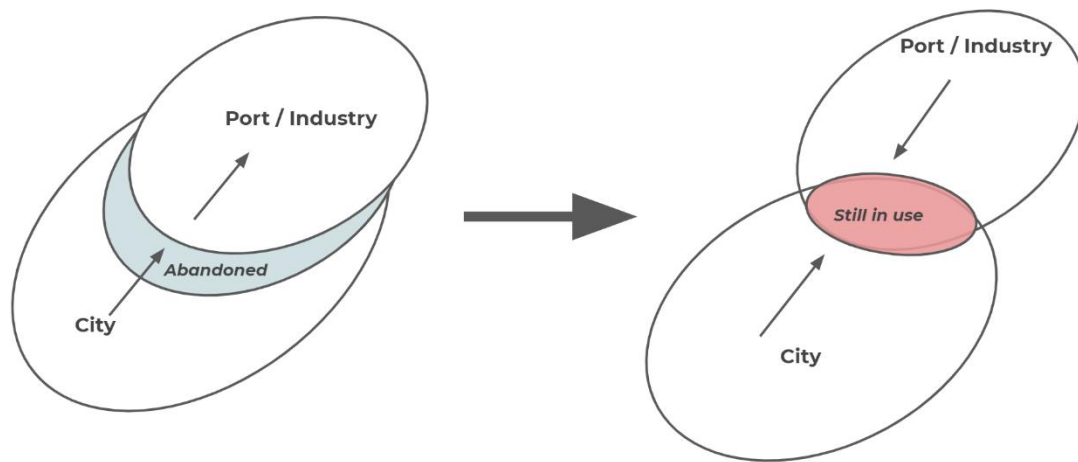


Figure 11: Shift in cause for redevelopment. Own illustration.

Conditions for overall redevelopment of urban areas are economic transitions, concerns over the social environment, physical obsolescence or sustainable development of the environment. For the waterfront, conditions are the closure of the port, de-industrialization, abandoned land or the wish for public space (Wang, 2008, p2). Three similar conditions for redevelopment of waterfronts were found by Sieber (1991), being 1) Obsolescence and shifts in technologies of transport, de-industrialization and *corporatization* of the city. This corporatization means that the city has clearly shifted to a post-industrial city with a focus on other economic activities, particularly in the service sector.

In port cities the industrial maritime sector was - more or less - the sole base of wealth and social life, of attitudes and culture, of innovation and development. Warsewa (2006, p9) mentions how this general change to a tertiary economy caused a constellation of problems in port cities (see figure 12). Redevelopment in port cities often aim to resolve or at least respond to these problems.

Port city problems			
Loss of jobs and income	Movement of labor and local population	Deserted port areas	Uncertainty of identity
Unemployment	Redundant transport infrastructure	Rundown city quarters	Lack of political support

Figure 12: Port city problems according to Warsewa (2006, p9).

The redevelopment of obsolete port or industrial areas can have a lot of benefits. Papatheochari (2011, p4.) lists some of the most distinctive advantages of waterfront regeneration (these are included in the categories in figure 13). Among which are increase of property values (local benefits), but also the attraction of resources and investments in a degraded area. Furthermore, the increase of livability, resolving pollution and enhancing the city (or port) image, are significant benefits.

Other than that, redevelopment reduces urban sprawl, as land use is intensified or the adapted land use provides better in the city demand. Longo & Campbell (2008) and De Zeeuw (2018, p178) list some benefits of redeveloping obsolete sites, which are included in figure 13 as well. Among these are: less commuting and thereby less congestion, less conversion of rural lands and thereby preserving nature, but also strengthened power of the economic agglomeration. Figure 13 summarizes the benefits found in literature.

Benefits of redeveloping obsolete port of industrial areas	
Increase of property values	Better services of transport and social services (bigger support for amenities)
Attraction of economic investment (on degraded areas)	Enhanced livability (social cohesion)
Improvement of environmental condition of polluted areas	Less congestion and commuting
Preserve historical heritage	Less conversion of rural lands to city use (preserve nature)
Improvement image of port and city (better marketing strategies)	Increases economic growth of inner city and strengthened power of economic agglomeration

Figure 13: Benefits of redeveloping obsolete port of industrial areas (Paptheochari, 2011; Longo & Campbell, 2008; De Zeeuw, 2017).

According to the international experience, the usual goals of waterfront regeneration projects are the redefinition of waterfront's role in the urban context, the improvement of urban image and the transformation of the economy (Butuner, 2006). Nevertheless, every city has its own character, identity, history and role. Also, every area redevelopment takes place inside a geographically distinct area, Daamen (2010) expresses. Papatheochori (2011) concludes that every port city redevelopment should be examined accordingly.

3.1.3. Redevelopment challenges

As mentioned in the introduction, the redevelopment of port areas comes with significant challenges. The complexity of area development is reflected in the wide variety of actors, with corresponding interest that are very likely to conflict, and the often long term time span of (urban) area developments (Adam and Tiesdel, 2012). Papatheochori (2011) mentions some reoccurring conflicts in waterfront regeneration in general relating to the long time span and the varied actor involvement. Some are:

- Reduction in project funding
- Conflicts in interest between private and public sector
- Conflicts associated with working and residential areas
- Land use conflicts
- Controversy of social benefits
- Delays in decision making and implementation
- Environmental pressure

Mixing & integration

One of the main challenges is how the industrial functions and character can be *mixed* or rather be *combined* with city functions such as living, working and recreation. Often this is a reasonable consensus solution in the middle allowing a process to incrementally add other functions to an industrial site. Moreover, building upon the initial arguments of Jane Jacobs (1992), a lot of urban planners established a conviction on the wide variety of benefits that come from creating vibrant cities with

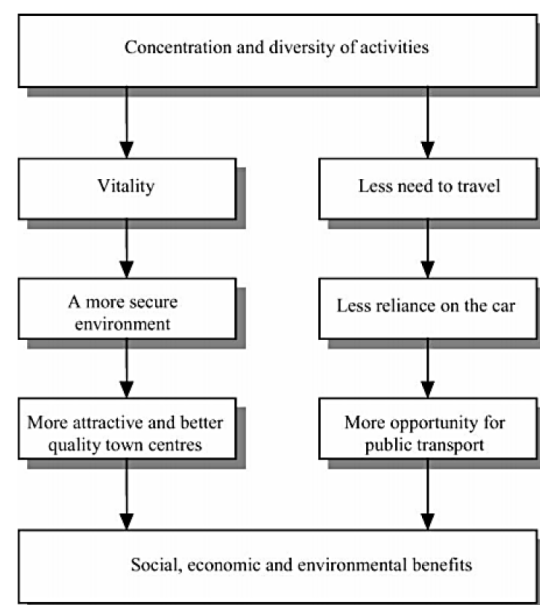


Fig. 14: Benefits of mixed-use developments (Hoppenbrouwer & Louw, 2005, p969)

mixed use. There can be a lot of benefits to mixed-use developments according to Hoppenbrouwer & Louw (2005), as can be seen in figure 14.

However, mixing in industrial areas doesn't come without the corresponding serious challenges. Korthals Altes and Tambach (2008) examined three cases of port redevelopments in the Netherlands with particular respect on the municipal strategies for introducing housing on industrial sites. From those case studies (i.e. Binckhorst, Buiksloterham & Plaspoelpolder) could be concluded that while there may be plenty of room for housing, much of it will be subject to unacceptable environmental hazards and that not all industrial functions can be mixed with housing. Plans to transform an industrial area to mixed use actually resulted in the move of industry facilitating them a location better suitable for their pollution.

Hoppenbrouwer and Louw (2005) examined to what extent mixed-use strategies are used in the redevelopment of the eastern dockland of Amsterdam. They concluded that even though the number of jobs outnumber the forecasts and the entrepreneurs are satisfied with the area, the businesses are very small and exclusively in the commercial service sector. Moreover, these services did not bring about the lively, stimulating and secure public realm that Jane Jacobs described. The shops and manufacturing or producing businesses were not mixed and either excluded from the area or still clustered separated from the residential areas.

For the Havenstad project in Amsterdam Pliakis, as mentioned earlier, concluded that the municipal approach has solely been about "unlocking the port lands by overcoming legal barriers" (2019; p136), not even considering integration of port functions in the redevelopments. In the context of Amsterdam, this can be explained by the housing shortage that the city of Amsterdam faces and the green party being dominant in the municipal council also aiming to move industry away from the city.

However, there are good arguments not to neglect production or manufacturing industries within the city. Van den Berghe (2020) argues that bringing (re)consumption and (re)production back and closer not just has ecological but also economic advantages. Dutch cities and their economies have become highly dependent on global processes making them volatile. Hence, Van den Berghe argues to include small-scale production industries in the redevelopment of port areas.

Financial and social considerations

Another field of tension in waterfront redevelopment is the balance between financial and social benefits, but also the balance between internal and external benefits or value creation. Specifically for port areas, Huang, Chen, Kao and Chen (2011) divided the benefits of the port development into "internal" and "external", which can be explained as personal or organizational benefits and public or societal benefits (see figure 15). In that regard, they concluded that diverse developments for a distribution of benefits is also desired for successful waterfront redevelopment.

Developers and their investors can be categorized under private enterprises with a heavy internal financial benefit aim, being: return on investments and profitability. Nowadays real estate developers have become

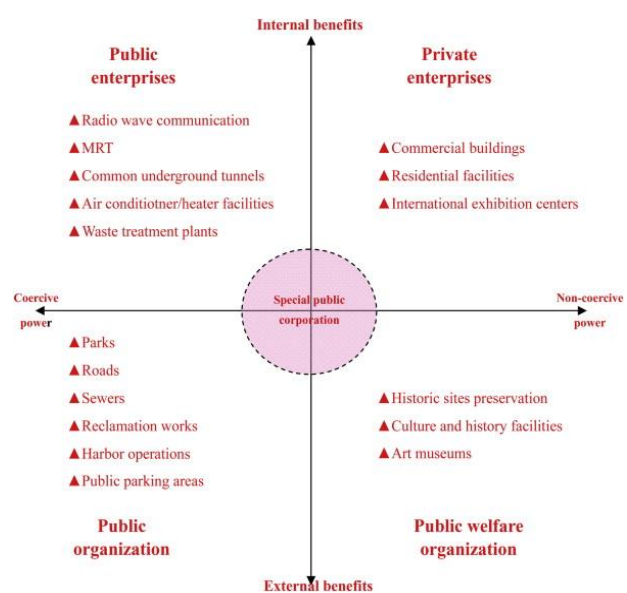


Fig. 15: The field of benefits and powers categorized by type of stakeholder, from Huang et al (2011)

key drivers of the production of space (Robin and Brill, 2018). Therefore, the urban environment created by real estate objects can be read as the physical manifestation of real estate 'values' resulting from investor objectives. In many instances, this does not directly connect with local needs, and thus governmental aims. Robin (2018) expresses how in this line of research little emphasis has been put on the relationships leading to the production of particular urban forms. The balance between internal and external benefits can be directly translated to the discussion of area use.

Desvor and Jorgensen (2001) argue that it is important to come to a consensus about the use of the port area on the basis of experiences with the Kalvebod Brygge in Copenhagen. This redevelopment was perceived a disaster due to no consensus about the use of the port area. As a result, landowners pursued their own interests, the ones of private enterprises in figure 6, leading to a waterfront that was by no means an integral part of the city or its growth strategy. This led to some public resistance even that resulted in a different approach for the rest of the Copenhagen port redevelopments. Franzen, Hobma, de Jonge, and Wigmans (2011) in their identification of the success factors for area redevelopment expressed the importance of coming to a clear scope (even being a veto criteria for success), thus area use agreement.

In regard to this, according to Taddeo (2002), the core questions that all of us should consider in proposals for redevelopment of our waterfront should be: is it good for the port and is it beneficial for the city? Khoo (2002) states that the final decision whether or not to redevelop will be based on the evaluation of three elements: physical, economic and social advantages.

3.2. Land use decision

3.2.1. Area development

This section discusses on area and project development and what the processes look like. This will give a theoretical context in which the intrinsic value perceptions will be discussed or even changed.

Area development

Daamen (2010) formulates area development in a general way: 'An area development refers to a *framework of concrete material interventions inside a geographically distinct area*'. This formulation emphasizes that in order to call something an urban area redevelopment there should be intended a concrete physical intervention. Also, it indicates that in area redevelopment copy-paste is not just possible, as every area comes with their own 'geographically distinct' characteristics. According to De Zeeuw (2018) literature on this does not conflict, but rather adds to each other and emphasizes different elements. That being said, De Zeeuw formulates area development as 'the art of connecting functions, disciplines, parties, stakes, and cash flows, focused on the development or redevelopment of an area' (2018, p10).

Project development

Area (re)development should not be confused with project development, which concerns a single real estate object (De Zeeuw, 2018). Important to realize is that project development is however an important aspect of area redevelopment. In regard to project development, this thesis will only focus on the front-end aspects leading to the concept development. The project phases of elaborating the design and executing construction are outside of the scope.

3.2.2. Zoning plan

It is in the zoning plan (in Dutch: bestemmingsplan) where the land use is legally established. The zoning plan allows local governments to steer on developments so that they can safeguard the public interest in the development of the built environment (Hobma & Jong, 2016). Zoning plans can be very specific, but also very broad. If a municipality prefers to hold a strong grip on the developments are

very specific zoning plan can be preferred. On the other end a broad zoning plan will facilitate more solution space for market parties to work within the conditions set in the zoning plan.

The zoning plan is normally made by the municipality, who establishes the zoning plan in collaboration with an urban design firm unless they have an internal urban planning department doing this (De Zeeuw, 2018). However, private parties sometimes like to take on the preparations for the zoning plan from the municipality in order to steer on quality, costs and time. In the end, the normal municipal decision taking process should be gone through, so nevertheless good tuning with the municipality is crucial.

Prior to the zoning plan modification, there can already be a non-binding agreement between public and private parties about the uses in the area and a vision for the future. The zoning plan can be seen as a definitive legal environmental codification (De Zeeuw, 2018). The process up to the establishment of the zoning plan is interesting in the analysis how the intrinsic land value perspectives are eventually used in coming to a zoning plan.

Steps to zoning plan

Overall the following process steps and realization risks are listed by De Zeeuw (2018, p78) for inner-city area transformations from initiative to the zoning plan modification:

1. Vision
2. First acquisition
3. Environmental research
4. Collecting partners
5. Temporary lease
6. Masterplan (flexible or not)
7. Collaboration agreement
8. Participation plan
9. Placemaking
10. Zoning plan modification

3.2.3. Urban area development process

The next section will explain how the steps to the zoning plan modification are embedded in the urban area development process phases.

De Zeeuw (2018, p30) divides area development in 5 phases:

- Initiative and exploration
- Plan shaping and setting conditions
- Elaboration and project development
- Real estate development and construction
- Real estate use, maintenance and management

The last two phases will not have the focus in this thesis and will therefore be out of the scope of this thesis. Particularly the third phase has been integrated more and more with the second phase and will therefore be included in the scope up to the point of where uses are defined for projects. Mainly this thesis will look on the first two phases.

Initiative phase

The initiative phase can take a wide variety of forms. It is a form and rules-free domain, in which basically everyone with an idea can act upon that. This idea can only be elaborated to actual developments if the initiator has or can organize the knowledge, skill, influence and resources necessary. Different initiators can be thought of (e.g. government, market parties including housing

associations, local residents, social institutes, etc.), which can also initiate a development in combinations of collaboration.

Some activities that might occur in this phase are:

- Define urgency and vision
- Map out history
- Formulating a concept
- First market research
- Vision on value-creation and feasibility
- First risk analysis
- Exploratory conversations (municipality, land owners, users, etc)
- Market consultation (in case of government initiation)

Plan shaping phase

In this phase four components are to be elaborated more into detail to form a plan:

1. Program (use): deciding the uses in the area and its phasing
2. Design and research: establishing area concept or masterplan, and investigating environmental aspects and effects such as the MER (in Dutch: Millieu effect rapportage), and sometime even establishing the zoning plan
3. Finance: Cost division among public and private parties, testing feasibility
4. Process: Establishing collaboration agreements, area marketing and participation strategy

This is the phase of area concept development too, which can include a certain theme for the area such as “living on the golf track” or “central innovation district”. This is the phase where the intrinsic land values come together of the actors involved and will be decided what will be the use after development for the area.

A significant shift has developed over the years in regard to this phase. Namely the shift from government dominant master planning to a more flexible approach. De Zeeuw (2018) mentions how before the financial crisis of 2008, the masterplan used to have a elaborated and detailed character. Municipal departments used to have strong internal expertise and urban planning departments coming to integral developments. As introduced, the financial crisis ended this practice, making masterplans broader and more indicative, flexible for future change. More and more local governments don't specify the plans and designs, but set the boundaries or conditions for area developments and facilitate the market.

In the plan shaping phase, eventually the zoning plan will be established. This can be all at once for the whole area, but can also go step by step in parts of the whole area.

3.3. Intrinsic land value

This section explores the land theory literature and how we can explain the intrinsic land value in land use considerations. It consists of two parts: 1) How can we define intrinsic land value, and 2) what does it comprise of?

3.3.1. Definition

The *intrinsic relative land value* as explained by Merckx (2004) included the word “relative” since the meaning referred to alternative expansion locations. The intrinsic relative land value, as explained by Merckx et al is then dependent on the scarcity of alternative locations for that activity. The intrinsic land value for that use(r) would be higher, when there are no expansion alternatives. He explained that if there is a lack of alternative locations for one of the two uses (port and city), then the intrinsic land value would be higher, the debate on the land use would increase and mixed-use solutions would logically be the outcome (Merckx, 2004).

This thesis aims to get a broader perspective on land use considerations, and include other factors that contribute to intrinsic land value. This thesis will speak of “*intrinsic land value*”, leaving out the word “*relative*”, to examine the broader impact of values rather than just the availability of other expansion locations.

Expanding the definition further, the word “*intrinsic*” can mean two things 1) that the value comes from the unadaptable land characteristics itself, but also 2) that the value is “intrinsic” in terms of to someone or something specifically. In this thesis with “intrinsic value” is meant that the value is perceived by someone personally, as an opposite of extrinsic when value is based on external factors. For instance, if you are the land owner, but you don’t see any use in it anymore, then the intrinsic value is low, in spite of someone else willing to pay a very high price for it because the intrinsic value for them is high.

Merckx et al, demonstrated the land value for two types of users and the uses they represent (i.e. city and port). This thesis will examine the intrinsic land value for a broader spectrum of possible users (and the use they represent) that the city and port consist of.

3.3.2. Land value theory

To understand the basic valuation of land, first we will look at the early land value theories. These mainly consist of unadaptable land characteristics.

Early land value theories

This section will look into land value and location theories. Land value theories revolve about land rents to express the value of land in monetary terms. The first economist to develop a theory of land rent (and hence value) is David Ricardo (1821, pp 33-45), who developed the *Ricardian land rent model* (Mcdonald & Mcmillen, 2010). This model states that the *productivity* of the land determines the rent price one will ask for the land. This was demonstrated with the fertility of land: high fertility comes with low production costs and thus a very high productivity, leading to a higher rent price for the land than with low fertility. Nowadays, land in urban areas can be very productive in other ways than a high fertility: as a lot of activities may be performed and a high density can be achieved, leading to a high land value. Hence, land value is based on what you can do with it: specific land qualities. However, Ricardo’s agricultural theory must be modified to explain spatial variation of rents and land value in urban areas. Even in an agricultural area, land value reflects more than just the fertility of soil. Ricardo focused solely on fertility (a land characteristic) and ignored location (Mcdonald & Mcmillen, 2010).

A few years later Von Thünen (1826) stated something similar to Ricardo. The difference was that he did not look at the height of the costs based on the land fertility, but at the amount of transportation costs of a certain location. In the decision making process of farmers on where to farm, assuming the fertility is the same everywhere, farmers are willing to pay more for a farming location close to the market, as shipping costs of their products will be lower. Land as a form of real estate is fixed to a location, so for an important share the value is based on its location relative to other locations. This theory can easily be applied to commuting too (see figure 16): If you have to pay to commute to your workplace, then there is an incentive to locate close to where the work is.

Building upon this, *Alonso (1964)* introduced the well-known bid-rent functions. A bid-rent function demonstrates maximum prices one is willing to pay for a certain location and maintain some given level of utility/ profit (see figure 17). In this theory, the firm or household is indifferent between all the locations and their corresponding rent level along the function, because theoretically it will achieve the same level of profit or utility everywhere (macdonald & mcmillen, 2010). For instance: a central location will come with low transportation costs or larger sale opportunities, but will come with higher level of rent, hence the same level of utility as a location further off but also with lower rent levels. In reality the indifference for all locations along the bid-rent curve is not really a hundred percent the case, as there are more factors influencing the location decision (macdonald & mcmillen, 2010).

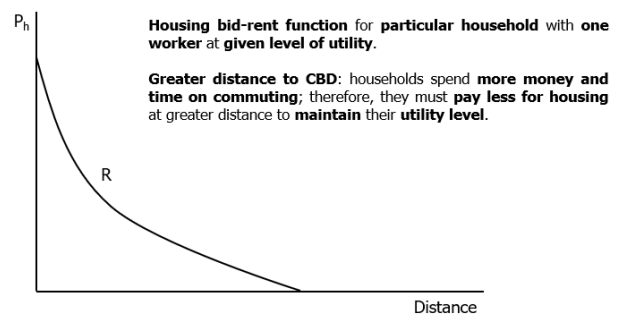


Fig. 16: Bid-rent function for a household. MacDonald & Mcmillen (2010).

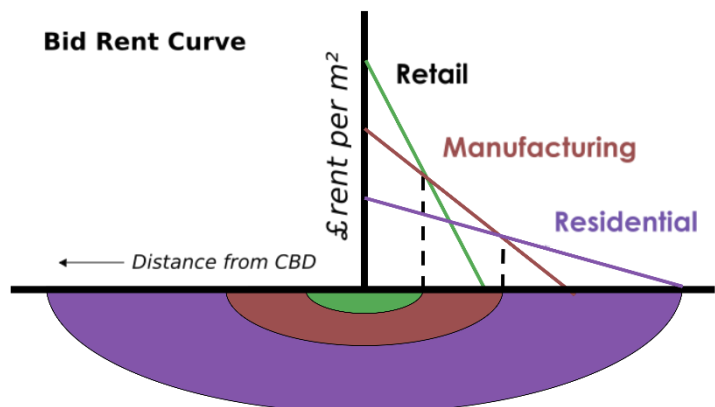


Fig. 17: Bid-rent function for three function groups in monocentric city. Alonso, 1964.

Location factors

So far two main location characteristics have been discussed that are both *non-adaptable*: 1) Soil (fertility) and 2) Location (as relative to another location). As

Macdonald & Mcmillen (2010) state there are also adjustable location factors that impact the intrinsic value of a location or land to someone and the use they represent.

Hard and soft location factors

In general, a division can be made between hard- and soft location factors. Hard location factors are physically visible, measurable and clearly expressible in monetary terms. This includes accessibility (of highways, public transport, or a port or airport even), but also the space available for expansion, or the availability of highly educated employees. The early land value theories (as discussed so far) clearly approach land and location value from that perspective.

Soft location factors concern feeling, appearance, and are qualitative in its core. For soft locations it is more challenging to express them in monetary terms. Soft factors are increasing in importance as they allow an area to distinguish itself from other areas (Rainisto, 2003). Some soft location factors include representativity, the identity or image, the quality of life (public space/ safety), etc. Jansen (2009) categorizes 6 types of soft location factors, which are illustrated below:

'soft' location factors by Jansen (2009)					
Building	Direct area	Socio-economic	Living environment	Institutional support	Personal
prestige	pleasant living environment	work ethic population	beauty of scenery	accessibility	Personal motivation
representativeness	liveliness	International perspective	visual attractiveness	quality of information	
recognizable structure	attractiveness of place	reputation of the region	buildings		

Fig. 18: Soft location factors (Jansen, 2009)

It should be taken into account that for different companies from different sectors and for different households, there are different preferences for location factors as they will grant different values to them. For companies the primary activities determines the importance of soft location factors (Atzema et al., 2002). A company that receives a lot of clients will grant more value to the representativeness of the real estate than a company that doesn't. The same goes for different types of accessibility. Other than that, irrational factors can play a role in location behavior for companies. Especially small companies choose for a familiar environment (which can be regarded a soft factor) and relocate within the district when needed, thus a decision is made as a result of internal factors rather than rationally on the basis of location factors. (Atzema et al., 2002).

In figure 19 hard and soft location factors are listed, found by Noordink (2014), specifically for positioning of companies.

HARD LOCATION FACTORS	SOFT LOCATION FACTORS
Accessibility (public transport, airport, roads)	Representativity (quality RE and surroundings)
Access to (educated) employees	Appearance environment , identity, image (heritage, culture)
Expansion possibilities	Quality of life (mix of use, services, facilities)
Close proximity to related companies (potential collaboration)	Bond with region
Relation to market (customers, clients, suppliers)	

Fig. 19: Hard and soft location factors (Translated from Noordink, 2014)

Location theories

Pellenbarg (2006) demonstrated how different location theories developed throughout time, including new location factors and shifts in importance (see figure 20).

Time	Location factors	Factors	Theories
100 years ago	- Transport costs - Production costs	Economic and technical	Neo-classical location theories
In the 50's	- Agglomeration benefits	↓	↓
Around 2000	- Knowledge - Environmental concerns - Regulation - Image and representativity	Social and economic	Behavioral, institutional, evolutionary

Fig. 20: Location factors and theories through time (Translated from Pellenbarg, 2006)

Location theory has been researched for decades on the basis of different theories. Four different location theory approaches can be distinguished:

- (Neo) classical
- Behavioral
- Institutional
- Evolutionary

(Neo) classical theories focus on “hard” location factors. The initial classical theories (such as Ricardo, Von Thunen, etc) focused mostly on agricultural and industrial business, as office space was not a real sector at the time. Classic theory takes as basis a well-informed entrepreneur, in an isotropic environment, with no variety in landscapes. A clear focus is put into cost reduction while being as productive as possible. Neoclassical focus more on profit maximization and the market size and position. (Jansen, 2009; Noordink, 2014)

Behavioral location theory brought two important additions. Firstly it focuses more on personal circumstances and motives. Also non-rational elements can play a role in this (Atzema et al, 2002). The soft location factors are introduced here. Hence is suggested to shift research to interviews and open questions rather than quantitative measurements (Jansen, 2009).

Secondly, it notes that companies and households cannot have a complete information and knowledge of all the location factors and moreover how to process this rationally. Thus, a limited rationality should be assumed in location theories.

Institutional location theory and *evolutionary theory* both include external factors. The first one in regard to institutional context and policy. These factors often play a role on a national level, but can also play a significant role on a municipal and area level. The evolutionary theory focus on innovative benefits, from location factors such as proximity of partners, knowledge spill-overs, attracting qualified employees (Meijer, 2015).

In short, the intrinsic land value for a use or user can be created through location factors. These location factors can be described from four perspectives, hence land or location factors can be categorized in four groups: hard factors, soft factors, institutional factors and evolutionary factors.

Location theories based by Meijer (2015)			
Location theory	Focus	Characteristics	Location factors
(neo) classical approach	understanding financial drivers through cost reduction & revenue optimization	'hard' location factors	<i>transportation costs</i> <i>production costs</i> <i>labour costs</i> <i>land/real estate costs</i> <i>market size/position</i> <i>etc.</i>
behavioural approach	understanding subjective localisation decision-making	irrational considerations internal factors 'soft' location factors	<i>quality of life</i> <i>reputation of the area</i> <i>attractiveness of the building</i> <i>personal motivation</i> <i>etc.</i>
institutional approach	understanding the importance of the social and institutional context	external factors policy factors cluster factors	<i>legislation and regulations</i> <i>government policies</i> <i>subsidies</i> <i>power relations</i> <i>relations</i> <i>etc.</i>
evolutionary approach	understanding company survival and the importance of adaptation to change	external factors long-standing factors cluster factors	<i>proximity of partners/suppliers</i> <i>knowledge-spill overs</i> <i>qualified employees</i> <i>etc.</i>

Fig. 21: Four location theory approaches (Meijer, 2015)

3.3.2. Actor valuation

Location factors themselves mean nothing if they don't bring **value** for certain individuals. This thesis defines value as something that aligns with objectives and a certain benefit for the actor who perceives the value. As mentioned earlier, for one company production costs are important, while another prefers the reputation of the area for its image to its clients. Whether hard or soft factors are important, and what particular factors within those two categories are important, depends on actor characteristics, of which their core activity is the most important characteristic.

A key element in the research question is how the intrinsic land value perspectives impact the real estate developments. Hence, involvement and power of the actors involved plays a major role in how these perspectives impact the real estate developments. A well-known method to examine this is through the power-involvement matrix.

It can be concluded so far that *intrinsic land value* is created through location factors, categorized in four perspectives or categories. The extent of value is dependent on the actor (individual or organization) who assigns value to those factors.

3.3.3. Context impact

The port-city interface sequence demonstrated that as a result of context factors, the perception of intrinsic land value for a certain user or use can be heavily affected. Economic trends of scale enlargement and societal perspective on social of waterfronts have significantly impacted the intrinsic land value in the past.

Also, a lot appears to have changed since 1964 and the initial use curves as drawn by Alonso appears to be outdated. In the current context it is hard to imagine that manufacturing used to have a higher

willingness to pay than residential users for locations close to the center. This indicates that value is a perception in one moment in time and is affected by economic and societal change.

As described in the drivers of development paragraph, a change in context can become the driver for development. The urgency for development always from certain context changes, shifted market demand, enhanced economic growth, adapted legislation, technological improvements, et cetera.

3.3.4. Development value

As introduced earlier, there are six context factors that can change the intrinsic land value and fuel a need or motivation for (re)development. These will then influence what enhancement of location factors is desired for a certain use on that location.

Good urban redevelopment adds value by increasing economic viability of development and delivering social and environmental benefits. Value, however, is a multi-dimensional concept which requires careful interpretation. Drawing on Macmillan (2006), Adam and Tiesdel (2012,p30-31) identify six different categories of value creation in area development:

- **Exchange value:** revealed by the price at which buildings are traded
- **Use value:** Evident in the appeal of places to occupiers, reflected in their contribution to productivity, profitability and competitiveness
- **Social value:** Reflecting the extent to which places help to connect people, enhance social interaction, encourage social inclusion and promote unneighborly behavior, reducing vandalism and crime
- **Environmental value:** Shown by the degree of adaptability, flexibility and robustness and reflecting concern for intergenerational equity and biodiversity
- **Image value:** demonstrated in the contribution that places make to identity, vision and reputation
- **Cultural value:** apparent in the relationships of a place to location and context, and its contribution to historical development of the town in which it is situated

Some types of value missing in this list that could be thought of are: political value, economic value, technological value, and of course many more. Value can be approached in a much broader sense of the word and from a wide variety of academic fields, all establishing different categories. For instance intrinsic and extrinsic, social and economic, internal and external, functional, emotional and social, and many more. A complete all-including or dominant list of types of value may not be established yet in area development research, but also this is not the key focus in this thesis. An important conclusion to take into account is that location factors and development can bring value to actors in a lot of different ways.

3.4. Theoretical framework

To conclude the theoretical review, this section will answer the theoretical question: *How can we explain intrinsic land values and what does it comprise of?* This will be summarized in the theoretical framework, which will be used in the analysis of the cases.

This thesis focuses on the intrinsic land value to users (and their uses) in broader way than the relative intrinsic land value of Merckx et al. (2004), which solely described the value on the basis of scarcity of alternative locations for a certain use or user (i.e. the overarching categories port and city). This particular factor can be regarded as context factors.

In this thesis intrinsic land value will be defined as “a perception of the value of land or a location to be used the way one sees fit, as assessed by its user(s) on the basis of location factors.” Those location factors are valued differently by different individuals or organizations, creating different intrinsic land value perspectives. These location factors can be based on location characteristics, actor characteristics, or context characteristics.

Intrinsic land value can be assessed through four categories of location factors:

- 1) Classical (Hard) location factors: concerning financial measurable factors to land value for users
- 2) Behavioral (Soft) location factors: concerning factors that can be less rational or refer to appearance and image of the site, hence called behavioral factors. These are harder to quantify in monetary terms.
- 3) Institutional factors: concerning legislation and policy factors
- 4) Evolutionary factors: concerning long standing strategical factors. Location factors within the four categories can be location-based, context-based or actor-based.

In regard to the creation of value, the sequence of Hoyle has demonstrated that the context can significantly impact the intrinsic land value of a location for a certain use. On the other hand, intrinsic land value can actively be created through development. In area redevelopment debate is often about future intrinsic land value. Through development: Exchange value, use value, social value, environmental value, image value and cultural value, can be created. A theoretical framework is established, that is used for the empirical part (see figure 22).

The fact that intrinsic value consists of financial and non-financial values makes it qualitative as a whole. Merckx, et al. (2004) did not quantify intrinsic relative land value on the y-axis too, implying that intrinsic land value is determined as a result of a discussion and perception rather than a measurable fact.

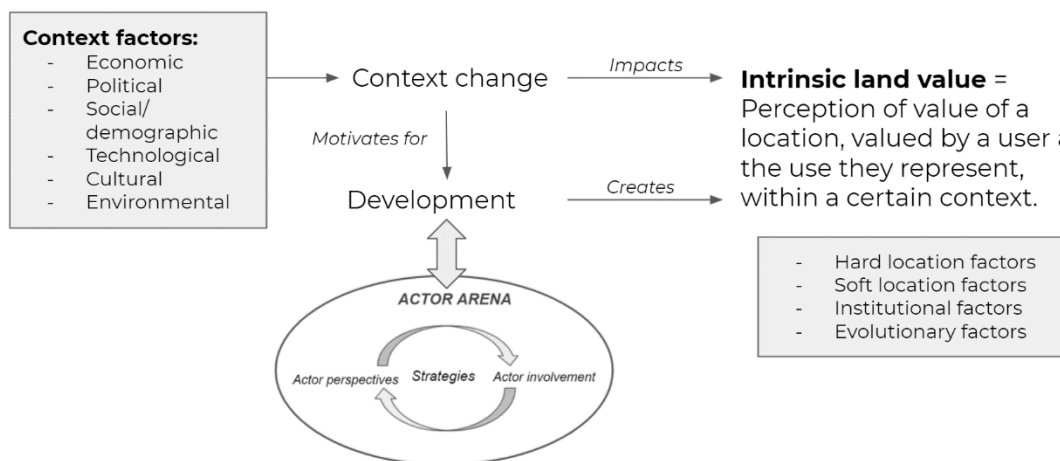


Fig. 22: Theoretical framework for intrinsic land value creating. Own illustration.

4. CONTEXT ANALYSIS

4.1. Context analysis

This section will first focus on the broader context that M4H and RDM cases are part of. An introduction will be given into how the two areas are embedded into Rotterdam, the larger port-city strategies for this region, and how this developed over time. Understanding the cause for the two cases and understanding the context will help understanding the intrinsic relative values within the specific case areas better.

4.1.1. Urban development background

The city of Rotterdam is located along the river “de Nieuwe Maas” in the province of Zuid-Holland. Rotterdam is the second largest city of the Netherlands with about 600.000 residents within the city boundaries. The city however is part of a larger urban region with up to 1.2 million residents, depending on where one sets the boundaries.

Rotterdam is well-known for its port, which can be regarded as part of the cities identity. This is the result of a long history of the port as part of the city as illustrated in figure 23. In this process it developed itself as the largest port of Europe and one of the largest, and most important even, in the world.

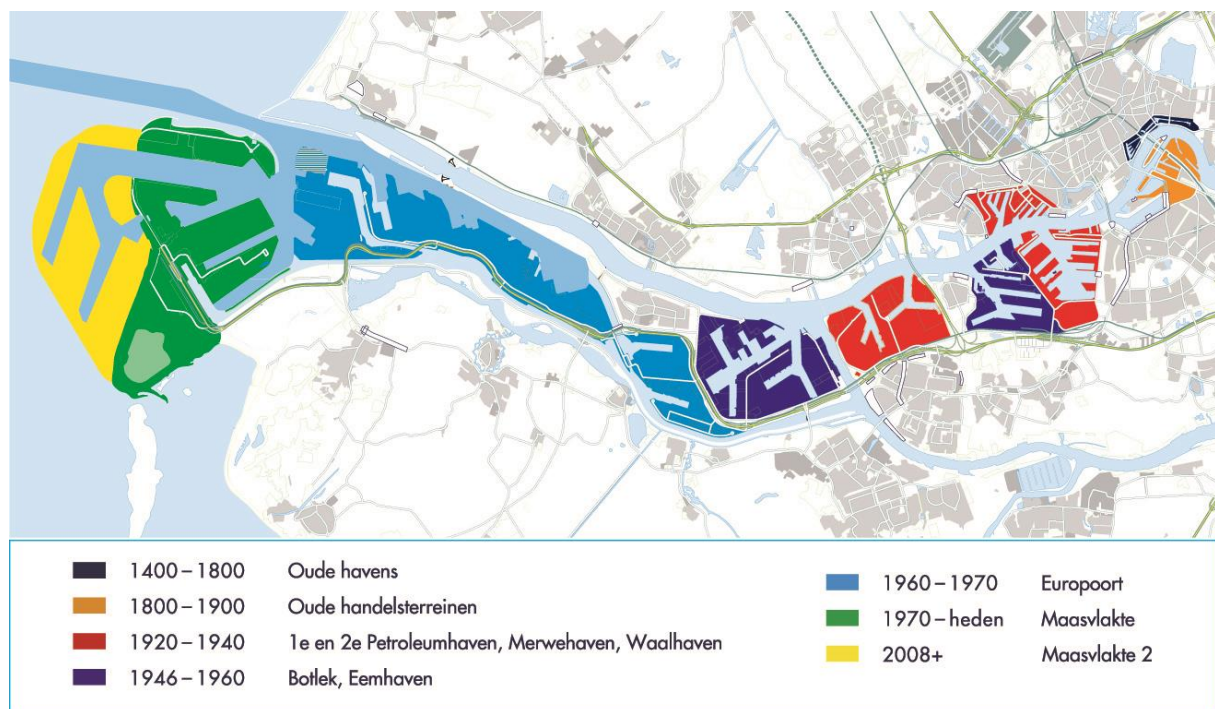


Fig. 23: Historical development of the port of Rotterdam (Futureland, n.d.)

In line with the described literature, the port of Rotterdam started to move westward towards the sea in order to facilitate specialization and mainly provide space for scale enlargement. Port activities started to migrate out of the city center towards deeper waters in order to become technologically more advanced (Daamen, 2010). With government involvement in the ongoing industrialization, huge areas (i.e. Botlek, Europoort, and the Maasvlakte) were developed and industries moved further downstream leaving unproductive waterfronts behind, which came together with the move of production to lower-income countries.

Other than the port developments in the westward direction, old ports in the city became focus of policies. Initiatives led to new uses for old industrial uses, such as the Oude Haven, de Veranda, the Kop van Zuid. These became mostly residential and working environments and lost most of their port activities. Later initiatives for Katendrecht (on the south bank) and Schiehaven, Sint Jobshaven, Mullerpier and the Lloydpier also arose, establishing the redevelopment a lot of inner-city port areas over time.

Nowadays, the Port of Rotterdam likes to promote itself as the “gateway to Europe”, and has specialized itself in logistic processes as the link from the world to the rest of Europe. A key moment, as described by Van den Berghe (2020), was the introduction of the national investment plan from the “mainport-strategy” of the Dutch government, aimed to stimulate the economy with this large infrastructure program. Figure 24 demonstrates the mainport-concept that led to a shift of focus in infrastructure to stimulate production industry to infrastructure focused on logistic processes.

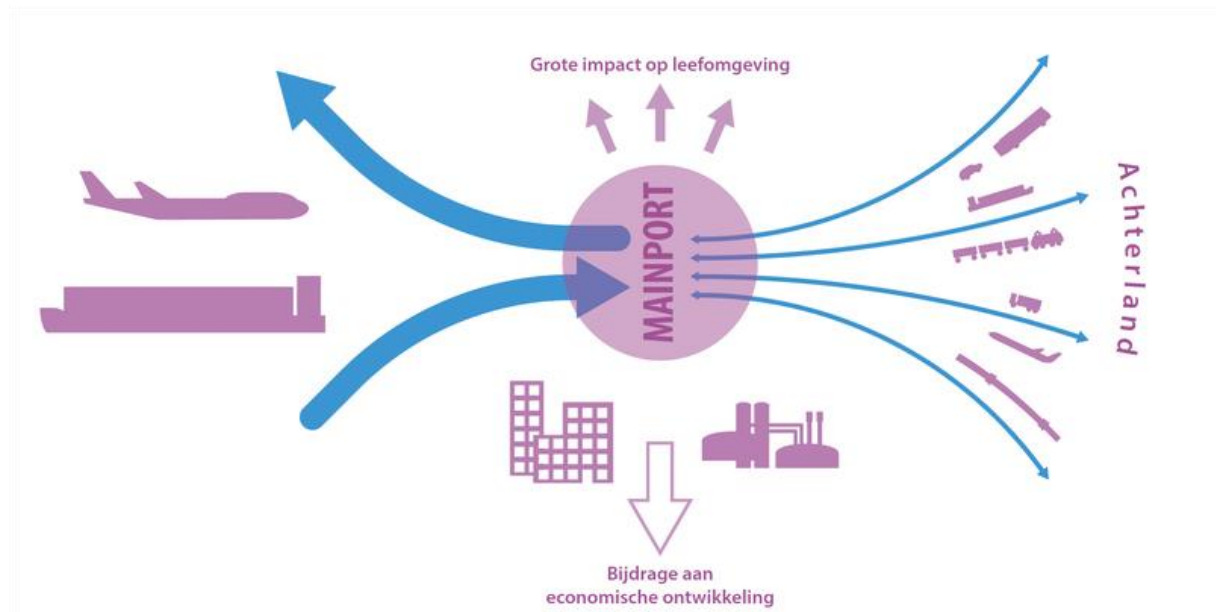


Fig. 24: Mainport concept as depicted by Raad voor Leefomgeving en Infrastructuur (2016, p7)

With the growing globalization and move from production to lower-income countries, this proved to be a successful strategy. In retrospect, the Dutch mainport strategy responded well to these trends (Kuipers & Manshanden, 2010).

The latest port expansion called the Maasvlakte 2, as can also be seen in figure 24, was started in 2008 and delivered in 2013. This port area will provide a thousand hectares of business space, able to welcome and handle the largest container ships in the world.

4.1.2. Stadshavens Rotterdam

As mentioned before, some of the relatively unproductive port areas closer to the city were left by the port. Daamen (2010) mentions how the success of other urban waterfront redevelopments was a considerable incentive for the municipality to propose the redevelopment of the inner-city ports, proposing a new future. This led to the initiation of the Stadshavens city development project, which comprises Rijnhaven, Maashaven, Waalhaven, Eemhaven, RDM, and the Merwe- and Vierhavens (see figure 26). This vision actually builds upon the trend of the redevelopment of other inner city ports so far.

Areas like Katendrecht and the Kop van Zuid are to a certain extent redeveloped port areas, that are now dominantly city-use oriented. These are located around the Rijnhaven (see figure 25) and lay closest to the city center.

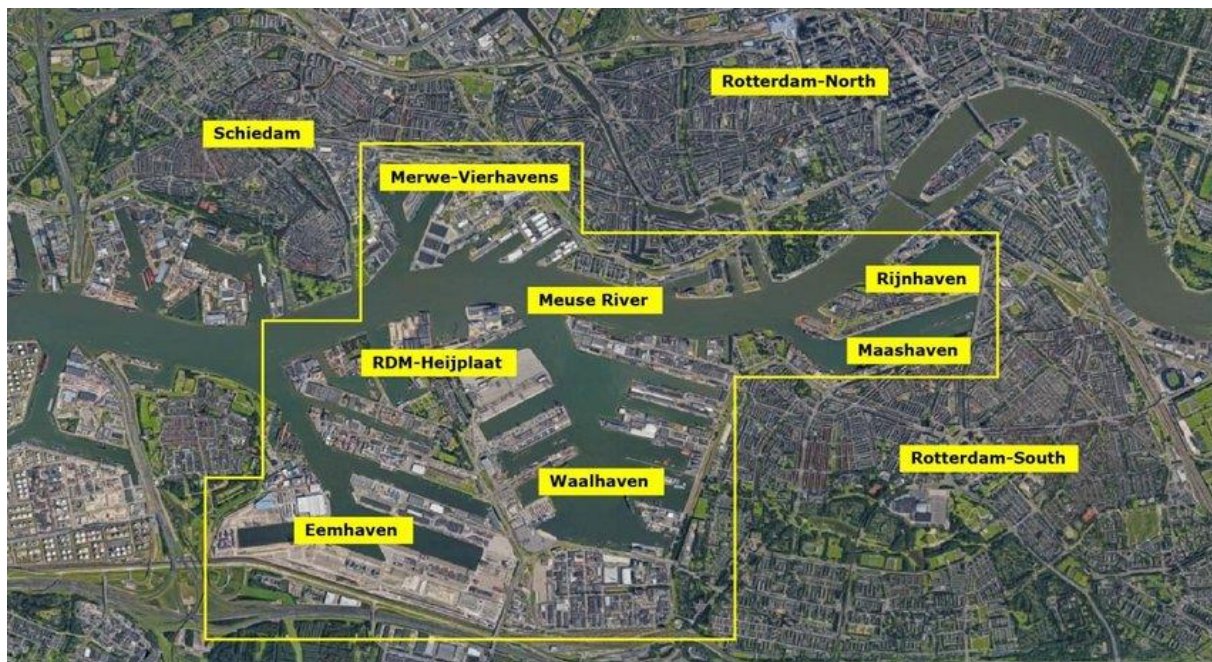


Fig. 25: Stadshavens Rotterdam (https://www.researchgate.net/figure/The-Stadshavens-project-area-in-Rotterdam-Recent-focus-has-been-on-the-development-of_fig1_340779345)

Daamen (2010) states how the goals and long term objectives Stadshavens Rotterdam were based on the idea that with the development of The Maasvlakte over time land within the Stadshavens area would be transferred back to the city, which has also been repeatedly confirmed in the interviews. The plans concerned a new container terminal and the replacement of deep sea container handling from on the Maasvlakte. The assumption was that those port uses, that were currently taking place in the Waalhavens, Eemhaven and the Merwe-Vierhavens would move away to the Maasvlakte. In 2013, the latest expansion: the Maasvlakte 2 was realized, however, the developments around the Stadshavens progressed on a rather slow pace. A lot of discussion arose in regard to vision and ambitions, there were significant changes in collaboration approaches between municipality and port authority and the impact of the financial crisis.

As can be seen in figure 25, the RDM and M4H are two of the six areas that the Stadshavens vision focuses on. After the redevelopment of areas closer to the city center (i.e. Lloyd Pier, Müller pier, Kop van Zuid), the RDM and M4H areas are perceived as the next two focus areas for city development. The RDM area was one of the earliest areas to be eventually redeveloped, which already started with its redevelopment in 2006 to 2007 with the introduction of the Innovation Dock concept. The M4H redevelopment, in spite of signing the collaboration agreement with the municipality in 2007, got elaborated a lot later in the spatial framework which was published in 2019.

In regard to the Stadshavens vision in general, it was explained by Daamen (2010) that the vision objectives altered towards the ambition of realizing a *mixed-use* urbanized area, also transforming port activities to create societal and economic benefits for the city of Rotterdam. This shift is further explained in the next sections. The initial development strategy ambitions are listed in the Stadshavens Vision of 2005, see figure 26.



Figure 26: Ten ambitions of the development strategy Stadshavens Rotterdam (OSMR, 2005).

4.2. Stadshavens

4.2.1. Timeline

The stadshavens development can be defined as quite dynamic in terms of process and the actor collaboration structures. This is demonstrated in figure 27, in which the changes of actor agreements and collaboration structures are indicated with different colored boxes. The timeline in figure 27 provides an overview of the major events for the development of the Stadshavens vision, describing the historical context around the RDM and M4H developments. The impact of individual events on the development of the perspectives on the intrinsic land value of the Stadshavens area will be explained in the next section.

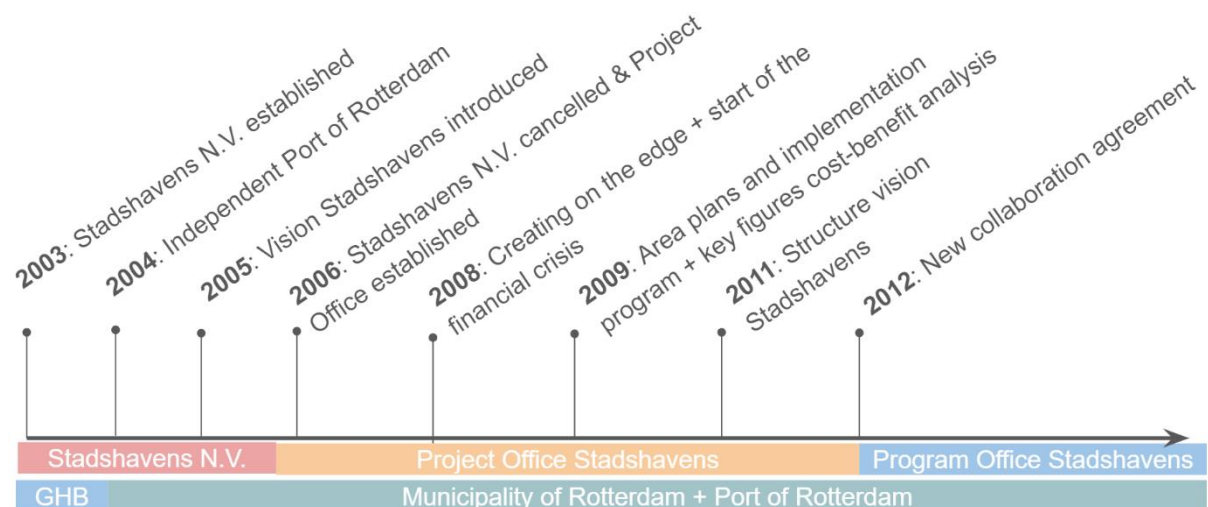


Figure 27: Timeline for the Stadshavens vision development. Own illustration.

4.2.2. Actor involvement

Municipal Port Company (gemeentelijk havenbedrijf = GHB)

During the early stages of the Stadshavens project, the port was an integral department of the municipality. In 2004 however, the Port of Rotterdam became independent, nevertheless with the municipality as main shareholder. Later the Dutch National Government joined as shareholder, making the division 70% in municipal possession and 30% in possession of the national government. The municipal port company can be regarded the initiator of the Stadshavens project, approached from a

strategic scale. With the separation of the municipality and port a collaboration structure had to be found to elaborate the Stadshavens vision.

Stadshavens N.V. (Ontwikkelings Maatschappij Stadshavens Rotterdam = OMSR)

In 2004, simultaneously with the separation of the port company, a joint development organization was established to map out the opportunities and possibilities for the Stadshavens port areas. Both municipality and the Port of Rotterdam had an equal share of 50% in this development organization. This idea of an independent development company was primarily inspired by precedent port developments (mainly Hamburg). However, in 2006 this joint development organization was cancelled already, for the reasons that due to highly divergent aims and time planning of development and the operation of the large area, it would be better not to carry out all these activities by one specific development organization. It would make more sense to carry out the agreed ambitions separately within the shared Stadshaven vision. Daamen (2010) refers to a director of the development organization that stated that both were no longer willing to share income and expenses, as well as bearing the risks together. This was one of the first indications that Stadshavens would not be comparable with the Hamburg port redevelopment. Nevertheless, the Stadshavens N.V. had taken some important steps: In 2005 a first vision for the area was presented, incorporating an analysis of the Stadshavens areas.

Project office Stadshavens

As a successor of the joint development company, a project office was established for coordination of the developments of the areas: Project office Stadshavens. This organization would look at overarching challenges such as accessibility, and the status of the area as “key-area” (sleutelgebied in Dutch) through which National Government subsidies can become available. This organization was in 2013 renamed to the Program Office (in Dutch: Programmabureau) Stadshavens (Milosevic, 2014).

Port of Rotterdam

The port of Rotterdam is a separate actor since its independence in 2004. However, Port of Rotterdam is still completely in ownership of public shareholders, being the Municipality of Rotterdam (70%) and the Dutch National Government (30%). As perceived by municipal interviewees in this research, in spite of having public shareholders, the port in fact does act very independently. An important aspect of the privatization of the Port of Rotterdam is that this separation also meant that municipal port areas would be transferred to the Port of Rotterdam as an perpetual leasehold (personal communication, 2021).

Municipality of Rotterdam

The municipality of Rotterdam should be concerned a separate actor from the Port of Rotterdam, since the independency of the Port of Rotterdam in 2004 too. Before 2004 the two could be seen as an integral actor: The Municipal Port Company (GHB: Dutch abbreviation), as explained earlier.

The municipality gladly would like to see the Stadshavens area be redevelop to an innovative residential and working area that enhances the economic structure of as well the city and port. In the first place the municipality safeguards the public interest of its residents, but the municipality also is the main shareholder in the independent Port of Rotterdam since the Port became independent. The Port of Rotterdam is still a major contribution to the Rotterdam annual budget with a dividend distribution of for instance 70 million euros over 2019 (see figure 28).

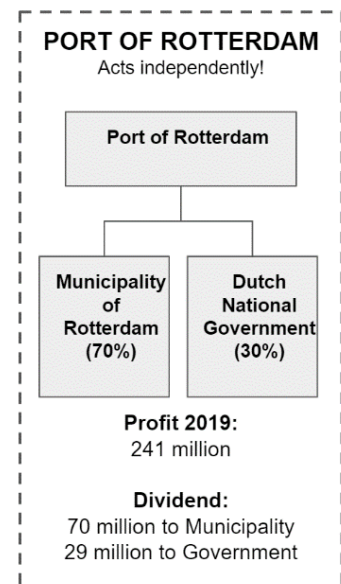


Figure 28: The Port of Rotterdam organization diagram. Own illustration.

4.2.3. Actor perspective

Impact Maasvlakte

Copy and paste

As introduced earlier, as a result of the Maasvlakte expansion project, the assumption arose that port activities would be move further westwards towards the sea. In turn, more space would become available for the city. A repetition of earlier trends and also heavily inspired by Hamburg Hafencity as described by Daamen (2010). The experience with the Kop van Zuid area had demonstrated how difficult and expensive it could be to give new life to obsolete and impoverished areas. Hence, the municipality took a more pro-active attitude towards other older port areas to prevent an increase of impoverished areas.

Coerce

The perspective of the port and municipality was to some extent integrated in the way that both were integrated in one organization. The perspective on the intrinsic land value was to a certain extent a prediction on the future value rather than the current value. Differing from area to area some parts of the Stadshavens still were highly active and accommodated successful port activities. In spite of that in 2004 with the establishment of the Stadshavens N.V. non-water-bound economic activities and residential locations would be realized in the Stadshavens areas in the perspective dominant until then.

A moment of discussion

Challenge

With the privatization of the port area, the redevelopment of some areas in the Stadshavens zone sounded more irrationally from a dominantly economic perspective. Daamen (2005, p48) states that at the time 13% of cargo handling and 40% of all container handling was still taking place in the area. The size of these activities could still compete on an European scale and growth expectation for container handlings were good. The Port of Rotterdam realized this very well and hence challenged the municipal paradigm that the port intrinsic land value would decrease.

When the construction of the Maasvlakte was delayed by a negative advice of the State Council (in Dutch: Raad van State), the Port of Rotterdam clearly expressed their difference in opinion on the value of some of the areas in the Stadshavens. The Port of Rotterdam blocked the proposed transfer of lands to the Stadshavens N.V., even though the concept of the development strategy was published. This vision on the development of the Stadshavens was argued with important development opportunities for as well the city as the port and mutual benefits. Still expanding the economic structure in the area was one of the aims and some former port activities would be moved westwards or at least relocated. "In order to achieve a win-win situation, possible competition between city and port will be prevented" (OMSR, 2005). An important point in the vision was that "other than in previous transformations in Rotterdam" the accent would be on economic renewal as most important effort". The importance of the area for as well city as port was acknowledged.

The result of this became clear when the intrinsic land value for port activities were expressed in a public information announcement by the Stadshavens N.V. in 2006. As a result of a positive development of the economy the demand for locations for companies and offices in the maritime and logistic sector increased. The municipality, Port of Rotterdam and Stadshavens N.V. agreed that because of that, the Port of Rotterdam would take the lead in the development for the Waalhavens area and RDM. The Stadshavens Rotterdam would focus on the northern bank and RDM terrain. The idea to develop the Stadshavens integrally with one development company started to fall apart and the Stadshavens N.V. eventually even was cancelled and replaced by a coordinating project office the same year.

Intrinsic value

The practice seems to be very well aligned with Merckx et al (2004) theory. The intrinsic land value of some areas in the Stadshavens area would decrease from the perspective of the municipal port company with the Maasvlakte expansion coming up as alternative expansion location for the port activities. The city was therefore preparing for that future with the development of the Stadshavens vision. For a long time this remained the strategy as a municipal representative demonstrated in an interview (personal communication, 2021):

“The port would gradually transfer lands to the city and the city would take those areas over similar to what happened on the Kop van Zuid and Lloyd Kwartier. So to say the traditional port out and city in trend. That belief was for a long time the way of development, that we would do it that way.”

However, the great Stadshavens area consisted of a lot of different areas with different activities and different intensity of use. Moreover, the area was by no means an obsolete terrain that had lost its function (Daamen, 2005), such as the sites literature mainly focuses on. The Stadshavens vision was remarkable in the sense that it introduced an integral vision for an area that consisted of different area types with different activities for which different renewal and transformation should be taken place. In the upcoming years, a lot of effort would focus on making sure this was integrated in the vision.

Elaboration of the vision

Coalition modification

Even though the Stadshavens N.V. was cancelled, the Port of Rotterdam and Municipality continued to develop the vision for the Stadshavens area, with the Project Office as coordinating organization for the elements where the two had to integrate for mutual benefits. This mutual basis for all activities was first described in the long term vision “creating on the edge” in May of 2008. This was the first report of the Project Office Stadshavens. The report lists five (opportunity) strategies for sustainable development:

- 1) Re-inventing delta technology: Stadshavens as experimentation zone for sustainable water and energy technologies
- 2) Volume and value: more and more efficient cargo handling and high-end knowledge related business activities
- 3) Crossing border: breaking down the barriers between city and port and profit from each other's presence
- 4) Floating communities: floating residential and working environments will shape a zone of quality for all Rotterdam residents
- 5) Sustainable mobility: activities in the living and working environments will flourish because of efficient and sustainable transit.



Figure 29: Five strategies for a new future of the stadshavens area
Projectbureau Stadshavens Rotterdam (2008)

The urgency for these interventions and for development was expressed in the following points: 1) Renewal of the mainport, 2) Energy transition challenges, 3) Water challenges, 4) Job opportunities creation, and 5) enhancing the intersection of infrastructure. The urgency of a transition is clearly described, as it was expected that without development a lack of space for new businesses and jobs,

obsolescence of the port areas, stagnation on the housing market and threats of the waters would occur.

Soon after the project office established other documents, such as the Pioneers along the Maas in 2009. This document from the Project Office Stadshavens introduces per area an area-specific plan. What this meant for the M4H and RDM areas, will be described in the chapter concerning those specific cases.

From a Cost-Benefit analysis (in Dutch: Kengetallen Kosten Baten Analyse: KKBA) for the Stadshavens in 2009 appeared that the societal benefit for the total program would exceed the societal costs (Structuurvisie Stadshavens, 2011). An interesting aspect of this is to see what these societal benefits (intrinsic value for the city) consists of. The benefits are divided into three categories:

- 1) **Direct societal effects:** net societal benefit of 141 million
 - Net result from increase in accessibility, travel time savings, lost income for port activities by transferring lands back to the city
- 2) **Indirect societal effects:** net societal benefit of 109 million
 - Net result of extra employment, productivity increase (higher tax-income and fewer social allowances required)
- 3) **External societal effects:** net societal benefit of 298 million
 - Includes enhancement quality of the living environment, real estate value increase, increase in recreation value, external effects of industry (reduction smell and noise effects), external effects of soil remediation, and CO2 and NOx reductions.

Structure vision Stadshavens

In 2011 a structure vision for the Stadshavens was presented by the Stadshavens project office, and thereby the plan making on the strategical scale was mostly completed. This structural vision also described a profile for every area in particular. This also meant some first area-specific steps for the development of the Merwe-Vierhavens: it was described as an “international experimentation zone for innovative energy supply and water management”. Also a better connection with adjacent areas is described. The content and impact on the M4H development will be described more in detail in those chapters. In the meantime the RDM redevelopment had already been initiated, and naturally this was also described that way in the structure vision.

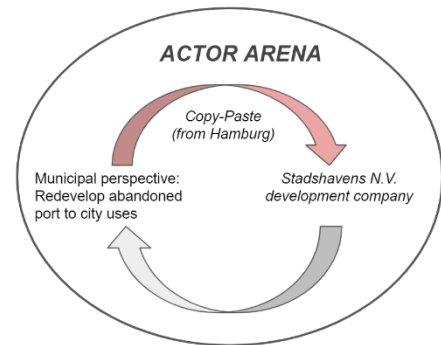
Impact of financial crisis

Coalition modification

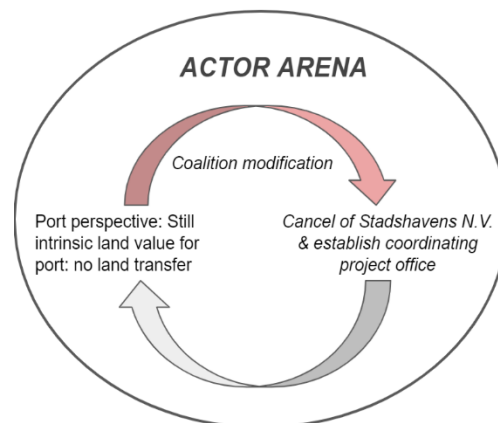
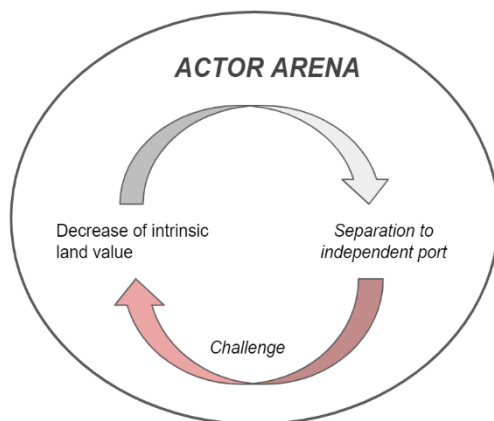
As a result of the financial crisis, the municipality did not have the financial capacity to realize the plans from the structure visions and its role should be reinvented (Daamen, Van der Vegt and Franzen, 2013). The Project Office was replaced with a Program Office which would take a more supporting and facilitating attitude and new collaboration agreement among the port and city was signed. Both would focus on realizing their own goals as part of, and in alignment with, the established Stadshavens vision. The collaboration structure was thereby edited and the involvement of the port increased. This has had a great impact on the RDM and M4H cases, as will be explained in those chapters.

4.2.3. Conclusion

The RDM and M4H areas are part of the Rotterdam port and the Stadshavens redevelopment vision, incorporating a variety of port areas closest to the Rotterdam city center. In the brief introduction on the Rotterdam port and the Stadshavens project it can be concluded that the westward movement of the port over the last years was just as an argument for an copy-paste strategy "business as usual". The argued main driver for this redevelopment vision was the Maavlake expansion project, which was assumed to decrease the intrinsic land value for port uses near the city. This was in line with developments in the past in Rotterdam (Kop van Zuid, Mullerpiers and Lloydpiers) and in line with port-city interface trends in general. However, Stadshavens appeared to consist of quite varying sub areas with different location characteristics.



After the port independence this perspective was actively challenged. In response the Stadshavens N.V. realized integration of interest was necessary and the 2005 vision focused on this alignment and prevention of land competition. Additionally, the Stadshavens N.V. was cancelled as the municipality and Port of Rotterdam learned that this was not the right organizational approach for this large and diverse area. Also in the years after, the organizational collaboration has been subject to a lot of changes which affected the process. These will be explained in the case-specific chapters, that will describe the rest of the process.



In general in this early Stadshavens stage certain influence strategies (the C's strategies) can be identified in the interplay between actor involvement and their perspectives:

- Copy and paste
- Coerce
- Challenge
- Coalition modification

5. CASE 1: RDM ROTTERDAM

5.1. Introduction

This case study will focus on the RDM area and the intrinsic land value creation for that case. The case analysis is separated into a process description, an actor involvement analysis, actor perspective analysis and finally the influence on the development. First the area will be broadly introduced.

General

The RDM site (named after the historical Rotterdamsche Droogdok Maatschappij ship wharf) is located on the south bank of the port of Rotterdam. Together with the M4H area, the other case, the RDM site is part of the Stadshavens project and later the Makers District vision. The site its origin comes from the RDM N.V. founded in 1902 by a consortium of Rotterdam shipowners to provide sufficient maintenance capacity in Rotterdam. Even though it started with repairs, the activities soon expanded to the construction of new ships too. To accommodate the workers, adjacent to the RDM wharf, a small village called Heijplaat was constructed, including all kinds of public building such as a library, church, music pavilion, swimming pool, shops and more (RDM Rotterdam, 2020). The RDM became one of the largest ship wharfs of Europe, and constructed some famous ships and also some submarines.

In figure 30 the real estate on site at the start of development are shown. This illustration comes from the historical exploration study from 2005 (CRIMSON, 2005), in which became apparent what the historical and cultural value was on the RDM site, and which elements in particular should receive special attention. Some objects in the area may be highlighted :

1. **A: The Machinery Warehouse:** a highly-characteristic 200m long warehouse: redeveloped to the Innovation Dock.
2. **B: Ship construction Warehouse:** largest volume building on the RDM site, also with characteristic value redeveloped to Franklin Offshore office and Techniek College (from Albeda and Zadkine)
3. **C & D: Offices and gate building:** iconic and high historical-cultural value, which temporarily accommodated the Stadshavens N.V. headquarter and currently is used as event space and among others the Rotterdam Architecture Academy.
4. **E, F & H: Dokloods, central warehouse and Dokkantoor:** smaller scale warehouses redeveloped to innovative business warehouses and office space



Gebouwen en overige inrichtingselementen werf

- A. Machinefabriek (1903, 1911-12, 1930, 1937, 1950-51, 1962)
- B. Scheepsbouwloods (1920, 1924, 1939-1962)
- C. Kantoren en poortgebouw (1913, 1916-17, 1929, 1938, 1952)
- D. Kantine (1913-14)
- E. Dokloods (1918-1958)
- F. Centraal Magazijn (1918-1958)
- G. Ketelmakerij annex Grofsmederij (1920-1938-39, 1954)
- H. Dokkantoor (1923, 1953)
- I. Onderzeebootloodsen (1929, 1936, 1939, 1946)
- J. Gieterij (1929-1930)
- K. Apparatenfabriek (Heavy Lift Center) (1958)
- L. Nieuwe apparatenhal (1968)
- M. Voormalige helling (1960, 1974)
- N. Voormalige acetyleenopslag, nu kantoor (ca. 1960)
- O. Magazijn (1950)
- P. Timmerloods (1935, 1952)
- Q. Sorteerbanen (1939, 1977)
- R. Kantoor sleepboothaven
- S. Dokkantoor Heysehaven
- T. Laboratorium (1954, 1967)
- U. Magazijn Oost en Loods (1954-55)
- V. Overige bebouwing

Figure 30: The RDM and the former Real Estate on site. (CRIMSON, 2005)

5. **G: Grofsmederij:** Large warehouse, redeveloped to a multi-business building suitable for larger production and material supply.
6. **I: Submarine Warehouse:** Characteristic building directly on the water, redeveloped to an event center for Ahoy.

Redevelopment

In the 60's, as a result of an increasing market share of countries with a lower income level, the RDM prosperity turned into a downfall. In 1983 the RDM was declared bankrupt. Some viable departments were saved by ownership of the government, as RDM the Netherlands B.V (RDM Rotterdam, 2020). With the increase of request for highly-technological devices and systems for the military and energy sectors, the name was changed to RDM technology in 1987. RDM technology was the new N.V. that focused on constructing submarines, but also this activity stopped in the mid-90's. Gradually some other companies used the area, but nevertheless over the years the warehouses became obsolete and the area became somewhat abandoned.

In 2002 the municipal council of Rotterdam decided to purchase the RDM site through the at the time municipal port company (Gemeentelijk Havenbedrijf Rotterdam, GHR), from now on called GHR. Through this move the city aimed to claim a consecutive area along the river for redevelopment (RDM Rotterdam, 2020). This was in preparation of the Stadshavens Project for the inner-city port areas closest to the city center. Since the Port of Rotterdam became independent from the municipality in 2004, the municipality and the port company signed a collaboration agreement (in Dutch: samenwerkingsovereenkomst) to work on a new future for the RDM area.

5.2. Process

What happened:

To demonstrate what happened in the RDM redevelopment process, an overview is established in the form of a timeline. In general this case can be divided into three distinctive phases that will be elaborated next:

- 1) Stadshavens N.V. exploration
- 2) RDM campus: educational collaboration
- 3) RDM Rotterdam: innovation and making cluster

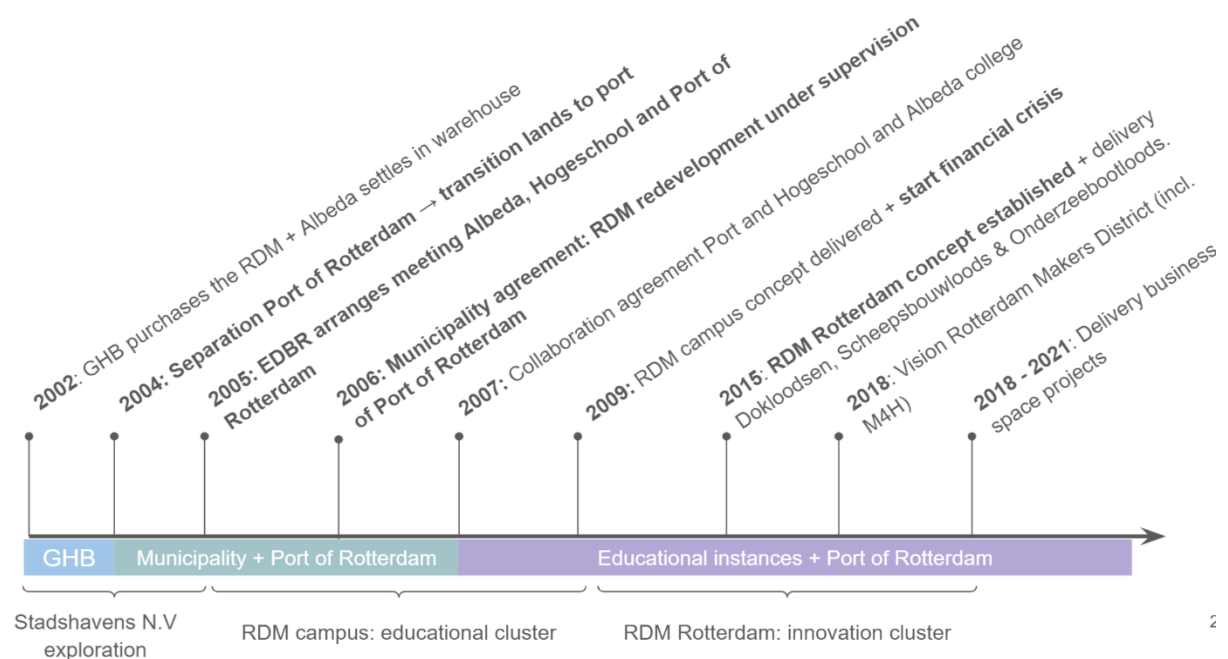


Figure 31: Timeline of events for the RDM redevelopment. Own illustration.

1. Stadshavens N.V. exploration (2002-2006)

The first steps in the area development of the RDM area take place simultaneously with the development of the Stadshavens project. Back in 2002 the municipal council of Rotterdam decided to purchase the RDM site and to have this purchase carried out by the Municipal Port Company. As introduced in the Stadshavens context chapter, the port was an integrated department of the municipality until the separation of 2004. The area was purchased with the aim to obtain a contiguous waterfront location of 80 hectares for redevelopment. This action was in line with the development of the Stadshavens vision, which was in development back then (RDM Rotterdam, 2020).

In 2004, simultaneously with the separation of the Port of Rotterdam, the RDM lands were definitely transferred to the Port of Rotterdam. This was part of a larger land transfer to the Port of Rotterdam in line with the motivation to facilitate the port to act more independently. In regard to the Stadshavens project the port would work together with the municipality in the form of the independent Stadshavens N.V. The Stadshavens N.V. (OSMR) settled in the former director office building on the RDM site and became the first physical and conceptual driver of the RDM redevelopment (Murris, 2015).

The Stadshavens N.V. started investigating possible uses for the area and invited parties to actively help thinking on the future of the Stadshavens. Among others, in regard to the RDM site, housing association Woonbron (involved in the adjacent Heijplaat village) and some educational instances were contacted (Murris, 2015).

In 2002, in the very beginning of the initiation phase, Albeda College (a large practical higher education school of Rotterdam) had settled some metal and welding education in the Machine hall on the west side of the RDM site. When the redevelopment of RDM was becoming specific in terms of plan making, Albeda realized that something had to happen with the obsolete building or they needed to find a new location for their activity. But soon appeared that demand and opportunities of the Port of Rotterdam and Hogeschool Rotterdam and the Municipality were coming together. This window of opportunity was facilitated by the Economic Development Board Rotterdam, which was established together with the Stadshavens N.V., and brought directors of the education instances, municipal companies, the Stadshavens N.V. and the Port of Rotterdam together (Murris, 2015). The redevelopment of the RDM site was by all seen as a high-potential project and supported. The Hogeschool was searching for space for their practical education for engineering and technical courses. The municipality wanted to revitalize the RDM site and the Port of Rotterdam saw potential in bringing students in contact with the Port to recruit future talent.

In 2005, the Economic Development Board Rotterdam (EDBR) together with the Stadshavens N.V. and Hogeschool Rotterdam initiated a meeting to test the plans for accommodating technical and engineering education with entrepreneurship on the RDM site. The Hogeschool at the time seriously considered settling on the RDM site together with Albeda. Murris (2015) describes how this meeting was perceived a great success, which motivated the initiators in their ambition to create an innovative learning-and-working environment. In the end of 2005, an intention declaration was signed and the warehouse transformation plans were incorporated in the Stadshavens vision concept of 2005.

In 2006 the Stadshavens N.V. was cancelled as a result of area transcending discussions between the Port of Rotterdam and the municipality. The Stadshavens N.V. could therefore no longer act as development partner. At the same time the housing association Woonbron had to step out as a result of the great SS Rotterdam affair. With new agreements after cancelling the Stadshavens N.V. a collaboration agreement was signed among the municipality and the Port of Rotterdam, in which was agreed that the development of the RDM area will fall under the supervision and responsibility of the Port of Rotterdam. The Port of Rotterdam would thereby become the strong driver of the RDM site redevelopment in collaboration with the educational organizations.

In short in this phase a lot of actors were involved in the exploration phase, with the Stadshavens N.V. taking the lead. The ones named in this section are listed below:

- Stadshavens N.V.
- Woonbron
- EDBR
- Port of Rotterdam
- Municipality
- Albeda
- Hogeschool

2. RDM Campus concept (2006-2009)

In 2007 another collaboration agreement was signed: this time between the Port of Rotterdam, the Hogeschool Rotterdam and the Albeda college. Common ground was found on the potential of the former machine warehouse and together they joined forces for the redevelopment of this site. In that same year, construction works started on renovating the machinery warehouse (RDM Rotterdam, 2020). This would be the first visible development on the site, and in 2008 the Hogeschool Rotterdam and the Albeda College would settle in the building now called: Innovation Dock. The Hogeschool Rotterdam would be main tenant, with Albeda as subtenant (Murris, 2015).

An important condition for the Hogeschool was a good accessibility of the area for students. This was believed to be best achieved directly over water, also adding to the maritime character of the area. This was in a straight line also the shortest route to the Hogeschool Rotterdam and the city center. In the same period the Port of Rotterdam, with support of the Municipality and the Hogeschool, a contract was signed for the Aqualiner between the RDM terrain and the city center (Murris, 2015). This added an important location factor to the area: enhanced connectivity/ accessibility.

Soon the partners realized that the developments should be promoted as a “place to be” and the RDM Campus concept was developed, building upon the Innovation Dock as key project. A clear focus on learning-and-working was formulated and the realization of the public space was integrated to achieve the campus that was desired. The RDM Campus concept incorporated societal trends such as sustainability, innovation and creative industries to attract companies and create innovation value for the Port and Hogeschool. With this concept also subsidies could be acquired to make the development possible. The national and even European value of this concept was demonstrated and in an interview with a real estate manager of the port the following was mentioned in that regard:

“The unfeasible top of the business case was compensated with subsidies at the time. I don’t quite remember but I think it was something like 20 million euros on a total investment of 120 million for the RDM initially.”

The focus in the period was also to organize communication, congresses, events and tours around the area, to promote concept to businesses, governments and other important stakeholders. The innovation concept in the form of a campus was quickly made reality with the necessary effort. In 2009 the project was delivered as the “Innovation Dock” for education and later in 2009 the whole campus, including the company part of the Innovation Dock and Droogdok (the old headquarters) was opened by king Willem-Alexander (back then the prince) himself.

Financial crisis (2009-2014)

After 2009, no major new developments were initiated. Also, in this first period after delivering the RDM Campus, it was difficult to find users for business part of the developments. This is demonstrated in the following quote of a leading program manager of the RDM area.

“Ten years ago we were happy if in the Innovation Dock, actually the starting point of the RDM concept, a company was willing to rent. Five years ago we were happy if it would be Technical companies. Now we can be critical on the type of companies and in what way they bring added value to making us achieve that energy transition.”

The financial crisis had just started, and Murris (2005) describes how it eventually took until 2014 before 70% of the company part of the innovation dock was permanently rented. The flexible concept of the company part (appointed to innovative start-ups and scale-ups) came with a constant change of tenants in general and thereby an average vacancy of 30%. Eventually in spite of a “floating” workspace development within the innovation dock, no further developments took place on site, but when the financial crisis gradually ended, a new phase of development started.

3. RDM Rotterdam activity steering (2014-2021)

The financial crisis and vacancy had led to a more active attitude of the Port of Rotterdam on the development of the campus. Redevelopments on RDM West provided customized spaces for its users and the Port of Rotterdam actively started attracting tenants with an actively searching acquirer. With the gradually ending financial crisis, the Port of Rotterdam saw new possibilities to initiate new developments since 2014. The large Ship Construction Warehouse (in Dutch: Scheepsbouwloods) and the Central Warehouse (in Dutch: Centraal Magazijn) were redeveloped in 2014. The redevelopment of the Dokloodsen and the Submarine Warehouse (in Dutch: Onderzeebootloods) soon followed in 2015.

A new brand name is selected for the RDM terrain. The name was changed from RDM Campus (focused on education and a particular area) to RDM Rotterdam (including all activities such as business, campus and events on the whole site) to really put the area on the map as a place for innovation and innovative making industries. The Port of Rotterdam and the Hogeschool Rotterdam will remain the most important parties for attracting education and companies and shaping the total area concept (RDM Rotterdam, 2020).

The RDM area even became such a success that the concept would expand to the other side of the river for the M4H area. “The RDM location has now been fully let while demand continues to increase” (Port of Rotterdam, 2018). In 2017 an overarching vision would be published for the RDM and M4H areas together: Rotterdam Makers District (RMD – not to be confused with the RDM site). This concept will be explained further in the M4H case.

In the following years, new projects are initiated or even realized already. One example is the last large renovation on the RDM site of the huge Grofsmederij warehouse in 2018. The old warehouse was soon completely rented out to companies specialized in maritime, off shore, robotics and composite. In 2020 De Haas ship wharf activities expanded and Het Magazijn (the warehouse) is being developed. These are all (innovative) maritime business developments on site.

5.3. Actor involvement

As totally normal in an area redevelopment a lot of actors have been involved over time in establishing an intrinsic land value for the RDM area. This is summarized in figure 32. It should be realized that involvement can have a certain extent to it, therefore the boxes without a cross do not mean “no involvement” but rather “no significant involvement”. Likewise between boxes with a cross in one phase the involvement can be larger than in another box. The exact involvement and extent of it will be described in the rest of the section.

	Stadshavens N.V. exploration (2002-2005)	RDM campus (2006-2009)	RDM Rotterdam (2015-2021)
Stadshavens N.V.	X		
Municipality of Rotterdam	X	X	
Port Company of Rotterdam	X	X	X
EDBR	X		
Woonbron	X		
Albeda & Hogeschool	X	X	X
Government investor (national or european)		X	
Companies		X	X

Figure 32: Actor involvement graph. Own illustration.

1. Stadshavens N.V. exploration (2002-2006)

Coerce

In this phase, the municipality and port uses to be integrated a lot in terms of involvement. In the first place this was as a municipal port company (as department of the whole municipality organization), and from 2004 the Stadshavens N.V. taking the lead independently in the redevelopment project Stadshavens.

The Municipal Port of Rotterdam purchased the site in 2002, but the port lands were eventually transferred to the port when it had become privatized (providing space to truly perform their activities more independently). The municipal strategy was to set up an independent development company to lead the Stadshavens, and thus the RDM, redevelopment. With the separation of the Port of Rotterdam and the simultaneous establishment of the development company Stadshavens N.V., the leading role was shifted to this independent company. The municipality and the port were both 50% shareholders. The Stadshavens N.V. made some major steps in the exploration phase, among others: investigating possible uses, seeking contact with potential partners, settling the headquarter on the RDM site and establishing a concept vision for the Stadshavens. It was planned that eventually port lands would be transferred to this development company.

Coalition building

It was also up to the Stadshavens N.V. to build a coalition, which explored opportunities by involving Woonbron (a housing association that could enhance the link with the adjacent Heijplaat village) and educational instances (of whom Albeda was already located on site in one of the warehouses).

Simultaneously with the establishment of the Stadshavens N.V. development company, the EDBR (economic development board Rotterdam) was established. This board explored economic opportunities (in collaboration with the Stadshavens N.V.) and initiated a meeting with the Hogeschool Rotterdam for the RDM: Research, Design and Manufacturing concept.

Albeda had already been a user in the area (since settling in a warehouse in 2002) and the Hogeschool was seriously looking for new (affordable) space for their practical courses. Building upon student ideas on urban development, a new future for the area was presented under the motto: Research, Design and Manufacturing. With the EDBR meeting and a bidbook, the management of the Port of Rotterdam, and other important stakeholders were eventually convinced of the potential and urgency to invest in the development of the RDM campus concept (Murreis, 2015). The Hogeschool with Albeda were hereby acting as the initial concept developers. Woonbron, the Port of Rotterdam, the

municipality and the initiating Albeda and Hogeschool Rotterdam were all taking part in the meeting, and at the end of 2005 an intention agreement was signed.

2. RDM Campus concept (2006-2009)

Coalition block

Soon after, the involvement completely changed as a result of area transcending factors, as described in the Stadshavens chapter. The land transfer to the Stadshavens N.V. was blocked by the port of Rotterdam, but also the whole Stadshavens N.V. development company was cancelled eventually. In the same year, the Woonbron housing association had to withdraw from the established coalition as a result of the SS Rotterdam (ship transformation) scandal (Murriss, 2015). The coalition that had just been established was thereby fallen apart.

Coalition building

This however provided new opportunities to build a coalition and with the reformation of the Stadshavens collaboration the Port of Rotterdam enforced a leading role in the RDM redevelopment. It could thereby build their own coalition with Albeda and the Hogeschool, which had obtained themselves a very strong project leader with all land ownership in the area and large investment capacity. This new involvement, had a direct impact on the perspectives on the intrinsic land value, which will be described in the next chapter.

The educational instances Hogeschool Rotterdam and Albeda had so far taken an unorthodox role of concept developers. With their RDM research design manufacturing concept they had persuaded the Port of Rotterdam into making the necessary investments, but also (as part of the new coalition) the Port of Rotterdam joined in the concept development role. Eventually, the RDM campus concept grew from this. The Port of Rotterdam would take responsibility for renovating the warehouse and the redevelopment and exploitation of the business part of the warehouse. The role of the Hogeschool can be described as concept developer as well as a main pioneer tenant. The same goes for Albeda. It was to a large extent their willingness to be tenant for a long period, that took away a lot of risk of the investment for the Port of Rotterdam and provided some certainty.

The concept developer roles of both the Port as the educational instances eventually went hand in hand with the role of place maker. With a shared development team for the RDM area. By steering the perspective on intrinsic land value creation subsidies, partners and financing could be obtained. Societal trends such as sustainability, innovation and creative industry succeeded to make the Innovation Dock and eventually the whole RDM campus project feasible with tenants and European subsidies.

Collaboration

Coming from a strong perspective of the educational instances, connectivity and accessibility of the RDM had to be enhanced (among others for their students). The quickest route to the rest of the city was a shuttle bus over water. The municipality was asked for collaboration by the Port of Rotterdam and the Hogeschool and Albeda to realize this. This was a direct effect of the perspective of the educational instances that the connectivity and accessibility had to be enhanced as classical location factor in order to make true the intrinsic land value. By describing the added value for the Stadshavens project and the city as a whole the municipality was involved in establishing an aqua liner contract: a shuttle boat along river locations (including the RDM site).

3. RDM Rotterdam activity steering (2009-2021)

Commit

So far, the Hogeschool demonstrated a strong commitment into making the RDM concept work by investing heavily in the joint development team. Both the Port of Rotterdam as the Hogeschool would contribute financially to this team. The Hogeschool settled the Rotterdam Academy of Architecture on the site, invested in a congress company for the

area and organized Concept House Village (prototypes of sustainable homes) on the site among other events. The Hogeschool thereby took a leading role in the place making of the area.

As a result of the financial crisis, the Port of Rotterdam started to increase commitment (which was not absent so far though!) to the area redevelopment. The Innovation Dock had remained vacant for a long time: it took up to 2014 before 70% of the business part of the Innovation Dock was rented out on a permanent basis. On top of that the flexible concept (focused on start-ups and experimentation) already causes a permanent change in tenants and an average vacancy of 30% (Murriss, 2015). Hence, an active acquirer of tenants and partners was appointed. The program office even up to today contains a sales manager who is constantly working on this and actively approaches companies with favorable innovation products or activities. This new necessary commitment in involvement also changed perspective into the next phase (which will be elaborated in the actor perspective chapter):

‘The soft factors are at least just as important. Those warehouses are beautiful, but it is all about what happens within those warehouses and how it helps with shaping the new economy for the port.

Capability building

Remarkable in this area development, is that no traditional developers were significantly involved. Port interviewees clearly mentioned that developers are blocked from proposing residential developments in the RDM area (not including Heijplaat). As a matter of fact, the Port of Rotterdam has taken on a broad role, including the investor role, developer role and area manager role. This is a significant role-expansion which brought new expertise to the Port of Rotterdam Company. In an interview it was mentioned that this expertise is still under development ever since. With this broad role, the Port of Rotterdam, in alignment with the Hogeschool, Albeda and Zadkine, could optimally steer in the uses for the area, the real estate development, and the eventual users and how this would contribute to the strategic objectives of the concept.

As mentioned, the Port of Rotterdam joined in the concept development with the Hogeschool, but their role as area developer can especially be identified when the developments expanded from the RDM campus as starting point to the development of the whole area. At the end of 2014, the program management over the RDM campus and Congress center was transferred to the Port of Rotterdam, they expanded the concept from just the RDM campus (which focused on education, business and research of a specific part of the RDM site so far) to the whole RDM site. This included the branding of the whole area with events and businesses. The collaboration between education and business would be managed in another team: the Centre of Expertise. With the expansion of the development, the Onderzeebootloods (former submarine warehouse) would also accommodate cultural uses to showcase the port innovations to the world. Cultural organizations such as Ahoy and Boijmans were contracted for exhibitions and congress space. With following developments more and more businesses are added to the area. With the effects of the strong branding and a high demand, the Port of Rotterdam is even in the position to select businesses for the area to create the synergy and added value of the area that they aimed for.

“We really look for parties that are looking for business space and are working on innovative technologies or technologies that can help make the port activities become more sustainable.

...

We really believe that we are making a cluster in which parties are working on port innovations. Synergies and encounters will lead to new ideas and the right innovations.”

Over the years of incrementally redeveloping the RDM site, the Port of Rotterdam had become a committed area developer, rather than just a facilitating landlord, which was the role they were used to have. By increasing capability the Port of Rotterdam could be dominant in the whole RDM redevelopment. The Port of Rotterdam developed expertise in renovating real estate, take on the role

as developer, investor, steering area manager, and tenant acquirer. This involvement outcome was the result of a strong port perspective on the intrinsic land value that could be created here, if the port would optimally steer on the businesses and knowledge institutions settling in the area.

5.4. Actor perspectives

The three main phases in the RDM process mostly revolve around the change in perspective on the intrinsic land value for area in all three phases.

1. Stadshavens N.V. exploration (2002-2006)

The first key moment in the development of the intrinsic land value comes from the initiation of the municipality, in which clearly was determined that the RDM site was being underused and should be redeveloped. Where the land value used to be high for port activities such as ship construction and repairs, the value of this location had decreased of the result of some economic context factors. The cost of employment is a hard location factor on a mondial scale impacting the perception of the intrinsic land value for boat construction uses. This context factor was significant and led to the bankruptcy of the RDM and its activities. The belief of the municipality was that redevelopment was necessary, which was clearly expressed by the purchase of the whole site by the Municipal Port Company. The aim was to create new intrinsic land value of the area for other uses.

As described already in the Stadshavens chapter, the Maasvlakte project led to an intrinsic land value decrease assumption, which was coerced upon the Port of Rotterdam as integral department of the municipality of Rotterdam. After the separation this perspective was actively challenged by the Port of Rotterdam.

The intrinsic land value for certain uses was assessed in the following exploration. The second key moment was when the Hogeschool and Albeda College introduced plans to redevelop the RDM site to a learning and working environment, with a focus on innovative making. The motto "RDM: Research Design and Manufacturing" was used to express the future intrinsic value that they aimed for. In order to make this concept work the Port of Rotterdam had to be persuaded to make the necessary investments. Woonbron was involved in the initial initiative agreement, among others to contribute to the idea of reconnecting the area better with the Heijplaat village again. When the municipality and Woonbron both got cancelled from the RDM coalition, the Port of Rotterdam blocked the concept of increased residential activities on the RDM site and to focus on the Albeda and Hogeschool value creation proposal. These two had successfully managed to persuade the Port of Rotterdam for their RDM Research Design and Manufacturing proposal.

2. RDM Campus concept (2006-2009)

For the Hogeschool the RDM campus concept would bring different sorts of value, coming from different location factors of the RDM area. Initially, affordable space as a hard location factor was a key motivator for the Hogeschool to initiate plans for the RDM site. The Hogeschool was already looking for a location for practical education in technique and engineering and on the RDM site an affordable space was found. This perspective motivated them to form an alliance with Albeda (who had already settled on the RDM site in one of the warehouses in 2002). This mostly made them steer upon the Innovation Dock that they would rent themselves from the port.

Collect interests

Nevertheless a whole RDM campus concept was established for broader value creation: the connection of education with port-related or innovation-related businesses, practice experience and other educational instances, such as Albeda. It was this value proposal that was also most interesting to the port, hence the affordable space motivation was camouflaged by a whole perspective on an collaborative cluster of companies and education, with the

Innovation Dock as kickstarter, aiming to collect port interests into the concept. The following value creation was realized by the Port of Rotterdam in that convinced them of the RDM campus concept:

1. Kickstarting the whole RDM redevelopment
2. Attracting future talent (bringing students in connection with the port)
3. Obtaining new (maritime) innovations for the resiliency of the port

In general for the Port it would be beneficial to develop the underused RDM area, this intention had been expressed in the past years anyways. This can be seen as financial benefit: higher productivity on the land, higher rent revenue. But other benefits were the key arguments that made the Port of Rotterdam commit to the proposed concept. These were mostly long-term and strategical in nature.

First of all, by facilitating education, and providing a collaboration with engineering and technical companies, the port could attract or even recruit new future talent for port activities. This is clearly expressed in interviews too. The following quote is from a port representative in the program office:

“A clear objective of the RDM development is to enthuse young students for Engineering and Technical education. We need technicians, boys and girls of TU Delft level but also from HBO and MBO levels.”

Hence, the area development of the RDM site is to some extent strategically used to create better location factors for the whole port (high-quality and available personnel).

Another major strategical value would be created by establishing an environment that facilitated the development and exchange of innovation for port activities to keep the port competitive for in the upcoming future. This would not solely require future skilled personnel, but also the development of innovation in general and expansion of port activities to be resilient to future trends. Some of these future challenges are the shift to sustainably energy supply, hydrogen applications or off shore innovations. The program manager described (personal communication, 2021) that it was eventually this added value that motivated the port to become more focused on the users of the real estate rather than the real estate development itself.

According to the RE manager (personal communication, 2021), through subsidies the unfeasible top of development could be compensated, making the development of the initial concept possible. It also demonstrates that no added value for the port was created over profit of the development itself (no exchange value). Nevertheless, the fact that with the Hogeschool and Albeda college long term tenants would be guaranteed, a lot of risk was taken away. The value created was mainly (future) use-value and the enhancement of soft location factors: cluster creation of knowledge and enhancing attractiveness of the site for other business activities.

A third objective with the development, from the port perspective was reconnecting the port and city. The added value would be internal: a better image of the port in the social debate.

“You could say that the port of Rotterdam has quite a good and well-known name. On the other hand, there are quite some challenges, the perception of the labor is that it is dirty and underpaid, and ask a green party voter what they think of the port and they’ll answer “they’re responsible for x percent of the emissions”. Which in fact is true, but we should use that position to seek the solution.”

By enhancing the quality and reputation of the area, image value can be created for the area and thereby the port. The Port of Rotterdam saw potential in making this area the showcase of the port and all its potential for a broad public. The potential opportunities that the existence of the port brings, use to be clear, but should be made clear again. This was mainly achieved in the next phase. Also initiatives such as guide tours were arranged in the joint program office with the education organizations.

The Hogeschool and Albeda hence steered on evolutionary location factors potential for the RDM site in order to convince them to invest and commit to the concept. For the educational actors this would also bring significant value potential:

1. Education quality impulse: through specific location factors like proximity of partners and knowledge spill-overs.
2. Reputation enhancement: As described, eventually the Centre of Expertise was established on the RDM site. Hence, the redevelopment also brought other long-term internal value for the Hogeschool. The Hogeschool had enhanced its reputation as Innovative university of applied sciences central in Rotterdam, its society and economy. Other than that it had obtained national recognition with its involvement in the Center of Expertise.

Especially these final points motivated the Hogeschool Rotterdam to also invest into the area further than solely the Innovation Dock. The perspective that developed in the concept-making among the Hogeschool and the Port of Rotterdam led to an increased involvement in the form of commitment for place making, which also appeared to become very important in the next years, when the financial crisis started.

3. RDM Rotterdam: activity steering (2009-2021)

The financial crisis had a major impact on the intrinsic land value perception. There was little to no demand for new real estate space and hence the development of the area stagnated after the delivery of the RDM campus up to 2014. This context motivated the Port of Rotterdam to increase involvement by actively starting to approach innovative companies. This is where the activity steering as increased involvement of the port, out of urgency, grew to a new Port perspective on the RDM redevelopment:

“We really look for parties that are looking for business space and are working on innovative technologies or technologies that can help make the port activities become more sustainable.

...

We really believe that we are making a cluster in which parties are working on port innovations. Synergies and encounters will lead to new ideas and the right innovations.”

By steering on the tenants the most added value for maritime innovations could be achieved. Eventually, when the financial crisis had faded away, the Port of Rotterdam and Hogeschool had to think about enhancing the RDM Rotterdam cluster. Placemaking so far was achieved with the public space interventions (to really form a campus), guiding tours and the organization of events. With the financial crisis fading away new projects could be initiated. The RDM campus had functioned as a means of placemaking and an investment to become the first driver of the development of the rest of the area. It was mentioned that the value created was mainly the cluster forming to attract the type of companies that together would create a synthesis to achieve innovation.

In this final phase after the financial crisis, a lot of new added uses were focused on enhancing the cluster and branding of the area in order to: 1) Make the area a showcase of the port, 2) Stimulate innovation for the port, and 3) increase attractiveness of the site and revitalize with new companies. The financial crisis also made the Port of Rotterdam realize what was necessary to enhance the cluster attractiveness. At first, with the redevelopment of congress spaces, meeting spaces and catering facilities, the area could be branded broader than just education and businesses. Innovation and synergy would be central, demonstrating the attractiveness of the site by the presence of educational organizations, congress space, meeting spaces, catering facilities. Obtaining the most cluster benefits from the synergy of innovation, would require steering on the businesses to attract innovations and shape the synergy in line with the port objectives.

Hence, in agreement with the Hogeschool, innovation themes have been established in which the new businesses should fit. For instance, off shore wind, hydrogen applications, and technologies that could

make the port or its activities more sustainable or efficient. The attraction and reserved space for companies and their projects create new returns on the area (providing land or real estate to companies) for the Port of Rotterdam. An example is the development of De Haas wharf. With this development traditional port activities (ship maintenance, repairs and renovation) have returned to the site as a result of increasing market demand. This wharf fits in the policy of the Port of Rotterdam to provide relevant ship repair facilities.

In regard to the port perspective on value creation through development, during the incremental RDM redevelopment the port shifted away from an intrinsic value perception based on solely large-scale uses that depended on hard location factors such as expansion possibilities and size. The port learned the added value of accommodating smaller companies and more commercial spaces (such as offices). The intrinsic relative land value increased as a result of the new activities that the port want to accommodate: innovate and create. Since these uses now match the strategic aims of the port, a new value of the area for port activities has been created.

5.5. Development influence

In line with the intrinsic land value development described above, three redevelopment streams can be identified. The first one is the innovation dock, consisting for a large part on educational space, but also providing flexible start-up and research & design space in large transformed warehouses for start-ups, and R&D departments of larger companies in the port. With European subsidies the project had become feasible and the port had excepted low returns due to other sorts of long term value creation. The project had become realized as an initiative of the Hogeschool and Albeda, supported by the financially strong and overall land owner: the Port of Rotterdam. The RDM campus had enhanced the location factor of accessibility through the water shuttle (aqua line) to the city with a collaboration with the municipality.



2007-2009:
RDM campus & Innovation Dock

Kickstarter for the whole RDM redevelopment, mainly focused on education and innovation.

Figure 33: First RDM campus developments. Own illustration.

Around 2014, when the economic market demand got back on its feet, new projects in the area were realized. The Scheepsbouwloods and the Centraal Magazijn (2014) were realized in 2014 and a year later the Dokloodsen and Onderzeebootloods (2015). These projects by the port aimed to expand the RDM campus concept to the RDM Rotterdam concept, which not solely focused on the education component, but also the rest of the RDM site involving (innovative) maritime focused business

2014-2018:
Realizing the necessities for cluster value & actively approaching partners

Adding: Franklin offshore quayside facilities, start-up company space, flexible offices and event space (Ahoy & Boijmans)



Figure 34: Second stream of developments after the financial crisis. Own illustration.

activities. The Scheepsbouwlloods accommodated Franklin off-shore specialized in repairing and equipping off shore vessels. The roof was fitted with a major solar panel park, contributing to the innovative port character. The Dokloodsen and Centraal Magazijn projects, were smaller-scale transformation projects, accommodating for instance the Information Center for Sustainable Construction and innovative start-ups. The Onderzeebootloods was developed as large scale event and congress space, and would contribute to the branding and placemaking of the area. This was in line with the value creation of making RDM the showcase of the port for the city and providing events to stimulate innovation exchange.

2018-now:

Company and innovation steering

Establishing use value and using cluster benefits



Figure 35: Latest projects on the RDM site: adding companies. Own figure.

More recently new developments have occurred, adding more and more business activities to the area, all bringing the location factor benefit of being in close proximity of the RDM innovation dock and Onderzeebootloods event space. With the Port of Rotterdam, being in close contact with market demand, it could steer on the establishment of different types of real estate. An impact on developments are that flexible spaces are realized focused on accommodating start-ups that can grow to scale-ups all within the same area. The grofsmederij (and Ketelmakerij) is another major warehouse transformation project, which will be used for manufacturing industry, assembly on large and small scale, innovation and experimentation. The large warehouse provides expansion possibilities due to its size and flexible lay out, and also offers good options for supply and removal of large equipment. Currently as of writing, Het Magazijn ("the warehouse") is under development, which will accommodate the "new generation" port companies. More specifically it will accommodate making business, start-ups and scale-ups. The building will be a multifunctional company complex consisting of four casco units.

Other than that in 2020 De Haas Rotterdam will re-start ship wharf activities on the west side of the RDM site. An issuance agreement with the Port of Rotterdam was signed. The old ship elevator, will be replaced and the adjacent terrain of 2 hectares will be re-used again to set ships dry (for maintenance, repairs or renovation) or to transport them. De Haas had already used the site from 2016 with an old lift as a lot of demand appeared for wharf facilities for tugs, patrol vessels, pilot tenders, small pontoons. Sometimes the shortage of this facility led to diversions of tugs to Antwerp or Hamburg (Transport online, 2020).

5.6. Conclusion

Involvement and influence

The RDM redevelopment as part of the Stadshavens project started as a project initiated by the municipality, which later was designed as a Stadshavens N.V. led project. The development perspective was coerced to some extent upon the port, which gradually changed when the coalition building (including Woonbron and the municipality) constructed by the Stadshavens N.V. was cancelled in 2006. The Port and Hogeschool both build a new coalition and with all the land ownership and an agreement with the municipality that the port would take the lead for the RDM site, the port obtained a very dominant involvement in the RDM redevelopment.

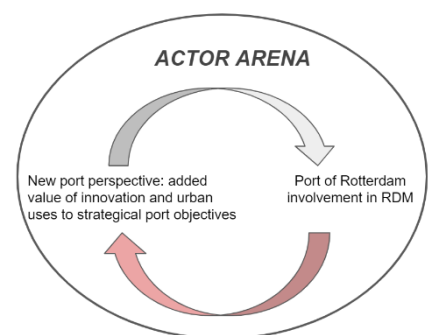
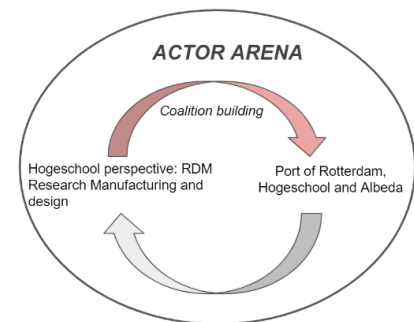
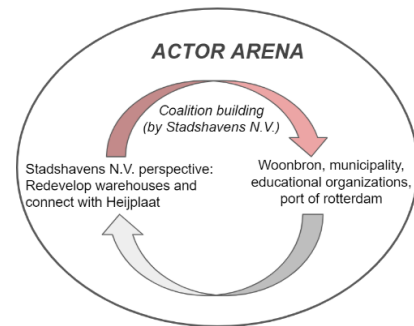
Within this new coalition as well the Port of Rotterdam as the Hogeschool took on unorthodox roles. This capability building strategy was employed to achieve their goals without including new actors and optimally steer on the benefits. The Port of Rotterdam has shifted from a facilitating landlord and large-project developer to an area manager, acting as (concept) developer, investor and also steering on tenants. Within the actor arena the actors involvement thereby increased their own involvement.

In this case the municipality was eventually not involved as key actor in establishing the eventual plan and neither were there private developers involved in executing the plan. The intrinsic land value eventually created is experienced very successfully from the Port of Rotterdam, even though the RDM redevelopment includes the incorporation of uses that normally would have been regarded as city uses (i.e. schools, universities, business space, offices). The reason that this is still regarded a port dominant redevelopment is that the Port of Rotterdam has expanded its activities and managed to link urban uses to the port's (strategical) interests. The port established an dominant involvement in which they could optimally steer on creating an innovation cluster that greatly contributes to maritime innovation and thereby strategical port objectives.

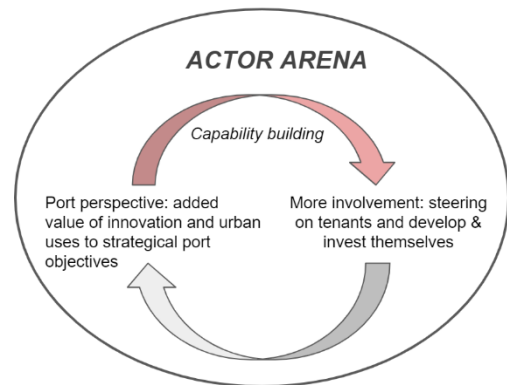
The incremental RDM redevelopment, with its dominant Port authority involvement, led to its development outcome as a interplay with the perspective change of the port on their core business case perspective: from scale-enlargement, to how small-scale business can bring value too. This has been an insight that developed over the years and in terms of real estate has led to a steering attitude of the Port of Rotterdam on the tenants of the real estate.

Perspectives and influence

For the Hogeschool and Albeda strong commitment came from added use value and image value to the education organizations: quality impulse of education with link to practice and other educational organizations, and enhanced reputation and recognition for this innovation dock concept. By camouflaging the affordable space objective with a lot of long term added value for the port, the port had developed a conviction of the potential intrinsic land value of the RDM site.



In regard to value creation, with real estate development as a means, and not as a goal in itself, other value is created than exchange value of added value to real estate. By creating a cluster of educational organizations and innovative companies, from start-up to scale-up, an important location factor is provided for companies to settle in the Port of Rotterdam. A high vacancy and low rents for the start-up and innovation concept, are compensated with kickstarting the RDM redevelopment and attractiveness pull for companies for the whole port. Through the Hogeschool and Albeda proposal the Port of Rotterdam has realized the strategic value this can bring in terms of competitiveness of the port. The Port of Rotterdam had performed a total non-feasible plan initially (neglecting usual financial value creation, in spite of government subsidies) for long term non-financial value. Other non-financial benefits were recruiting new talent and providing student an insight into the Port of Rotterdam as employer and creating image value of the area as showcase of the port to society. The latter objective was realized through event and exposition real estate developments, and branding the area together with the Hogeschool and municipality.



Actor arena strategies

In the developments can be seen that the interplay between involvement and perspectives decided the intrinsic value creation direction in the RDM redevelopment project.

In general 6 C's as strategies in the actor arena can be identified in which either the involvement and perspectives were attempted to be influenced in the intrinsic land value creation. These are:

- Coalition building
- Coalition block
- Collaboration
- Capability building
- Coerce perspective
- Collect interests

6. CASE 2: M4H ROTTERDAM

This case study will focus on the M4H (Merwe Vierhavens) area and will discuss the intrinsic land value perspectives, the process and actor involvement, and the impact on the eventual real estate developments.

6.1. Introduction

General

The Merwe-Vierhavens area (in short M4H) is a port site of more than 100 hectares on the north side of the port of Rotterdam (see figure 36). The area covers approximately 200 hectares, of which about half is water and half is land. The area also partly lays on the edge of the municipality of Schiedam. It used to be one of the largest fruit ports in the world, where storage and handling took place daily (Port of Rotterdam, 2020). The area is bordered by a flood defense with a road on it (figure 38).



Figure 36: The RDM and M4H areas within the city of Rotterdam.
Source: Makers District Vision, 2017.

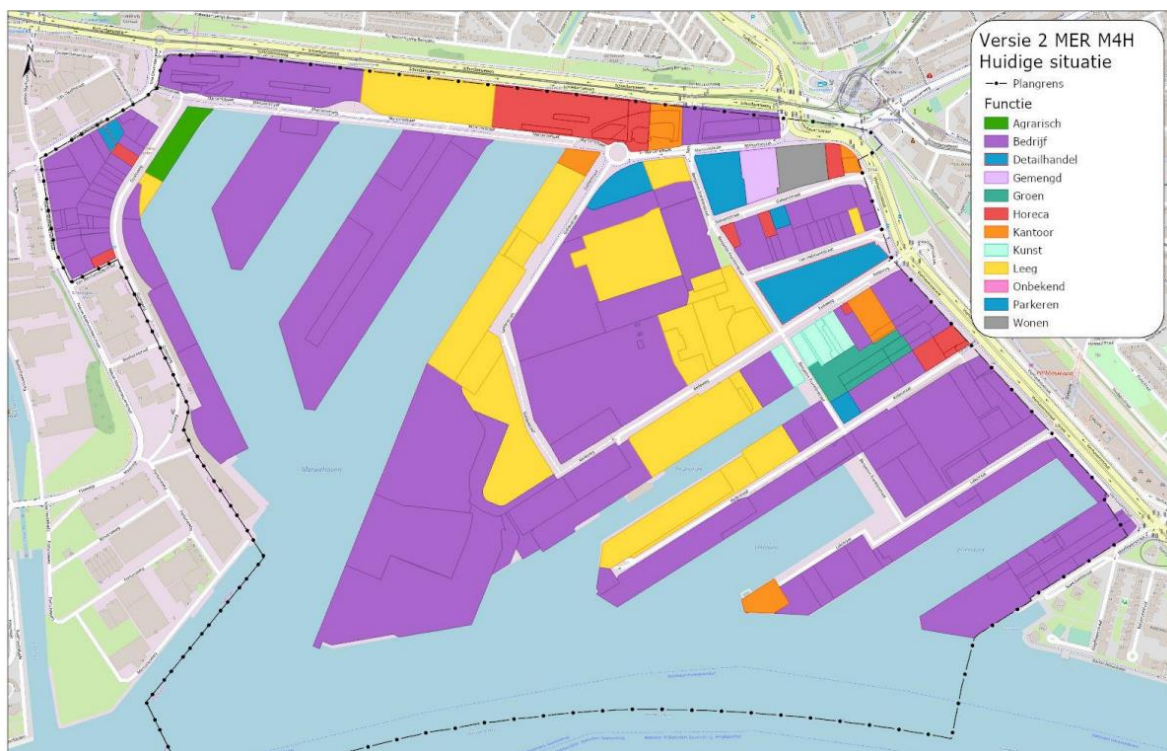


Figure 37: Current land use for the Merwe Vierhavens area. (Gemeente Rotterdam, 2019)

The M4H area is almost the size of the whole city center. It currently is still used by some port companies and the area contains complex soil at places, deprecated real estate and an infrastructure focus on freight traffic, ignoring cyclists or pedestrians. Figure 37 demonstrates the current (as of publication of the NRD document) land use of the area (Gemeente Rotterdam, 2019).

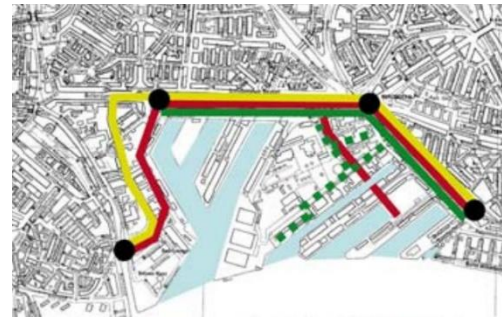


Figure 38: Marked in yellow dikes for flooding protection (Municipality of Rotterdam, 2010)

The Vierhavens were constructed between 1912 and 1916 and the Merwehaven in the years 1932 to 1933. Due to the realization of the Suez Canal in Egypt and the Panama Canal, deeper vessels were able to reach Europe, requiring deeper harbors to be realized. Hence, the Merwe and Vierhavens were dug 10 meters deep, rather than the 8,5meter deep. The Merwehaven and Vierhavens are both constructed as docking harbors for cargo with a lot of quay length. This type of port activity was very labor intensive. Around the ports working-class neighborhoods for harbor workers arose. However, due to automatization a lot of jobs evaporated and connection with the adjacent neighborhoods was lost (Gemeente Rotterdam, 2010).

Redevelopment

In 1988, plans begun to convert the Merwe and Vierhavens area into “Fruitport”. In the Merwehaven area the fruit arrived and in the Vierhavens area juices arrived. Even today the area is characterized by these fruit and juice clusters, the particularly remaining port uses in the area. This cluster consists of businesses as HIWA, Rotterdam Fruit Wharf, and Continental Juice, and initially more. In the rest of the Merwe Vierhavens area the industrial use was in decay. Old warehouses and factories became vacant, but also creative pioneers such as Atelier Van Lieshout settled on the site.

As part of the Stadshavens, development of the area was initiated and with the success of the RDM redevelopment, the M4H area is now under development under the overarching Makers District Vision. Even though the area development is still ongoing and far from delivered, a clear spatial framework is already established. As of writing this thesis, the municipality is working on the zoning plans.

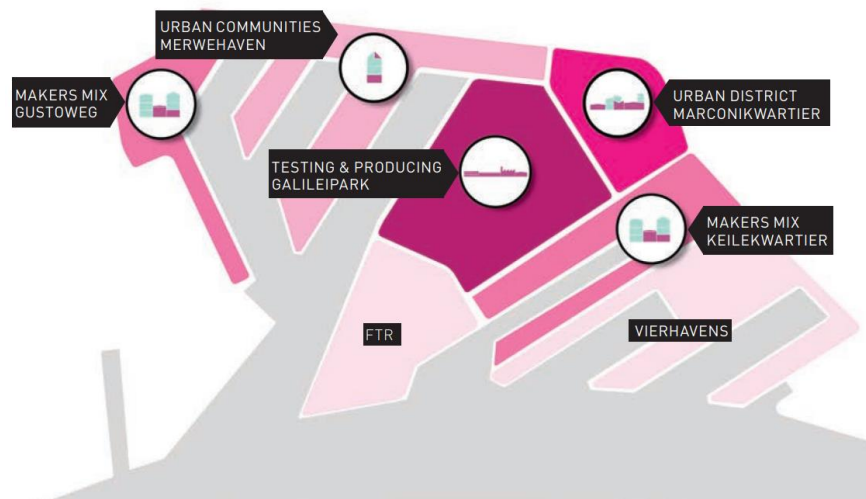


Figure 39: Different program focus types per sub-area of the M4H area. Source: Programmabureau RMD, 2019, p49.

In the spatial framework (in Dutch: Ruimtelijk raamwerk), which can be interpreted as a flexible masterplan and vision, is formulated that the municipality and the Port of Rotterdam aim to develop the area into an “innovative live-work environment, optimally equipped for innovative making industries and with a mix of working, living, culture, catering facilities and education” (Programmabureau RMD, 2019). The spatial framework translates the mutual ambitions into a spatial and land use vision for the area. Also it is an elaboration on the 2017 Makers District vision together with the RDM area on the opposite side of the river.

Some challenges in the area described by the alderman of Rotterdam are: the area contains complex soil, deprecated real estate and an infrastructure that is not suitable for cyclists or pedestrians (Spatial framework, 2019). The area is characterized by a low density, it does not have a clear transport strategy to freight traffic and the area is almost completely paved.

What makes this case interesting, is that one eventually did not choose for transformation to city uses and a dominantly residential area. Nevertheless, the initial idea has been for a long time that the port would pull back from the area and the city would take over. This area development has become a combination of as well city as port uses in which the two collaborate in establishing a joint vision. The Makers District, being the foundation for the M4H spatial framework is illustrated in figure 40.

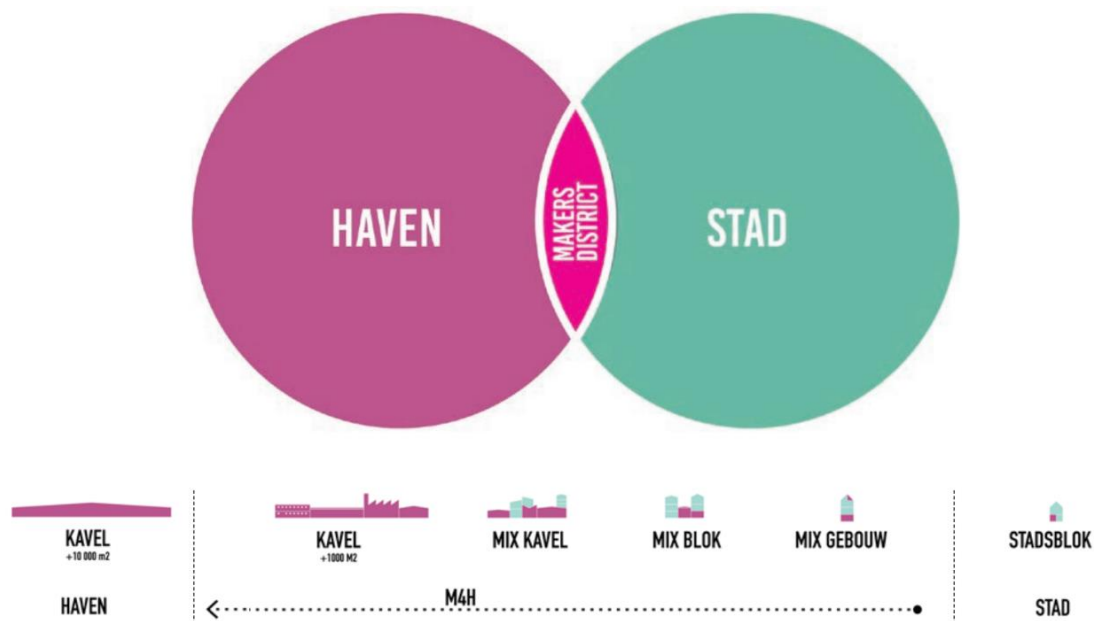


Figure 40: Makers district as a concept of connection between city and port in the port-city interface.
 Programmabureau RMD (2019)

The redevelopment will be a long-term process – “taking at least a few decades” (programmabureau RMD, 2019) - taking the incremental approach. It hereby takes into consideration 1) the size of the redevelopment and the likeliness of different economic trends, and 2) the period of time in which current contracts will expire. Unlike in previous port transformations, it is decided to facilitate some of the port companies in the meantime rather than having long term wastelands in the area (Programmabureau RMD, 2019).

6.2. Process

What happened:

To summarize the process as will be described next, the following timeline (see figure 41) has been created to provide an overview of the sequential events in the M4H area redevelopment. In the next two chapters the actor involvement and actor perspectives will be described more in depth.

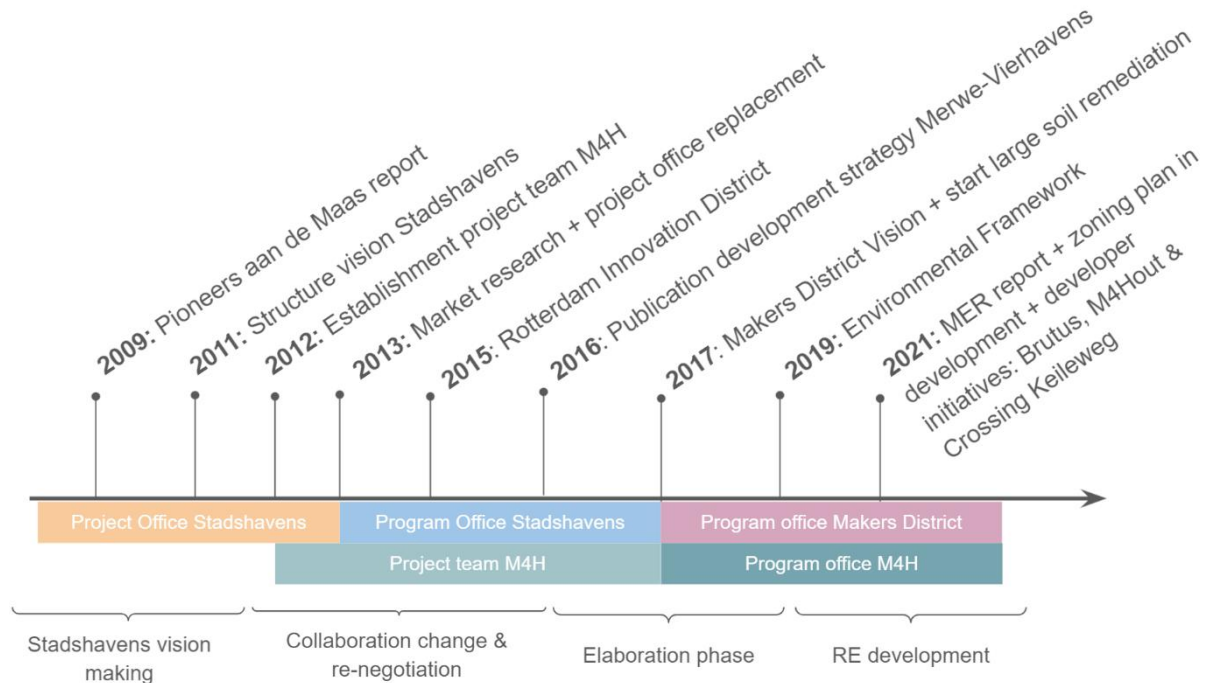


Figure 41: Timeline of events for the M4H redevelopment. Own illustration.

A starting point can be found as early as the first steps of the Stadshavens project, around the year 2000. As this is already discussed in the Stadshavens chapter, and to some extent in the RDM case, this will not all be repeated. Instead, we will take as starting point the first document with specific remarks or concepts in regard to the M4H area: the Pioniers aan de Maas (2009) document. The collaboration between the Port of Rotterdam and the municipality representatives at the time was arranged in the Project Office of Stadshavens.

In general the M4H area redevelopment can be divided into three main phases:

1. Stadshavens vision making
2. Re-negotiation phase
3. Elaboration phase

The latter is in the timeline figure also separated from a RE developments phase, since that is the moment when developers started to increase their involvement. This new phase is in a very early stage though and will therefore be discussed as part of the elaboration phase.

1. Stadshavens vision making (2008-2012)

Pioneers aan de Maas (2009) - In 2009 the Project Office Stadshavens published a strategy per sub area of the whole Stadshavens. This document was called Pioneers along the Maas (Pioniers aan de Maas in Dutch). This document also included some first statements in regard to the M4H area. The report puts an accent on environmental change: from business space to a living-working environment.

The Merwe Vierhavens will develop as an international experimentation garden for innovative energy supply and watermanagement. *"In the port there is enough space to experiment with new concepts. Pioneers will even live in this rough and tough environment, for instance in carbon neutral floating*

houses. In time on and along the water a completely new city area will be established. ... Combining high-quality residential areas and port activities with sustainable live-working traffic over land and water will obtain a lot of attention.” (Projectbureau Stadshavens Rotterdam, 2009, p.5).



Figure 42: Crossing borders map for the M4H zone. Projectbureau Stadshavens Rotterdam (2008)

The area has a good accessibility, but there is a clear border with surrounding city neighborhoods and for instance Schiedam. The enhancement of connectivity with the adjacent areas and re-integration is described as a societal value to be created. A general direction for the development of the M4H area up to 2025 (figure 42) was drawn in the *Pioneers aan de Maas* document. The report also splits the area in three zones for the focus on the short term developments: 1) *Marconi free zone*, 2) *The Keilehavenport area*, and 3) *the Roof park (dakpark)*.

The Marconi free zone will be designated for temporary facilities, expositions, ateliers and catering. The Keilehaven will be designated for innovative business space and housing. The keilehaven is smaller than the others, and connects perfectly with the offices, educational institutes and business due to it varied and fragmented use. Small-scale first investments are therefore possible. The short-term strategy as described for this area is: Wherever space becomes free, new uses will be realized: innovative companies and atelier, food catering and living. Furthermore, for after 2015 a lot of residential space will be added once the fruit handling and the juice cluster will be moved to the Waalhaven.

Programma Merwehaven/Vierhavens	Tot 2015	2015-2040	Totaal
Commercieel vastgoed (m2 bvo)	164.500	187.500	352.000
Woningen (aantal)	100	5400	5500

Figure 43: Crossing borders program for the M4H zone. Projectbureau Stadshavens Rotterdam (2008)

It can be seen that at this moment in time the belief was that port lands would gradually be transferred to the city and hence a port-out and city-in approach was taken for the area. In regard to the fruit cluster, it was stated that the fruit cluster would move to the other side of the Maas and in time would make space for new other uses. Also, the floating city opportunity in the Merwehaven

demonstrated the belief that the port would no longer be used for water-related port activities in time. Nevertheless the call for innovation was already apparent, and projected on the area. Part of the area would be used as experimentation and innovation zone.

Structure vision (2011) - The transformation vision of the M4H area was explained by the port and municipality for the first time in a formal and public document in 2011 in the structure vision. This formal vision document concluded the planmaking of the Stadshavens project office and incorporated also the reports *Creating on the edge* (2008) and *Pioneers aan de Maas* (2009). The document discussed the whole Stadshavens area, but also discussed the areas separately.

As a result of economical explorations by the Stadshavens project office, the Stadshavens was stated to be the anchor points of the Clean Tech Delta: a network of companies focused on innovative solutions for water, climate and energy questions, from Dordrecht to Europoint and Delft. Knowledge development will come from two areas in particular: the former Haka-building and the RDM site. Traditional port activities (maritime services) would be clustered in the Waalhaven. This was an important decision in the Stadshavens development, creating clear distinction between the M4H development direction (urban, residential and innovative) and the Waalhaven (maritime activities)

In regard to the M4H area, the vision speaks of the creation of “living and working environments” in which the urbanization challenge is mentioned as key argument for intensifying the use of areas within the Stadshavens. Two main aims for sustainable development are: 1) stronger economy: expanded and sustainable mainport, and 2) more attractive city: inner-city waterfront development. This should go hand in hand with climate targets of Rotterdam and the Netherlands.

2. Collaboration change & re-negotiation (2012-2016)

For a moment, the vision had aligned the perspective of port and city in a formal but broad document, but in the years after, this vision was supposed to be elaborated and projects were supposed to be initiated. With the structure vision delivered, the plan development for the Stadshavens was more or less finished on the overarching scale. However, considering the economic status at that time, a large scale transformation was not possible. Hence, in the years after no development of M4H really took off. Therefore, a new approach was necessary.

A key issue was that due to the financial crisis, the municipality of Rotterdam was no longer in a position to initiate large-scale redevelopment project as presented in the earlier Stadshavens documents. Up to then the Port of Rotterdam had taken a cautious attitude due to risks and uncertainties posed by aiming for a large scale urban redevelopment in times of changing development dynamics (Van der Meer, 2017, p92).

Coalition modification

Hence, in 2012 new terms were formulated and new agreements between the municipality and the port were made in regard to the Stadshavens development. The execution and operational tasks would be appointed back to the municipality and Port of Rotterdam, because these tasks are bound to these organizations (Milosevic , 2014). The program office, as successor of the project office, would have a more supporting role for the management of the Port of Rotterdam and of the municipality. Both entities (municipality and port) would do what they are best in, in line with the structure vision that was established, and see from project to project what is feasible .

New agreements concerned that the Port of Rotterdam would be qualified to take the lead in the development on the South Bank to steer effectively and efficiently on identified economic trends. The municipality would focus more on the north bank to safeguard city interests (Milosevic, 2014; Van de Meer, 2017) described in the Stadshavens vision.

New collaboration M4H

Coalition modification

Because the municipality had no financial capacity to carry out the area development of the M4H area, also new agreements were made in regard to the M4H area in particular. A project team took office specifically for the M4H area to stimulate the development of the M4H area, which had not really taken off up to then. The main aim for the project team to give an impulse to the development of the M4H area.

Key for the development of the area would turn out to be that Port of Rotterdam would participate and take a more active role in the development of this area as developer and investor. The agreement up to then required minimal investments from the Port of Rotterdam, since they (as mentioned) had taken a cautious attitude to the large-scale plans. . In this new approach, it was reasoned that revenue from rent and land lease canon could cover the investments for the Port of Rotterdam. As a result of the RDM concept that had developed over time, the port came to the realization that the M4H area could still be a major site of opportunities in value creation for them. The necessity for a strong partner by the municipality together with this gradual perspective change within the port out of lessons from the RDM case, was the starting point for new coalition building among the Port of Rotterdam and the municipality to create a cluster to attract innovative companies. In short, due to the economic context all actors involved were forced to rethink their role, and with the new collaboration discussion also came a lot of practical substantive discussions.



Figure 44: The main involvement shift. Own figure.

Realigning the strategy

The new M4H project team carried out a scan of the area to map out the vacancy, the spatial quality and the users (Schaeken, Milosevic, and Dalmeijer, 2014). Furthermore, a market research was started to test the former vision sectors, to formulate sharper definitions and provide reference material of these potential sectors.

Coalition building

Simultaneously, the team invited entrepreneurs and private parties to provide insight into their wishes and to see how the Stadshavens vision could be filled in with certain sectors or partners with potential. *Medical sector* and *clean tech* were already introduced from an economic exploration earlier and from these ideas the Rotterdam Science Tower had already been established in the M4H area. Hence the medical sector could provide economic potential for the area.

Challenge

At the same time within the joint teams (with port and municipal representatives) there was a lot of debate on whether residential use was still suitable on this site. The Port actively tried to challenge this perspective for at the time reasonable reasons. During the financial crisis demand for housing had evaporated and the housing prices had decreased significantly. Simultaneously, the port had agreed on taking on a more active role as investor and developer, which obviously would not be focused on residential projects. Also the combination between business real estate and residential projects will always remain a challenge, as described several times in the literature. Nevertheless the municipal representatives decide to keep the area reserved as future housing location, and the project team M4H would eventually take this into consideration as condition for the new working activities.

The project team established *clean tech* and *residential use* as two clear guiding requirements for this area. This means that companies that want to settle in the area for a longer period or accommodate their activities should perform this in a sustainable manner, or contribute to innovation and fit within environmental category 3.1. to keep residential use possible on the long term (Milosevic , 2014).

Another key theme in the negotiations between the port representatives and the municipal ones, concerned the financial feasibility. The outcome turned out that moving out large companies would come with major investments, that the municipality could not afford and the port was not willing to do. Also, since the area development had not fully taken off yet, there was no real urgency to force this on a short term basis. This also did not have the support of the Port of Rotterdam as this would affect their trustworthiness as business partner: businesses are granted long term leases to provide security over investments in the location the company chooses to settle in.

When the project team M4H gradually concluded that the fruit cluster would remain (at least for as long as their contracts would take), the cluster was even introduced as possible innovation sector for the area. The fruit companies had proposed to apply for the World Food Center with Rotterdam, which was eventually lost to Wageningen (Noordink, 2014, p106). Nevertheless the food companies lobbied for becoming part of the innovation in the area with research and development, rather than solely handling, and sketched the potential for the city in a collaboration with the Westland Greenhouses.

Taking into consideration residential use in the area a market research commissioned by the M4H project office showed that the following sectors had potential in the area:

- Food (research and development)
- Medical (life science and health)
- High-quality industry
- Small-scale logistics
- (Maritime) service sector

Development strategy challenges

Parallel to establishing clear sectors of focus and defining economic potential for the area, a political field of tension had arisen in the collaboration negotiations for the area. This regarded the balance between “the point on the horizon” and short term results (Schaeken, Milosevic, and Dalmeijer, 2014). Major infrastructural investments were required to make the area accessible and moreover soil sanitation was required in general. Fueling the stimulation of innovation and knowledge creation would not lead to direct visible returns on investments. This was a clear field of tension among the Port of Rotterdam and the municipality, as described by Van der Veer (2017). The ambitions so far were to a large extent focused on non-financial value creation (innovation and knowledge creation) and required major preparation investments (soil remediation, land acquisition, etc.). For the port as investor, it is however for significant importance to also obtain at least some short term financial returns from such investments and land policies.

Port and city initiated a new mutual development strategy for the area that would alleviate some of these tensions. This incorporated the wishes of current users and the needs of potential users. Contrary to the former plans, this development strategy initiation was founded on the idea of organic area development, which means incrementally over time, flexible to respond to future trends and changes. For the following five years, in this development strategy five short term focus areas / projects were listed:

- **Vierhavenblok:** the new makers quarter of the M4H area with cross overs between large and small business

- **Marconistrip:** On the undeveloped piece of land between the Marconistraat and Schiedamsedijk, plenty of space was available to experiment. Creative ideas with no place elsewhere in the city can settle here.
- **Europoint towers:** with the municipality that moved out from these towers to The Rotterdam on the Kop van Zuid, the towers had become vacant and should be redeveloped. A medical innovation hotspot would be created for elements of the Erasmus MC.
- **Ferro:** This building of rich history and as industrial heritage should be redeveloped as a place for events, art, culture, music and media. This attraction should attract visitors.
- **Dakpark:** This project was already in development as project resulting from earlier plans. A lot of green space and shops and facilities were added, making a first step in reconnecting the area to the city.

A trainee, involved as municipal planner at the time (personal communication, 2021) mentioned that he experienced this period of reinventing and establishing a mutual development strategy as a ritual mating dance in which port and municipal representatives tried to reinvent a strategy for the area. It goes without saying that elaborating the mutual vision and corresponding developments has proven to be a major challenge in the collaboration of municipality representatives and Port of Rotterdam representatives.

Moreover, for some years there was no significant market-demand or pressure for development as a result of the financial crisis as context factor. Motivation for development was therefore lacking for the time being, fueling debate and negotiation about the process.

In regard to the medical sector, which was initially incorporated together with food research and clean tech, in the development strategy, was eventually somewhat neglected as described by a leading municipal planner (personal communication, 2021). Plans had already been introduced to realize a medical cluster in the redevelopment of the Marconi towers. Eventually, it was reflected by the program office that medical innovation cluster would not suit this locations port character, and should more logically be positioned around the Erasmus MC (personal communication, 2021). This can be regarded a clear port influence in steering the innovation direction for the M4H area. When eventually a private project developer introduced the plan to redevelop the two remaining vacant towers to residential units, the municipality accepted this alternative contribution to its objectives for the area.

Innovation District (2015)

In 2015 a start to finding common ground in rethinking the collaboration was established in the concept of the Innovation District. A report from Deloitte (2015) described this opportunity as overarching concept for M4H and RDM together, with “smart manufacturing” as specialization. In the report it is stated that around the world Innovation Districts are the inextricable result of the Next Economy.

This innovation district concept should be seen within a context of exploration on hosting the World Expo 2025 and even a new city bridge was considered on this side of the city (AD.nl, 2014). Interest for the M4H area was growing and redevelopment gained momentum. The developments of the RDM had functioned as a catalysator. The RDM had proven to be a success for the Port of Rotterdam, and not without a surprise the link between M4H and RDM was drawn more and more. At the time the RDM housed a number of educational and knowledge institutions (Port of Rotterdam, 2015). Also within the M4H area itself, some pioneers and business had started to made use of the affordable space in the area provided to experiment or innovate. Hence, in the Deloitte paper (2015) it was mentioned that the development had already started growing as a result of previous plans. In the end of 2015, at the Innovation Festival the Innovation District was presented.

As the Stadshavens program office, and the M4H team, were looking for ways to promote the area and to define a clear scope, the Innovation district appeared to be a good solution. In interviews it was expressed how this mix between residential use and “the new economy” and “innovation district” created a lot of support and did a good job in the lobby. This goes as well for private businesses, developers and government funds and subsidies.

“You can imagine that a narrative in which we are going to make sure that the port can structurally keep earning money and provide jobs, also for The Netherlands as economy. Also the National Government has become shareholder of the Port of Rotterdam. Then that is a very good narrative to believe in, also to obtain funds from the state.”

The momentum and the port commitment can be demonstrated with the accelerator programs that were initiated. **Port XL** for instance was a 100-day in which pre-selected start-ups received intensive coaching to support them. The participants were provided with mentors, investors and sponsors with large Dutch companies and banks (Port of Rotterdam, 2016). **SmartPort 2.0** was an initiative of Deltalinqs, the port authority, the municipality of Rotterdam and two universities. With an annual budget of 1.5 mil euro for five years, transition to a circular economy, logistics connectivity based on big data were facilitated. (Port of Rotterdam, 2016).

In 2017 a major soil remediation started around the Ferro building (a former gas plant). The terrain had been blank for quite a while, but as more and more private parties express interest to invest in the M4H area, this step should be taken to facilitate developments (Program office RMD, 2017, p28). The whole soil remediation costs 50 million euros, which is largely subsidized by the Ministry of Infrastructure and Environment (Rijnmond, 2017).

3. Elaboration phase (2017-2021)

Makers District

As the development gained momentum more companies and instances showed interest in settling in the RDM and M4H area. The focus on the RDM and M4H area over the years meant a new chapter for the Stadshavens, the program office would now focus on the Makers District, consisting of RDM and M4H.

In 2017 the municipal college of mayor and aldermen (in Dutch: college van B&W) approved this new vision for the M4H and RDM areas together, which really captured the link and collaboration between RDM and M4H. This Makers District vision states how the success of RDM is limited by the physical and geographical boundaries of the area, but how the M4H area is located directly on the other side of the river (see figure 45). The success of the RDM area therefore played a significant role in the motivation of development for the M4H area.

The new Makers District strategy focused on accelerating the investments from Municipality of Rotterdam, Port of Rotterdam and possibly other public partners to work with private parties on the area. This step fits with the development success of the RDM (which was ready for new developments) and would function as an elaboration of the established development strategy for the M4H area and the agreed innovation district approach therein for M4H.

The three scenario's until 2025 in this development strategy would be too late in regard to the current moment and dynamics around the development. Hence, a more hands-on and decisive approach was required for the M4H area and the Program Office Stadshavens would now be Program Office Makers District as collaboration organization between the municipality and the Port of Rotterdam.



Figure 4: The M4H and RDM areas as part of the city (Program office, 2017).

Even though the Makers District Strategy did not conflict with earlier plans, as innovative making and manufacturing were already named in earlier documents, it brought an important nuance to the scope: it was about actual production to “Make It Happen” and should not solely result in services and offices to facilitate innovation.

The Makers District vision was an important moment in the development vision for the M4H area, in which the development direction for the M4H area really had become specific and clear. The Makers District vision describes how “the road to the next economy is unmistakably taken, an economy that strives for circularity, made possible by digitalization. Innovation is a crucial and enduring component of this new economy” (Program office RMD, 2017, p2). It emphasizes the possibilities of the combination of the largest European port, and the city, accommodating multiple multinationals, together with the educational instances, culturally diverse and highly educated talent.

The vision describes how Rotterdam has grown with the growth of the port, but the traditional activities are under pressure. This new collaboration in the Rotterdam Makers District is caused by the major challenges of as well city as port: the energy transition, digitalization and developing the circular economy. The making industry is no longer part of the development concepts for the area but a central aim.

The objectives as described in the Makers District vision document (Program office RMD, 2017) are:

- 1) Attracting and facilitating innovative activities with a making industry accent and supporting companies (from start-up to corporate)
- 2) Create broad employment for the citizens of the Rotterdam region
- 3) To realize an open innovation environment with a varied mix of companies, educational and knowledge instances
- 4) To realize an urban living environment on and around the Merwe havens
- 5) To develop the area as an experimental area and showroom for the circular future of the city and port.

The Makers District strategy document also mentions how RDM and M4H still maintain their own focus. RDM primarily focuses on port-related making industry and connected with education and research. This fits well on the south bank of the port where port activities are dominantly present still.

M4H will be where the physical development of the Makers District will mainly take place. The area has been in use of fruit handling for years and even though the juice cluster is still very much alive in the area, the fruit handling moved away as a result of containerization (Program office RMD, 2017). The M4H area has a more direct connection with the city and among others is well-connected with a large public transport connection (bus, tram and metro). It will therefore become a mixed area accommodating startups, scale-ups, grown-ups and corporates. At the same time attractive places to stay and experiments will be created, for knowledge-workers an urban environment and urban facilities should be provided within an urban living environment (Program office RMD, 2017).

The M4H area is divided into eight sub areas (see figure 46). There will be a difference in scale and requirements per area. The Fruit Terminal will be postponed as a long term future development due to the land lease contract. The production campus will provide space for innovative and production companies, additional uses should not limit the businesses. The Merwehavens and Marconistrip will be dominantly urban residential area. By laying the focus on manufacturing and making, a better link and synergy with the port was thereby enforced, preventing an urban take over by the city anyways.



Figure 46: Eight sub areas of the M4H (Program office RMD, 2017).

Structural Framework M4H

The new vision was supported very well by port, municipality but also the national government and private parties willing to invest. Hence, the Makers District was soon elaborated to a spatial framework (in 2019) for the M4H area to finally make significant steps and elaborate the vision into a guiding framework for projects. Hereby ambitions were translated into a spatial plan for which urban design teams were consulted.

The main aim was to challenge and invite parties with interest in the area and provide the guidelines within they could operate. Also it would guide the actions of the municipality and port of Rotterdam. Overarching elements and interests (such as infrastructure and public space) were established as basis for zoning plans (program office RMD, 2019).

In establishing this framework, internally (within the M4H team) and with external stakeholders an intense process was gone through. Inspiration session with entrepreneurs and developers were organized, as mentioned by a municipal representative of the program office (personal communication, 2021).

"We organized one session for current entrepreneurs in the area and another for involved and interested developers"

"For the developer session have made a selection of interested developers and parties that had already taken position in the area. They inspiration session discussed the questions what area do you see here? What would you want to add to the municipality and port of Rotterdam?"

Eventually, when the initial spatial framework (in 2018) was delivered, a new input moment was provided in the delivered HAKA-building by Dudok development, who had already acquired this site and redeveloped this monumental building in alignment with the municipality.

“This was quite a large gathering with approximately 80 people I think, they could respond on the concept document and afterwards we closed the doors again to finish the spatial framework and make the calculations.”

Eventually, with the necessary adaptations and a range of environmental, mobility, soil and cost tests, the definitive spatial framework of 2019 was delivered. To the question about what were the major changes after the gathering in the HAKA-building an interviewed member of the M4H program office answered (personal communication, 2021):

“We used to have a tide park in the concept plan in the port where no ship activities would take place. It appeared that this would be an expensive investment and we were already filling in the contents. Afterwards, we made this more abstract by mentioning the we have the ambition to program and to add green to the ports.”

Other adjustments were in the position of roads, and a better cut was made between developments up to 2035 and what could happen next. This cut between the two phases was made more explicit and clear. Isabelle Vries, overall program manager, stated the importance of this in an interview with gebiedsontwikkeling.nu (Monster, 2020).

“In 2030 the area will not even be close to completely transformed yet. There are blank spaces that will remain empty of content until 2035 to be adaptive for future context shifts. The framework is only fixed where it needs to be.”

Vries explicitly mentions too how up to this point in time the concept of “port out and city in” was completely withdrawn. The port would actively be involved in the long term redevelopment of the area and the program office would arrange all the overarching points that are of interest for all actors involved in the redevelopment the area. For instance: The municipality puts the accent on residential use and urban facilities, while the Port of Rotterdam will focus on development of the making industries (Monster, 2020). Hereby both parties will focus on their main activities of expertise.

The major challenges for the near future in the area redevelopment, as described by Monster (2020), are: To speed up the construction of housing for which the new zoning plan is required. In the meantime, large parties should be lured to the area that can make the difference in upscaling the area development. Other important location factors to be improved are local accessibility and the public space.

MER (Milieueffectenrapport)

Also the environmental research (MER) was initiated to test possibilities for add dwellings to the area and possible business in that regard for the area. This is an important legislation factor for creating intrinsic land value for certain developments.

In the Notitie Reikwijdte en Detailniveau (Gemeente Rotterdam, 2019, p30-32) is listed what important environmental themes and aspects are investigated in the environmental research (MER). The overarching themes are listed in figure 48.



Figure 47: Intended boundaries of zoned industry area (Gemeente Rotterdam, 2019).

This environmental research is mandatory for adjustments of the zoning plan in the Netherlands. In this case a *zoning plan office M4H* is established by the Municipality and Port of Rotterdam as clients. This team commissions the MER (environmental research) as well as the zoning plan. Currently the MER is being established as of writing this thesis.

Theme	Aspects
Traffic	Accessibility and safety
Noise	Industry, businesses, traffic, ships and cumulation
Air	Nitrogen dioxide & particulate matter
External safety	(transport of) hazardous substances
Water (safety)	Quality, climate adaptation, waste water system
Odor and dust	Odor nuisance and dust nuisance
Health	Noise, air, living environment
Soil	Soil quality
Landscape and heritage	Quality and heritage including archeology
Sustainability	Shared facilities, experiments, sustainable energy, mobility, climate adaptation

Figure 48: Themes and aspects for the MER. Edited from Gemeente Rotterdam (2019, p30-32).

Project development

Eventhough the zoning plan and MER are not finished yet, some developments and private initiatives have already occurred. Also some of the fragmented privately owned lands have be acquired by investors and developers. An example is Dudok who purchased the Haka-building in 2017 and initiated redevelopment which was stagnated due to the outbreak of Covid and the reluctance of larger companies to rent. As of writing, new projects are already proposed while awaiting the definitive MER outcome and zoning plan. These specific projects will be discussed later.

6.3. Actor involvement

With the timeline concluding the process description, this chapter will elaborate on the actor involvement, roles, and shifts over time. A simple yes-or-no table indicating in which phase an actor was or was not involved does not suffice. The M4H redevelopment has been influenced by degrees of involvement for actors such as developers, local companies and the port, rather than being involved at all, because most of them have been involved to some extent during the whole process. In figure 49 the involvement of actors is put into a graph to give a basic overview of the involvement over time, indicated by three degrees of involvement. The bars in the graph will be explained further in the next sections.

As can be seen in the timeline in figure 41 the Stadshavens collaboration structure has changed over time in many ways. From a Stadshavens Project office to a Stadshavens program office and M4H project team, to eventually a Makers District program office. The Stadshavens organizations are deliberately not included in the actors, because it consists of the port and municipality as partakers in the mutual team, and within the Stadshavens collaboration team involvement or influence from municipality and port has shifted in the M4H area.

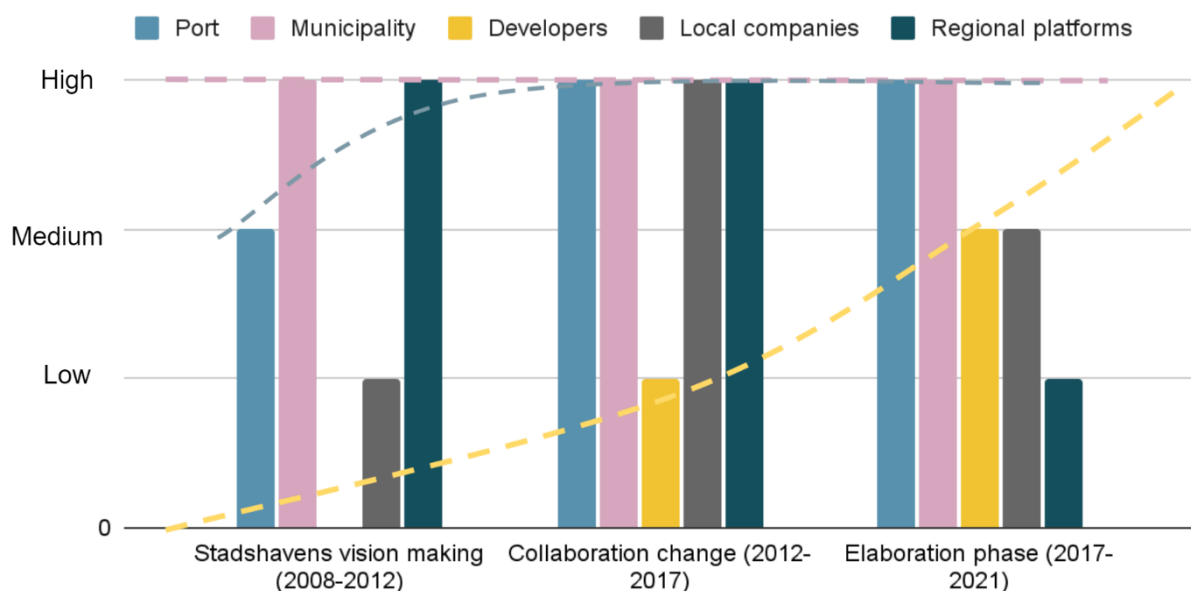


Figure 49: Actor involvement development in the M4H redevelopment. Own illustration.

Furthermore, it should be stated that provincial and national governments should also be regarded actors on a higher level, who also contributed financially with subsidies for instance for soil remediation, as the Stadshavens project has been recognized and integrated in national economic plans. These are for now left out of the diagram but in fact had a great involvement with their financial contribution to the soil remediation in 2017.

1. Stadshavens vision making (2008-2012)

Stadshavens Project office - In the Stadshavens chapter it was described that the project office Stadshavens was the successor of the more independently acting Stadshavens N.V. as development company. The Project Office was a more coordinating organization for the developments in the Stadshavens. Some important general and overarching vision documents were created (i.e. creating on the edge, pioneers aan de Maas, structure vision Stadshavens), which included from time to time some specific components in regard to the M4H area in particular too. Nevertheless, the M4H area was still approached as part of the total Stadshavens.

In figure 49, the involvement of the port is set to a medium level for the reason that the port was taking a reserved attitude with commitment and taking on obligations in regard to the M4H area redevelopment. Clearly, the municipality took the leading role for the plan making for the M4H area, as it also had become apparent that the Waalhaven and Eemhaven mostly would remain port areas, and the RDM had turned a mostly port-led area redevelopment (Braun, Otgaar, Witte & De Jong, 2015).

Cooperation

The M4H redevelopment, was mostly municipal-led in this early phase, with cooperation of the port. The Port of Rotterdam had always participated in the Stadshavens plan making, but the idea was still that the port would move westwards towards the sea and city uses would take over, especially for the M4H area eventually. Agreements with the municipality were therefore established for future land transfers. The port had clearly exchanged the M4H area for the lead on the south bank developments and new land lease agreements for the Waalhaven and Eemhaven. During the time of partaking in the project office, the port of Rotterdam had taken a reserved attitude towards the development of the M4H area. Hence, in the Stadshavens vision making period in figure 49 the port involvement in the M4H area cannot be regarded on the same level as the municipality, who clearly up to then took the leading role.

Regional platforms have especially obtained an influential involvement in the economic explorations during the early Stadshavens exploration phases and the program office phase in which the old vision was reinvestigated. The medical delta and the clean tech delta (which includes the Europoort all the way to Delft and the Drechtsteden, consisting of the TNO, NWC National water center and Technical University of Delft) are two main examples. Furthermore, initiative takers for the World Expo and the climate campus can be regarded regional platform lobbyists all bringing potential concepts to the M4H area later in the collaboration change phase.

Coalition block

It can be argued that local companies (especially the larger ones) were blocked from the coalition of the area redevelopment with the idea that they would eventually move for the integral area redevelopment. This goes especially for the larger food companies that still contained long term contracts. They would in time be moved to the Waalhaven for instance and otherwise their contracts would not be extended.

2. Collaboration change (2012-2017)

Stadshavens Program office - After delivering the final structure vision (2011), the Stadshavens project office was in 2013 renamed to the Program Office (in Dutch: Programmabureau) Stadshavens (Milosevic, 2014). The formal role-taking would be to arrange the overarching components of development: marketing and promotion, funding creation and application, safeguarding the collaboration agreement and safeguarding the structural vision of 2011 (Van de Meer, 2017).

In this phase in regard to the M4H area in particular, new agreements were made about the role-taking of the Port of Rotterdam and the municipality too. As described, the Port of Rotterdam would take a more active role and partake in the area redevelopment as investor and developer.

Role taking Port of Rotterdam N.V.	Act as investor/ developer when projects meet port vision and strategy
Role taking Municipality of Rotterdam	Acts as manager in a regulatory role in the developments of M4H
Role taking Stadshavens program office	Facilitate overarching activities: <ul style="list-style-type: none"> - Safeguarding Stadshavens vision of 2011 and collaboration agreement

	<ul style="list-style-type: none"> - Promote the area - Funding creation and application
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Figure 50: New role taking in the M4H area. Own illustration.

M4H Project team - In 2012 also a M4H project team was established specifically for the M4H area with the clear target to stimulate development in the M4H area and to get the vision of Port and Municipality into execution. This team would tune port and municipal activities in a mutual project team for the area. Milosevic (2014) describes that this team has an advising role toward the municipality and the Port of Rotterdam, and thus does not have a decision-making authority. An important step taken by this team is realigning the interests of the port and municipality and establishing a development strategy specifically for the M4H area.

Coalition modification

Building upon the RDM development, and as a result of a weakened financial capacity of the municipality, the port decided to become more actively involved as investor and developer in the area themselves. This increase of involvement goes hand in hand with the perspective shift within the Port of Rotterdam N.V. as also described in the RDM chapter.

Within this context, the Port of Rotterdam eventually decided not to withdraw from the area, but to actively participate in the redevelopment of the area. This happened right after the experiences that the Port had obtained with the development of the Innovation Dock. The port started to focus more on its own real estate and aligning the business environment with their strategical ambitions through their real estate portfolio. The port is actually able to carry out their own plans in terms of real estate development and able to take risks for that matter.

A major shift was that the Port of Rotterdam would not participate as facilitator of land or real estate, nor would it solely facilitate integral development by the municipality, but the Port of Rotterdam decided to actively steer on the businesses and the added value to the innovation and making aspects of the developments.

The Port of Rotterdam has a strong position in the M4H area, as it had gotten most of the land from the Municipal Port Company after separation. Nevertheless the land is an eternal leasehold agreement and over time an agreement was established that the lands would be transferred to the city for redevelopment. In the M4H area the Port of Rotterdam is allowed to lease the land to port-related business and other businesses, but for new long term lease contracts permission by the municipality should be granted first (personal communication, 2021).

Coalition modification

As described, the municipal lead in the area shifted after the renewed collaboration agreement to a more developing apart together approach. Port and municipality both agreed to work on their own objectives within the mutual vision and framework that were established by the overarching program office. The municipality lays their accent on the urban facilities, and the residential use. Unlike the port, the municipality does not develop itself. For real estate development to establish their goals in the area they are therefore dependent on the private developers or public institutions. An exception was the Dakpark project, funded with European subsidies, which had the municipality of Rotterdam as client (top010.nl, 2013) aimed to enhance the link between the M4H area and its urban context and to add high quality facilities to the area. The municipality does have some land ownership in the area (about 20%), which can be developed through tenders, which provides a lot of steering opportunity.

Coerce

During the collaboration change phase this food cluster attempted to become part of the area redevelopment by challenging the idea that they should move away. At one point they were incorporated as potential economic category for the area. This was done through proposing Food innovation and research and collaboration with regional clusters such as Westland. The food cluster proposed to apply for the World Food Center in the M4H area to enforce this, but this was eventually lost to Wageningen (Noordink, 2014). Since 2013, the idea of moving out the food cluster was somewhat neglected, or delayed so to say, as the municipality did not have enough financial capacity to make major investments for the redevelopment of the area. With an increased port involvement, and little financial means at the municipal side, the long contracts puts them in a more dominant position at the negotiation table to coerce their involvement. In that regard, the development strategy is to a large extent, especially in phasing, influenced by these contracts. The reason for these long term contracts (20, 30, 40 of even 50 years) is described by the real estate manager of the Port of Rotterdam (personal communication, 2021). The companies should be provided with some guarantee of certainty that they can earn back investments on that site. These companies are in some cases still financially important for the Port of Rotterdam. If their contracts cannot be extended, then preferably they should be relocated within the port of Rotterdam.

3. Elaboration phase (2017-2021)

Coalition modification

Makers District Program Office - In 2017 the area concept had evolved into the Makers District, and the complete focus of the Stadshavens had shifted to the RDM and M4H areas. Hence the program office would now be called Program Office Makers District. It can clearly be identified that the perspective called for a change in the involvement. The new Makers District program office would consist of two program office teams, one for the M4H area (which would replace the M4H project team) and one for the RDM area. The general program manager used to work as a strategical advisor for the Port of Rotterdam but also as an area manager. The program office team consists of 8 people and urban planners, project managers, landscape architects and other specialists. The M4H program office works in close collaboration with the RDM program office to work on the overarching Makers District Rotterdam concept.

The program office focuses on connecting the innovative side of the port with the innovative side of the city, it focusses on connecting businesses, knowledge and education. The program office is coordinating rather than an area director. The Port of Rotterdam and Municipality and private parties still develop apart together, with the program office as coordinating office for mutual documents and strategies: mobility plan, energy supply strategy, spatial framework, etc. In the program office, port and city representatives work on plans for the area as if they are colleagues (personal communication, 2021). The concepts there are then presented and assessed by the municipal council and the Port company management.

The role of developers had been quite limited up to the spatial framework, but as of writing the thesis they are more and more getting involved in the plan making with specific developments. In the past years, pioneer projects mostly were small-scale and coming from companies and public associations. An exception was the Science Tower of Rotterdam, as pioneer large-scale development, was a collaboration of a lot of educational and public organizations. In 2019, the first large private development was realized which consisted of the redevelopment of two of the Marconi towers to short-stay residential units. This, however, was on the edge of the area and mostly focused on the nearby public transport hub, rather than the M4H area.

Coerce

More recently, a lot of new private developer initiatives are proposed and also some land positions have been taken in on the small locations in the area which were privately owned. An example is Open Development who purchased a former glass

factory of an owner who had decided to stop its business. Some plans that have been recently initiated will be discussed in the next section. Another example is Dudok who purchased the monumental Haka Building (2017) and Europoint V building (2020). Through this action, developers could coerce a say at the negotiation table. If not, the municipality could coerce their perspective through tenders upon the developers.

In personal communication (2021) with a municipal representative of the M4H program office it was stated that some interested market parties, and also interested developers, were involved in the development of the spatial framework of 2019. Thereby their involvement, or rather input, was limited but present.

Collaboration

In other examples, mostly recently, developers are getting involved through collaborations with local partners in the area. The Brutus project is an initiative from a local art studio in the area, that has settled there for a long time now, that sought a collaboration with the developer (RedC) to establish a business case for their objectives. Through large scale residential program, a cultural hub with congress and event space can be made feasible. Another example identified in the M4H area is from an interview with Bakkers Hommen development is innovation-focused development on port-owned land. This land was given out by development rights to a group of innovative entrepreneurs, who now collaborate with Bakkers Hommen in establishing a feasible project.

6.4. Actor perspectives

This section will focus on the actor perspectives on the intrinsic land value, and how this impacted the (real estate) developments in the area.

1. Stadshavens vision making (2008-2012)

The M4H vision making started with the Creating on the Edge and Pioneers aan de Maas documents in which the municipal-led vision making for the M4H area was clear. In spite of an innovation statement and arguing for a work-living environment, the waterways would be used for floating communities leaving their port-related use. Also most of the area would be designated for housing and a climate campus was the focus of the proposed innovation.

Clearly the perspective was dominated by the municipal perspective with the belief that the port would gradually retreat from the area and land would be transferred to the city for redevelopment. Also the food cluster was planned to be moved to the Waalhaven (the part of the Stadshavens that was agreed to maintain its traditional port uses).

Also for the current companies in the area this would have its effect in intrinsic location value. The contracts in this area most likely will not be extended, in spite of the interest of the port to maintain these companies. Due to insecurities about the development of the area, the companies would not risk new investments in the location. For the fruit handling, new European legislation in regard to cooling would require such investments, which they would not be willing to do on an unsecure location (Van de Meer, 2017).

The port at the time cooperated with this perspective, as it has exchanged the M4H area more or less for the south bank development lead. From an interview with Robert Bonk (real estate manager for the Port of Rotterdam) in a 2014 graduation report on the M4J area (Noordink, 2014) can be learned that the intrinsic land value of the M4H was a lot lower at the time than for instance the Waalhaven and Eemhaven. The latter two still accounted for 30% of all container handling.

“In an old collaboration agreement we would have to ask permission to the municipality for long term lease contracts, longer than 25 years, in the Waalhaven and Eemhaven. As Port of Rotterdam we wanted to cancel that agreement and in exchange give up the Merwe Vierhaven area.”

Moreover, the Stadshavens Vision was perceived as too ambitious, hence the Port had taken a cautious attitude with their involvement and getting dragged into major shared investments with the city. The Port of Rotterdam would rather focus on making the RDM campus a success and focusing on economic renewal on the south bank. A port program manager in the makers district (personal communication, 2021) mentioned how the Stadshavens vision bombastically presented a vision for an enormous area without looking well at market demand (also in the future) and area characteristics.

The municipality and Stadshavens Projects Office did not succeed in implementing their perspective in the M4H area for a lot of reasons that they learned in the following years. Market demand was missing for a lot of the following years as there was no economic momentum. The first effect of this economic downturn was that as no clear market demand was found, there was no specific direction in which potential use value could be found. This did not just apply for business and production use, but also for residential use since prices of dwellings were decreasing. A large part of the intrinsic value of land therefore appears to be determined by the economic context.

2. Collaboration change (2012-2017)

In this phase a significant involvement change was described in last chapter, which was mainly a necessity as a result of context change, hand in hand with a gradual perspective change within the Port of Rotterdam. With the RDM redevelopment the Port started to learn how small real estate developments and certain considered urban uses could contribute to strategical objectives of the Rotterdam port. This made it more interesting for them to take part into achieving the Stadshavens Vision goals under the condition that they would invest and develop if it would match their port interests.

This participation of the Port of Rotterdam had become possible as its perspective on the intrinsic location value of the M4H site had changed. First of all, the port had realized the urgency of innovation to keep the port competitive and future proof. This idea had been incorporated in Stadshavens plan making for a long time though. But this perspective had become realized in the RDM redevelopment and proven itself successful: some educational and knowledge instances were already linked to the ambitions. At the same time RDM was limited in its size, and M4H could provide an alternative expansion location for the innovation concept. The M4H provided a lot of space still, for this innovation district concept to be expanded. In an interview with a port real estate professional it was mentioned that what makes this area especially interesting for the port is that there is a large amount of space to establish a cluster of companies and knowledge institutions to establish significant knowledge spillovers and establish supply chains for the innovation that port and city seek.

With its experience in transforming old warehouses the port of Rotterdam had gained expertise in its real estate department and it started broadening its activities from large scale projects and clients, to accommodating and attracting smaller companies and start-ups too. In the RDM developments, the port of Rotterdam also started to realize that in order to achieve the described benefits of innovation, it should also steer on the users of the real estate. By becoming an investor and owner of the real estate and steering on the users, the value perspective of the port started to shift on long term value creation, that would also incorporate non-financial values. The Innovation Dock had a major unfeasible top (compensated with European subsidies) and the port had accepted a low return for a very risky project, nevertheless the Innovation Dock became a kickstarter for the whole RDM redevelopment and eventually the M4H redevelopment too. This shift is demonstrated in the following quotes by respectively a municipal and port representative (personal communication, 2021):

“A major reason that port would not move westwards any longer is that the port it’s business case would not be focused solely on scale enlargement and bulk, but also added value which requires a fierce knowledge-component. Logistics should become more sustainable which brings major innovation demand.”

“What you can see is that at the moment the Port of Rotterdam realized that we wanted to focus more on steering the users and the software of our real estate rather than our traditional role as area developer, the vision around the Stadshavens started tilting.”

With the new port activities as a result of new strategical objectives the M4H suddenly had increased in intrinsic value for the port. New economic activities could be facilitated, which would no longer be large scale heavy industry businesses, but new technologies and light forms of making.

Set in motion perspective change port:



Figure 51: Actor involvement development in the M4H redevelopment. Own illustration.

Challenge	With still bad prospects in regard to the Dutch housing market, the perspective on large-scale residential development over time in the M4H area was challenged by the port. Clearly, the Port of Rotterdam was looking on a way to obtain as much space for businesses and innovation as possible to get the most out of the cluster values that could be created. In spite of a major fall in demand for housing in the financial crisis, the municipality insisted to maintain the area partly for residential use. Therefore, working and production should be compatible with that. The new innovation and production should be compatible with residential zones. In interviews it was described that the Port of Rotterdam had already realized that heavy industries would not be suitable in this area and therefore was in peace with this decision.
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The focus that was found in the first place were clean tech, food and medical innovation. These sectors came from bottom-up propositions for food research, area transcending initiatives and economic cluster explorations for clean tech and medical innovation.

Challenge	The Food cluster companies were trying the same by proposing to apply for the World Food Center and establish Food research and innovation as new economic potential sector for the area. This was also compatible with residential developments appeared from the explorative market research and through this strategy the Food cluster companies tried to gain involvement in the intrinsic land value creation by sketching the program office their perspective. Eventually, the World Food Center was lost to Wageningen, but the belief that food innovation and research was one of the potential innovation sectors had rooted. It was eventually the long term contracts that kept them in the area for at least those terms.
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Another point of discussion in value creation were short and long term values. Whereas the port expects soon or later financial returns on their investments, the municipality sees these investments more in long term social and environmental value. A municipal representative mentioned how the municipality for instance wanted to prevent that a residential area would be created alongside a business area. But also in regard to the definition of ambition and focus themes for the area, a lot of discussion had to be resolved. In the RDM redevelopment most of the innovation was focused on maritime and offshore innovations, but with the municipality as an equal partner in the development some other innovations with value for the city influenced the focus of innovation in this area.

Innovation district

Coalition building	Alignment and a more clear focus occurred in 2015 with the Innovation District event and the paper of Deloitte describing the combination of forces and branding of RDM and M4H. At the same time, entrepreneurs in Rotterdam were lobbying for the World Expo 2025, which matched with the Innovation idea that had developed for so many years now. M4H was also appointed as perfect site for the bid. The innovation and experimenting concept had been under development for some years now, but with the municipality and port more and more agreeing on the concept, the lobby also started to attract a lot of private and public attention. More and more companies were interested in the area and even state funding was attracted to performed a large scale soil remediation.
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The innovation district brought a solution to the debate between the municipality and port by also creating intrinsic values to the city and its interest representative, the municipality: *"In the light of a mutual innovation urgency of port and city, we started looking at the area"*.

At the same time, as stakeholder in the Port of Rotterdam N.V. and in interest of the city economy, the innovation concept was by no means a concession of the municipality. The Port of Rotterdam accounts for a major amount of the Rotterdam employment and economy, therefore broadening the port business case and facilitating innovation to keep the port competitive and resilient was also in interest of the municipality. The innovation district had become very compatible with city uses too, as an interaction environment was required to stimulate innovation. This means incorporating event spaces, public space, catering facilities, urban vibrancy with hotels and housing. The municipality could thereby still achieve the realization of urban uses. However, needless to say, it has always remained a field of tension on how to combine this best.

3. Elaboration phase (2017-2021)

Making use of the momentum eventually the Makers District Strategy document was established, which definitely fixed the link between the RDM success and the M4H development challenge. A clear focus was specified on innovative manufacturing and "making". In addition, for instance medical innovation was more or less cancelled as it did not fit the maritime character of the area. A behavioral factor had defined the intrinsic land value of this site for this use.

Residential use

For the city eventually, residential use was an important use value to be created with the development for the city. The demand is enormous and for the city due to compact city policies, limited locations area available. In the M4H area these are mostly located around the edge of the plan area on the city side. Important location factors that create intrinsic value for this use on this site were the connectivity and accessibility with the major public transport hub around the corner. Also the site was already quite embedded in the city and completely surrounded by it.

The municipality also states in the discussions that in order to achieve a well-functioning innovation district, an interaction environment should be realized, which provides companies and people to meet and exchange experience and knowledge. It thereby argues for the necessity of urban uses (including residential and recreational) in a lot of zones in the M4H overall area. Also within the dominantly residential areas, a percentage of all the real estate will be assigned for business, working or recreational uses.

In interviews with the port it appeared that they acknowledge the possible long term benefits of this, and also a cultural cluster is required to create environmental and social value in the area. This also attracts highly educated personnel and provides meeting points for exchange of information. Nevertheless they are very cautious too, this is demonstrated in the following quotes of an interviewed port real estate manager (personal communication, 2021).

"Looking back at the last ten years, I think we managed to demonstrate the value of a rough, industrial area and the relation between city and port to companies, without having a very beautifully designed public space. Nevertheless, it could have value on the long term."

"Companies eventually might be willing to pay more if they could settle in a vibrant area, with space for networking, but I think this evidently is the case with area development. In time value will increase, as well of the real estate as the network growing there. "

Cluster value

The key location factor to create intrinsic land value for the area for as well the port as the city had become "cluster value" providing knowledge spill-overs and bringing great strategical value for other areas for as well the port as the city. A port real estate manager mentioned the following about this (personal communication, 2021):

"The central aim is what I call the network effect. I borrow this from the platform economy, how can we create a competitive advantage through specific developments or innovations such as nitrogen, electrification and create an ecosystem of suppliers? How can we make it too costly for companies not to settle in Rotterdam to be on top of those developments?"

To summarize, for the port this created value to make the port competitive in the future, make the port of Rotterdam attractive for companies (fear of missing out on innovation), create a showcase of the port for the city and thereby enhance the image. But also some real use value, which it had lost for port activities to a large extent. Small scale production (as part of port activities now) can bring new returns to the port of Rotterdam company. A key consideration for the port, are steering the innovation and the companies involved, in order to contribute to port strategies. Some innovation elements of focus currently are: 1) hydrogen, 2) electrification, 3) smart logistics, and 4) waste-to-value (towards circularity), according to the Port of Rotterdam real estate manager.

For the city, the similar strategical value is created, but from another perspective. The city shares the urgency for innovation in spatial development, digitalization, the energy supply and use transition. Furthermore, a well performing and competitive port is also important for Rotterdam and its economy and employment. The cluster forming furthermore can attract knowledge-workers to the city creating the pull of companies and overall city competitiveness with other cities in the Netherlands and internationally.

From interviews it can be learned that both port and city still have a slightly different perspective on what priorities should be set to establish an innovation cluster. The port tempts to prioritize hard classical location factors such as expansion possibilities (hence flexible real estate), affordability, decent business real estate quality, while the municipality also focuses on the public space (creating a campus) and creating a link with the surrounding (more residential areas). One municipal interviewee stated:

"we want to prevent that what we're doing will eventually result in a business park along a residential area. There should be some integration or synergy."

...

"What we want to aim for is an interaction environment, that facilitates knowledge and innovation exchange."

This debate should not be understood as two opposite perspectives among the Port of Rotterdam and the municipality, but it is more in the nuance. With attempts to redevelop the Ferro Dome to an meeting and event place, the Port had already demonstrated that they do see value in investing in interaction possibilities. This is also integrated into the structural framework for the area. On the other hand, Port representatives also stated that:

"In our experience, you can establish a great innovation hub, which attracts a lot of companies and is very interesting through the real estate and partners involved itself, without extensive investments in a fantastic public space."

Eventually, the Port and Municipality agreed in the structural framework to establish one area: the Galileipark as a business, working and production area only. The Port of Rotterdam really challenged the municipality to do this in order to safeguard affordability and expansion possibilities for companies and constrict at least one area not too much with residential use.

Some tradeoffs can be seen in the Structural framework:

- The Galileipark remains completely residential free to provide space for companies to expand and to produce (without residential limitations)
- It is agreed that business development will have a maximum of 5000 square meters, as this area should facilitate small-scale production and start-ups and scale-ups too. Larger industries should really settle on the Maasvlakte: which indicates that the city is definitely urbanized and no longer available for traditional large-scale port uses.
- The Port and Municipality will both contribute to the public space, in which the balance between creating cycling paths, pedestrian routes, as well as freight traffic infrastructure for supply of materials and moving away waste, will need to be discussed in the future.
- The phasing of the area will adapt to the two larger food sector company clusters in the area with long term contracts.

The Structural framework is still quite open and flexible. It provides a spatial guideline for the future, and still some discussions lay in the future. This concerns the translation and degree of the public space, the financial contributions to overarching elements like that, and the specific projects in the area.

Developers perspective

Coalition block

Within this elaboration phase, it is especially the last years in which the role of developers is starting to become significant. So far they have not taken part in the Stadshavens, or M4H teams or offices. They have been blocked from the coalition so far, and also land in ownership of the port or municipality where not sold prematurely. The municipality had built a coalition with the Port of Rotterdam initially and even agreed on an investing and developing role of the Port rather than private developers. It was mentioned that developers were invited at one moment to give advice for the development of the spatial framework, which was mostly developed by the M4H program office consisting of port and municipality representatives. As a vision and framework for the area was already developed between the port and the municipality, developers need to propose projects that are aligned with this spatial framework.

Moreover, as a result of a poor market context, developers themselves have been very cautious and the projects that were initiated before the spatial framework mostly failed: Ferro Dome & Haka Building. Some (investing) developers with a higher willingness to take risk, did obtain some plots in the areas that were privately owned (about 10% of the area). Also there are some exceptions where private developers did establish, or attempted, the realization of projects in the area. But overall, as a result of this lacking involvement, the developer perspective in value creation is to a minimal extent involved in the vision and plan making.

What especially appears from the projects proposed and realized so far by private developers, is that they are mostly positioned on the outside of the area, closest to the urban context (the Lee Towers, M4Hout, Diepeveen, Haka-building). Some important location factors play a role in this intrinsic land valuation for developers. These sites are positioned closest to current facilities (shops and other) and are not subject to possible environmental nuisance.

Location factors that were mainly mentioned by developers for creating added exchange value were the potential quality of 1) the waterfront, 2) the distinctive and rough character, and 3) the high level

facilities realized with the Dakpark project, and 4) the location within the urban context, well-embedded with a major public transport station around the corner.

The projects and interviews indicate a preference for the development of residential use. The Lee Towers, the M4Hout, the Diepveen, Brutus, they are all dominantly residential, and the good connection with the city comes with a lot of location factors that make the site attractive for urban developments. Focusing on exchange value this use comes with the greatest demand and therefore highest returns.

“A residential program has our preference. The location is quite well-embedded in the city and there is already a metro stop located. Furthermore, the location is already surrounded by other residential neighborhoods. The facilities in the Dakpark are of high quality, you could practically start living there tomorrow.”

The developer Dudok, which also has expertise in developing logistical real estate, nevertheless chooses for almost a completely residential project called Diepeveen, on the far edge of the M4H area. Another project, the Haka-building is also located on the edge of the M4H site, closest to the urban areas. This monumental building is proposed to be redeveloped for offices and working spaces and catering facilities.

M4Hout adds to the innovative character of the area with a proposal to build a wooden building in a circular manner, with even a plinth for creative working spots or making industry. The latter is a way of adding social value, and a way to please the municipality and gain support, rather than one of added exchange value.

“The plinth use surely isn’t a source of revenue. It is the residential program that should deliver a good revenue, but the plinth is actually a way of embracing the atmosphere of the area and giving it a spot in the project.”

The making-oriented real estate appears not to bring the desired exchange value by developers. It is therefore the question to what extent the work-living environments will turn out to be realized as described in the vision. In the future it will appear how the increasing involvement of developers will affect the development outcome as they will challenge the guidelines and boundaries as much as possible. The actor arena and its influence on the intrinsic land value creation is a story to be continued for the M4H area.

6.5. Development influence

The involvement throughout the process and perspectives on intrinsic land value creation have formed the circumstances for the real estate developments in the area (so far). The projects delivered so far have different initiators, coming from different phases in the process. As described in the process section, the sectors and vision adapted over time and a conviction of the intrinsic land value of this location was incrementally developed.

Small-scale initiatives

In the early Stadshavens visions the area was described as an experimentation zone. Hence a lot of Artists, urban agriculture and innovative entrepreneurs established small-investment projects in the area. One main location factor of importance was affordability of the real estate, due to the impoverishment of the area and the poor quality of living.

Real estate developments really took a while before they really took off. A main factor for this was future insecurity about what the area would become and what would be the political and port

commitment. Also for current companies in the area this meant that no investments would be done in the area due to this insecurity. Atelier Lieshout is a well-known example in the area.

The economic context also enormously decreased intrinsic motivation to pioneers to develop. An interesting case in the M4H area is the monumental Haka building. This was purchased by the developer UVastgoed in 2007 for 2.1 million, but during the financial crisis it was sold to the housing association Vestia for 11,1 million, who would redevelop it to offices and a living lab for clean water and energy (in alignment with the vision making at the time). The housing association had to be saved from bankruptcy, and it was only possible to sell the building in 2017-2018 to the developers Dudok for a bare 2.3 million (Limmen, 2019). Their project plan is once more to create an innovative office concept, in combination with catering facilities.

Another project development that failed was the redevelopment of the Ferro Dome to a club / event space (AD.nl, 2016). DHG initiated this redevelopment, but had lost its investors after the financial crisis in 2016. The site was afterwards returned to the Port of Rotterdam. Their plan at that time was still to redevelop the location to an event location in alignment with the M4H vision with the municipality, they will develop it themselves in a later stage in the future. In general can be concluded that the intrinsic land value of this location from the perspective of investors was generally low, and only very small-investment initiatives or highly subsidized projects were successful.

Since 2017, the first projects were initiated by support of the municipality through public association initiatives. The Science Tower client consisted of a broad range of institutional partners and the Keilepand was an initiative of two architecture firms (at the time new tenants in the building) who established the KeileCollectief, an association of creative entrepreneurs and companies as owner and developing association for the building. This former warehouse from 1922 was redeveloped into an affordable entrepreneur spot, in which participating companies can acquire a say in the building (Weessies, 2019). In new steps, the entrance and top floor were redeveloped to presentation rooms and an exposition space. These projects and owners did not attempt to achieve a high added real estate value (exchange value), through large investments, but focused on adding use value or image value to the project association and area.



Figure 52: Keilepand from the outside. Source: Rotterdamarchitectuurprijs.nl

The floating farm is another real estate development with a highly-innovative character. The concept of floating housing and businesses dates from the early Pioneers along the Maas document. Nevertheless the floating buildings were mostly realized in the Rijnhaven. This project however, came from the initiative of a company (Beladon) around 2017 and was delivered in 2019. The project matches very well with the current innovative and sustainability ambitions that the port and city formulated. The initiator mentioned (Rotterdam Partners, n.d.):

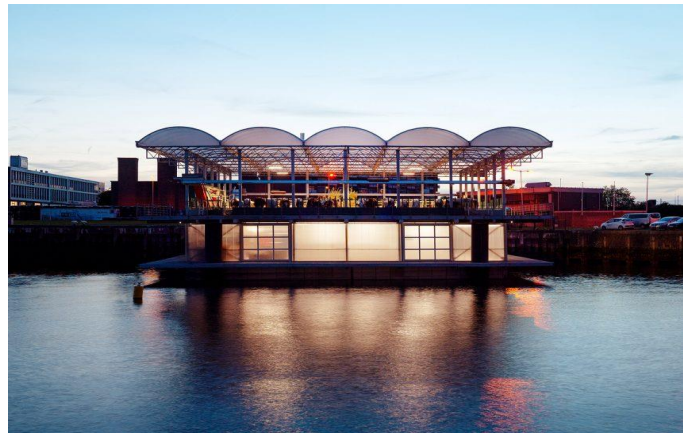


Figure 53: Floating farm in the M4H area. Source: <https://www.dezeen.com/2019/05/24/floating-farm-rotterdam-climate-change-cows-dairy/>

“A lot of transport is required to bring dairy products to the people in the city, which comes with pollution and pressure on the infrastructure. If we can establish dairy production within urban areas, than that would be a good thing.”

Municipal projects

A major exception was the Dakpark project, in which the municipality was the client. This major project was funded with large European subsidies. This non-feasible project was very much focused on creating social, environmental, image and use value for the area and improve location factors such as quality of life (facilities and appearance), attractiveness of the area (with the park) and connectivity of the M4H area with the surrounding urban context. From an interview with developers this was mentioned as an important factor in their considerations on the intrinsic land value of the site for urban uses and residential developments.

The municipality also tendered the Kunst & Complex site along the Keilehaven for private parties to purchase for redevelopment. This impoverished location had been used by a collective of artists with little possibilities to invest in the buildings. The municipality explicitly looked for a capable party to establish a redevelopment that could kick-start further developments in this area. A consortium called Team Crossing Keileweg has won this tender with a plan that includes space for entrepreneurs and artists around a central publicly accessible “makers stage” where events and expositions can be organized (Weessies, 2021). The current Kunst & Complex will be remained and is integrated in the plan. The appearance will remain industrial and the purchase selection was not based around the highest bid, but rather about social and use value too for the area.

Private developer projects

Since the publication of the Makers District vision and spatial framework, and the focus of the Stadshavens on the M4H area, more and more interest from private developers has come to the M4H area. The municipal commitment and the reduction of environmental contours and nuisance in the area has created the attractive environment for private investors to step in. The area is thereby increasing in intrinsic land value for urban uses and minimized for large-scale industrial or production uses.

The private developer projects (Brutus, M4Hout and Lee Towers) all aim for residential developments. These all however add something in terms of use, social or image value in alignment with the spatial framework and vision. M4Hout has circular ambitions with the construction with wooden elements and a public plinth for small-scale production or creative business. The Brutus project for instance

integrates Atelier Van Lieshout enlarging this use to a major cultural hub for art, galleries, exposition, and event space.

Port projects

As mentioned, the Port of Rotterdam themselves decided to be actively involved as investor and developer in the area. This obviously has had an impact on the real estate developments in the area too. The port mainly develops working programs, and real estate to attract desirable innovating companies and entrepreneurs.

The Ferro Dome, mentioned before as the failed event and club site, is currently being redeveloped as a multi-business building for innovative companies. This project thereby potentially provides space for companies from the PortXL innovation program, in which innovators around the world are provided with help in Rotterdam to launch their maritime invention (AD.nl, 2019). This clearly adds use value to the port ambitions to establish an innovation cluster in the M4H area to establish a supply chain of innovators in the port of Rotterdam.

Along the Merwehaven, in the far east of the Galileipark the port is delivering two new former fruit warehouse redevelopments: the Werkplaats and Stadshavens Brewery. The Werkplaats aims to create use value to attract innovating companies and makers through functional, affordable business space (personal communication, 2021). Through quay stream, potentially future ships can supply the business space in a sustainable manner.

The Stadshavens brewery is a major expansion of a brewery that was already located in the old fruit warehouse. The beer is brewed in a sustainable manner, reusing cooling water, use energy out of solar panels and old scooter batteries, and using residual heat of the cooling process for their pre-heating of brew water (Rijnmond, 2021). The developments express some priorities of the Port of Rotterdam perspective: interventions are target specific and functional.

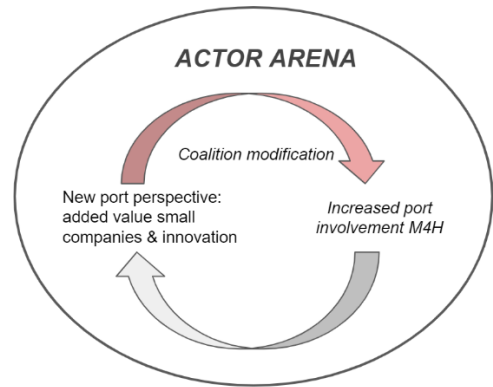


Figure 54: Left: Werkplaats and right: Stadshaven brewery. Sources from left to right: Roosros.nl. 2020. <https://www.roosros.nl/actueel/nieuws/placemaking-in-m4h-rotterdam/> & Port of Rotterdam. 2020. <https://www.portofrotterdam.com/nl/nieuws-en-persberichten/stadshaven-brouwerij-rotterdam-opent-najaar-2020-in-m4h>

6.6. Conclusion

Actor involvement and influence

The M4H case can overall be defined as a municipal-led development that shifted to a developing apart together collaboration with the Port of Rotterdam. This shift occurred through some small steps coming out of an urgency from economic context impacts on the municipal power in their involvement (no investment capacity) as well as a gradual perspective shift within the Port of Rotterdam N.V.



Developers have been blocked from the coalition so far to a large extent. The port took on this role itself for developments in their interest, and the municipality has postponed giving out land until after the MER research and a zoning plan. Some developers have obtained involvement through purchasing land of the privately owned sites, and others joined coalitions of local entrepreneurs. Their final impact on the development of intrinsic land value cannot be concluded, as this will be a process within the future.

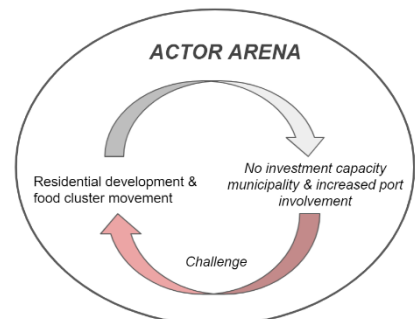
Actor perspective and influence

From the process can be learned that the M4H area had lost a lot of its intrinsic land value to the Port of Rotterdam as its activities still focused on large scale industries and expansion possibilities. The port had accepted the redevelopment of the area and even exchanged lease rights over the Waalhaven and Eemhaven for the M4H area. Due to its neglect, the location factor of cheap real estate and poor attractiveness of the area, had risen the intrinsic value for small-investment initiatives such as artists and experimenting companies.

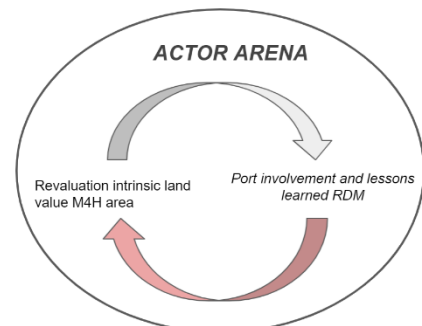
A clear shift in the perception of the intrinsic land value for the port came from two context factors:

- 1) Actor based factor: no financial capacity municipality
- 2) Actor based factor: expansion of scope port
- 3) Location characteristic: lots of available space

The large company clusters were initially planned to be bought out or replaced. The goes for the Food cluster, who was planned to be moved to the Waalhaven, when the M4H development was led by the municipality. When their involvement power was affected by the economic context (decrease in financial capacity), the perspective on this changed.



The intrinsic land value for the port came from the cluster creation opportunity, building upon the success of the RDM . The creation of intrinsic land value with this concept and use can mainly be explained through evolutionary and institutional location theory. The development of the area to an innovative manufacturing zone brings cluster location factors that have strategical benefit to the port and the organization. This brings intrinsic value to the city (as a whole) through among others diversifying and enhancing the Rotterdam economy, creating high-skilled employment for the city, and establishing new innovations for the energy and urban planning challenges of the future. Hence, the port and municipality agreed upon the innovation district concept through a mutual



innovation urgency (digitalization and energy transition) and the need to enhance and diversify the economy (for the port and city). With this narrative, the port regained its involvement in the area and providing new space for companies within the port of Rotterdam. This time focused on innovation and small-scale making activities.

The municipality and developers really perceive a high intrinsic land value for residential and urban use nevertheless. The area is surrounded by urban residential areas, there is a large public transport hub and with the Dakpark project a lot of public facilities are already available. For this reason in the development, the municipality aims for investments in quality of life and public space attractiveness creating environmental and image value. This is in contrast to the port as developer and investor who would also like to maintain sufficient space for businesses (expansion and positioning flexibility) and to keep the business space affordable (hard factors mainly). Some of these discussions are not resolved in the structural framework, but are to be continued in the future still.

Actor arena strategies

In the developments can be seen that the interplay between involvement and perspectives decided the intrinsic value creation direction in the RDM redevelopment project. In general 8 C's as strategies in the actor arena can be identified in which either the involvement and perspectives were attempted to be influenced in the intrinsic land value creation. These are:

- Coalition building
- Coalition modification
- Coalition block
- Cooperation
- Collaboration
- Challenge
- Coerce perspective
- Collect interests

8. CONCLUSIONS AND DISCUSSION

8.1. Conclusion

This thesis sought to make the intrinsic land value creation explicit for two cases (i.e. the RDM and M4H areas as part of the Stadshavens project), looking at the impact of actor involvement and their perspectives on the real estate developments. This thesis thereby answered the research question: *How is intrinsic land value created, in industrial area redevelopments such as port areas, and how does it influence the eventual development?* A qualitative research was executed consisting of documentation analysis and interviews for the RDM and M4H cases in Rotterdam.

8.1.1. THEORY

Intrinsic land value can be defined as the value perception of a location as valued by a certain user and the use they represent. From port-city literature it appeared that intrinsic land value can either be affected by the impact of context changes (e.g. social or technological shifts) or actively be created through development (e.g. led by port or city actors) which can add or enhance location factors.

The intrinsic value of a location or of land can be described or assessed through location factors that are in nature actor-based, context-based or location-based. These can be categorized into four groups: 1) classical (hard), 2) behavioral (soft), 3) institutional or 4) evolutionary factor categories. The value of certain location factors differs highly per use(r) and the actor-based core activities and goals. Development can enhance or establish location factors and can thereby create all sorts of added value to the actors: 1) exchange, 2) use, 3) social, 4) environmental, 5) cultural, 6) image, 7) technological, 8) political, and more. The redevelopment of an area is influenced by the actors involved and the perspectives they bring. The perspective on intrinsic land value creation is highly actor-based, which is why this thesis examined the actor arena for two port area redevelopments.

8.1.2. EMPIRICAL

Stadshavens

The RDM and M4H areas are part of the Stadshavens redevelopment project, which incorporates a variety of port areas closest to the Rotterdam city center. This project was initiated out of the assumption that the intrinsic land value for port uses would decrease as a result of a new westward movement of the Rotterdam Port due to the new Maasvlakte project. It can be concluded that this perspective came from a copy-paste strategy of the admired Hamburg Hafenstad redevelopment and earlier trends in Rotterdam itself (e.g. Lloydpier and Kop van Zuid): an approach similar to “business as usual”. In those cases the port completely withdrew out of those areas and exchanged the lands to the municipality. This perspective was coerced within the municipal organization to the municipal port company.

After the port independence, this perspective was actively challenged by the port. The new actor involvement of an independent port thereby right away led to a challenging strategy of the municipal perspective. Successfully, because in response, the Stadshavens N.V. 2005 vision mainly focused on this alignment and prevention of land competition.

Eventually, a land transfer to the independent Stadshavens N.V. development company was blocked as a result of the critical port perspective together with a negative state council advice for the Maasvlakte project. As a result, the Stadshavens N.V. was cancelled as the municipality and Port of Rotterdam learned that this was not the right organizational approach for this large and diverse area. A coalition modification was necessary, which was translated to a coordinating project office.

In short the following C-strategies employed by actors in the actor arena were identified in the early Stadshavens process to influence the creation of intrinsic land value:

- Copy and paste (from the perspective and coalition approach)
- Coerce perspective (from municipality upon the port department)
- Challenge perspective (by the port towards the dominant development perspective)
- Coalition modification (from an independent development company to a project office)

RDM case

The RDM redevelopment, as part of the Stadshavens project, started as a project initiated by the municipality, which later was approached as a Stadshavens N.V. led project. This organizational approach was copy-pasted from Hamburg Hafenstad. The Stadshavens N.V. and EDBR attempted to build a coalition, thereby steering actively on the involvement to establish an area redevelopment in line with their perspective. This included the municipality, Woonbron, educational organizations, and the Port of Rotterdam. For reasons described in the Stadshavens project, the Stadshavens N.V. was cancelled, and also Woonbron had to withdraw as a result of the SS ship transformation scandal. A new collaboration agreement put the south bank (including the RDM, Waalhaven and the Eemhaven) under the Ports lead, which together with the great land ownership put the Port of Rotterdam into a strong and dominant involvement position.

As a result of a successful interest collecting strategy by the Hogeschool and Albeda, a coalition with the Port of Rotterdam was established for the Innovation Dock and eventually RDM campus project. For the Hogeschool and Albeda strong commitment came from added use value and image value to the education organizations: quality impulse of education with link to practice and other educational organizations, and enhanced reputation and recognition for this innovation dock concept. They convinced the port through collecting interests and concept proposal that would also add great intrinsic land value for the port: 1) kickstarting the RDM area redevelopment, 2) recruiting future talent (bringing students in contact with the port activities), 3) RDM as showcase for the port: enhance image towards the city and 4) facilitating innovation to keep the port resilient and competitive in the future.

Within this new coalition as well the Port of Rotterdam as the Hogeschool took on unorthodox roles. This capability building provided that no new actors had to be included to realize the objectives and optimally steer on the opted benefits for the Port of Rotterdam and Hogeschool. The Port of Rotterdam has shifted from a facilitating landlord and large-project developer to an area manager, acting as (concept) developer, investor and also steering on tenants. Involvement of the municipality was only incorporated in a collaborative form in regard to for instance the aqualine shuttle. Developers did have no significant actor involvement in the case at all.

In regard to value creation, with real estate development as a means, and not as a goal in itself, use value of an innovative cluster and the creation of evolutionary factors for long term objectives was prioritized over short term rent development revenue and exchange value. By creating a cluster of educational organizations and innovative companies, from start-up to scale-up, an important location factor is provided for companies to settle in the Port of Rotterdam. Through the Hogeschool and Albeda proposal the Port of Rotterdam has realized the strategic value that urban uses and smaller-scale developments can bring to the port and its competitiveness. The latter objective was realized through event and exposition real estate developments, and branding the area together with the Hogeschool and municipality.

The incremental RDM redevelopment, with its dominant Port authority involvement, led to its development outcome as a interplay with the perspective change of the port on their core business: from scale-enlargement, to how small-scale business can bring value too. This has been an insight that

developed over the years and in terms of real estate has led to a steering attitude of the Port of Rotterdam on the tenants of the real estate.

In this case it can be concluded that intrinsic land value was created in the actor arena through dominant port involvement, with a coalition with educational organizations. In the actor arena the following C-strategies were employed by actors to influence the creation of intrinsic land value:

- Coalition building (by the Stadshavens N.V. and EDBR)
- Coalition block (of the Stadshavens N.V.)
- Collect interests (seek mutual benefits with the Port of Rotterdam for their RDM campus concept)
- Coalition building (by the Port of Rotterdam and Hogeschool)
- Collaboration (with the municipality for the aqualiner shuttle)
- Capability building (taking on new roles by the Port and Hogeschool, expanding their involvement)

M4H

The M4H area has had a different actor involvement compared to the RDM case, resulting in a different project outcome and process coming to that. The M4H case can overall be defined as a municipal-led development that shifted to a developing apart together collaboration with the Port of Rotterdam. This shift occurred through some small steps coming out of an urgency from economic context impacts as well as a gradual perspective shift within the Port of Rotterdam N.V. An interplay between perspective and involvement shifts.

Because the M4H area was better embedded in the city, and because the Port of Rotterdam had prioritized the Waalhaven and Eemhaven, the M4H area would in general be redeveloped to urban uses in a municipal led approach. Land transfer agreements were also established for the area and companies such as the food cluster were figured to be replaced or bought out in time. It can be concluded that for a long term the perspective was still that the port would gradually move away and the city would take over.

This perspective was incrementally reversed since the financial crisis as a result of increased port involvement. The port had managed to create a lot of intrinsic value out of the RDM redevelopment concept and the municipality was not in the financial position to realize Stadshavens objectives in the M4H area. Hence, the role and involvement of the port was reinvented, making the port more actively involved in the M4H area as investor and developer.

To some extent the renewed intrinsic land value perspective for the Port of Rotterdam can be explained through scarcity of land for large cluster forming. A desire that had developed from lessons learned in the RDM redevelopment. The uses in itself, start-up space, business space, are small in size and can theoretically be integrated in other port areas. However, the amount of space required to create a whole innovation synergy of businesses and education and knowledge organizations is challenging to find. With the RDM being too small to expand a lot more, but taking into consideration its perceived success, the M4H area would be perfect in its size and real estate prices to realize the start-up, scale-up innovative manufacturing cluster.

The intrinsic land value for the port came from the cluster creation opportunity, building upon the success of the RDM. The creation of intrinsic land value with this concept and use can mainly be explained through evolutionary and institutional location theory. The development of the area to an innovative manufacturing zone brings cluster location factors that have strategical benefit to the port and the organization. This brings intrinsic value to the city (as a whole) through among others diversifying and enhancing the Rotterdam economy, creating high-skilled employment for the city, and establishing new innovations for the energy and urban planning challenges of the future. Hence, the

port and municipality agreed upon the innovation district concept through a mutual innovation urgency (digitalization and energy transition) and the need to enhance and diversify the economy (for the port and city). With this narrative, the port regained its involvement in the area and providing new space for companies within the port of Rotterdam. This time focused on innovation and small-scale making activities.

The municipality and developers really perceive a high intrinsic land value for residential and urban use nevertheless. The area is surrounded by urban residential areas, there is a large public transport hub and with the Dakpark project a lot of public facilities are already available. For this reason in the development, the municipality aims for investments in quality of life and public space attractiveness creating environmental and image value. This is in contrast to the port as developer and investor who would also like to maintain sufficient space for businesses (expansion and positioning flexibility) and to keep the business space affordable (hard factors mainly). Some of these discussions are not resolved in the structural framework, but are to be continued in the future still.

In the M4H case it can be concluded that intrinsic land value was created in the actor arena through a high municipal involvement and an increased port involvement, with other actors lobbying for their perspective. In the actor arena the following C-strategies were employed by actors to influence the creation of intrinsic land value:

- Cooperation (of the port with municipal M4H plans)
- Coalition modification (from Stadshavens project office, to program office, to makers district, adding a M4H team, reorganizing the roles of the Port N.V. and the municipality)
- Coalition block (of developers and the companies out of the project office or M4H team)
- Coalition building (finding partners and companies for innovation district)
- Collaboration (of entrepreneurs and innovators with developers for their business case)
- Challenge (the perspective of food cluster being bought out)
- Coerce perspective (from municipality to developers or the food companies)
- Collect perspective (establishing innovation district as a collection of the mutual innovation agenda of the port and city, with sectors compatible with residential use in the area)

ANSWER MAIN QUESTION:

How is intrinsic land value created, in industrial area redevelopments such as port areas, and how does the actor arena influence the eventual development?

Intrinsic land value comes from the valuation of the location factors within a certain context. Through development the location factors can be adjusted, added or enhanced: the creation of intrinsic land value. Within the actor arena everyone involved attempts to influence the development, and thereby the creation of intrinsic land value, in their favor. Strategies are employed to impact the involvement and perspective. In both cases it can be concluded that the involvement and perspective of actors influence resulted in a different redevelopment outcome. For the M4H case the dominant residential and urban-use redevelopment shifted to an innovation making cluster, including a separate business area without residential use. The RDM case, the coerced dominant port involvement in coalition with educational organizations Hogeschool and Albeda resulted in an innovation working district with a heavy knowledge component to it, focused on maritime and off shore innovations. It can be concluded that intrinsic land value is heavily affected by context, and actor shifts. Also the actor shifts (involvement and perspectives) are often set in motion through context changes and not solely through strategies. As well in regard to involvement as in perspectives. The strategies affecting those can be listed as the 10 C's identified in this thesis:

- Coalition building
- Coalition block
- Coalition modification
- Collaboration

- Cooperation
- Capability building
- Collect interests
- Challenge
- Coerce
- Copy paste

8.2. Discussion

Intrinsic relative land value

In the Stadshavens project a significant finding is that in spite of the Maasvlakte as alternative expansion location, the RDM and M4H areas still brought new intrinsic land value to the Port of Rotterdam. Merckx et al (2004) argued that the intrinsic land value can be explained through amount of alternative locations, but it appears that the intrinsic land value cannot be understood solely by the presence of alternative expansion space. On the basis of this it could be stated that it simply is not just about the presence of alternative expansion space, but the relation between this and the demand. In the RDM and M4H case, the demand of the port for space increased as a result of their perspective change and expansion of port uses in regard to their expanded business case: incorporating smaller companies and the innovation value required for their competitiveness. The value is always a balance of demand and supply, if demand for space for port activities increases harder than the supply of expansion locations, the intrinsic land value can still increase.

In experience intrinsic land value is often based on an assumption over future value and market demand. Moreover, it is also not solely assessed by actors on the basis of location characteristics, but also very much actor- and context based. Hence, all location factors and all the four perspectives (classical, behavioral, institutional, and evolutionary) should be considered when analyzing area (re)developments and applying location theory. Therein it is important to consider if all the four categories are equally important or not. It is likely that hard factors will always be considered, and other categories such as soft or evolutionary factors only in some cases.

Furthermore the shift of the port in regard to their activities is a key finding to be included in port-city literature. Traditional port activities (such as container handling) are very much focused on scale expansion that for a long term defined the trends in intrinsic land value we saw in port-city literature, and in the starting phases of the two cases too. Now that the Port of Rotterdam has become aware of the added value of smaller companies and an innovation cluster to its strategical objectives, the port activities, and thus uses, have expanded changing their perspective on intrinsic land value. As the Port of Rotterdam has revaluated urban uses for strategic objectives of the port, the intrinsic land value for the sites close to the city has increased. These sites demand new location factors, such as knowledge spill-overs, proximity to partners, accessibility and connectivity, rather than a focus on scale-enlargement and expansion possibilities. Potentially, this could affect the port-city interface in the future. Especially when other port cities start to copy-paste this approach in their own port redevelopments.

At least it affects the strict separation that is sometimes made between port uses and city uses in the literature. One that also occurs in the paper of Merckx et al (2004) categorizing port and city uses into two curves. Uses that initially would have been regarded as urban uses, now are port uses too, making the distinction harder to make. This brings a whole new phase in the interface between port and city in Rotterdam.

Port city interface

The port-city interface sequence of Hoyle describes how due to expansion, industrialization and specialization and trend of retreat of the port from the city had occurred. Initially this would result in the redevelopment of abandoned waterfronts. The stadshavens project was initiated around the belief that the concerning areas would follow that trend, and formerly abandoned waterfront had already been developed. The latest phase (VI) called "renewal of port/city links" states that port roles are transformed and port-city associations are renewed. Wiegman and Louw also mentioned how port and city start growing to each other as cities are expanding faster than the port is moving away. The re-integration of port and city however in this case had not only occurred geographically and in supply chain links. The re-integration of port and city has also occurred on an area-use level. The port is broadening its perspective, making use of the services sector of the city with a strong knowledge component from the city. The business case is expanded too, moving away from the focus on the unsustainable scale-enlargement. This trend can be explained on the basis of a positive and negative argument. Starting with the positive: as a result of social and technological change, port activities need to be adapted to be more sustainable to remain competitive and links with the city should be tightened to facilitate this innovation. Then the negative: the incorporation of (and adaptation to) urban uses comes from a necessity to survive as port area. In the same way the city had to adjust its hunger for residential areas (as a result of inner-city policies) to long term contracts in port areas. A mix of port and city uses was, at least for the time being, the only solution.

Actor arena

A central contribution of the thesis is that we learned that the development (and the intrinsic land value creation) is influenced by the actor involvements in the actor arena and the perspectives they represent. The interplay and strategies employed to steer that interplay between involvement and perspective can put a new light on understanding developments.

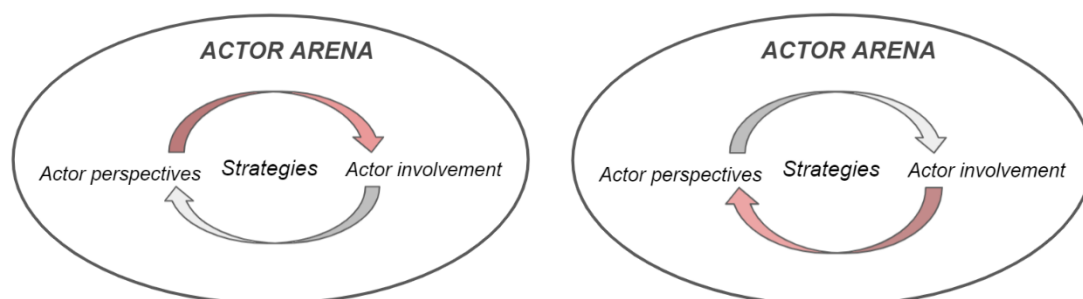


Figure 55: Perspective influence on the actor involvement and the other way around. Own illustration.

There is no generally approved categorization of actor strategies in the actor arena on how to persuade, block or include certain perspectives and involvement in urban area redevelopment. Hence, a new tool box needs to be developed to understand dynamics in the actor arena. This thesis identified 10 C's strategies:

1. Coalition building
2. Coalition block
3. Coalition modification
4. Collaborate
5. Capability building
6. Collect
7. Coerce

8. Copy paste
9. Challenge
10. Commit

In this regard it must be realized that the strategies are actively steered by actors, but sometimes involvement or perspectives shifts can also occur from context changes.

Linking the actor arena to the port-city interface literature might be of great added value to understand developments. Pliakis (2019) started approaching port-city interface events through an institutional “actor arena” examination. This is an important step in deepening the understanding of the port-city interface. Understanding the sequence solely by looking in retrospect to context trends might not suffice as very specific arguments might result in different redevelopment outcomes nevertheless. This is for instance the case if you would compare the Stadshavens Rotterdam and Havenstad Amsterdam, both having the same social and economic context of a housing shortage and a past of redeveloping the waterfront and a westward movement of the port. It requires however an understanding of the actor arena to see how both resulted in different development outcomes and intrinsic land value creation. This comparison is very interesting for follow-up research.

The hypothesis initially was that the port area redevelopment should not be regarded a two-dimensional discussion, but should rather be seen as a multi-actor arena. For the RDM and M4H cases, this appears to be very much true. Intrinsic land value cannot just be regarded by the port authority, municipality and developers, but should also be regarded for local (sometimes large-scale) companies, public associations, national government, investors, and even actors from other cities appeared to play a major role in the actor arena (e.g. TU Delft, or other innovative or knowledge institutions).

Nevertheless, the Port of Rotterdam and the municipality attempted to make it a two-dimensional discussion by establishing project or program offices with solely municipal and port representatives for integration in the M4H and Stadshavens. Developers and local companies were not involved in those organizational structures. This program office was also set up for the RDM, but then replacing municipality for representatives of the educational organizations. Within these offices the most important considerations would then be tuned between the port and municipality representatives.

The developer role had been quite modest in the two cases, which contradicts with the hypothesis. The debate of land use appeared to be determined by municipal planners and Port of Rotterdam representatives both participating in a joined area team, program office or project office. Other than the Port of Rotterdam, no major private area developers were involved in the M4H or RDM program office or area teams. A reason for this might be that the port could already to a certain extent take the role that developers normally take in area redevelopment: contributing to public space, establishing a vision for the area and providing their perspective on the market demand.

Daamen (2010) mentioned that the institutional structure impacts the development outcome, which is in fact perceived in the RDM and M4H case as well. The dominant involvement of the port in the RDM case, incorporating educational institutions in the RDM program office, and the absence of private developers, has led to a whole other development outcome (proposal), than the M4H case, in spite of a similar vision for the area. It should be taken into consideration of course that the M4H area redevelopment is still to be finished and executed.

8.2.2. LIMITATIONS

In regard to the 10 C's in the actor arena it is likely that a lot more strategies potentially can be found, and the once identified might even be reformulated or recategorized in future research. These 10 only were identified in the two cases and help understand better the process and the involvement of the actor arena on the intrinsic land value creation.

The (value) perspectives described in this thesis highly depend on the particular actors interviewed and different context. In this thesis a limited amount of port representative, municipal representatives, and developers is interviewed, but a very larger group of other people have been involved too, potentially all with slightly different perspectives. This is always a threat within qualitative research. Furthermore, the identified perspectives from developers, the port and the municipality cannot be generalized for other cases in other cities, but are very specific for this particular case.

Furthermore, no hard comments can be made in regard to the port-city interface or actor perspective in general, as this thesis revolves around two single case studies. This thesis did not list all possible ways of value creation in waterfront redevelopments for actors, neither did it provide a conclusion on how certain actors prioritize certain location factors and the created value from them. This is something for additional research. For such conclusions quantitative research would be more suitable. Nevertheless, as Daamen (2010) and De Zeeuw (2017) describe, every redevelopment comes with its own different (geographical) context. Moreover, this thesis demonstrated the importance of actor-based context, and the impact that the role conversion of the Port of Rotterdam has had. In that regard, location theory literature had long ago concluded that qualitative research was highly necessary to understand actor-based or soft-based factors.

In regard to the developer involvement, the developers are not at all involved in the RDM case, and in regard to the M4H developers are mostly only starting to get involved from this moment on with their project initiatives and in the future with submissions to tenders. The impact of the developer perspective and the actual implementation of the spatial framework are something that must be awaited. No conclusions can yet be drawn in regard to that yet.

Developments, such as the RDM and M4H cases in this thesis, cannot just be generalized for port areas elsewhere. Neither can the concept of the two areas simply be copied elsewhere, so much has proven itself in the Stadshavens project when it was attempted to copy the Hamburg Hafencity approach. The (geographical) context and actors differ from case to case. Also economy does not just let itself be steered to a certain location.

8.2.3. ADDITIONAL RESEARCH

As mentioned earlier, a comparison between Haven Stad Amsterdam and Stadshavens Rotterdam would be interesting as two cases within the same national context, but with completely different port-city interfaces perspectives resulting in a radically different redevelopment approach. This thesis was focused on the RDM and M4H cases and not on the comparison.

Furthermore, the strategies employed in the actor arena to influence the intrinsic land value creation and the perspectives and involvement of actors towards that is something to be further examined in the future. The 10 C's derived from these cases might be reformulated or categorized with the addition of strategies found in other cases to provide a new framework for future analyses of area redevelopments.

An interesting follow-up research can be to examine how in the real estate development in the execution of the port and city ambitions, different developers (public associations, the Port of Rotterdam, investor developers, private independent developers) can realize the described ambitions. It has appeared that private developers are focused on short-term exchange value creation and do not like long-term financial investments due to opportunity loss of capital. What are methods (in terms of collaboration and in terms of business case) to align developing parties with non-financial or long-term value creation. A personal hypothesis is to create transparent land price (or land lease) calculations or simply through co-creation.

8.3. Recommendations

The recommendations formulated here are based on the thesis lessons learned for the cases but also around intrinsic land value creation in general.

1. Consider all location factor categories

In regard to location factors, it is important to consider all four perspectives on location factors when examining intrinsic land value. This means classical perspective from hard factors, as well as behavioral factors that are internal (actor-based) or soft. But also evolutionary and institutional factors such as legislations, politics, cluster and strategical growth. Even though the hard (classical) factors are always relevant and in most cases will always be considered an important factor, other factors should not be ignored to understand location value for users. The RDM and M4H cases eventually developed to a large extent around evolutionary factors in land value creation for as well the port as the city. If in further research location development is sought to be fully understood the assessment of actors of all location factors should be considered to make sure no important factors in actor considerations is left out.

2. Realize that value can be an assumption

In regard to the assessment of intrinsic land value in area (re) development it should be realized that value can be an assumption. So much has been demonstrated with the Stadshavens project initiation as a response to the Maasvlakte expansion. The Port of Rotterdam as separated N.V. had to reject the assumption of municipal planners that the intrinsic land value for port uses would decrease for large parts of the Stadshavens areas.

Moreover, especially developers and to some extent the Port authority and Municipality, are indirect representatives of intrinsic land value for users: Their value perception is based on the opportunity of the development or representation, rather than eventual self-use of the land afterwards. Municipal representatives act on behalf of all sorts of urban use(r)s and the port authority does on behalf of port-related companies. They represent someone else's values and perspectives when involved in the redevelopment actor arena. The Port of Rotterdam has close links to market niche demands and that the developer has close links to commercial real estate demands. The same way, the municipal has good feel for social and environmental needs. The three main actors should realize to keep good links with possible users and their demands (for instance through market research) to make the best area use decisions. The M4H case demonstrated the added value of a good market research. It is not for no reason that the saying goes: Assumption is the mother of all fuck-ups.

3. Find the mutual ambitions and go from there

Surprisingly, the municipality and port of Rotterdam interviewees were quite content about the collaboration and the mutual spatial framework that has been established. Both have shown great enthusiasm and in the first place did not mention conflicts and contradictions. Sometimes port-city literature focuses on the contradictions and conflicts, while in fact there can be a major overlay in interests from the two. Especially in Rotterdam, the port found a narrative that demonstrated how they still contribute greatly to Rotterdam and the overall Dutch economy and employment. For the municipality it was in their interest to facilitate innovation and keep the port competitive, in order to prevent a Detroit scenario as a result of a fixation on fossil sources or certain activities of the Port of Rotterdam. Moreover they contributed to the municipal sustainability agenda.

Similarly the Port of Rotterdam has shown a new open attitude towards urban uses and how they can contribute to strategical goals of the port. With those uses, cultural and environmental value creation (such as cultural projects and public space investments) can bring added value to the attractiveness of the site for businesses too and enhance knowledge spill-overs.

From the case can be learned that it is important to find the mutual agenda and focus on the mutual interests first, and keep everyone engaged on the mutual goal. Then afterwards details can be discussed later. Due to potential context shifts or external factors, a fixed plan from the beginning is very tricky anyways. In this regard, the program office on a specific area level appeared quite effective to align port and city representatives on the most complex overall elements.

4. Align short term value creation with long term value creation

In order realize long term ambitions, it should be considered how to align short term actor perspectives or value creation with the long term goals. In the RDM case the Port as developers as well as investor and area developers managed well to align short term value creation with long term value creation. When independent developers are required for projects a good framework or clear terms should be set for short term projects to prevent opportunistic behavior, this was also demonstrated by Desvor & Jorgensen (2001) in the literature review. For the M4H case this means that without good governance a Havenstad scenario can still occur, with a clear housing dominance in the zones that were initially appointed as mixed-use areas. This can also result in some conflict in the transition zones, were for instance the manufacturing use designated Gailieipark can nevertheless become oppressed through adjacent residential towers.

5. Open up to private involvement

The Port of Rotterdam has proven to be capable as area redeveloper in establishing the successful RDM redevelopment and also in the M4H area their involvement appeared to be necessary for large scale development of the area the size of the city center. In addition, the port has a good relation to niche markets which can be important knowledge to strategical city planners to better provide what the city needs.

In the M4H case, Bakker & Hommen has appeared to be an example of a developer willing to redevelop an innovation work environment on port lands. It thereby brought expertise in regard to feasibility to the entrepreneur association initiative. But it could also be of added value to the Port of Rotterdam itself (for instance in professionalizing their business case) if they would learn from collaborations with private developers. The proposed Brutus project is a clear example of the renewing concepts that can arise from a collaboration of developers with a local cultural pioneer. Similarly the Marconi towers that had become vacant as a result of the leave of the municipality, had become redeveloped to residential use in an early stage by the collaboration with developers, becoming an important impulse for the M4H redevelopment.

With the involvement of private organizations it is important that the Municipality and Port authority safeguard the balance between internal (organization) or short term benefits and the external greater benefits for the area. The land lease is a strong means to steer on the developments, but the sixth recommendation is key in successful private involvement.

6. Aim for transparency and collaboration

To keep this balance in soft and hard location factors (affordable vs representativity) a clear and honest communication is required, but also trust should be established. It is often described in area development partnerships- or conflict theory, that transparency and clear communication is key (Ten Have, 2017; Lousberg & Noorderhaven, 2014; Winch, 2010). This is not a renewing but nevertheless once more an important recommendation.

This was also once more concluded in personal communication with one of the long-term developers in the area about the realization of innovative business space with an entrepreneur association on port land. In order to make a project with low square meter revenues feasible for the reason of other value creation, a transparent and reasonable land price collaboration is necessary. In turn, agreements

among developer and port can safeguard the aim that business activities in fact fit in the area and add to the innovations desired.

An abundance of changes in institutional collaboration approaches (which quite characterized the Stadshavens project initially), replacement of representatives and officials negatively affect trust and collaboration. This should be kept to a minimum as much as possible.

7. Reflect on compact city policies

This thesis to some extent noticed a paradox. With compact city policies, the housing shortage should mostly be resolved within the current city boundaries. The result, as appeared, is that brownfield business areas are transformed in a lot of cases. Sometimes business locations are thereby replaced outside of the city nevertheless as a result of space within the city. Hereby the city is still expanding in the form of “verdozing” as we call it in the Netherlands. Moreover, Van den Berghe (2020) expresses the threat of losing manufacturing location within the city, for instance creating a volatile economy or frustrating the circular economy ambitions. In that regard, urban planners should wonder if this is a desired phenomenon, or if compact city policies should be renewed and if a M4H and RDM approach would be more desirable in brownfield redevelopments.

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10. APPENDIX

10.1. Interviewees

INTERVIEW	ROLE	ORGANIZATION	TOPIC
Exploring the subject and challenges			
Interviewee 1	Strategic urban planner	Municipality of Rotterdam	The M4H plan development and relation port and city in general
Interviewee 2	Developer Local / former graduation student	Developer / TU Delft	Havenstad redevelopment graduation research
Case analysis (RDM & M4H)			
Interviewee 1	Strategic urban planner	Municipality of Rotterdam	Process M4H and considerations
Interviewee 3	Program manager RDM	Port of Rotterdam & program office	RDM redevelopment and intrinsic land value and actor involvement
Interviewee 4	Real estate manager	Port of Rotterdam & program office	Value creation for port
Interviewee 5	Urban designer M4H	Municipality & program office	Process M4H and intrinsic land value Considerations among actors
Interviewee 6	Large project developer	Bakkers Hommen	Perspective developer M4H and intrinsic land value
Interviewee 7	Small project developer	OPEN development	Perspective developer M4H and intrinsic land value
Transcribed interview 1 (Noordink, 2014)	Senior project manager	Port of Rotterdam	Port development, contracts, and considerations in M4H
Orientation role developer (data from internship)			
Internship partner 1	Developer	Synchroon	Perspective developer general
Internship partner 2	Developer	Stebru	Perspective developer De Faam
Internship partner 3	Concept developer	Synchroon	Perspective on selection research on use
Developer perspective on brownfield location (in general)			
Interviewee 8	Acquisition (region) manager	Synchroon	Assessment criteria for project on brownfield location & perspective developer in acquisition phase.
Interviewee 9	Acquisition (Region) manager	Synchroon	Assessment criteria for projects on brownfield location & perspective developer in acquisition phase.