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The Role of Culture in Sustainable Cities

Comparing Sustainable City Projects in the EU and China

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List of Abbreviations

- APs: Almere Principles
- CASE: Cities As Sustainable Ecosystems
- CED: Community Economic Development
- CVS: Chinese Value Survey
- EIP: Environmental Impact Profile
- EMAS: Eco-management and Audit Scheme
- EU: European Union
- GBES: Green Buildings Evaluation Standard
- GEF: Global Environment facility
- GHG: Greenhouse Gas
- ICLEI: Local Governments for Sustainable Development
- IDV: Individualism Index
- IETC: International Environmental Technology Centre
- IRM: Integrated Resource management
- KPIs: Key Performance Indicators
- LED: Local Economic Development
- LETS: Local Exchange Trading System
- LNV: Ministerie van Landbouw, Natuurbeheer en Voedselkwaliteit (Ministry of Agriculture, Nature and Food Quality)
- LTO: Long-Term Orientation
- MAS: Masculinity Index
- MPs: Melbourne Principles
- NGO: Non-Governmental Organization
- Nrg4SD: Network of Regional Governments for Sustainable Development
- PDI: Power Distance Index
- RRAAM: Rijk- regioprogramma Amsterdam Almere Markermeer (State-Region program Almere-Amsterdam-Markermeer)
- SC: Sustainable City
- SC projects: Sustainable City Projects
- SD: Sustainable Development
- SSTECH: Sino-Singapore Tianjin Eco-city
- SDCL: Sustainable Development Capital LLP
- SIIC: Shanghai Industrial Investment Company
- SSTECH Ltd: Sino-Singapore Tianjin Eco-City Investment and Development Co. Ltd
- UAI: Uncertainty Avoidance Index
- UK: United Kingdom
- UN: United Nations
- UNDP: United Nations Development Program
- UNEP: United Nations Environmental Program
- VROM: Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieu (Ministry of Housing, Spatial Planning and the Environment)
- WWF: World Wide Fund for Nature

Abstract

Throughout the world the idea of sustainable cities (SCs) is gaining momentum in both academia and practice. Sustainable cities can be defined as urban areas that balance social, ecological and economic goals in such a way that they may, in principle, be continued into the foreseeable future. While worded as universal truths, theories about how to create such cities appear to have a Western bias. However, as Hofstede (2001) shows, it is highly questionable whether such Western-based theories are applicable across cultures.

This thesis addresses the universality of the SC debate by comparing the way SCs are created in the EU and China. China - which shows large cultural differences with the EU - has grown into a critical player in global affairs and has also embarked on the development of SCs. This raises questions about the applicability of SC theory in this very different context: Will an autocratic government allow its citizens to dictate policy, or team up with non-governmental organizations? Will the power of the Chinese government lead to more mandatory policies? And could a focus on the individual lead to slower, more incremental developments in the EU?

Such questions show how culture may be expected to influence the way SC projects are given shape. Thus an answer to the following research question was sought: *To what extent do differences in culture account for any perceived differences in the process and content of sustainable city projects in the EU and China?*

In this thesis, UNEP's Melbourne Principles for Sustainable Cities (MPs) are used as a summary of the most important aspects of SCs, focusing on both process and content. Hofstede's (2001, and Hofstede and Hofstede, 2005) distinction between five aspects of culture – power distance, individuality vs. collectivism, masculinity vs. femininity, uncertainty avoidance and long-term vs. short-term orientation – is used as a model of culture. By linking relevant cultural characteristics pertaining to these five indexes to the MPs, the following five hypotheses were deduced. The relevant cultural indexes are named in parentheses.

H1: While the EU will seek collaboration with a broad array of stakeholders (including NGOs and citizens); China will seek active participation only of consultants and powerful (government and business) interests (because of differences in power distance, individuality and masculinity).

H2: While the EU will have broad, vague measures of progress; China will use narrower and quantitative assessment criteria (because of differences in masculinity).

H3: While the EU aims for incremental technological- and land-use changes; China will create mega-projects and large transformations of space (because of differences in long-term orientation).

H4: While the EU aims to create incentives for voluntary behavioral change through communication and mobilization strategies, China is more forceful, utilizing bans and penalties (because of differences in power distance and long-term orientation).

H5: While the EU devotes much of its resources to welfare provisions (education, employment, aid, recreation, etc.); China invests only in prestigious physical projects and business interests (because of differences in masculinity)

In this exploratory, qualitative study these hypotheses were tested for six cases; three in the EU - Almere, Leicester and Hammarby Sjöstad-Stockholm - and three in China - Dongtan, Tianjin and Rizhao. In addition to analyzing the influence of culture, the type of development – new city or area or retrofit of an existing city - was controlled for. The qualitative nature of the study also allowed for the finding of additional important variables.

Both culture and the type of development were found to have an influence on the way SCs are given shape. Cultural differences appear to lead to differences concerning the use of mandatory measures (H4). The large power distance and collective nature of Chinese culture may then lead to more forceful policies than in the EU, where only voluntary approaches were found. The relationship between culture and assessment criteria (H2) and the choice of an incremental versus a rapid, large-scale approach (H3) is less clear. While there were some interesting differences between the EU and China, qualitative assessment and a large-scale approach appear to be the norm in both contexts. The type of SC project was shown to be related to the level of inclusion of stakeholders (1) as well as the importance of welfare provisions (H5), with both being more pronounced in retrofit cases. Additionally, this study showed the importance of economic variables and the amount of discretionary space of municipalities.

Key words: sustainable cities, ecocities, environmental policy, European Union, China, culture.

PART I

INTRODUCTION AND METHODOLOGY

Chapter 1 – Introduction

With about half the world population living and working in cities, and more people joining them every day, cities represent huge concentrations of pollution, consumption and production. The very fact that they are so concentrated makes them both mayor contributors to environmental damage, as well as important places for intervention (Rees, 1999). For this reason efforts to make cities sustainable are emerging throughout the world. For instance, cities such as Rotterdam and London are involved in the Clinton Climate Initiative in order to reduce their greenhouse gas (GHG) emissions (NGIF, 2009, clintonfoundation.org). In the Arcosanti project in the USA people have been experimenting with the construction of an ecologically oriented architecture since 1970 (arcosanti.org); and in Abu Dhabi they are building Masdar City, supposedly the worlds first carbon-neutral and zero-waste city (masdar.ae). A completely different focus is offered in Oregon where a visioning process amongst the public is heralded as the key to a sustainable future (Newman and Jennings, 2009).

As these examples show, practical implementation of efforts to make cities more sustainable varies considerably. While the first examples focus on reduction of emissions in existing cities, Arcosanti and Masdar city are to be built from scratch and include new forms of architecture. The last example shows how the processes involved in envisioning and creating such projects also forms an important part of such projects. Rather than merely focusing on technical matters or content, Oregon includes the wishes of its constituency in its plans.

These different approaches are also evident in the (academic) debate on the subject (see Chapter 3). Here ideas varying from highly technical undertakings to issues of governance, empowerment and equity are advocated. While only comprising part of the debate, it appeared that ideas about participation and democracy are widespread and form an important starting point for many theorists (also see Joss, 2010). Strangely, the relationship of arguments to the country of implementation is rarely discussed.

This lack of context in much of the literature is striking considering the wide variety of approaches. While issues such as the reduction of GHG emissions may be achievable throughout the world, Joss (2010) notes that even such seemingly universal, technological undertakings may run into context-specific policy challenges. Theories about the need for more democracy and participation by citizens appear much more context-specific. Considering the fact that the world is not made up exclusively of (well-functioning) democracies, it seems questionable whether arguments for these approaches are applicable worldwide.

The sustainable city debate thus suffers from a bias towards democratic, developed countries (Newman and Jennings, 2009). Furthermore, even more technical solutions may not be applied in the same manner in every context. While many factors may influence the different ways in which cities are built and adapted throughout the world, many of these may ultimately be the result of cultural differences. As Hofstede (2001), Hofstede and Hofstede (2005) and Williamson (1998) argue, culture forms the most stable, unchanging characteristic of a given setting and has considerable influence on organization and resource allocation. It may then be expected that culture also forms an important factor in determining the process and content of sustainable cities.

Given the Western, democratic focus of much of the literature, it would be interesting to compare sustainable city projects in such a setting with similar projects in a very different, non-democratic setting. In this research, I will use the EU as an example of a western, democratic context, to be compared with the more-or-less communist society of China.

China has, over the past decades, grown into an economic super-power (Naughton, 2007). Furthermore, the country harbors around a fifth of the world population and is dealing with ever increasing environmental degradation and resource shortages. In response to this, the Chinese government has expressed the will to create a more sustainable development path, including various projects aimed specifically at cities (Naughton, 2007 and Yip, 2008). Because of this increasingly important role in economic and environmental matters, China forms a pivotal role in the worldwide quest for sustainability. Considering that China is non-democratic and thus presumably operates in quite different ways than the West, it is questionable if the existing theory on sustainable cities – especially that focusing on democracy and participation - has any relevance here. Will an autocratic government allow its citizens to dictate policy, or team up with Non-Governmental Organizations (NGOs)? Will a population that has never had much to say in matters of policy even want such responsibilities? Do the Chinese perhaps have other, unique ways of reaching policy goals that may not be feasible in the West? Will, for instance, the power

of the Chinese government lead to more forceful actions? Or could a focus on democracy and the individual in the EU lead to less far-reaching, more incremental developments?

In this study some such issues concerning cultural influences in the sustainable city debate will be addressed by drawing a comparison between projects in the EU and China. For now, I broadly define sustainable cities (SCs) as urban areas that balance social, ecological and economic goals in such a way that they may, in principle, be continued into the foreseeable future. However, as Newman and Jennings (2008, p.3) note: 'Many cities have begun attempts in this direction. However, these attempts have been mostly fragmented, lacking a holistic guiding framework to bring the threads of sustainability together.' Thus, while many attempts exist, no city is currently actually sustainable. Because these projects do not (yet) fully qualify to be called SCs, I will refer to these efforts as Sustainable City Projects (SC projects). These definitions will be further discussed in the methodology section below.

In the remainder of this introduction, the knowledge gap will first be discussed more thoroughly. In the second section the research objective and questions will be given. This introduction finishes off with an overview of the rest of the thesis.

1.1 Knowledge Gap: The Neglect of Culture in SC Theory

As was noted above, despite much talk and action on the subject of SCs, policy makers and academics alike do not seem to be in agreement as to what exactly such a city should look like. Considering the urgent need for more sustainable patterns of living, and the importance of learning processes and (international) cooperation therein (see Chapter 3), more clarity on this subject is desirable.

As in so much of the (policy) sciences, the lessons that are drawn on SCs are often worded as general findings: SCs must have renewable energy sources (Nijkamp and Pepping, 1998); they must reduce their car dependence (Register, 2006); they must be built on shared understanding created through participatory processes (Newman and Jennings, 2009); etc. While I do not wish to claim that the authors concerned do not realize the inherent difficulties in making such universalistic propositions, it is nevertheless felt that such issues are under-theorized in much of the literature.

The debate is complicated by the fact that SC features not only concern concrete physical characteristics, but also relate to certain social theories and ideals. Like much of sustainability, SCs can be located in that difficult terrain of science where (uncertain) physical characteristics, human action and subjective notions of what is desirable intersect. Sustainable development (SD) is often defined as development that: '... meets the needs of the present without compromising the ability of future generations to meet their own needs.' (WCED 1987 p. 8). In this same publication the now often used 'triple bottom line' was introduced. Sustainability is thus seen as a combination of environmental, social and economic concerns (for instance Du Pisani, 2006). These three tiers must all be adequately addressed in order to reach true sustainable development.

While the broadening of the environmental debate has had positive effects – for instance by making economic and environmental goals part of a whole, rather than seeing them as separate and mutually exclusive (Du Pisani, 2006) - it has also made solutions to problems much more complex. Strategies aiming at sustainable development cannot simply aim at alleviating environmental issues, but must also meet the 'needs of the people'. Considering the huge differences between people, especially when looking at different cultures, such an aspiration is not easily met.

The importance of democratic governance in the SC debate is discussed by Joss (2010), who states that for a long time the notion of sustainable cities consisted mostly of '...a collection of ideas and propositions about sustainable urban planning, transportation, housing, *public participation and social justice.*' (p.239, italics added). While he continues to say that a more practical orientation has been characteristic of recent time, these procedural and societal aspects of the SC debate can still be found in much of today's literature (see for instance Newman and Jennings, 2008, Kenworthy, 2008).

I do not wish to claim here that participatory approaches cannot create sustainability, even on a purely environmental level. In fact, many authors have shown that such processes can be highly effective. As, for instance, Mega (1999) notes about a study of SC projects in the EU:

‘The most successful projects proved to be the result of broad partnerships and of well-integrated approaches combining environmental achievements with economic benefits and favouring social integration and local democracy.’ (Mega, 1999, p.50)

Of course, as a finding related to a number of cases, such a statement is fine and simply draws a conclusion based on empirical evidence. It becomes problematic, however, once such findings are used to draw conclusions about the way things should and will work everywhere. A clear example is given by Roseland (1999):

‘The vision of ecological cities ... is one that links ecological sustainability with social justice and the pursuit of sustainable livelihoods. It is a vision that acknowledges the ecological limits to growth, that promotes ecological and cultural diversity and a vibrant, democratic community life, and that supports a community-based economy directed towards fulfilling real human needs rather than just simply expanding’ (Roseland, 1999, back cover)

Interestingly, Roseland names the ‘promotion of cultural diversity’ and ‘democratic community life’ in the same breath. It is thus assumed that all of these diverse cultures that must be promoted will all want democracy. As will be argued below, however, there is substantial evidence that these two may actually be in conflict in certain contexts. While it may be tempting to describe a single, archetypal SC, the possibility of actually constructing such a place in any given locality will surely be influenced heavily by the culture in which this happens. Drawing on more than 30 years of statistical survey research, Hofstede has developed a typification of cultures that complements this view. As he states it:

‘Research about the development of cultural values has shown repeatedly that there is little evidence of international convergence over time, except an increase of individualism for countries having become wealthier. Value differences between nations described by authors centuries ago are still present today, in spite of continued close contact. For the next few hundred years at least, countries will remain culturally diverse.’ (Hofstede and Hofstede, 2005, p.366)

These cultural differences are also related specifically to global issues such as sustainable development and the democratic focus described above:

‘The solution of pressing global problems does not presuppose world-wide democracy. The rest of the world is not going Western. Authoritarian governments will continue to prevail in most of the world. Elections are not a universal solution to political problems. In poor, collectivist, high-PDI¹ and strong-UAI cultures, elections may generate more problems than they resolve.’ (Hofstede and Hofstede, 2005, p.353)

And later, specifically addressing scholarly literature:

‘Theories, models and practices are basically culture-specific; they may apply across borders, but this should always be proven. ... In scholarly journals – even in those explicitly addressing an international readership – the silent assumption of universal validity of culturally restricted findings is common.’ (Hofstede and Hofstede, 2005, p.276)

There is thus substantial evidence that, indeed, cultures are not easily changed. Furthermore, the research conducted by Hofstede and Hofstede (2005) underscores the observation about the ‘silent assumption’ of universality in much of the literature. In this thesis I thus hope to challenge this idea in the specific case of the literature on SCs by attempting to show how culture may influence the way SC projects are given shape. In doing so I try to address issues for further research suggested by Joss:

¹ Power Distance Index and Uncertainty Avoidance Index. The meaning of these measures will be explained in Chapter 3

'Concerning the issue of governance, eco-cities are situated in, and *have to adapt to, various contexts of social, economic and political governance*. ... Research, then, should inquire into how eco-cities are politically, economically and socially governed, what tensions and conflicts may arise between technological innovation, urban development and sustainable living, ...' (Joss, 2010, p.249, italics added)

Interesting in the light of the current research focus is the last half-sentence that completes the above quote. While first specifically acknowledging the importance of context, Joss ends by making the same fallacy that I try to address here:

'... and how these may be resolved within a framework of *democratic governance*.' (Joss, 2010, p.249, italics added)

1.2 Research Objective

In this research, then, I aim to address the lack of culture in SC theory described above by analyzing the importance of culture in SC projects in the EU and China. As the first section of this introduction showed (but see Chapter 3 for a detailed description), the debate on SCs deals with both the *process* by which the (plan for) an SC comes into being and the *content* of the project. Local democratic processes such as the visioning exercises mentioned above are an example of the former, while issues such as ecological buildings, energy production, waste-disposal, transport etc. are examples of the latter. The main research question is thus:

To what extent do differences in culture account for any perceived differences in the process and content of sustainable city projects in the EU and China?

Because the link between culture and SC enactment is currently not addressed in any detail in the literature, this study aims at creating an initial understanding of this relationship. In order to do this, a qualitative case study approach has been chosen based on six cases, three in the EU – Almere, Leicester and Hammarby Sjöstad - and three in China - Dongtan, Tianjin and Rizhao. Such an approach allows for a comparison both within and between contexts, while leaving sufficient room for a detailed description of the processes involved. The cases are all cities that themselves claim to be SC projects (be it in different wording) and have a clear plan of action to work towards a broad set of sustainability goals directed at the planet, people and business. The choice for these cases is further discussed in Chapter 2.

While the assumed causal relationship is thus between culture (independent variable) and the enactment of SC projects (dependent variable), other variables may also play a part. An initial control variable is found in Joss (2010), who describes SC projects on the bases of a number of categories, one of which is *type* of SC. A distinction is made between: Type I – a totally new city, built from scratch; Type II – the expansion of an existing city, for instance through the building of a new neighborhood; and Type III – innovation and adaptation through retrofitting of an existing (part of a) city. This distinction is important because different types of cities may provide very different opportunities and limitations for SC projects. While newly built areas provide the opportunity to apply sustainable concepts from the onset, thus allowing an area to be set up in an explicitly sustainable manner, retrofits of existing cities will have to work with the (social) structures and buildings already existing in the city.

In my results, I will thus also look at the possibility that type of development may significantly influence the findings. While the six cases together reflect all of the different types of development, the EU sample has slightly more retrofit (Type III) projects. This distribution will be discussed in more detail in Chapter 2.

Furthermore, while culture may be seen as the most permanent, slow changing aspect of the institutional context of a place, various historically grown factors such as laws, rules and organizations also play a part in resource allocation, i.e. SC enactment (Hofstede and Hofstede, 2005, Williamson, 1998, and Künneke and Fens, 2006). Such factors, while themselves being created in relation to the local culture, form mediating variables that may independently influence the way SCs are given shape. Thus, besides the two predetermined factors of culture and type of SC, the qualitative research setup allows for the identification of additional findings related to factors not considered beforehand. Through a discussion of each case, alternative explanations for any perceived differences may also be understood.

The research is divided into two parts. In the initial, theoretical part, literature on SCs is first reviewed and summarized through a discussion of the United Nations Environmental Program's (UNEP) ten Melbourne Principles for Sustainable Cities. Culture is then operationalized through a discussion of work done by Hofstede and Hofstede on cultural comparisons (Hofstede, 2001, Hofstede and Hofstede, 2005). By bringing these two models together, hypotheses are deduced that form the basis for the second, empirical part of the thesis.

1.3 Thesis Overview

In the remainder of this introductory part, an overview of definitions and methodology will be given. After this, the report moves on to the actual research.

As was just mentioned, the research has been divided into two main parts. In the first, theoretical part, SCs and culture are operationalized in order to deduct hypotheses on the expected differences between the EU and China. In Chapter 3 a literature review of SCs will be conducted in order to better understand the various uses and interpretations of the concept and find a suitable measurement tool that summarizes this broad debate. UNEP's Melbourne Principles for Sustainable Cities (MPs) are advanced as such a tool and will be linked to the rest of the debate in order to understand their relevance.

In Chapter 4 a discussion and operationalization of culture is given. As was argued above, this context can form an important factor in the creation of policies. Hofstede's cultural index is discussed as way of easily measuring culture. Thus, the MPs and Hofstede's cultural index are given as measures of SCs and institutional context respectively. In the remainder of Chapter 4 these two concepts will be brought together to form hypothesis on the expected relationship between culture and the way SCs are interpreted in each context. Because the MPs are rather vague and show considerable mutual overlap, and because Hofstede's cultural index forms a broad and somewhat limited picture of the culture of a place relevant to policy, some adjustments are necessary. Thus, the cultural indexes of the EU and China are analyzed and simplified, and some of the concepts of the MPs are combined. In this way five hypotheses are derived that form the basis of the empirical work in the second part of this study.

In this second part, six case studies are presented: three in the EU and three in China. For each case the five hypotheses will be confirmed or rejected by conducting an analysis of relevant policy documents, (academic) articles and, where available, interviews. Chapter 5 describes the EU cases, while the Chinese cases are discussed in Chapter 6. The findings are then summarized and analyzed in Chapter 7. Here the influence of culture, type of SC and any important additional variables will be discussed.

Finally, I will draw my conclusions and provide a discussion and suggestions for further research in Chapter 8 and 9 respectively.

Chapter 2 - Methodology

In this chapter, I will further explain my research methodology. With the research objective now set-out, definitions of core variables will first be given. I then move on to a further discussion of the research strategy, followed by a discussion of the selected cases and the reasons for their selection. This chapter ends with a discussion of the data collection for each case.

2.1 Definitions

Culture:

In this research, I will use the definition given by Hofstede (2001): 'The collective programming of the mind that distinguishes the members of one group or category of people from another' (Hofstede 2001, p.9).

Cities

While obviously a matter of much importance, the definition of the words 'city' or 'urban' is often lacking in literature explicitly addressing these terms. The reason appears to be the lack of international consensus. As Hald (2009) notes, widely used indicators include population size and density, number and range of available facilities and employment profiles. Additionally, more sociological definitions can be found that focus on the meaning of cities for society. The problem is that many countries use different indicators and have different institutional forms of organizing cities. As in most of the literature, then, I will rely here mainly on a common understanding of what constitutes a city. However, cases were limited to those including at least a few hundred thousand (future) inhabitants.

Sustainable City (SC):

An urban area where ecological, social and economic goals are balanced in such a way, that they may, in principle, be continued into the foreseeable future.

Sustainable City Project (SC project):

Any urban area for which a serious plan of action towards becoming more sustainable exists, is being implemented or is already completed.

The various interpretations of SCs used are exactly the focus of my research. Therefore, a broad initial definition leaves room to study many varying cases and possibilities using more specific definitions.

2.2 Research Strategy

As was mentioned in the introductory chapter, the research is divided into two main parts. In the first part, the concepts of culture and SCs will be operationalized using two models (see below). By bringing these models together, five hypotheses are derived. In the second part, these hypotheses will be used as a starting point to analyze the six cases.

The use of hypotheses in this thesis more or less follows the method of *working hypotheses* described by Shields (1998) and Shields and Tajalli (2006). As these authors note, working hypotheses are ideally suited for explanatory, preliminary research such as the topic at hand; they form a provisional guide that helps further inquiry into subject matters in their early stages of conceptualization and may lead to the discovery of other important facts. By connecting relevant theory to the problem at hand, hypotheses may be drawn up. These hypotheses can then be operationalized by linking each one to relevant types of empirical information.

The first important variable used to draw up hypotheses is Sustainable Cities. As Chapter 3 will show, the SC concept is used in quite different ways by various authors and practitioners. In order to summarize this debate and make it measurable, however, one single description had to be chosen. To do this the Melbourne Principles for Sustainable Cities (Melbourne Principles or MPs) are used. While not providing many of the (technical) details evident in some other approaches, the MPs have the virtue of combining many of the approaches used in the literature into a single framework. As such they deal with both the process and content of SCs in a rather broad but inclusive way. The MPs will be thoroughly discussed in Chapter 3, where they are related to the rest of the SC debate to show the strengths and shortcomings of this approach.

The MPs will be used in two ways throughout this thesis. First, for each case study a table will be presented that summarizes the inclusion of each of the relevant MPs in that case. This table, then, answers the question: *Is the MP included in this case?* Here I first look at whether

or not an aspect is mentioned in the program. As it turns out, most of the MPs are in fact evident in one way or another in each case. However, there are important differences in the manner and extent that each MP is addressed. Thus, it should also be asked: *How and to what degree is the MP included in this case?* It is this latter question that forms the brunt of this research and for which the hypotheses will be analyzed. It is thus expected that culture will lead to different degrees and ways of including these principles.

In order to draw up hypotheses on this expected relationship between culture and SC enactment, a measure of culture is also needed. While many analyses of culture exist – for instance in the discipline of Anthropology – these are often descriptive and qualitative in nature. For the current purposes, however, it is necessary to make a clear comparison between the different cultures in the EU and China. Hofstede (2001, also see Hofstede and Hofstede, 2005) provides a model in which cultures are quantitatively compared on five different dimensions (see Chapter 4 for an extensive discussion of this model). This model, based on extensive statistical analysis, has the advantage of giving countries a numerical score on each of these dimensions, thus making for a (relatively) easy comparison between countries. Hofstede's work is also widely acknowledged, as is clear from the fact that he appears among the 100 most quoted authors in the Social Science Quotation Index (<http://www.sagepub.com>).

Through the connection of these two models, five hypotheses are deduced that form the basis for the second, empirical part of the thesis. A number of cultural characteristics described by Hofstede and Hofstede (2005) are used to predict the way the MPs will be given shape in each context. As will be shown in subsequent chapters, for the sake of clarity and because of the difficulty of describing such complex notions in a simple manner, these hypotheses are stated as extreme opposites. Thus, the EU and China are each expected to conform to one side of a dichotomy. While, of course, such statements form an oversimplification of a much more subtle reality, this approach may nevertheless highlight real and important differences in each place.

One aspect of culture, for instance, concerns the degree to which the unequal distribution of power expected and accepted by the population (Hofstede and Hofstede, 2005, p.46, see Chapter 4 for a full discussion of this issue). This dimension is called the Power Distance Index (PDI). Countries on opposite sides of this dimension are attributed certain characteristics, such as autocratic, centralized governments in countries with large power distance, and democratic, decentralized governments in countries with smaller power distance. By linking such cultural characteristics to the SC characteristics described in the Melbourne Principles - for instance citizen participation - outcomes may be predicted. In the example given here, large power distance countries (autocracy, centralization) are expected to have less participation, while the small power distance countries (democratic, decentralized) would be more likely to allow its citizens to participate. In this way five hypotheses are derived. The hypotheses themselves and the process by which they were created are explained in detail in Chapter 4.

Moving on from this theoretical exercise, six cases are studied: three in each context. By discussing the differences between each case and its context in connection to the hypotheses, the relationship between context and SC enactment are analyzed.

The choice for a case study approach stems from the lack of implemented and/or well-described cases and the fact that the relationship between culture and SC enactment is of yet not addressed in any detail in the literature. As was discussed in the introduction, the actual construction of SC projects has only gained momentum in the last decade or so (also see Joss, 2010). As such, there are only so many projects available, most of which are still in their planning phase or in the early phases of implementation. As will be discussed below, there is not always sufficient (English) information available about each project, especially the ones in China. Additionally, because the object of this research (the relationship between culture and SC projects) has not previously been discussed, a qualitative approach is well suited to gain an initial understanding of the details of the complex interactions involved (Shields, 1998). While quantitative studies may be very interesting in the future (see Chapter 7), an initial qualitative analysis will allow for a more detailed understanding and the induction of important variables that may not be conceived beforehand. Because of all of these reasons, it has been decided to make a study of six cases, three in each context. Such an approach allows for the selection of cases for which information is available, while giving sufficient breadth to be able to compare different types of development in each context. The approach thus aims to find an appropriate path between depth and breadth of scope.

In order to measure the extent to which each case conforms to the expected results (i.e. to operationalize the hypotheses), the hypotheses must be linked to facts and statements about

the relevant processes and content. As will be discussed below in the section on data collection, this thesis rests mostly analysis of policy documents and (academic) literature. Additionally, a number of interviews have been conducted. All of these sources have been analyzed by focusing on the relevant information on each of the five hypotheses. Table 1 gives a brief description of this information. Such a process of analysis, of course, is inevitable a somewhat subjective task. Information sometimes has to be interpreted and always weighed against information on other cases. However, I hope to have made such considerations clear throughout the text.

Hypothesis	Relevant Information
H1: While the EU will seek collaboration with a broad array of stakeholders (including NGOs and citizens); China will seek active participation only of consultants and powerful (government and business) interests.	- Mention of different stakeholders and their role in planning and implementation process.
H2: While the EU will have broad, vague measures of progress; China will use narrower and quantitative assessment criteria	- Descriptions of assessment criteria
H3: While the EU aims for incremental technological- and land-use changes; China will create mega-projects and large transformations of space.	- Size of the project (i.e. [planned] amount of new buildings, houses, inhabitants, facilities etc.) - (Expected) time-span of the realization of the project
H4: While the EU aims to create incentives for voluntary behavioral change through communication and mobilization strategies, China is more forceful, utilizing bans and penalties.	- Mention of strategies for communication and mobilization, changing culture or mental programs etc. - Mention of bans and restrictions
H5: While the EU devotes much of its resources to welfare provisions (education, employment, aid, recreation, etc.); China invests only in prestigious physical projects and business interests.	- Mention of specific welfare provisions - Relative importance of such provisions in comparison to other aspects

Table 1: Operationalization Hypotheses

In the discussion of each case (Chapter 5 and 6), the hypotheses will thus be analyzed in turn according to the information described in Table 1. This leads to a qualitative description of the processes and content evident in the cases. By weighing these descriptions against each other, the hypotheses are either confirmed or rejected for each case. All of these findings will be brought together in Chapter 7 to find the overall influence of culture. As an initial control variable, the influence of the type of project will also be analyzed (see previous chapter). Furthermore, because of the qualitative, searching nature of this research, alternative explanations of differences and similarities that may come up during the research will also be discussed in the results.

2.3 Case Selection

The choice of cases has relied on a number of factors: availability of information, incorporation of a broad set of SC principles, and size. First of all, (English) information must be available in order to make a study and to even find the existence of the project in the first place. The selected cases have all been used in one or more (academic) publications and have significant internet resources available. Secondly, the cities must have a plan that recognizes multiple facets of sustainability (e.g. people, planet and profit) and use this as the core plan on which to base further development. This means that all of the chosen cases refer to themselves as SC projects (albeit not necessarily in that specific wording). Additionally, many of the cases have been rewarded awards or gained (inter-) national recognition for their efforts at sustainability. Finally, cities must be of a given size. While I have not defined cities in terms of number of resident, I have omitted any cases covering just a few thousand inhabitants.

I have not made any specific choice regarding the type of city. However, as noted above, this could be a very relevant factor. However, I did not find enough strong cases of each type to be

able to make such a choice. With the exception of Leicester, however, all cases at least concern some newly built *parts* of the city.

For the EU Almere, Leicester and Hammarby Sjöstad will be studied. Almere is a city in the Netherlands that is looking to grow according to the cradle-to-cradle (c2c) principles advocated by McDonough and Braungart (2002). The city has set a number of targets for its future development up to 2030 based on the Almere Principles (Gemeente Almere, 2009). Whilst creating large new areas of the city, the project also focuses on making the existing city more sustainable. In terms of Joss' categories of SC project, it is thus a combination of Type II and III. Leicester is recognized as the United Kingdom's (UK) first 'environmental city' and has the title of 'European Sustainable City' (www.leicester.gov.uk). It has set out its goals in the One Leicester program (Leicester Partnership, 2008). Leicester forms a retrofit of an existing area and is thus a Type III city. Thirdly, Hammarby Sjöstad is a new district of Stockholm, Sweden, which is being built on so-called life cycle perspective (hammarbysjostad.se; and GlashusEtt, 2007). As a new district, it is thus a Type II development.

For China, I discuss the following cases: Dongtan, Tianjin and Rizhao. Dongtan is probably China's most famous SC-project. Planned by Arup, a British consultancy firm, the project is heralded as one of the most far-reaching SC-projects to date, although considerable problems since its startup have led to criticism and doubt considering its implementation (Hald, 2009). As a totally new development, Dongtan can be considered a Type I SC project. Tianjin Eco-city is collaboration between the Chinese and Singapore governments to create a SC on the port of Tianjin (Hald, 2009). Tianjin constitutes a Type II project whereby a new area is being built around an existing city. Finally, Rizhao is a somewhat different example whereby an existing city was retrofitted focusing strongly on renewable energy (Bai, 2007). Rizhao is thus a Type III project.

While these six cases together reflect all of the different types of development, they are not distributed evenly across the two contexts. The EU has one Type II and III development (Almere), one Type III development (Leicester) and one Type II development (Hammarby Sjöstad), while China has one Type I project (Dongtan), one Type II project (Tianjin) and one Type III, retrofit development. This means that retrofit efforts are slightly more strongly represented in the EU, while China has the only Type I project. However, as chapters 5 to 7 will show, in practice there is little distinction between Type I and II developments. In this research, then, the emphasis is on the distinction between newly built (Type I and II) and retrofit (Type III) projects. Considering this distinction, the differences between contexts become less pronounced; the EU case sample only has marginally more retrofit developments because Almere constituted both a Type II and III development.

2.4 Data collection

Data collection has not been easy, especially for China. The fact that many of the developments are very recent means that not much has yet been written about them. Also, due to problems with fieldwork in China I have been unable to rely on extensive interviews. While some interviews were conducted to get more detailed information about the EU cases, it was felt that broadening the data too much in only one setting would only add to the skewness of information. As such the research is based mainly on analysis of policy documents and available (academic) articles. These sources have been triangulated wherever possible. However, this could not always be done. Especially in Rizhao, I have had to rely for a large extent on a single document provided by the municipality. While all of this means that the empirical work could be more thorough, such problems are largely inevitable when dealing with such new developments, especially in China. In the remainder of this section, the process of finding information will briefly be discussed for each context and each case therein.

As may be expected, data collection was much easier in the EU. Here a great deal of information was available on official websites, much of it (also) written in English or, in the case of Almere, in Dutch. Furthermore, because of the proximity to my place of residency, the fact that many people in the EU speak English and the relative openness of EU policy processes (see for instance Lin, 2001 for comments about the lack of openness in China), it was easier for me to come into contact with relevant actors in the EU. It has thus been possible to conduct a number of interviews and derive a lot more information from official-, academic- and other sources.

For Almere an interview was held with Mr. Jeroen F.T. Roeloffzen, program leader for the Sustainability Lab in Almere. Mr. Roeloffzen also provided a number of publications about

Almere's sustainability program. Various websites, a few articles and the official government programs have also been analyzed.

In Leicester, an interview was held with Mr. Neville Stork, head of environmental sustainability at Leicester city council. Mr. Stork also provided a yet unofficial document about the Leicester program and greatly clarified the documents found on Leicester's various websites. An important academic article was also found, along with the various official programs and discussions on websites.

In Hammarby Sjöstad, I spoke to Mr. Eric Freudenthal, head of information at the local information centre for the project. Mr. Freudenthal gave an extensive presentation and provided a number of documents on the project. Academic articles and official program documents and websites were also available.

Finding data for China was substantially more difficult. While this research was started with a plan to travel to China to conduct interviews, this option sadly fell through due to an overburdening on the part of the people that were to function as a connection to interviewees. Thus being unable to rely on an 'insider connection' in China, something that was assured was necessary by people with experience in this issue, it was decided to abandon the interviews for China and rely solely on what could be found in other sources. However, I was able to draw on research conducted previously by other Dutch students who also studied SCs in China (see Hooning et al, 2010). This document provided additional information about Dongtan and Tianjin. An interview was also held with two of the involved students.

For Dongtan information was thus drawn from this report, as well as from various (academic) articles. Sadly, not much information could be gathered from official sources.

For Tianjin, there was much information on official websites. Furthermore, various articles mention the program.

Rizhao was by far the most difficult case for which to find information. While some, mostly short analyses and discussions of the case were discussed in the literature, very little depth and official information was available. However, the websites of various awards proved helpful, including amongst others an important document in which the city council itself discusses the SC program in depth.

PART II

THEORY

Chapter 3 - SC Characteristics and the Melbourne Principles

The idea of creating more sustainable urban environments has been taken up by many authors and practitioners, each giving their own interpretation of this concept. In this chapter, the wide variation of ideas associated with SCs will be further discussed. Because the debate is so broad, it must be summarized in a way that is more or less representative of all of the literature. To do this, the Melbourne Principles for Sustainable Cities will be discussed as a proxy of the entire debate. While any such approximation will necessarily obscure many of the details of more specific approaches, it has the virtue of compressing the debate in such a way that the inclusion of different SC elements in the enactment of SC projects may be compared.

In this chapter, a brief overview of the history and terminology associated with SCs will first be described in order to get a better understanding of the various uses of this concept. Secondly, the SC characteristics described in the SC debate will be discussed based on Joss' (2010) three categories of different 'modes' of SCs. These modes – technological innovation, integrated sustainability planning and civic empowerment/involvement - form a good way of introducing some of the most important ideas, concepts and solutions related to SCs in their own terms. Various technologies and ways of changing land-use patterns in cities will be discussed in the first sub-section. The second sub-section focuses on general governance issues, while the third sub-section focuses on those governance approaches that stress the need for people to be empowered and to actively participate in urban governance. The MPs themselves will be introduced in the second section of this chapter. In the second part of this section these SC characteristics will be linked to the MPs to show how this framework relates to the rest of the literature. In this way I hope to show that, while missing some of the (technical) detail of more specific approaches, the MPs form a more or less complete approximation of the entire debate. Because not all of the MPs can be predicted by the cultural characteristics described in the following chapter, this Chapter ends with the selection of the eight MPs for which this *is* possible.

3.1. History and Terminology of the Concept of Sustainable Cities

Many of the ideas behind what I here call sustainable cities go back more than a century. Basiago (1996) traces the history of these ideas to Howard's 'garden city', which was developed in 1902 as a critique of the 'crowded, ill-ventilated, unplanned, unwieldy, unhealthy cities' (Howard, 1902, in Basiago, 1996, p.136). Subsequently many authors have drawn up their views on how to make a better city. While all of these start their analysis by ascertaining the pathologies of the modern urban form - caused by modern, reductionist and industrial models of progress - the focus on certain problems and solutions varies. Geddes' 'neotechnic city', for instance, advocates green spaces and stopping the sprawl of the city, while Wright's 'Broadacre city' also incorporates arguments for decentralized democracy (Basiago, 1996). More recent roots of the SC concept are set out by Roseland (1997), who discusses the predecessors of the 'Eco-City' concept over the last decades of the twentieth century. He recognizes the following debates as being critical to the formation of this concept: healthy communities; appropriate technology; community economic development (CED), social ecology; the green movement; bioregionalism; native world views; and sustainable development. All of these movements have added their own arguments and terminology to the general debate.

As Joss (2010) notes, the SC phenomenon has, over the last decade or so, moved from a largely theoretical phase into actual practice. In Joss's words: 'Throughout the 1980s and early 1990's, the term 'eco-city' remained mainly a concept, a collection of ideas and propositions about sustainable urban planning, transportation, housing, public participation and social justice ...'. Due to increased awareness of climate change, rapid urbanization - especially in developing countries - and the perceived need to revitalize cities towards a more service oriented socio-economic organization, many EC projects are now being planned and realized all over the world.

This new orientation was kick-started by the Agenda 21 program, which came from the United Nations 'Earth Summit' in Rio de Janeiro in 1992. This practice is now increasingly supported by a wide range of global and local initiatives such as the Clinton Climate Foundation, the European Commission's Eco-City Projects and the World Economic Forum's SlimCity knowledge exchange initiative (Joss, 2010).

As was mentioned in the introduction, there are many terms denoting some form of SC. Nijkamp and Pepping (1998) mention: green city, eco-city, eco-polis, zero-emission city, livable city, resourceful city and environmental city. Newman (1997) also mentions urban ecology and the ecological city, while Roseland (1997) adds sustainable urban development, local

sustainability initiatives, sustainable communities and community self-reliance. Both authors also mention the sustainable city.

As Roseland (1997) indicates, the terminology is loosely connected to those who use them. Planners, authors, architects, academics and activists have all contributed to the debate, and each has had its own focus and expertise. While, for instance, architects are likely to focus on specific characteristics of individual buildings, activists more often propose solutions that require a more fundamental change of attitude amongst the population. Thus, various actors selectively employ certain arguments and names, leading to a 'kaleidoscope' of concepts, frameworks, and proposed action. All of these arguments, however, start from the premise that something is inherently wrong in our current society and cities, leading to social and ecological problems, and that solutions need to be found in order to create a better future.

While written more than ten years ago, the following quote by Roseland still holds true: 'it is at present safe to say that there is no (and perhaps there should not be any) single accepted definition of "eco-cities" or of "sustainable communities"' (Roseland, 1997, p.11, but see Joss, 2010, p.247 for a present-day restatement of the same idea). For the sake of clarity all of these terms will be referred to as Sustainable Cities (SCs), even when describing theory and practices where different words are used. When using quotes, or when terminology is part of an official project name, however, occasional reference may be made to the original wording. While it may be argued that such an approach skips over important differences between terms, it is felt that there is in fact sufficient overlap to warrant such an approach. Besides, the seemingly wild proliferation of terminology addressing the issue means that any study of a single one of such concepts would be too limiting. Instead, the focus of this thesis is on all of these ways of creating sustainable cities.

3.2 SC Characteristics

Throughout the literature pertaining to SCs, many specific approaches are advanced that deal with certain aspects of sustainability in cities; i.e. energy, economic organization and stakeholder participation etc. While these approaches will be discussed as separate solutions, it must be noted that they often form part of more encompassing strategies that incorporate a number of these issues. Thus, for instance, Register's (2006) idea of an ecocity incorporates ideas about transportation, compact cities and people's relationship to nature.

This section is organized in three parts according to the categorization used by Joss (2010): technological innovation, integrated sustainability planning (governance), and civic empowerment/involvement. While his distinction is rather broad, it shows the most important different categories of approaches that may then be used to show how the more specific MPs relate to the SC debate. Thus, by first ordering the literature in these categories and explaining some of the central approaches, the relevance of the MPs as a proxy can be discussed in subsequent sections.

3.2.1 Technological innovation

Technological innovation comes in many forms and sizes. These technologies are geared at reducing the ecological impacts – in both production and use – of cities. Such improvements are important in (almost) all technologies, and specific cities may focus their energy on any number of these. However, certain technologies are given specific attention in the literature on SCs. Here renewable energy, eco-buildings and transport systems are addressed in turn. Because the widespread adoption of technologies often requires changes in land-use, the idea of the compact city and the importance of including the wider city region in urban planning are then discussed.

The first important technology concerns renewable energy. Because cities are huge consumers of energy, this topic is of great importance. Droege (2007, in Newman and Jennings, 2008), for instance, has set out a vision of creating a grid of decentralized renewable energy sources for the city. In the cradle-to-cradle model (see McDonough and Braungart, 2002) it is asserted that the use of solar power is a central characteristic of natural systems; a characteristic that should be emulated by humans to create truly sustainable urban systems. While many forms of renewables (i.e. water, wind, solar, tidal, geothermal etc.) may be applicable to different cities, solar energy appears to be mentioned most often. Solar energy, both passive and active, also forms an important part of the design of eco-buildings (for instance Kenworthy 2006).

Eco-buildings are the topic of many publications and debates, and numerous authors have given their vision on this concept. Register (2006, p.14-18), in a discussion of the European Ecological Architecture Congress in Stockholm and Helsinki in 1992, mentions renewable energy

systems, built-in recycling, non-toxic building materials, interior greenhouse planting and rooftop gardens as features that are often incorporated in such designs. This issue is also taken up by Register in his discussion of 'New Synthesis Architecture'. Such architecture goes beyond the design of specific buildings by conceiving of them as part of a broader whole.

Another much discussed topic is that of transport systems. Cities, with their concentrations of people and economic activity, require much movement by people and goods throughout their area, their region and between them and the wider world. Clearly, the patterns of movement have changed much over the years, linked specifically to the transport technologies of their time. Some authors have characterized this pattern as moving from walking cities, through transit cities, to automobile cities (for instance Newman and Jennings, 2008) Especially this latter phase has led to huge changes in the way the city and people's lives are given shape. It was the coming of the car that allowed for the huge urban sprawl that characterizes many cities, especially in the U.S. and Australia. Sustainable forms of urban transport are likely to focus on reducing car-use and enhancing the use of walking and transit as the main modes of transportation (Register, 2006, and Newman and Jennings, 2008).

Like eco-buildings, modes of transport are strongly linked to the way that the whole city is given shape. Because many technologies are mutually enhancing and depend heavily on the availability of the right infrastructure, such land-use aspects may be considered part of technological innovation.

Probably the most widely used idea in this debate is the compact city. The compact city can be described as '... making optimal use of the infrastructure of the city, through compact, mixed-use and dense settlement structures enabling effective use of public transport ... and minimizing vehicular movements' (WG Urban Design, 2003, p.9, quoted in Tosics, 2004, p.69). As, for instance, Rees (1999), Kenworthy (2006) and Newman and Jennings (2008) argue, higher density, and thus a more compact city, is significantly correlated with lesser per capita energy and transportation use. Other authors have discussed variations on this model. Already in 1991, Nash developed his concept of the 'Island Civilization' in which the world would be organized in 500 relatively big compact cities with transport in between these hubs, leaving much of nature free for itself and for other human purposes (Basiago, 1996). More recently, Register's idea of Ecocities also incorporates many ideas related to a more compact city. In his model small, mixed-use and high-rise urban forms would stimulate walking as the main mode of transport within the city (Register, 2006).

Another important argument related to land-use is that of incorporating the city region in urban planning (Kenworthy, 2006 and Newman and Jennings, 2008). By linking the city to its direct environment, production and disposal of materials can be organized on a more natural scale than current globalization trends allow for. Such ideas are, for instance, evident in UNEP's Cities As Sustainable Ecosystems (CASE) perspective, a model from which the Melbourne Principles were derived (Newman and Jennings, 2008). Such approaches focus on restoring the connection with, and balance within, a city's bioregion, for instance by producing much of the needed food, water and energy at a regional scale.

3.2.2 Integrated Sustainability Planning: Governance

This second mode of implementation is characterized by an integration of technological, social and cultural aspects. For my discussion of the SC literature, I will interpret this category by describing those parts of the literature that deal with governance issues where, indeed, technical aspects are confronted with the practicality of society, culture and organization. While clearly also part of this approach, I leave out those aspects dealing explicitly with civic empowerment and involvement, as these are discussed separately in Joss' third category. Here the following issues are addressed: alternative economies, 'good governance', networks, the relationship between culture, nature and sustainability and the importance of assessment.

As Kenworthy (2006, p.67) notes: 'Not only do urban form, transportation systems and water, waste and energy technologies have to change, but the value system and underlying processes of urban governance and planning need to be reformed to reflect a sustainability agenda'. While specific technologies and forms of land-use are essential for creating SCs, such processes need to come about through (new) forms of organization and steering.

Related to the regional integration discussed above, for instance, certain specific schemes have been set-up that try to create alternative economies and (more) real pricing within a given locality (see for instance Newman and Jennings, 2008, chapter2). Many initiatives have been undertaken to promote (sustainable) development at the local scale by

adopting context specific forms of economic organization. The ideas behind such initiatives are to focus on the comparative advantage of a given region, to promote the use of locally available resources and expertise, to promote the acknowledgement and incorporation of the real (environmental and social) costs, and to promote a sense of belonging to a place by fostering local economic ties. One approach focuses on the creation of complementary currencies that can be used by actors to buy and sell their services and products locally. The most famous of these is probably the LETS (Local Exchange Trading System) initiative (see for instance Burman, 1997, and Newman and Jennings, 2008, p.56). Another approach, LED (Local Economic Development) does not create alternative currencies but adopts a broader policy approach to create an economy that makes more use of locally available advantages and expertise. LED works, amongst others, by giving economic advantages to progressive economic sectors. It also focuses public procurement on local and economically, socially and environmentally sound businesses (Rogerson, 2003).

Another important approach to sustainable organization, one that deals explicitly with the social dimension, is referred to as 'Good governance'. Many authors and organization have used this concept as a means to analyze and promote certain practices related to governance (see for instance ESP, 2009, Faria et al., 2010, Kenworthy, 2006 and Lian et al., 2010). The United Nations Development Program (UNDP) and the United Nations' (UN) habitat Campaign on Good Urban Governance have set out 11 principles that they consider essential for good urban governance (Faria et al., 2009, p.644). They are the following:

- | | |
|----------------------------------|------------------------|
| (1) participation | (2) rule of law |
| (3) transparency | (4) responsiveness |
| (5) consensus | (6) orientation equity |
| (7) effectiveness and efficiency | (8) accountability |
| (9) strategic vision | (10) subsidiarity |
| (11) security | |

Good governance is thus a rather broad concept that incorporates various aspects of governance considered by many to be essential for sustainability (for instance Faria et al 2009 and Kenworthy, 2006). As can be see above, good governance also incorporates an aspect dealt with separately in Joss' third category, namely participation.

Also related, but perhaps less subjective, is the notion of networks. In one reading of the concept, this can be seen as just another way of saying participation. Networks may then arise between various actors at the local scale, leading to more broadly supported policies. However, the concept of networks for SCs is mostly used in discussions of creating links between different cities around the world. Such links are deemed increasingly necessary in a globalizing world. Egger (2003, in Kenworthy, 2006, p.80) puts it as follows:

' . . . through globalization . . . cities more than ever before are becoming increasingly dependent upon other cities and regions in the world city network . . . The new economy consists of a global meta-network of complex technological and human interactions ... a city's sustainability is now far more dependent upon the world city network within which it exists than its previous raison d'être.'

Cities thus depend on one another because their action is always connected to the rest of the world. Networks allow cities to share information and thus learn from each other's best practices (Bulkeley and Betsill, 2005). A number of global networks of this sort have been established. Newman and Jennings (2008), for instance, mention three such global networks: ICLEI (Local Governments for Sustainable Development), nrg4SD (Network of Regional Governments for Sustainable Development), and the Clinton Climate Initiative.

Another approach concerns a more far-reaching point about the relationship between culture, nature and sustainability. This argument is strongly put forward by Register (2006), who argues that we should learn from nature and from our cities. He argues that the natural connection to the environment has been severely severed in recent times. While people in older cities and societies were so closely dependent on their direct environments that it was impossible to ignore their effects on it, modern societies, through technology and (international) trade have been increasingly distanced from their environments. Thus, people do not automatically realize (and control) the effects that their daily lives has on nature and society. A

similar point is also made in the cradle-to-cradle literature and UNEP's CASE program (McDonough and Braungart, 2002 and Newman and Jennings, 2008). Here the point is made that human systems have been increasingly technological and self-focused, thereby neglecting basic truths evident in nature. These approaches therefore promote learning from and copying nature. Newman and Jennings also put forward a number of arguments to foster education and arts as a way of making people more sensitive and connected to the places they live.

Besides the many approaches proposed to make cities more sustainable, much has also been written on the need to assess any progress induced by such measures. The most widely used of these is probably the so-called 'ecological footprint', largely popularized by the work of William Rees (Rees, 1999, and Rees and Wackernagel, 1996). The ecological footprint measures the amount of biologically productive land- and water area necessary to support the demands of a population or productive activity (Cheng and Hu, 2010, p.119). In this way, the ecological footprint aggregates various sustainability indicators into a single, easy to comprehend number. This number can then be compared between different places and set off against the earth's carrying capacity.

3.2.3 Civic Empowerment/Involvement

Joss' third and final category concerns civic empowerment and/or involvement, where citizens and other stakeholders are encouraged to actively participate in the planning and implementation of policies. As was mentioned above, these arguments form an elaboration of the first and sixth principle of good governance mentioned in the last section. Under this final heading of SC theory, the issues of dispersed power, participation and democracy, equity and city gardening are discussed.

The basic tenet of civic empowerment is that of all of the governance literature, namely that power today is so widely dispersed that no single actor (most commonly 'the government') is able to make the required changes on its own (see for instance Dingwerth and Pattberg, 2006). This argument is especially evident in the debate on sustainability, in which many (if not all) related socio-economics factors interact. While participation generally can mean the incorporation of any actors (i.e. government, businesses, Non Governmental Organizations [NGOs] and citizens), for many authors it stands for more democratization in city planning (see for instance Takashi, Newman and Paoletto, 1999 for literature with a strong democratic focus). As Mega (1999, p.67) states:

'Urban democracy, representative and direct, is a key element of the existence of cities and their capacity for sustainability. ... But democracy may be fragile. It needs an constant reaffirmation of civic values, an ongoing reinforcement of the civic bond. It has to precede any gestation of visions and plans and touch the heartbeat of the city. Citizens should be transformed from mere users and consumers into city actors and should rise to the new challenges of urban governance. Cities must endow themselves with strengthening civic action in local communities.'

With the side note that such an approach may require a change in behavior on part of the citizen, reminiscent of the need to regain a connection to nature mentioned above, democracy is seen here as an essential element in creating SCs. Democracy is deemed to create legitimacy and a sense of attachment to the plans and the physical surroundings of the city. This is further elaborated in so called 'visioning' practices (Newman and Jennings, 2008, Chapter 1). Such practices use direct democracy by allowing citizens to give their input into future plans for a city.

Another argument often used axiomatically, concerns equity. While there are analytical and empirical arguments for creating more socially just systems (for instance Frankel, 2003), it is also a subjective argument, based on the idea that everyone should be able to lead a good, healthy life. Equity is widely regarded as one of the starting points for SD, where environmental, economic and social needs must be balanced. Participation is one outcome of this idea, where all those concerned should be able to give their input onto new processes. Cities are not only mayor players in environmental matters; they also often show concentrations of poverty and, thus, equity issues (for instance Newman, 1999). They are thus seen as places where both these matters should be dealt with.

The last arguments discussed here is a particularly bottom-up approach to local sustainability: city gardening. City gardening initiatives show how individual citizens can make a difference, both for themselves and for the community as a whole. While such small-

scale, bottom-up initiatives may seem rather marginal in what they may produce, figures show that such initiatives can have a large effect, especially in developing countries where people are more reliant on their direct environment. Newman and Jennings (2008) mention that globally 800 million people produce food in cities, accounting for 15 percent of global food supply. City gardening has the advantages of making good use of the land available and producing food that has very low energy intensity due to the proximity of production and consumption. It also creates opportunities for sustenance for populations that may be hard-pressed to find other ways of making a living.

While I have discussed all of these approaches under the single heading of civic empowerment and involvement, there are important differences within this category. While they all involve active participation by the citizenry, the last category – city gardening – does not necessarily require a specific government program. Rather, city gardening can constitute a very bottom-up approach whereby individuals simply start growing food wherever possible. This is distinct from the arguments for democratic participation and equity, which must be tackled at the collective level and are more likely to form part of a government program.

3.3 The Melbourne Principles

While it is clear that renewable energy use, waste reduction, new kinds of architecture and communal visioning exercises may all contribute to sustainability in certain ways, it remains unclear how such ideas relate to each other and to the ultimate goal of creating cities and societies that do not undermine the carrying capacity of our ecological, social and economic systems. As was mentioned above, various authors have created visions of SCs by linking up a number of approaches in more holistic strategies. Register's ecocity was already mentioned. Another much discussed strategy, for instance, is McDonough's Hannover Principles (McDonough and Braungart, 2003). For this thesis, the Melbourne Principles will be used. While also forming a broad framework in which many of the aspects of SCs are incorporated, the MPs have the added advantage of being the only internationally sanctioned measure of SCs available.

At a meeting held by the International Environmental Technology Centre (IETC) of UNEP in Melbourne, Australia, in 2002, a set of aspirations was developed to further a more encompassing view of what a sustainable city should be (Newman and Jennings, 2009; and UNEP/IETC, 2002). The principles were later endorsed by local governments at the 2002 Earth Summit, although the IETC has since abandoned the program in favor of a new focus (Newman and Jennings, 2009). The ten Melbourne Principles for Sustainable Cities (UNEP/IETC, 2002) are a set of non-binding statements, that policy makers may take into account when planning SCs. Taken together they cover a wide variety of issues that are believed to be essential to a truly sustainable city. Table 2 lists the ten principles and gives a short explanation of each one.

3.3.1. The Melbourne Principles in Relation to SC Characteristics

The Melbourne Principles have been proposed in order to bring together all relevant factors that make a city sustainable. In this section, I will analyze this claim by discussing the principles in relation to my earlier discussion of SC Characteristics. By doing this it will become clear which ideas have been incorporated in each principle, thereby showing the relationships between the principles and the broader SC literature. Below I will discuss each principle in turn to see if and how it relates to each (set of) approaches, all of this is summarized in Table 3.

The first principle, vision (1), prescribes the creation of a broad ideal to work towards. Vision is elaborated by stating that it should express and align the aspirations of the community involved as well as focusing on equity and motivating the community to take action.

The idea of creating a vision does not relate specifically to any of the approaches described above. However, it may be argued that all of the inclusive strategies in which an ideal of a sustainable future city are set out are in fact such a vision. This principle simply states that each individual city should set out an ideal towards which to strive. Such a vision, then, should incorporate all of the qualities described in the rest of the principles. One approach to creating a vision relies on public input. This process, called *visioning*, allows the needs and wants of the population to be incorporated in the future plans of the city (Newman and Jennings, 2008).

Economy and society (2) focuses attention on the fact that sustainability can be seen as a combination of an environmental, a social and an economic tier. A SC should thus seek economic and social systems that do not undermine the earth's carrying capacity and that provide welfare and security for its citizenry. Concerning the economy, several examples of systems for

alternative economies and real pricing were discussed above. Thus for instance LETS and LED systems may lead to new types of economies that cater to local needs and opportunities. Similarly, city gardening may contribute to more sustainable food supply. The second aspect of this principle, society, is related to the idea of creating equity. Thus, an SC should incorporate systems that not only create welfare but that also distribute this welfare more or less fairly between citizens.

The Ten Melbourne Principles for Sustainable Cities	
1. Vision	Provide a long-term vision for cities based on sustainability; intergenerational, social, economic, and political equity; and their individuality.
2. Economy and Society	Achieve long-term economic and social security.
3. Biodiversity	Recognize the intrinsic value of biodiversity and natural ecosystems, and protect and restore them.
4. Ecological Footprints	Enable communities to minimize their ecological footprints.
5. Model Cities on Ecosystems	Build on the characteristics of ecosystems in the development and nurturing of healthy and sustainable cities.
6. Sense of Place	Recognize and build on the distinctive characteristics of cities, including their human and cultural values, history and natural systems.
7. Empowerment	Empower people and foster participation.
8. Partnerships	Expand and enable cooperative networks to work toward a common, sustainable future.
9. Sustainable Production and Consumption	Promote sustainable production and consumption through appropriate use of environmentally sound technologies and effective demand management.
10. Governance and Hope	Enable continual improvement based on accountability, transparency, and good governance.

Table 2: The Melbourne Principles

(Adapted from UNEP/IETC, 2002, as discussed in Newman and Jennings, 2009)

Biodiversity (3) is largely an environmental aspect. Rather than just focusing on the physical benefits that people derive from this diversity, the principles also points out the intrinsic value of nature, noting how appreciation of biodiversity can connect people to the planet. The first, physical aspect of the importance of biodiversity in cities can be recognized in the approaches that stress the need to incorporate the wider region into city planning. The second aspect – intrinsic value - is evident in those approaches where the need to have a connection to nature is stressed. The fact that this connection has increasingly been lost in modern society is thus seen as one of the reasons for environmental degradation.

Ecological footprint (4) was discussed above as a measure of people’s impact on the planet. This principle focuses attention on the need to gain insight into our impacts by measuring them. Such assessments may then be used as a gauge for the effectiveness of remedial activities.

The fifth principle, model cities on ecosystems (5), again alludes to the arguments put forward in the previous section about the need to learn from nature. Seeing that natural systems tend to be cyclical, and thus sustainable, approaches to development that mimic these structures could greatly enhance environmental performance. While the intrinsic value of a connection to nature is stressed in principle 2 (biodiversity), this fifth principle focuses on design. Thus, the systems in nature may be mimicked in buildings and land-use in such a way that the man-made environment also becomes cyclical, waste-free and not reliant on non-renewable resources. One interpretation of this idea is evident in the Cradle-to-cradle approach discussed above.

Sense of place (6) adds a local touch to the framework. While abiding by the general prescriptions set out in the other nine principles, SC projects must also pay attention to the strengths and weaknesses, opportunities and threats posed by their specific locality. Organizational forms such as LETS and LED, also discussed under principle 2 (economy and society), and the inclusion of the wider region in city planning form examples of systems that specifically take heed of local circumstances.

Empowerment (7) was mentioned several times above and sets out the need to incorporate citizens. It is argued that by doing so, local knowledge and resources are mobilized and peoples right to be included is adhered to. Empowerment refers to those approaches discussed under the heading of civic empowerment/involvement in the last section.

Partnerships (8) were also discussed above. In the principles, partnerships are mentioned as both an extension of the idea of empowerment and as a way of connecting different cities and regions in order to facilitate learning. This has been discussed above through the idea of networks.

Melbourne Principle	Related SC Theory
1. Vision	All below
2. Economy and Society	Alternative economies; LETS; LED; city gardening; equity,
3. Biodiversity	Include wider region; relationship culture, nature, sustainability
4. Ecological Footprints	Assessment
5. Model Cities on Ecosystems	Cradle to cradle
6. Sense of Place	LETS; LED; Include wider region
7. Empowerment	Dispersed power; participation; democracy
8. Partnerships	Networks
9. Sustainable Production and Consumption	Renewable energy; eco-buildings; transport systems; compact city; alternative economies; LETS; LED; city gardening; equity,

Table 3: The Melbourne Principles in Relation to SC Theory

The ninth principle, sustainable production and consumption (9), combines economic, social and environmental aspects. By changing production processes and consumption patterns humanity's impact on the environment can be minimized. This principle may be said to include all of the technical aspects discussed above. Technologies such as renewable energy, eco-buildings and transport systems could ideally lead to the creation of environmentally sound production processes and products. If the products are sustainable, consumption will also be. However, consumption may also be addressed separately, thus forming a more bottom-up push to change production. People taking part in LETS, LED and city gardening systems, for instance, can be said to be adding to more sustainable consumption patterns.

Finally, governance and hope (10) expresses the ideal of good governance, also discussed above. This principle further elaborates on concerns of transparency, democracy, equity etc. that were also evident in principles two, seven and eight.

3.3.3 Shortcomings of the Melbourne Principles

As was seen above, the MPs reflect much of what has been written about SCs, concerning both process and content. Technological, governance and participation issues can all be found in some form in the MPs. However, some general observations about possible shortcomings are in order. First of all, the MPs are clearly stated in a very broad way. The framework thus often lacks specific ways of reaching certain goals. This point is especially clear when considering technological solutions. While it was shown above that the literature offers many specific technologies and ways of implementing them, all of this is aggregated under the single heading of 'Production and consumption' in the MPs. Secondly, many of the principles are clearly interrelated. 'Production and consumption' (9), for instance, is clearly linked to other principles such as 'Economy and society' (2), for production happens within economies and consumption is reliant on the organization of society.

In order to deduct hypotheses, these issues have had to be addressed. The lack of (technological) detail is in fact very compatible with the measurements of culture. As will be seen in the following chapter, the cultural characteristics described by Hofstede and Hofstede (2005) are also worded very generally. As such, it would be impossible to predict very specific outcomes from culture alone. The breadth of the MPs, however, is much more easily linked to such broad cultural statements, while (technical) details of actual projects will still emerge through the qualitative description of case studies. This lack of detail in describing a culture also means that not all of the MPs may be predicted (accurately). A choice has thus been made in which a number of principles were discarded and others were aggregated into single hypotheses. Thus the second issue, the interrelated nature of many of the principles, is solved by bringing together overlapping principles in single hypothetical statements. The selection of MPs is described below, while the process of deducting hypotheses forms the subject of the following chapter.

3.4 Choice of Items from Melbourne Principles

As was noted above, not all of the MPs can be predicted from the cultural characteristics described in Chapter 4. Although they may be used as predictor variables for certain issues, the cultural statements reflect very broad values of a society that are difficult to link to outcomes that are too specific; that deal with issues not reflected clearly in the cultural characteristics; or that lead to hypotheses that cannot be properly tested in this research setup. A selection of eight MPs has therefore been made of the principles for which such a prediction *is* possible.

The original Melbourne Principles (UNEP/IETC, 2002 and previous chapter) consist of ten statements. However, two of these clearly have two components. Principle two deals with both economy and society, while principle nine deals with production as well as consumption. By separating these components twelve individual items emerge. These are all shown in Table 4. The first column of Table 4 shows the eight principles that could be predicted using the cultural characteristics. These items will be incorporated into my final hypotheses. The four remaining items – ‘biodiversity’, ‘model cities on ecosystems’, ‘sense of place’ and ‘good governance’ – will not be used for different reasons. These are explained below.

‘Biodiversity’ and ‘model cities on ecosystems’ have been discarded because they deal with issues that are too specific to be predicted by the cultural characteristics available. While doubtlessly being important elements of SCs, the cultural model used here does not provide a way of anticipating whether or not they will be used in a certain context. The MAS item (see Chapter 4) ‘environment’ versus ‘economic growth’, for instance, may suggest that biodiversity may receive more attention in the EU, none of the other items appear to reinforce such a statement. On the contrary, the long-term orientation in China might suggest that biodiversity – an ecosystem characteristic that may be said to have particular value in the long run – would be more valued there. Thus, the few cultural characteristics that may seem to indicate some logical relationship with valuing this principle are inconclusive at best. Modeling cities on ecosystems is an even more specific principle that describes a certain approach to design that is far removed from most current practices. Here, even more than with biodiversity, none of the characteristics give any indication of whether or not such an approach is likely to be adopted.

Included	Not included
1. Vision	- Biodiversity
2. Economy	- Model City on Ecosystems
3. Society	- Sense of Place
4. Ecological Footprint (assessment)	- Good Governance
5. Empowerment	
6. Partnerships	
7. Production	
8. Consumption	

Table 4: Inclusion of the Melbourne Principles

‘Sense of place’ has been disregarded for almost the opposite reason; namely that *all* cultural characteristics may be relevant here. While it seems reasonable that any city should build on the strengths it already possesses, none of the characteristics available give an indication that this should happen more in one context than the next. Rather, each context is expected to show expressions of culture related to its own specific set of characteristics.

The principle of ‘(good) governance’ has not been incorporated into any hypotheses because it cannot be tested using the data available. Good governance (see Chapter 3) is a rather complex, multi-issue criterion with high political sensitivity. As such, the lack of it is expected to be obscured as much as possible in official documents and interviews with policy makers. Looking at the cultural characteristics it may be expected that China would give much less attention to this principle than the EU. The inclination towards autocracy, commands and lower human rights standards would suggest this. However, the broad approach adopted here, with six case studies, together with problems in gathering data in China, means that I do not have sufficient data to give adequate attention to the many facets of this highly important but obscure criterion.

All in all then, while four principles have had to be discarded, eight important MPs are left. As the following chapter will show, these characteristics may be linked to cultural characteristics in each context to come up with hypotheses to be tested in later chapters.

Chapter 4 – From Culture to SC Projects: 5 Hypotheses

In order to make predictions about the influence of culture on the enactment of SC projects in different settings, a measure of both variables is needed. In the last chapter, the Melbourne Principles were introduced as a representation of the broader SC debate. The MPs form a proxy with which to measure the inclusion of various process- and content related aspects that are considered important in creating SCs. In this chapter, the second variable will be operationalized using Hofstede and Hofstede's (2005, also see Hofstede, 2001) research on cultural indexes. This model provides a tool for summarizing the complex notion of culture in such a way that contexts may be compared. Using this tool, a comparison can be made between characteristics pertaining to the different cultures of the EU and China. By relating these characteristics to the MPs, hypotheses may be deduced on the expected differences in the way SC projects are given shape.

In this Chapter, the five cultural dimensions will first be introduced. Using these indexes, a comparison will be made of the cultures of the EU and China. By focusing on a number of dichotomous, policy-related cultural characteristics the differences between the two contexts are highlighted. In the final section the eight remaining principles discussed in the previous chapter will be grouped and linked to each context's culture, thus arriving at five hypotheses.

4.1 Culture: 5 Dimensions

Drawing on more than 30 years of statistical survey research, Hofstede has developed a typology of cultures based on five dimensions. Four of these dimensions (power distance (PDI), individualism/collectivism (IDV), masculinity/femininity (MAS) and uncertainty avoidance (UAI), see discussion below for the meaning of these variables) were inferred from significantly related clusters of answers that came forward from survey research conducted for IBM. Aggregated per country, the data showed significantly different answers for each country, answers that seemed to be measuring important differences in cultural values across the world. Subsequent research has strengthened the conclusions from this database and led to the addition of a fifth dimension: long-term orientation (LTO).

These dimensions refer to ideal types. As such, no population of a country can be said to be, say, 100 percent individualistic. Rather, the differences in scores point to the *relative* differences between populations. In first instance, the relative scores were calculated in such a way that the lowest score got a number around zero and the highest around a hundred. Inclusion of further research, however, led to certain populations scoring outside of this range. Thus, the numbers attached should not be considered as absolute scores or as having certain percentages of a trait. The scores should be compared in order to understand the relative importance of certain characteristics with each population. I will briefly discuss the five dimensions below.

4.1.1 Power Distance Index (PDI)

Power distance is defined as: *the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally.* (p.46)²

This dimension deals largely with the dependence relationships between actors. In large-PDI countries, dependence (inequality) between actors of different standing (i.e. parent/child, worker/employee, elder son/younger son etc.) is accentuated. Subordinates are expected to show respect and obedience, while superiors should take the lead restrain their power with benevolence. Such countries will tend to be organized hierarchically with large (financial, status, skill and power) differences between people. The political system is characterized by centralization, little dialogue and more violence, strong political polarization (weak centre), autocratic or oligarchic governments, more corruption and the covering up of scandals.

In small-PDI countries, on the contrary, the dependence is smaller, inequalities should be limited and superiors tend to consult their subordinates. Inequality is more pragmatic and does not rest on absolute, essential characteristics of the people involved. The political system is more pluralistic, decentralized, democratic, and characterized by dialogue. The political centre is strong, corruption is perceived to be less and scandals will mean the end of a political career.

² All page numbers in this section refer to Hofstede and Hofstede (2005).

4.1.2 Individualism Index (IDV)

Individualism pertains to: *societies in which the ties between individuals are loose: everyone is expected to look after himself or herself and his or her immediate family. Collectivism as its opposite pertains to societies in which people from birth onward are integrated into strong, cohesive in-groups, which throughout people's lifetimes continue to protect them in exchange to unquestioning loyalty.* (p.76)

This dimension stresses the difference between people living mostly through and for their in-groups (collectivist), and those living for themselves (individual). In low-IDV countries, people think in terms of their in-group. Here people are interdependent and more introvert, resources are shared, relationships predetermined, harmony (the avoidance of confrontation) is important and geared towards not losing 'face'. Occupational mobility is low and in-group members are favored. Hofstede and Hofstede (2005) speak of 'high-context' communication to denote the importance of relational ties. The state dominates the economy, businesses are mostly family or group owned, patriotism is encouraged and harmony and consensus are the ultimate goals. Cultures scoring low on IDV also tend to have lower per capita income and lower human rights standards.

In high-IDV countries, on the other hand, people are more focused on themselves. They speak their mind, are extrovert and relationships are voluntary. Guilt and loss of self-respect can be the outcome of confrontations. Communication is 'low-context', where the matter at hand and the individuals involved are most important. The role of the state in the economy is restrained, businesses are owned by individual investors, and self-actualization and autonomy are the ideal. The countries tend to have higher per capita income and high human rights standards.

4.1.3 Masculinity Index (MAS)

A society is called masculine when: *emotional gender roles are clearly distinct: men are supposed to be assertive, tough, and focused on material success, whereas women are supposed to be more modest, tender, and concerned with the quality of life.*

A society is called feminine when: *emotional gender roles overlap: both men and women are supposed to be modest, tender and concerned with the quality of life.* (p.120)

Thus in high-MAS countries, men are focused on challenges, earnings and recognition, while woman are more focused on relationships. Such societies are based on the power of the strongest. Companies are often large and the management style is decisive and aggressive. These countries do well in competitive manufacturing and chemistry, where relationships are less important and work is technical. Society is performance-based and corrective of individuals and religions are tough and less secularized. Voters are more often in the political centre and the political game is adversarial, where conflict is resolved by show of strength. The political focus is on helping oneself and economic growth is seen as being most important.

Low-MAS countries have less distinguished gender roles. Both men and woman may pursue a wide range of characteristics and relationships and quality of life are pursued by everyone. Compromise and negotiation is key. Organizations are smaller and management works on intuition and consensus. These countries are good at competitive agriculture and service industries, where the more socially oriented characteristics are important. Society is geared towards providing welfare to all, is permissive of individual freedoms and religion is secularized. Voters are often more left wing and negotiation and compromise are evident in the political game through coalitions. Aid is an important political goal, as well as the protection of the environment.

4.1.4: Uncertainty Avoidance Index (UAI)

Uncertainty avoidance can be defined as: *the extent to which the members of a culture feel threatened by ambiguous or unknown situations. This feeling is, among other things, expressed through nervous stress and in a need for predictability: a need for written and unwritten rules.* (p.167)

Uncertainty avoidance is perhaps the hardest to grasp out of all the dimensions. Many of the characteristics may for instance be confused with PDI because they lead to power inequalities. However, Hofstede and Hofstede (2005) argue that authorities do not necessarily have more

power because of their standing but because they are perceived to have expertise. In high-UAI countries, uncertainty is seen as negative; different is dangerous. People here tend to be more stressed, anxious and neurotic, they are less happy and worry about health and money. Interests are conservative; people need rules, precision and formalization and tend to believe experts. This leads people to work longer for one boss and to create fewer new trademarks, while also creating more self-employment and better implementation of technologies. Politically, precise laws are needed (though not always implemented) and citizens have a low interest and participation in politics. Prejudice, xenophobia, intergroup violence and aggressive nationalism are evident. There is a focus on truth, and a tendency to think that the in-group knows this truth. This also leads to grand theories and a tendency to discuss rules and truth in literature.

On the other hand, low-UAI countries tend to be more comfortable with uncertainty; different is curious. People are more lenient on rules, happier and worry less about health and money. There is a tolerance for chaos and ambiguity; laws and rules should be few, general easily adaptable if that seems more practical. People change employer more easily and produce more new trademarks, while being worse at implementing them. Citizens are competent and active in politics and there is trust in the legal system. Politics is more liberal and tolerant, thus there is less extremism and violence. Scientific focus is not so much on grand theories, but rather focused on relativism and empiricism. Fantasy world are often the topic of literature.

4.1.5: Long-Term Orientation (LTO)

Long-term orientation stands for: *the fostering of virtues oriented toward future rewards – in particular, perseverance and thrift. Its opposite pole, short-term orientation, stands for the fostering of virtues related to the past and present – in particular, respect for tradition, preservation of ‘face’, and fulfilling social obligations.* (p.210)

This final dimension was added to the model after completion of the Chinese Value Survey (CVS) by Michael Bond (see Hofstede and Hofstede, 2005). This survey was built around the teachings of Confucius and opposes two sets of values found in these teachings. Interestingly, China scored overwhelmingly towards one side (High-LTO), showing that the Chinese consciously prefer one side of this dimension. High-LTO countries scored higher on the values persistence, thrift, the ordering of social relations by status and having a sense of shame. Work values include learning, honesty, adaptiveness, accountability and self-discipline. These cultures tend to work hard and aim at creating outcomes and profits in the long run. Savings are high, leading to funds for investment. The worldview of such people tends to be more synthetic; disagreement is not seen as a problem and opposing statements can both be seen as true. They are often good at mathematics, formal problems and applied, concrete sciences. The eastern (Chinese) idea of *guanxi* is discussed here. This tight mutually supporting bond between people leads to lifelong connections, something that may only be worthwhile for people with a long-term orientation.

On the opposite side, low-LTO, reciprocation of greetings, favors and gifts, respect for tradition, protection of ‘face’ and personal steadiness and stability are stressed. This dimension consists of the more static Confucian principles. Freedom, rights, achievement and thinking for oneself are valued here. Outcomes must be produced now rather than later, there is a pressure to spend money and savings are much lower. The worldview is characterized by abstract rationality and analytical thinking, a need for cognitive consistency and universal guidelines of good and evil. These societies tend to have talent for theoretical, abstract sciences.

4.2 Comparing European and Chinese Culture

For this research, I will thus compare the scores of China and the EU. This leads to a small methodological problem because most of the scores mentioned by Hofstede and Hofstede (2005) are at the national level. This means that there is one single score for China, but many more for the EU. However, as was expected, most of the scores for the EU countries in which the three cases are located have very similar scores, with the exception of the MAS score for the UK. As such, the scores of each individual EU country will be used and compared to the overall score of China. For the UK, the expected outcomes will be adapted for those hypotheses where MAS is considered important.

It must be noted that the comparison here deals only with a certain part of EU culture. In fact, the cases used in this research are all located in the well-developed, Northern part of Europe. It must also be mentioned that the very large area and population of China have been calculated as one group. While - because of the long integration of this country - it may certainly

be expected that this group is more homogeneous than the EU, important differences between regions may nevertheless be expected. It should be noted that all three of the cases used here lie in the relatively well-developed Eastern side of China. While, for the sake of simplicity, I refer to the 'EU' and 'China' throughout this thesis, it should thus be remembered that I am only considering a certain selection of countries or cities from this wider region.

4.2.1 Comparing the Scores

As can be seen from Table 5 below, countries in the EU and China differ significantly on most cultural dimensions. In this section, the differences between the EU and China will first be discussed using this table.

Culture Index	NL	Sweden	UK	China
Power distance (PDI)	38	31	35	80
Individuality (IDV)	80	71	89	20
Masculinity/femininity (MAS)	14	5	66	66
Uncertainty avoidance (UAI)	53	29	35	30
Long-term orientation (LTO)	44	33	25	118

Table 5: Cultural Scores of the Netherlands, Sweden, the UK, and China (Adapted from Hofstede and Hofstede, 2005)

On the first cultural dimension, power distance (PDI), all of the EU countries score much lower than China (38, 31 and 35 against 80). The countries in which the European cases are found thus show a much smaller power difference than China.

The second dimension, individuality (IDV), shows a similar, though reversed, pattern. While China scores low (20), the EU countries are much higher (80, 71 and 89). It can thus be argued that the EU and China differ significantly in their individuality.

The masculinity/femininity (MAS) dimension shows a less clear picture. While the UK shows the exact same number as China (66), the difference with the other two European countries (14 and 5) is very pronounced. Because of this large difference between China and the bulk of my casework, I will treat this dimension as showing a discrepancy between both contexts. Because of the convergence between the UK and China, however, the hypotheses for the UK for which the cultural characteristics associated with MAS are especially relevant will be adapted accordingly

On the fourth dimension, uncertainty avoidance (UAI), the two contexts score rather similar. There is a negligible difference between Sweden and the UK in comparison to China (29 and 35 compared to 30), and also the Netherlands (53) does not score that much higher. I have therefore chosen to dismiss this cultural dimension as an explanatory variable because it does not seem to indicate any important difference between the contexts of this study.

The last dimension, long-term orientation (LTO), shows by far the largest difference between the EU and China (44, 33 and 25 against 118). As such, the characteristics belonging to this dimension will also be taken to measure significant differences between the contexts.

4.2.2 Comparing Cultural Characteristics

As was discussed earlier, each dimension is attributed certain characteristics. These are worded as dichotomies pertaining to the extremes at both ends. However, not all of the characteristics discussed by Hofstede are directly relevant for the task at hand. Hofstede also discusses, for instance, differences in ways of raising children, teaching at school and sexuality. While such issues are very interesting for general cultural comparison, they are not directly useful for the analysis of governance structures. I have thus made a selection of more directly relevant statements from all four dimensions in which the EU and China are seen to differ significantly.

The Appendix lists all of the cultural characteristics described by Hofstede and Hofstede (2005). As can be seen, they cope with a wide variety of issues that are all related to an aspect of culture. It must be noted that many of the characteristics overlap or are more or less specific reiterations of the same point. In order to make a selection I have mainly looked at those characteristics dealing with organizations and government³. The list in the Appendix is ordered

³ Distinctions between different areas such as organizations and government, while absent in the list, are explicitly made by Hofstede and Hofstede (2001, also see Hofstede, 2001)

using a color scheme: lightly colored items are not deemed especially relevant, dark colored items are seen to be relevant and red items with shading have been used as predictor variables. While the first items are largely disregarded, I hope to have chosen those characteristics (dark) that more or less also cover the remaining relevant (shaded) items. Some of the wording has also been changed in order to create more clarity and to be able to refer to the characteristics more easily. In this way, for instance, the characteristic 'Pluralist governments based on outcome of majority vote' has been reduced to 'Democracy'. While this process leads to a somewhat more rough description of culture than the original list, it has the virtue of being more easily used, while retaining the most important differences that are relevant for the analysis here.

In total, sixteen characteristics have been retained. These are shown in Table 6. The first column shows the cultural index that forms the origin of each of the characteristics. Columns two and three show each of the characteristics, ordered by context.

Index	EU	China
PDI	<ul style="list-style-type: none"> - Democracy - Decentralization - Dialogue 	<ul style="list-style-type: none"> - Autocracy - Centralization - Command
IDV	<ul style="list-style-type: none"> - Limited state - Problem driven communication - High human rights standards - Individual investment 	<ul style="list-style-type: none"> - Strong state - Harmonious communication - Low human rights standards - Family ownership
MAS	<ul style="list-style-type: none"> - Welfare for all - Environment - Compromise and negotiation - Intuitive, consensus-based management - Smaller organizations 	<ul style="list-style-type: none"> - Prestige and recognition - Economic growth - Power of the strong - Decisive, aggressive management - Larger organizations
LTO	<ul style="list-style-type: none"> - Freedom, rights, thinking for oneself - Spending - Low savings - Short-term profits 	<ul style="list-style-type: none"> - Learning, honesty, accountability, self-discipline - Thrift - High savings - Long-term profits

Table 6: Cultural Characteristics of PDI, IDV, MAS and LTO Relevant to Policy Issues (Adapted from Hofstede and Hofstede, 2005)

4.3 Combining: 5 Hypotheses

By combining the four relevant cultural indexes with the eight items from the MPs (see section 3.4), hypotheses can now be drawn up on the expected influence of the former on the inclusion of the latter in SC projects in the EU and China. As will be discussed individually for each hypothesis below, some of the MP items refer to similar processes or content. In such cases, these have been grouped together to form a single hypothesis. Concerning the difference between process and content aspects of SC projects, H1 (stakeholder inclusion) and H2 (assessment) deal mostly with process, while the last three hypotheses (incremental vs. mega-projects, voluntary behavioral change vs. bans and penalties, and inclusion of welfare provisions) focus on content.

Process

4.3.1. Hypothesis 1: Stakeholder Involvement

The principles 'empowerment' and 'partnerships' both relate to processes of stakeholder involvement in the governance of a project. Whilst I assume here that all SC-projects will have some sort of vision of where they want to go and how they want to get there, the way such a vision is achieved is expected to differ markedly. While, for instance, Newman and Jennings (2008) provide a lengthy discussion of ways of gathering public input to create a plan that represents the public's view, a vision may also simply be imposed by the government in charge. Thus, the way the principle 'Vision' is given shape can also be considered part of the process of stakeholder participation. Partnerships, according to the Melbourne Principles (UNEP/IETC, 2002) are a way of facilitating the transfer of knowledge both within and between cities. 'The people' may then use this knowledge to create a more sustainable environment. Networks are thus important for stakeholder involvement, and the way these networks are given shape may determine who is involved and how much influence they have. In the Melbourne Principles, both vision and partnerships are thus deemed important because of the way they involve various

people in the planning, decision-making and execution of SC policies. This is further articulated in the principle of empowerment, where the need for participation of the public is advocated as both a necessity for successful implementation as well as a basic right.

Looking at the cultural characteristics, PDI is most relevant here. The need to include a broad range of stakeholders fits in neatly with a democratic, decentralized society characterized by dialogue. On the other side, in a centralized autocracy governed by demands rather than dialogue it seems unlikely that people without direct power will be included in the decision-making process. Thus the difference between the small power distance in the EU and the large power distance in China may manifest themselves in a different approach to stakeholder involvement, and thus to a difference in the way that vision, empowerment and networks are given shape. The score on PDI is reinforced by some characteristics in the other indexes such as "limited-" vs. "strong state" (IDV) and "compromise and negotiation" (MAS) vs. "power of the strong". This leads to my first hypothesis:

H1: While the EU will seek collaboration with a broad array of stakeholders (including NGOs and citizens); China will seek active participation only of consultants and powerful (government and business) interests.

It is thus expected that the EU will incorporate more strategies to take account of the wishes and ideas of the public, such as visioning exercises, opinion surveys and referenda. Citizens and NGOs may also be encouraged to actively participate in the realization of various projects and to form part of any network organizations involved. In China, citizens and NGOs are expected to be more or less sidelined in both planning and implementation. In the Chinese culture, it is more likely that only those actors with a lot of power and resources will be included in policy practices.

4.3.2 Hypothesis 2: Assessment

Ecological footprint refers to a measurement of ecological impact. The MPs state that this impact should be measured and then reduced. This reduction has to take place through differences in ways of living and producing, something that is dealt with in the hypotheses below. While ecological footprint refers only to ecological measures, the broader meaning of sustainability – also clearly evident in the MPs – means that other measures of improvement (i.e. social and economic) may also be deemed crucial indicators. This hypothesis will thus make a prediction of how assessment criteria may differ across context

The various MAS items offer some clues as to how this relationship may be. In the EU, the focus is on overall welfare and the environment, and management is negotiable and intuitive. Such 'soft' characteristics are expected to lead to assessment criteria that are broader and more inclusive. The intuitive, socially- and consensus based management style may also allow for more qualitative and vague criteria. In China prestige, recognition and (economic) power are more important and management is decisive and aggressive. Such 'hard', targets may thus also be evident in its SC assessment criteria, which are expected to be narrower in scope and thus more easily quantifiable. My second hypothesis is thus:

H2: While the EU will have broad, more qualitative measures of progress; China will use narrower and more quantitative assessment criteria

This is not to say that hard, quantitative measures will not be used in the EU. Rather, it is expected that they are more likely to also include measures of people's perceptions and happiness, their quality of live, whether or not the program has been taken up and is understood by the people etc. In China, such measures as deemed less likely. Rather, they are expected to focus on quantitative economic and environmental targets.

Content

4.3.3 Hypothesis 3: incremental vs. mega-projects

The first hypothesis dealing with content concerns the principles economy and production. Both of these prescribe the creation of economies that are viable in the long-term.

The LTO items give an indication of the differences in the way the EU and China may approach such a transformation of the economy. The free, emancipated culture of the EU, with more dispersed, individual actors aiming more for short-term profits, may not allow for large, sudden changes. Such an individualistic citizenry is likely to think for itself rather than letting

governments decide for them. Change in such a context must thus arrive by gradually changing the behavior of many individual nodes. In China, however, a predisposition for self-discipline and thrift in larger organizations aiming at the future may provide the funding and organizational structure for large-scale investments and changes. I can thus state my third hypothesis:

H3: While the EU aims for incremental technological- and land-use changes; China will create mega-projects and large transformations of space.

The EU, then, should aim at a gradual change of technologies and the way land is utilized. Individual business will be stimulated to change their strategy in the market by incorporating ever more environmentally- and socially friendly solutions that are still economically viable. They are thus likely to use innovation policies and other long-term stimuli to gradually make sustainability an integral part of the economy and economic thinking. In China, on the other hand, large investments in available- and developing sustainable technologies are expected. These would be used in projects where big tracts of land are transformed and used for single industries or technologies. Large initial investments may be offset by profits in the long run.

4.3.4 Hypothesis 4: Communication vs. Force

The other side of production is consumption. Taken broadly, this relates to the way people use the many available resources throughout their lives.

The cultural qualities under PDI provide some clues to the different approaches that may be taken to influence consumption. In the democratic culture of the EU the limited role of the state, more closely connected to the will of the people, allows for much less power to create behavioral change through forceful means. This is in line with the short-term orientation (LTO), which shows a mentality based on freedom and rights in which people are less likely to accept forced changes. Changing behavior in the EU, then, is likely to be based on more voluntary grounds. In China, on the other hand, a strong and autocratic state may be expected to be able to utilize more forceful measures. Again, the inclination for more thrift and self-discipline (LTO) reinforces this statement. My fourth hypothesis is thus:

H4: While the EU aims to create incentives for voluntary behavioral change through communication and mobilization strategies, China is more forceful, utilizing bans and penalties.

In the EU freedom would be the starting point, with the expectancy that measures aiming at improved knowledge and understanding of sustainability issues and perhaps (financial) incentives would lead people to change their consumption and behavior patterns voluntarily. In the Chinese culture, a predisposition for autocratic, hierarchic, command driven systems may be translated into orders rather than requests for changes in behavior. In such a system, bans and penalties will be more accepted than in the free EU. China is more likely to simply require certain standards and ban certain behaviors and products altogether.

4.3.5 Hypothesis 5: Welfare Provisions

My final hypothesis deals with the principle of 'society'. In the MPs (UNEP/IETC, 2002), society refers to the fair distribution of resources and the meeting of basic human needs in a just and equitable manner.

Such societal goals fit in neatly with the qualities associated with MAS. The EU, oriented on welfare, environment and compromise, may be expected to give such societal goals high priority. In China, where prestige, economic growth, and the power of the strong are important, the opposite is true. China, then, is not expected to make society a priority goal. China, instead, may invest more in prestigious, economically viable projects. I thus state my fifth hypothesis:

H5: While the EU devotes much of its resources to welfare provisions (education, employment, aid, recreation, etc.); China invests only in prestigious physical projects and business interests.

In SC projects the EU should pay much attention to the availability of jobs, poverty alleviation, access to schooling and medical care for all and the creation of a place where all people feel welcome and can live fulfilling lives. Equality and welfare would be key criteria that take up many resources, which are then unavailable for other aspects. Chinese efforts may save all

available resources for highly visible projects aiming at sustainable economic growth and giving prestige to those involved.

4.4 Influence of Type of SC

As was discussed above, culture is not the only variable expected to influence SC enactment. It was noted that the type of development – Type I: new city, Type II; new area or Type III: retrofit – may also have significant bearing on the choices for certain processes and content. While the hypotheses are derived from cultural characteristics, this section will briefly show how the type of development may influence the expected outcomes.

Concerning H1, it may be expected that new developments – Type I and II – have lower stakeholder involvement than retrofit efforts. While retrofit developments have to adapt to existing physical and social systems, new developments do not. With no citizens and other stakeholders in the area, there will be much less reason to incorporate people, especially at the onset of the program. For H2, Type III developments are expected to have more qualitative assessment criteria due, again, to having to adapt to existing structures. Qualitative criteria will be more adaptable and interpretable than quantitative ones, allowing them to be fitted more easily into an existing city. When building new areas, on the other hand, there is much room for incorporating certain requirements from the very beginning. It is expected that hard sustainability criteria will then form the starting point of construction. An incremental approach – H3 – is also expected to be used more often in retrofit developments. Building a new area is by definition not incremental and should thus lead to mega-projects. While retrofits may also be changed more radically, it is expected that the need to adapt to existing structures will again lead to an incremental approach. H4 is more difficult to predict on the basis of the type of development. However, it may be argued that it is more difficult to impose bans and penalties on a population that already has habits in an existing area than on a population that is moving into a new place. Retrofit cases, then, may be more inclined to adopt an incremental approach. Finally, welfare provisions (H5) are also expected to be more evident in retrofit cases. Existing social structures are likely to have certain problems that would be expected to be addressed by any major new developments in the city, while new areas have no existing social problems to be addressed.

Table 7 summarizes all of the expected outcomes just described. The first column shows the number of the hypothesis under each heading – process and content. Column two lists all of the SC principles that are incorporated into that hypothesis, while column three shows the main cultural variables used to reach this hypothesis. Finally, column four lists the expected influence that the type of SC may have.

Hypothesis	Melbourne Principles	Main Explanatory Variables	Expected Influence Type of SC
<i>Process</i>			
H.1: Stakeholder involvement	- Vision (1) - Empowerment (8) - Partnerships (9)	PDI (IDV, MAS)	Lower stakeholder involvement in Type I and II
H.2: Assessment	- Ecological footprint (assessment) (5)	MAS	More qualitative assessment in Type III
<i>Content</i>			
H.3: Incremental vs. mega-project	- Economy (2) - Production (10)	LTO	More incremental in Type III
H.4: Voluntary vs. bans	- Consumption (11)	PDI (LTO)	More voluntary in Type III
H.5: Welfare vs. prestige	- Society (3)	MAS	More welfare in Type III

Table 7: Expected Relationship between Hypotheses, MPs, Cultural Characteristics and Type of SC

PART III

EMPIRICAL WORK: 6 CASES

Chapter 5 – SC Projects in the EU

In this part, these hypotheses will be tested against actual cases in both contexts. In this chapter, the three EU cases of Almere, Leicester and Hammarby Sjöstad will be discussed. After a brief explanation of the overall project, each hypothesis will be analyzed in turn. After discussing the findings for each hypotheses, a 'score' is given which states whether or not the findings are in-line with the expected outcome. As a matter of convenience, I will also refer to these scores as either supporting or rejecting a hypothesis *based on that case*. It should be noted that this does not imply that the hypotheses in question is accepted *overall*. I simply use these terms to denote whether or not the findings conform generally to what was expected. Only in the conclusions do I give a final judgment about any perceived differences and whether or not they are caused by the cultural differences.

5.1 Case 1: Almere

Almere is a relatively young city built on newly created land in the IJsselmeer in the Northwest of the Netherlands. Planned from the end of the 1960's, Almere was created to cater for the overspill of the population from parts of the *Randstad*, an (economically) important conurbation in the West of the Netherlands. In creating such a new city from scratch, on newly reclaimed land, the group of planners responsible had plenty of freedom to experiment with new ways of building and organizing, while also building on a vast amount of experience gained in similar earlier projects. The designers eventually settled on a structure with multiple cores, surrounded and divided by tracts of green space. This space allowed for an urban structure different from most cities, where nature and the built environment could interact and which allowed plenty of space for recreation and future changes to the city. Thus, a new city was born with the flexibility to adapt to a future full of uncertainty (Municipality of Almere, 2008).

In the last decade or so, Almere has again felt the push of the *Randstad*, forcing it to expand once more. While the city was originally planned to house a maximum of 250.000 people, the central government of the Netherlands has now asked it to grow to allow for a population of 350.000 people, the so-called *Schaalsprong Almere* (Scale-jump Almere). In this new phase, named Almere 2.0, the city is expected to build 60.000 residences and create 100.000 jobs by 2030 (Municipality Almere, 2008 and almere2030.almere.nl). This plan is part of a broader approach to enhance the whole *Randstad* area in the coming decades (almere2030.almere.nl).

In the early days of planning for Almere 2.0 the VPRO television program *Tegenlicht* ran a double episode on the *Cradle to Cradle* sustainable design philosophy of William McDonough and partners (Municipality of Almere, 2008). The planners for Almere 2.0 were inspired by this philosophy and consequently sought out collaboration with McDonough and partners to work on sustainability plans for the new expansion. This partnership culminated in the publishing of the so-called *Almere Principles* (APs). This set of seven broad principles was to form a framework for all of the plans of the city. The principles are as follows:

1. Cultivate diversity
2. Connect place and context
3. Combine city and nature
4. Anticipate change
5. Continue to innovate
6. Design healthy systems
7. Empower people to make the city

(Source: Municipality of Almere, 2008)

As is stated in the principles: 'The Almere Principles are meant to inspire and offer guidance to those involved in further designing Almere as a sustainable city in the next decades.' (Municipality of Almere, 2008, p.25). True to their word, in the ever more detailed plans for Almere 2.0 the principles and the idea of a sustainable city have been retained and worked out. This has culminated in the documents *Concept Structuurvisie Almere 2.0* (Concept Structural Vision Almere 2.0) (Stuurgroep Almere 2030, 2009) and the *Integraal Afsprakenkader* (Integral Agreement Framework) (IAK, 2010) in which ecological-, social- and economic sustainability play a key role.

While the plans for Almere 2.0 are still in a very early stage, work has already begun on the implementation of the APs with the creation of the *Sustainability Lab*. This network platform within the municipality was set up to plan and coordinate the practical implementation of the

principles (almere2030.almere.nl). Besides already forming a source of knowledge and connection for various actors in the municipality, the Lab has been working on the first practical plans for the year 2010 (see DuurzaamheidsLab Almere, 2010)

Almere is thus in the process of a radical enlargement, while at the same time working towards being sustainable in both the new and the old part of the city. Considering Joss' (2010) terminology, Almere may thus be said to constitute both a Type II and a Type III city. While creating large new areas, this SC project also focuses on adaptation of the existing urban landscape.

Table 8 shows the MPs used in this research and if and how they are given shape in Almere. As was noted in Chapter 2, most of the MPs used for this research are in fact included in each of the cases in one way or another. However, the cases differ substantially in the manner and extent to which each principle is addressed. As the table shows, all of the principles are addressed in some form in Almere, with the partial exception of Ecological Footprint (4). As the discussion below will show, there are currently only some vague, qualitative measures by which to assess the impact of the APs. The table further shows that the project in Almere stresses welfare and participation, works in many partnerships with diverse stakeholders, and includes other MPs by trying to engage businesses and citizens in its sustainability efforts. These issues are addressed in more detail in the discussion of the hypotheses below.

Almere	
Melbourne Principle	Included?
1. Vision	Yes. With McDonough & Partners.
2. Economy	Yes. Engage businesses.
3. Society	Yes. Welfare is stressed.
4. Ecological Footprint (assessment)	Only qualitatively. May change in future.
5. Empowerment	Yes. Participation is stressed.
6. Partnerships	Yes. Many diverse partners.
7. Production	Yes. Engage businesses.
8. Consumption	Yes. Engage citizens.

Table 8: Inclusion MPs Almere

5.1.1 H1: The EU will seek collaboration with a broad array of stakeholders (including NGOs and citizens).

The plans for the expansion of Almere have come together through collaborations with many diverse stakeholders. The initial idea to expand the came from the central government. The idea was then worked out by a broad set of stakeholders including the municipality of Almere, the province of Flevoland, the ministry of VROM (Housing, Spatial Planning and the Environment) and the ministry of Verkeer en Waterstaat (Traffic and Waterworks) (IAK, 2010). Additionally, the broader plan to improve the *Randstad*, of which Almere 2.0 forms a part, also included the other RRAAM (State-Region program Almere-Amsterdam-Markermeer) participants. This organization includes the stakeholders just mentioned as well as the ministry of LNV (Agriculture, Nature and Food Quality), the municipalities of Amsterdam and Utrecht and their corresponding provinces (almere2030.almere.nl).

In addition to these government actors working on the broader plans for Almere 2.0, the APs were established in collaboration with McDonough and Partners. In this separate process, they worked closely together with the municipality of Almere.

Besides those directly involved in the planning of the city, various local stakeholders were also consulted. After the principles had been set out, a process of brainstorming was organized, involving important experts and stakeholders from within the municipality (Municipality of Almere, 2008). This session was set up to see whether people agreed on the principles and saw them as a viable starting point for the further development of the city.

While many of the government tiers, McDonough and partners and important local experts and stakeholders from businesses and civil society were consulted, the general public did not participate in the planning process (Interview 3). However, the principles have been created in such a way as to be communicated and taken up throughout the community. As is stated in the principles themselves: 'The words of the Almere Principles will come alive and become meaningful through human action, by incorporating them on each level into every design for the city as a whole.' (Municipality of Almere, 2008, p.40). The need to incorporate everyone is also evident from the seventh principle: 'Empower people to make the city'. In the elaboration of this

principle, the need to have an informed public, with the leeway to set up their own initiatives is stressed (Municipality of Almere, 2008, pp.38-39). This incorporation of citizen initiatives and participation, along with the education that must go with it, is also part of the work of the Sustainability Lab and forms an important part of many of the initiatives mentioned in the first *Uitvoeringsagenda Almere Principles for 2010* (Implementation Agenda Almere Principles) (DuurzaamheidLab Almere, 2010).

Thus indeed, in many ways Almere conforms to the expectation concerning stakeholder involvement. The process culminating in the Almere Principles and their enactment included a broad array of participants, from governments at many levels to market parties and civil society. While citizens were not consulted during the writing of the principles, they nevertheless constitute important stakeholders in the implementation phase. Thus, while citizens did not participate in the MP 'vision', empowerment and participation are definitely considered of central importance in Almere.

The approach taken in Almere with regard to stakeholder participation is very much in line with the related cultural characteristics. As was argued in Chapter 4, the PDI items 'democracy', 'decentralization' and 'dialogue', the IDV item 'limited state', the MAS item 'compromise and negotiation' and the LTO item 'thinking for oneself' are relevant here. The broad array of stakeholders included in the various phases of the project show the complex pattern of different (democratic) institutions and non-central actors involved. As the quote above and the seventh AP illustrate, the government explicitly addresses the need to include many people through dialogue and negotiation in order to make a meaningful difference. The state clearly feels it does not have the power and authority to tackle the plans alone, and is reliant on stakeholders to do their share. As the following two sections will show, the inspirational character of the APs means that 'thinking for oneself' – at least within the framework of the APs – is also considered to be very important.

5.1.2 H2: The EU will have broad, vague measures of progress.

The Almere Principles, the starting point of the sustainability effort of Almere, represent very broad ideas, meant more to inspire than to from direct instructions on how to expand and develop the city. As such, the principles do not immediately offer a way of being measured.

Part of the broader vision of Almere 2.0, of which the APs form the starting point, of course, can be measured much more easily. The plans to create a set number of new residences and jobs, as well as the extension of infrastructure (IAK, 2010) in the coming two decades are relatively hard criteria that can be assessed by numbers. The IAK (2010, p.7) states that progress will be measured by the 'bestuurlijke samenwerking Almere' (administrative cooperation of Almere). In this report numerous projects are mentioned that name specific, relatively hard targets to be reached within a certain time limit. For instance, it is stated that the level of education in Almere, which is currently under the national average, should reach the average within a period of five years (IAK, 2010, p.12). However, disregarding the broader growth plans, for the measurement of the APs no specific assessment criteria are in place.

Mr. Roeloffzen, program leader of the Sustainability Lab, indicated that measurement of the APs was the subject of much discussion within the team. In Mr. Roeloffzen's words:

"That umbrella [Almere Principles] has been set down, that's why it is sort of self-evident that we all talk about that together. ... the discussion only focuses on how to translate it. Are we just going to leave it to be an inspiration framework, or we'll see what it becomes? Or will we continue now and say "nice, but part of it we will have to start measuring, and we're also going to obligate." ... That is kind of the story right now, so I cannot give you a clear answer yet. We do measure, but we measure the success by initiatives in the city. So we don't measure if we actually, in the classical sense, if we use less energy... We think so, but we don't really believe that that should be the measure for the success of the APs or a sustainable city. (Interview 3)

It thus remains unclear how to translate the principles into measurable results. While they offer much guidance on the general direction, the principles do not set any hard targets to be reached within a certain amount of time, let alone prescribe how to get there and how to track your progress. At the moment, measurement is based on '... the projects that are there, and the clubs that are inspired by it.' (Interview 3) This approach is also defended, based on the idea that the reaching of a few (environmental) targets does not make for a long-term healthy city:

‘Sustainability is not just green roofs, but is also about making that city complete. That takes entrepreneurs, and employment opportunities. You need a social structure, and indeed better energy and greener, healthier systems. In the end that whole package determines that you build a really good city. Look, if we’re very sustainable later, but no one wants to live here, what have you made then?’ (Interview 3)

Therefore, while hard targets may emerge in the future, for the time being ‘soft’, qualitative measures are the main tool of assessment for the APs. The explicitly inspirational character of the Principles, however, also shows that it is likely that qualitative aspects will remain of central importance in this project. Rather than focusing on reaching certain predetermined quantitative goals, the program aims largely at the way the APs are taken up in society and at creating a place where people want to live. While the possibility of creating more quantitative measures in the future should not be neglected, the initial aim of the APs at least can be said to focus largely on broad and vaguely defined measures of progress. H2 is thus supported by the evidence in Almere.

This approach is very much in line with the MAS characteristics of ‘compromise and negotiation’ and ‘intuitive, consensus based management’. Rather than having predetermined outcomes at which to aim, the APs are much more adaptable to what people want and allow separate parties to find their own ways of interpreting them. The municipality appears reluctant to set hard criteria, in part because it feels that this may undermine the livability of the city, causing people to move elsewhere. The breadth of the MPs, however, allows for compromises, negotiation and eventual action based on consensus amongst a broad set of people. This reasoning appears to be related to H1, where it was said that power is shared between many stakeholders due to a limited, democratic and decentralized state with a freethinking public. Within such a setting, the government is reliant on many parties to make their plans come true. It is then no surprise that the targets to be reached should also be negotiated with these actors.

5.1.3 H3: The EU aims for incremental technological- and land-use changes.

For this hypothesis, again, there appears to be some discrepancy between the broader plans for Almere 2.0 and the implementation of the APs in the rest of the city. The aim of significantly enlarging the amount of residences and jobs in Almere over a period of twenty years constitutes a major jump in the development of the city and the broader environment.

Construction has already begun on some of the new, sustainable areas, for instance Almere Poort and Almere Hout (almere.nl and DuurzaamheidLab Almere, 2010). While none of the new neighborhoods are finished, the plans are to realize various parts of the projects within the coming years. While most of the numerous other projects are still in the thinking and planning stage, the plans presented in the Implementation Agenda show a commitment to large-scale action in the coming years. Thus, Almere seems to be committed to sustainable growth that can hardly be called incremental.

However, in discussing the day-to-day implementation of the principles with Mr. Roeloffzen, it appears that the creation of a sustainable city is also a matter of long-term, incremental change. Many of the efforts that were discussed aimed at creating a cultural change; at changing the whole ecological-, social- and economic fabric of the city to one where sustainable thinking is integrated everywhere. In Mr. Roeloffzen’s words: ‘It’s a cultural turnaround. Sustainable thinking is different from how we think now.’ (Interview 3). Thus everyone in the city, from government tiers, through businesses and entrepreneurs, down to individual citizens and employees, must start thinking and acting in a sustainable manner. When asked about the integration of sustainable thinking throughout the established government departments, sustainable thinking was compared with putting on a different pair of glasses:

‘Sustainability is basically just a pair of glasses that you look through. And it is very normal for people in their regular job to just look through a certain pair of glasses: “I always do it like this, so I will just keep doing that.” But some people have the tendency to put on the sustainability glasses naturally. So that works automatically. They just say, “Well, I don’t want an unsustainable building”, or “It should be a function that matches the environment.” But some people have more trouble with that, and we have to help them.’ (Interview 3)

A large part of the implementation of the principles, then, is based on a gradual shift in the way of thinking of those involved in the city. This is also evident in the many concrete projects whereby the Lab and its partners are trying to engage businesses, civil society, citizens, and government agencies in sustainable thinking and action (see DuurzaamheidLab Almere, 2010).

The project in Almere is combining two approaches. On the one hand, the city is committed to large-scale growth. While this is to be realized within twenty years, it means large projects are already being executed in the next few years. On the other hand, the twenty-year time-span also allows for a more incremental approach when it comes to changing people's attitude and behavior and the way things are done in the existing areas and departments of Almere. This means the MPs 'economy' and 'production' are addressed on two scales: while the newly built areas provide places for more rapid change and use of new technologies, there is also room for existing people and organizations to change and innovate more slowly. Almere thus does not confirm to the hypothesis that development will be incremental. While this element is certainly included, the plans also create large-scale, rapid innovations. H3 can neither be confirmed nor rejected in the case of Almere.

While the incremental approach is clearly in line with what was expected from the individual freedom associated with a low LTO scores, the more rapid expansion is not. It was argued in Chapter 4 that a free citizenry focused on rights may not allow for rapid changes in their (economic) functioning. As the above has shown, this indeed appears to be the reasoning behind gradually changing people's mindset. By including such ideas in ever more projects throughout the city, the municipality of Almere aims to slowly influence the way people think. In this way, it is hoped that people themselves will see the need for change and voluntarily start adapting their thinking and action in such a way as to create more sustainable economic systems.

However, the large-scale efforts to expand the city do not fit into this picture. Apparently, the cultural factors just described do not mean that such mega-projects cannot be undertaken. As was noted above, however, this part of the project will be conducted as a new part of the city, making Almere both a Type II and Type III project. These large new areas are constructed in places where no people and businesses currently reside and thus do not require changes of existing behavior patterns. These findings show that, while culture may indeed have led to the choice of an incremental approach in the existing city, larger scale changes are nevertheless possible in the same setting.

5.1.4 H4: The EU aims to create incentives for voluntary behavioral change through communication and mobilization strategies.

The fourth hypothesis for this case is closely linked to H2 and H3, and the fact that the Almere Principles are meant as an inspiration framework rather than a hard set of targets. As was discussed above, assessment of the principles (H2) is currently rather vague and qualitative. Without strict criteria by which to judge progress, it is also hard to impose mandatory action because it remains unclear exactly what, and how much should be done. Similarly - considering H3 - bringing about a cultural change, a change in the way people think and act requires more than force and pressure. Thus, a broad strategy of communication and mobilization must at least be *part of the solution*.

While, as with the problem of measurement discussed above, the principles are now only used as broad inspiration, there is much discussion within the municipality about the possibility of creating more forceful regulations to realize (some of) the goals:

'The whole idea is to do this more and more with the city, so we're not doing it alone as a government. We feel responsible, but the principles are in fact an invitation to all the people in this city who are busy doing things sustainably. So it's an inspiration framework, it's not an obligation. It's not a set of rules that says you should do this and that. It will be used as assessment, but it is not: "you have to do a, b, c, or d, otherwise its not allowed." Of course that is the discussion of what is enough. Inspiring works better than requiring, but maybe in some cases you should make things mandatory.' (Interview 3)

As was discussed above, this issue is closely connected to the fact that sustainability is considered to entail much more than just ecological sustainability. Sustainability must also include social and economic criteria; the city must provide a place where people can live and work happily. This weighing of the three tiers of sustainability leads to hard choices as to where

to draw the line when it comes to, for instance, energy consumption etc. This problem was neatly put by Mr. Roeloffzen:

'... for instance, you can say "There will only be sustainable businesses in Almere, full stop." But if then a very big company, taking 100.000 jobs with it, wants to come, and it isn't sustainable, are you then going to refuse? Those are very difficult considerations.' (Interview 3)

As the above shows, there is much discussion in Almere about the need to balance voluntary and mandatory measures. However, the principles were first and foremost meant as an inspiration framework only, and no mandatory measures have yet been put in place. For the time being H4 is supported in the case of Almere: communication and mobilization strategies are the main tool in changing behavior on a voluntary basis. However, it will be interesting to see if and how more mandatory measures may be incorporated in the future.

This is perfectly in line with the prediction and the cultural values related to PDI and LTO. The inspirational character of the APs shows how dialogue, freedom and thinking for oneself are stressed rather than issuing central commands. Looking at the first quote, it is even explicitly recognized that 'inspiring' works better than 'requiring' in this setting. It may then be said that the cultural characteristics of society are recognized by the government and have led to this particular approach of including people.

5.1.5 H5: The EU devotes much of its resources to welfare provisions (education, employment, aid, recreation, etc.)

Again, the answer to this hypothesis already came forward in the above. The plans for Almere constitute a broad sustainability effort, aimed at ecology, society and the economy, as well as being part of a broader program to expand and improve a large area of the Randstad. The project includes the building of houses, the creation of jobs, enhancing school, creating awareness, etc. As the last quote for H4 showed, the act of balancing the three sustainability tiers is considered an important and yet unresolved problem in the realization of the Almere Principles.

In the text of the principles themselves this broad approach is also evident (Municipality of Almere, 2008). Here social and economic aspects – improving culture, helping deprived groups, improving education and health care – are considered an essential part of the principles. As McDonough and partners say in the elaboration on the principles:

'A sustainable community is one where every person is empowered and engaged in shaping the future. It is only when these needs are met can we achieve true economic, ecological and environmental sustainability.' (McDonough and partners in Municipality of Almere, 2008, p.38)

Thus, indeed, meeting the needs of the people through broad welfare provisions is deemed essential for sustainability in all tiers. When asked about this, Mr. Roeloffzen also acknowledged its importance, using the example of education to show that the people must be the carriers of making a sustainable city in the future:

'Look, what's so funny is, by choosing that [a broad, welfare oriented approach], much more is released than with the classical movement of energy reductions. For instance with education. We want people like you, who are busy getting understanding in sustainable development, we will need those very badly later, when they go to work, to do that naturally. Look, we notice that this only works if the power comes from the people. It starts with an administrator who says, "I find this important." That starts with people like me saying "I'm going for it." But we also need people like that in our organization, and in other organizations too, because that just happens to be the way things are created: when people really go for it, feel like it, then they just do it.' (Interview 3)

Thus Almere indeed devotes much of its resources to the provision of welfare to citizens throughout the municipality, as was expected. The case thus appears to support hypothesis 5. This finding follows logically from the low MAS score, where welfare for all is seen as important. Rather than focusing on the strong people in society, this municipality indeed sees a need to help everyone, regardless of competencies.

Interestingly, as the last quote shows, there appears to be more reasons for this than the mere need for equality. According to this statement, a broad, welfare orientation allows sustainability to be integrated in many aspects of life. This investment is expected to pay itself back because it leads to broad support that would be unattainable when just focusing on environmental matters. While this finding may indeed reflect a culture where welfare for all is seen as important, there also appear to be more practical reasons for this approach.

5.1.6 Conclusions Almere

Almere is characterized by the intention for both large-scale growth and more incremental changes in the existing city. Broad stakeholder participation, vague measures of progress, a partly incremental focus, a voluntary approach and a focus on welfare provisions all show how the project in Almere aims at including the entire city in a largely inspirational manner.

The project in Almere conforms closely to what was expected. With the exception that the plan also includes large-scale new construction, all of the hypotheses were confirmed. Most of the findings could be explained with reference to the cultural characteristics of low PDI, high IDV, low MAS and low LTO. However, two important exceptions were found. First of all, the new areas just mentioned were not in line with the incremental approach expected from the cultural characteristics. These, however, can be explained by the type of development, which includes the creation of new parts of the city (Type II). The incremental approach that was found in the existing parts of the city is indeed in line with the culture. Secondly, while welfare provisions were indeed stressed in the program, as was expected from the high MAS score, an alternative explanation was also given. In this reasoning the broad, welfare oriented approach allows the program to gain support by making it known to those that might otherwise not be involved and creating an understanding of sustainability.

5.2 Leicester

With more than 300.000 inhabitants, Leicester is the largest city in the East Midlands and the tenth largest in the UK. The city, already occupied by the Romans, developed into an important commercial and manufacturing centre but has suffered substantially from changes in the global economy over the last 25 years (Leicester.gov.uk and Leicester Partnership, 2008) The citizenry is made up of a culturally diverse community of people from around the world. The population is young, with nearly half of the people under 30 years old. Perhaps due to the abovementioned economic trends, the city suffers from slightly higher than average crime rates, low skill and education levels and relatively low average incomes (Leicester Partnership, 2008).

Despite these substantial problems, the city boasts an impressive environmental record. Because of its pioneering efforts to improve the urban environment the city was named Britain's first Environmental City as early as 1990. Later, in 1996, the city became the first European Sustainable City, was the first to implement the European environmental management scheme EMAS (Eco-management and Audit Scheme) in 1997 and it boasts a university well known for its work on energy and sustainable development (Leicester Environmental partnership, 2004, Leicester Partnership, 2008 and Roberts, 2000). In the year following the EMAS registration, for instance, the city reduced water consumption by ten percent, paper use by almost 30 percent, increased the use of bicycles to work by 50 percent and managed to raise its percentage of renewable energy to twelve percent (Roberts, 2000). Despite these successes, the city still suffers from congestion, litter and many social problems, and falls short of many other UK cities when it comes to sustainability indicators (Leicester Partnership, 2008).

The effort to deal with these problems is evident in the long list of organizations and documents aiming to create a more environmentally friendly city. During the 1990s, much work was done to create partnership organizations with stakeholders from around the city to tackle the issue. As a result of a campaign by the Civic Trust and Friends of the Earth NGOs, the first partnership organization, the Environmental City Board, was set up (Roberts, 2000). In the following years the names, organizations and implementation plans related to this effort saw many transformations. One important shift was the change in focus between environment and sustainable development. This move allowed the incorporation of ever more social and economic aspects into the environmental program.

The most recent sustainability effort, brought about through an intensive process of public consultation, is set out in the document *One Leicester Shaping Britain's Sustainable City: The journey to creating a city of confidence, prosperity and beauty* (Leicester Partnership, 2008). In this document the most recent social, economic and environmental challenges facing the city

have been set out, along with an approach to meet these challenges over the coming 25 years. Here Leicester Partnership champions seven key levers for change:

1. Investing in our children
2. Planning for people not cars
3. Reducing our carbon footprint
4. Creating thriving, safe communities
5. Improving wellbeing and health
6. Talking up Leicester
7. Investing in skills and enterprise

(Source: Leicester Partnership, 2008, p.16)

This program thus works towards tackling a number of issues dealing with a broad spectrum of sustainability concerns. While sometimes referring to the entire history of environmental programs in Leicester, the focus of this case study will be on this latest plan.

Considering the fact that the entire program aims at innovation and adaptation within an existing city, Leicester is clearly a Type III municipality. In fact, Leicester is the only city in this research that is not using its sustainability agenda in the context of large-scale building efforts. Rather, Leicester is characterized by an effort to gradually become more sustainable within a context of resource restraints and economic and social difficulties. Sustainability is used as a platform to address social, economic and environmental issues in an integrated manner.

Table 9 summarizes the way the eight MPs used here are incorporated in Leicester. As in Almere, welfare and participation are again stressed and various partnerships are included. An interesting difference is the inclusion of citizen participation in the creation of the sustainability vision, thus giving Leicester an even larger democratic focus. Like Almere, the plan also includes various (small-scale) initiatives to engage businesses and citizens in the implementation of various parts of the project. Unlike Almere, however, Leicester has much more clear and qualitative assessment criteria.

Leicester	
Melbourne Principle	Included?
1. Vision	Yes. Citizen involvement.
2. Economy	Yes. Engage businesses.
3. Society	Yes. Welfare is stressed.
4. Ecological Footprint (assessment)	Yes. Various methods. EMAS.
5. Empowerment	Yes. Participation is stressed.
6. Partnerships	Yes. Diverse partners.
7. Production	Yes. Engage businesses.
8. Consumption	Yes. Engage citizens.

Table 9: Inclusion MPs Leicester

5.2.1 H1: The EU will seek collaboration with a broad array of stakeholders (including NGOs and citizens).

The sustainability efforts in Leicester are characterized by an effort to incorporate stakeholders from throughout the community. From the very beginning in the 1990s a diverse range of actors were brought together to form the Environmental City Board. This board, under the chairmanship of the vice-chancellor of De Montford University, consisted of actors from the Leicester City Council, the Leicester County Council, the business community and local community groups. The board subsequently established the Environmental City Trust, a charity for providing executive support and managing the Environmental City initiative. The charity received further funding from the World Wide Fund for Nature (WWF) (Roberts, 2000).

While in years that followed there have been many name- and program changes for the institutions involved, the Leicester Partnership that now runs the One Leicester program is still based on the principal of bringing together and coordinating a diverse range of actors. As before, the Leicester Partnership includes members from the public-, business- and voluntary sector. The partnership is organized through a number of strategic theme groups, each focusing on one or a number of the levers for change identified in the introduction (Leicester Partnership, 2010).

As was mentioned above, the One Leicester program was the result of an intensive process of public consultation (Leicester Partnership, 2008). This approach, again, has been

pivotal throughout the history of Leicester's environmental program. As Roberst (2000) notes, the second wave of activity following the initial plans saw the start of the Local Agenda 21 project *Blueprint for Leicester*. This program consisted of an extensive set of public participation exercises aiming to map the problems and aspirations of all of the diverse groups in Leicester. The results of these exercises were then brought together to form a shared vision, guiding principles and action plans for the future. While significant difficulties were encountered during the implementation process, this approach was nevertheless heralded as an effective way to tackle the broad set of challenges inherent in sustainable development (Roberts, 2000). The public process involved in creating the One Leicester program shows that public consultation and participation are still central to Leicester's sustainability efforts.

Participation of citizens and stakeholders in Leicester is also apparent at the implementation level. Leicester Partnership, with its diverse membership, is not only active in planning but is also responsible for driving the One Leicester program and delivering its targets. In addition, in the One Leicester program the necessity of working together with an active citizenry is stressed repeatedly. As the document notes:

'The challenges we face as a city cannot be solved without the active involvement, participation and enthusiasm of the people of Leicester. Whilst we are committed to providing the support and services that people want, and to giving power to the communities to improve their own neighborhoods, we also need to release the energy and enthusiasm of local people to enhance their own quality of life.' (Leicester Partnership, 2008, p.23).

So, the sustainability effort in Leicester is characterized by high stakeholder involvement. The discourse used throughout the plans is based on participation, democracy and the need for everyone – from governments to businesses, NGOs and citizens - to get involved in order to be able to make a change. Unlike in Almere, citizens in Leicester were also active in the creation of the vision. Thus, H1 can be confirmed in the case of Leicester.

Like in Almere, participation of many stakeholders is again seen as being of central importance to the success of the project, as was expected from the culture scores. As the Leicester Partnership shows, the entire program rest on involvement of others, and thus on dialogue and a certain amount of decentralization. Additionally, participation and democracy for the entire citizenry have been stressed throughout the history of Leicester's environmental strategy, and the government explicitly notes that it cannot reach its objectives without help from citizens. All of this goes to show that the municipality in Leicester plays a limited role and rests on a wide group of stakeholders for the implementation of the project. While, as the following will show, this may also rest in part on a lack of finance, the pronounced nature of partnerships and empowerment make Leicester a prime example of democratic SC governance.

5.2.2 H2: The EU will have broad, vague measures of progress.

As with the Almere Principles, the One Leicester program is meant as an inspiration framework based on broad ideas. As is mentioned in the program:

'Rather than being a blueprint, One Leicester is the starting point for a process – a catalyst that will hopefully trigger great changes and improvements in our city. It is not intended to direct, but rather to inspire people to get involved in transforming Leicester. Through it, we can get the city we want.' (Leicester partnership, 2008, p.30)

Nevertheless, the program does set some hard targets, though not necessarily spelling out exactly how they will be reached. For instance, there is a target of reducing carbon dioxide emissions by 50 percent relative to 1990 levels within the 25 years span of the plan, as well as making sure all new buildings in Leicester will be 'zero carbon' by the year 2013 (Leicester Partnership, 2008).

Some of the goals of the One Leicester program are much more difficult to measure, such as improving wellbeing and 'talking up Leicester'. For these targets it indeed appears that Leicester will work with rather broad, vague measures involving the participatory tools that were also evident in the process of creating the plans. Such an approach has indeed been used throughout much of the history of Leicester's environmental improvement efforts (Roberts, 2000). For the latter target, for instance, the One Leicester document notes the need to highlight

individual projects and achievements, as well as holding public meetings to discuss progress and get new ideas from the inhabitants (Leicester partnership, 2008).

However, for the most part Leicester is committed to much harder targets and auditing schemes. The carbon reductions and 'zero carbon' buildings just mentioned are an example. Additionally, many of the social and economic targets – such as improving literacy rates, creating more employment and improving life expectancy – can also be measured quantitatively. As was mentioned in the introduction, Leicester was also one of the first government organizations to receive EMAS certification. This voluntary, Europe-wide scheme forms an independent agency that monitors progress on sustainability standards (Iraldo et al., 2009). As a result, Leicester now publishes extensive reports on its progress towards sustainability, in which a diverse range of environmental criteria, as well as the progress in achieving them are documented (see Leicester City Council, 2009). Leicester has also set up many of its own initiatives to monitor specific aspects of its progress on environmental matters. Roberts (2000, p.15), for instance, discusses the creation of an extensive citywide network for monitoring air quality, a device that was also mentioned in my interview with Mr. Stoke, head of sustainability at Leicester city council (Interview 1). In this interview, we also discussed the creation of new measuring tools, such as the Carbon Footprint (Interview 1 and Leicester Partnership, 2008) and a new energy algorithm used to improve the flow of traffic.

All in all then, while broad, vague targets and measures may form part of Leicester's assessment strategy, much of it rests on hard, quantitative criteria that are also monitored by the independent organization EMAS. While the initial quote about the strategy not forming a 'blueprint' but being meant as inspiration is reminiscent of Almere, Leicester has clearly gone much further in quantifying their criteria. However, as was mentioned in Chapter 4, the MAS score used for this hypothesis is very different in the UK as compared to the rest of the European cases. In fact, the score was seen to be the same as in China. Thus, it is not unexpected that Leicester confirms more closely to the more decisive and aggressive management associated with this higher score. Consequently, H2 can be confirmed for Leicester.

As was noted in Chapter 4, high MAS scores are related to a focus on prestige and recognition, economic growth, the power of the strong, decisive, aggressive management and technical and larger organizations. Especially the quality of 'decisive, aggressive management' was expected to have a bearing on this particular hypothesis. Such a focus was expected to lead to more quantitative assessment criteria. It may then be argued that the many quantitative criteria mentioned above are the result of a government that needs to be firmly in charge. However, the fact that more quantitative criteria also form part of the program, and the fact that 'inspiring' was again mentioned as one of the goals of the project, makes it difficult to follow this argument through. While, Leicester indeed conforms more closely to what was expected, it also includes measures not easily explained by its cultural scores.

5.2.3 H3: The EU aims for incremental technological- and land-use changes.

Unlike the other two EU cases, Leicester's sustainability program does not form part of any major new construction plans. Many of the issues identified in the program - especially those dealing with social and economic sustainability - aim at improving existing facilities over the 25-year duration of the program. The program aims, for instance, to improve health care, schooling, safety and leisure facilities, to clean up parks and graffiti, and to attract more business and investment in the city. Many of the environmental goals - such as the carbon reduction of 50 percent in comparison to 1990 levels, improving domestic- and business energy efficiency and adapting the current infrastructure to cater more for walking and cycling than for the use of cars – also won't be realized immediately. The aim is to reach these goals within the relatively long time-span of 25 years. This long-term approach is specifically addressed in the One Leicester program, where it is stated that:

'We cannot change Leicester overnight – we simply don't have the resources to tackle every challenge we face, or to implement all of the great ideas that people have suggested. So we need to bring about these huge changes one step at a time, making properly informed choices about where we focus our attention and resources.' (Leicester Partnership, 2008, p.14)

Thus, a shortage of resources is given as the main reason for the incremental implementation of the strategy, especially given the huge task of working in so many diverse areas at once. In the

interview, the lack of financial resources also came up repeatedly (Interview 1). It was often given as a reason for not taking measures, or for certain plans not being executed, such as planting trees and green walls, creating new, environmentally friendly buildings for the city council and upgrading the existing building stock of the city.

Despite the mainly incremental approach adopted for the plan as a whole, there are nevertheless some more tangible projects that may be realized within a shorter time-span. The necessity of creating such new and visible projects in Leicester, as a part of a generally incremental strategy, was already recognized during the first ten years of Leicester's environmental and sustainability efforts (Roberts, 2000). Examples of such projects in the One Leicester strategy, however, mostly include the setting up of new organizations – such as a new energy services company – and the drawing up of reports on the state of the city (Leicester Partnership, 2008). In our interview, Mr. Stork did name some more tangible flagship projects, such as the use of hydrogen cars through cooperation with RiverSimple (Interview 1 and Riversimple.com) and the organization of cultural events that are run sustainably and focus people's attention on this topic, such as 'Greening the Laughs' (Comedy-festival.co.uk).

Still, despite some flagship projects aimed at the short-term, incremental technological- and land-use changes at all levels constitute the brunt of Leicester's sustainability strategy. As Mr. Stork put it in our interview: "There are no highs and no lows. It is a question of "inching the middle up" (Interview 1). H3 can thus be confirmed for Leicester.

This finding, then, is in line with what was expected from the low LTO score. However, the reasons given for the incremental approach are mostly financial. Unlike in Almere, the need for necessarily slow adaptation of the way people think has not been found in the Leicester program. This makes it very difficult to link this finding to cultural characteristics. Rather, the program stresses the need to include people based on the resources they could bring to bear on the project. It thus appears that, while more radical developments may be preferred, resource constraints form the main limiting factor. Although Leicester's program thus confirms H3, it must be noted that the reasons are not necessarily cultural.

5.2.4 H4: The EU aims to create incentives for voluntary behavioral change through communication and mobilization strategies.

An answer for this hypothesis can already be deduced from the discussion on H1. Here, Leicester's collaborative approach with a broad set of stakeholders, was explained. It was also mentioned that: '...we ... need to release the energy and enthusiasm of local people to enhance their own quality of life.' (Leicester Partnership, 2008, p.23). Thus, Leicester Partnership recognizes the need to mobilize local people in order to reach their sustainability goals.

Mr. Stork explained that the use of force –bans and penalties – by individual cities is not possible within the UK regulatory framework (Interview 1). Such issues are only regulated at the national level, leaving only a voluntary approach aimed at communication and mobilization strategies. As Mr. Stork put it:

'... it is all about creating social responsibility in residents, this is the essence of the entire approach. Need to engage everyone and take responsibility together. The council guides people in this and takes the lead.' (Interview 1)

Thus, the city aims to include as many people as possible – from government, businesses and NGOs, down to citizens – in realizing its aims. The necessity of such an approach and ways of activating citizens came forward again and again in the interview. Terms such as creating social responsibility, engagement and working with people's different 'drivers' were often heard.

Leicester has thus set up many initiatives to engage the people and help them make more sustainable choices. One Leicester, for instance, mentions the need to make people proud of the city and confident in their action, to develop capacity for local communities to identify common needs, and to set up a reward scheme for those that have helped achieve success and put Leicester on the map. Mr. Stork also mentioned a number of initiatives such as a team that advises people on insulation and other energy-efficiency improving measures at home, a team that visits local businesses to inform them about the pro's of energy savings and other environmental measures, and the partnerships with rugby- and football clubs to reduce their carbon emissions (Interview 1). These examples show how Leicester is working throughout the community to try to get people actively supporting the One Leicester framework.

Mr. Stork also recognized the downsides of such a voluntary approach but argued that this was the only possibility within the power-constraints faced by British cities. Apparently, British cities have much less legislative power in relation to the national governments as compared to most other EU cities (see Bomber and Peterson, 1998, and Darby et al, 2002 for supporting analysis). However, such a limitation also means that a city cannot miss-use its power:

‘You need the right regulatory framework. An advantage of the current setting is that one cannot do anything outrageous. The disadvantage is that you cannot demand anything.’
(Interview 1)

In a setting where demanding change is not directly possible, Leicester is trying to engage all of its people to voluntarily help them realize a broad set of sustainability goals. Leicester’s approach confirms the hypothesis; Indeed the city’s plans and action aim almost exclusively at voluntary behavioral change through strategies of communication and mobilization.

This corresponds closely to what was expected from this low-PDI, low-LTO country. Dialogue, democracy, freedom and thinking for oneself are reflected in statements of the government that, while they must be the catalyst of the program, the success ultimately rests on the active participation of the citizens. The limited power of the state and the free, emancipated citizenry are clearly accepted as a fact of life and included in the program. As the last quote shows, people in the government recognize the importance of these freedoms for the people and limited role of the (local) government.

However, the apparent impossibility of creating more forceful measures due to the limited discretionary space of cities in the UK is interesting in this regard. It points out the importance of such organizational forms in city governance. Perhaps greater freedom for the Leicester government would have led to more aggressive strategies.

5.2.5 H5: The EU devotes much of its resources to welfare provisions (education, employment, aid, recreation, etc.

As was shown in the introduction, welfare provisions do indeed feature prominently in the One Leicester strategy. At least four of the seven ‘levers for change’ – ‘Investing in our children’, ‘Creating thriving, safe communities’, ‘Improving wellbeing and health’, and ‘Investing in skills and enterprise’ - that form the crux of this document mention welfare-related issues.

In fact, it seems that the outcomes of the intensive visioning and participation exercises that took place during the forming of the strategy - and thus the main concerns of the stakeholders and citizens that took part - mostly involve such welfare provisions, rather than environmental concerns. Thus the environmental part of the program appears to be added by the Leicester Partnership, independent of these consultations. As it is worded in the One Leicester program:

‘If we are to improve the city for everyone, we know we must take action to deal with the concerns that most worry our citizens, while addressing the main challenge that faces us today and in the future - damage to our environment.’ (Leicester Partnership, 2008, p.4)

In fact, the ‘three key themes’ that are mentioned as the starting point of the document focus more on welfare than on (non-local) environmental problems (Leicester Partnership, 2008). The first theme addresses the need to become more confident, the second addresses prosperity, reaching one’s potential and becoming more active and healthy. Only in the third theme can a trace of environmentalism be discerned. This theme deals with making Leicester a beautiful place, with less traffic, clean and tidy streets, excellent green spaces and high quality buildings. Thus the sustainability program, while originating from a more or less purely environmental approach (see Roberts, 2000), now seems to focus first and foremost on addressing the needs and wants of its constituency.

This is not to say that the environment does not play an important role in the program of Leicester. Two of the three remaining ‘levers of change’ – ‘Planning for people not cars’ and ‘Reducing our carbon footprint’ - clearly address environmental issues. It thus seems that the program aims to address the worries of its citizens, while using this process and the resources and energy it is expected to release to also tackle (global) environmental concerns. In Mr. Stork’s words: we have to ‘take people’s lifestyle, then weave the environment into it.’ (Interview 1).

So Leicester is indeed devoting much of its energy to welfare provisions rather than investing in prestigious physical projects and business interests. While this was expected for all

other EU cases, the fact that the UK has the same MAS score as China means that this is contrary to the expected outcome. H5 must thus be rejected for Leicester.

This finding is very interesting because it clearly goes against the expected outcome. The cultural characteristics of prestige and recognition, a focus on economic growth, the power of the strong etc., do not appear to be reflected in the program at all. The discourse used corresponds much more closely to characteristics associated with low MAS scores.

A possible explanation for this welfare orientation is the fact that public participation plays such an important role in both the planning and the implementation of the program. Given the relatively severe social problems in the city and the fact that citizens had so much input in the program, it is not surprising that their immediate (welfare) concerns form a large part of the effort. As was discussed above, this democratic focus does correspond closely to the expectations derived from low PDI scores. The case of Leicester, then, shows some of the complexities of combining the various cultural indexes. While, for instance, the PDI characteristic 'dialogue' may be expected to correspond to the MAS item 'intuitive, consensus based management', the UK shows that the two are not necessarily evident in the same country. However, the findings in this case study show that actual outcomes correspond more closely to low MAS. There is thus no easy explanation for this divergence; however, it may be explained by the pronounced importance of democracy in the project. Attention for the will of the people may have indirectly led to the inclusion of otherwise neglected welfare issues.

5.2.6 Conclusions Leicester

High stakeholder participation, relatively hard assessment targets, an incremental and voluntary approach and a welfare orientation characterize Leicester's sustainability program. Most of these findings were in line with the expected outcomes. This case was especially interesting because of the different MAS score of the UK as compared to the other EU countries. While, as was expected, H2 indeed showed a quantitative approach, the findings for H5 were very hard to explain from this score. While one would expect less attention for welfare provisions, these were actually very pronounced. Other interesting findings concern the financial restraints given as a reason for the incremental approach (H3), and the limited discretionary space of UK municipalities that may have led to a voluntary approach (H4).

5.3 Case 3: Stockholm - Hammarby Sjöstad

The city of Stockholm, Sweden, was created around water. Situated at the point where Lake Mälaren flows into the Baltic Sea, the city spans fourteen islands. Stockholm was built when in the mid thirteenth century its strategic position was recognized, allowing the founders to subtract money from the vast flows of trade in the area. In the centuries since, Stockholm grew to be one of the most important cities in the region. The greater area of Stockholm now comprises 1.3 million people (Visit-stockholm.com).

From the beginning of the 1990's, Stockholm saw the radical redevelopment of one of its run-down areas into a major sustainability project. Hammarby Sjöstad – literally: town on the Hammarby Lake – is a brand-new urban district built on an old industrial and harbor area (Svane, 2007 and GlashusEtt, 2009). The old industrial area was heavily polluted; Freudenthal (2010) mentions the extraction of 120 tons of oil and grease and 180 tons of heavy metals from the area before construction. The first impulse to transform this area came from Stockholm's bid for the 2004 Olympic summer games. Hammarby Sjöstad was intended to become the Olympic village, and an environmental plan was drafted along with the application to host the games (Vernay et al., 2010). The intention was to reach a reduction of 50 percent on a broad set of environmental targets as compared to ordinary new area's being built at the time.

While Stockholm lost the bid to host the Olympics, the idea of transforming the area around Hammarby Lake in a sustainable manner remained. The area, when fully developed in 2017, will have roughly 11.000 residential units, housing 25.000 people, and offer room for 10.000 working places (GlashusEtt, 2009). With building starting in 1997, at present a substantial part of these developments have already been realized.

From the onset, the municipality had formed the idea that the project should aim to 'close the loop' of resource use in the area (Vernay, 2010). This idea of 'closing the loop' – increasing the efficiency of natural resources use by closing the material and mineral cycle, implementing energy cascade and taking maximum profit of the chemical potential energy (Vernay, 2010, p.2) – was used as a starting point for the further development of the project. In 1996 the municipality contacted many local utilities to come up with a joint solution for the many

challenges they faced in ‘closing the loop’ in Hammarby. The idea was that, by combining these actors from an early stage, new ways of working and coordinating different resources flows could be achieved.

These utilities worked together to form the so-called Hammarby Model. This concept - used to develop the area and later worked out as the broader concept SymbioCity (Symbiocity.org) - is based on a new type of planning process and an integration of different urban functions, such as waste, energy, water and sewage. The idea is to reach synergies between all of these areas by bringing together various utility-related stakeholders from an early stage in the planning process (GlashusEtt, 2009 and Symbiocity.org and Interview 2). Figure 1 gives an illustration of the various interactions involved. By linking the plans to existing and newly developing techniques and the market, the utilities managed to form a model that would be both environmentally and commercially sound. In the model many of the area’s functions are interlinked in such a way, that wastes from one area can be productively used somewhere else, largely closing the resource loop for the area. It was the combination of all of these actors from the very beginning of the project, called *integrated planning* (Interview 2), which allowed them to coordinate their activities and create the synergies needed.

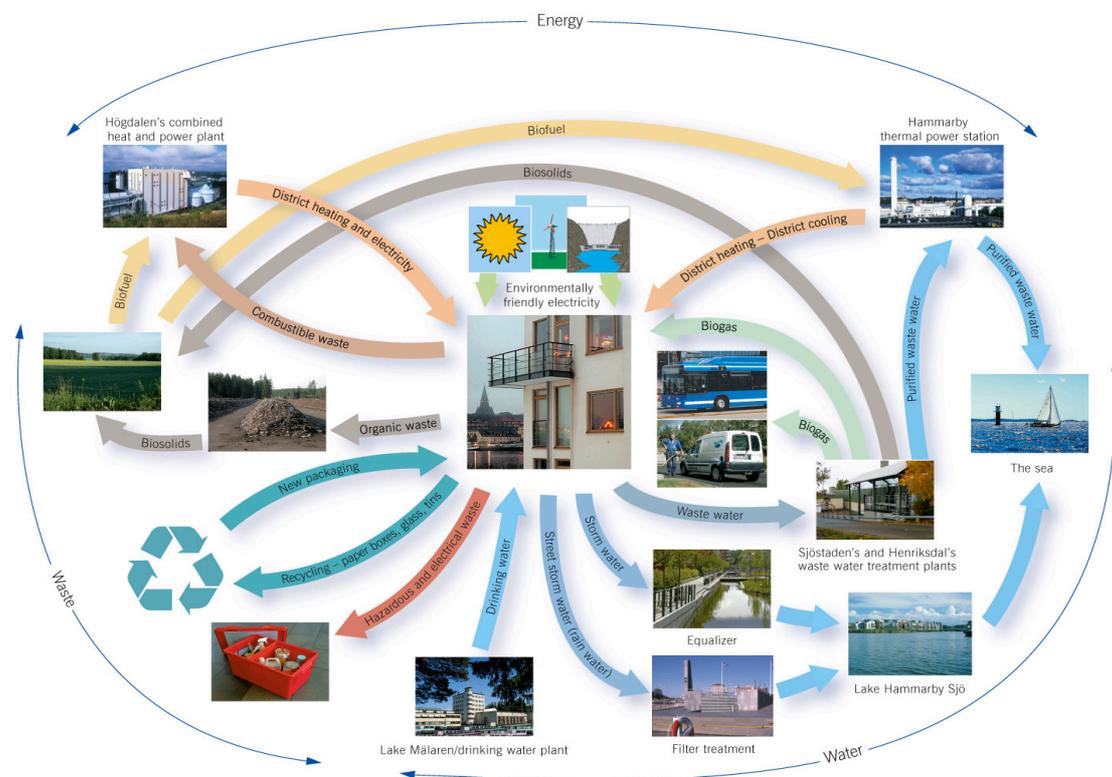


Figure 1: The Hammarby Model

(Source: Stockholm Municipality 2007, as depicted in Vernay et al. 2010, p.3)

The success of Hammarby Sjöstad has led to widespread (international) interest and praise. In my interview (Interview 2) with Mr. Freudenthal, head of information at GlashusEtt – the information centre of the project – the enormous amount of international attention and visitors was mentioned. He also noted that Hammarby Sjöstad won the first European Green Capital award (Ec.europa.eu). Additionally, the project was one of the winners of the 2007 Clean Energy Award (Cleanenergyawards.com).

The project in Stockholm constitutes a highly technical effort aimed at creating synergies between various utilities. The integrated planning model that led to this approach shows highly innovative stakeholder involvement. As can be gathered from the above, Hammarby Sjöstad constitutes a Type II city – an expansion of an existing city by the building of a new area. While the project in Almere also aims at creating large new areas, both Almere and Leicester also devote a substantial part of their effort at making the existing city more sustainable, an element that is not directly evident in the case of Hammarby Sjöstad.

Table 10 shows the inclusion of the MPs in the HS project. It shows that, while most of the principles are again evident, HS does not specifically address societal issues and has limited participation processes aimed only at a part of the implementation of the project. As the table shows, the project in HS aims largely at the creation of more sustainable utilities and buildings.

Hammarby Sjöstad	
Melbourne Principle	Included?
1. Vision	Yes. Top-down, integrated planning.
2. Economy	Yes. Utilities and building.
3. Society	Not explicitly addressed.
4. Ecological Footprint (assessment)	Yes. Through Grontmij.
5. Empowerment	Only partly in execution.
6. Partnerships	Yes. Utilities & developers, integrated planning
7. Production	Yes. Utilities and building.
8. Consumption	Yes. In buildings, citizens also involved.

Table 10: Inclusion MPs Hammarby Sjöstad

5.3.1. H1: The EU will seek collaboration with a broad array of stakeholders (including NGOs and citizens).

Hammarby Sjöstad forms an interesting case for the study of stakeholder interaction. Essentially a top-down approach led by the municipality and involving only powerful infrastructure companies from Stockholm, the process by which the Hammarby Model was developed is widely recognized to be unique and to form an essential part in the success of the project (Vernay et al, 2010).

As was mentioned above, the Hammarby project was first devised by the municipality of Stockholm as part of the bid for the 2004 Olympics. A process of integrated planning, involving various city utilities was started and eventually led to the creation of the Hammarby model. These utilities included the district heating company Stockholm Energi, the drinking- and wastewater treatment company Stockholm Vatten and the cities waste recycling company SKAFAB (Vernay, 2010, p.4). As Mr. Freudenthal told me:

‘The normal way to make a new city area is that you take a piece of the infrastructure, you solve that one and then you move on to the next and the next one. SymbioCity’s thinking is: “can we get synergies out of all these different aspects of the infrastructure?” That you sit down with both the public and the private stakeholders on the same table and decide how can we make this area as sustainable as possible, before the master plan... That is a crucial point.’ (Interview 2)

Much of the success of the program is attributed to this unique stakeholder interaction. During the construction of the project, of course, many more stakeholders were included, such as the many developers and architects (GlashusEtt, 2010) that were to create the buildings and surrounding infrastructure. These were under strict guidance from the municipality to build in accordance with the existing and planned features of the area and the city as a whole (Interview 2). Thus, the central government control on many of the aspects of the project allowed for a truly integrated approach for many of the facets that characterize this project.

This control by the municipality was made possible in part by the continuous political will to make the project a success (Vernay, 2010 and Interview 2):

‘... to have successful implementation of this, I think first of all you have to have the political will. And in this case here, even though we’ve had a change of ruling every four years in Stockholm... but this environmental program has not changed, in spite of all the changes in the town hall. That is a first criterion. The second criterion is that you have to commit to the developer. Oral, written, procedures, whatever, but he has to follow that program. I think that is very crucial also.’ (Interview 2)

In the interview, I also asked about the position of citizens in the planning process (Interview 2). According to Mr. Freudenthal, no citizen consultation took place during the process. However, as a law in Sweden, the government must publish any plans it has before

implementation in order for concerned parties to be able to object to these plans. However, the plans for Hammarby were not challenged by anyone.

While most of the goals for the project will be reached through technological means, citizens do play a role in the implementation of certain areas of the program, for instance by using public transport rather than cars, or making use of the possibilities to separate different waste fractions. In the interview, Mr. Freudenthal said that approximately 75 percent of the environmental improvements would arise from the buildings and infrastructure alone, leaving the other 25 percent to rely on people's behavior. For this reason the information centre was set-up, so that citizens can easily be informed and inspired about their role in the success of the project.

Hammarby Sjöstad shows rather different stakeholder involvement than the previous EU cases. The process mostly involved the municipal government and important, utilities and developers from the city. However, many more private companies later joined the effort and there were possibilities for citizens to express any concerns they may have had. Additionally, citizens play significant role in the execution of the project, but no NGO participation has been found. Looking back at the MPs, vision was created mostly with powerful utilities, while there was some citizen empowerment through the possibility of objection and their role in implementing the project. Partnerships were created with the numerous utilities, developers and architects.

HS forms a difficult case for this hypothesis. Compared to the previous EU cases, the top-down approach taken in HS has a much less participatory, democratic focus. While many stakeholders were involved, these mostly fall into the category of powerful government and business actors. Also, no NGO participation has been found. Nevertheless, participation by citizens still forms a significant part of the project and (as Chapter 6 will show) is more pronounced than in most Chinese cases. However, despite this last consideration, the strong leading role of the government and the fact that planning and the largest part of implementation were conducted by powerful utilities and developers without inclusion of citizens and NGOs leads me to conclude that H1 must be rejected for this case. While stakeholder participation was central to this project, it *mostly* focuses on powerful actors.

The findings for HS are contrary to what was expected from Sweden's low PDI scores and additional scores on IDV and MAS. Rather than creating highly democratic systems, the project follows a largely top-down approach. However, the characteristics of decentralization and dialogue are apparent in the process of integrated planning, where the government and utility companies worked together from the very start. While this is in line with 'compromise and negotiation' (MAS), the important role played by the government shows more or less the opposite of a 'limited state' (IDV). Rather, the government is trying to change behavior through incorporating its vision in the buildings themselves (see H4). Despite similar culture scores, HS thus differs profoundly from Almere and Leicester in its incorporation of stakeholders. This difference is probably due to the fact that it constitutes a purely Type II development, with no inhabitants present. This lack of existing stakeholders on site may have allowed for the largely top-down approach.

5.3.2 H2: The EU will have broad, vague measures of progress.

As was shown in the introduction, the initial goal of the Hammarby project was to 'twice as good' as ordinary new areas in Stockholm in the mid-1990s. This criterion forms a quantitative target with which to compare the project to similar developments from that time.

In order to measure the environmental impacts, the City of Stockholm sought cooperation with Grontmij AB - an international design- advice- and management bureau focusing on sustainability (Grontmij.nl, Grontmij AB, 2008). Together they developed the Environmental Impact Profile (EIP). This tool is meant for: '... defining the most relevant activities from an environmental viewpoint and quantifying them in the form of emissions to the air, soil and water, together with both the resources used by the consumption of non-renewable energy products and water consumption.' (Grontmij AB, 2008, p.2). In their report, the organization mentions on the following criteria:

- Emissions into the air, soil and water in the form of the following Environmental impact categories: Greenhouse effect, Acidification, Overfertilization, and Ground level ozone
- Radioactive waste

- Resource use in the form of the consumption of non-renewable energy, raw materials and water consumption
(Source: Grontmij AB, 2008, p.2)

Overall, the effects have been very positive. While not all of the targets reach the intended 50 percent reduction, substantial reductions have been achieved on all of the measurements, with some parameters far exceeding this number. The report mentions reductions ranging between 23 and 70 percent for all of the measurements in the year 2008 (for full details on the reductions see Grontmij AB, 2008). In their weighing of this assessment, GlashusEtt estimates that the project actually reached reductions of 30 to 40 percent (Freudenthal, 2010).

Therefore, the project of Hammarby Sjöstad has chosen a quantitative assessment approach, focusing on reductions in measurable outputs in a number of categories. This approach deviates from the expected results; H2 must thus also be rejected for this case study.

Rather than a culture of negotiable and intuitive management leading to softer criteria, the HS project showed very hard assessment measures. This may be due to the highly technological nature of the project and the mostly top-down approach by the municipality. If utilities are to make significant improvements to their systems, they should have a practical target at which to aim. By setting this target at a 50 percent reduction as compared to ordinary areas in the 1990's, the municipality forced these companies to think of truly new solutions. The technological focus and top-down approach may in turn be related to the fact that this is a Type II development in which there was ample room to set standards from the onset of the building.

5.3.3 H3: The EU aims for incremental technological- and land-use changes.

Planned from the early-1990s, and with construction starting in 1997, most of the area has now been built. Thus, most of the project has been built in just over 10 years. While not harboring anywhere near as many people as in the new developments of Almere, Dongtan and Tianjin, the creation of 25,000 new residences and 10,000 working places in an old industrial area still constitutes a rather large effort.

The unique actor configuration that took place through the process of integrated planning, and the resulting Hammarby Model, also constitute a huge governance- and technological leap. While the use of certain technologies was not entirely new, and often linked to existing systems and innovation projects by the utilities involved (Vernay et al, 2010), most of the technologies had not been used on such a scale. Furthermore, the integration of all of these technologies into one system was certainly new.

Hammarby Sjöstad, then, does not confirm to the expectations. The time span in which this project was built, along with the important new developments in the technologies that it encompassed, lead to the conclusion that the project conforms more closely to the ideas of a mega-project and large transformations of space that were expected in China. As such, H3 must be rejected for Hammarby Sjöstad.

Thus, the low-LTO score in Sweden did not correspond to the outcomes of the project. While freedom, rights and 'thinking for oneself' were clearly reflected in the incremental approaches in Almere and Leicester, this project is reminiscent of the new developments in Almere. Again, this may be explained by the type of development, where new areas do not have to fit their projects into existing structures and behavior patterns.

5.3.4 H4: The EU aims to create incentives for voluntary behavioral change through communication and mobilization strategies.

While voluntary behavioral change certainly plays a part, it has already been noted above that approximately 75 percent of the expected environmental gain will come from the buildings and technologies alone. The strength of such an approach, and part of the motivation for adopting it, was explained by Mr. Freudenthal:

'The more we can put into the buildings, the better, because then people don't have to change their behaviors. I don't have to tell you how long it takes for people to change their behavior. Oh my god!' (Interview 2)

However, as was discussed under H1, 25 percent of the effect still depends on the behavior of individual citizens. In order to address these, the information centre GlashusEtt was built in the

centre of the new area. Because of the unexpectedly large amount of visitors, especially international ones, the centre has now been open far longer than initially planned (Interview 2).

It appears that the whole ecological image of the project at Hammarby has actually managed to inspire different behavior. While it is unclear exactly how people have changed their actions, and which part of the program caused this, Mr. Freudenthal gave an interesting story about the relationship between the new neighborhood and people's environmental awareness:

'On our website we have a weekly question, answered by 60 to 200 people, it depends on the question. And a couple of years ago we asked the question: "Was it because of the environmental program that you move into HS?" And of those who answered 60% said "No." The week after we asked the question: "Has your environmental behavior changed because you are living in HS?" And over 70% answered: "Yes".' (Interview 2)

Of course, many schemes in the area aim at changes in behavior: a car-pooling scheme has been set up, decent public transport was made available from the very beginning of the project, facilities for the easy collection of wastes in different factions has been created, etc. Considering the latter, it is interesting to note that this was not functioning well at first. Many people were apparently not separating their waste properly, leading to impure and useless factions of waste, especially organic waste. To solve this, lids with special locks were put on bins for this faction, making sure only those people consciously separating their wastes would take the trouble of disposing it there (Interview 2).

It thus appears that people are indeed voluntarily changing their behavior through living in the new area. Through a careful mix of smart technologies and providing information, the project in Stockholm has managed to activate a citizenry that did not come to live here especially for the environmental lifestyle. Rather than creating bans and penalties, Hammarby Sjöstad utilized what I will call *forcing technologies*⁴. By simply building and equipping peoples living area with environmentally friendly technologies, people are more or less forced to live more sustainably. Such an approach is interesting when looking at the democratic and free cultural characteristics. As the first quote of this section shows, the team at Hammarby Sjöstad recognizes the difficulty of changing people's behavior. Rather than turning to bans and penalties, however, they opted to simply introduce technologies that would change people's environmental impact without them having to radically alter their behavior. However, this approach is supplemented by efforts to inform and mobilize people that are also expected to contribute significantly to the success of the project. This aspect is much closer to what was expected. It may then be argued that the cultural characteristics of personal freedom have indeed been recognized and have informed the way the project is given shape. However, rather than aiming solely at voluntary changes in behavior or turning to (probably unacceptable) bans and penalties, the government has opted to simply create a place that more or less forces sustainable behavior through its form. It must again be stressed that this approach was very much aided by the type of development, where innovative solutions could be included from the onset of the new area.

Hammarby Sjöstad thus used a combination of forcing technologies and information and mobilization strategies. Because of the importance of the latter and the fact that no actual bans or penalties were put in place I will thus argue that H4 can be confirmed for this case. However, the idea of forcing technologies will be taken up again in later chapters.

5.3.5 H5: *The EU devotes much of its resources to welfare provisions (education, employment, aid, recreation, etc.)*

While the previous cases focused at least part of their energy on addressing existing problems, no such problems were present in the current case. HS was built to accommodate middle class people. While one may expect that the high environmental standards caused high prices, it turns out that the costs of the buildings was only two to four percent higher than average buildings (Freudenthal, 2010). While probably not accessible to those with a very low income, living in HS is only fractionally more expensive than living in the average newly constructed area. For those

⁴ This term is my own adaptation of *technology forcing* (see for instance Gerard and Lave, 2003). Technology forcing relates to setting higher standards that cannot be met with existing technologies, thus forcing businesses to innovate in order to reach the standards. My term turns this around: by introducing technologies with high standards in people's homes they will be forced to live in more sustainable ways.

living in the area all necessary amenities – such as employment opportunities, health care and recreation – are readily available. Considering education, it was noted in the interview that this component has changed quite a lot as compared to the original plans. While it was expected that the area would mostly be populated by elderly people whose children had left their parental home, it turned out that many young people moved in to the area. As such, many new schools have arisen to take care of the many children that form an important section of the population.

Hammarby Sjöstad forms an interesting comparison to the other EU cases. This finding shows that, while the low-MAS score would suggest a welfare orientation, this does not necessarily lead to inclusion of such provisions. Working only on a relatively small piece of the city, with no existing social problems, the plans did not have to deal extensively with the provision of welfare. However, the project does provide all necessary amenities for its largely middle-class residents. Because of the more or less normal prices as compared to similar areas in the city, HS also cannot be said to be especially 'elitist'. However, the program also does not address any welfare issues that may exist elsewhere in the city. While it may be argued that special welfare provisions are not so necessary in Stockholm because the standards are already very high, it must nevertheless be concluded that they do not form an important part of the program. H5 must be rejected in the case of HS.

5.3.6 Conclusions Hammarby Sjöstad

This third case is thus very different from the previous EU cases. Hammarby Sjöstad is characterized by a top-down approach, quantitative assessment criteria, a large-scale transformation of technologies and land, voluntary behavioral change and limited (but perhaps nevertheless sufficient) welfare provisions. All of this means that HS conforms more closely to what was expected in China than in the EU. These findings are especially interesting because HS constitutes the only EU case that is a purely new development. As was seen above, this difference in type of development explains much of the differences found with earlier cases. It thus appears that most of the expected influence of culture does not show in newly built areas

An interesting aspect of the program is what I have here called forcing technologies. Rather than relying solely on voluntary behavioral change, the area was built in such a way that citizens were more or less forced to use more environmentally sound technologies without relying on directly forceful measures such as bans and penalties. This approach appears to be the outcome of the top-down, technologically oriented process in which planners and utilities worked together to realize high environmental standards before the master plan was even in place. In this way new inhabitants were stimulated from the onset to live in a more environmentally sound manner. As was argued above, this may be due to recognition that forceful measures are not desired and accepted in this society, while waiting for citizens to voluntarily change their behavior will not happen (fast) enough. Including most of the desired outcomes in the infrastructure and buildings is then a way of bypassing both of these problems.

Chapter 6 – SC projects in China

In the chapter above the first, EU part of the casework was discussed. In this chapter, the rest of the casework will be presented. Thus, the Chinese SC projects Dongtan, Tianjin and Rizhao will be discussed in turn. This chapter is ordered in the same way as the previous chapter. After explaining a case, the five hypotheses will be analyzed in turn. All of the cases from these two chapters will be further analyzed in Chapter 7.

6.1 Case 4: Dongtan

Dongtan is probably the most talked-of SC project in China. Heralded from its conception as ‘the world’s first purpose-built eco-city’ and ‘a model for new cities around the world’ (Cheng and Hu, 2010, p.120 and Sigrist, 2009, p.4 respectively), Dongtan raised high expectations about China’s newfound sustainability approach. The new city was to function as a template for future urban design in rapidly urbanizing China. However, while the first stage of construction was already meant to be finished, the city currently still only exists on paper due to financing problems and a corruption scandal (Lian et al. 2010, p.87).

If realized, Dongtan – East Beach - is to be situated on the east side of Chongming, the world’s largest alluvial island at the mouth of the Yangtze River (Cheng and Hu, 2009, p.120). Interestingly, this island is itself a product of environmental degradation. The island was created and is steadily growing bigger due to deforestation causing soil erosion further upstream (Girardet, 2006). The island is situated next to Chongming Dongtan National Nature Reserve, an internationally recognized wetland reserve harboring many migratory bird species, including the black-faced spoonbill – one of the world’s rarest birds (Cheng and Hu, 2010 and Castle, 2008).

The area where Dongtan will be built forms part of the mega-city of Shanghai. The Shanghai municipality initiated the development of Dongtan with the hope of attracting residents from Shanghai and creating new business opportunities (Castle, 2008 and Cheng and Hu, 2010). However, Dongtan falls under central government regulations that mandates that any new land used by a city for building must be compensated by reclaiming the same amount of land for agricultural purposes (Cheng and Hu, 2009). Because of the vast growth of Shanghai over the last years, the new land of Dongtan was to serve this purpose. Thus, most of the island is now used for agricultural purposes. Because of the central government’s concerns about the use of such agricultural land and the location on the border of an important wetland area, Shanghai decided to form a plan for an eco-city whereby most of the current functions would remain undisturbed (Castle, 2008). From this background the process of the development of Dongtan was started.

The Shanghai Industrial Investment Company (SIIC), a large investment holdings company owned by the municipality of Shanghai, is responsible for planning development of the project. In 2004, they contacted McKinsey consultants in Hong Kong. The consultants subsequently sought contact with Arup, an ‘independent firm of designers, planners, engineers, consultants and technical specialists offering a broad range of professional services.’(arup.com). Arup took on the project and quickly signed four more contracts in China for the construction of additional eco-cities (Castle, 2008).

While the original idea was to create a commuter town linked to Shanghai and housing up to 28.000 people, Arup decided that commuting over such a vast distance was not sustainable. As such, they proposed that Dongtan should be a much larger, mostly independent city that was commercially sustainable and thus more or less independent of Shanghai (Castle, 2008). Thus, Dongtan was planned to grow in several stages over the coming decades and would eventually harbor around half a million people. While the numbers cited in various publications differ, the initial phase was planned to accommodate somewhere between 5.000 and 25.000 people (compare for instance Castle, 2009, Cheng and Hu, 2010 and Girardet, 2006 for different numbers) in 2010, in time for the World Expo in Shanghai in the same year.

The plan for Dongtan consists of an ‘integrated urbanism’ approach to city building, whereby environmental, social and economic aspects are said to be taken into account (Cheng and Hu, 2010) The city was designed to be self-sustaining when it comes to energy, water and food and is to have zero greenhouse gas emissions. The design aims at energy efficiency and the minimization of waste and pollutants, as well as providing vast tracts of green space and conserving biodiversity. Specific targets have been set concerning buildings, energy, water, waste, transportation, food, ecosystems and social and economic development (for a full list see Cheng and Hu, 2010, p.124 and Kirkpatrick, 2007). Additionally, the city should be connected to Shanghai by brand-new rail- and road links (Wood, 2007).

The plan for Dongtan thus represents an ambitious approach to the construction of a brand-new city, based on a wide range of sustainability targets. However, although some work appears to have been done concerning ecological agriculture and the building of wind-farms on the island (Cheng and Hu, 2010), none of the houses have currently been built. Lian et al. (2010) even claim that the situation has worsened because parts of the wetlands have actually been destroyed and populations have been moved in anticipation of construction. The main reasons given for the delay are unclear financial agreements between the partners and a corruption scandal concerning former Shanghai Communist Party Leader Chen Liangyu (Lian et al. 2010, Hooning et al, 2010 and Hald, 2009). While, in an interview with Hooning et al. (2010), Tony Chan of Arup seems positive about the future development of the program due to considerable price-drops of the technologies concerned in recent years, it remains uncertain whether Dongtan will ever become a reality.

Dongtan is thus a rather different project than the three cases in the EU. While those cases all built on an existing city, Dongtan will be a wholly new development. In terms of Joss' (2010) division, the project constitutes a Type I city - a totally new city, built from scratch.

As can be seen from Table 11, all of the MPs used for this research have been given shape in one way or the other in this project. However, concerning 'society' (3) and 'empowerment' (5), it is questionable whether they are given enough attention. While these aspects are definitely included in the plans, the discussion below will show that the measures taken to include them are rather marginal. Other interesting aspects of the program include the important role played by the British consultancy firm Arup and the banning of motor vehicles throughout the new city.

Dongtan	
Melbourne Principle	Included? How?
1. Vision	Yes. Mostly by Arup.
2. Economy	Yes. Commercially sustainable.
3. Society	Yes, but marginally.
4. Ecological Footprint (assessment)	Yes. By Arup: IRM & Ecol. Footprint.
5. Empowerment	Yes, but questionable.
6. Partnerships	Yes. Businesses and consultants.
7. Production	Yes. Commercially sustainable.
8. Consumption	Yes, mostly vague. Bans motor vehicles.

Table 11: Inclusion MPs Dongtan

6.1.1 H1: China will seek active participation only of consultants and powerful (government and business) interests.

The start of the process whereby Dongtan eco-city was planned was briefly discussed above. Initiated by the Shanghai municipality through their investment holdings company SIIC, the project soon incorporated big consultancy firms McKinsey and Arup. While Arup took on the task of planning, the process grew to involve various other stakeholders in government and business.

The cooperation between the Chinese SIIC and the British firm Arup on such an ambitious project had the side effect of incorporating the national governments of both these countries. The signing ceremony between the two companies took place in the UK during the visit of Hu Jintao, the president of China. Since then, the British government took an interest in the project, prompting a visit to Shanghai by the British Prime Minister Gordon Brown. During this trip, China and the UK agreed on improved trade relations that were to boost their mutual trade by 50 percent by 2010. Brown also offered £50 million for China's climate change program (Castle, 2008).

During that same visit to China, Brown joined the Shanghai mayor, Han Zheng, to witness the signing of the Memorandum of Understanding (MoU) between SIIC, Arup, HSBC bank and the investment banking firm Sustainable Development Capital LLP (SDCL) (Castle, 2008). These groups established a long-term strategic partnership to develop the funding model for eco-cities in China. An important element in this agreement - one that also forms the basis of the economic plan for Dongtan (Castle, 2009) - is the establishment of the Institute for Sustainability that is to be based in the city. Hald (2009) mentions some additional large businesses and local developers that were active in the process. Arup also held a workshop involving clients, stakeholders and experts related to the project, bringing in more expertise.

The inclusion of the public in the planning of Dongtan appears to be non-existent or limited at best. While Arup has tried to incorporate local social and cultural conditions in the

plans through an analysis of the current state of the island, Hald (2009) mentions that this study was conducted by researchers that were unaware of the local conditions and the Chinese language and culture. This may have led to an insufficient knowledge of the area and the concerns of the local people. Furthermore, in an interview with Hald (2009), Dongtan project members mention that local residents had been consulted about the project and were aware of the huge developments that were to take place. However, Hald is skeptical about this claim, and could not verify it during her own fieldwork in Dongtan.

Thus, the process whereby the masterplan for Dongtan was realized constituted a collaborative effort between various levels of government, consultants and other business interest. While it is claimed that citizens were consulted, this is only mentioned in one source where the author is skeptical of the claim. It then seems fair to assume that if citizens were consulted at all, this effort did not form an important part of the project. While an extensive cultural study was conducted, it is questionable whether this study managed to capture the situation on the ground. Furthermore, there is no mention of NGO involvement in any part of the project. It may thus be concluded that indeed only powerful stakeholders were involved in the project, affirming H1 in the case of Dongtan.

All of this corresponds closely to what was expected from the cultural characteristics of strong, centralized, command driven governments and the power of the strong. Indeed the plan was started from a top-down, government-led process and has mostly involved powerful actors. While some measures were taken to consult citizens and adapt the program to the local context, academic sources appear skeptical of this claim. In addition, no NGOs appear to be included in any part of the project. It may then be concluded that these measures aim more at appeasing democratically oriented critics rather than constituting an important part of the program. Therefore, while Dongtan affirms the cultural characteristics, the rhetoric of those involved nevertheless shows recognition of the fact that some observers may prefer a different approach.

6.1.2 H2: China will use narrower and more quantitative assessment criteria

Some of the criteria for the Dongtan project were mentioned in the introduction. It was said that Dongtan aims at an inclusive set of criteria pertaining to environmental, social and economic sustainability. Arup has integrated this wide range of criteria into a model that can be used both for the planning and the assessment of projects. Besides this, Arup also uses a measure of Ecological Footprint to calculate the environmental impact.

The first method, Integrated Resource management (IRM) modeling, was used throughout the design phase in order to optimize the delivery of various Key Performance Indicators (KPIs) (sustainabilityatwork.org). This quantitative model offers a way of assessing the implications for these KPIs of different strategies used by the various teams in an urban design project. Data from the technical teams is combined with data from life-cycle assessment experts and the KPIs in order to see how different parts of the system interact with each other and lead to certain outcomes (Page et al., 2008). Inputs may be changed in order to come to more optimum solutions. IRM can be used for design, development and evaluation of the complex interactions relevant to the master plans of large-scale projects (sustainabilityatwork.org).

Additionally, Arup makes use of the ecological footprint. As was discussed in Chapter 3, this is a much-used measure for the sustainability of people's life-style. Arup has calculated the expected footprint for Dongtan and sets this off against the numbers for a conventional city (Sigrist, 2009). While a normal city has a footprint of 5.8 global hectares per person, this number would come down to 2.3 for inhabitants of Dongtan. While this is still higher than the earth's estimated carrying capacity (2.1), it is a significant improvement on the business-as-usual scenario.

Thus, Arup uses two distinct models for the planning and assessment of Dongtan. Both measures are quantitative in nature and rely on hard inputs concerning various measures of environmental, social and economic targets. No evidence has been found on the inclusion of any qualitative measures. H2 can thus be confirmed in the case of Dongtan.

While this is in line with the expectations from the cultural characteristics, it must be noted that the firm responsible for the assessment is actually British and uses similar assessment criteria elsewhere. Because Arup played such a pivotal role in the planning of Dongtan, it seems unreasonable to link this approach to Chinese culture. While it could be argued that Arup was chosen as a partner because of their approach, or that they specifically adopted their assessment to this case, no evidence was found for such theories. Furthermore, as in HS, a set of hard criteria may simply be more appropriate for large-scale, newly built areas, where the new buildings and

infrastructure must conform to certain outcomes from the onset. Vague, qualitative criteria may then only be applicable to retrofit developments. All in all, it remains highly questionable whether the assessment criteria chosen are at all related to Chinese culture.

6.1.3 H3: China will create mega-projects and large transformations of space.

The project at Dongtan constitutes a large new development of an area that was previously only used for agriculture or not used at all. Dongtan aims to create a large new urban area utilizing state-of-the-art technologies.

Dongtan was designed as a compact city, (Cheng and Hu, 2010, see Chapter 3 for a discussion of this concept) comprised of three closely linked parts. While I do not intend to give a full list of all the technologies, I will mention some in order to get more insight into the kind of solutions proposed. Cheng and Hu (2010) mention many of the technologies used. Dongtan was designed to be more or less carbon neutral, and thus to rely almost exclusively on renewable energy. Energy sources to be used are: biomass, wind, solar and biogas from solid waste and sewage. Energy demand would also be reduced through high performance buildings, using down to two-thirds of a normal building. These buildings will also be built with special materials and be placed in such a way as to make optimal use of the surroundings. Waste will be used for energy and compost, while food will be produced locally. Petrol cars will be banned from the city, leaving visitors and inhabitants the options of electric vehicles, public transport and walking and biking. Furthermore, all of this will be done while protecting the existing wetlands, amongst others by creating a buffer zone between the city and these ecosystems.

According to the plans, all of this should be realized within a time limit of just over 40 years. Within a few decades, a previously agricultural or unused area would be transformed into a modern city with half a million inhabitants and the latest technologies. While some large-scale building projects were also found in Almere and Hammarby Sjöstad, the projected number of inhabitants in Dongtan easily surpasses both of these. Such an effort can certainly be called a mega-project and a large transformation of space. Dongtan thus confirms the expectation of H3.

However, it must again be noted that the initial intent was to create a much smaller city that would be connected to Shanghai. The decision to create a much larger project actually came from the developer Arup. As with H2, then, while the size of the project is formidable it is questionable whether this is related to Chinese culture.

6.1.4 H4: China is more forceful, utilizing bans and penalties.

As was the case with Hammarby Sjöstad, Dongtan aims largely at creating sustainable behavior through the adoption of new technologies. However, both measures for voluntary behavioral change and some form of forceful compliance can be found in the plan.

Concerning the first, Cheng and Hu (2010) mention that: ‘... Shanghai municipal government conceived the idea of transforming it into an ecological island to serve as a national model for sustainability, energy efficiency, and *environmental awareness*.’ (p.121, italics added). The same point is made by Hooning et al. (2010) in an interview with representatives of Arup. One of the representatives is mentioned to have said that reductions in energy demand would be created through ‘... cleverly designed buildings and *creating awareness*.’ (p.106, italics added). However, apart from these statements hardly any information could be found on actual policies aiming to create such awareness. The only clear example is given by Cheng and Hu who briefly mention the following: ‘Meters will display energy consumption and generation in each house to allow residents to monitor their real-time energy use.’ (2010, p.124).

While not mentioned directly as a policy for creating awareness, it may be expected that the Institute for Sustainability, mentioned above, will help realize this goal. This institute is hoped to become an international centre of excellence for studying environmental matters, thus bringing teaching, research, and spin-off activities to the city (Castle, 2008). Also mentioned is the possibility of drawing tourism into the new city (Cheng and Hu, 2010). While not being directly linked to awareness creation among the public, these developments, together with the general image of such an eco-city, may be expected to create awareness among the residents.

Bans and penalties have only been found concerning the use of transportation. Cheng and Hu (2010) mention two such policies. First of all, gas and diesel vehicles will be banned throughout the city, to be replaced by vehicles and boats powered by battery or hydrogen fuel cell. Secondly, motorcycles will be banned and replaced by electric scooters or bicycles. Of course, the whole master plan aims at utilizing new technologies and materials, which means that companies using other means will be rejected. This may also be seen as a ban, though not

relying on changes of behavior in the everyday lives of people living there. There is no mention of how these measures will be enforced.

All in all, then, Dongtan is mostly a technological challenge, reminiscent of Hammarby Sjöstad. The plan does contain some vague mentions of the aspiration to create awareness, but these do not appear to be worked out in any detail. Interestingly, however, a few bans do form part of the program. While only compromising a modest part of the effort, the fact that bans are even considered is very noticeable. No such bans were found in any of the EU cases. Thus, while it is recognized that this in no way accounts for the whole projects, Dongtan confirms H4.

The inclusion of bans in this project may be seen as proof that higher PDI and LTO scores are indeed linked to more forceful measures. Thus, an autocratic government based on command and a citizenry used to self-discipline may indeed be more inclined to accept such an approach. While Dongtan is very similar to HS in many ways, bans did not appear to be even contemplated in the Swedish case. In fact, the government in Stockholm seemed very much aware of the need to change behavior, but adopted a very different approach to realizing this. While they also included efforts to inform and mobilize people, it was argued that most of the environmental effect if the project was included in the buildings and infrastructure. In this way, people are encouraged to change their behavior, without having to rely on (probably unacceptable) bans and penalties. While this strategy, that I have called *forcing technologies*, is probably also an implicit strategy for parts of the Dongtan project – buildings here will, after all, also be more sustainable than normal buildings – they have clearly solved the problem of inhabitants' behavior very differently. While the policies for voluntary behavior change are vague, bans have been set out more clearly. Dongtan, then, may indeed show an important difference between two contexts concerning the use of more forceful measures.

6.1.5 H5: China invests only in prestigious physical projects and business interests.

Dongtan is said to embody values aimed at sustainability on the environmental, social and economic tiers, with all aspects being incorporated in the design and models used by Arup. However, the social tier seems somewhat limited in conception (Cheng and Hu, 2010), especially in comparison to the EU cases in the last chapter.

Arup mentions the following broad guidelines as part of their social strategy:

1. Create inclusive, cohesive and tolerant communities that recognize traditional and modern Chinese and other cultural values.
2. Ensure all citizens are engaged with and are represented by governance systems that are accountable and that work towards the continued realization of the fullest concepts of Dongtan as an eco-city.
3. Develop a city that enables healthy and safe lifestyles through the provision of key services and facilities accessible to all and which promote health, provide suitable healthcare when required, avoid car dependence and reduce opportunities for crime.
4. Provide jobs and cultural, leisure, community, sporting and educational facilities for all, regardless of age and ethnicity and make everyone aware of these opportunities through world class information and communication technologies.
5. Create an internationally, regionally and locally accessible city with user friendly facilities and a sustainable mix of development and housing opportunities blended with green spaces to create vibrant communities and a real sense of place.

(Source: Wood, 2007, p.7)

While these guidelines suggest a broad set of welfare provisions, there again appears to be some discrepancy with the more practical plans. The idea of an inclusive city with housing opportunities, for instance, has apparently been translated into 20 percent of the residential area being designated for social housing for lower income residents (Hooning et al., 2010). Although this is not insignificant, it still means that 80 percent of the residents will need to be rather prosperous, a division that is hardly representative of the overall income discrepancies in China. Overall, then, the plan may fall into the trap discussed by Chen and Hu (2010) whereby only the rich can live sustainably.

Other authors have discussed similar concerns. Castle (2008), for instance, quotes designer C.J. Lim as saying: '... the focus sadly was very much on energy and the environment only. Important social and economic questions were ignored.' Sigrist, partially quoting Allen et al., notes the same problem:

'Despite significant attention to quality of life issues, Arup's literature reflects a primarily "green" agenda, with a focus on "ecosystem protection and the immediate and deferred effects of human activity at the regional and global scale" rather than a "brown" agenda based on "social justice and the immediate problems at the local level, especially those suffered by low-income groups" ... The new city could potentially cast large sectors of Chongming's population into poverty and divert public expenditure away from poor people in existing cities. While the brown agenda may be primarily a government responsibility, Dongtan can't be considered a socially responsible model of urban sustainability if it doesn't address these concerns.' (Sigrist, 2009, p.10, partly quoting Allen et al, 2002, p.36)

While social concerns and welfare provisions are definitely part of the Dongtan project, it thus seems that the plan mostly aims at the environmental and economic goals. If SCs are considered as 'prestigious physical projects' – which the widespread media-coverage and promotion by the Chinese authorities would suggest – Dongtan appears to be mostly an investment in prestige and business. Thus, while the word 'only' in H5 may be too strong to denote the effort, Dongtan does seem to suggest that China invests more heavily in these issues than in welfare provisions.

The brunt of the project indeed confirms the importance of characteristics related to high MAS scores and low human rights standards. While welfare is addressed to some degree, the characteristics of prestige and recognition, economic growth and the power of the strong are evident from the fact that the small section of the city to be devoted to social housing is nowhere near representative of the actual economic stratification of (urban) China. As with H1, it may again be concluded that welfare provisions are more rhetoric than conviction. While these provisions may draw prospective wealthy citizens into the city, they do not appear to offer a solution for the vast social problems that cities throughout China are coping with.

6.1.6 Conclusions Dongtan

The Dongtan project is characterized by cooperation between powerful stakeholders, quantitative assessment criteria, large technological innovations and transformations of space, the utilization of some bans and a focus on prestige and business interests. All of the hypotheses have been confirmed for this case. These findings, however, are not directly evident from the program itself. While the plans include talk of participation and welfare provisions, it was found that these claims may be more rhetoric than conviction, or that they are at least not given as much attention as some of the EU cases. The use of bans in changing people's behavior was also very noticeable. While only comprising a small part of the program, no such bans have been found in any of the EU cases.

Some further interesting features emerged from the analysis above. First of all, while assessment criteria were in line with what was expected, it was noted that the techniques used were actually developed by a British firm. It is thus questionable whether this confirmation has anything to do with culture. Secondly, the scale of this project is much larger than any of the EU cases. However, here again it was noticed that this approach was actually advocated by Arup rather than the municipality.

6.2 Case 4: Tianjin

Tianjin – 'a port for the emperor' – is one of the most important trading centers in China. The port forms the key gateway into the North of China and the city constitutes one of the main manufacturing hubs in the country (Keppel Co. Ltd., 2007). It was one of the first places to open up to trade after the reform and is now one of four cities reporting directly to the central government rather than the province (tj.gov.cn). Tianjin has recently adopted a plan to build a new part of the municipality as an eco-city. The project is the result of a cooperative agreement between the Chinese- and the Singapore central governments.

On November 18, 2007, both governments signed the 'Framework Agreement on the Development of an Eco-city in the PRC'. The so-called Sino-Singapore Tianjin Eco-city (SSTEC) will comprise an area of 30 square kilometers in the Tianjin Binhai New Area, and is expected to house around 350.000 people in roughly fifteen years time (Quek, 2008). The initial start-up area will house roughly 26.500 people, with the first inhabitants moving in around 2011 (tianjineco-city.com). Work has already started on the start-up area and is said to be progressing well

(www.tianjinecocity.gov.sg). Furthermore, the Sino-Singapore Tianjin Eco-City Investment and Development Co. Ltd (SSTEC Ltd.) – the master developer of the project, – mentions a wide range of investment contracts to start building new parts of the city within the coming years (tianjineco-city.com).

The Tianjin project is set up as a pilot city where ideas and technologies can be tested for use in future projects. As the Keppel Cooperation Ltd. States:

‘SSTEC will play the role of a pilot city, serving as a sustainable development model to be replicated in other cities in China. As such, the concepts and technologies adopted have to fulfil the criteria of Practicability, Scalability and Replicability – collectively known as the Three Abilities.

Practicable, in the sense that the technologies introduced, even if they are cutting-edge, must be affordable and commercially viable. Replicable and Scalable in that the technologies introduced are applicable both in the localised context as well as on a larger scale to other cities and even countries.’ (Keppel Co. Ltd., 2007, p.71)

The project is said to be based on ‘three harmonies’: man living in harmony with man, now and in future generations; man living in harmony with economic activities; and man living in harmony with the environment (Hald, 2009, p.57). Key features of the project include energy efficiency and the use of clean, renewable energy; green buildings; ecologically friendliness through wetlands- and biodiversity preservation; water management; waste management; economic vibrancy; social harmony; and heritage preservation (tianjinecocity.gov.sg).

When completed, Tianjin eco-city will consist of five distinct but interconnected areas. The Northeast district will function primarily as the base of high-tech eco-industries, while the Northern district encompasses the administration, a residential area and a cultural centre. In between the North and the South lies the Eco-Core. This district will harbor a marsh reserve, entertainment amenities and eco-residencies. The Southern part of the city will see the construction of the downtown, business centre Central District and the mainly residential Southern district (tianjineco-city.com).

Another interesting feature is the so-called ‘Eco-Cell’. This basic building block of the city aims to bring together all of the key features of the city within a 400m by 400m grid structure. Within this area, educational facilities, commercial- and working areas and recreational areas will be located. By building up the city from such cells commuting by residents will be brought to a minimum (tianjinecocity.gov.sg).

Tianjin Eco-city is thus another ambitious, large-scale project aimed at a broad range of sustainability parameters. Unlike Dongtan, however, construction has actually started and the organizations involved seem positive about the future of the project. Like HS and part of Almere, the Tianjin project constitutes a Type II city – an enlargement of an existing city through the creation of a new area.

Table 12 again shows the inclusion of the relevant MPs in this project. As with Dongtan, ‘society’ (3) and ‘empowerment’ are included in name but are given little priority. An especially interesting feature of this project is the Sino-Singapore partnership that leads the project.

Tianjin	
Melbourne Principle	Included? How?
1. Vision	Yes. By consortium.
2. Economy	Yes. Utilities and building.
3. Society	Yes, but marginally.
4. Ecological Footprint (assessment)	Yes. KPIs and GBES.
5. Empowerment	Yes, but questionable.
6. Partnerships	Yes. Public-private, China and Singapore.
7. Production	Yes. Utilities and building.
8. Consumption	Yes. Sustainable lifestyles.

Table 12: Inclusion MPs Tianjin

6.2.1 H1: China will seek active participation only of consultants and powerful (government and business) interests.

As was the case for Dongtan, the Tianjin project appears to mostly be a collaboration between governments, consultants and other businesses. The approach taken in Tianjin, however, has led

to the creation of some unique structures. Also, while no NGO participation has been found, there is some evidence of structures supporting the consultation and participation of citizens.

As was briefly mentioned in the introduction, a special investment and development cooperation – SSTECH Ltd- was set up to plan and develop the project. SSTECH Ltd. is made up of a Chinese- and a Singapore consortium that each have a 50 percent share in the undertaking. The Keppeler group is the leader for the Singapore part, while the Chinese consortium is led by Tianjin TEDA Investment Holding Co., Ltd.. The latter company is connected to the TEDA industrial park, a sustainably oriented site that has been very important for the growth of Tianjin (Shi et al., 2010). Thus, while the project was initiated through the governments of both countries, the execution will mostly rest with these commercial partners. However, ministers and other officials of both countries do play an important role in the project, for instance by chairing the Joint Working Committee and the Joint Steering Committee (Keppeler Co. Ltd., 2007).

SSTECH thus forms a public-private partnership, building on the expertise of both China and Singapore. Many government agencies and ministries from both nations are involved (Keppeler Co. Ltd., 2007). Possibly because of this involvement by the central government, the project in Tianjin gained the status of independent government, meaning that the authorities answer directly to the central government rather than first going through the Tianjin municipality and the regional government.

As was mentioned above, no evidence was found of any NGO participation in the project. There are, however, some hints at possible citizen involvement in the future, although information of this process is far from clear. On part of the Singapore website for the project, last updated in 2008, it mentions the eminent release of a 'Master Plan for public consultation in Tianjin' (tianjinacity.gov.sg). However, no further updates of this plan could be found. Public participation was also mentioned in a document provided by the World Bank. This document sets out the environmental assessment criteria for the Tianjin project in relation to funding by the Global Environment Facility (GEF) Trust Fund. It mentions, for instance, that 50 people have been consulted about the construction project (GEF, 2010).

The project at Tianjin constitutes a large public-private partnership involving high-level officials and businesses from both China and Singapore. No NGO participation has been found, but there is some evidence of citizen consultation. However, this consultation formed part of a GEF assessment needed to be able to get funding from this organization and does not appear clearly anywhere else in the program. While not totally in line with the hypothesis, it may be stated that collaboration was at least *mostly* with powerful actors.

The characteristics of a strong state with centralized control are clearly evident in this case. The project is a top-down initiative with high-end stakeholders from China and Singapore actively participating. No significant attention was given to less powerful stakeholders, presumably because this is not demanded or deemed necessary in China. Furthermore, as was stated in the introduction, the project is meant as a pilot project for the rest of China, and must conform to the 'Three Abilities' of Practicability, Scalability and Replicability. Such an approach alone would suggest a rather technological focus with no room for context-specific ideas and concerns from local stakeholders. In addition, by making the city an independent government, answering directly to the central government, Chinese leaders have undone some ordinary decentralization in order to gain more control over the project and make it easier for those involved to bypass regional legislation and channels of authority. It thus seems that the central government feels it can create a blueprint, which may then be used throughout the nation, with little interference from local- and regional powers.

6.2.2 H2: China will use narrower and more quantitative assessment criteria

A key feature of the Tianjin project is the creation of KPIs prior to the master plan. While this was also the case for Dongtan, Hoening et al. (2010) note that this is usually the other way round. Thus, the entire plan revolves around the targets set out in the KPIs. In addition to these indicators, a specially designed building standard has been created.

Like Dongtan the Tianjin project is based on a wide range of KPIs. For Tianjin 26 KPIs have been created, 22 of which are quantitative, and four of which are qualitative in nature. The quantitative KPIs fall into four groups focusing on: (1) a good natural environment, (2) a healthy balance in the man-made environment, (3) good lifestyle habits, and (4) the development of a dynamic and efficient economy. Within these quantitative KPIs specific targets are given, such as 90 percent reliance on public transport by 2020, recycling 60 percent of waste by 2013, providing 20 percent of energy through renewable means by 2020 and employing at least 50

percent of employable residents within the Eco-city by 2013 (www.tianjinecocity.gov.sg). These KPIs form the hard part of the assessment framework and can be monitored using standardized, quantifiable means. The four qualitative KPIs are as follows:

- Maintain a safe and healthy ecology through green consumption and low-carbon operations.
- Adopt innovative policies that will promote regional collaboration and improve the environment of the surrounding regions.
- Give prominence to the river estuarine culture to preserve history and cultural heritage, and manifest its uniqueness.
- Complement the development of recycling industries and promote the orderly development of the surrounding regions.

(Source: www.tianjinecocity.gov.sg)

These broader guidelines are not quantifiable and it remains unclear exactly how they will be measured.

In addition to this framework - but strongly related to the seventh KPI: Proportion of Green Buildings - is the creation of a new building standard. As mentioned by Hooning et al. (2010), this measure was developed by combining two existing standards. The Green Buildings Evaluation Standard (GBES) can be used for buildings and clusters of buildings for both residential and non-residential purposes and has three levels: Silver, Gold and Platinum. Six different categories of environmental performance are addressed: Land Saving and Outdoor Environment, Energy Saving and Use of Energy, Water Saving and Use of Water Resources, Material Saving and Use of Material Resources, Indoor Environment Quality and Operation and Management (bsd.nforce.com.sg).

Substantial efforts have thus been made to create new ways of assessing the project at Tianjin. While the bulk of the KPIs, as well as the building standard, are quantitative, there are also a number of broader, qualitative criteria. While not forming the only type of assessment, the Tianjin project does focus primarily on quantitative criteria. This is in line with H2.

While these findings could be explained by a culture of decisive, aggressive management, it could also simply be the result of the highly technological effort in a brand new area. As was explained for HS and Dongtan, qualitative criteria are much more logical when one wants to build a new area with certain specifications, while qualitative criteria may be more relevant to retrofit efforts where one has to adapt to existing structures.

6.2.3 H3: China will create mega-projects and large transformations of space.

Again, as with Dongtan, this project aims to create a large new city on previously unused land. They aim to do this largely through the utilization of state-of-the-art technologies to greatly reduce the footprint of the city compared to normal construction. As Low et al. eloquently put it:

'... flat, marshy tracts of underdeveloped land in the desolate north-eastern corner of the Tianjin Municipality will be transformed over the next two decades into a 30 km² Eco-city using the latest green technologies such as state-of-the-art water recycling and waste treatment systems. ... A "green lung" and eco-corridors with extensive greenery for some 110,000 energy-efficient homes will form part of the Eco-city Project.' (Low et al., 2009, p. 373)

While Dongtan, housing around half a million people, was to be built over a period of just over 40 years, the project at Tianjin is designed to create living space for 350,000 people in a time-frame of around fifteen years (Quek, 2008). It is thus clear that the Tianjin development constitutes a mega-project whereby large tracts of previously unused space will be transformed into a state of the art city. This strongly affirms H3.

This finding is, again, in line with cultural characteristics of self-discipline, thrift, high savings and long-term profits. However, it was shown for Dongtan that such an approach is not necessarily related to culture. There, it was the British firm Arup that opted for a larger-scale project than the government initially foresaw. Moreover, mega-projects were also evident in Almere and HS - the two EU cases where new parts of the city were being built. It thus seems likely that this approach is more related to the type of development rather than the culture.

6.2.4 H4: China is more forceful, utilizing bans and penalties.

While up to now much of the Tianjin project seems very similar to the Dongtan SC project, there are some clear differences concerning H4. While no practical policies have been found that relate directly to communication towards and mobilization of citizens, the importance of including such an approach is much more pronounced in the plans of the project. In addition, for this case no indications were found of the use of bans and penalties.

The importance of including citizens to actively engage in the project through adaption of their behavior is made clear in the following paragraph from the SSTECH website:

'Apart from the green "hardware", the software aspects are also very important. We aim to foster strong and cohesive communities within the Eco-City. Residents will also play a critical role in realizing the visions of the Eco-City, as they will need to play their part. Sino-Singapore Tianjin Eco-City is about creating a sustainable lifestyle yet not compromising on the residents' daily needs, a vibrant city that attracts new ideas, opportunities, activities and talent, a city that embraces life.' (tianjineco-city.com)

This need to create a more sustainable lifestyle is also evident in a number of the KPIs that were discussed above. In the qualitative KPIs, for instance, it is stated that the average person should not produce more than 0.8 kg of domestic waste by 2013 and that at least 90 percent of travel within the city should be in the form of 'green trips' - non-motorized- and public transport - by 2020. The first qualitative KPI also mentions the need to create green consumption.

On their website, SSTECH only vaguely mentions ways in which such targets may be reached. Concerning waste, for instance, they mention 'public education programs', while for energy they mention that: '... an energy-conservation and environment-friendly mindset will also be cultivated in its residents.' (tianjinecocity.gov.sg). While a few more of such statements can be found, it is unclear how exactly they propose to meet such goals. However, no evidence has been found that forceful measures will be used. Unlike Dongtan, for instance, there are no bans on the use of motorized vehicles within the city.

Therefore, while it is unclear exactly how they want to change people's behavior, there is also no indication that this will happen through forceful means. In fact, the statements about creating a sustainable lifestyle are more suggestive of a voluntary approach based on information and mobilization. This is contrary to the expectations in this hierarchic, centralized and command driven country. Thus H4 must be rejected in the case of Tianjin.

This finding is interesting when compared to Dongtan (and Rizhao, as will be explained below). It seems that, while bans are clearly possible in China and may indeed be linked to culture, this does not mean that they will necessarily be used. It was already evident in Dongtan that information and mobilization strategies are also used, and this program further shows that such efforts may indeed be the rule in China. Therefore, while more forceful measures are possible in this context, this does not mean that they are necessarily preferred.

6.2.5 H5: China invests only in prestigious physical projects and business interests.

For this hypothesis, the project at Tianjin is again much like Dongtan. This project also includes 20 percent social housing and provides easy access to hospitals, education and other public facilities and addresses the importance of local culture (tianjineco-city.com). The importance of including welfare aspects is, for instance, clear in the following quotes:

'Eco-City is more than just cutting edge technologies or sexy, iconic buildings. It is about practical and well tested solutions. It is about the city's spirit, civic values and community development, creating a sustainable lifestyle without compromising the residents' daily needs.' (tianjineco-city.com)

'In addition to being environmentally friendly, the Eco-city is socially responsible. Officials have pledged that one-fifth of the flats will be subsidized low cost housing and the 2,000 villagers who are being relocated for the project are guaranteed jobs and housing in the city.' (Garst, 2007)

However, just like Dongtan, one-fifth of the housing is not representative of the overall Chinese population. While definitely giving attention to poorer residents, the Tianjin project will most likely also mainly be a place for the well-to-do. It thus remains questionable whether projects like

this can really form a solution for the hundreds of millions of people expected to move to the city in the coming years. Additionally, as Cheng and Hu (2010) discuss, such projects do not offer solutions to the pressing problems of existing cities.

Thus, while the Tianjin project does address some of the problems associated with welfare provisions, the adequacy of the extent of these measures is questionable. While offering many important innovations and lessons, Tianjin eco-city is also a prestigious project offering plenty of opportunities to businesses and the more affluent part of society. Again, while not totally confirming to the dichotomous expectations of H5, this case does appear to aim more at the prestigious and business-oriented side of the coin.

This situation is almost identical to that found in Dongtan. While addressing welfare to some extent, the importance of prestige and recognition, economic growth and power of the strong again appear to outweigh these concerns and lead to a city that will mostly cater for the well-to-do. However, it should be noted here that HS also did not cater extensively for existing problems in the city. It may then be concluded that new developments are less likely to include broad welfare provisions.

6.2.6 Conclusions Tianjin

The new area in Tianjin is thus reliant on powerful stakeholders from both China and Singapore. Assessment of this large-scale project is quantitative, while the focus is on voluntary behavioral change and minimal welfare considerations. Consequently, Tianjin confirms all of the hypotheses except H4, where it was seen that this project relies on information and mobilization rather than bans and penalties.

Tianjin, then, is very much like Dongtan and allows one to draw many of the same conclusions. However, some important differences are evident. First of all, while the large-scale approach in Dongtan was planned by Arup, this approach was also chosen in Tianjin. As was noted above, however, judging by these two cases such an approach appears to be more related to the type of development rather than culture. This will be an interesting aspect to look at in the next case. Rizhao, after all, constitutes the only Chinese retrofit project in this study. Secondly, the lack of forceful measures was interesting. While the discussion of Dongtan showed that such measures are indeed possible in China, it appears from this case that they are not necessarily preferred.

6.3 Case 6: Rizhao

The coastal port city of Rizhao - named after a Chinese saying meaning 'It was the first to get the sunshine' - certainly lives up to its name (RMPG, 2009). Located on the southern part of the Shandong peninsula, the city faces Korea and Japan across the yellow sea. In 2009, the wider city area had a population of 2.84 million, 560,000 of whom lived in the urban core (RMPG, 2009). For at least a decade Rizhao has been embarking on a broad development project based on the stimulation of its solar power production and utilization, port development, ecological restoration and protection, tourism, welfare provision and social inclusion. The project has had remarkable success, leading Rizhao to win, amongst others, the 2007 Clean Energy Awards (cleanenergyawards.com), the 2009 UN-HABITAT Award (unhabitat.org) and a wide range of Chinese awards for environment, tourism, economy and livability (RMPG, 2009, p.13).

After being upgraded from a county to a city in 1989, Rizhao started on its new development route. At this stage, the city faced serious problems concerning its planning organization, insufficient infrastructure, environmental degradation and poor living conditions (RMPG, 2009). From this starting point, the city embarked on a strategy to build an eco-city. Whilst the sources are somewhat unclear about the exact dates of the project, it appears that the development took place in two distinct phases. Many sources state that the program was started shortly after the upgrade in the early 1990s (Bai et al, 2009, C40cities, 2007 citing Worldwatch Institute, 2007 and RMPG, 2009). However, the effort seems to have been stepped up a decade later when Dr. Li Zhaoqian was elected as the new mayor in 2001. It was he who was awarded the World Clean Energy Award 2007 by the Transatlantic21 Association for strengthening measures aiming to create more renewable energy (cleanenergyawards.com). The local authorities also recognize that efforts have increased over the last decade (RMPG, 2009)

The new policy orientation led to a wide range of measures, including the successful and widely acclaimed solar energy policy. Currently it is stated that about 99 percent of the central district households and more than 30 percent of suburban/village households use solar water heaters (Bai et al, 2009). In addition, most of the cities traffic lights, streetlights and park

illumination are powered by photovoltaic cells and 60.000 greenhouses are utilizing solar energy. Solar power is also used for other purposes such as the solar cookers used by over 6000 households. The city also used energy from marsh gas, which is derived from sewage and is used for cooking and additional power generation (Bai et al, 2009, p.261). Besides these measures on energy production, further policies ensured the cleaning up and conservation of wide stretches of nature and coast, as well as the five main rivers that run through the city. Social housing was improved, the economy grew significantly, and investment, universities and tourists from throughout the nation and the world flocked into the city (RMPG, 2009 and Bai et al., 2009).

Rizhao thus forms a very different case than Dongtan and Tianjin. Both of these represent large new developments in places where no city currently exists. Rizhao, on the other hand, shows that retrofit efforts may also successfully emerge in China. In terms of Joss' (2010) categories of type of SC Rizhao thus forms a Type III city, focusing on retrofitting an existing city.

Table13 shows the inclusion of the relevant MPs in this project. Again, all of the MPs are evident in one form or another in this project, with the exception of ecological footprint (4) for which insufficient data was available. Especially interesting features of this project are the focus on solar energy and the fact that, unlike the earlier Chinese cases, both welfare issues and participation are given a lot of attention.

Rizhao	
Melbourne Principle	Included? How?
1. Vision	Yes. Top-down.
2. Economy	Yes. Solar power, utilities & ports.
3. Society	Yes. Welfare is stressed.
4. Ecological Footprint (assessment)	Data unavailable.
5. Empowerment	Yes. Participation is stressed.
6. Partnerships	Yes. Many diverse partners.
7. Production	Yes. Solar power, utilities & ports.
8. Consumption	Yes. Engage citizens. Mandatory solar.

Table 13: Inclusion MPs Rizhao

6.3.1 H1: China will seek active participation only of consultants and powerful (government and business) interests.

The process that led to Rizhao's sustainability program has been widely acclaimed as a very successful collaborative effort between various stakeholders (Bai et al., 2009 and cleanenergyawards.com). Throughout the program a wide range of actors were involved, including the municipality, the province, national and international knowledge centers and universities, local businesses, NGOs and citizens. Rizhao has also had (financial) assistance from the EU, Britain and the World Bank (RMPG, 2009).

Being confronted with considerable environmental, social and economic problems after the upgrade to city status, policymakers invited various planning- and design institutes to work on plans for Rizhao (RMPG, 2009). This culminated in a multi-level planning system in which different aspects of coastal development, rural-urban development, environmental development and the creation of a 'circular' economy were set out. In addition, a public hearing system was created that sought to include comments and suggestions from experts and citizens.

A very effective process of stakeholder cooperation is said to form the basis of the successful implementation, especially of the energy related part of the program (Bai, 2007 and Bai et al., 2009). Shandong province had a policy in place whereby the use of solar energy was promoted through the provision of subsidies. These subsidies aimed at the production side, thus giving companies incentives to conduct research and development activities leading to improved efficiency and reduced costs of their products. This allowed the prices of solar heaters to drop dramatically, leading to an average saving of \$120 a year over a 15 year period as compared to using electrical heaters (Bai et al, 2009). The municipal government made use of this policy by mandating that all new buildings must utilize solar panels and checking to see if this was actually taking place. They also encouraged voluntary adaptation of solar panels through public information, exemplary projects, help with installation, and by providing (together with a number of companies) free panels and installation to certain employees. As an example, government buildings and the homes of city leaders were the first to have panels installed. As was discussed in the introduction, this approach has been hugely successful. As Bai *et al.* note:

“The success story of Rizhao demonstrates the importance of positive vertical and horizontal linkages through positive synergies among multiple actors, and the positive impact of a successful experiment to other regimes. ... Under ...[a]... favourable policy environment at upper governmental level, and with the availability of technologies at an affordable price, the Rizhao city government has played a pivotal role in the popularization of solar water heaters by introducing a series of policy measures and undertaking widespread efforts of public education.’ (Bai *et al.*, 2009, p.261)

As the above quote already alludes to, the apparent high level of citizen participation in this project is very notable. The government set up numerous activities to educate and encourage citizens, businessmen and government officials. Lectures, open seminars, television advertisements, on-site guidance and related publications were set up to inform the people of the benefits of renewable energy, a clean environment and the circular economy (IGES, 2010 and cleanenergyawards.com). Funding and participation by NGOs and local organizations are also mentioned in the cities application document for the UN-HABITAT awards (RMPG, 2009).

The city of Rizhao has thus adopted a highly successful strategy that incorporates a wide range of actors in all aspects of the process, including citizens and, to a more limited extent, NGOs. While the following will show that the strong state also played a role in the project, stakeholder participation, also for citizens and NGOs, formed a crucial aspects of the success of the developments at Rizhao. H1 must thus be rejected for this case.

The stakeholder involvement in Rizhao is very interesting when compared to the two previous Chinese cases. These both confirmed the hypothesis of a top-down approach involving only powerful stakeholders. Rizhao clearly has a different approach, which does not conform to what was expected from the strong, autocratic and centralized state. Looking back at the EU cases, it was noted that both Almere and Leicester had high stakeholder participation, while HS – the only purely new development in the EU – used a much more top-down approach. It thus seems likely that this type of development accounts for the differences rather than culture. The analysis of Rizhao strengthens this finding; While both of the new developments of Dongtan and Tianjin involved only (or mostly) powerful stakeholders, the retrofit project in Rizhao includes a much broader array of actors. It thus seems likely that the type of development is the main explanatory variable for this difference.

6.3.2 H2: China will use narrower and more quantitative assessment criteria

Unfortunately, the information on Rizhao is limited. Strangely, although being a successful SC project that has been around for quite some time, not much has been written on the subject. It has thus proven very difficult to find exact plans and procedures for much of the project. While the information found allows me to analyze most of the questions related to my hypotheses, I have been unable to find satisfactory information on the subject of assessment.

The application document for the UN-HABITAT awards does provide some information on criteria that must form part of the assessment framework. For instance, it provides statistics for quantitative measures of various pollutants, GDP and investment growth, people and organizations moving to the city and the happiness of inhabitants based on survey data (RMPG, 2009). In the same document, it is also stated that Rizhao ‘has achieved visible, tangible and measurable results during its practice.’ (RMPG, 2009).

On the other hand, the document contains statements such as: ‘Following the four principles of “ecology, flood control, aesthetics and functionality” and using modern garden landscape elements, we continue to build landscape green belts along the rivers and create urban riverbank ecological sceneries.’ (RMPG, 2009, p.7). The use of concepts such as aesthetics seems to relay a more qualitative approach based on the way the city is experienced.

Based on the very limited information available it seems that both types of assessment may play a role in measuring progress for the Rizhao project. However, because of the lack of clarity no conclusive answer can be given about this hypothesis.

6.3.3 H3: China will create mega-projects and large transformations of space.

As was noted above, Rizhao is a Type III city, focusing on retrofitting an existing city. While this notion may appear to suggest an incremental approach, the efforts in Rizhao have led to considerable technological and land-use changes within a span of about 20 years.

A clear example of the size of the operation is given by the discussion of improved infrastructure by the municipality (RMPG, 2009). According to this report, the length of hard-

surfaced roads in the whole city was only 49km in 1989 and the city had almost no garbage disposal facilities and no sewage system with a treatment complex. Twenty years later a total of 50 highways were built, with a total length of 1,187km, sewage interception, treatment and recycling facilities were constructed that now treat over 87 percent of the sewage, and a scheme has been set up to collect and treat garbage. Railroads have also been broadened and new ones built, the harbors have been upgraded, public transportation has improved, and 98.6 and 65 percent of houses now have access to fuel gas and central heating respectively. Furthermore, public housing has been upgraded substantially, residents have moved from an average living space of 12m² to just over 30m², public squares and recreational areas have been created and vast tracts of land and water have been cleaned and protected. The effect of all of this on the city has been enormous, leading, amongst others, to more (foreign) investment, new knowledge institutes, the attraction of international sporting events and tourism.

Thus, while the project may rightly be called a retrofit effort, the scale, breath and technological innovation of the undertaking, as well as the investments involved, are very large. It may thus be concluded that Rizhao is in-line with H3.

This finding is very interesting when compared to the other cases. Both Dongtan and Tianjin also constituted mega-projects. However, for Dongtan it was noted that the choice of such a large project was actually made by the British firm Arup. In addition, it was shown that a similar approach was evident in the newly built projects in the EU. It thus seemed more likely that this approach is linked to the type of development rather than culture. However, the analysis of Rizhao somewhat changes this picture. Here a retrofit development was combined with a large-scale approach. This may show that, while new developments will have a similar approach across contexts, China is nevertheless more likely to create mega-projects even in retrofit projects. This may then indeed reflect the ordered, hierarchic culture associated with LTO.

Rizhao is also striking because of the economic differences with earlier retrofit projects. The most similar project to Rizhao is Almere, where substantive growth was also combined with an effort to make the existing city sustainable. In Rizhao, however, the initial situation was much less developed than in Almere, leading to the development of many primary provisions such as infrastructure and housing. Compared to Leicester the scale of the effort is especially pronounced. Whereas in Leicester resource restraints were mentioned as an important constraining factor, Rizhao appears to have had plenty of resources with which to conduct development.

6.3.4 H4: China is more forceful, utilizing bans and penalties.

As was discussed for H1, the project at Rizhao incorporates citizen and NGO participation. However, it was also mentioned that the success of the effort has been attributed in part to the strong approach taken by the municipal government to make use of the subsidies available at the provincial level.

By stipulating that all new buildings must incorporate solar panels in their design, and by thoroughly checking the execution of this rule, the municipal government made good use of the subsidies provided by the provincial authorities and the strong solar businesses that sprang up from this (Bai et al, 2009). They could now utilize the money from the province indirectly by making use of the affordable technologies that it made possible. Seeing as the costs had been reduced dramatically and expertise had grown, mandating the use of solar panels did not pose too much of a burden on developers. Thus, by cleverly adding a measure of force to a development that was already underway, the municipality was able to reap the benefits of solar energy without having to pay all of the costs. Forceful measures were also taken for the protection of newly recovered nature. Here the municipality mentions that: 'strict control is exercised in this field' (RMPG, 2009, p.6).

However, voluntary behavioral changes also played a large part in the development. Whilst solar energy was mandatory for all new buildings, this was not the case for those structures already built. The municipality also set up various communication and mobilization schemes that would lead citizens to change their behavior voluntarily. Thus the information schemes, exemplary projects and programs aimed at helping local people buy and install solar panels were created. Additionally, a number of schemes were set up that provided financial incentives for both citizens and businesses to adopt and develop the technologies (IGES, 2010).

It was a combination of forceful measures, financial incentives and information strategies that led to the successful implementation of the Rizhao project. Again, as with Dongtan, the fact that bans formed part of the strategy is striking. However, Rizhao also included many

communication and mobilization initiatives. Considering this focus on force as well as mobilization, H4 can neither be confirmed nor rejected for this case study.

Looking at the cultural characteristics associated with high PDI and high LTO, this case again shows some interesting findings. It was expected that the autocratic, centralized, command driven culture with respect for self-discipline and thrift would lead to forceful projects where the state was strongly in charge. In many ways, these characteristics are indeed evident in Rizhao. The municipality indeed played a strong leading role in the project and, like in Dongtan issued bans. As was mentioned before, such bans were not used in any of the EU cases, thus lending more credibility to the idea that culture may indeed be the cause of this. However, Rizhao also shows that this does not mean that such forceful measures are all that can be used. Especially in comparison to the other Chinese cases, Rizhao also took many measures to make its citizenry voluntarily change their behavior. While this case thus strengthens the idea that Chinese culture may indeed lead to more forceful measures, it also shows that information and mobilization strategies may also be used in this context.

6.3.5 H5: China invests only in prestigious physical projects and business interests.

A number of welfare provisions have already been mentioned above. Social housing was part of the development, as well as the creation of more and better open spaces. Citizens also benefited indirectly because of the reduced long-term cost of heating and water provided by the solar heaters. In addition, the broader developments of the city have allowed the economy to grow and attract businesses, knowledge centers, tourism etc., leading to new jobs and better possibilities for education. Many citizens must also have reaped the benefits of all the other infrastructural developments such as transport and waste- and sewage treatment.

The documentation by the municipality provides many more examples of ways in which welfare has been provided and people's lives have been improved. They mention, for instance, better air and drinking water quality, a better community life, more social order, and disaster and poverty relief. The quote below is a good illustration of the weight that welfare provisions appear to have had in the planning process:

'With emphasis upon solving the housing problem of families with medium and low income, we set up a multi-level house supply system by means of providing housing allowances and building low rental houses ... the reconstruction of "villages in town" was successively began in those which are most vulnerable to flooding. We issued special supporting policies and worked out the scientific planning such as effectively integrating the available resources, appropriately relocating villages and incorporating habitation parts, reducing tax and fees and equipping with necessary service facilities including schools, clinics and culture centers. We also reformed the management and public security system of the community, and increase employment rate through developing service industries. ... Combined with the reconstruction of "villages in town", we built low rental houses and provide them directly to qualified families to solve the housing problems of special families with orphaned, old, sick, and disabled members.' (RMPG, 2009, pp.7-8)

While Rizhao has grown into a prestigious place with plenty of business opportunities, a lot of the effort seems to also have been aimed at providing an adequate environment and lifestyle and decent facilities to the citizens of the city. H5 must thus be rejected in the case of Rizhao.

This finding is contrary to expectations based on the high MAS index and differs markedly from the other Chinese cases. Rather than a culture of prestige and recognition, economic growth and the 'power of the strong' leading to mainly prestigious projects throughout China, Rizhao shows that a welfare orientation is also possible in this context. Again, the explanation seems to lie with the type of development. While in the EU the two retrofit developments in Almere and Leicester both had a focus on welfare provisions, the one newly built case of HS did not show such a focus. Similarly, the earlier Chinese cases of Dongtan and Tianjin also constitute both newly built developments and mostly prestigious projects. It thus seems likely that the type of development explains a focus on welfare provisions rather than culture.

6.3.6 Conclusions Rizhao

Rizhao thus forms a very different type of development than the other cases in China. The project is a retrofit effort of an existing city based on high stakeholder participation, large technological

innovations and land-use changes, a combination of forceful and voluntary measures and a welfare orientation. Unfortunately, not enough information is available to draw conclusions on assessment criteria. This means that only one hypothesis (H3) could clearly be confirmed. For H4 no decisive conclusions could be drawn and H1 and H5 had to be rejected.

Especially interesting in this case is the inclusive stakeholder participation and the welfare orientation. Neither of these were found in any of the other Chinese cases. While the analysis of both Dongtan and Tianjin would suggest that China is indeed prone to focus on powerful actors, prestigious projects and business interests, Rizhao has shown that this may also be different. The other important finding here concerns the use of mandatory measures. While this approach was combined with a high level of voluntary measures, bans were indeed in place.

Chapter 7 - Comparative Analysis

In the above, each of the six SC cases has been analyzed according to the five hypotheses explained in Chapter 4. In this chapter, the results presented before are compared in order to draw conclusions about the influence of culture, type of SC project and alternative explanations that came up during the casework.

In the first section, the tables showing the scores of the cases on each hypothesis will be introduced. Here, the level of convergence with the expected outcomes will be examined. This section is divided into an analysis per context – comparing the EU and China – and an analysis per hypothesis. In the second section, the influence of type of SC project will be analyzed. Finally, important additional variables that came up during the casework will be discussed. After analyzing the data here, a final judgment on whether or not each hypotheses can be confirmed is given in the conclusions in the following chapter.

7.1 Level of Convergence with Hypotheses

Table 14 shows the scores of all of the case studies on each of the five hypotheses. The first column shows the type of SC project ranging from Type I – totally new city – through Type II – a partly new development – to Type III – a retrofit of an existing city. The second column shows the name of each case. In this table, the cases are ordered in the same way as they appeared in the text of Chapters 5 and 6. The following five columns show the scores of the cases on each hypothesis. As can be seen in the legend, light shading refers to findings that are in-line with the hypothesis while dark shading shows that that the findings in that case are not in-line with the expected outcome.

7.1.1 Analysis per Context

As the table shows, the hypotheses do appear to have some prediction value. Out of 30 scores, 19 are supported by the empirical evidence. However, eight times the hypothesis had to be rejected on the basis of the case in question. For three scores no conclusive answer could be given. For two of these the reason was that both opposing aspects of the hypothesis were present. Almere involves both a large new development as well as a retrofitting effort in the existing part of the city, while in Rizhao no conclusive answer could be given as to whether this concerns a forceful or a voluntary, communicative approach. Again, both aspects could be found in the project. Finally, assessment criteria in Rizhao could not be scored because of a lack of information.

Type	Case	Hypothesis				
		1.Stakeholder Involvement (PDI,IDV,MAS)	2.Assessment Criteria (MAS)	3.Incrementalism vs. Mega-project (LTO)	4.Voluntary Vs. Force (PDI,LTO)	5.Welfare Provisions (MAS)
II + III	Almere			/////		
III	Leicester					
II	Hammarby					
I	Dongtan					
II	Tianjin					
III	Rizhao		-----		/////	

Legend: = In-line = Not in-line
///// =Both/ Undecided ----- = Not enough information

Table 14: Findings Ordered by Context

Looking at the individual cases, two cities show clear differences with the other cities from the same context. In the EU Hammarby Sjöstad shows the least convergence with the expected results. Here only one out of five hypotheses was correct. Counter to what was expected; HS thus shows limited stakeholder involvement, qualitative assessment criteria, a non-incremental approach and limited attention to welfare issues. The only correct expectation for this case concerns a communication and mobilization strategy aimed at voluntary behavior change in its citizenry. The other outlier is Rizhao. Counter to what was expected, the developments at Rizhao

show broad stakeholder participation and much attention to welfare issues. Additionally, H4 is undecided for this case and no conclusive answers could be found about assessment criteria for Rizhao. Thus, only H3 was supported by this case study.

Apart from these two outliers, another three cities had one hypothesis that was not in-line with the expected outcomes or could not be answered unequivocally. First of all, the case of Almere constitutes both an incremental approach as well as a mega-project. In Leicester, welfare provisions formed an important part of the program, and in Tianjin, no signs of forceful measures could be found. Thus, only Dongtan confirmed all of the hypotheses.

7.1.2 Analysis per Hypothesis

Looking at the answers to each hypothesis, further patterns can be distinguished. Thus, H2, H3 and H4 show the most convergence, followed closely by H1. H5 proved to be the worst predictor.

While not being perfect predictors, H3 and H4 do appear to show real differences between the EU and China. An incremental approach (H3) was indeed only found in the EU. Both Almere and HS had a (partly) incremental approach. Judging by these scores, it seems that the free, emancipated culture of the EU related to a low Long-term Orientation (LTO) score may indeed lead to a more gradual approach to changing the economy and production, while a high LTO score would lead to more large-scale projects. Forceful measures (H4) could be found solely in China, where both Tianjin and Rizhao includes bans. Consumption patterns (H4) may thus indeed be linked to the Power Distance Index (PDI) and LTO. The democratic (low-PDI) and free (low-LTO) culture of the EU would then lead to a more voluntary approach, while the autocratic (high-PDI) and self-disciplined (high-LTO) nature of the Chinese would allow for the creation of more forceful bans.

However, while both these hypotheses show the greatest total number of confirming cases, it must be noted that for each hypothesis the two scores that did not (fully) confirm them were in the same culture. Thus, most of the cases actually have a (partly) non-incremental approach and communication and mobilization strategies. It may then also be argued that these hypotheses show great convergence between the contexts rather than prediction value; an argument that will be further discussed when looking at the influence of the type of SC below.

H1- stakeholder involvement - shows a different pattern. While also having two scores that do not support it, these cases were evenly divided between the EU and China. Seeing as the brunt of the evidence thus supports the hypothesis, PDI, individualism (IDV) and masculinity/femininity (MAS) may thus indeed be linked to stakeholder involvement. Interestingly, however, Hammarby Sjöstad and Rizhao show the clearest differences. As will become clear in the next section, this may be explained by the type of SC project concerned.

H2 - assessment - shows a similar pattern. Again, the same two cases supported the hypothesis. However, it should be remembered that the expected outcome for Leicester is based on a different MAS score (see Chapter 4). Therefore, while confirming the hypothesis, Leicester shows quantitative assessment criteria. It must also be mentioned here that the answer for Almere was drawn on the basis of the current state of this new development. It was shown in Chapter 5 that more quantitative criteria might yet emerge in the future. While it is still interesting that the only case that had qualitative assessment is in fact in the EU - perhaps reflecting the intuitive, consensus-based management associated with its low-MAS score - it may generally be concluded that H2 forms a bad predictor. Based on this analysis it appears that quantitative criteria will be used in most if not all SC projects.

H5 - welfare provisions - has had to be rejected most often. However, it should again be noticed that the MAS score was used here. As was the case with H2, then, while the hypothesis is rejected for Leicester, this means that welfare provisions *were* included in this program. Considering that half of the predictions were wrong, it seems unlikely that this hypothesis is related to the MAS scores used here. However, the other two wrong predictions again concern the cases of HS and Rizhao. As the section below will show, this means that welfare provisions are probably more related to type of development.

7.2 The Influence of Type of SC project

Table 15 shows the same information as Table 14 except that this time the data is ordered according to type of SC project. Thus Dongtan, the only Type I city in this research, is at the top, followed by the two Type II projects Tianjin and HS. Almere, which is both a Type II and a Type III development, comes next. Finally, the two Type III developments, Leicester and Rizhao are shown at the bottom.

When reading the table, it must first of all be remembered that when a finding is not in-line with the hypothesis in one context this means that this score confirms more closely to what was expected in the other culture. For example, while H1 – stakeholder involvement - is confirmed for Dongtan and Tianjin and rejected for Hammarby Sjöstad, this means that all three of these cities showed *low* stakeholder involvement. In the rows below the opposite is true. While the hypothesis is confirmed for Almere and Leicester and rejected for Rizhao, this means that all of these cases showed *high* stakeholder involvement. When reading the table, it should thus always be remembered in which context each case falls.

Secondly, it was noted in Chapter 4 that the UK has a different MAS score than the other EU countries in the sample. Both H2 – assessment - and H5 – welfare provisions – were predicted using this score. Hence, these two hypotheses were expected to differ from the other EU cases and conform more closely to the expectations for China. This important detail should also be taken into account when interpreting the table and will be discussed where necessary below.

Finally, it must also be noted that Almere forms an outlier when considering the type of development. Almere is the only city that has both a retrofit element as well as building large new areas. However, the scores for this city conform closely to the other retrofit projects. This is probably due to the focus on the APs, which, while included in the new developments, deal largely with the existing city. While I will come back to this issue below, Almere is thus mostly seen as a retrofit project.

Looking at Table 15 it is apparent that the findings for most new developments (Type I and II) conform closely to what was expected in the Chinese culture. While for both Dongtan and Tianjin most of the hypotheses could be confirmed, most of these had to be rejected for the only newly built European case - Hammarby Sjöstad. The same is true of the three retrofit (Type III) cases. While most of the hypotheses could be confirmed for Almere and Leicester, for the only retrofit case in China – Rizhao – many hypotheses had to be rejected. Both the top- and the bottom three cases, then, all point more or less in the same direction. This shows that the type of city has at least as much prediction value as culture. Judging from this first look at the scores, it thus seems that the Type of development is more important than culture. Looking at the individual hypotheses, this initial finding can be further refined.

First of all, for both H1 and H5 the split between new areas and retrofits conforms almost perfectly to the scores. If Almere is considered a retrofit effort these scores are in fact perfect. Thus, as the example at the beginning of this section showed, stakeholder involvement is low in all newly built projects and high in all retrofit cases. The same is true for H5. While welfare provisions are given little attention in all of the newly built areas, they form an important aspect in all three of the retrofit cases. This leads to the conclusion that stakeholder participation (H1) and welfare provisions (H5) are probably related to the type of SC rather than culture.

Type	Case	Hypothesis				
		1.Stakeholder Involvement (PDI, IDV, MAS)	2.Assessment Criteria (MAS)	3.Incrementalism vs. Mega-project (LTO)	4.Voluntary Vs. Force (PDI, LTO)	5.Welfare Provisions (MAS)
I	Dongtan					
II	Tianjin					
II	Hammarby					
II/III	Almere			/////		
III	Leicester					
III	Rizhao		-----		/////	

Legend:  = In-line  = Not in-line
 = Both/Undecided  = Not enough information

Table 15: Findings Ordered by Type of SC

Conclusions on the other three hypotheses are less clear. Concerning H3 the split between new areas and retrofits is still evident. As may be expected, all new areas were scored as constituting mega-projects, while all incremental approaches were found in the retrofit cases. However, as

was noted above, both Almere and Rizhao are (partially) non-incremental, leaving only Leicester as a clearly incremental approach. This may be argued to show that most SC projects do indeed include a non-incremental element. However, it is interesting that the only retrofit case in China – Rizhao – constitutes a mega-project, while the only totally retrofit project in the EU – Leicester – does not. In addition, an incremental approach was evident in the retrofit part of Almere but was offset because this project also included new developments. Therefore, while mega-projects may be the norm across contexts, Rizhao shows that China may nevertheless be more inclined to adopt such an approach even in retrofit cases. Similarly, the only incremental approaches were found in the EU, showing that perhaps the EU, while also creating mega-projects, is more likely to have an incremental approach. As the following section will show, however, economic variables may also explain some of these scores.

The split between new developments and retrofits is also present in assessment criteria (H2). However, considering that too little information was available for Rizhao, only the case of Almere shows qualitative assessment.⁵ While most cases actually have quantitative assessment criteria, the one case that did not is both a new development and a retrofit effort. In addition, as was discussed in the previous section, the assessment criteria in Almere may become more quantitative as the project continues. H2 thus does not appear to show any clear differences between new developments and retrofits.

H4 – voluntary vs. force – shows a very different pattern than the other hypotheses. Here, the two cases that did not confirm it are divided evenly between new developments and retrofits. There is thus no evidence that the Type of SC project has any influence on whether or not force is used. This strengthens the finding in the previous section that this use of force may indeed be a result of the Chinese culture. However, as the following will show, context specific variables other than culture (but not necessarily unrelated) may also have an influence.

7.3 Alternative Explanations

It was mentioned in the introduction that culture does not lead directly to policy outcomes. It was argued that several layers of historically grown institutions – in the form of rules, laws, procedures and organizations – mediate between culture and actual policies and resource allocation. While I do not intend to describe all of the institutions relevant to SC projects, a number of important findings came up in the research that may help explain some of the differences and similarities found in the cases. Here a number of such variables will be discussed. While a few idiosyncratic, case-specific findings were discussed in the analysis of each individual case, only two of these appear to be of more general importance. Thus two main intermediate variables will be discussed that came up in a large part of the cases: the importance of economic factors and the amount of policy freedom for municipalities.

The first alternative variable found in many of the cases concerns the economic state of the area. It was noticed in most cases that the level of economic development, growth and investment, both nationally and locally, has important consequences for the type of development in SC projects. In Almere, for instance, the need for more housing and working space in the wider Randstad area provided much of the momentum for a reorientation of the development of the entire city. Through the interest, funding and political will to expand the city, the Almere Principles could grow into the important overarching framework they now represent. Leicester showed quite a different development. Here the lack of funding was often mentioned as an important limiting factor. In Hammarby Sjöstad, it was noticed that welfare issues were not specifically addressed. While this may appear like a weakness at first, such a finding must also be related to the overall level of welfare in Stockholm and Sweden. If issues of welfare and equity are already sufficiently addressed in the broader area, there may be less need to incorporate such issues in SC projects.

Economic components are also important in the Chinese cases. The large-scale plans for Dongtan currently only exist on paper due largely to financing problems, while the Tianjin project is appropriating large amounts of funding from the business community. Judged by the amounts of investment in energy, infrastructure, nature protection and social services, the retrofit development at Rizhao appears to have been able to mobilize large funds. It must also be noted that all of these Chinese cases are situated on the wealthy East coast of China, rather than

⁵ As was noted at the top of this section, this is one of the two hypotheses for which the MAS score was used. Because Leicester has the same MAS score as China, the rejection of H2 for this case means that Leicester had *quantitative* assessment criteria.

the poorer, Western hinterland. Furthermore, all of these places constitute or form part of important economic hubs and ports.

The economic component of SC projects has thus been shown to be important. Finance can form both an enabling, as well as a limiting factor in the types of policies adopted. While sufficient economic means and large (expected) growth may allow for large investments, a lack of funding can lead to delayed or even cancelled efforts as well as a less radical program and a (perceived) need to draw upon the resources of other stakeholders, as was the case in Leicester.

Secondly, the amount of freedom and power vested in the municipality or other local government appears to form an important variable. It was mentioned in the discussion of Leicester that municipalities in England have less independence for making policy than most of their European counterparts. In China, this issue is also very pronounced. As was mentioned, Tianjin is one of only four cities in China that reports directly to the central government rather than first going through provincial levels of authority. As Hooning et al. (2010) mention, this mode of governance allows for faster and more efficient development. The project in Rizhao was also started as a result of a change in status of the area. In 1989, Rizhao was upgraded from a county to a city, a change that allowed for the start of the current development phase.

While this is not the place to go into the configurations of such urban governance systems in detail, it is clear that these organizational forms have important impacts on SC projects. Levels of independence from central control limit and enable different measures that may form part of SC projects. Furthermore, different levels of status may influence the amount of attention and funding a municipality receives.

PART IV

Conclusions and Discussion

Chapter 8 - Conclusions

In this thesis the processes and content of SC projects in the EU and China were compared in order to understand the influence of culture on such projects. Alternative explanations, especially the type of development, have also been analyzed. In this chapter, the findings are summarized in order to come to a final judgment about whether or not each hypothesis is supported by the empirical evidence, after which the main research question can be answered.

The cases studied in this research showed considerable differences, reflecting many aspects related to process and content mentioned in the SC literature. Table 16 gives an overview of the way the eight Melbourne Principles used in this research are given shape in each of the six cases. While, for instance, in Dongtan a brand new city is being planned in a top-down manner, utilizing state of the art technologies, Leicester is trying to address the problems and wishes of its existing citizenry through highly democratic processes and participation. As was mentioned in the introduction, it is at present safe to say that none of these projects can (yet) rightfully be called a SC, but the cases illustrate the various ways in which this ideal concept is being approached in the EU and China. Judging by this research, both culture and the type of SC may account for some of these differences.

Melbourne Principle	Almere	Leicester	Hammarby Sjöstad
1. Vision	Yes. With McDonough & Partners.	Yes. Citizen involvement.	Yes. Top-down, integrated planning.
2. Economy	Yes. Engage businesses.	Yes. Engage businesses.	Yes. Utilities and building.
3. Society	Yes. Welfare is stressed.	Yes. Welfare is stressed.	Not explicitly addressed.
4. Ecological Footprint (assessment)	Only qualitatively. May change in future.	Yes. Various methods. EMAS.	Yes. Through Grontmij.
5. Empowerment	Yes. Participation is stressed.	Yes. Participation is stressed.	Only partly in execution.
6. Partnerships	Yes. Many diverse partners.	Yes. Diverse partners.	Yes. Utilities & developers, integrated planning
7. Production	Yes. Engage businesses.	Yes. Engage businesses.	Yes. Utilities and building.
8. Consumption	Yes. Engage citizens.	Yes. Engage citizens.	Yes. In buildings, citizens also involved.
Melbourne Principle	Dongtan	Tianjin	Rizhao
1. Vision	Yes. Mostly by Arup.	Yes. By consortium.	Yes. Top-down.
2. Economy	Yes. Commercially sustainable.	Yes. Utilities and building.	Yes. Solar power, utilities & ports.
3. Society	Yes, but marginally.	Yes, but marginally.	Yes. Welfare is stressed.
4. Ecological Footprint (assessment)	Yes. By Arup: IRM & Ecol. Footprint.	Yes. KPIs and GBES.	Data unavailable.
5. Empowerment	Yes, but questionable.	Yes, but questionable.	Yes. Participation is stressed.
6. Partnerships	Yes. Businesses and consultants.	Yes. Public-private, China and Singapore.	Yes. Many diverse partners.
7. Production	Yes. Commercially sustainable.	Yes. Utilities and building.	Yes. Solar power, utilities & ports.
8. Consumption	Yes, mostly vague. Bans motor vehicles.	Yes. Sustainable lifestyles.	Yes. Engage citizens. Mandatory solar.

Table 16: Overview Inclusion Eight MPs

H1: While the EU will seek collaboration with a broad array of stakeholders (including NGOs and citizens); China will seek active participation only of consultants and powerful (government and business) interests.

Concerning H1, it appears that this aspect is related to the type of development, rather than culture. While broad stakeholder participation was found mostly in the EU, this context also had more retrofit developments; the only totally new area (HS) showed less participation. In China, both new developments included mostly powerful stakeholders while the retrofit project in Rizhao did have broad participation. Broad stakeholder participation, then, showed only in retrofit projects. The cultural factors related to power distance (PDI), individualism (IDV) and masculinity (MAS) used for this hypothesis thus do not appear to influence stakeholder

participation; meaning H1 must be rejected based on the evidence in this research. Rather than culture, the type of SC-project appears to be the main explanatory variable for the perceived differences in stakeholder participation.

H2: While the EU will have broad, vague measures of progress; China will use narrower and quantitative assessment criteria

H2 proved to be a bad predictor. In fact, only one case, Almere, clearly used a qualitative approach. Even for this case, it was noticed that more quantitative criteria may emerge in the future. Based on these findings it may thus be concluded that qualitative assessment is rare in SC projects, with most developments utilizing quantitative criteria. However, it must also be noted that the one case that did show a qualitative approach was indeed in the EU, as was expected. In addition, the accuracy of this prediction was hard to test because of the use of masculinity/femininity (MAS) as the main predictor variable - with the UK scoring different than the other EU cases - and the lack of information concerning assessment in Rizhao. This means that Almere could only be compared to four other projects, each with the same MAS score. Considering that Leicester is also a Type III development, it seems unlikely that qualitative assessment is related to the type of SC project. However, this still leaves the possibility that such assessment is related to culture, with harder criteria in masculine countries and softer criteria in feminine countries. Thus, while this research shows that such a soft approach may be rare, it would be interesting for further research to see if the cases where it is used are indeed in low-MAS countries.

H3: While the EU aims for incremental technological- and land-use changes; China will create mega-projects and large transformations of space.

H3 also shows a lot of similarities between cases in both contexts. In the EU Leicester was the only case with a purely incremental approach, Hammarby Sjöstad is non-incremental and Almere shows both aspects. In China, all three cases were shown to constitute mega-projects. Thus, there is only one case with a purely incremental approach and most SC projects in this study concern at least partly mega-projects. Interestingly, however, both (partly) incremental projects - Almere and Leicester - were indeed in the EU, as was expected. Both these cases also constitute (partly) retrofit developments, suggesting that this type of development may lead to a more incremental approach. However, in China the one retrofit development - Rizhao - also constitutes a mega-project. It thus seems unlikely that the choice of approach is necessarily based on the type of SC-project. While it appears that mega-projects may generally be preferred in newly built SC projects, a non-incremental approach may indeed be more likely in high long-term orientation (LTO) cultures such as China. The self-discipline and thrift in such cultures may then indeed allow one to fund and organize larger projects even in retrofit projects. However the availability of resources may also account for these differences. While for instance in Leicester resource restraints were seen as an important limiting factor, the Rizhao government appeared to be able to mobilize plenty of funding. All in all no conclusive judgment can be given on this hypothesis, while cultural influences cannot be ruled out, it appears that given enough resources municipalities may prefer to create large-scale projects in both the EU and China.

H4: While the EU aims to create incentives for voluntary behavioral change through communication and mobilization strategies, China is more forceful, utilizing bans and penalties.

H4 shows by far the clearest relationship to culture. While all the EU cases only use voluntary approaches, forceful measures were found in two of the Chinese cases. Both the new development of Dongtan as well as the retrofit project in Rizhao included some form of forceful measures. Thus, this approach appears to be unrelated to the type of development. While it is clear that mandatory measures only form a small part of the measures in Chinese SC-projects and voluntary approaches are also used, it may be concluded that forceful means are indeed more likely in the Chinese context. The democratic, decentralized, dialogue- and freedom oriented culture associated with low power distance (PDI) and a low long-term orientation (LTO) in the EU may then indeed make it undesirable or even impossible for governments to impose mandatory measures and lead to a voluntary approach. Its opposite, the autocratic, centralized,

command- and self-discipline oriented Chinese culture associated with high-PDI and high-LTO scores, may allow for the acceptance of the imposition of more forceful measures.

An alternative explanation may be given based on the amount of discretionary space of municipalities. It may then be argued that Chinese governments have more room to include bans and penalties, while this is not possible in the EU. However, looking back at the discussion of Almere, this does not seem likely. Here the possibility of rejecting non-sustainable companies that wanted to come to the city was still being considered for the future. While it was yet undecided whether this would actually happen, the possibility was entertained, thus showing that they at least considered this a possibility. Even if it is true that Chinese municipalities have more discretionary space to create bans, this also does not mean that this is not the result of culture. As was noted in the Chapter 1, laws, rules and organizations – and thus the discretionary space of municipalities - are also the product (and the producers) of culture. Based on all of this, then, it seems likely that the bans evident in Dongtan and Rizhao indeed reflect Chinese high-PDI and high-LTO culture. Future research on (differences in) the discretionary space of local governments, perhaps linked to cultural variables, could create more clarity on this issue.

H5: While the EU devotes much of its resources to welfare provisions (education, employment, aid, recreation, etc.); China invests only in prestigious physical projects and business interests.

H5, like H1, appears to be linked to the type of development rather than culture. Contrary to what was expected, broad welfare provisions were evident in both the EU and China and thus do not co-vary with differences in masculinity (MAS). However, retrofit cases in both contexts showed much more participation than the new developments. Creating broad provisions may then be a way of appeasing an existing public in and getting them involved in the program. In new developments with no previous inhabitants such provisions appear to be deemed less necessary.

All in all, in this exploratory, qualitative research setup the relationship between culture and SC project enactment has been difficult to assess. While the findings were often in line with the hypotheses, it was shown that the type of SC project could also account for many of the differences. Furthermore, alternative variables such as economic status and discretionary power exercised by municipalities have also been shown to be important for the way SC projects are enacted. Nevertheless, this research has made a first attempt to address some previously neglected aspects of the SC debate, and some tentative conclusions have been drawn. Thus a careful answer to the main research question may be given.

To what extent do differences in culture account for any perceived differences in process and content of sustainable city projects in the EU and China?

Culture was shown to mainly influence whether or not force was used. While the importance of discretionary space of municipalities should be further analyzed in this regard, the cases discussed here suggest that it is likely that China will indeed be more likely to impose bans and penalties and that this is indeed caused by its high-PDI (and high-LTO) culture. The data also allowed for the possibility, albeit much less clearly, that culture may influence assessment criteria and the choice of an incremental or mega-project approach. Low-MAS countries, then, would be more likely to adopt qualitative assessment criteria, while High-LTO countries would be more likely to create mega-projects. However, for both these later findings the data is far from conclusive and shows complex interactions with other variables such as economic status. Finally, both stakeholder involvement and welfare provisions could not be shown to be related to culture but can be explained by the type of development.

All in all, the relationship between culture and SC project enactment is complex. Relationships in this small-N study are often unclear and there are many important intermediate variables, making it hard to prove causality. In the last chapter recommendations for further research will be made that could more clearly show the relationship addressed here.

Chapter 9 - Discussion

The methodology employed here has helped analyze some first, tentative relationships between culture and SC project enactment. It has also shown the importance of the type of SC development as well as other variables such as economic development and the discretionary space of municipalities. As such, I hope to have opened up a previously underexplored issue for further theorizing in the SC debate.

While the methodology has been helpful in conducting this first analysis of such issues, it also has some shortcomings that may be addressed in further research. In this final chapter, I will discuss these drawbacks in the first section. In the second section some recommendations for further research will be given.

9.1 Shortcomings of the Current Research

Four main issues will be addressed in this section: the use of the MPs and Hofstede and Hofstede's cultural indexes, the relationship between context and the type of development, the amount and quality of the data, and the small amount of cases. All of this will form the basis for recommendations for further research.

First of all, while the Melbourne Principles were found to be a reasonable proxy of the SC debate, including many of the most important arguments found there, it is still not perfect. The main shortcomings are the vague formulations, often overlapping issues and a lack of technical detail. While the first two problems may be solved by collapsing the principles into more clearly separated issues and formulating these more precisely, as was attempted here, the lack of technical detail could be solved by adding measures from other sets of principles such as the Hannover Principles.

Concerning the use of Hofstede and Hofstede's cultural characteristics, ways may be found of creating more understanding of specific policy related characteristics, perhaps through further research. Alternatively, as the next section will show, simply looking for covariance between culture and SC project content without drawing up hypotheses may also allow one to skip this difficult process altogether. It should also be noted that I do not want to suggest that Hofstede's indexes are *the* solution to understanding differences in SC enactment or (local) culture in general. I have simply used this work in order to conceptualize broad cultural differences across the world in an attempt to contextualize part of the current SC theory. While I think to have shown that large cultural differences may indeed influence SC enactment to an extent, and hope that this argument will be taken up and elaborated on, many more (local) factors, of course, also play a huge role in the way SC-projects are given shape. While some of these factors have been addressed here, further contextualization is needed, especially when working on the ground in the realization of actual SC-projects.

Secondly, while this research has looked at culture and the type of SC as separate variables, the two are not necessarily unrelated. It may prove that certain countries are more likely to create newly built areas while others are more prone to retrofitting existing cities. To the extent that culture influences factors such as economic progress, demographics, urbanization etc., it may also affect the type of developments found in a certain places. Again, quantitative research with many cases could make such linkages more clear.

Thirdly, it has already been mentioned in the methodology section that it was difficult to obtain information about SC cases, especially in China. While this is partly inevitable due to the fact that many of these developments are still rather recent, this could partly be solved by conducting more in-depth research on the ground, as was initially planned for this thesis. Such research may also create more understanding about the exact meaning of certain measures in a particular context. While this research has shown, for instance, that both Leicester and Rizhao worked with many stakeholders, more in-depth research into these practices may show important differences in the way such processes are conducted. It should also be mentioned again that all of the cases discussed here concern self-proclaimed SC-projects with quite different focuses'. As I have argued above, there is currently no single set of criteria by which to judge whether or not a city lives up to this claim. Rather, this research has shown some of the different ways in which this broad concept is being interpreted in practice, none of which can yet be said to fully live up to the claim of being completely sustainable. While the MPs give an indication of important aspects, further work on such criteria may come up with ways of assessing the validity of such assertions and thus to come to clear judgments as to what may rightly be claimed to be an SC-project. The self-proclaimed nature of the cases also means that there is sufficient momentum and political will to focus on issues of sustainability. While the focus here has thus been on cities

where such momentum exists, it would also be interesting to conduct research on the sustainability of cities that do not advertise themselves in this way.

Finally, because the issues of cultural influences on SC enactment addressed here have so far not been studied it was argued that a qualitative, case study approach was warranted for this initial analysis of the issue. In this way, more details of the projects could be used to understand the influence of culture on SC enactment and find alternative explanations for the findings. While this methodology has indeed been interesting, it also raises questions about the generalizability of the findings. As such, it would be interesting to conduct quantitative research in which the tentative findings here can be tested with more cases. The methodology and findings of the current research could form an important starting point for such an analysis, providing both a measure of SCs and culture and providing some important additional variables to be controlled for.

9.2 Recommendations for Further Research

As a recommendation for further research, it may thus be useful to work on methods that include a large number of cases and that also measure differences in the intermediate variables. Below I will briefly sketch some important considerations for such a study based on what was found here. The added value of such a quantitative approach is first set out, after which the variables to be included in such a study and some options concerning the use of hypotheses are addressed. Finally, the issue of case selection is discussed.

To make the influence of culture and other variables more clear, a quantitative, large-N study could be conducted that includes SC projects in more than two contexts. By increasing the number of cases per context the validity of the statements about each context will be higher. This recommendation could help solve the problem found here that findings differ within the same context. As such, it would become clearer to what extent SC projects differ within a given culture. However, if such a study would still only address two different contexts, the importance of third variables that exist throughout each context would still be held constant. This problem could be solved by including more countries in the analysis. If, for instance, the relationship between low-LTO and a more incremental approach persist despite differences in economic development, this relationship could indeed be argued to be caused by culture.

Concerning the variables used in such a study, something must be said about the creation of hypotheses. In this study these were drawn up using the Melbourne Principles and Hofstede and Hofstede's (2010) cultural indexes. While no better measures of culture and SCs have been found, these models were by no means perfect. As was mentioned above, the MPs, while indeed representing much of what has been said in the SC debate, are rather vague and overlapping and lack technical detail. Similarly, the cultural indexes, while showing important cultural differences, are not very exact when one wants to predict specific developments such as SC enactment. While it may be impossible to create a much more specific cultural index, the problem with the MPs may be solved. In this study, these broad principles have already been reduced to five statements. Future studies may improve on this by finding ways of including measures of biodiversity and good governance that were not included here. Alternatively, a study with enough cases may be able to skip this difficult process of drawing up hypotheses altogether. One could then simply score each case according to the culture and the principles it embodies and induce relationships from this. However, as will be discussed below, if only a limited amount of cases can be found, directional hypotheses may be necessary in order to give more statistical weight to the findings. Thus, while drawing up hypothesis from such broad concepts on such a specific issue is precarious, it may nevertheless be necessary.

A further issue concerns the alternative explanations used. This study has shown that the type of SC projects is of particular importance, especially concerning stakeholder involvement and welfare provisions. Additionally, the level of economic development and the discretionary space of municipalities may form important variables. A quantitative study may also more accurately address the connections between these variables and between these and culture.

Finally, a remark must be made about case selection in further studies. It was noted in the methodology chapter that finding appropriate cases is still difficult. This is due largely to the fact that practical implementation of SC projects is a rather new phenomenon. As such only a limited amount of cases are available. Furthermore, many of these cases are still in a very early state of development. While the latter point can be dealt with by focusing on the process and plans rather than the outcomes, as was done here, the limited amount of cases may partly be

solved by including a broad set of search terms. In the quantitative study conducted by Joss (2010), for instance, 79 cases were found worldwide. However, Joss only conducted searches on the terms 'eco-city' and 'eco-town'. As the discussion on the history and terminology of the SC concept in Chapter 3 has shown, however, many more terms are used to denote the same development. Thus, a quantitative study of SC projects could have a broader empirical basis if more of these terms are included in the search for cases.

This study has tentatively shown that culture may influence the use of forceful means, and perhaps to a lesser extent assessment criteria and the choice of an incremental versus a rapid, large-scale approach. Furthermore, the type of SC project was shown to be related to the level of inclusion of stakeholders as well as the importance of welfare provisions. Apart from these factors, the importance of the level of economic development and investment and discretionary space for municipalities can be said to form important alternative explanatory variables. Further research, along the lines set out in this chapter, could provide more clarity on the subject.

I hope that this research has been able to indicate that SC project enactment, in both process and content, is not and will not be the same across different cultures. Important differences between countries exist, some of which are likely to be deeply rooted in the collective programming of peoples mind. To further sustainability in cities across the globe, these discrepancies must be recognized in (SC) theory and be further analyzed in order to be able to draw more specifically on the strengths and weaknesses available in each different context.

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Interviews

Interview 1: Held with Mr. Neville Stork, head of sustainability at Leicester city council in a café on the main street of Leicester, 20 July 2010.

Interview 2: Held with Mr. Eric Freudenthal, head of communication at GlashusEtt, at GlashusEtt, 23 August 2010.

Interview 3: Held with Mr. Jeroen F.T. Roeloffzen, program leader for the Sustainability Lab in Almere, at the city hall in Almere, 1 September, 2010.

Interview 4: Held with Mr. Robert van Rooij and Mr. Stephen Waters in a classroom at the Technical University of Delft (TU Delft) 17 September 2010.

Appendix: Table Cultural Characteristics

Adapted from Hofstede and Hofstede (2005).

Small PDI	Large PDI
Inequalities among people should be minimized	Inequalities between people are expected and desired
Social relationships should be handled with care	Status should be balanced with restraint
There should, and there is to some extent, interdependence between less and more powerful people	Less powerful people should be dependent; they are polarized between dependence and counterdependence
Parents treat children as equals	Parents teach children obedience
Children treat parents and older relatives as equals	Respect from parents and older relatives is a basic and lifelong virtue
Children play no role in old-age security of parents	Children are the source of old-age security to parents
Students treat teachers as equals	Students give teachers respects, even outside of class
Teachers expect initiative from students in class	Teachers should take all initiative in class
Teachers are experts who transfer impersonal truths	Teachers are gurus who transfer personal wisdom
Quality of learning depends on two-way communication and excellence of students	Quality of learning depends on excellence of teacher
Less educated persons hold more authoritarian values than more educated persons	Both more and less educated persons show equally authoritarian values
Educational policy focuses on secondary schools	Educational policy focuses on universities
Hierarchy in organizations means an inequality of roles, established for convenience	Hierarchy in organizations reflects essential inequality between higher and lower levels
Decentralization is popular [DECENTRALIZATION]	Centralization is popular [CENTRALIZATION]
There are fewer supervisory personnel	There are more supervisory personnel
There is a narrow salary range between the top and bottom of the organization	There is a wide salary range between the top and bottom of the organization
Managers rely on their own experience and on subordinates	Managers rely on superiors and on formal rules
Subordinates expect to be consulted	Subordinates expect to be told what to do
The ideal boss is a resourceful democrat	The ideal boss is a benevolent autocrat, or "good father"
Subordinate-superior relations are pragmatic	Subordinate-superior relations are emotional
Privileges and status symbols are frowned upon	Privileges and status symbols are normal and popular
Manual work has the same status as office work	White-collar jobs are valued more than blue-collar jobs
The use of power should be legitimate and follow criteria of good and evil	Might prevails over right: whoever holds the power is right and good
Skills, wealth, power and status need not go together	Skills, wealth, power and status should go together
Mostly wealthier countries with a large middle class	Mostly poor countries with a small middle class
All should have equal rights	The powerful should have privileges
Power is based on formal position, expertise, and ability to give rewards	Power is based on tradition or family, charisma, and the ability to use force
The way to change a political system is by changing the rules (evolution)	The way to change a political system is by changing the people at the top (revolution)
There is more dialogue and less violence in domestic politics	There is less dialogue and more violence in domestic politics

[DIALOGUE]	[COMMAND]
Pluralist governments based on outcome of majority vote [DEMOCRACY]	Autocratic or oligarchic governments based on cooptation [AUTOCRACY]
The political spectrum shows a strong centre and weak right and left wings	The political spectrum, if allowed to exist, has a weak centre and strong right and left wings
There are small income differentials in society, further reduced by the tax system	There are large income differentials in society, further increased by the tax system
There is less perceived corruption; scandals end political careers	There is more perceived corruption; scandals are usually covered up
Collectivist	Individualist
People are born into extended families or other in-groups that continue protecting them in exchange for loyalty	Everyone grows up to look after him- or herself and his or her immediate (nuclear) family only
Children learn to think in terms of "we"	Children learn to think in terms of "I"
Harmony should always be maintained and direct confrontations avoided	Speaking one's mind is a characteristic of an honest person
Friendships are predetermined	Friendships are voluntary and should be fostered
Resources should be shared with relatives	Individual ownership of resources even for children
High-context communication prevails [HIGH -CONTEXT COMMUNICATION]	Low-context communication prevails [LOW-CONTEXT COMMUNICATION]
Trespassing leads to shame and loss of face for self and group	Trespassing leads to guilt and loss of self-respect
Brides should be young, industrious, and chaste; bridegrooms should be older	Criteria for marriage partner are not predetermined
Use of the word <i>I</i> is avoided	Use of the word <i>I</i> is encouraged
Interdependent self	Independent self
On personality tests, people score more introvert	On personality tests, people score more extrovert
Showing sadness is encouraged, and happiness discouraged	Showing happiness is encouraged, and sadness discouraged
Slower walking speed	Faster walking speed
Consumption patterns show dependence on others	Consumption patterns show self-supporting lifestyles
Social network is the primary source of information	Media is the primary source of information
A smaller share of both private and public income is spent on health care	A large share of both private and public income is spent on health care
Disabled persons are a shame on the family and should be kept out of sight	Disabled persons should participate as much as possible in normal day-to-day activities
Students only speak up in class when sanctioned by the group	Students are expected to individually speak up in class
The purpose of education is learning how to do	The purpose of education is learning how to learn
Diplomas provide entry to higher status groups	Diploma's increase economic worth and/or self-respect
Occupational mobility is lower	Occupational mobility is higher
Employees are members of in-groups who will pursue their in-group's interest	Employees are "economic men" who will pursue the employer's interest if it coincides with their self interest
Hiring and promotion decisions take an employee's in-group into account	Hiring and promotion decisions are supposed to be based on skills and rules only
The employer-employee relationship is basically moral, like a family link	The employer-employee relationship is a contract between parties on a labor market
Management is management of groups	Management is management of individuals
Direct appraisal of subordinates spoils	Management training teaches the honest

harmony	sharing of feelings
In-group customers get better treatment (particularism)	Every customer should get the same treatment (universalism)
Relationship prevails over task	Task prevails over relationship
Opinions are predetermined by group membership	Everyone is expected to have a private opinion
Collective interests prevail over individual interests	Individual interests prevail over collective interests
The state holds a dominant role in the economic system [STRONG STATE]	The role of the state in the economic system is restrained [LIMITED STATE]
Per capita GNP tends to be lower	Per capita GNP tends to be higher
Companies are owned by families or collectives [FAMILY OWNERSHIP]	Joint stock companies are owned by individual investors [INDIVIDUAL INVESTMENT]
Private life is invaded by group(s)	Everyone has a right to privacy
Laws and rights differ by group	Laws and rights are supposed to be the same for all
Lower human rights rating [LOW HUMAN RIGHTS STANDARDS]	Higher human rights rating [HIGH HUMAN RIGHTS RATING]
Ideologies of equality prevail over ideologies of individual freedom	Ideologies of individual freedom prevail over ideologies of equality
Imported economic theories are unable to deal with collective and particularist interests	Native economic theories are based on pursuit of individual self-interest
Harmony and consensus in society are ultimate goals	Self-actualization by every individual is and ultimate goal
Patriotism is the ideal	Autonomy is the ideal
Outcome of psychological experiments depends on in-group-out-group distinction	Outcome of psychological experiments depends on ego-other distinction
Feminine	Masculine
Relationships and quality of life are important	Challenge, earnings, recognition, and advancement are important
Both men and women should be modest	Men should be assertive, ambitious, and tough
Both men and women can be tender and focus on relationships	Women are supposed to be tender and take care of relationships
In the family both fathers and mothers deal with facts and feelings	In the family fathers deal with facts and mothers with feelings
Both boys and girls are allowed to cry, but neither should fight	Girls cry, boys don't; boys should fight back, girls shouldn't fight at all
Boys and girls play for the same reason	Boys play to compete, girls to be together
Bridegrooms and brides are held to the same standard	Brides need to be chaste and industrious, grooms don't
Husbands should be like boyfriends	Husbands should be healthy, wealthy, and understanding, and boyfriends should be fun
Being responsible, decisive, ambitious, caring, and gentle is for woman and men alike	Being responsible, decisive, and ambitious is for men; being caring and gentle is for women
Girls don't cheer for boys	Woman's ambition is channeled toward men's success
Women's liberation means that men and women take equal shares both at home and at work	Woman's liberation means that women are admitted to positions so far occupied by men
Single standard: both sexes are subjects	Double standards: men are subjects, women objects
Same norm for showing male or female nudity	Stronger taboo on showing male than female nudity
Explicit discussion of sex, less implicit symbolism	Taboo on explicit discussion of sex but implicit erotic symbolism
Sex is a way for two persons to relate	Performance for a man can be exploitation for

	a woman
Sexual harassment is a minor issue	Sexual harassment is a big issue
Homosexuality is considered a fact of life	Homosexuality is considered a threat to society
Average student is the norm; praise for weak students	Best student is the norm; praise for excellent students
Jealousy of those who try to excel	Competition in class; trying to excel
Failing at school is a minor incident	Failing in school is a disaster
Competitive sports are extracurricular	Competitive sports are part of the curriculum
Children are socialized to be nonaggressive	Aggression by children is accepted
Students underrate their own performance: ego-effacement	Students overrate their own performance: ego-boosting
Friendliness in teachers is appreciated Job choice is based on intrinsic interest	Brilliance in teachers is admired
Men and women partly study the same subjects	Job choice is based on career opportunities
Women and men teach young children	Men and women study different subjects
Women and men shop for food and cars	Women teach young children
Couples share one car	Women shop for food, men for cars
More products for the home are sold	Couples need two cars
More fiction is read (rapport talks)	More status products are sold
Management as ménage: intuition and consensus [INTUITIVE, CONSENSUS BASED MANAGEMENT]	Management as manège: decisive and aggressive [DECISIVE, AGGRESSIVE MANAGEMENT]
Resolution of conflict by compromise and negotiation [COMPROMISE AND NEGOTIATION]	Resolution of conflicts by letting the strongest win [POWER OF THE STRONG]
Rewards are based on equality	Rewards are based on equity
Preference for smaller organizations [SMALLER ORGANIZATIONS]	Preference for larger organizations [LARGER ORGANIZATIONS]
People work in order to live	People live in order to work
More leisure time is preferred over more money	More money is preferred over more leisure time
Careers are optional for both genders	Careers are compulsory for men, optional for women
There is a higher share of working women in professional jobs	There is a lower share of working women in professional jobs
Humanization of work by contact and cooperation	Humanization of work by job content enrichment
Competitive agriculture and service industries	Competitive manufacturing and bulk chemistry
Welfare society ideal; help for the needy [WELFARE FOR ALL]	Performance society ideal; support for the strong [PRESTIGE AND RECOGNITION]
Permissive society	Corrective society
Immigrants should integrate	Immigrants should assimilate
Government aid for poor countries	Poor countries should help themselves
The environment should be preserved: small is beautiful [ENVIRONMENT]	The economy should continue growing: big is beautiful [ECONOMIC GROWTH]
International conflicts should be resolved by negotiation and compromise [COMPROMISE AND NEGOTIATION]	International conflicts should be resolved by a show of strength or by fighting [POWER OF THE STRONG]
More voters place themselves left of centre	More voters place themselves in the political center
Politics are based on coalitions, polite political manners	Political game adversarial, with frequent mudslinging
Many women are in elected political positions	Few women are in elected positions
Tender religions	Tough religions

In Christianity, more secularization; stress on loving one's neighbor	In Christianity, less secularization; stress in believing in God
Dominant religions stress complementarity of the sexes	Dominant religions stress the male prerogative
Religions are positive or neutral about sexual pleasure	Religions approve sex for procreation rather than recreation
Weak UA	Strong UA
Uncertainty is a normal feature of life, and each day is accepted as it comes	The uncertainty inherent in life is a continuous threat that must be fought
Low stress and low anxiety	High stress and high anxiety
Aggression and emotions should not be shown	Aggression and emotions may at proper times and places be ventilated
In personality tests, higher scores on agreeableness	In personality tests, higher scores on neuroticism
Comfortable in ambiguous situations and with unfamiliar risks	Acceptance of familiar risks; fear of ambiguous situations and of unfamiliar risks
Lenient rules for children on what is dirty and taboo	Firm rules for children on what is dirty and taboo
Weak superego development	Strong superego development
Similar modes of address for different others	Different modes of address for different others
What is different is curious	What is different is dangerous
Family life is relaxed	Family life is stressful
In affluent Western countries, more children	In affluent Western countries, fewer children
People feel happier	People feel less happy
People have fewer worries about health and money	People have more worries about health and money
People have more heart attacks	People have fewer heart attacks
There are many nurses but few doctors	There are many doctors but few nurses
Students are comfortable with open-ended learning situations and concerned with good discussions	Students are comfortable in structured learning situations and concerned with the right answers
Teachers may say, "I don't know"	Teachers are supposed to have all the answers
Results are attributed to a person's own ability	Results are attributed to circumstances or luck
Teachers involve parents	Teachers inform parents
In shopping the search is for convenience	In shopping the search is for purity and cleanliness
Used cars, do-it-yourself home repairs	New cars, home repairs by experts
There is fast acceptance of new products and technologies, like e-mail and the Internet	There is hesitance toward new products and technologies
More books and newspapers	Fewer books and newspapers
Risky investments	Conservative investments
Appeal of humor in advertising	Appeal of expertise in advertisement
More changes of employer, shorter service	Fewer change of employer, longer service
There should be no more rules than strictly necessary	There is an emotional need for rules, even if these will not work
Hard-working only when needed	There is an emotional need to be busy and an inner urge to work hard
Time is a framework for orientation	Time is money
There is tolerance for ambiguity and chaos	There is a need for precision and formalization
Belief in generalists and common sense	Belief in experts and technical solutions
Top managers are concerned with strategy	Top managers are concerned with daily operations
More new trademarks	Fewer new trademarks
Focus on decision process	Focus on decision content
Intrapreneurs are relatively free from rules	Intrapreneurs are constrained by existing rules
There are fewer self-employed people	There are more self-employed people
Better at invention, worse at implementation	Worse at invention, better at implementation

Motivation by achievement and esteem or belonging	Motivation by security and esteem or belonging
Few and general laws or unwritten rules	Many and precise laws or unwritten rules
If laws cannot be respected, they should be changed	Laws are necessary, even if they cannot be respected
Fast result in case of appeal to justice	Slow result in case of appeal to justice
Citizens competent toward authorities	Citizens incompetent toward authorities
Citizen protest is acceptable	Citizen protest should be repressed
Civil servants do not have law degrees	Civil servants have law degrees
Civil servants positive toward political process	Civil servants negative toward political process
Citizens are interested in politics	Citizens are not interested in politics
Citizens trust politicians, civil servants, and the legal system	Citizens are negative toward politicians, civil servants, and the legal system
There is high participation in voluntary associations and movements	There is low participation in voluntary associations and movements
The burden of proof of identifying a citizen is on the authorities	Citizens should be able to identify themselves at all times
Liberalism	Conservatism, law and order
Positive attitudes toward young people	Negative attitudes toward young people
Tolerance, even of extreme ideas	Extremism and repression of extremism
More ethnic tolerance	More ethnic prejudice
Positive or neutral toward foreigners	Xenophobia
Refugees should be admitted	Immigrants should be sent back
Defensive nationalism	Aggressive nationalism
Lower risk of violent intergroup conflict	High risk of violent intergroup conflict
One religion's truth should not be imposed on others	In religion, there is only one Truth and we have it
If commandments cannot be respected, they should be changed	If commandments cannot be respected, we are sinners and should repent
Human rights: nobody should be prosecuted for their beliefs	More religious, political, and ideological intolerance and fundamentalism
In philosophy and science, there is a tendency toward relativism and empiricism	In philosophy and science, there is a tendency toward grand theories
Scientific opponents can be personal friends	Scientific opponents cannot be personal friends
Literature dealing with fantasy worlds	Literature dealing with rules and Truth
Short-term orientation	Long-term orientation
Efforts should produce quick results	Perseverance, sustained efforts toward slow results
Social pressure toward spending [SPENDING]	Thrift, being sparing with resources [THRIFT]
Respect for traditions	Respect for circumstances
Concern for personal stability	Concern for personal adaptiveness
Concern with social and status obligations	Willingness to subordinate oneself for a purpose
Concern with "face"	Having a sense of shame
Marriage is a moral arrangement	Marriage is a pragmatic arrangement
Living with in-laws is a source of trouble	Living with in-laws is normal
Young women associate affection with a boyfriend	Young women associate affection with a husband
Humility is for women only	Humility is for both men and women
Old age is an unhappy period but it starts late	\Old age is a happy period and starts early
Preschool children can be cared for by others	Mothers should have time for their preschool children
Children get gifts for fun and love	Children get gifts for education and development
Children should learn tolerance and respect for	Children should learn how to be thrifty

others	
Birth order is not a matter of status	Older children in the family have authority over younger children
Students attribute success and failure to luck	Students attribute success to effort and failure to lack of it
Talent for theoretical, abstract sciences	Talent for applied sciences
Less good at mathematics and at solving formal problems	Good at mathematics and at solving formal problems
Main work values include freedom, rights, achievement, and thinking for oneself [FREEDOM, RIGHTS, THINKING FOR ONESELF]	Main work values include learning, honesty, adaptiveness, accountability, and self-discipline [LEARNING, HONESTY, ACCOUNTABILITY, SELF-DISCIPLINE]
Leisure time is important	Leisure time is not important
Focus is on bottom line	Focus is on market position
Importance of this year's profits [SHORT-TERM PROFFITS]	Importance of profits 10 years from now [LONG TERM PROFFITS]
Managers and workers are psychologically in two camps	Owner-managers and workers share the same aspirations
Meritocracy, reward by abilities	Wide social and economic differences are undesirable
Personal loyalties vary with business needs	Investment in lifelong personal networks, <i>guanxi</i>
There was slow- or no economic growth between 1970 and 2000	There was fast economic growth between 1970 and 2000
Small savings quote, little money for investment [LOW SAVINGS]	Large savings quote, funds available for investment [HIGH SAVINGS]
Investment in mutual funds	Investment in real estate
Concern with possessing the Truth	Concern with respecting the demands of Virtue
There are universal guidelines about what is good and evil	What is good and evil depends upon the circumstances
Higher rates of imprisonment	Lower rates of imprisonment
Dissatisfaction with own contributions to daily human relations and to correcting injustice	Satisfaction with own contributions to daily human relations and to correcting injustice
Matter and spirit are separated	Matter and spirit are integrated
If A is true, its opposite B must be false	If A is true, its opposite B can also be true
Priority given to abstract rationality	Priority given to common sense
There is a need for cognitive consistency	Disagreement does not hurt
Analytical thinking	Synthetic thinking