

**Exporting Expertise? Rotterdam's Planners and the  
Flood Adaptation Industry**

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## **Abstract**

*The effects of climate change and its implications for flood-vulnerable cities have incentivized systematic knowledge exchanges among urban planning professionals globally. Rotterdam, a delta city with an extensive water-management background and an innovative urban design culture, has emerged as a leader in water-related planning and has shared its strategies with cities such as New Orleans and New York. This research investigates the ways in which the City of Rotterdam has positioned itself as a leader in climate adaptation planning and a center of knowledge exchange. The research seeks to identify whether and to what extent Rotterdam benefits from its enhanced international profile. Upon review of existing theory and interviews with Dutch and American planners, this research concludes that the City of Rotterdam's brand is strengthened by Dutch planners' international activities, but that any direct economic impact on the city has been negligible. Finally, it suggests that further investment into Rotterdam's local knowledge institutions and adaptation infrastructure could more efficiently serve the city's economy while maintaining its international profile.*

## **Chapter 1: Introduction and Review of the Literature**

Climate change has challenged urban planners across the globe to adapt their cities to future risks and unknowns. The necessity of adaptation, paired with the emergence of knowledge-based economies and increased methods for information-sharing, has created an opportunity for innovative cities to benefit economically from sharing climate change adaptation strategies. In light of the climate crisis, the Dutch government has sought to strengthen its approach to water management, and the city of Rotterdam has emerged as a leader in climate change-related flood adaptation planning. Dutch waterfront planners, many of whom represent Rotterdam-based firms or are employed by the city of Rotterdam, have and continue to work internationally to disseminate the city's flood management and adaptation expertise.

Rotterdam has developed a reputation as a living laboratory for flood adaptation planning due to a combination of unique historic, geographic, and economic factors. The city lost over 26,000 homes and more than 6,000 other buildings during the Second World War bombings between 1940 and 1943, and as a result has little old architecture to preserve, unlike the neighboring cities Amsterdam and The Hague. Architects have accordingly been able to use the cityscape as a laboratory for modern, postmodern, and contemporary construction (Frearson 2016). Of perhaps even greater significance is the city's geographic vulnerability to flooding. Because of its location on a delta, it is threatened by the Rhine river and the North Sea, as well as rain inundation (Keeton 2013). This vulnerability has forced city leaders to take action to protect the city from the magnifying effects climate change will have on these already precarious environmental conditions. Finally, Rotterdam—home of the biggest and busiest port in Europe—has over the years shifted its port operations closer to the sea, leaving ample opportunity for real estate redevelopment in previously industrial waterfront buildings within the city. The resulting convergence of waterfront engineering, climate change adaptation, and innovative design practices has created an opportunity for Rotterdam to fashion a unique identity as a leader in climate-change related water management planning.

Rotterdam has been internationally recognized for its expansive climate change adaptation measures. During the United Nations COP21 climate change conference that took place in December 2015 in Paris, Rotterdam was awarded with the first place in the “Adaptation Planning & Assessment” category (C40 Cities, 2015). While the city's efforts have been formally recognized at large climate conferences, Rotterdam planners' reputation for water management expertise has been propagated more extensively through intercity partnerships.

Planners from Rotterdam and the Netherlands have begun applying this expertise in international contexts, working in flood-vulnerable cities around the world.

### Research Question

The primary aim of this research is to determine how and to what extent the city of Rotterdam benefits from its position as a leader in flood adaptation planning in the global arena. The research will address several additional, supplementary questions. These include how Rotterdam's brand of flood planning and climate adaptation expertise informs professional relationships between Rotterdam planners and their international partners, and a determination of the implications of exporting planning expertise on the commodification of the Rotterdam planner. This set of questions identifies a critical convergence of the environmental, economic, and socio-political issues that contemporary planners must address in their practice. Rotterdam is a case of a second-tier city rising to international prominence due to the niche yet highly desirable expertise of its planners. While unique, the Rotterdam case may serve as an example of how planning expertise can be commodified and leveraged in cities seeking to elevate their international profiles. The case also suggests the beginning of a new era in the planning practice, in which planners may be viewed as strategic assets for urban development rather than behind-the-scenes actors.

## **Planning in Rotterdam: History and Present Conditions**

### Geographic Vulnerability

As of 2014, the Netherlands had a population of 17 million and a GDP of 600 billion euro, making the country's economy the 18<sup>th</sup> most powerful worldwide (Alphen, 2014). The country itself is relatively small—with an area totaling 34,000 square kilometers— but densely populated at 460 inhabitants per square kilometer. Notoriously flat, nearly one third of the country lies below sea level (Van Koningsveld et al., 2008). Due to its plentiful freshwater bodies, a total of 60 percent of the country's land lies within flood-prone areas (Zevenbergen et al., 2012).

With a population topping 500,000, Rotterdam is the second largest city in the Netherlands. One of the most urbanized regions in the country, the city contains the Port of Rotterdam, an area which extends approximately 40 kilometers from the city center to the North Sea (Stead and Tasan-Kok, 2013). It lies within a delta composed of the confluence of the Rhine, Meuse, Scheldt, and Ems rivers (Alphen, 2014). Approximately 80 percent of the city is below sea level (Rotterdam's Resilience Challenge, n.d.). Already vulnerable to flooding, Rotterdam is at increased risk due to rising sea levels. Some scientists predict that the sea level in Dutch coastal areas may rise between .35 and .85 meters by 2100. If land subsidence is included in the calculation, the coast may effectively be facing a two-and-a-half to five-meter increase in sea level within the same period (Lu and Stead, 2013).

### Lessons from Past High-Water Events

The Netherlands's southwestern coastal area is familiar with catastrophic flooding. The last major flood in the Netherlands occurred in that region in 1953 when extreme storm surge

caused poorly maintained coastal defense systems on the North Sea to fail, flooding 1,700 square kilometers of land and killing nearly two thousand people. The cost of the damage amounted to nearly ten percent of the nation's GDP at the time (Alphen, 2014). The nation faced two more near-catastrophes in 1993 and 1995 when high water levels of the Meuse and Rhine rivers almost caused dike failure (Zevenbergen et. al, 2012). As a precaution, thousands were evacuated at a scale not seen since World War II (Stead and Tasan-Kok, 2013). While the dikes ultimately held, these events continue to haunt the collective memory and the Dutch and their governmental institutions, and have catalyzed ambitious efforts to strengthen the Netherlands's flood defenses.

### Governmental Water Management Regulations

While the high-water incidents of the 20<sup>th</sup> century spurred greater efforts to manage water in the Netherlands, the history of water management regulations dates back much further. Regional water boards, established to formally regulate water management and to maintain and inspect hydraulic works, were instituted as early as the 13<sup>th</sup> century (Van Koningsveld et al., 2008). Rijkwaterstaat, the national organization of water management, was established in the late 19<sup>th</sup> century and played an important role in increasing the scale of water management throughout the Netherlands (Borger and Ligtendag, 1998). Following the 1953 flooding disaster the Dutch launched Delta Works, a flood protection system composed of storm surge barriers, dikes, and coastal dunes. The program was developed and implemented by the newly formed Delta Committee (Zevenbergen et. al, 2012). The near-disasters of the 1990s prompted a “traditional Dutch” reaction, involving the mobilization of “all necessary sources to strengthen and enlarge the dikes and dams” (Stead and Tasan-Kok, 2013, p. 214). While by the late 1990s anxiety about flooding had somewhat waned, it was then that the issue of climate change



emerged. Due to the uncertainties the phenomenon created, a new approach was necessary to combat the threat (Stead and Tasan-Kok, 2013). Planning documents in Rotterdam began to demonstrate awareness of the threat of climate change-related flooding in the mid 2000s (Lu and Stead, 2013). The tone of water management planning has since evolved from a defensive to an adaptive approach which involves full-scale, in situ experimentation. The 2009 establishment of the second Delta Committee marked the beginning of an initiative to build resilience within the Netherlands, striking a balance between protection, prevention, and preparedness (Zevenbergen et. al, 2012). Within this new Delta Program are two extensive new projects, *Building with Nature* to build resilience to coastal flooding and *Room for the River* to offer more space for water by adapting land use strategies and changing current river conditions (Lu and Stead, 2013). The Netherlands now invests over one billion euro annually towards adapting to living with water rather than fighting it (Zevenbergen et. al, 2012).

#### Netherlands-United States Planning Partnerships

While Dutch planners' involvement in international flood adaptation projects cannot be attributed to one individual event or policy, some see Dutch involvement in reconstruction post-hurricanes Katrina and Sandy in the United States as the country's most significant steps towards establishing an international presence. Hurricane Katrina is recognized by certain planners as a turning point in the international application of Dutch flood adaptation expertise as well as in the approach to domestic water management strategies in the Netherlands. "The recent history started after Katrina in 2005," reflected Piet Dircke, the head of water management at Dutch engineering consultancy firm Arcadis. "In the years before, the Dutch water sector was a sleeping giant" (personal communication, February 22, 2017). As he recalls, prior to that

infamous hurricane Dutch international water management projects were limited to development aid projects, along with small amounts of work for the World Bank (personal communication, February 22, 2017). Arcadis, a firm with an extensive North American presence, was responsible for strengthening New Orleans's defenses after Katrina—a \$200 million project (Juskalian 2016). The Dutch-American collaboration project Dutch Dialogues, facilitated in large part by the Dutch embassy in Washington, DC, began in 2007. The exchange consisted of participation from government workers, academics, and private firms from the Netherlands and from Louisiana. The aim of the project was to improve the design of urban water management systems in the greater New Orleans area (Meyer 2015). The result of the extensive collaboration process, as Dircke describes it, was the establishment of a knowledge bridge between New Orleans and the Netherlands. Because of the ongoing collaboration between United States cities and Dutch planners that followed, a knowledge exchange which is “almost institutionalized” has continued between Dutch planners and cities in the United States since (personal communication, February 22, 2017). The Netherlands gained a new perspective from its involvement in New Orleans. According to the literature describing the evolving Dutch approach towards water management, Hurricane Katrina caused the Netherlands to reflect on the consequences of incompetent engineering and reliance on a single, defensive approach towards flood management (Zevenbergen et al., 2012).

The Dutch were again extensively involved in the planning processes that unfolded in the aftermath of Hurricane Sandy in 2012. Shortly after the storm President Obama launched a Hurricane Sandy Rebuilding Task Force, which was led by of Housing and Urban Development secretary Shaun Donovan. Donovan enlisted the director of the Netherlands's office of Spatial Planning and Water Management, Henk Ovink, to be his senior advisor (Shorto 2014). Ovink

orchestrated a design competition called Rebuild by Design to address the New York metropolitan area's needs for implementable solutions to prepare for future climate uncertainties (Hurricane Sandy Design Competition, n.d.). A number of firms from the Netherlands participated in the competition, and of the ten overall selected consort, seven teams included design firms from Rotterdam (Arnoud Molenaar, personal communication, February 24, 2017). Participating Dutch firms included Arcadis, which was part of the winning team behind the BIG U proposal and earned "somewhere between ten and 100 million dollars" (Piet Dircke, personal communication, February 22, 2017). Not all Dutch firms experienced such success, as will be illustrated in the following results and discussion.

#### Establishment of International City Adaptation Networks

In addition to the two climatic disasters that spurred Dutch involvement in American waterfront planning projects, two emerging international cooperative organizations have helped Rotterdam position itself as a leader in adaptation planning. These are C40's Connecting Delta Cities and Rockefeller Foundation's 100 Resilient Cities. Established in 2007, C40 is a global organization which is composed of 87 cities as of early 2017 (Chantal Oudkerk Pool, personal communication, February 20, 2017). The organization is committed to undergoing climate change mitigation measures and managing risk by providing a platform for peer-to-peer exchange among participating cities (Keeton 2014). Founded in Rotterdam in 2008, Connecting Delta Cities is a smaller network of cities within C40's Water & Adaptation Initiative. Other member cities besides Rotterdam include Jakarta, Tokyo, New York, New Orleans, and Ho Chi Minh City (Keeton 2014). Incidentally, 2008 was also the year that the City of Rotterdam ratified the Rotterdam Climate Proof climate adaptation program with the ambition of being "climate-

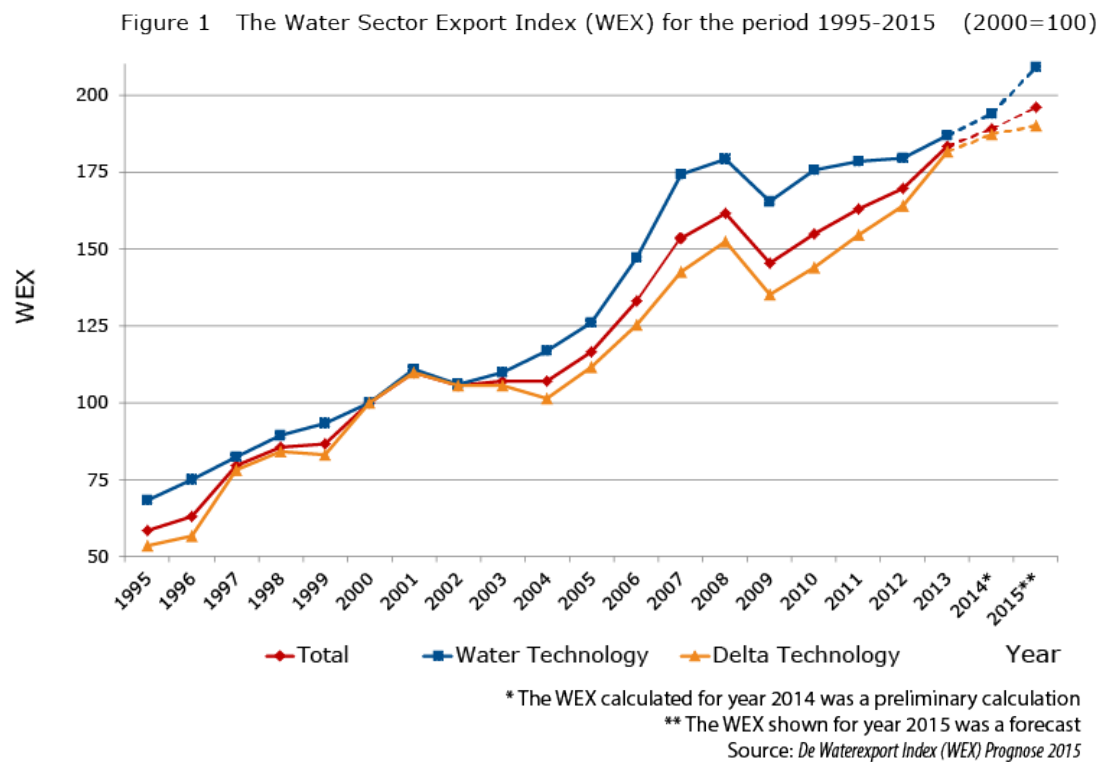
proof” by 2025. The program consists of three main goals: the development of knowledge, the implementation of climate adaptation measures, and the presentation of Rotterdam internationally as an innovative delta city (Rotterdam Climate Initiative, 2013). The establishment of C40’s Connecting Delta Cities network in Rotterdam was a decisive step towards achieving the third goal.

100 Resilient Cities (100RC) was established in 2013 by the Rockefeller Foundation with the goal of helping global cities become more resilient to the economic, social, and physical challenges of the 21<sup>st</sup> century (“About Us,” n.d.). Member cities receive financial support from the organization to hire a Chief Resilience Officer and develop a resilience plan. They also have access to strategic support services including information technology tools and policy models. 100RC furthermore facilitates connections between network cities to optimize information sharing and dialogue. During the organization’s first year, 100RC picked only 33 cities to participate, one of which was Rotterdam (Rodin 2013). As an early member, Rotterdam hosted Chief Resilience Officers from eight other network cities in the fall of 2015 to learn from Rotterdam’s living laboratory model and exchange knowledge (Zanusso 2016).

### Economic Growth in the Dutch Water Sector

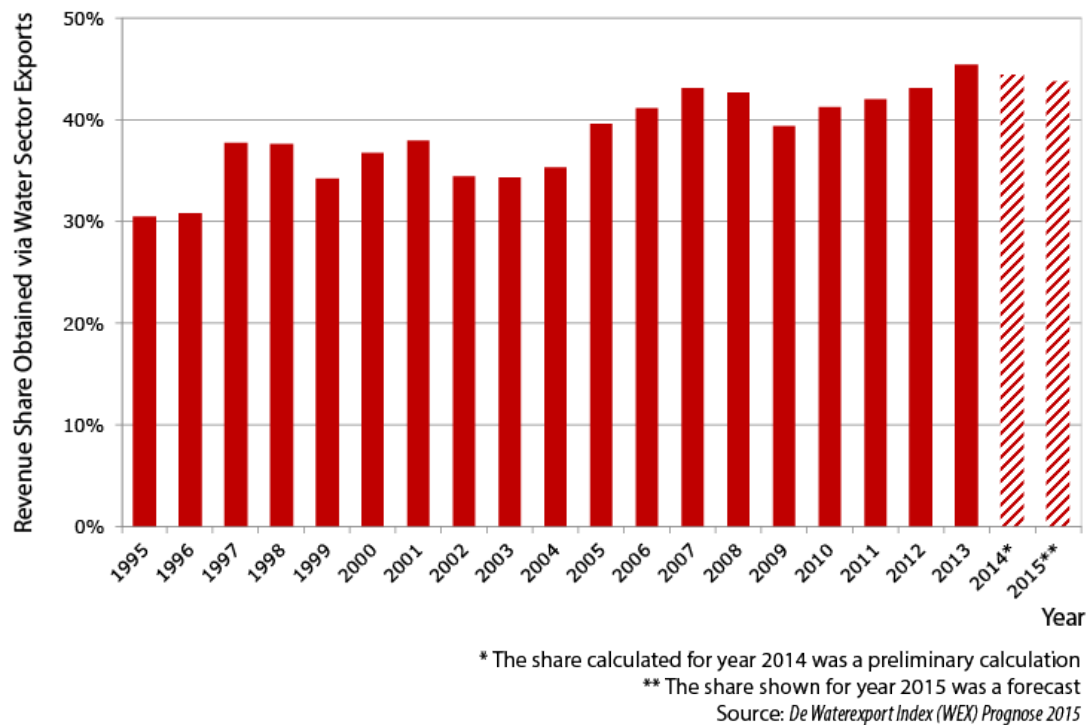
The economic contributions of the water sector to the country’s gross domestic product are measured and published annually (Lennart Silvis, personal communication, November 18, 2016). The Netherlands Water Partnership is responsible for the Water Export Index, which identifies and distinguishes between the economic impact of Dutch water technology and delta technology in its yearly report. Delta technology includes water resources management, groundwater, surface water, water quality, coastal development, port construction, and dredging.

Water technology includes water supply (composed of drinking water supply and treatment, transport and distribution, and industrial water supply and treatment), sewage collection and sanitation, and wastewater reuse. While water-related planning services are not explicitly represented in the report, flood adaptation and water management falls within the delta technology category. The water export index (WEX) is measured from base year 2000, WEX 100. Preliminary numbers released in 2016 indicate that WEX reach 196 in 2015, representing an export volume of water activities—composed of both water and delta technologies—worth 8.1 billion euro (see Figure 1). In 2000, this export volume was almost half that amount at 4.1 billion euro.



During this same timeframe, the revenue share obtained through water sector exports increased nearly ten percent, from approximately 30 to over 40 percent of water sector revenue deriving from exports (see Figure 2).

Figure 2 Revenue Share of Water Sector Exports, 1995-2015



During this period, delta technology exports increased from 2.6 billion euro to 5 billion euro. The export ratio of delta technology, at over 50 percent, was significantly higher than water technology, which had a ratio of approximately 30 percent. The export ratio of delta technology increased between 1995 and 2013 from 35 to over 50 percent. The share of the water sector in total exports fluctuates between 1.6 and 2.0 percent. The numbers published in the 1995-2015 Water Export Index show growth in both delta and water technology between 1995 and 2015, contributing to overall growth in the Dutch water sector (Gibcus and Snel, 2015).

### **Pertinent Planning Theory**

In order to address the research question, a thorough evaluation of pertinent existing theory is imperative. The sources used in this portion of the study are interdisciplinary, ranging

from the fields of business and marketing to urban planning. The theoretical basis of this research is predominantly derived from sources addressing intercity competition, place branding, knowledge-based economies, knowledge-sharing, and the relationship between urban agglomeration and innovation. There is ample opportunity for new research on the planning industry in Rotterdam as it relates to these theories, as few academic sources describe the emergence of Rotterdam's water-related planning expertise, its international distinction, or its global dissemination of expertise—and none in a comprehensive way. This research therefore draws from these theories to provide a framework for the emergence and strength of Rotterdam's planning expertise industry.

The existing literature on flood management and urban planning processes within Rotterdam is considerable, but predominantly focused on the infrastructural methods of adaptive planning rather than the growth and specialization of waterfront planning as a trade or an industry. The city and surrounding region is well-aware of its flood risk due to the aforementioned flooding of 1953. Because of its vulnerability, the city of Rotterdam has become a pioneer in planning for coastal and riverine flooding due to climate change, and its flood adaptation policy documents are more advanced than those of other Dutch cities (Stead and Tasan-Kok, 2013). Lu and Stead (2013) describe the ways in which Rotterdam's planning policies address issues of resilience<sup>1</sup>. They argue that multi-level governmental collaboration, as well as collaboration between a leading ministry and other agencies, are defining aspects of resilience-building in the city. The city acts as a driver to develop adaptive strategies to climate change as it is “keen to transform climate threats into

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<sup>1</sup> The term *resilience* is used frequently within the context of flood adaptation planning. For the sake of consistency, the working definition used in this research is borrowed from Lu and Stead's (2013) description of *resilience* as a system's ability to absorb or buffer disturbance while remaining functional.

opportunities for economic benefits in global markets.” They use resilience as an umbrella term that includes climate adaptation or a soft form of resistance. Brugge and Graaf (2010) describe how flood adaptation became intertwined with urban renewal as resilience-building measures led to innovative and attractive uses of space. These innovative design and planning measures have drawn international attention to the city, which brings with it further economic opportunity. Similarly, Tillie and Heijden (2016) describe Rotterdam’s adoption of an urban green infrastructure plan in 2005 as a program that better connected previously underutilized riverside areas with the surrounding landscape, emphasizing how improved neighborhood green spaces can contribute to social cohesion. Frearson (2016) also acknowledges the breadth of design innovation in Rotterdam, attributing its bold attitude to the sense of design freedom that the relative lack of historic buildings lends the city. Architects commend the city for its willingness to invest in new ideas to keep the city healthy and “futureproofed.” Zevenbergen et. al (2012) identify the potential for export of Dutch expertise and technology as an incentive driving political commitment towards long-term planning. They also offer insight into the transferability of Dutch flood adaptation expertise internationally and describe how the adaptation planning process will need to be altered to accommodate the social structures and nuances of each international partner. They note that few other countries have the institutional capacity to simply adopt Dutch water management strategies without first undergoing fundamental changes in policy framework, stakeholder relationships, knowledge, and skills. The literature suggests that the presence of planners from Rotterdam internationally is an important step in establishing the city’s global image as a resilient and well-planned city and strengthens the Rotterdam brand, but also identifies certain obstacles for societies adopting Dutch planning frameworks.



There is an abundance of literature available on city branding and marketing, as well as on the emergence of the creative and knowledge-based economy in cities of the post-industrial era. Pike (2013) defines *brand* as the characteristic of a kind or variety of a particular service or good. Chenatony and Riley (1999) distinguish between product and service branding, emphasizing the importance of internal training for communicating to consumers as well as employees what a service brand is and ensuring that consumers' expectations are met and exceeded. Such a distinction is useful for evaluating the Rotterdam or Dutch brand of expertise, which more closely resembles a service than a product. Ashworth and Voogd (1988) define the marketing of a city as a "process whereby urban activities are as closely as possible related to the demands of targeted customers so as to maximize the efficient social and economic function of the area concerned in accordance with whatever goals have been established" (p. 68). According to the authors, one of the types of marketing policies a city can implement is the expansion policy, in which a city seeks new markets for existing services. Barke (1999) identifies two relevant problems inherent in marketing a city, the first of which is the necessary but problematic distilling of a place with multitudinous characteristics. In condensing the image of a city to attract consumers, the nuances that make the city unique may be lost. The second issue Barke identifies is that in the creation of a marketable image, cities begin to paradoxically bear similarities to one another.

Hospers (2008) discusses city branding as a tactic of differentiation between competing cities in the era of globalization. Like Hospers, Anttiroiko (2015) posits that branded cities can attract more resources—thereby bolstering their competitiveness—and that cities must distinguish themselves from one another by promoting their local characteristics. Hankinson (2001), however, identifies the challenges of branding a place as varying from complex to impossible. The problem

begins with the varying definitions of a brand, which can include visual or verbal triggers, personality, and value added. For place branding to be successful, Hanksinson finds that appropriate organizational structures must be in place within the organizations responsible for the branding in order to deliver a single, consistent image of the brand. Kavaratzis and Ashworth (2005) argue that branding a place is an attempt to manipulate people's perceptions and images of that place in a way that benefits that place. They make a distinction between place branding and product branding, but discuss how place and product branding can be effectively combined with co-branding. Product-place co-branding occurs when a place—Switzerland, for example—attempts to market a physical product, such as watches, by creating a positive association between that product and its place of origin. The objective in this type of branding is to transfer the characteristic associated with that place or its people onto the product. Similarly, Pike (2013) discusses the powerful role geography can have in giving brands culturally endowed meanings, which is demonstrated by the “country-of-origin” effect influencing purchase decisions. Pike evaluates this effect on the high-end fashion company Burberry, whose country of origin Great Britain is deeply entrenched in its brand identity and whose brand owner seeks to apply the concept of British “authenticity, quality, and tradition” to the Burberry brand (p. 328). This description of co-branding and country-of-origin effect is useful for the purposes of distinguishing Rotterdam planners' water management expertise as a product or service that is given value by virtue of planners' origins.

According to Hospers (2008), effective branding can boost a city's economic competitiveness by attracting knowledge workers. This argument assumes that growing a knowledge-based economy is beneficial for post-industrial cities seeking to establish a broader and more diverse economic base, such as Manchester, England. Yigitcanlar (2009) takes a similar

position on the knowledge economy, describing how the past several decades have seen the rise of knowledge economies on both a global and a local scale. He argues that for cities to compete in the increasingly knowledge-based global economy they must invest in “knowledge infrastructure,” including academic institutions and technological and infrastructural connections to the global economy. Matthiessen, Schwartz, and Find (2006) identify the Amsterdam-Hague-Rotterdam urban agglomeration as a “world city of knowledge” for its prominent research output, which suggests that Rotterdam does have the necessary knowledge infrastructure to succeed in the post-industrial economy. Reed et al. (2013) emphasize the importance of the sharing and co-production of knowledge between global cities. This sentiment echoes Arriens and Lujendijk (2009), who distinguish between explicit and tacit knowledge<sup>2</sup>, argue that socialization between stakeholders promotes the sharing of tacit knowledge, which is otherwise incommunicable but critical for problem-solving and resilience-building. These sources therefore suggest that sharing and co-production of knowledge between Rotterdam and other waterfront cities would be valuable for strengthening networks and promoting learning through stakeholder interaction. This, in turn, may be useful for reinforcing Rotterdam’s brand as the leading city in flood management and adaptation expertise and supporting further development of a knowledge-based economy.

This research initially did not consider existing theory of innovation among urban agglomeration economies, and this theory therefore did not inform the structure of the following research design. However, as research continued it became evident that theory on urban agglomeration and innovation would be relevant and indeed essential to a thorough analysis of the

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<sup>2</sup> The authors define explicit knowledge as knowledge that can be expressed in facts and numbers and can be easily communicated and shared. They define tacit knowledge as highly personalized and hard to formalize. Subjective insights, intuitions and hunches fall into the latter category.

Rotterdam case. The following theoretical sources will therefore be incorporated into the discussion of results. Gordon and McCann (2005) define innovation as any commercial activity which exhibits the simultaneous characteristics of newness, improvement, and uncertainty. They examine four hypotheses on the geography of innovation, of which one asserts that certain places may provide more permissive environments which enable unconventional initiatives to be brought to the marketplace (2005). This hypothesis will be useful as a framework from which to evaluate Rotterdam as a center of innovation. Carlino and Kerr (2015) identify the tendency for industrial clusters to “act as a source for innovation leading to productivity growth but also to stimulate the formation of new business” (p. 366). They describe thick factor markets, which allow for small firms’ sharing of specialized inputs and access to a pool of specialized workers and business services as if they had a greater scale, and identify the tendency for these markets to arise when innovative activity clusters locally. Labor market pooling allows firms in agglomerations to reduce cost and maximize profit. They furthermore discuss the theory that geographic concentration of people and jobs can facilitate the spread of tacit knowledge, which can in turn foster knowledge spillover and exchange between firms. The authors highlight the importance of knowledge spillovers in explaining the clustering of innovation activity in places such as Silicon Valley. They also emphasize the natural advantage that local universities and institutions provide towards fostering innovation. The relevance of this theory to Rotterdam will be evaluated in the discussion portion of this study.

## Chapter 2: Research Design and Findings

### Methodology

This research incorporates semi-structured interviews with relevant urban planning and water sector professionals from both the Netherlands and the United States. The interviews aimed to elicit experts' views on the success on Rotterdam's water-related planning initiatives and the creation and dissemination of a Rotterdam brand. Questions were selected based on the aforementioned literature and theory. Interview subjects from the Netherlands consisted of planners working domestically or internationally in the field of waterfront and water-management planning, employees working for the City of Rotterdam on climate adaptation or resilience-building measures, and federal employees involved in Dutch international water policy programming and implementation. The interview subjects from the United States were planning professionals that have previously worked or are currently working with Dutch planners on waterfront planning initiatives in the United States, specifically in New York City and New Orleans. Interviews with subjects from outside of the Netherlands and the United States were not conducted due to time constraints.

A total of 12 subjects were interviewed. Ten of the subjects were Dutch and two were from the United States. All but two interviews were conducted in person. Those not conducted in person were held over Skype. Interviews were facilitated using a questionnaire to steer the overall interview process. The questionnaires contained a brief background section that elicited information on the subjects' academic and professional backgrounds, as well as the number of years of experience they have in their field. On the questionnaire were five statements to which subjects could respond along a scale ranging from *strongly disagree* to *strongly agree*. They were then given the opportunity to elaborate on their reply following each statement response.

Dutch professionals received one questionnaire, Americans another (see Appendix A, B respectively). All interviews were in English and ranged in duration between half an hour to over one hour.

Interviews with Dutch subjects focused on each subject's professional background, perception of growth and change in the waterfront planning field, perception of the field's contribution to the local economy in Rotterdam, and perception of the success of Rotterdam's international branding and planning practices abroad. Questions for American subjects focused on their perceptions of Dutch waterfront planning expertise, their expectations for partnering with Dutch planners and whether they had been met, whether they believed Dutch firms were benefitting from international partnerships, and whether they would seek out partnerships with Dutch planners in the future.

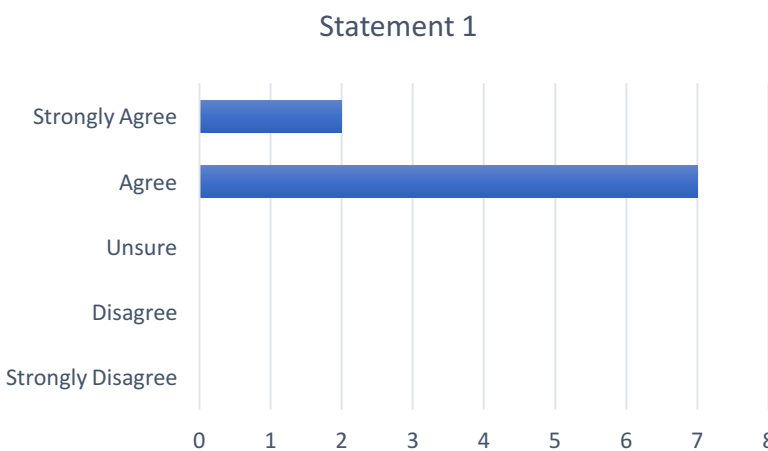
Interview content analysis was conducted by comparing the frequency of responses along the agree-disagree scale for each question, across all interviews. As the interviews were semi-structured and the comments section facilitated free response, some topics were discussed that did not directly relate or respond to the questionnaire. These nevertheless provided information that was useful for the purposes of the research. It was therefore also necessary to identify recurring themes and patterns in subjects' free responses during the analysis process. Dutch responses and American responses were analyzed separately. Frequency of response occurrence across the agree-disagree scale is indicated per question, followed by an overview of recurring themes discussed in the free response portion of each question.

## Findings

Frequency of responses per question are indicated below. In cases where a subject has responded with two answers (e.g. not sure/agree or agree/strongly agree), each answer is counted as one half. Due to a lack of any identifiable trends, information on each subject’s professional and academic background and years of experience in the field have not been included below.

### Dutch Subjects

*Statement 1: The planning industry in Rotterdam has changed since my career began.*



Subjects tended to agree with this statement, though expressed confusion on the use of the word *industry*, preferring the terms *field* or *practice*. The recurring themes in planners’ assessments of the changing nature of planning in Rotterdam included perspectives that the city has taken an increasingly integrated approach to urban planning, that there has been a rise to prominence of private development, and that the need to address climate change and create a resilient city is now being addressed. They frequently discussed changes within the city of Rotterdam itself in their responses.

“Urban planning has become more and more integrated with other sectors... First urban planning was quite a separate sector, and then we added climate change to it” explained Chantal

Oudkerk Pool, former planner for the City of Rotterdam and current Head of Adaptation Planning under C40. “Content-wise it’s become more integrated, more holistic” (personal communication, February 20, 2017). “It’s all coincidence from certain issues coming together” stated Andre van Ommeren, Program Manager at the Inter-ministerial Water Cluster<sup>3</sup> (IWC) in The Hague. According to van Ommeren, Rotterdam has always been known for its harbor, but changes in the harbor’s management reflect broader changes in the city’s approach to water management, which he attributes to the Dutch integrated approach towards water problems. He credits this approach as having helped the city become more liveable and resilient (personal communication, February 21, 2017).

The relocation of harbor activities further towards the sea loomed large in planners’ perceptions of changes both in the planning practice and the city’s urban fabric. “A lot of harbor business on the inside [of the city] has moved out, and the inner city has been reclaimed for other types of working and for living. These warehouses have been transformed” said Maarten Gischler, Senior Water Adviser at the Ministry of Foreign Affairs (personal communication, February 22, 2017). Such a transformation in the real estate market and relocation of the port may also reflect the city’s attempts to attract more highly educated, higher income groups, suggested Oudkerk Pool. “The focus of the current urban planning or urban development here in Rotterdam is to have a more balanced population, so that means build more for middle income and higher income groups” she said (personal communication, February 20, 2017). Piet Dircke, too, reflected on these changes:

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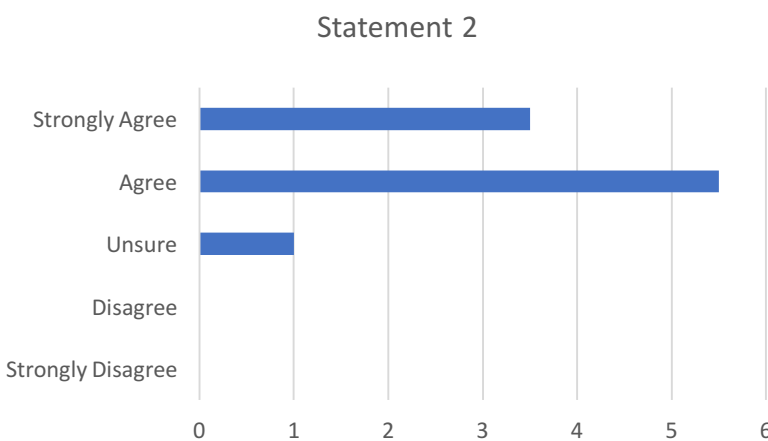
<sup>3</sup> The Inter-ministerial Water Cluster is a confluence of representatives from the Dutch Ministries of Infrastructure and the Environment, Foreign Affairs, and Economic Affairs.



Ten years ago Rotterdam was a no-go area. It was a risky city with high unemployment. The city had a low feel of self-pride. And that changed... There is a revitalization of Rotterdam. Rotterdam is fancy. It is cool. It scores high in the Lonely Planet guides and rankings. It is a tourist destination. (personal communication, February 22, 2017)

Peter van Veelen, urban planner and researcher at Delft University of Technology and former planner for the City of Rotterdam, also indicated that the focus of the field changed dramatically. He viewed the change as a shift from a top-down government-led approach to a more bottom-up system with higher stakeholder engagement—a move towards “strengthening the existing city” rather than expanding outwards (personal communication, February 21, 2017). The responses indicate a cumulative consensus that the approach to planning in Rotterdam has changed in terms of integration with other fields as well as through a general reimagining of Rotterdam’s image as a port city.

*Statement 2: The waterfront planning industry has contributed to growth of Rotterdam’s economy.*



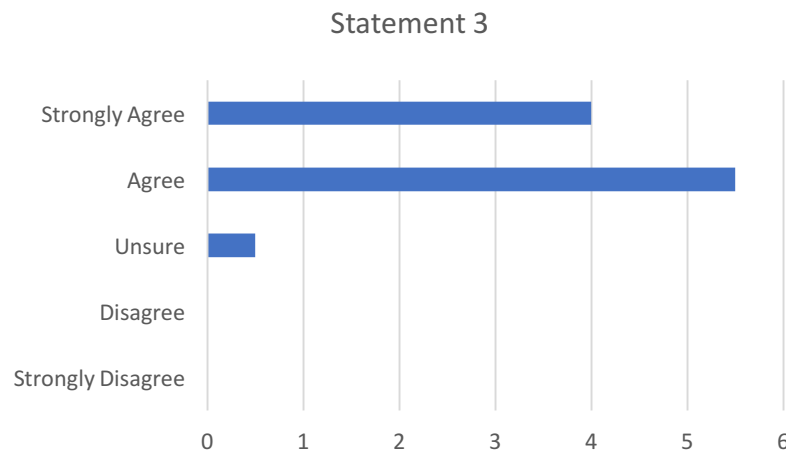
Responses to this statement were similar to and consistent with responses to Statement 1. Recurring themes in subjects' responses included the value-adding and revitalizing aspect of waterfront planning, Rotterdam's intent to attract investment and wealth, but also the unidentifiable direct impact of the field of waterfront planning to the local economy.

"The idea of redeveloping former port areas for residential uses has really played a major role in the redevelopment and revitalization of the city of Rotterdam" said van Veelen (personal communication, February 21, 2017). Oudkerk Pool, too, described the value-adding aspect of water to residential areas in the Netherlands. She spoke of how development along Rotterdam's waterfront contributed to the local economy, particularly by providing housing that attracts high-income groups. "It really does change the demographics, having areas like these," she said (personal communication, February 20, 2017). Arnoud Molenaar, Chief Resilience Officer for the City of Rotterdam, had a more conservative viewpoint on value-adding with waterfront planning. "If you do not invest in it, in a moment of time there will be companies that say because of sea level rise, rainfall, and climate change, we better grab our bags and leave," he said (personal communication, February 24, 2017).

As far as the measurable economic impact that waterfront planners have had in Rotterdam, subjects were uncertain. "The influence on the real economy is something which has to be proven in the coming years" stated van Ommeren (personal communication, February 21, 2017). Roel Martens, point person for international water development the Dutch Ministry of Foreign Affairs, agreed. "These [planners] work far too hard for too little money. It's exciting and attractive...but it's not a very big industry" (personal communication, February 21, 2017). Maarten Gischler also seemed skeptical of the direct impact of waterfront planning on Rotterdam's economy. He indicated that compared to the petrochemical industry, an enormous

contributor to the economy, the economic contributions of the planning industry are probably negligible (personal communication, February 22, 2017).

*Statement 3: Planners from Rotterdam are uniquely equipped to consult international cities on flood resilience and adaptation planning.*



Responses to this statement represented a general consensus among interview subjects that Rotterdam’s planners have experience implementing innovative planning measures not seen elsewhere, and that this makes them uniquely qualified to consult other cities. Some subjects were cautious to identify Rotterdam’s planners as having a separate, unique skillset, preferring to describe their planning expertise as comparable to that of Dutch planners as a whole. Several subjects also emphasized the Dutch cultural heritage of managing water as an essential component of what makes Dutch planners’ skillsets unique. “We are all raised with the fact that we have to manage water. It’s something that is taught to us from kindergarten on,” answered one subject<sup>4</sup> (personal communication, February 20, 2017). “The water type of planning and

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<sup>4</sup> Due to the professional subject matter and the candid nature of the interviews, subjects were given the option for anonymity in their responses. Subjects not identified by name have chosen to remain anonymous.

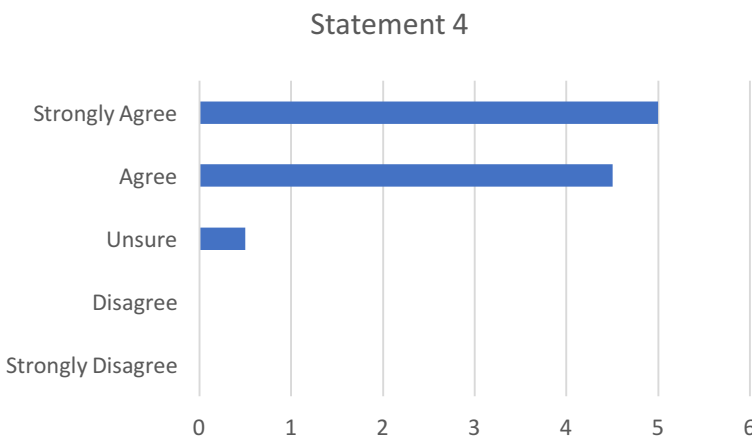
development is never just the burden of the city,” explained Henk Ovink, Principal at Rebuild by Design and Special Envoy for International Water Affairs for the Netherlands. “The Netherlands grew by collaboration” (personal communication, February 20, 2017). Chantal Oudkerk Pool expressed similar views. “We’re definitely not the only ones,” she said, “but we are one of the first cities to incorporate this into our urban planning” (personal communication, February 20, 2017). Some respondents referred to Rotterdam’s design heritage as evidence supporting their response. “The [planners] who have worked in Rotterdam...have specific experiences related to the questions that delta cities are facing” said Arnoud Molenaar. “If you look at our city we have a huge amount of design companies” (personal communication, February 24, 2017). Maarten Gischler shared a similar point of view:

I think there are a lot of top planning firms based in Rotterdam because it’s a dynamic city. More dynamic than Amsterdam, because [Amsterdam] tries to preserve history, whereas Rotterdam’s history was wiped out to a large extent. So there was much more freedom there. Are they uniquely equipped? Maybe they are. And maybe Dutch planners are. (personal communication, February 22, 2017)

A couple of respondents were more hesitant to trumpet the expertise of Rotterdam or Dutch planners. One of these was Peter van Veelen, who admitted to thinking that Dutch planners could benefit from being “a bit more humble”. “We have a very strong tradition of flood prevention,” he acknowledged, but continued by explaining that because the Netherlands hasn’t had a major flood event since 1953, they have “lost knowledge and awareness of flooding and potential risk of it,” mentioning that they don’t have a proper disaster plan in place. He concluded that the United States would likely serve as a better model for resilient communities (personal communication, February 21, 2017). One subject expressed skepticism about the applicability of Rotterdam’s model of flood

adaptation elsewhere. “Watersquares don’t mean anything and won’t mean anything in New York, or Miami, or Boston,” where solutions at a larger scale are needed (personal communication, March 1, 2017).

*Statement 4: The Dutch waterfront planning brand has driven international planning partnerships.*



This statement elicited more *strongly agree* responses than any of the others. Recurring themes among responses indicate that Rotterdam’s brand as a leader in climate change adaptation planning and flood management is being actively cultivated and leveraged to create strategic partnerships internationally. Again, however, some subjects emphasized the modest or immeasurable economic gains the brand has produced for the city of Rotterdam.

“I think every city in the Netherlands, or around the world, is looking for an identity. And I think this one really suits us well,” said Oudkerk Pool (personal communication, February 20, 2017). Twenty years ago, Rotterdam had a different image. It was a working city, said another interview subject. The image has changed because of new architecture, but also because of the way Rotterdam has evolved to be a living laboratory. “Delegations go to other cities to see what they’re planning to do in the next 100 years on Powerpoints,” whereas in Rotterdam they “walk

the streets and see what we've been trying out," the subject explained, claiming that the international recognition Rotterdam receives generates profit for the city (personal communication, February 20, 2017). Arnoud Molenaar also acknowledged the Rotterdam brand's ability to influence and grow partnerships. "We see it as a unique selling point to the city," he said. "We are developing knowledge, and this is translated into visions and strategies, and we are implementing these. This is what is attracting other cities and countries" (personal communication, February 24, 2017).

This international interest in Rotterdam did not come about on its own, Peter van Veelen explained. The Dutch planning industry has been pushed by the Ministries of Economic Affairs and Foreign Affairs (personal communication, February 21, 2017). There is a two-way process, elaborated Roel Martens. "The waterfront brand has profited from the international planning partnerships," and the Dutch government also has a "huge budget for international activities" (personal communication, February 21, 2017). These activities are meant to provide an opening for Dutch planning firms to work internationally. According to van Ommeren, the aim of the International Water Ambition<sup>5</sup> includes sharing the Dutch integrated vision and knowledge of water management with international cities while simultaneously helping the Dutch water sector to earn more contracts so their private sector may benefit (personal communication, February 21, 2017). Working internationally in theory should generate further opportunities abroad. If Dutch planners have gone to the United States, reasoned Maarten Gischler, they can put this work experience on their CVs, which may help them earn work in other countries as well (personal communication, February 22, 2017).

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<sup>5</sup> The International Water Ambition is supported and reinforced by the Special Envoy for International Water Affairs, a position that Henk Ovink currently holds.

The distinction between Rotterdam and Amsterdam's unique characteristics also emerged as a theme among responses. Differentiating between the two cities' approaches to planning has proven important for planners working in Rotterdam, especially as they consider how their city is perceived internationally. "I can imagine it's kind of confusing internationally, because we think it's very important that Rotterdam is associated with adaptation and not Amsterdam" said one planner (personal communication, February 20, 2017). Van Veelen, too, expressed a similar sentiment on Rotterdam's competitiveness with Amsterdam:

A couple of years ago Amsterdam also started focusing on climate change adaptation, and there was a discussion going on in Rotterdam; 'Okay, you already have everything. The Van Gogh museums, the canals, and the tourists. Leave this topic to Rotterdam, it's ours!' (personal communication, February 21, 2017)

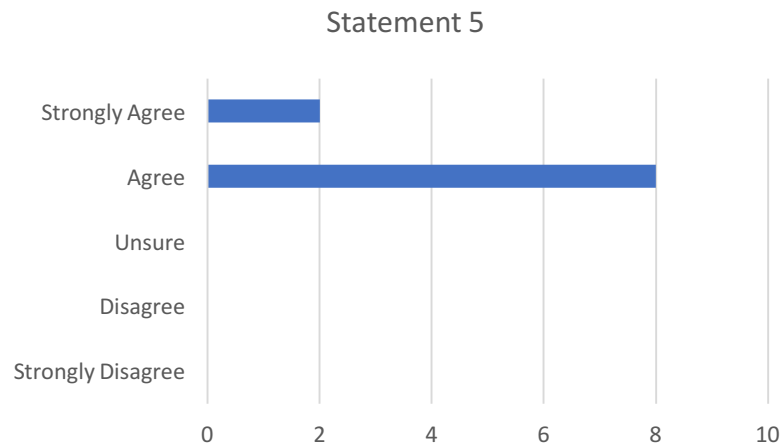
Piet Dircke explained that the two cities are competitive, but not comparable:

I think Rotterdam can score even higher if they manage to become the speaking voice for the whole Dutch [water] sector...Amsterdam and Rotterdam are the deal breakers here. Rotterdam is a labor city. It's an old port. Amsterdam has all the shiny things. So that makes it hard. The Dutch are making a big mistake by separating between local initiatives. We don't have our forces together... We don't speak with one tongue when we go outside the country. (personal communication, February 22, 2017)

This ambiguity over which city has the right to claim the climate adaptation brand is possibly derived from the collaborative Dutch culture, which does not foster competitiveness and winning.

“It’s not so much competition that drives us,” explained Henk Ovink. “In a sense this is not about don’t excel. It’s do excel, but don’t brag about it” (personal communication, February 20, 2017).

*Statement 5: International planning partnerships benefit the city of Rotterdam.*



Among responses to this statement was a certain consensus that Rotterdam is having difficulty capitalizing on its planning expertise, but that it gains from its international recognition in indirect ways, including by benefitting from knowledge exchange partnerships and attracting outside investment to the city.

“It’s not a huge industry, but we are creating economic spinoff” said Molenaar. “Mainly [partnerships are] helping Rotterdam in its brand to be an innovative delta city.” However, he acknowledged, considering Rotterdam’s brand and the participation of the Dutch water sector internationally, it should have shown more economic growth than it has actually experienced (personal communication, February 24, 2017). “Knowledge is hard to sell,” explained another subject. “There’s not a product, even though selling the process would go a long way” (personal communication, March 1, 2017). Part of the difficulty that Dutch planning firms have faced in



gaining financially from their expertise in the United States is the restrictive Jones Act.<sup>6</sup> According to André van Ommeren, it is not easy for the private Dutch sector to have access to the American market. Some companies that have found success in the American market, including Arcadis, are Dutch firms with branches in the United States. “They have to do that otherwise they will not get any contracts,” he explains, “because Americans do not want to deal with the Dutch. They want to deal with the Americans who’ll make use of the Dutch” (personal communication, February 21, 2017). The experience is similar in Asia, where once Dutch planners create a strategy, Dutch firms are not hired to execute the project. “It’s much cheaper just to hire Chinese or Korean dredgers or builders than just to hire Dutch,” says van Veelen. “The Dutch proposition should change, in my view, from focusing on the actual work...towards consultations, advice, and strategy building” (personal communication, February 21, 2017).

Instead of focusing on international partnerships, Rotterdam’s planners expressed hope that the city will be able to benefit economically by attracting outside firms, organizations, and individuals to collaborate and work in the city, enhancing its innovative atmosphere and international reputation. Part of the incentive for firms to relocate to Rotterdam is to take advantage of the Rotterdam brand. According to van Veelen, this is already happening. “Some of the Dutch firms that were working on climate change adaptation decided to open an office here in Rotterdam so they could use the name Rotterdam as well in their brand,” he explained (personal communication, February 21, 2017). Further incentive is to partake in knowledge exchange. Research institutions may find it beneficial to locate in Rotterdam, which regularly

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<sup>6</sup> The Jones Act, passed in 1920, stipulates that a vessel may not provide any part of the transportation of merchandise by water, or by land and water, between points in the United States to which coastwise laws apply unless the vessel is US built, owned, and registered. Additionally, at least 75 percent of the crew must be citizens of the United States (Transportation Institute, n.d.).

hosts international adaptation conferences, will soon host a C40 Adaptation Academy, and hopes to be the home of the Global Center of Excellence on Climate Adaptation<sup>7</sup> (Chantal Oudkerk Pool, personal communication, February 20, 2017). Piet Dircke likened the notion to a “Silicon Valley kind of idea for water” (personal communication, February 22, 2017).

The city may benefit from attracting outside organizations by positioning itself as an innovation center, but it also may attract companies that have been displaced from other, more flood-vulnerable locations. If London or Hamburg flooded, according to Maarten Gischler, people in Rotterdam would say “Hey, we’re ahead of the curve in climate adaptation so base your headquarters here” (personal communication, February 22, 2017). Piet Dircke agrees:

Why not attract firms that say ‘Hey, this is the safest delta in the world? That’s interesting because I’m Google, I’m Microsoft, I want to build my data centers, but it’s best in a place that is not going to be flooded.’ It can help the internal business model to grow, and that is one of the things that Rotterdam wants. (personal communication, February 22, 2017)

A final benefit that Rotterdam accrues from its international partnerships is access to the knowledge bases of other cities. According to one planner, cities are “finding each other more and more,” and they can work together according to their unique specialties “apart from what is happening on the national level” of the countries’ politics (personal communication, February 20, 2017). “We learn from other cities,” explained Oudkerk Pool. “The first couple of years we were mainly sort of sharing knowledge, not getting much out of it...but a lot of cities are

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<sup>7</sup> The Global Center of Excellence on Climate Adaptation is a UN Environment establishment intending to aid countries, institutions, and businesses in adapting to a warming climate. The Center will be located in the Netherlands (“New Global Centre of Excellence on Climate Adaptation”, 2017).

speeding up and have done research themselves” she said. “We are definitely learning from cities like London, Copenhagen, and Melbourne” (personal communication, February 21, 2017).

### *Intercity Competition: Rotterdam and Copenhagen*

While no question explicitly addressed the rise to prominence of Copenhagen’s flood resilience and climate adaptation planning, the Danish city’s international profile was a recurring topic among Dutch subjects. After a massive cloudburst several years ago caused over one billion euro in damage, Copenhagen has amassed a large amount of funding to move quickly towards becoming flood resilient. According to Oudkerk Pool, Copenhagen has caught up with Rotterdam in terms of climate adaptation strategies (personal communication, February 20, 2017). Piet Dircke indicated that the Danes are competing with the Dutch, who are still not unified on their own resilience and climate adaptation branding:

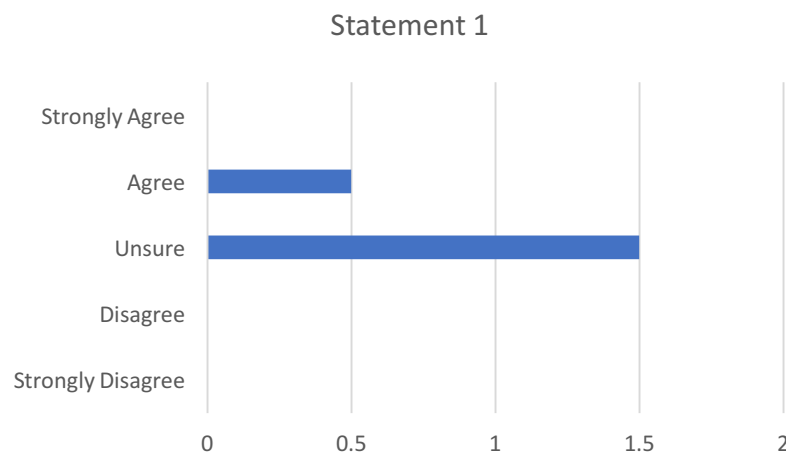
The countries are the same size, they both have the same kind of business model that means there’s a small local market and a lot of export, they both speak the languages very well, have a long history, and have a story to tell. The Dutch have this story about battling the sea and living below sea level, while the Danish have this story of being very sustainable. They have been leading the world with adaptation conferences. The EU Environment minister was a Danish lady, so they have this reputation for a sustainable way of dealing with water where the Dutch are the defenders. I don’t know how that will work out. (personal communication, February 22, 2017)

Arnoud Molenaar took a more collaborative stance. “Of course you could see Rotterdam and Copenhagen as two competitors, but the demand for knowledge is huge. I see Copenhagen more

as a partner” he said (personal communication, February 24, 2017). The amount of funding each city has for its respective adaptation measures also makes a difference. Copenhagen has “a huge amount of money” to adapt post-disaster, but Rotterdam does not have the same financial situation, he pointed out. However, in terms of the strategies the two cities have produced and the adaptation measures they are taking, he indicated that the two cities are equal (personal communication, February 24, 2017).

### American Subjects

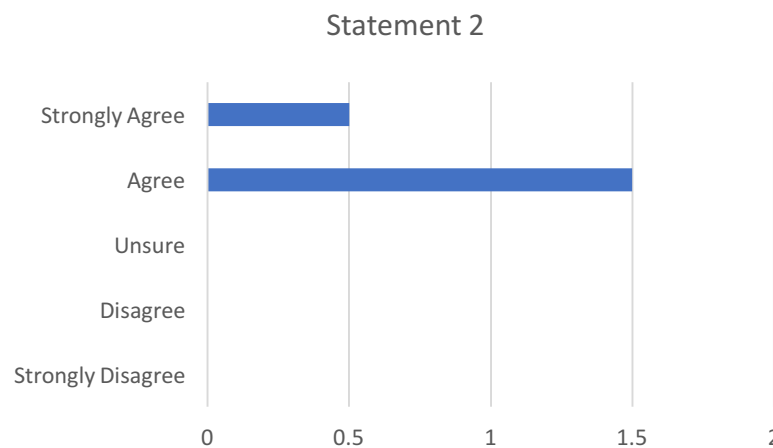
*Statement 1: Rotterdam is the world’s foremost city in flood resilience planning expertise.*



Subjects were not able to definitively state that Rotterdam is the world’s foremost city in flood resilience planning expertise. David Waggoner, a New Orleans-based planner actively involved in post-Katrina adaptation planning efforts, indicated that it’s a great example, but that it hasn’t been tested by storms. “I’m not sure resilience really is a condition that can exist outside of these clashes and conflicts,” he stated (personal communication, February 28, 2017). He furthermore pointed to the unique political and economic systems of the Netherlands, which are supportive of “doing smart things,” whereas most other places “you have to overcome a lot of

ignorance” (personal communication, February 28, 2017). “I think there are many lessons to be learned and useful frameworks” in Rotterdam, stated Carter Craft, New York City-based planner and Senior Economic Officer at the Consulate General of the Netherlands in New York. The geography of Rotterdam makes these lessons less widely applicable, however. “I think the geography is so different that the whole set of [planning] solutions can only be applied to a place that has the same geography” he said (Carter Craft, personal communication, February 28, 2017).

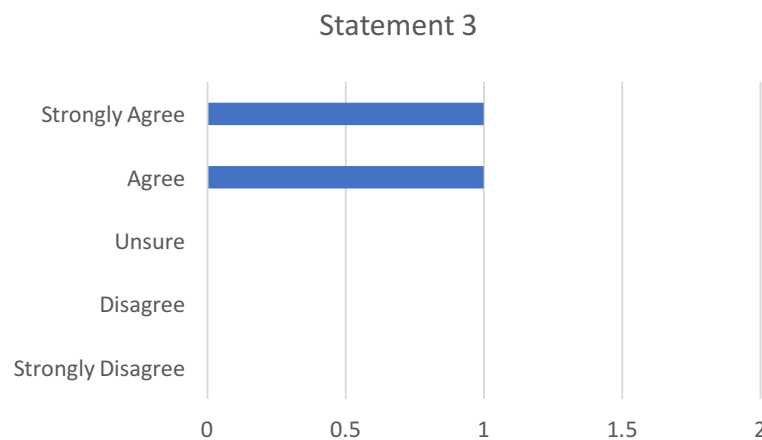
*Statement 2: Planners from Rotterdam are uniquely equipped to consult [city] on flood resilience and adaptation planning.*



Both subjects referred to the proactive planning culture of the Netherlands and the Dutch connection to natural systems in their response. In New York, said Craft, the port is an institution the city needs but doesn’t talk about very much—like something that’s “somewhere between our liver and our kidneys” (personal communication, February 28, 2017). Rotterdam celebrates its port and its role as a transportation hub, and invests more holistically in its transportation systems. “The real story over there [in the Netherlands] is that they are stewards of the land and water’s relationship to the land, not just water experts” he concluded (personal communication,

February 28, 2017). Waggoner agreed that Rotterdam is uniquely equipped to consult New Orleans because it is among the first cities to formulate an agenda around building resilience. The Rotterdam model of living with water reflects a deep connection to natural systems within the city, despite its industrial heritage. This culture is nowhere present in New Orleans, he stated, which shunts its water underground (personal communication, February 28, 2017).

*Statement 3: Working/partnering with Dutch planners has met my expectations.*



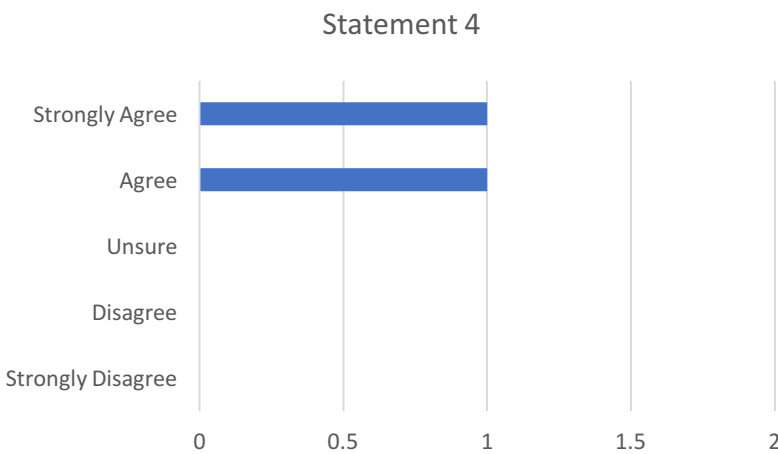
Both subjects found that working with Dutch planners on projects in the United States met their expectations. Craft had high hopes for his partnership with Dutch planners:

I expected and hoped it would be a more interdisciplinary design strategy than just the engineering-driven design strategy. My expectation was that there was more interest and political will for genuine long-term planning, not just short-term value creation. (personal communication, February 28, 2017)

Craft further expressed that partnering with Dutch planners helped him to expand his appreciation for a more integrated, “whole project lifecycle” approach to planning (personal communication, February 28, 2017).

While Waggonner’s expectations were met, he expressed reservations about their ability to work across cultures. “When it comes down to implementation they don’t understand what’s so difficult [in the United States]... The fact is that the Dutch may have some arrogance, but it can be mitigated” he said (personal communication, February 28, 2017). One of the challenges Rotterdam planners encounter in New Orleans is their own lack of awareness of social issues. “I’m not sure the Dutch are fully aware of the scars of the past,” he said. “There’s a blindspot there. They don’t see the problems of the past quite the same way we have to experience them when we’re closer to the poverty” (personal communication, February 28, 2017).

*Statement 4: Planners from Rotterdam, or the organization(s) they represent, gain from partnerships with [city].*



The subjects indicated that Dutch planners benefit from working internationally, though did not indicate that this benefit was financial. Benefits Rotterdam planners may instead experience include the opportunity to increase the international profile of the Rotterdam or Dutch brand, to accrue experience working with different cultures and business methods, and a chance to gain perspective on the relative ease with which planning occurs in the Netherlands. “I think

on a practical level it enhances anyone's or any organization's brand to be active internationally," said Craft. "It shows that you're sought-after, even if you're not being paid for it" (personal communication, February 28, 2017). They have also learned about the tools and business culture in the United States, which is quite different from the Netherlands. "Over there there's an emphasis on the formal, and over here the informal interactions... are at least as important as the formal ones," he said. "It's all the informal interactions outside the office that really feed and strengthen business relationships over here" (personal communication, February 28, 2017). The Dutch collaborative model doesn't work as well in the United States, he added, due to the US's rigid procurement process and siloed approach to planning (personal communication, February 28, 2017).

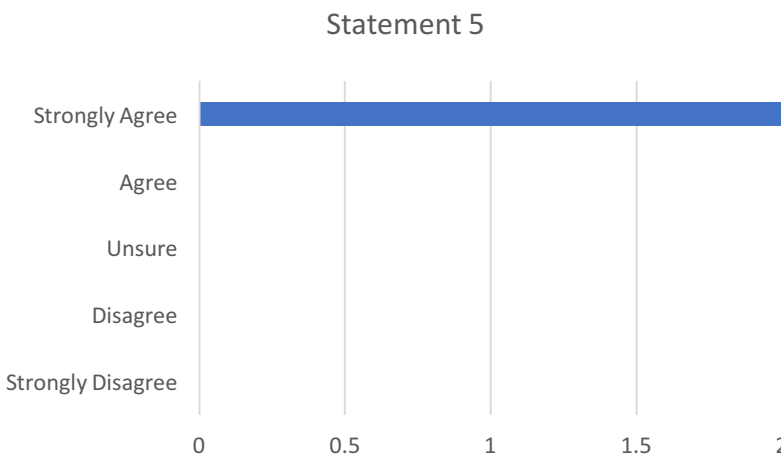
The Dutch planners that participated in Rebuild by Design learned these political lessons the hard way, according to David Waggoner. "Some of them thought they were going to be heroes," he said. "And they were not treated well. They didn't play the game well... This is where their lack of political savvy showed up" (personal communication, February 28, 2017). Rebuild by Design was not paid for by foundations, but by the participating design firms. On Dutch planners' participation in the competition, Waggoner said "they really thought that their system was superior and would triumph. And because they were declared, in some cases, winners, it meant that they were the winners. The winner was the place" (personal communication, February 28, 2017). To a certain extent, he said, the Dutch were used, but they were complicit; it was their choice to participate (personal communication, February 28, 2017). "We all learn from experience, whether we want to or not," said Carter Craft. "For some people international forays can be costly distractions and for some people... [they] can actually lead to success and results" (personal communication, February 28, 2017). International project



partnerships have also provided Dutch planners with perspective on their own domestic planning success. According to Waggonner:

They have come to appreciate that their problem is a more solvable problem than a lot of the problems elsewhere. Bangladesh is much more difficult to solve. Jakarta is much more difficult to solve. New Orleans, much more difficult to solve. Miami, much more difficult to solve. So I think that they've gotten an appreciation of their relative condition, their small size, their moderate problems, their great wealth. (personal communication, February 28, 2017)

*Statement 5: I would hire planners from Rotterdam for future waterfront projects.*



Both subjects strongly agreed with this statement. “Over there, there’s a feeling that co-benefits are the benefits... Spatial awareness is something that they have way better than we do” said Craft. “They have cultural, government, and private sector experiences on so many different scales” (personal communication, February 28, 2017). Waggonner believes the Dutch make good partners. “I like the competitiveness of Rotterdam,” he said. “That’s why the city is so inspirational. It’s looking to make things happen” (personal communication, February 28, 2017).

Waggonner also addressed the perception that inter-city competition between Rotterdam and Copenhagen was growing. He found the fact that the Danes might challenge the strength of Rotterdam's brand irrelevant:

The Danes have resources and they're putting them [into adaptation planning]. They had their flood, and now they have their cloudburst planning...They have these resources and this really simple, unified class and race. It's more complicated than that. The world doesn't work that way, especially in America. I think Rotterdam looking at Copenhagen would be looking the wrong direction. I think Rotterdam's inherent strength is that it has diversity. (personal communication, February 28, 2017)

## Chapter 3: Discussion and Conclusion

### Discussion

When considered in conjunction with the aforementioned literature and theory of city branding, inter-city competition, and innovation in agglomeration economies, the results of the interviews cumulatively suggest that Rotterdam has indeed succeeded in establishing a brand related to its waterfront planning and climate change adaptation efforts. This corroborates the country of origin and product-place co-branding effects described by Pike (2013) and Kavartzis and Ashworth (2005), respectively. However, the findings do not indicate that Rotterdam has benefitted from its rise to international prominence directly or in any measurable way. Contrary to the water sector's growth as reflected in the 2005-2015 WEX report, which suggested that the economic contributions of the water-related planning sector may be making measurable and increasing contributions to the Dutch economy, interviewed subjects—both Dutch and American—did not identify a single direct, measurable way in which the Netherlands's international waterfront planning partnerships benefit the City of Rotterdam. Instead, subjects tended to identify any benefits the city has accrued from its international planning partnerships in terms of economic spinoff, or indirect benefits. Possible explanations and implications for the planning industry's inability to successfully commodify its expertise on the international market are discussed below.

### Dutch Collaboration Culture

As mentioned by Henk Ovink, the Dutch culture is not a competitive one, but instead values collaboration and partnership (personal communication, February 20, 2017). Dutch planners reflect these principals in their engagement with other cities through organizations such

as C40's Connecting Delta Cities and 100RC, as well as the establishment of the Dutch Dialogues in New Orleans. Since Hurricane Katrina struck New Orleans in 2005, the international presence of the Dutch as advisors to cities facing flood risk has indeed heightened, but in each case the presence of Dutch waterfront planners reflects more accurately upon Dutch institutional will to share knowledge and build diplomatic relationships than will to economically benefit from an opportunistic partnership. International planning partnerships formed after Katrina may have grown, and indeed been fed, by this perceived goodwill from the Dutch. Perhaps it is the Dutch planners' largely uncompensated role in New Orleans, as well as in previous, small development-aid projects, that set a standard for the international partnerships that followed. Their collaborative approach to mitigating flood risk in these cities might strengthen the appeal of their brand, but not the benefit, for why should cities pay Dutch planners to advise them on flood adaptation strategies if payment is not customary, or if the Dutch government is paying them instead for their international service? In this case, the Dutch culture of collaboration may be considered both a blessing and a curse. Should Dutch planners or institutions attempt to change their partnership model and attempt to capitalize upon their expertise, they may suddenly experience a significant devaluation of their brand. This devaluation may threaten the visibility of Rotterdam's position as a leader in climate adaptation planning as other international cities begin to strengthen their own approaches to flood adaptation and share their knowledge on the international stage.

### Intercity Competition

The largely untapped economic market for urban resilience-building and climate change adaptation expertise has created an opportunity for cities such as Copenhagen to emerge as

competitors to Rotterdam. While planners like Arnoud Molenaar may identify Copenhagen's competitiveness as less of a threat to Rotterdam and more as an opportunity for partnership—there are, after all, multitudes of cities facing flood risk—their presence may challenge Rotterdam to seek new avenues to distinguish itself as more than a leader in climate change and flood adaptation planning. Such an issue is identified in the inter-city competition and branding literature by Barke (1999), who describes how in an effort to market themselves as distinct and different, the “means [cities use] of communicating that message and the physical entity that is the subject of such communication demonstrate a high degree of convergence” (p. 490). This suggests that paradoxically, the more Rotterdam may try to distinguish itself from its competitors, the more it may resemble them. The process of creating a city brand necessitates the distillation of certain aspects of the urban culture and glazes over the smaller idiosyncrasies that may make a city like Rotterdam unique, interesting, or appealing.

Rotterdam's brand is challenged by its more immediate neighbors in the Netherlands as well. As some Dutch subjects suggested, Rotterdam planners' skillset is not unique to them—it's an artifact of Dutch culture. Planners with the same set of skills may be found in other Dutch cities including Amsterdam. The challenge several interview subjects identified is establishing a national consensus of how Dutch cities should present themselves internationally. As van Veelen suggested, if Amsterdam already has an international reputation as the beautiful, touristy city, perhaps by additionally being branded as a leading city in climate adaptation planning it would detract from Rotterdam's position more than it would benefit that of Amsterdam. As Chenatony and Riley mention in their discussion of the important elements of service branding, internal communication is important for establishing consensus among employees—or in this case, city agencies—about how to communicate to consumers in order to maintain the brand's reputation for

service. Applied to Rotterdam and Amsterdam, this suggests enhancing communication channels between city agencies to distinguish and solidify each city's unique approach to service branding.

### The Rotterdam Model Applied Internationally

Dutch planners encounter further challenges when attempting to apply their skillset in international contexts. Despite their positive views on Rotterdam as a planning model and Rotterdam's planners as partners, both American interview subjects expressed reservations about Dutch planners' ability to implement plans in international contexts. As Carter Craft described, Rotterdam's geography is unique and hardly comparable with much of the geography of New York City (personal communication, February 28, 2017). Perhaps more importantly, as both Craft and Waggoner discussed, the flood adaptation planning process in the Netherlands is decidedly different from any planning process in the United States (personal communication, February 28, 2017). Planning in cities as complex as New Orleans and New York requires an approach that may be unfamiliar to Dutch planners, who are used to planning with an integrative approach and are not accustomed to working across silos. Waggoner also discusses the cultural sensitivities that the Dutch may not be attuned, but which must be addressed during the planning process (personal communication, February 28, 2017). These issues are also identified in the literature on Dutch planning expertise by Zevenbergen et. al (2012), who see a need for the Dutch adaptation planning process to accommodate the nuances and social structures of each international partner, some of which would necessitate a customized planning approach. A possible solution to this issue would be broadening avenues of knowledge exchange between Dutch planners and their partners so that tacit knowledge about adaptation strategies can grow and evolve to fit the respective geo-political contexts where it is needed.

According to interview responses from both Dutch and American planners, it is in attempting to apply the Dutch planning model in an American socio-political context that planners encounter institutional barriers that ultimately prohibit the successful export of Dutch expertise to the United States. A combination of factors including but not limited to the fragmentation of institutional authority, unfamiliarity with business culture and customs, and policy barriers such as the Jones Act have repeatedly hampered Dutch firms from gaining economically from their involvement in flood adaptation planning projects in the United States. While the Netherlands-based engineering firm Arcadis would seem to demonstrate otherwise with its large-scale success in winning contracts in the United States and across the globe, the company's extensive North American presence enables it to overcome these barriers while also benefitting from the broader Dutch water sector brand. The challenges Dutch planners and firms may find working in countries other than the United States differ, and include competition with firms from countries that have cheaper labor sources (Peter van Veelen, personal communication, February 21, 2017). Because the research methodology did not include interviews with planners representing other countries, further speculation on the obstacles Dutch planners face in capitalizing on foreign markets outside of the United States is beyond the scope of this study. However, it is due to the aforementioned challenges to implementing flood adaptation plans in foreign countries that van Veelen suggested a revision to the approach Dutch planners and firms take towards the export of water sector expertise, from one focused on full life-cycle project implementation to assuming an advisory or consultancy role (personal communication, February 21, 2017).

If there is indeed Dutch political will to export water-related planning expertise in a way that benefits private firms in cities such as Rotterdam, there is a fundamental flaw in the

approach these planners, firms, and institutions are taking to do so. While the Dutch collaborative culture has been instrumental in the international development of a recognizable Rotterdam brand, the brand is not economically paying off. The collaborative approach that defines the involvement of Dutch planners abroad is not sustainable and borders on exploitative of the underpaid experts and firms involved. As van Ommeren and Waggoner indicated in their interviews, Dutch planners are being taken advantage of during their forays into the international flood adaptation planning partnerships. They are not blameless victims, however. They are as complicit as their foreign partners.

It is important to recall, however, that while Dutch subjects had limited knowledge of direct contributions the international flood adaptation planning partnerships were having on the City of Rotterdam, several identified indirect benefits of maintaining an international planning presence. As New York planner Carter Craft stated, the integrated Dutch planning approach includes the perspective that the planning co-benefits are the benefits (personal correspondence, February 28, 2017). Perhaps the co-benefits of international planning partnerships are what should be measured to determine whether the Dutch flood adaptation planning model is truly benefitting the city of Rotterdam, economically or otherwise.

#### The Co-Benefits of International Cooperation

There is consensus among Dutch interview subjects that the approach to planning in Rotterdam has evolved over the last several decades, and this evolution has resulted in development that has made Rotterdam a more attractive city to both visitors and residents. While Rotterdam may not unilaterally claim the title of leading city in climate adaptation planning, the measures the city has taken to secure its future as the threat of climate change-related flooding



grows are some of the most progressive among cities globally. The result of these planning measures is a new image for the city. Rotterdam's identity has evolved from a working-class, port city to a more economically diverse and progressive version of its previous self. This reinvigorated image, fundamental to the Rotterdam brand, has allowed Rotterdam to promote itself internationally as a showcase of climate adaptation strategies and establish partnerships with organizations including C40's Connecting Delta Cities and 100RC. As Oudkerk Pool mentioned, Rotterdam does gain from the knowledge exchanges these organizations facilitate (personal communication, February 20, 2017). While participating in these organizations and in international partnerships does not directly finance further economic development in Rotterdam, it has helped the city fashion an image as a center of learning, cooperation, and innovation. Focusing on developing this image further through continued investment in the city's knowledge institutions as well as on new development and placemaking strategies may prove a more lucrative and sustainable business model for Rotterdam and its planning firms in the future.

### Rotterdam as a Center of Innovation

As concluded by several Dutch interview subjects, attracting students, research organizations and outside firms may be the best method to ensure Rotterdam can maintain its global reputation for flood adaptation planning while benefitting economically from its expertise. In accordance with Carlino and Kerr's theories on agglomeration and innovation, the local presence of institutions and universities provides a natural advantage for innovation. Rotterdam can continue to foster the growth of water management and adaptation planning expertise by encouraging local institutional investment. Many of the elements which characteristically occur in urban innovation clusters, such as knowledge spillover and resource sharing, are already

present in Rotterdam. The city benefits from its proximity to universities such as Delft University of Technology. The establishment of the C40 Adaptation Academy, and possibly the UN's Global Center of Excellence on Climate Change Adaptation, will augment these benefits. The environment in Rotterdam is therefore ripe for the city to establish itself as a center of pedagogy and shared knowledge, which suits the Dutch collaborative culture better than planning firms' costly international forays and design competitions do.

Rotterdam has already experienced the co-benefits of its climate change adaptation and waterfront planning agenda. The city's approach to redevelopment in formerly industrial port areas has served the communities of Rotterdam by linking previously disconnected urban areas and creating more livable spaces. Continued investment within the city on adaptation measures will strengthen the Rotterdam brand. This investment may also signal to outside firms that Rotterdam is a sound place to open an office or to locate headquarters. Firms may be attracted by both the promise of climate security, the entrepreneurial environment, and the spillover from the knowledge-based economy that the city fosters. Some firms may relocate to participate in knowledge exchange and utilize Rotterdam's location-based brand to market themselves internationally. Attracting outside firms and research institutions may also enhance the economic diversity of the city, which is important component of building resilience and would further contribute to the vitality of the Rotterdam brand and the city itself.

### **Conclusion**

In an era of globalization and ease of exchange of knowledge, it is logical for cities to form partnerships and networks to facilitate the sharing of management strategies and techniques for adapting to contemporary demands and risks. Climate change presents a threat that magnifies the need for such exchanges, as no city is invulnerable to the consequences of a warming planet.

Cooperation between cities with experience in managing climate threats and those without is essential to safeguard the future of those cities most vulnerable to severe climatic events. Such exchanges can embody diplomacy and goodwill between cities. Nations with fewer financial resources and facing more dire risks may come to depend on the aid of foreign cities and countries that have the means and expertise to mitigate these challenges. It is therefore fortuitous that communication and knowledge exchange is now easier and more efficient than ever.

While the Netherlands is at risk from rising seas and cloudburst inundation, its history, culture, and infrastructure have equipped the country well to adapt to climate change. The City of Rotterdam is leading the country in adaptation planning, and in so doing is setting an example for the world. By participating in international partnerships and knowledge exchange networks, Rotterdam is disseminating its expertise to cities and countries facing similar risks but gaining little in return. These unbalanced exchanges are not economically sustainable for design and planning firms, the city, or the country to be financing. As a result, Rotterdam's international planning partnerships must be reconsidered.

Rotterdam's successful rebranding from an industrial port city to a symbol of climate resilience can serve as an example for other post-industrial cities globally. It is important, however, for cities that might follow Rotterdam's example by investing in marketing a unique expertise to establish better parameters for monetizing the success of their service brands. Monetizing a service that was previously low cost or free may have initial negative consequences, including a devaluation of the service brand. In order for cities to expend resources to continue providing expertise and knowledge in exchanges such as C40's Connecting Delta Cities and 100RC, they will need to have sustainable business models that allow them to continue to innovate and attract institutions and workers to participate in the local economy.

It is therefore prudent for Rotterdam's planning firms and institutions to rethink their international approach to disseminating expertise. As other cities innovate and adapt to climate change, the window of opportunity for Rotterdam to benefit economically by exporting planning expertise shrinks. While cities such as Copenhagen may not have the network of planning partnerships that Rotterdam has, its international presence is strong enough to gain the attention and business of cities facing flood risk. Rotterdam is still well-positioned to compete with the other cities on the market for climate adaptation planning, but this position is precarious. Instead of wasting time and resources competing internationally for contracts worth little, the city's leaders should instead cultivate the collaboration-based innovation economy that the Dutch culture seems predisposed towards.

The Silicon Valley model is a useful example of an innovation center that has benefitted from agglomeration economies, but Rotterdam's product is less tangible—expertise derived from explicit and tacit Dutch knowledge, owing to strong institutions and the pervasive cultural norm of living with water. If the city succeeds in marketing its brand of expertise in a way that attracts institutions and firms to Rotterdam, it may serve as an original model for a service-based innovation economy. Such action would not only enhance the sustainability of the Rotterdam business model; it would also ensure the ongoing cooperation and exchange of knowledge between Dutch water management experts and the rest of the world in an era where the need for knowledge of risk mitigation and climate adaptation strategies is unprecedented.

While not a generalizable case study, Rotterdam may serve as a model for other post-industrial, mid-sized cities seeking to create new identities and position themselves better to compete for political capital. Planners have been instrumental in the formation and dissemination of the Rotterdam brand. The changing role of the planner may signal a potential crisis of

conscience among the planning community, particularly for planners that see themselves as servants to local communities and may shy away from acting as brand ambassadors—or even tradeable commodities—on behalf of the cities they serve. It would be inaccurate to say, however, that planners participating in the international branding of cities do not also affect or enhance the lives of the communities therein—they do, yet less directly. Further research is needed to identify the implications of the planner’s role in intercity competition, branding, and knowledge economies on the trajectory and purpose of the planning profession.

Finally, this research serves as a reminder to the planning profession that none of the issues planners face can be dealt with in isolation. A planner cannot confront one challenge, such as climate change, without addressing another, such as displacement. Furthermore, planning cannot be isolated in scale. As evidenced in Rotterdam, planners’ flood adaptation measures have had local, regional, and international impacts. The Rotterdam case demonstrates the complexity of confronting a web of related planning challenges, and the added difficulty of trying to implement solutions in unfamiliar international contexts. It is in this case that the need for cross-cultural collaboration and knowledge exchange is most evident. Implementing broad-reaching, multi-scalar solutions will be necessary in the coming century to deal with the increasing climatological risk cities will face. These solutions will require extensive knowledge-sharing and collaboration to ensure their efficacy and ultimately the survival of urban communities.

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## Appendices

### Appendix A

#### Interview with Dutch Planners

##### Education

What is your last, or most recent degree?

What school did you attend?

What year did you graduate?

##### Work experience

Current position (check one): Nonprofit\_\_\_\_\_ Public\_\_\_\_\_ Private\_\_\_\_\_ Other\_\_\_\_\_

Years of Experience per Sector:

Nonprofit\_\_\_\_\_

Public\_\_\_\_\_

Private\_\_\_\_\_

##### Planning in Rotterdam

Respond to the statements below by indicating the degree to which you agree or disagree.

**1. The planning industry in Rotterdam has changed since my career began.**

Strongly Disagree                      Disagree                      Unsure                      Agree                      Strongly Agree

Comments:

**2. The waterfront planning industry has contributed to growth of Rotterdam's economy.**

Strongly Disagree                      Disagree                      Unsure                      Agree                      Strongly Agree

Comments:

**3. Planners from Rotterdam are uniquely equipped to consult international cities on flood resilience and adaptation planning.**

Strongly Disagree                      Disagree                      Unsure                      Agree                      Strongly Agree

Comments:

Dutch Planners Globally

Respond to the statements below by indicating the degree to which you agree or disagree.

**1. The Dutch waterfront planning brand has driven international planning partnerships.**

Strongly Disagree                  Disagree                  Unsure                  Agree                  Strongly Agree

Comments:

**2. International planning partnerships benefit the city of Rotterdam.**

Strongly Disagree                  Disagree                  Unsure                  Agree                  Strongly Agree

Comments:

**Appendix B****Interview with American Planners**Education

What is your last, or most recent degree?

What school did you attend?

What year did you graduate?

Work experience

Current position (check one): Nonprofit\_\_\_\_\_ Public\_\_\_\_\_ Private\_\_\_\_\_ Other\_\_\_\_\_

Years of Experience per Sector:

Nonprofit\_\_\_\_\_

Public\_\_\_\_\_

Private\_\_\_\_\_

Respond to the statements below by indicating the degree to which you agree or disagree.

**1. Rotterdam is the world's foremost city in flood resilience planning expertise.**

Strongly Disagree      Disagree      Unsure      Agree      Strongly Agree

Comments:

**2. Planners from Rotterdam are uniquely equipped to consult [city] on flood resilience and adaptation planning.**

Strongly Disagree      Disagree      Unsure      Agree      Strongly Agree

Comments:

**3. Working/partnering with Dutch planners has met my expectations.**

Strongly Disagree      Disagree      Unsure      Agree      Strongly Agree

Comments:

**4. Planners from Rotterdam, or the organization(s) they represent, gain from partnerships with [city].**

Strongly Disagree      Disagree      Unsure      Agree      Strongly Agree

Comments:

**5. I would hire planners from Rotterdam for future waterfront projects.**

Strongly Disagree      Disagree      Unsure      Agree      Strongly Agree

Comments: