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Smart City Can Tho

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The Smart City principles within Can Tho
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to be worldwide applicable

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Foreword

This document has been written as an assignment provided to Ruud Griffioen for the pre-master thesis at the Radboud University Nijmegen. The aim of the assignment is to write a research proposal about the thesis subject regarding the topic of Smart Cities.

The document is focussing on describing the research goals and objectives as well as a description about the methodologies that will be used during the research process.
A timeline is included to provide an overview of the final thesis and amount of time needed for specific subjects.

I would like to thank Mr. Ary Samsura for giving me the opportunity to conduct the thesis at the Radboud University during the coming four months.

Geldrop,

June 27, 2018

Ruud Griffioen

Abstract

Sustainability is a hot topic for cities and countries worldwide. Therefore, more and more cities are developing into Smart Cities. Smart City is a concept that serves as a guideline for cities that are able to develop according to six principles; Environment, Living, Mobility and Infrastructure, Economy, People and Government. Each of the six principles incorporates three variables that should be present in order to be called a Smart City. Smart Economy and Smart People are closely related to one another. This is the reason that Smart People is included in the Smart Economy principle within this study.

The principles in the concept are applicable for every city in the world according to the concept. A case study has been conducted in order to find out whether or not the concept can really be called a globally applicable concept. The case study is aiming at evaluating the presence of the principles of the Smart City concept. It can be stated that only one principle can be identified as present in Can Tho, namely the Smart Living principle. The other four principles are not identified as present in the city. The three variables included in Smart Economy have partially been identified as present and partially as not present and is therefore a principle that is doubtful.

Interviews as well as surveys have resulted in the data needed for the review of the global aspect of the Smart City concept. The interviews have been held with both Dutch and Vietnamese experts or lecturers. It became clear that the concept in general can be applicable to most of the cities.
The aspect that is not taken up within the concept is culture and the local conditions of the city and inhabitants. The principle of Smart People can be integrated in Smart Economy and therefor offers the possibility to incorporate culture in the concept. Three variables are included in this principle.
Resilience is focussing on the capacity of the society to deal with difficulties that occur within the city.
Masculinity is focussing on materialism and social relations. The value that the inhabitants attach to either owning a new car or the newest watch or the importance of taking care for others within the city.
The last added variable is focussing on the future orientation of the society and governmental bodies. A vision that is towards a future of 50 years from now is more Western oriented while developing countries limit the visions to less than 50 years.
Waste is an aspect that also needs to be taken into account since it can be found in every city. The pollution creates a negative atmosphere in cities and is also affecting the flora and fauna within cities.

The current Smart City concept is focussed on developing in a sustainable way with new technologies being part of the developments. Climate change in not part of the Smart City concept yet. Adaptations to the effects of climate change are not present within a principle. The case study found out that Can Tho is prone to flooding and that the projections of climate change might result in more problems related to both water and drought issues. Mitigation is however included in the variables of the Smart Environment.

The conceptual framework has been updated and is reviewing the Smart City principles from a cultural perspective. The objective is that the cultural aspect reviews the underlying Thought for developments and is able to make it less difficult for developing cities to become a Smart City.

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Keywords

Concept	Definition
Smart	A city is smart because it is intelligent, digital, wired, sustainable, inclusive, democratic (Dameri, 2013)
Smart City Concept	A Smart City is a well-defined geographical area, in which high technologies such as ICT, logistic, energy production, and so on, cooperate to create benefits for citizens in terms of well-being, inclusion and participation, environmental quality, intelligent development; it is governed by a well-defined pool of subjects, able to state the rules and policy for the city government and development (Dameri, 2013)
Smart Environment	The core values of a sustainable city are linked to the capacity of the city to adapt and transform over time, to its high quality of use and life, to economies made by its residents, by the fluidity of its networks, by its safety, and by its sharing of space (GDF SUEZ, 2013).
Smart Economy	The Smart Economy principle within a city is related to innovation, creativity and entrepreneurship, enacted by smart people (Kitchin, 2013).
Smart Mobility and Infra	Smart Mobility is largely permeated by ICT, used in both backward and forward applications, to support the optimization of traffic fluxes, but also to collect citizens' opinions about liveability in cities or quality of local public transport services (Benevolo, Dameri, & D'Auria, 2015).
Smart Technology	A city that uses the technology to improve the efficiency and effectiveness of its infrastructures and services: it focuses its smart projects on urban space quality, mobility, public transports, logistic (Downey & McGuigan, 1999)
Smart Energy	The Smart Energy principle is focussing on the production and usage of sustainable energy
ERTMS	European Rail Traffic Management System (Government of the Netherlands, n.d.)
CTU	Can Tho University

Table 1 Key words and concepts

List of figures and tables

1. Introduction

The report present in this document is the result of an intensive research in which a case study has been conducted, interviews have been held and a start has been made with a quantitative analysis. The research is focussing on the 'global application' of the Smart City concept and is focussing on Can Tho as a case study.

1.1 Motivation

The aim of this document is to develop a report about the thesis topic to identify the presence of the Smart City concept principles within the city of Can Tho and to adapt the Smart City concept to become a globally suitable concept.

The subject of the research that will be discussed in this document is based on conversations with Mr. Ary Samsura. The subject including the main research question, sub-questions and objective has been discussed with Mr. Ary Samsura in an earlier stage and received positive feedback.

The report starts with a **theoretical framework** which will examine literature related to the Smart City concept and the principles. This is a good way to start the research since knowledge will be gained about the topic already and relevant information can be examined
into detail. Relevant information that is missing might also be interesting for the research.

The following chapter will explain the different **methodologies and approaches** that will be used during the research. Each method and approach will briefly be described to explain how, and why the specific method will be used. The methodologies used during the research will help to find answers on the research questions.
A case study is included as well that is identifying the presence of the principles in Can Tho.

The chapter of **Results** will elaborate on the outcome of the case study, the interviews and the survey among inhabitants of Can Tho City. The results chapter is followed up by the **Discussion** and eventually the **Conclusion**.

1.2 Background

Can Tho is the fourth biggest city in Vietnam and is located in the Mekong Delta (World Bank Group; GFDRR, 2014). In 2010, a bridge (Can Tho Bridge) has been built across the Hau river (Roadtraffic-technology, n.d.) allowing inhabitants and visitors to travel to Ho Chi Minh City in less than four hours.
The Can Tho bridge has, together with other economic developments, made sure that Can Tho has become an interesting place for international tourism and businesses.

Inhabited by approximately 1.2 million people (100 Resilient Cities, 2018), Can Tho has rapidly grown over the recent years**.** The city is also prone to flooding from both the Hau river and the sewage system and is subjected to land subsidence. Smart Cities are becoming a topic of interest for cities worldwide. Since Can Tho is experiencing an increase in inhabitants as well as international tourists and economic development, it is important to make sure that the city is able to support the inhabitants and visitors (being tourists and business-related).
Can Tho is already a member of the 100 Resilient Cities. This research will focus on the present Smart City principles in Can Tho and is exploring the principles of a Smart City that are already present and will describe the missing principles.

1.3 Problem statement

Being a growing city, Can Tho is in need of constant development in order to make sure that the increase in inhabitants as well as tourism and international business visitors will have no difficulty when travelling through the city. There is an increase in car usage and ownership instead of motorbikes within the whole country which might cause traffic jams in the city itself.
Can Tho is subjected to flooding, especially during the rainy season, both from rising river levels as well as sewage overflow which result in flooded streets that cannot be used during that period of time. The principles that are indicated in the Smart City concept will provide a city to be competitive as well as to ensure the quality of life for the society (International Electrotechnical Commission, 2018). Can Tho needs to develop into a Smart City in order to cope with the current water problems to ensure the quality of life to the inhabitants and to ensure positive economic development. Therefore, the main research question of this research is formulated as follows:

'What Smart City principles are needed in Can Tho to tackle the difficulties of the city and is the current concept of Smart City globally suitable?''

The second part of the research question is focussing the concept of Smart City because the literature that is available is describing it as being a global concept. But is it really possible to incorporate the Smart City concept in a city as Can Tho with a different climate and culture compared to Western countries? So the last part of the research question will focus on the Smart City concept itself

1.4 Scope of study

The research is focussed on the principles of the Smart City concept and will determine to which level the city of Can Tho is a Smart City and how it can develop into a Smart City.
The research will be carried out as part of the pre-master programme at the Radboud University Nijmegen. It will explore the presence of the principles within the city and might come up with an addition to the Smart City concept since a city in Asia cannot be compared to a city in Western countries.

1.5 Sub questions

In order to answer the main research question, it is necessary to research on multiple sub questions. The following sub questions will help to be able to provide a clear answer on the main research question.

1. Which principles are part of the global Smart City concept?
2. Which of the principles can be identified as present in the city of Can Tho?
3. Is the ''global'' concept of Smart Cities really globally suitable?
4. If the concept is proven to be not globally suitable, how should the Smart City concept then be used?

1.6 Societal relevance of the research

The first two sub-questions provide an indication on how smart the city of Can Tho is according to the current principles of the Smart City concept. The third and fourth question are questioning whether the Smart City concept can really be used in every other city. It will provide more information on whether or not the concept is in need of adaptations and if so, what principles should be added. This research will make sure that the Smart City concept can be implemented in cities all around the world with Can Tho serving as a case city. Eventually, the research will contribute to an improvement of the current land use/city planning and will make sure that Can Tho is able to develop into a Smart City that is able to deal with future challenges regarding climate change, population growth and technological developments.

1.7 Scientific relevance of the research

As mentioned in the background as well, Can Tho is a rapidly growing city and is becoming more and more important for tourists as well as international trade and business developments.
Since the rapid increase in inhabitants, the city is in need of new spatial and infrastructural developments. This argument is supported by (Thuzar, 2011/2012) indicating that cities in South East Asia are now faced with a strategic choice whether economic dynamism comes for the cost of a liveable city. Can Tho is facing the exact same problems as mentioned in the article.
As stated in the article of (Jiong, Gubbi, Marusic, & Palaniswami, 2014), increasing population density in urban centres demands adequate provision of services and infrastructure to meet the needs of city inhabitants, encompassing residents, workers, and visitors. This sentence is closely related to the liveable city aspect as mentioned by (Thuzar, 2011/2012) because it is focused on the needs of the inhabitants, residents, workers and visitors of Can Tho. There is not much information available on how 'smart' Can Tho is at the moment. This research will investigate how Can Tho can develop into a smart and liveable city and thus stimulate economic development within the city.
On March 29, 2018 during a seminar in Hanoi, the Dutch Embassy and the Vietnamese Ministry of Construction agreed on help in terms of sharing knowledge to develop the Vietnamese cities into Smart Cities (VNA, 2018). This also indicates the relevance of the research.

Another aspect that the research will come up with is related to the present Smart City principles. The research might indicate which aspect of the already present Smart City principles is relevant for an Asian city and whether the principles are in need of an adaptation/improvement based on the characteristics of Asian cities. This is because of the fact that the concept of Smart City is especially being used in Western countries, while the concept is described as being sufficient to be used on a global scale. This research will elaborate further on the aspects of the Smart City concept and will contribute to the academic knowledge according to the implementation of the principles in Asian cities.

2. Theoretical framework

Can Tho is a growing city that already encounters multiple problems. The problems can be identified as a result of the weather or a result of the increase in inhabitants. Being a member of the 100 resilient cities, the city of Can Tho is already aware that it is in need of change.
A positive boost can be derived from becoming a resilient city, but becoming a resilient as well as a Smart City would be adding even more value.
The theoretical framework will start with information regarding the principles that are incorporated in the Smart City Concept and will at a later stage of the research, find out to what extend the principles can be identified in the city of Can Tho and whether the Smart City Concept is in need of adaptation.

2.1 Smart City principles

Searching the internet for the basic principles that define a Smart City can be difficult since there are many articles, documents and papers that are focussing on a variety of subjects that could be part of the Smart City concept.
(Dameri, 2013) describes it as ''a smart city is a well-defined geographical area, in which high technologies such as ICT, logistic, energy production, and so on, cooperate to create benefits for citizens in terms of well-being, inclusion and participation, environmental quality, intelligent development; it is governed by a well-defined pool of subjects, able to state the rules and policy for the city government and development''.
This subchapter will describe and elaborate on the Smart City principles that have been indicated as most relevant for the research focussed on the city of Can Tho.
The five principles that will be elaborated further in this chapter have been chosen on the specific qualities and threats of the city and are probed to be the most suitable for the research.

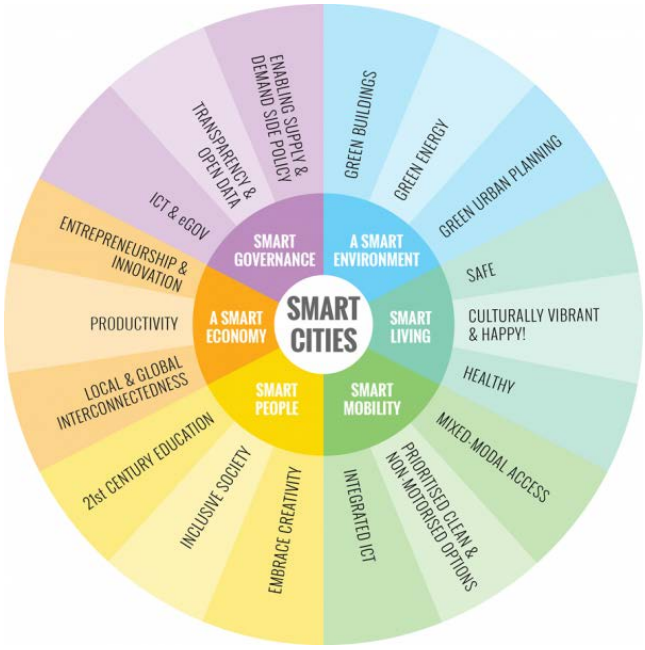

Figure 1 Smart City concept (Pinterest)

2.1.1 Smart

Smart is a definition that can be used in different ways. Therefore it is important to describe the definition of the word smart on how it will be used in this document. Sometimes different words define the same concept, while the same word defines different things (Qi, 2001).
Because the research is focussing on cities, the word smart will be defined as follows: a city is smart because it is intelligent, digital, wired, sustainable, inclusive, democratic (Dameri, 2013).
According to (Willis, 2018), a smart city is any urban centre that leverages the power of IT to improve quality of life experienced by residents, enhance economic development, as well as manage and use natural resources in an efficient manner according to.
Both Willis and Dameri indicate that the smartness of a city is derived from IT and digitalisation as well as the integration of sustainable energy and the use of natural resources. The smartness of the city results in economic development and a decent quality of life for the inhabitants in the city.

2.1.2 Smart Economy

The Smart Economy principle can also be labelled as entrepreneurial cities (Hollands, 2008). According to (Kitchin, 2013), the Smart Economy principle within a city is related to innovation, creativity and entrepreneurship, enacted by Smart People. It means that the city must enable new businesses and organisations to arise and is able to support the businesses in a qualitative way. (Kitchin, 2013) also refers to 'big data' that is needed for real-time analysis of city life.
Smart Technology aspect of Smart Cities. The big data also provides the materials needed for envisioning and enacting a more efficient, sustainable, competitive, productive, open and transparent city.

2.1.3 Smart People

Smart People is focussing on the 21st century education an inclusive society and the embracement of creativity. 21st century education and creativity can be related to Smart Economy.
Both mostly have a positive influence on the economy of a city or country.
The indicators for Smart People are a result of a stable economy. Therefore, the Smart People concept will be part of the Smart Economy concept and will not be described as a separate concept.

2.1.4 Smart mobility and infra

Smart Mobility is largely permeated by ICT, used in both backward and forward applications, to support the optimization of traffic fluxes, but also to collect citizens' opinions about liveability in cities or quality of local public transport services (Benevolo, Dameri, & D'Auria, 2015).
Electric vehicles are part of the smart mobility and infra aspect of the Smart City concept.
The electric vehicles are less polluting compared to cars that use gasoline and can make use of the Smart Energy principle making it an even more sustainable way of transport.
A rather new development within the car industry is the concept of self-driving cars.
The self-driving cars are still being developed and tested by car companies like Volvo and Tesla.
Live traffic information in cars already exists by means of communication via the radio.
Navigation software is nowadays also able to detect traffic jams and will guide the driver along another route to the destination in order to avoid the traffic jam.
Railway technology is being developed in the Netherlands that is called European Rail Traffic Management System ERTMS (Government of the Netherlands, n.d.).
This allows for live speed updates and travel information, makes sure that the train is not speeding and decreases the likelihood of trains driving through a red sign.

2.1.5 Smart Governance

Technology is one of the main focus areas within the Smart Governance. According to (Downey & McGuigan, 1999), a city that uses the technology to improve the efficiency and effectiveness of its infrastructures and services: it focuses its smart projects on urban space quality, mobility, public transports, logistic. Technology not only involves computer programmes and weather forecast equipment but is much broader. It includes live traffic information on traffic jams (see 2.2.3 Smart mobility and infra). The ERTMS system as described in the Smart mobility and infrastructure chapter can also be included in this chapter since the system is technology driven. Various new technological projects arise in the field of technology for example the project of smart city furniture.
The main aim of the smart city furniture can be recognized as ''products that make life easier for citizens and visitors and to optimize the management of public infrastructure or to provide connectivity such as free Wi-Fi according to (Mueller, 2017).
Transparency

2.1.6 Smart Living

Figure 1 indicates that Smart Living includes safety, health, and a culturally vibrant & happy society. According to (Nikayin, Skournetou, & Reuver, 2011) is the vision of Smart Living promises innovative services from providers in energy, healthcare, entertainment and surveillance sectors.
The society is the main source for improving the quality of life. (Bianchini, Antonellis, Melchiori, Bellagente, & Rinaldi, 2017) support this by stating that an information infrastructure for modern Smart Cities must be able to integrate data from multiple heterogeneous sources such as private and public energy consumption, garbage collection and environmental conditions (pollution, citizens' safety and security).

2.1.8 Smart Environment

An environment can be different in every place.
A natural environment is suggesting that there is a lot of nature within the specific area. A city environment can be identified as a place which is densely populated with high rise buildings included in the environment. City developments did not take the natural aspect into account when developing the cities.
Hong Kong is however trying to improve the natural conditions within the city as the study of (Jim, 2001) is indicating.
But Hong Kong is not the only city that is focussing on a more natural environment within the city.
Vancouver is developing as a green city for years now and has even become the most liveable city in the world (City of Vancouver, n.d.). Smart Environment can also be seen as a sustainable city.
(GDF SUEZ, 2013) is suggesting that the core values of a sustainable city are linked to the capacity of the city to adapt and transform over time, to its high quality of use and life, to economies made by its residents, by the fluidity of its networks, by its safety, and by its sharing of space.

Figure 2 Green building Milan, Author photograph

Global warming is a consequence of the usage of greenhouse gasses derived from using fossil fuels for an advantage to both humans and industries. The greenhouse gasses have been part of the society for years but there is a growing consensus on using more sustainable energy nowadays.
The Smart Energy principle of the Smart City concept is focussing on the production and usage of sustainable energy. Sustainable energy can be derived from solar panels on the roof of a house, via wind energy as well as via water by using dams. Part of the Smart Energy principle is that the energy needs to be stored properly. As indicated by (Mathiesen, Lund, Connolly, & Wenzel, 2015), there is a need of rethinking and redesigning both on the energy production as well as on the energy consumption side. Mathiesen and Lund also state that Smart Energy Systems also enable a more sustainable and more feasible use of bioenergy compared to the current types allow.

2.2 Conceptual framework

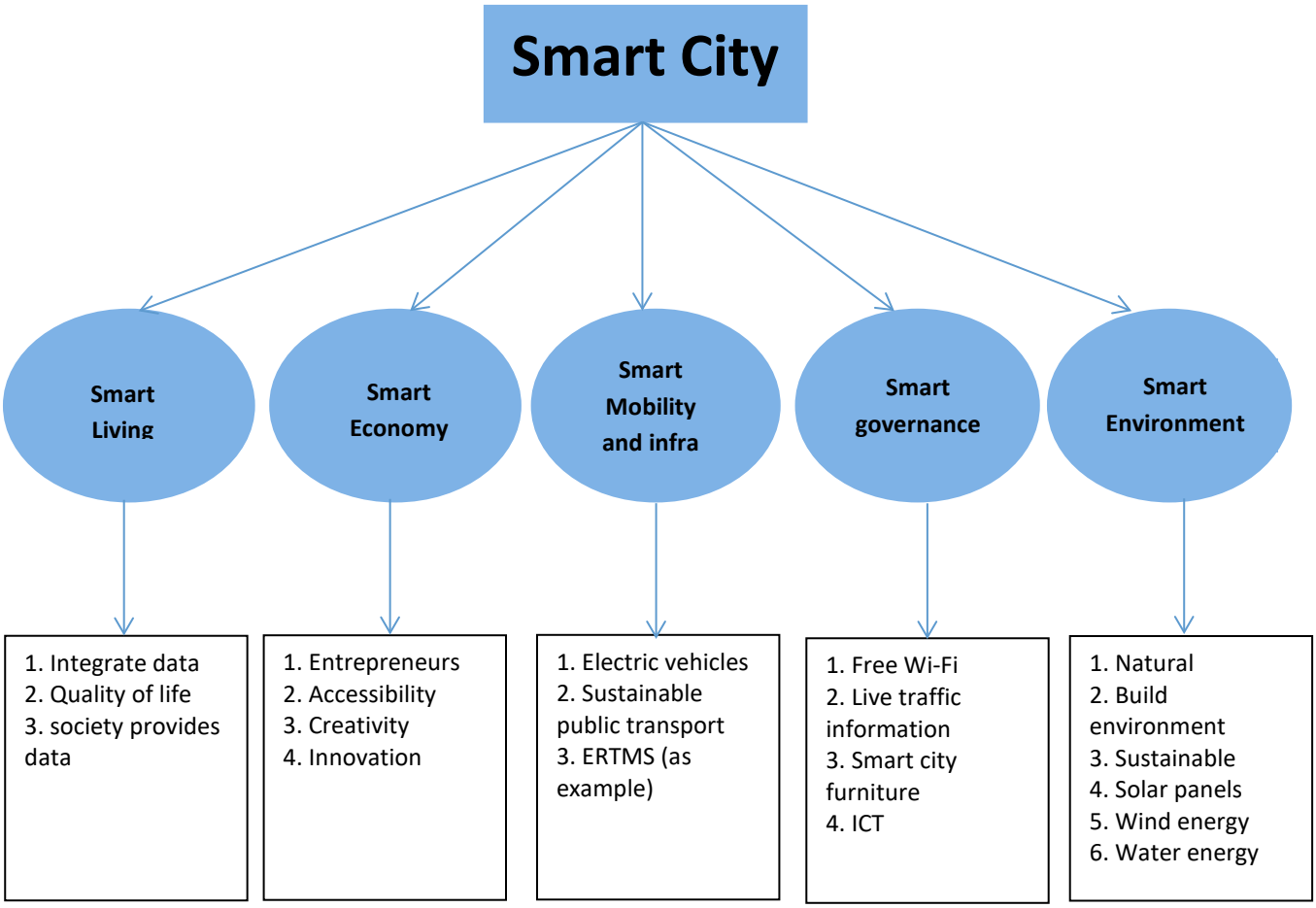

Table 2 Conceptual framework

3. Methodology

This chapter will provide information about the methods that will be used during the research.
A table is included that functions as an action plan. The textual explanation will be provided after the table. The last part of this chapter will consist of a theoretical framework in which the objectives, data collection and sub questions are visualised in an organized way.

3.1 Research design

The research will include descriptive as well as explanatory, exploratory research and analytical research.
The principles are in need of a description and the reason why the principles are important to the research as well. The explanatory research will highlight the outcomes of the research with respect to the city of Can Tho both in a qualitative as a quantitative way. It will also include contacting the relevant authorities and persons relevant to the research subject.

The research will describe both quantitative (partly) and qualitative information since specific numbers can be or already are available, for example precipitation and tourist numbers.
Because of the fact that the research topic is concentrating on an Asian city, not all information can easily be found. Therefor the research is in need of qualitative data.
The qualitative information will predominantly be gathered via interviews or questionnaires with parties or researchers in Can Tho or with researchers that have a relationship to Can Tho or Vietnam.

The observations will provide information about the city of Can Tho. During a visit in Can Tho, multiple places with significant problems and disturbance regarding flooding became visible.
These places will also be taken into account when researching on the presence of the Smart City principles.

The information that is needed during the research will mainly be gathered via a desk research and by consultations with the relevant parties within Can Tho or researchers with a close link to Can Tho.

An analysis will be executed on the Smart City principles and what each specific principle is striving for. This knowledge will be interpreted and be used to assess the presence of the principles within the city of Can Tho. The city and the area surrounding the city will also be analysed.
This is important to the research to identify the strengths and weaknesses of Can Tho.
It will result in a SWOT analysis afterwards.

The theory of the Smart City concept will be analysed and reviewed to examine whether the concept can really be used on a global scale or whether it is in need of adaptations to make it suitable for cities in less developed countries as well.

The main purpose of the research is to come up with a suitable strategy that the city of Can Tho can adopt and use as a guideline to manage and (re)develop into a Smart City and to identify whether the Smart City concept is really a global concept.

3.1.1 Research design framework

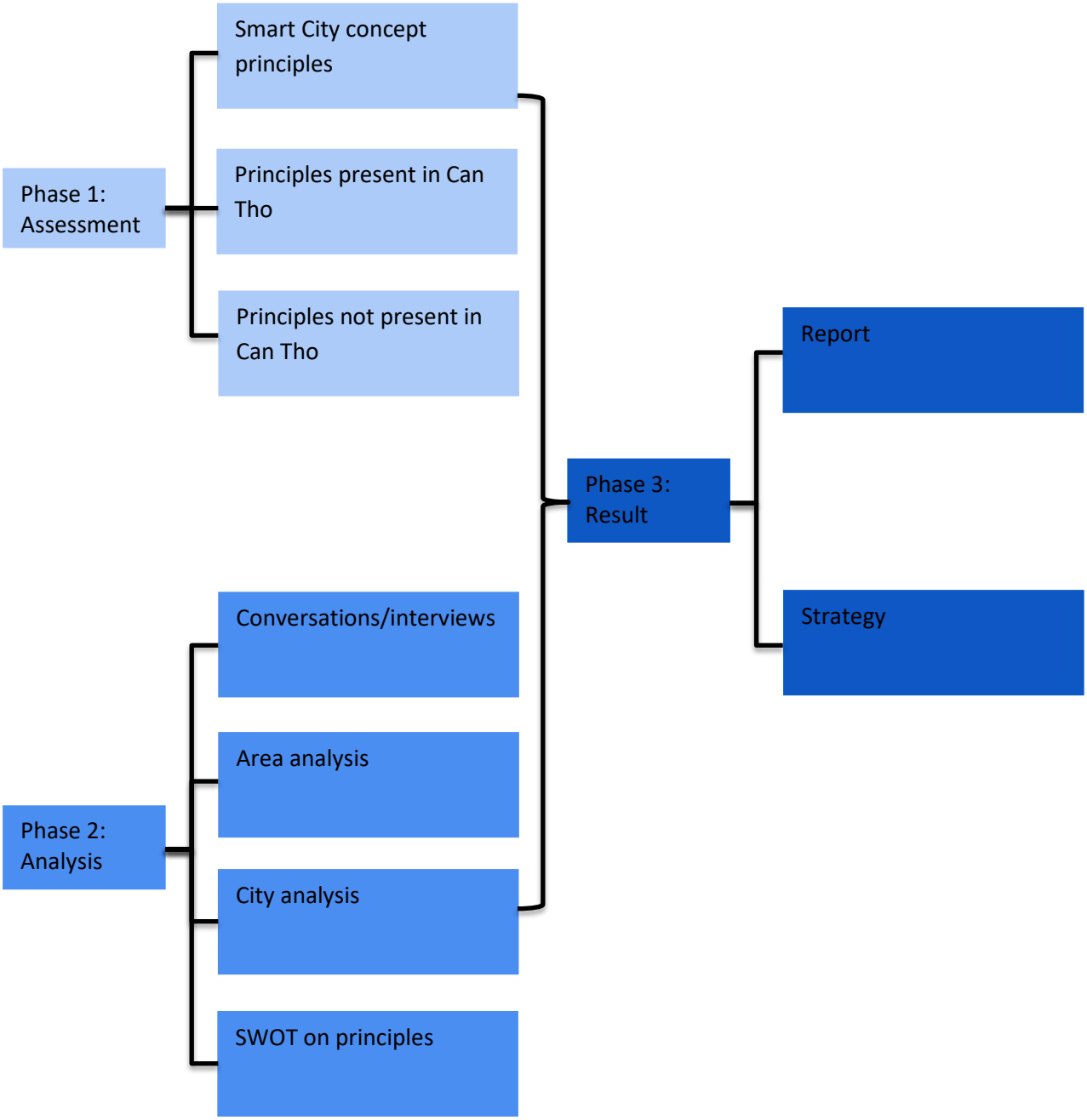

Table 3 Research design

3.2 Research method and data collection

Variable	Indicator	Data analysis
Smart Energy	Solar panels Wind energy Water pumping energy	Energy databases Previously conducted Can Tho University studies Questionnaires
Smart Mobility and Infrastructure	**Bus stations** Train station Tram line Electric charging stations **Accessibility**	Infrastructural maps Public transport organisations Electricity supplier in Can Tho Questionnaires Author experience
Smart Government	ICT and Egov Open data and transparency **Supply and demand side policy**	Author experience Questionnaires
Smart Economy	**Entrepreneurs** **Accessibility** Innovation **Creativity**	Chamber of commerce Economic newspaper Amount of entrepreneurs Economic databases
Smart Environment	Green buildings Sustainable land use planning **Nature in the city** Electrical charging possibilities	Author field work Planning concepts of the city council Subsidies regarding implementing green structures

Table 4 Data collection

Table 4 is indicating the variables, indicators and the kind of analysis that will be used during this research. The type of data analysis that will be used will be further elaborated in the next sub-chapter. The indicators highlighted in black are the indicators that are most relevant for Can Tho.

3.2.1 Data collection literature review

A literature review is a sufficient method to gather the first information regarding a research topic. It is a way to examine previously conducted research and is crucial for every academic research. According to (Hart, 1998), the need to uncover what is already known in the body of knowledge prior to initiating any research study should not be underestimated.

The research topic involving the Smart City concept is a topic in which a decent amount of previous research has been conducted already. This means that there is a lot of knowledge present that can be analysed and build upon within this research. The main databases that will be used for the literature review will consist of the Radboud University Library as well as Google Scholar, Science Direct and NARCIS.

The first step in the literature will be to define the definition of smart and how this is used in the Smart City concept. The next step is to identify the most important and most relevant Smart City concepts and describe the meaning of each principle. Those two steps will help to answer the first research question. In order to provide a clear answer on the second research question as being stated in chapter 1.5, further data collection is needed via both qualitative and quantitative research methods.

3.2.2 Data collection qualitative research

Qualitative research analyses data from direct fieldwork observations, in-depth, open-ended interviews, and written documents according to (Patton, 2005). Conducting interviews is one of the methods used in qualitative research.

In order to answer the second research question and to get a better insight in the possible outcome of the research question, four interviews will be held. These interviews will be conducted with people who have knowledge about the Smart City concept as well as knowledge of the city of Can Tho or the planning processes within the Vietnam. Liliane Geerling (Lecturer at HZ University of Applied Sciences), Joep Jansen (Author of the book Living with the Mekong) La So Sen (100Resilient Cities) and Tran Van Ty (Lecturer at Can Tho University) might be interesting people to speak with as well as other lecturers of the Can Tho University.
There are two kinds of conducting interviews (structured and unstructured) of which the structured interview consist of a list of questions that serve as a guideline for the interview while unstructured interviews do not have any form of planned questions. The type of interview that will be used for the interviews in this research will be semi-structured because several questions will be used to create a smooth overflow of subjects, while this also allows space for questions that arise during the interview.

Appendix 1 is indicating the questions that can be asked during the semi structured interviews.
The table below lists the names of the possible interviewees and the field of work the interviewees are involved.

Interviewee	Field of work
Liliane Geerling	Researcher/lecturer at the HZ University of Applied Sciences Started Living Labs in Can Tho, An Giang and Surabaya
Joep Janssen	Author of the book Living with the Mekong and founder of Nextblue
La So Sen	Employee of 100 Resilient Cities Can Tho
Tran van Ty	Researcher/lecturer at Can Tho University

Table 5 Interview list

3.2.3 Data collection quantitative research

Quantitative research is focussing on numbers and developing models to indicate whether the hypotheses is correct or not. It is focussing on focus groups as well as population groups and includes dependent and independent variables (Velde, 2018).
A questionnaire is one of the ways to conduct quantitative research. Within the research topic, focus groups can be identified that might be suitable to answer the questionnaire. These involve lecturers of the planning department of the Can Tho University (CTU), spatial planning students of the CTU, municipal planners and inhabitants. Appendix 2 provides an indication to what kind of questions might be included in the questionnaire.
The quantitative research output will be analysed in order to find out whether the Smart City concept can truly be named as a global concept or to indicate that the concept is in need of adaptations.

3.3 Data analysis

3.3.1 Literature study

A part of the literature study provided in this research proposal will provide a (partial) answer to the first research question, being: Which principles are part of the global Smart City concept?
As indicated in chapter 3.2 already, the literature will be derived from databases of the Radboud University and Google Scholar, Science Direct, Springerlink and NARCIS and will require full attention during the reading. The literature analysis will be used to answer sub question one in particular, and will help to gather background information that is needed to answer the other three sub questions.

3.3.2 Case study

A case study will be conducted in order to test the global application of the Smart City concept. According to (Ernste, 2018), a case study is about developing an in-depth description and analysis of a case or multiple cases. It is studying an event, programme or group of people.
The case selection is dependent on intrinsic, typical, extreme, critical and longitudinal values. According to (Orum, Feagin, & Sjoberg, 1991), a case study is an in-depth, multifaceted investigation, using qualitative research methods of a social phenomenon. The study is conducted in great detail and often relies on the use of several data resources.
The case study will be used to analyse the presence of the each of the principles and variables in the city of Can Tho.

3.3.3 Qualitative analysis

Because the qualitative research and analysis will mostly consist of interviews, coding is an important aspect for the analysis. Coding can be conducted with the usage of the programme of Atlas.ti.
A transcript of the interview needs to be uploaded within the programme. The advantage of Atlas.ti is that it can attach codes to certain words or sentences. When these are identified multiple times, the programme will indicate this. In this way, it is possible to find out which aspects of the interview are most relevant for the research. Photographs might also be relevant to the research. These can provide underlying information regarding the city and help to analyse certain patterns within the streets of the city. Atlas.ti also allows possibilities to code photographs.
As mentioned in this sub-chapter Atlas.ti will both be used for interviews and photographs.
There are two specific theories that can be used here which are the (1) grounded theory for interviews, and the (2) visual data analysis for the identification and analysis of photographs.
The grounded theory is a general methodology with systematic guidelines for gathering and analysing data to generate middle-range theory (Charmaz & Belgrave, 2015). Coding data, developing, checking, and integrating theoretical categories analytic process of the grounded theory.
The visual data analysis will be based on the theory of (Rose, 2007) in which the scoping regime plays a role in how a certain picture is being viewed.

3.3.4 Quantitative analysis

The input for the data will be derived from the questionnaires handed out via my.survio to the inhabitants of Can Tho in order to project whether the inhabitants have a similar view on the concept and the city as researchers have. As a result from the usage of the quantitative analysis, the theory that the Smart City concept cannot be used on a global scale and is in need of adaptation and reconsidering, will either be proven or be rejected.

Concept	Variables	Indicator	Measurements	Question
Smart Economy	Local and global interconnectedness	Connections of the city	F.D.I.	Qu2, Q 1, 4, 5, Desk research I.q. 14
	Productivity	Working hours	GDP	Desk research
	Entrepreneurship & innovation	Amount of businesses and new technologies/energy consumption	Amount of entrepreneurs	I.q. 14
Smart Environment	Green buildings	Amount of green in design	Green roofs, green houses	Qu2 Q 2, 3, 7 I.q. 10
	Green energy	Sustainable energy production	Solar panels, water power production	Qu2 Q 2,3, 7 I.q. 10
	Green urban planning	Nature in the city	Maps of the city	Qu2 Q 2,3, 7 I.q. 10 Desk Research
Smart Government	ICT & Egov	Data from and to inhabitants	Website for data sharing	Qu2 Q 5, 9, 12 I.q. 9, 16 Desk Research
	Transparency and open data	Availability of governmental documents	Open system of documents	Qu2 Q 5, 9, 12 I.q. 9, 16 Desk Research
	Enabling supply & demand side policy	Policy documents	Open system of documents	Qu2 Q 5, 9, 12 I.q. 9, 16 Desk Research
Smart Living	Safe	Amount of accidents/burglaries	Occurrence of accidents	Qu2 Q 2, 3, 4, 7 , 10, 11, 17, 18 I.q. 8, 10, 13, 15 Desk Research
	Culturally vibrant & Happy	Amount of stress	Happiness index	Qu2 Q 2, 3, 4, 7 , 10, 11, 17, 18 I.q. 8, 10, 13, 15 Desk Research
	Healthy	Age of inhabitants	Death-birth rate	Qu2 Q 2, 3, 4, 7 , 10, 11, 17, 18 I.q. 8, 10, 13, 15 Desk Research
Smart Mobility and Infrastructure	Mixed modal access	Multiple infrastructural modes	Possibility to change way of transport	Qu2 Q4, 11 I.q. 12, 13, 14
	Connectivity	Connection between types of infrastructure	Train, airport, public transport	Qu2 Q4, 11 I.q. 12, 13, 14
	Prioritized clean & Non-motorized options	Multiple purpose roads	Bike lanes, high speed lanes	Qu2 Q4, 11 I.q. 12, 13, 14
Smart Culture	Resilience	Agency and structures	Adaptive capacity	I.q. 13
	Masculinity vs. femininity	Material results of success and caring for the weak	Owning individual items such as a car	I.q. Smart Economy and Smart Living
	Long Term orientation vs. Short Term Orientation	Developed plans	Future orientation	I.q. Smart governance

Table 6 Data collection Smart City principles

The principle that is added to the concept is Smart Culture. Smart Culture involves four indicators.

Resilience is a broad topic. In order to define the relevance of the resilience variable, indicators and measurements have been added. These indicators do add value to the principle and the Smart City concept to become a worldwide applicable concept. The variable ''agency'' is indicating the capacity to make a difference (Giddens, 2012), while structure does not exist outside or beyond people (Giddens, 2012).
Habitus describes both how social conditions act upon and shape individual actions and also how people are capable of creative responses to situations the people are in (Bourdieu, 2012).
So the (re)actions of the inhabitants towards certain conditions that occur within the city is what is defining the variable of resilience.

Masculinity vs. Femininity
Masculinity side of this dimension represents a preference in society for achievement, heroism, assertiveness, and material rewards for success. Society at large is more competitive (Hofstede, n.d.). The importance of this variable is that is provides an indication as to whether a society is driven by personal success and materialism or more focussed on cooperation and quality of life.
When investigating the case study in Can Tho and comparing this to a Western city again, it can be stated that this specific principle is different from Vietnamese society compared to more Western societies.
With keeping this in mind, it can help to identify what is important to develop for a city in order to become a Smart City.

L.T.O. vs. S.T.O.
During the interviews it became clear that Western planning departments have much more focus on the long term. So making visions for a city with multiple options for the future based on recent developments.
On the other hand, in more developing countries, the emphasis is much more on stabilising the economy of the country to move forward. This is also what the inhabitants of e a developing country do: make sure that there is enough food and water to live another day. So there is a difference in planning which needs to be taken into account and that part of planning is related to the specific culture a city is located in.

3.4 Validity and reliability

For every research, it is important that the outcomes are qualitative and representative. Any form of fraud is unaccepted and this research will not have any kind of fraud included in it.
The interviews that will be conducted will have a full transcript and will be send to the interviewee for a final check. With the approval of the interviewee, the transcript can be used for the coding of the interview.
The questionnaires will be analysed in a quantitative way. The output and interpretation of the data will be checked by the supervisor from the Radboud University.

The description of the methods that are used for this research will form the bases for the reliability aspect of the research. The working groups as formed by the Radboud University will also help to increase the reliability of the research.

4. Case study

Can Tho city is a city that has provincial rights. It used to stretch between Soc Trang, Bac Lieu, Kien Giang and An Giang but the province of Can Tho has been split up into the province of Can Tho and the province of Hau Giang.

The city has to deal with two seasons: Dry and wet seasons (the monsoon). The dry season lasts from November until March and the dry season starts in April and ends in October.

For tourists, Can Tho is not really popular. However, due to a decent connection with Ho Chi Minh City via the Can Tho Bridge, more tourists visit Can Tho. One of the main tourist activities in Can Tho is the Floating market as can be seen in figure 3.

This chapter will identify the presence of the Smart City principles in Can Tho city.

Figure 3 Floating market (Hoang, 2015)

4.1 Economy

According to (General Statistics Office , 2009), about 60% of the economy consist of microenterprises.

The city of Can Tho is mainly focussed on entrepreneurs. There is a strong relationship among family members that will always be there for one another in case of difficulties for a local entrepreneur (Geerling, 2018).

When looking at figure 4 it can be noticed that the buildings include a shop or restaurant at the ground floor of the building. The part above the shop is in most of the times the house where the shop owner and his family is living in (Janssen, 2018). The photograph is taken in one of the busiest places in Can Tho: Ninh Kieu Quay. As can be noticed in the picture as well, every building incorporates an entrepreneurial business on the ground floor of the building.

Figure 4 Night market Can Tho, Author photograph

There are several farms to be recognized within the city: Shrimp-, Aquaculture and fish farms. But this is a relative small amount as can be seen on the maps published on the website of WISDOM and figure 14 in chapter 4.5 that is focussing on the environment. The farms are mainly located in the province of Can Tho, away from the city itself into the delta.

As mentioned earlier on in the research, Can Tho recognizes two weather seasons. Figure 5 indicates the effect of heavy rainfall during the monsoon. The streets are flooded as well as the houses. This is the economic damage that the Vietnamese must deal with almost every year.
On the other hand, there is an increased period of droughts during the dry period which will have a marked effect on the agri- and aquaculture in the Mekong delta as well as in Can Tho. This is also mentioned in the research of (Trinha, Duong, Steen, & N.L.Lens, 2013) to explore adaptation options to the increasing droughts in Vietnam.

Figure 5 Flooded street, Author photograph

The Mekong delta and Can Tho in particular are affected by the pumping of ground water resources. The water level of the Mekong is rising during the rainy period and the ground level of the city itself is decreasing. This will result in more floods within the city itself.
The inhabitants of Can Tho have increased the level of the floors multiple times in some of the areas within the city. The floods result in flooded houses and businesses who sometimes are restricted to work because of the high water levels. There need to be restauration costs to prepare the damage on the buildings as the result of the floods.

Can Tho has a large university located in the city, the Can Tho University (CTU).
The CTU has an enrolment of 54.000 undergraduate students, approximately 3.000 students have been following Master programs; and around 300 students are Ph.D. candidates (Can Tho University, 2016). The Can Tho University offers 99 undergraduate programmes and 51 graduate programmes. Each faculty has its own separate building located on the campus. The campus includes, in contrast with the city itself, high amount of greenery. There is also a speeding limit of 25km/h in place for the entire campus.

4.2 Mobility and Infrastructure

Mixed modal access; Integrated ICT; Prioritized clean & Non-motorized options

Map of infrastructure and numbers

Figure 3 is showing the occupation layer of Can Tho. The grey lines indicate the main road network. The busiest and most dense traffic can be found in the infrastructure surrounding the Can Tho University and in the surrounding area of the Ninh Kieu Quay District next to the river.

Figure 6 Occupation layer Can Tho, (WISDOM, 2006)

According to (Asian Development Bank, 2007), freight transport on roads decreased by 45.1% between 2003-2006 in Can Tho but is still remaining the province with the highest amount of road transport.

According to (WISDOM, 2009) the transport of freight over water did increase with 159.5% in the period of 2003-2006, making Can Tho the second largest province for transport across water.

In Can Tho, the road can be used by everyone with every mean of transportation including transportation by foot. There is however not a separate lane for ''slow'' traffic such as cyclists and inhabitants moving by foot. The most left lane is reserved for trucks and busses but motorbikes regularly make use of this lane as well. Integration of ICT within the city can mainly be found within the traffic lights.

Public transport within the city is not present in terms of bus- or tramlines. There is a public transport connection between Can Tho an Ho Chi Minh City, Ca Mau, Rach Gia, Soc Trang, An Giang and Hau Giang (Phuong Trang, or FuTa) but that is long distance public transport. A transportation cooperation arrived in Can Tho recently called Grab. It is in fact the same concept as Uber in which a person can make a reservation for a driver which will pick up the individual and make sure that the traveller arrives at the right destination. This is done via motorbikes instead of taxi's which is stimulating the decrease of car exhaust in the air.

There is no electrical transport present in Can Tho. Trains and metro lines cannot be found. There are electrical motorbikes but the amount is limited. The connections to charge electrical vehicles is also missing which might explain why electric transport is so rare in Can Tho.

The monsoons do have an effect on the infrastructure of Can Tho. During heavy rains, the streets get regularly flooded. It does not, however, stop the inhabitants to travel. The motorbikes travel through deep pools of water but manage to get out and make sure that the inhabitants are able to continue. Figure 7 is showing a flooded street while there are still motorbikes driving through the streets.
Most of the sewage system in Can Tho consists of an open canal. According to (Geerling, 2018), this is one of the major problems that the city faces.

Figure 7 Flooded street Night market, Author photograph

Figure 8 Wires in the city, Author Photograph

Wires and cables are part of the infrastructure as well. In Can Tho, the wires can clearly be seen next to the streets. Figure 8 shows the many wires that cross the street just metres above inhabitants. During strong winds, some of the lines might be damaged because of fallen trees causing disturbance to the inhabitants.

4.3 Governance

As a foreign researcher, it is difficult to gather governmental documents regarding the research topic. In order to have a meeting with a person of a governmental body, one has to ask permission. The permission will be given through a letter stating that the person is allowed to conduct an interview with specific persons. This argument is supported by (Geerling, 2018) stating that open data is hard to gather.
The internet does not provide access to the documents from governmental organisations.
According to (Birkmann, Garschagen, Kraas, & Quang, 2010), there is a need for a paradigm shift to move from the dominant focus on the adjustment of physical structures towards the improvement of planning tools and governance processes and structures themselves. This is necessary in order to create an improved integration of different types of measures, tools and norm systems.

As discussed before, the floods in the city can cause disturbance to the inhabitants. Therefore, the local government started to strengthen the dykes. A case study from (Pham, Ehlers, & Subramanian, 2009) found out that the government neglects the social aspects such as participation, local knowledge and experiences of local people in the dyke system planning. There was a focus on hydrological and technological aspects to control floods rather than a focus on the needs of the inhabitants in Can Tho. Another study of (Nguyen, Le, Tran, & Bryant, 2015) focussed on the participation of inhabitants in the city planning of five centrally managed cities in Vietnam. The study found out that in larger cities as well as people that are being labelled as ''poor'' participate less in city planning. The recommendation of the study is that the cities need to take these groups of inhabitants in mind when developing the city. So in this sense, the government failed to fulfil to the principle of supply and demand side policy.
According to (Vu, 2017) there is a lack of integrated, demand-oriented and risk-sensitive urban planning practices which are instead fragmented, sector and fix-target oriented. The flood management in Can Tho is often based on hard infrastructures rather than implementing more green and blue networks within the city.

The Wi-Fi connectivity within Can Tho is advanced. Wi-Fi is present in every part of the city via the city's Wi-Fi system. It is an open network and only a log-in button needs to be used to get access. There is a Wi-Fi connection in every shop, restaurant and bar as well apart from the Wi-Fi network of the city itself.

The traffic light system in Can Tho clearly indicates the time that the traffic light is staying at a certain colour by counting down to zero. It provides a clear indication of when to stop and prevents the inhabitants to wait impatiently in front of a traffic light.

As mentioned before, Grab is one of the latest options present in Can Tho regarding mobility but also technology. It is possible to order a driver via an app on a smartphone. The person who is willing to travel via a Grab only has to select the time and address of the pickup and the destination and the Grab will arrive shortly after. This is technologically seen a step forward because the technology (smartphone and app) make sure that inhabitants get from A to B without having to own a motorbike.

4.4 Living

Can Tho has multiple hospitals. The quality of the hospitals can be improved but one of the hospitals does meet the Western standards. The hospital is however expansive causing it to be a hospital for inhabitants with a high income that can afford a treatment in that particular hospital. The Death-birth ratio in Vietnam is 5.9 deaths/1,000 population and 15.5 births/1,000 population (CIA World Factbook, 2018).Living in Can Tho is safe. Burglaries and murder does not occur very often and accidents in traffic do not regularly happen as well. Ho Chi Minh City has a higher crime rate compared to Can Tho.

The problem that arises is when the rainy season appears. Figure 9 indicates the problems related to living during a flood. Houses are flooded causing damage to the furniture of the house. The floors of the houses have been raised multiple times because of repeated flooding over the years. However, the inhabitants do just cope with the situations. The inhabitants know that a solution for the problem of flooding on a household level must come from the inhabitants itself.

Figure 9 Flooded street, Author Photograph

A factor that can have an effect on the liveability of a city might be derived from the sewage system. In Can Tho, as can be seen in figure 10, there is an open sewage system in parts of the city. The smell that the open sewage produces can cause disturbance to the quality of life for the inhabitants living next to an open sewage. During heavy rainfall in the rain season, the sewage system overflows (not only the open sewage systems) which cause smell and traffic disturbance within the city.

Figure 10 Sewage system, Author Photograph

According to (Saigoneer, 2017), Vietnam is ranked number 94 out of 155 countries on happiness. This is derived from the World Happiness Report that use six indicators for the happiness index: GDP per capita, life expectancy, social support, level of corruption, perceived freedom to make life decisions and generosity.
Corruption does still occur in Vietnam, although much less as years ago.
According to (World Health Rankings, 2015), the life expectancy of new born babies is 71.3 years for males, and 80.7 for females. This is different from for example in the Netherlands, which is 80.0 for males and 83.3 for females.

4.5 Environment

Cities can typically be described as densely populated with high amounts of pavement. When looking at the effects of climate change, this can have a marked effect as (Apel, Martinez, Chinh, & Nguyen, 2014) have identified. Apel indicates that due to its economic importance and envisaged development goals, the city has witnessed a large growth in both population size and extend over the last two decades. This uncontrolled growth has resulted in areas of the city that are relatively flood prone. Figure 11 and 12 indicate the amount and type of flooding during heavy rains in the city.

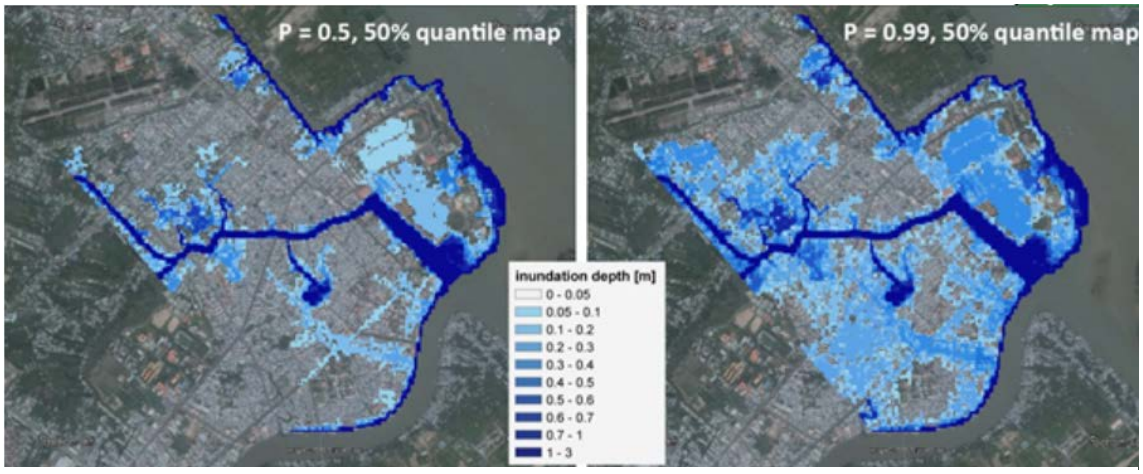

Figure 11 Pluvial flooding, (WISDOM, 2006)

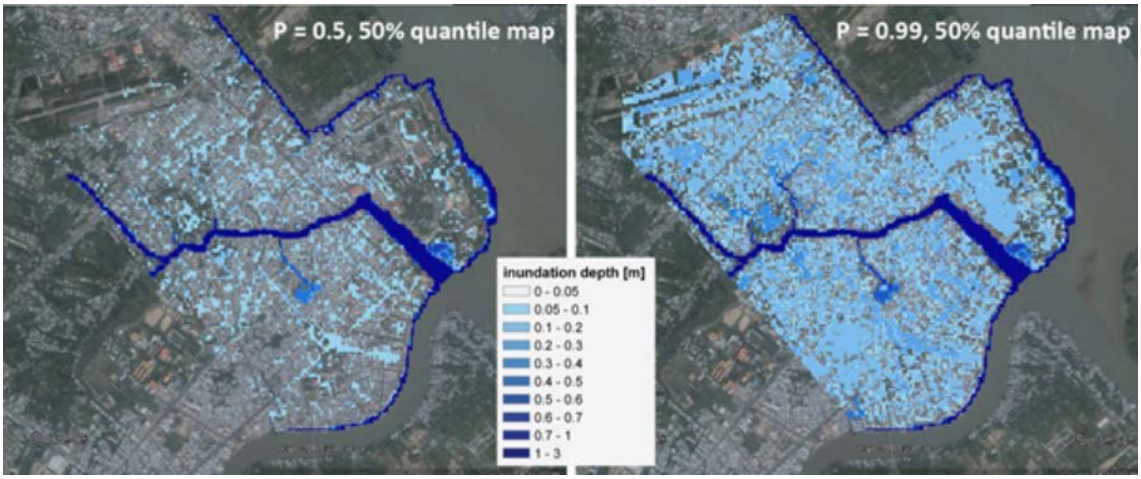

Figure 112 Fluvial flooding, (WISDOM, 2006)

It can be seen that the economic and touristic place (Ninh Kieu Quay) in Can Tho is prone to both fluvial and pluvial flooding. The fluvial flooding can be explained by a rise in the river water level that intrudes into the sewage system that is located next to the river. The water is getting into the city via the sewage system and causes a flooding. The pluvial flooding is the result of a failure of the sewage system that is not able to deal with the excessive amount of surface run off. Does this mean that the city has little green spaces and a large amount of pavement? Yes, within Can Tho, there is little attention paid to a natural environment. Ninh Kieu Quay does include a variety of nature and multiple green areas are developed within the city. The contradiction to the relatively low amount of natural areas is that the green areas are surrounded by paved structures and buildings.

Figure 13 is an example of nature being surrounded by paved surface. The figure indicates a roundabout of decent size that incorporates green spaces. The down side is that the road surrounding the natural area can be called a three lane way so the amount of paved surface is relatively equal to the amount of nature within the roundabout itself.

Figure 12 Round about, Author photograph

The Internet of Things is already a common concept within Smart Cities. A new concept that is recently developed is the Array of Things. The Array of Things has been implemented in Chicago, USA in 2016. The aim of the Array of Things is to provide location based, live data to researchers and to the public (Beesmartcity, 2018). The Array of Things (AoT) is an urban sensing project, a network of interactive, modular sensor boxes to collect real-time data on the city's environment, infrastructure, and activity for research and public use (Array of Things, 2016). The application provides data regarding (air)pollution as well which might result in educating the inhabitants of Can Tho to be more proactive to decrease the amount of air pollution.

Figure 14 displays the occupation layer in Can Tho. The map is derived from WISDOM and adapted to highlight Can Tho City. The red colour is indicating the houses and high rise buildings, dark grey is displaying the large buildings such as supermarkets and the light grey colour is highlighting the road network while the white colour shows open places that are paved. It can be noticed that there is little green space present in the city. Only the North-Eastern part of the city has relatively a high amount of green space.

Source for map→ (WISDOM, 2006)

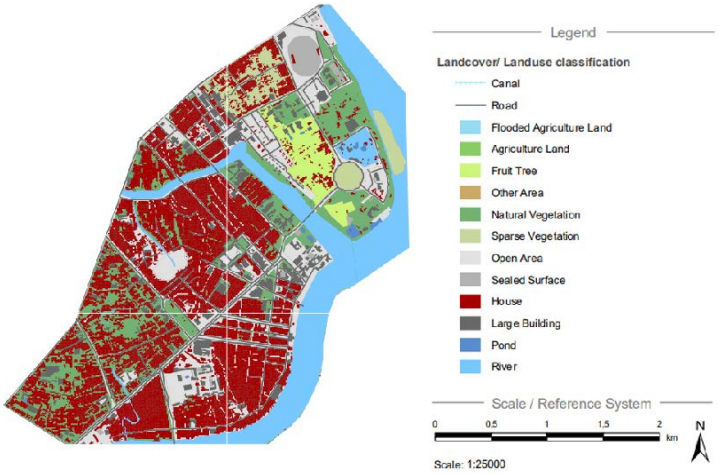

Figure 13 Map of occupation layer

According to (Janssen, 2018), almost every household in Vietnam has a solar panel installed on the roof. However, this solar panel is only used to provide hot water. The architectural style of housing in Vietnam is very typical or an Asian country. Narrow but high buildings with a flat roof. This suggests that the implementation of multiple solar panels on each roof can be realized. However, the installation for a solar panel is expansive and the government does also not stimulate the implementation of it.

Hydraulic structures such as hydropower dams should provide energy produced by the flow of water. Within the Mekong river, there are a lot of hydraulic structures with the main purposes to control the water level in the river, to make sure the yields have the availability of water and energy production. These structures can be found in China, Laos, Thailand and Cambodia.

The Can Tho University (CTU) has a water storage installation installed on the roof of the department of environment that is used to flush the toilet and the tap water. Figure 15 provide an idea of how this installation looks like. The capacity of the water tanks is too little to support the department with unlimited tap water because of the dry and rainy season.

Figure 14 Water storage, Author photograph

Ho Thang Thoi is a man-made body of water located in the city centre of Can Tho. The primary function of the lake is to store excessive amounts of water during periods of heavy rainfall. It is also used by locals to catch worms but also for fishing. The lake can discharge excessive amounts of water into the Rach Cai Khe, a canal that ultimately connects with the Hau river, a branch of the Mekong river. Figure 16 is a photograph of the Ho Thang Thoi lake.

Figure 15 Ho Thang Thoi lake, Author photograph

4.6 Concluding the case study

The case study has resulted in a description of the presence of each Smart City principle. Photographs have been included in the case study to visualize the textual explanation.
Overall, the Smart Governance and Smart Mobility and Infrastructure have got the most negative description in relation to the presence of the principles. Nature is present within the city but it can be noticed that this is man-made nature and the green spaces are surrounded by hard structures such as roads. The economy within Can Tho is relatively stable because of the high amount of local entrepreneurs. However, the economic connection with other cities is relatively poor and is in need of further development. Smart Energy has not been identified during the case study. Smart Living is however present in Can Tho despite the regular occurrence of floods during the rainy season, which is the main problem Can Tho is facing nowadays.

5. Results and discussion

This chapter is describing and visualizing the gathered data. It reviews the results of the interviews, the surveys and the visual data analysis.

5.1 Results case study and visual data analysis

This subchapter will explain the outcomes of the case study that can be found in chapter 4.
The table that is present in this chapter is highlighting the presence or absence of the most important indicators within the Smart City concept for Can Tho. Table 7 includes the smart city principles as well as the variables that are currently needed in Can Tho to tackle the present problems related to water. It must be stated that, as is the case in spatial plans developed for Can Tho before, this table has been the result of a Western way of looking at the presence of the variables as a result of the theoretical information provided by the case study.

A visual data analysis has been conducted on the figures used in the case study. The photographs have been taken by the author of this report. Through the use of Atlas.ti, codes can be linked to every aspect within each photograph. A total of 46 codes can be recognized that are related to the research topic.

The codes that are mentioned in the documents are for example the amount of green on the balconies of houses as well as (plastic) waste present on the streets and river. Trees have been mentioned three times in the pictures indicating that there are trees present within the city. However, when investigating the figure further it can be noticed that the trees are surrounded by only a limited amount of green space with on the end of the green space, a hard structure and the road. Only two dustbins have been noticed in the figures. Vegetation and green structures have only been mentioned once, indicating that the figures show a lot of pavement and limited amount of ''real'' nature. Vegetation can be noticed on the opposite side of the Hau River where there is no boulevard next to the river.

Within multiple pictures taken during the visit to Can Tho, the height of the floods as a result of sewage overflow and high river water levels can be found on the houses and buildings within Can Tho. The figures show a height of approximately 30cm of the water present in the streets. The effect of this is that the ground floor of the houses usually gets flooded and that roads might not be able to be used by motorbikes.
Furthermore it can be noticed that most of the houses have a distinctive colour, varying from green to blue to red. Most of the houses do incorporate one or multiple balconies in the design of the house.

Waste can be found in seven of the twelve pictures taken in Can Tho. Waste is also the code that is mentioned most times in the document. This indicates that waste is a big problem in Can Tho. In most cases, plastic is the dominant polluter of the city in forms of bags but the presence of chairs, car tyres, refrigerators, etc. can also be found in the Hau river and in the city canals of Can Tho.

Multiple pictures have been taken after and during (heavy) rainfall events. It can clearly be noticed that the sewage system is not able to deal with the excessive amount of rainwater. Streets and even residents are flooded.

Motorbikes are the main mode of transportation within the city. Almost everything is transported via motorbikes. The pictures taken in Can Tho show that there are indeed a lot of motorbikes present in Can Tho. There is however an increase in car ownership, as is also supported by the Dutch interviewee of the HZ University of Applied Sciences. The pictures show that there is the presence of multiple cars in several pictures.

Water catchment is not really common. The visual data analysis shows one system that is applied in Can Tho and this system is installed at the Department of Environment and Natural Resources of the Can Tho University. That is the only household water catchment system that could be found in the City. Farmers do have multiple water catchment systems however. Can Tho has developed water catchment areas in the urban design of the city. There is at least one large man-made lake that is used to store excessive amounts of rainwater. The lake can discharge the water into the canals of the city and into the Hau River. The manmade lake is located within a residential area as can be seen in the figure.

Can Tho Bridge is the largest bridge in Can Tho. The construction of the bridge allowed inhabitants to travel to Ho Chi Minh City in less than four hours. The bridge can be seen from multiple sites within the city itself and is also functioning as a trademark for Can Tho. This is a positive remark for the city and is also recognised in the case study in the subchapter of Mobility and Infra.

The table below is the result of the case study and visual data analysis.
The green colour indicates the presence of the principle and indicator, the red colour indicates the absence of the principle and indicator while the yellow colour indicates that the information on the topic in neither positive, nor negative on the presence of the principle and the indicator.

Concept	Indicator(s)	Present in Can Tho		Overall
		Yes	No	
Smart Economy	Local and global interconnectedness			
	Entrepreneurship & innovation			
Smart Environment	Green urban planning			
Smart Governance	Enabling supply & demand side policy			
Smart Living	Safe			
	Culturally vibrant & Happy			
	Healthy			
Smart Mobility and Infrastructure	Mixed modal access;			
	Prioritized clean & Non-motorized options			

Table 7 Principles in Can Tho

The presence of the Smart City principles as indicated in table 7 are visualized in the table above. Overall it can be noticed that the red colour is dominating the table indicating that the variable of the principle is not present in Can Tho.

The principle of Smart Economy involves the variable of local and global interconnectedness. When looking at the case study, this variable is not present in Can Tho. There is no public transport in the city and the connection with Ho Chi Minh City is either via airplane or via bus (FuTa). The Can Tho Airport only has a few international destinations making the global interconnectedness of the city relatively weak. This is however a problem that is withholding the city to really stimulate the local economy of the city and is therefore an important variable of the Smart City concept for Can Tho. Entrepreneurship is definitely present in Can Tho. As stated in the report before, most of the buildings have a shop located on the ground floor while the living space is located on the second and third floor.
Innovation is on the other hand not really developed. The explanation for this is the local economy of Can Tho. The inhabitants and local entrepreneurs do not have the availability of savings to invest in new and innovative developments such as renewable energy resources.

Smart Environment is divided into the variables of green buildings, green energy and green urban planning of which only the green urban planning variable is urgently needed in Can Tho. Green buildings as developed in Milan (Bosco Verticale) cannot be found in Can Tho.
In fact, the only green that is present in the design of the buildings can be found on balconies where only a few green structures have been placed. Green energy is not visible for the human eye. Solar panels cannot be found although the architectural design of the buildings and the weather provide the necessary conditions for the implementation of solar panels. The question however is whether Can Tho really is in need of green energy at this moment. Related to present water problems and economic situation of Can Tho, it can be concluded that green energy is not the most pressing issue and is therefore left out of table 7. The city of Can Tho does incorporate nature in the urban areas. The nature is most of the times realised by human and next to infrastructural structures. When reviewing the master plans that have been developed for Can Tho by multiple universities as well as the city council it becomes clear that the visions take the implementation of nature into account. The yellow colour is based on the visions developed by Can Tho which would result in a green colour, but the current lack of nature in the city would result in a red colour. Taking both into account, the yellow colour indicates that there is green urban planning but not sufficient enough.

Smart Governance incorporates the variables of ICT and Egov, transparency and open data and supply and demand side policies. All three variables cannot be found as present in Can Tho. There is some ICT in the city but this can mainly be found in the infrastructure such as the traffic light system. Transparency and open data is hardly present. The availability of public governmental policy regulations is limited and therefore the transparency as well. The lack of transparency in the governmental system is not proven to be a problem yet. Therefore, this principle has been left out of this table for now because it does not have a positive effect to tackle the current problems of the city. Supply and demand side policy is positively changing since the visions for Can Tho incorporate more green-blue structures in the city and is paying more and more attention to improving the quality of the urban areas. The needs of the inhabitants can be taken more into account however, by for example stakeholder meetings. Stakeholder meetings are however not familiar yet. It is more a Western style of approach to find out what the needs are of the society. The supply and demand side policy is however an important aspect which is also able to tackle the water problems of Can Tho. By involving the stakeholders, the current problems might become more clear to the city council and is allowing the city planners to take appropriate action to the current problems.

Smart Living is the most positive principle according to the case study and visual data analysis. The variables of safe and culturally vibrant and happy are both utterly present in the society of Can Tho. Health remains a bit of a problem. Safe can be determined in multiple ways. Burglaries do not regularly occur in Can Tho. Ho Chi Minh City has bigger problems related to burglaries to foreigners compared to Can Tho. The traffic however can despite the traffic lights and the presence of rules in traffic not be reviewed as safe. During the visit to Can Tho, it appeared that there were no rules in traffic at all except for the traffic lights. Because of all the motorbikes, the traffic appears to be chaotic. Accidents occur every now and then. When staying for a longer period in the city, a structure can be recognized in the way that the inhabitants travel through the city and seems a little less chaotic. Considering these two factors, the green colour has been given to the variable of safe.
Can Tho is a culturally vibrant city. Although it is city of over a million inhabitants, it is not an attractive place for foreigners to visit yet. Ho Chi Minh City has a lot more Western shops and industries located in the city because it is the economic capital of the country and the high amount of foreign visitors compared to Can Tho. The Western influence in Can Tho is therefore limited. There are of course restaurants like the KFC but the Vietnamese culture is still widely present. Multiple pagoda's are located in the Ninh Kieu Quay area. The local restaurants with the typical low seats in front can be found all around the city creating the culturally vibrant atmosphere.
During the visit, multiple people have been spotted that were wearing something to filter the air before breathing. This indicates that the quality of the air in the city can be improved. The amount of (plastic) waste found on the streets and in the river and canals of Can Tho is a factor that is also taken into account when defining the health of the inhabitants.

Although Can Tho has over a million inhabitants, the Smart Mobility and Transport has two variables that are not present in the city and two variables have aspects that can be found and aspects that cannot be found in the city.
As described in the case study, the multi modal access is not present in the city. No bus lines or bus stations can be found in the city except for the FuTa busses. The FuTa busses are only travelling to or from Can Tho to other cities in the Delta or to Ho Chi Minh City. Within the city, there is no possibility to either use a bus or the metro or trains. Most Inhabitants own a motorbike which is therefore the main mode of transportation in the city. The integration of bus lines within the city can trigger the inhabitants to use a bus instead of the motorbike. The result is that the living environment will improve when more people use the bus rather than the motorbike. Cabs are present as well. Because of the absence of options to travel in the city itself, the variable incorporates a red colour.
Prioritized clean and non-motorized options are present by rules. The lane closest to the sidewalk is reserved for non-motorized transportation. This means either by bicycle or by foot. However, in practice, this lane is also used by motorbikes. The yellow colour is indicating that there is a separate lane by law for non-motorized lanes, but this is not always the case in practice.
The traffic lights are the only example of integrated ICT in the mobility and transport of Can Tho. Because the integration of ICT within the infrastructure is not a key element for Can Tho to become a Smart City in the near future, this variable has been left out.

5.2 Interview results

The interviews have been coded through the usage of Atlas.ti. Connections between the interviews and the concepts used by the respondent have been made visual through the use of labels and codes.

The three interviews as well as the results of the survey open questions have been coded with different outcomes as well as overlapping answers to relatively the same questions for each of the respondents.

Liliane Geerling	:	Codes	: 52
Joep Janssen	:	Codes	: 76
La So Sen	:	Codes	: 19
Survey open questions (6)	:	Codes	: 83
Total	:	Codes	: 230

The main relations of the interviews can be found when looking to the impacts of climate change, the dominant culture in Vietnam, the resilience of the inhabitants and the view of the respondents towards the ''global'' aspect of the Smart City concept. The answers provided by the interviews have been analysed. In order to make sure that the answers match, a quantitative analysis is conducted via an online survey. The quantitative analysis can be found in the next chapter. However, the quantitative analysis is only restricted because of the lack of respondents.

There is however also a difference to be recognized between the interviewees from the Netherlands and the interviewee from Can Tho itself. The connectivity of Can Tho with other cities in Vietnam or Asian countries can be optimized in the point of view of the interviewees from The Netherlands while the interviewee from Can Tho is saying that the connection of decent quality with the FuTa (Phuong Trang) as well as the presence of Can Tho Airport. Both Dutch experts indicate the travel time to Ho Chi Minh City with the FuTa as being too long and relatively dangerous because of the driving style of the bus drivers. The airport has only got limited destinations and most of the destinations are located in Vietnam itself. It also stated that the connectivity within the city, the multimodal transportation possibilities is limited. There are no/limited amount of bus lines present within the city. Water transport of goods and inhabitants is in comparison with the road transport of decent quality. There are even tours for tourists to travel along the Mekong river.

The Vietnamese interviewee indicated integration of ICT and government as most important for the city. The government aspect is also one of the key issues stated by the Dutch experts as well. ICT integration is one of the aspects of the principle of Smart Technology. A Smart Technology that can be found in Can Tho is the integration of traffic lights that count to zero when the red sign is highlighted. When the number get to the zero, the red colour turns into a green colour and the counting down starts again. This technology allows the travellers to exactly know when the green light will arise and when the green light will end. Corruption still occurs in Can Tho and Vietnam as a whole. The regulations are not easy to find for locals which causes the transparency of the government to be a point to improve in order to become a Smart City.

The interview with the Dutch expert who has also worked for Vo Trung Nghia architects stated that the way the houses in Vietnam and Can Tho are build can be seen as being smart. This is because of the fact that the houses are small but high. It provides shade, especially in alleys next to the houses and decreases the amount of Urban Heat Island Effect. The ground floor of most of the houses in Vietnam is used for business in terms of shops, hairdressers, motorbike reparations, etc. while the first, second and third floor were used to live for the family owning the particular shop.
According to the Dutch expert, the problem that occurs within the zoning of the city is that there are no policies present that incorporate a certain amount of green in the buildings or, if present,

backyards. Due to the rapid increase of inhabitants in Can Tho, there has been a lack of guidance and planning in the city. Houses have been built without the city government even knowing that the development took place. During the construction of the houses, there was no attention towards more sustainable way of building the houses. So there is a lack of nature within the city. Nature has a cooling effect on a city. Adding Green-Blue structures to a city also decreases the likelihood of a flooding within the city during high river water levels, periods of intensive rainfall and sewage overflow. Another effect of nature is that the quality of the city and the way people experience the city is much more positive.

During the interviews with the Dutch experts, there have been a total of 22 adaptations to the Smart City concept.
The most important adaptation that the interviewees stated is the integration of culture within the concept as well as the starting point for the concept and to translate the local context of the city into the Smart City concept as well as incorporating resilience in a city.

Culture in societies differs from one place to another. When comparing the Netherlands with Vietnam, it can be noticed that the level of individuality is much higher in The Netherlands compared to Vietnam. Vietnam is more focussed on collectivism and taking care of relatives. This might be in relation to the level of economic capital since the economy of The Netherlands is much more developed than Vietnam. As cited by the interview with a Dutch expert: ''Vietnam is focussed on surviving another day and making sure that the children have enough food and water and are able to go to school''.

Local context is a point that does not really come back into the present principles of the Smart City concept. As culture above already explained is that the economic situation differs in every country. Vietnam is less developed compared to The Netherlands and first wants to make sure that the economy and health care of the country is stable before investing in renewable energy resources. Therefore, the Smart City concept must take the local context of the city into account.

The starting point (basic infrastructure) is related to the local context since it is focussing on the present structure of a city. In Can Tho, the basic infrastructure is sufficient at this moment. But when there is a need of new infrastructural developments, it is necessary to focus on local and simplistic measures to develop. During one of the interviews it is stated that in The Netherlands, the buildings in cities are densely build together which makes it easier to implement sustainable energy resources or separated sewage systems. In Can Tho and Vietnam, the density of buildings is more widespread in the countryside of the city and therefore much more difficult to implement such modern measures.

According to the Dutch expert that has worked for Vo Trung Nghia architects, it would add value if a cooperation could be adopted in the Smart City concept. Especially for cities that are dependent on developments upstream in a river. Can Tho is such a city. Every alteration to the morphology of the river has consequences for Vietnam. The dams constructed upstream cause the river levels to drop or rise, depending on the period of the year. Controlling the flow of the river by dikes while decreasing the possibility of the river water to flow into floodplains has an effect on the speed of the river and with that, the amount of erosion in the low-lying areas of the river and Can Tho located next to the river. The cooperation should make sure that the cities downstream a river do not have any consequences of the developments. It is also possible that when an upstream city must adopt a radical solution with effects to low lying areas, that this is clearly communicated and that there is enough time to react on the effects of the adaptation upstream.

Resilience is an aspect which is hard to define as indicated in the report already. There is also another concept called 100Resilient Cities. Can Tho is one of the members of this organisation.
The Vietnamese interviewee highlighted that when a city is striving to become a Smart City, resilience is one of the outcomes of the developments. When making the comparison again between The Netherlands and Vietnam, there is a difference in the resilience of the inhabitants.
Floods do occur relatively often within Can Tho as stated in the case study. The inhabitants of Vietnam realise that the government is not able to deal with the problem yet and therefore take action by themselves by raising the level of the ground floor or constructing small dikes in front of the houses to keep the water out of the houses.
When looking at The Netherlands during a period of flood, all eyes are pointed towards the government. The Dutch inhabitants rely on the fact that the government will take action towards problem that occur within the country and cities. Therefore, it can be stated that based on this difference, the Vietnamese society is much more resilient compared to the inhabitants of The Netherlands. Every development within Can Tho towards a more Smart City will only strengthen the resilience of the community.

Vietnam is one of the five most polluting countries in the world. Almost every citizen throws the garbage on the streets. Recently, there has been a restriction placed on the production of plastic in The Netherlands. It means that the industries are no longer allowed to produce plastic bags or bottles. In comparison, it is normal in Vietnam to get a plastic bag with every purchase that is made, whether just one bottle of water or one piece of fruit. There is always a plastic bag. When keeping this in mind, it is not strange that Vietnam is such a polluting country. The visual data analysis already indicated that waste is the code that has been identified the most of all codes present. The pictures taken in Can Tho, together with the statement of the Dutch experts symbolize the importance that (plastic) waste must be taken into account when developing a city into a Smart City.
A positive thing in Can Tho is that during the nights, all the garbage on the streets is collected and transported to dumb. The negative side is that all the garbage that could not be collected has flowed into the Hau river or other natural areas. One of the two Dutch experts has started a living lab which is investigating the possibility to catch plastic from the river and to recycle the collected plastic. However, funding is needed for the project but the decision for the funding has been postponed.

Local knowledge of inhabitants is valuable for future city developments. The inhabitants have information that most policy makers or planning agencies do not have. Problems related to climate change or infrastructure might be the most important aspects to tackle for the city through the point of view of the inhabitants while the city planners might focus on other issues the city is dealing with. When speaking to one of the Dutch experts, it became clear that the knowledge of inhabitants is not always taken into account but that is valuable knowledge and might bring new insides into the character of the city.

5.3 Survey results

Amount of respondents: 11
Amount of multiple choice questions: 16
Amount of open questions: 3

The respondents that have taken part in this survey consist of the inhabitants of Can Tho. All the participants either live in Can Tho, work in Can Tho or live and work in Can Tho. The results of the survey provide an inside in the view of the inhabitants and visitors of Can Tho on the presence of the principles regarding the point of view of the participants.
Because the response to the questionnaire from the inhabitants of Can Tho is very limited because of several limitations. The results of the analysis should therefore be taken caustiously. Future research must make sure that the reliability of the analysis is not questionable.

Questions	Bad %	Relatively bad %	Average %	Relatively good %	Excellent %
Question 1	0	36.4	54.5	9.1	0
Question 2	9.1	63.6	18.2	9.1	0
Question 3	27.3	18.2	45.5	9.1	0
Question 4	36.4	27.3	18.2	18.2	0
Question 5	9.1	36.4	45.5	9.1	0
Question 6	0	0	9.1	63.6	27.3
Question 7	0	0	27.3	54.5	18.2
Question 8	0	0	18.2	54.5	27.3
Question 9	0	0	18.2	72.7	9.1
Question 10	0	0	27.3	18.2	45.5
Question 11	9.1	9.1	45.5	18.2	9.1
Question 12	27.3	45.5	9.1	9.1	0
Question 13	0	18.2	36.4	18.2	18.2
Question 14	0	0	18.2	54.5	18.2
Question 15	0	0	0	45.5	45.5
Question 16	0	27.3	45.5	0	18.2

Table 8 Result survey

Questions	Bad	Relatively bad	Average	Relatively good	Excellent
Question 1	0	4	6	1	0
Question 2	1	7	2	1	0
Question 3	3	2	5	1	0
Question 4	4	3	2	2	0
Question 5	1	4	5	1	0
Question 6	0	0	1	7	3
Question 7	0	0	3	6	2
Question 8	0	0	2	6	3
Question 9	0	0	2	8	1
Question 10	0	0	3	3	5
Question 11	1	1	6	2	1
Question 12	3	5	1	1	1
Question 13	0	2	4	2	3
Question 14	0	0	2	6	3
Question 15	0	0	0	5	6
Question 16	0	3	6	0	2

Table 9 Result survey

Question 17:

- 1. open, manage and secure data 2. Smart data should be tightly combined with city government actions.
- Technology
- Green energy, government, river saving, education
- Willing of Can Tho authorities. 2. Infrastructure system. 3. Awareness of people
- Integrating technology and ICT as well as following bottom-up approaches
- IT and Infrastructures
- It starts with a more dynamic government, and maybe tackle the corruption pared with it. The priorities are in my opinion on the wrong things and the policies should be adapted with the aim of increasing the sustainability of Can Tho. The government should not only look for short term profits, but invest in long term projects that have a bigger net value in the end.
- Focus on solving water problems by integrating green-blue structures
- Watch out for the river, it is coming to get you
- A good functioning management system for all the aspects of becoming a Smart City.

Question 18:

- sure, resilience is flexible. We can increase resilience through Smart city.
- Yes
- Yes
- Yes
- Yes
- Your question need to be more specific
- renewable energy
- The people of Can Tho are very resilient. and it certainly plays a role in smart city projects.
- Yes because the Vietnamese people are a resilient community
- Yes, as government investment on this subject is scarce.

Question 19:

- increase people awareness and purchase
- No
- Need to have a lot more strict no-tolerance administrative penalties and a lot of efforts in educating people
- Start from educating people about the pollution and the solution
- Increase awareness, more top-down regulations for waste dumping
- Awareness
- A sufficient policies should be developed, and more important this policies should be executed. You could think of public relations, in order to convince people of the importance.
- Better waste management and education of the inhabitants
- I think a project in Can Tho focused on retrieving plastics from the river through a plastic catcher in the river, and then recycle the plastic and make a floating park out of the plastic would be an excellent project!!! The whole world would be astonished by this amazing project.
- A start needs to be made, a system that forms an example for the rest of the city. Education is also a very important factor. This can be connected to the concept of becoming a Smart City.

The intention of the analysis is to find out whether the inhabitants or visitors of Can Tho perceive the city in the same way as professors and experts do. The backside of this analysis is that there are only 11 respondents that were able to understand the questions and therefore, the quantitative analysis is a topic for further research.
The analysis that follows is based on the limited amount of respondents.

To what extend does Can Tho stimulate an entrepreneurial environment?
The percentages indicate that the entrepreneurial environment is not really stimulated by the city of Can Tho. Almost half of the respondents think it is questionable whether the city stimulates an entrepreneurial environment. This is a contradiction with the interviews since the interviewees indicated the presence of high entrepreneurial environment.

To what extend does Can Tho incorporate sustainable energy production?
Again, this question results in a rather negative response. It can be stated that renewable energy resources are not yet exploited in the city. Not to the extend as compared to for example The Netherlands. One of the interviewees stated that almost every household incorporates a solar panel, however this is only used to warm up the water so the answers of the interviewees and respondents do have similarities.

To what extend does Can Tho include nature within the city?
The inhabitants are a bit more positive about the nature in the city. Almost half of the respondents indicates that the amount of green in the city is about average. This is in contradiction with how the interviewees look at the presence of nature within the city since the interviewees indicated that there is a lack of nature within the city.

To what extend does Can Tho incorporate accessible public transport?
Public transport is indicated as to be relatively bad. The answers of the respondents match with the interviewees as well as the case study indicating that public transport is not present in Can Tho.

To what extend does Can Tho offer and invest in technological developments?
Technological developments is perceived to be relatively absent. Although almost half of the respondents indicated that technological development is averagely present.

In your opinion, is Smart mobility and infrastructure important for Can Tho?
The principle of mobility and infra is perceived to be an important aspect to develop for Can Tho in order to become a Smart City. More than half of the respondents indicate that this principle is relatively important for Can Tho to invest in. This result is also supported by the interviewees who indicate that the lack of public transport has a negative effect for the city.

In your opinion, to what extend is Smart Economy important for Can Tho?
More than half of the respondents indicate the relatively importance of the economy of Can Tho the be important to develop. Since Vietnam is still developing, the focus of the inhabitants is much more on primary living resources instead of materialism.

In your opinion, to what extend is Smart Environment important for Can Tho?
Environment is perceived to be an important aspect to develop in the city. Every respondent indicates that it is an important aspect for the city to develop. The question is related to question three since both have a focus on nature within the city. The respondents do perceive nature as present and do also think that it is important to develop Smart Environment further. This is also supported by the interviewees by stating that green energy is an important next step.

In your opinion, to what extend is Smart technology important for Can Tho?
Every respondent is aware of the importance for Can Tho to develop technology in the future. Since the technology is not really present at this moment, the city must invest in the Smart Technology.

In your opinion, to what extend is Smart Government important for Can Tho?
A few respondents does not really see the importance to improve the governmental structures and transparency regarding the present situation. An explanation for this is because the city planning did not have resulted in any difficulties for the inhabitants so far. However, more than half of the respondents think it is very important that the governmental structure will change and is in need of transparency. This statement is also supported by the interviewees who indicate that the lack of transparency makes it difficult for third parties to develop a qualitative plan for the city.

Is the availability of Wi-Fi throughout the city of high quality and accessible?
The respondents are divided regarding the availability of Wi-Fi across the city. More than half of the respondents indicate that the Wi-Fi throughout the city is sufficient. This is also supported by the case study who states that every shop has free available Wi-Fi.

Is the amount and quality of the public transport sufficient?
This question is related to the mobility and infra question and clearly corresponds with that question indicating that the quality of public transport is in need of improvements. Almost every respondent indicates that the quality of public transport is (very) limited. The case study as well as the interviewees indicate this as well indicating that there is a lot to improve for the city regarding public transport.

Will the IoT (Internet of Things) play an important role for Can Tho?
The IoT is not perceived to be an important aspect of Smart Cities to develop for Can Tho. The respondents are divided. Some do not see the relevance of the IoT while others do. One of the interviewees also indicated that the relevance of the IoT might be questionable for Can Tho.

How important is it for Can Tho to take action and become a Smart City in your opinion?
Every respondent is aware of the importance for Can Tho to take action and to develop into a Smart City and therefor develop the indicators of the concept. The interviewees also find it important for Can Tho to become a Smart City because the concept helps to deal with the current problems of the city.

Do you think developing Can Tho into a Smart City is very important
45.5% relatively important and 45.5% important
This question is basically the same as the previous. All the respondents are aware of the importance of the Smart City concept and indicate that Can Tho must try to become a Smart City as well.

If you have to grade Can Tho, what value do you attach to Can Tho?
The value attached to Can Tho by the respondents is not really positive with almost half of the respondents indicating that the quality of the city is perceived as average or even relatively bad. When Can Tho develops into a Smart City, the quality of life will eventually improve as well.

5.3.1 Open questions

What must be the focus for Can Tho in order to become a Smart City? Please write down your answer below.

The answers that appeared relatively often are related to improving the infrastructure, ICT, integrating green-blue structures in the city and the governmental structure needs to be changed. The result of this questions is in line with the multiple choice questions of the survey.

Do you think that resilience is a factor that can be connected to a Smart City, especially for Can Tho? Please write down your answer below.

Every respondent answered that resilience is an important factor and that it must be included in the Smart City concept and that resilience can be stimulated via a Smart City.

Pollution of plastic and waste can be found throughout Can Tho. How can the city deal with the pollution and must this be adopted in the concept order to become a Smart City? Please write down your answer below.

Policies needs to be established that are also executed. So there must be surveillance to make sure that the inhabitants adapt to the policies to decrease the amount of waste. Education is also perceived to be a factor that can decrease the amount of waste in the city because the inhabitants are made aware of the consequences of all the waste produced in the city.

5.3.2 Concluding the analysis

Overall, the respondents are unanimous regarding the fact that it is important for Can Tho to develop into a Smart City. The most important principle to develop is mobility and infrastructure and the public transport, environment and government. The principles of the Smart City concept cannot be fully recognized in Can Tho according to the respondents. This is also the outcome of the interviews regarding the presence of the principles in the city.

The most positive principle regarding the Smart City concept is the economy and the environment, although the environment is also a topic to take into account during developments. The open questions of the survey among the inhabitants led to the conclusion that pollution is an aspect that needs to be taken into account as well. Pollution is a problem in Can Tho and this needs to be tackled via fines, education and raising the awareness about the effects of the pollution to the environment and the economy.

The interviews also stated that pollution is a disturbing factor for future developments and needs to be taken into account in the Smart City concept. So in general it can be stated that the experts as well as the inhabitants do have the same opinion about the principles and Smart City Can Tho.

5.4 Presence of principles in Can Tho after case study, visual data analysis, interviews and survey

Table 10 indicates the availability of the Smart City Principles in Can Tho after evaluating and combining the results of the case study, visual data analysis, interviews and survey. The table is in structure the same table as indicated in the chapter of the results of the case study and visual data analysis but is added with the outcomes of the interviews and survey. The table is taking the adaptations to the Smart City concept into account. In the end of this chapter, there will be a final conclusion about how Smart Can Tho is when adopting the adapted Smart City concept.

The main difference with table 10 is that Smart Culture and the three variables relating to culture are included in the table. It can also be noticed that every variable of the current Smart City concept has been included in the table. Table 7 indicated the current principles that are important for Can Tho at the near future. Table 10 is highlighting every important aspect, including the near future as well as the possible future developments to deal with the already present problems in Can Tho.

Productivity is a pillar that is difficult to compare. It is partly within the culture whether people work hard with more than eight hours a day or whether the people work a little less hard but for a longer period during the day. But which culture is better compared to the other. The Netherlands has a relatively high amount of pressure at work and therefore more stress. Vietnamese people are a lot more relaxed. If a task cannot be fulfilled in one day, it will be managed the next day. This results in less stress for the Vietnamese people but the productivity is also less sufficient as is the case in The Netherlands.

Green energy and green buildings are not really important for Can Tho at this moment to tackle the current problems relating to rainfall. When taking climate change and its effect into account, it can be concluded that there is a need for Can Tho to become an adaptive city. The city has to deal with floods already and the amount of floods will increase in the future. In order to make sure that the city is able to deal with the flood problem, more adaptive and mitigation actions are needed. Green areas allow water to infiltrate into the ground. The result is that there are less floods to be recognized because the sewage system has to deal with less precipitation. The green buildings also capture rainwater and is decreasing the likelihood of a flood to occur. Green energy is not only positive for the environment but is also an economic beneficial option in the future. However, this variable is not present in Can Tho at the moment There is a lot of sun during the dry season in Can Tho providing excellent opportunities to integrate solar panels for the production of energy. The wires that are present in every street of the city can then be replaced which has a positive effect on the appearance of the city as well.

Smart governance has the principles of ICT and Egov as well as transparency and open data included in the table. The current way of governmental actions do not have a negative effect on the city itself. Table 7 is therefore indicating that the principles of open data and transparency is not urgent. However, in the future this might be really relevant because the citizens might want to be involved in city planning in order to stimulate effective city planning. Open data and transparency is needed to achieve this and is therefore an important aspect for the city to take into account.

Table 10 indicates that the integration of ICT within Smart Mobility and Infrastructure is not present. The traffic light system is the only aspect that incorporates technology in the Mobility and Infrastructure variable. This became clear during the interviews and the survey results. The integration of ICT is of less importance for Can Tho at the near future, but because of the present increase of inhabitants and visitors, it is of relative importance to integrate ICT in the future to optimize the flow of transportation within the city.
Prioritized clean and non-motorized options has also changed in a negative way. The conversations and survey made clear that the presence of a non-motorized lane or non-motorized options is not present. Electrical vehicles cannot be found in Vietnam and Can Tho in particular. During one of the interviews, the interviewee stated that she really had to watch out when walking on the streets because it has become busier as well as more dangerous to travel by foot or bicycle through the city. The change did not have an effect on the overall table since the principle could not be recognized in the previous able either. Prioritized and clean lanes might not be relevant in present days but because of the increase in inhabitants as stated before, becomes an aspect that needs to be taken into account when there is the availability of public transport and electrical vehicles in the city.

Smart culture is the addition to the concept of Smart City of this research. The culture principle does incorporates three variables. As explained in the theoretical framework, resilience is the capacity of people to deal with difficulties themselves and to look for creative solutions to particular situations. Can Tho has a resilient society since the inhabitants are much more able to cope with difficulties such as floods in the city.
he Masculinity side of this dimension represents a preference in society for achievement, heroism, assertiveness, and material rewards for success. Society at large is more competitive (Hofstede, n.d.). So the individual aspect of life is described in this variable. This principle is about whether the individuals are more focussed on own success rather than the collectivism aspect of society.

The Long Term Orientation (L.T.O.) is investigating whether the city is future oriented or not. The future orientation can be found in city council documents and urban development plans for the city. During the interviews with the Dutch interviewees and the desk research/case study, it became clear that urban plans have been established for Can Tho. A couple of visions have been provided via knowledge institutes such as the KU Leuven report but there have also been documents produced by governmental bodies.
These documents incorporate future visions for the city and do include aspects regarding a green city and therefore taking the present issues mainly regarding climate change into account.
The interviews however also indicated that the culture in Vietnam, and Can Tho in particular, is that the inhabitants are much more focussed on surviving and making sure that there is enough food to stay alive. Keeping this in mind, the long term orientation of the Vietnamese society is limited. Therefore, the yellow colour is given to the L.T.O. variable. Because the principle of culture incorporates the presence one variable, absence of one variable and one variable that might or might not be present in Can Tho, the overall score for the cultural aspect for Smart Cities is indicated by the yellow colour.
Table 10 can be found on the next page.

Concept	Indicator(s)	Present in Can Tho		Overall
		Yes	No	
Smart Economy	Local and global interconnectedness			
	Productivity			
	Entrepreneurship & innovation			
Smart Environment	Green buildings			
	Green energy			
	Green urban planning			
Smart Governance	ICT & Egov;			
	Transparency and open data			
	Enabling supply & demand side policy			
Smart Living	Safe			
	Culturally vibrant & Happy			
	Healthy			
Smart Mobility and infra	Mixed modal access			
	Integrated ICT			
	Prioritized clean & Non-motorized options			
Smart Culture	Resilience			
	Masculinity			
	L.T.O			

Table 10 Principles in Can Tho

5.5 Addition to the concept

When reviewing the Smart City concept and finding out which principles could be identified as present in Can Tho, it became clear that the Smart City is in need of at least two important adaptations. These adaptations are related to (1) translate local situation and (2) include culture in concept. Further important aspects that need to be taken into account for the Smart City development is the effects of climate change to a city and the mitigation and adaptive capacity to cope with the effects.

5.5.1 Translate local situation

Translating local situation is indicating that there is a need to use a different approach to valuing the principles. Western cities are more likely to develop according to the current principles because of the economic situation according to one of the interviewees. Asian countries do not have the same amount of economic welfare compared to Europe or the United States. Therefore, the specific situation of a city needs to be reviewed according to the (economic) situation it is located in.
It will result in a better understanding of the needs of the city in order to become a Smart City.
The understanding will lead to visions that really fit the local characteristics.

5.5.2 Adopt culture in the concept

Culture is a dominant way of life in a city or country. It differs from country to country and even from city to city. The needs of the society come to light when reviewing the culture. This will result in positive developments for a city that is purely focussed on the needs of the inhabitants of the city.
In Western countries, there is much more focus on sustainability in urban developments because of the economic situation. The focus in developing countries differs and might be focussed more on the collectivism aspects of life instead of sustainability.

5.5.3 Climate change

During the interviews, it became clear that climate change is a factor that has huge effects on countries and cities, but especially to cities located next to water bodies and rivers in a developing country. Floods occur relatively often in Can Tho. The main cause of the floods is related to high river water levels, intensive rainfall event resulting in sewage overflow and the amount of impermeable ground in the city. There are two ways to counter the effects of climate change.
Mitigation is the capacity to reduce emissions of and stabilizing the levels of heat-trapping greenhouse gases in the atmosphere (NASA, 2018). The use of solar panels is an effective measure for mitigating the effects of climate change. Energy produced by flowing water in the river is another solution that contributes to a more sustainable future. Neither the solar panels nor the water energy is present in Can Tho at this moment.
Adaptation means anticipating the adverse effects of climate change and taking appropriate action to prevent or minimise the damage that can be caused, or taking advantage of opportunities that may arise (European Commission, N.t.b.).
Adaptation consists of the physical adaptations to the urban structure to prevent rivers from overflowing such as dykes and to store excessive amount of rainwater via underground aquifers for example. Mitigation and adaptation are important for Can Tho to take into account, especially since the city is growing and is having difficulties with the excessive amounts of rainfall and high river water levels already.
The adapted conceptual framework as a result of the research can be found in table 11.

6. Discussion

Conducting the research has led to new insides in the Smart City concept.
The addition to the concept that has been suggested in this report is the result of intensive interviews, the result of the surveys as well as consultations with the supervisor of the Radboud University Nijmegen.

Developing the research proposal has been the first step for the research. Within this phase, multiple discussion have taken place both via email as well as face to face contact moments with the supervisor. The research proposal gave a clear idea of the tasks during the research and has led to the development of the research questions as being investigated in the execution phase.

The theoretical framework already provided an answer to the research question regarding which principles are incorporated in the Smart City concept. Furthermore, it provided insight into the complexity of the subject. It was not expected that the topic of Smart Cities would be such a complex concept with multiple disciplines, each focussing on different aspects of a city. (GDF SUEZ, 2013) is suggests that the core values of a sustainable city are linked to the capacity of the city to adapt and transform over time, to its high quality of use and life, to economies made by its residents, by the fluidity of its networks, by its safety, and by its sharing of space. The adaptive capacity of Can Tho is not really sufficient at this moment. This is also mentioned in the research of (Trinha, Duong, Steen, & N.L.Lens, 2013) that explore adaptation options to the increasing droughts in Vietnam, one of the problems related to climate change.

The methodologies has proven to be the most difficult chapter to develop. The data collection has been focussed on both qualitative and quantitative methods as well as qualitative analysing programmes to filter the most relevant information.

The desk research as well as the case study could be conducted without encountering difficulties except for reviewing the Smart Government principle and the cooperation with the society.
The reason for the minor difficulty is the lack of transparency when reviewing governmental documents or policies. The government does not take the local inhabitants into account and this is also supported by the study of (Nguyen, Le, Tran, & Bryant, 2015) focussed on the participation of inhabitants in the city planning of five centrally managed cities in Vietnam. The study found out that in larger cities as well as people that are being labelled as ‘’poor’’ participate less in city planning. The recommendation of the study is that the cities need to take these groups of inhabitants in mind when developing the city.
Planning the interviews has proven to be no problem since the preferred respondents have been interviewed.

The qualitative data gathering has resulted in answers that has led to the adaptations of the current Smart City concept. The interviews with Dutch and Vietnamese experts provided additions that might be relevant for considerations for the concept. The additions to the current concept mainly derived from the qualitative analysis.
Culture has been one of the main additions to the concepts according to the interviewees.
he local context of the specific city seems to be neglected. However, this is an important factor for a city that is striving to develop into a Smart City to tackle the current problems.

The research did also have a backside, mainly focussing on gathering quantitative data.
During the visit to Can Tho, it was already noticed that the proficiency of English in both word and speech is lacking. Surveys has been sent to inhabitants that were able to understand not too difficult English sentences. Because of the lack of English speaking inhabitants, it has proven to be difficult to gather quantitative data and therefore to use a quantitative analysis using SPSS to verify whether the view of inhabitants match with the view of experts and scientists.

The addition of culture to the concept came forward as the most important aspect because of the differences in habits, urban planning, productivity, transparency and economic situation.
The two principles of Smart People and Smart Living do take certain aspects into account, but this is only limited. With the addition of the Smart Culture principle, there is more focus on the cultural aspects of a society and city.
The addition is visible in table 11 of the conceptual framework adapted.

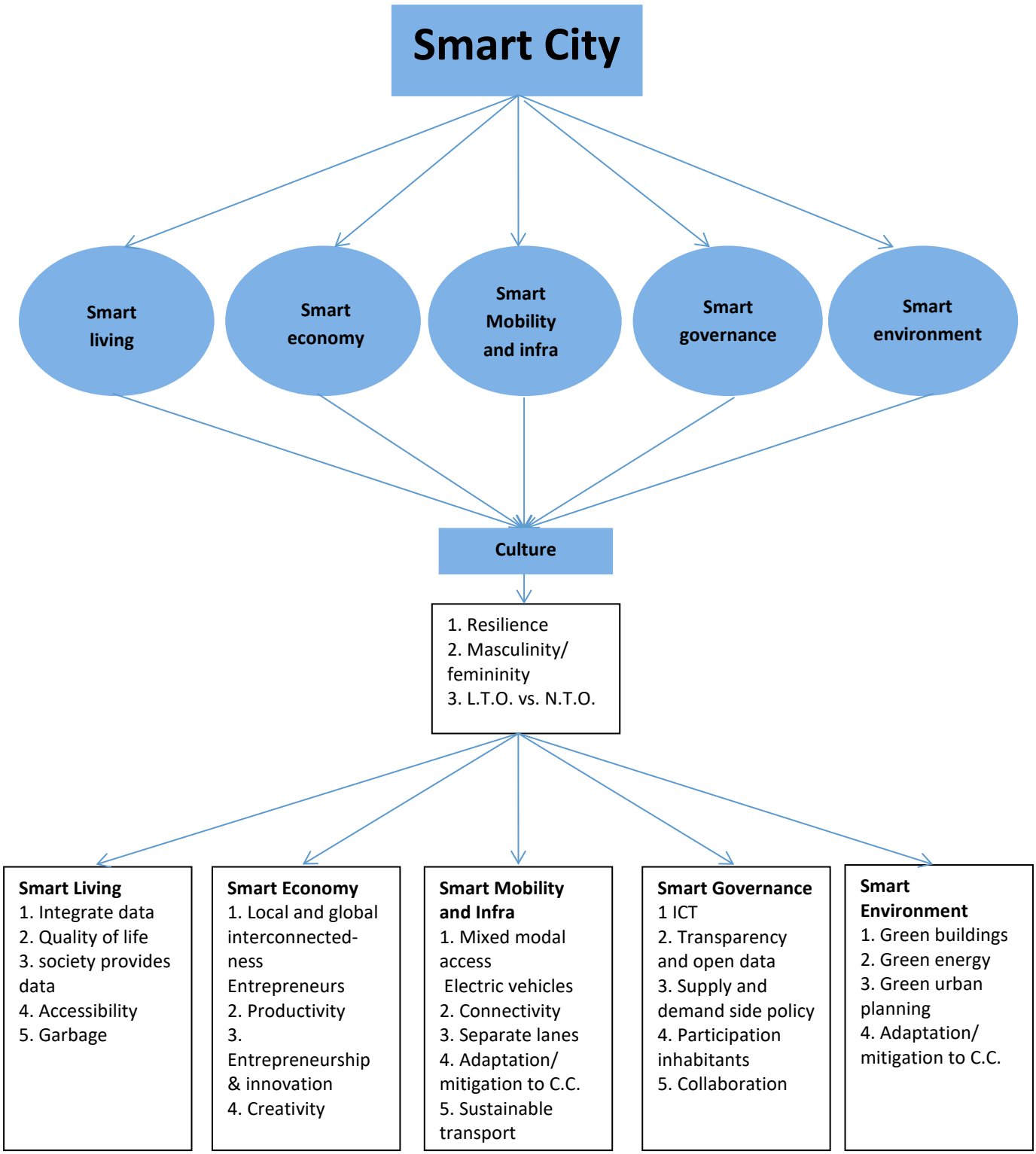

Table 11 Conceptual framework adapted

7. Conclusion

Smart Cities is a concept that has got attention from cities worldwide. The Smart City concept strives for the development of cities according to six principles being Smart Environment, Smart Living, Smart Mobility and infra, Smart People, Smart Economy and Smart Government (research question one) that each incorporate three variables and strives to be applicable in every city around the world. The principles The Smart City concept can broadly be called a globally applicable concept. However, the research indicated several aspects that need to be taken into account in the concept in order to really become globally applicable to every other city in the world (Research question three).

A case study has been conducted with the city of Can Tho located in the Mekong Delta in Vietnam being the city of interest. The case study served as a reference point to find out which principles are already present in Can Tho and which principles are not present. Based on interviews with expert in the field of water management and architecture, it can be concluded that the Smart City is indeed in need of adaptations to actually become a concept that is useful for every city in the world, regardless the economic situation.
The principles that have been found as being present in Can Tho is only limited to the principle of Smart Living. The principles of Smart Government, Smart Environment and Smart Mobility and Infra have not been identified as being present in the city. The presence of Smart Economy is the most difficult to describe. The productivity of Vietnamese inhabitants differs from inhabitants of The Netherlands. The local and global interconnectedness of the city is only limited while the amount of entrepreneurs in the city is significantly present (research question two).

Culture is an important aspect that is focussing on social aspects of any particular city.
There is no attention paid to the cultural aspect of a city in the current Smart City concept.
Culture is a broad topic but the recommendation of this report has come up with three variables of which to focus on within the cultural principle (Research question four). Resilience is one of the additions within culture. This is however broad and must therefore be limited to the capacity of inhabitants to deal with difficulties that arise within the city and to overcome the related effects.
Masculinity is the value that the inhabitants incorporate regarding materialistic aspects being ownership of cars, amount of power and the type of function within a company as well as the value of social relations. Western countries are much more individualistic compared to less developed countries who value social relations as more important.
Long term orientation is an aspect that is more important in developed countries since the economic situation is more stable compared to developing countries. Less developed countries therefore incorporate a much more short term orientation towards urban developments.

As stated before, the concept already is a valuable model for western countries to develop into a Smart City.
However, because of the economic situation, it is much more difficult for less developed countries to fulfil to the criteria of the Smart City concept. The current concept must take the local situation of the city into account and with that, the reason of a city to become a Smart City. This is also in relation to the cultural aspect that is elaborated on already. The problems regarding waste must also be taken into account in the Smart City concept and is included in the Smart Living principle.
Can Tho is much more prone to flooding compared to other cities in the world and has a different focus to develop the city in a Smart way related to cities that are less prone to flooding.
Because it is located in the Delta and thus near the sea, Can Tho has to deal with the effects of developments upstream on the Mekong river. In order to cope with these effects, Can Tho is in need of cooperation with cities and countries located next to the Mekong River to make sure that Can Tho can develop appropriate mitigation and adaption measures within the city and therefore to become Smart. The mitigation and adaption was not a variable included in the Smart City concept yet.

8. Recommendations

Chapter 2.2 is indicating the framework based on the theory of the global Smart City Concept. Based on the research, questionnaires and interviews, it can be concluded that the concept is in need of some adaptations. Table 6 in chapter 3.3.3. is indicating the concepts within the Smart City concept itself, the variables, indicators and measurements. Based on the research, this table is also in need of adaptation.
During the interviews as well as the result of the questionnaire, it became clear that the Smart City concept in not as globally suitable as expected. The case study which can be found in chapter 4 made clear that not every city is able to meet the requirements as indicated and explained by figure 1. Therefore, the concept is in need of some minor adaptations.

Table 11 is the result of this study. It contains adaptations to the Smart City concept.
The main contribution is the principle of Culture. Also included is the aspect of resilience. The capacity of inhabitants to deal with problems e.g. flooding due to high amounts of rain water. What also needs to be taken into account within the principle of culture is the needs of the society. Are the inhabitants of a specific city more focussed on a materialistic society rather than a society with a high variety of social relations and is the position of work, power and materialism important for the society? Culture also differs in the future orientation of the society and governmental bodies. More developed countries incorporate visions with a duration of 50 years or more while less developed countries might look ahead for a maximum of ten years.

The three variables that are already present within each principle of the existing concept has not been adapted. Some of the principles have a variable added to the principle in order to make sure that it is able to meet the global application of the concept.
The adaptations to the variables has been limited to a maximum of five variables per principle.
The Smart Living principle has been adapted with the principle of accessibility. Accessibility must make sure that the inhabitants have access to decent infrastructure and daily needs such as supermarkets nearby.

The cultural aspect is a factor that is missing in the current Smart City concept which is focussing on the most important aspects to develop a city in a smart way. However, the cultural aspect is not specifically taken up in one of the principles. The principles of Smart people and Smart Living be related to culture but even so, the full cultural aspect is missing.
An aspect related to culture that must not be forgotten in the Smart City concept is to keep in mind in what kind of situation the specific city is located in. Western countries are far more capable of transforming cities in a more sustainable way compared to Asian countries. The starting point for a city differs from one another.
As explained before, also the cultural aspect of it plays an important role in this.

Resilience is one of the results of the Smart City concept despite the presence of a concept called 100Resilient Cities. Resilience can be connected with the adaptations and mitigations necessary for a city in order to cope with climate change issues such as more rainfall and an increased intensity of rainfall. But also the adaptations/mitigations taken by a city to deal with droughts and Urban Heat Island effects. Both resilience and adaptation and mitigation are part of the recommended alterations to the existing Smart City concept because of the threat of climate change. Severe weather conditions create the need for more adaptive urban planning, especially in Can Tho. The mitigation in terms of decreasing the carbon footprint while stimulating the usage of sustainable energy is also an important aspect for cities in order to become a Smart City. Both the adaptive and mitigation capacity of a city is an important aspect for the future and absolutely needs to be taken into account.

An aspect that came to light during the research is the perception of inhabitants. The urban planning department of Can Tho does not communicate with local inhabitants of the city effectively enough and therefore lack valuable local knowledge regarding the districts in the city. Keeping in touch with the inhabitants is a way to gather information regarding the current and most important problems that occur in the city. Also the needs of the inhabitants can be expressed during the contact moments which eventually result in improved urban planning strategies. In order to accomplish this aspect, the participation of inhabitants in the Smart Government principle is included.

Array of Things is a new technology which has been installed in Chicago. It is an application which allows researchers and the public to gather live information about the environment, infrastructure and activity. The fact that this application shows real time traffic information and the quality of the environment is an improvement of technology regarding real time information. Can Tho can make use of this application and use the application to (un)consciously educate the inhabitants about the pollution caused by for example motorbikes. Inhabitants might avoid busy streets with traffic lights when the inhabitants notice the amount of air pollution in the areas of the main streets and the traffic lights located on these locations. The AoT might stimulate the decrease of usage of motorbikes which will result in a positive decrease of air pollution and positively benefit the city.

8.1 Further research

In order to conduct a proper quantitative research with the use of SPSS, there is a need for more respondents. The survey has been sent to various inhabitants of Can Tho and have been asked to share the link among other inhabitants. The downside is that not every citizen is able to speak English and therefore able to understand the questions. There is a need for more quantitative respondents to find out whether experts regarding the Smart City concept have the same vision about Can Tho as the inhabitants. The information of the survey did result in a preliminary outcome but in order to be absolutely transparent, more respondents are needed.
Given the limited amount of time to conduct the research and the current lack of transparency of governmental bodies, future research regarding Smart Cities focussing on Can Tho must further elaborate on the availability of policies regarding the Smart City principles and find out whether the government is indeed stimulating the transformation of Can Tho into a Smart City.

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Appendix 1 Possible questions during interviews

1. What do you perceive as being a Smart City?

2. Which aspects of a Smart city are most important for the concept?

3. In your opinion, can the Smart City concept be called a global concept in terms that the concept can be applied to any city in the world?

4. What aspects of the concept make it global?

5. Are there any aspects of the Smart City concept that do not make it global?

6. Are there any principles that need some consideration according to you, and if so, why?

7. I noticed that in Surat, India, they focussed on different principles. Are there any guidelines present within the Smart City concept that make clear to which actions/preconditions a city must fulfil in order to become a Smart City?

8. Mobility and Infrastructure is much more developed in Western Countries compared to Can Tho. How can this principle be evaluated for the global aspect of the principle?

9. Can Tho is a growing city. Which issues regarding the Smart City concept are the most important to develop and how can this be achieved in such a growing city?

10. The IoT (Internet of Things) is what Ho Chi Minh City is mainly focussing on when redeveloping the city. Do you think this is one of the main aspects for Asian countries, and Can Tho in particular to become a Smart City, or should the focus be at a different angle of the Smart City concept?

11. One of the biggest challenges for Can Tho in my perception is to improve the Mobility and infrastructure and to stimulate the usage of more sustainable types of transport(electrical)as well as to increase the usage of natural energy and to decrease the amount of waste by educating the inhabitants. How do you perceive this interpretation in relation to the Smart City concept?

12. Reducing the waste is not taken up in one of the Smart City concepts but when looking at Can Tho, it is significantly relevant. Do you think that the concept must incorporate waste reduction within the concept?

13. Energy production by using sunlight or tidal energy is not common in Can Tho. How can this be stimulated so people use sunlight to produce energy for own consumption in order to fulfil to the Smart Energy principle?

14. Is it important for Vietnam and Can Tho to stimulate the implementation of energy production via Those kind of environmental friendly resources?

15. I have experienced the resilience present in Can Tho. However, the concept of Smart Cities does not take this in to account. There is already a Resilient City concept. How do you perceive the difference between Those two concepts and do you think that the resilience of the inhabitants of a city is also part of a Smart City?

16. Do you have any suggestions or recommendations for me regarding the focus of the research, the Smart City concept, documents that might be relevant or relevant persons to get in touch with?

Appendix 2 Possible questions in questionnaires

The questionnaire included below is focussed on the Smart City concept. Five principles have been identified within this concept. The numbers indicate that 1 =bad, 2=relatively bad, 3= average, 4=relatively good, 5=excellent. The questionnaire will be send to individuals in Can Tho, mainly researchers/lecturers at the Can Tho University, students of the Can Tho University and inhabitants present in Can Tho. The questions below will be transferred to the respondents with the use of Survio and the results will be analysed in a quantitative way.

Question	1	2	3	4	5
1. To what extend does Can Tho incorporate sustainable energy production?					
2. To what extend does Can Tho incorporate accessible public transport?					
3. To what extend does Can Tho stimulate an entrepreneurial environment?					
4. To what extend does Can Tho include nature within the city?					
5. To what extend does Can Tho offer and invest in technological developments?					
6. In your opinion, is Smart Energy important for Can Tho?					
7. In your opinion, is Smart mobility and infrastructure important for Can Tho?					
8. In your opinion, is Smart Economy important for Can Tho?					
9. In your opinion, is Smart Environment important for Can Tho?					
10. In your opinion, is Smart technology important for Can Tho?					
11. Is the availability of Wi-Fi throughout the city of high quality and accessible?					
12. Is the amount and quality of the public transport sufficient?					
13. How important is it for Can Tho to take action and become a Smart City in your opinion?					
14. If you have to grade Can Tho, what value do you attach to Can Tho?					

Appendix 3 Interviews/Questionnaire

Interview Liliane Geerling

I) Ik wilde het skypegesprek op de Ipad doen maar die deed het op de een of andere manier niet.

R) Nee ja maakt niet uit, zo gaat het ook toch?

I) Ja dat is zeker waar, zeker waar. Hee uhm in ieder geval bedankt dat je tijd hebt voor dit gesprek, uhhhm,

R) Ja ik was net op tijd want ik had een uur vertraging haha.
Oh was je met de trein uh ja?

R) Ja ik moest weer rennen, het was echt weer verschrikkelijk. Ja normaal gaat het altijd goed en opeens is er weer van alles bij Lage Zwaluwe en dan gaat ook alles mis en ik had ook mijn telefoon niet bij me dus ik kon ook nog niet eens in de trein gaan skypen want die had ik dus ook nog eens laten liggen thuis.

I) Oh ja kijk zul je altijd zien he haha. Maar zit je nou in uh Vlissingen?
Ja nu zit ik op de HZ maar de treinverbinding is te slecht om goed genoeg te kunnen skypen.

I) Nee nee nee precies haha.

I) Bij ons thuis werkt de wifi om een of andere reden ook niet dus ik moest ook verplaatsen en zit nu bij mijn opa en oma haha.

R) Oke ha haha.

I) Ja ik dacht ik neem het zekere voor het onzekere.

R) Ja

I) Nee maar ja ik ben nu bezig met de pre-master en daarvoor moet ik een scriptie schrijven uuhm en dan krijg je..

R) Welke premaster is dat ook alweer?

I) Spatial Planning!

R) Is dat het zelfde als Judy doet?

I) Nee judy doet iets met sustainable nog iets en Pedro doet wel dezelfde premaster.

R) En Pedro is dus al bezig?

I) Nee Pedro ook met de premaster.

R) Oke dus ook allebei nog in de premaster?

I) Ja precies en Pedro en ik hebben ook allebei hetzelfde brede onderwerp Smart Cities. Alleen uuhm hij doet het dan gericht op de randstad en ik uh ja door de ervaring in Can Tho over Can Tho

R) Oke

I) Dus ja ik dacht ik kan wel weer in Nederland doen maar ik dacht Can Tho heeft mijn interesse dus ik dacht ik doe het daar gewoon over.
Ja mijn onderzoeksvraag heb ik al toegelicht, ofja in de mail beschreven maar die gaat dus over de principles of die te herkennen zijn in Can Tho en ze zeggen dat het Smart City concept wereldwijd toepasbaar is en ik neem dit in twijfel en dat wil ik dus proberen aan te tonen in mijn onderzoek.

R) Ja

I) Ja u hebt veel kennis van Can hjo dus ik dacht ik kan u wel vragen voor een gesprek mede doordat u Living Lab Can Tho, An Giang, Surabaya hebt opgericht. Uhm kunt u voor het gesprek uzelf nog even verder voorstellen?

R) Wie ik ben? Haha?

I) Ja wat je gedaan hebt en wat je van Can Tho weet.

R) Ja ik ben dus pas nog in Can Tho geweest maar toen met een specifieke bril gekeken en dat was voor het verzamelen van plastic uit het water.

R) Uhm.

R) Ik weet niet zo veel van de organisatie 100 Resilient cities op dit moment behalve dan dat we op hun kantoortje een workshop hebben gedaan maarja goed dat is echt dat stelt niks voor het is echt zeg maar twee kamers aan elkaar vast in een vaag gebouwtje niet zo heel ver van CTU en daar zitten drie dames volgens mij. En ja dat is eigenlijk met alle 100 Resilient cities programma's, die hebben niet allemaal direct een bak geld ofzo. Het is meer het doel van de organisatie wat eigenlijk meer uh ja ze worden daar de mensen die daar zitten ze worden deels betaald door andere organisaties als ik het goed begrepen heb dus vanuit overheid of wat dan ook en uhm het was zelfs nog zo dat we hun kamer mochten gebruiken maar we hebben zelf eten en drinken mee genomen dus dat kunnen ze niet eens aanbieden zeg maar dus dat geeft wel aan dat er niet echt budget is.

I) Nee.

R) Maar je kunt hun wel goed gebruiken omdat zij ja een goede naam hebben blablabla omdat als zijj deel zijn van jou ding dan kan het wel deuren openen naar andere overheidsorganisaties.

I) Is toevallig Ms. La een van de drie vrouwen?

R) Ja zou kunnen moet ik even in mijn mails kijken hoe ze heet

I) Ja want ik heb Sabine Voermans inderdaad iemand doorgekregen van Resilient Cities.

R) Ja dat ja dat moet haar zijn.

I) En zij heeft ook mijn enquête keurig ingevuld dus op zich is dat wel fijn.

R) Oh ja dat zal dan wel ja maar ik weet niet meer hoe zeet maar goed ik ben daar nu een ochtend geweest en wij zijn eigenlijk in afwachting we hebben een aanvraag lopen bij uhm partners voor water dat is een rvo programma, Rijks onderneming Nederland en wij zijn dan met Van Hal Larenstijn en de HZ, samen met Long Xuyen, Can Tho University als ik het goed uitspreek en kom uhm Uppcycling on recycled plastic en uuhm recycled park Rotterdam dus een zeg maar bedrijven en kennis instelling en daar zit 100 Resilient cities als ja extra partij bij maar niet zozeer om echt geld te ontvangen omdat ze ook niks in konden brengen zeg maar maar meer als uhm supporting partner en dat zegt de peoples commissie ook en ja dat zouden we eigenlijk komende week horen maar de regering heeft wat meer tijd nodig en we hopen wat meer budget te krijgen voor een jaar onderzoek en de daadwerkelijke uitvoering van de plastic catchers en als dat succesvol is eventueel ook een plan voor een recycled park of iets anders voor floating aquaculture maar dan gemaakt van de uppcycled plastic wat we uit de rivier halen zeg maar.

I) Ja

R) Dus als dat doorgaat, want ik ben echt erg opzoek dus naar betaalde projecten om dat living lab wat meer gestalte te geven wan tin Vietnam is dat gewoon lastig om daar bedrijven zeg maar als betalend partner te vinden ook en Indonesië eigenlijk ook want ja ze zijn dat niet gewend om onderzoeksinstellingen te betalen voor onderzoek.

I) Ik ben met Smart City mij aan het richten op 5 factoren, dat zijn economy, environment, governance, living en mobility and infra maar uhm omdat u nou zegt dat u zich focust op plastic.

R) Ja dat is vanuit dat onderzoek he.

R) Kijk school en vanuit onderwijs kijken we gewoon naar alle problematiek in de Mekong delta en niet specifiek Can Tho maar dat is van de plekken in de delta maar wel wat daar speelt en omdat het snel groeit en de problemen die verstedelijking met zich mee brengt en ja jou eerste vraag net was ja van zijn die principles nou algemeen toepas en ik denk ja wat nou eigenlijk het verschil maakt ja wij zijn vooral bezig met circulaire economie en klimaat adaptatie en mitigatie en dan zeg maar de culturele component daar onvoldoende in is mee genomen dus wat je hier voor ziet du dus ook dat plannen die zijn gemaakt, zoals de Mekong delta plan, ja dat is gemaakt vanuit het Nederlands planningscontext hoe wij strategisch over 100 visies maken he climate change scenarios en dan ja waarom dat niet van de grond komt is omdat ja er zit geen korte scenario of plan bij van wat moet je nu op korte termijn of morgen doen. In Vietnam is het natuurlijk heel erg gericht op overleven en ja als ik morgen maar eten heb en mijn kinderen naar school kunnen en ja die lange termijn planning al heel lang en dat de oerheidsvragen op elkaar afgestemd zijn en samen werken en ja dat is daar niet en dus je kunt niet zon strategisch en dat geld ook vind ik voor de meer fysieke oplossingen dat zeg maar wat je hebt gezien in chalets die bijvoorbeeld vanuit Sweco inmiddels uhm toen Grondmij die hebben charets in HCMC gedaan en die vind ik ook erg westers dus wat wij wat in onze steden past staat bijna een op een en naar mijn idee moet je eigenlijk ook op zoek en dat is lastig hoor, dat heb ik de studenten ook mee gegeven, je moet niet naar Recycled park Rotterdam kijken en dat verplaatsen naar Vietnam. Kijk floating structures passen daar en dat is heel goed hoe meer drijft hoe beter het is met waterstijging en overstroming en dat is in de cultuur dus dat is een goed ding alleen ja een floating park past dat in hun cultuur en hoe ziet het er uit en welke planten en hoe kun je daar upcyclen dus je moet alles uit de lokale context terughalen en hoe komt het nou dat er toch zo veel in het water verdwijnt, nou een van die antwoorden die mij letterlijk gegeven werd was in Long Xuyen van peoples commissie, Ja ik heb al zo veel moeite om het plastic en het afval uit de stad te halen en nu moet ik het ook nog eens uit het water gaan halen.

I) Ja.

R) Het stroomt toch gewoon lekker allemaal weg. Hahaha

I) Je verplaatst het probleem gewoon eigenlijk.

R) Ik zei ja daardoor zijn jullie op een van de 5 meest vervuilende landen die zorgen voor de plastic soep.

I) Ja dat was dus ook een van mijn gedachtes maar daarom dacht ik dus eigenlijk ook het concept zeg maar dat het iets mist, dus het cultuur aspect maar ook uhm de afval in de steden. Uhm

R) Ja de vertrek situatie is zo anders dan wanneer je vertrekt. Kijk wij hebben ook niet altijd een goede afvalverzameling gehad maar inmiddels gaan we iets beter mee om. Iets van de laatste 30 jaar dus we hebben daar een voorsprong. We hebben allemaal schoon water uit de kraan en beste water te wereld en dat is daar allemaal niet. Je kunt het water uit de kraan niet eens drinken, als je al water uit de kraan hebt. Uhm wij hebben allemaal een wc dat gaat allemaal naar een waterzuiveringsinstallatie, niemand poept meer in het water in Nederland zullen we maar zeggen haha dus dat is daar allemaal nog wel dus de vertrek positie op de basisinfra ik weet niet of je de verhalen van Dick Fundter kan herinneren met de Maslov piramide ook nog maar ja die basisbehoefte zijn bij ons op dat niveau dat de vertreksituatie heel anders is dus zul je volgens mij ook met simpelere meer lokale oplossingen moeten komen die goedkoper zijn en op kleinere schaal geïntroduceerd kunne worden. Zoals het verstedelijkingspatroon, ja In Nederland proberen we om compact te bouwen waardoor je ook makkelijker dan uhm duurzame concepten kan implementeren. He een riool is een lineaire bebouwing niet zo als Vietnam heeft in de Mekong Delta, Veel moeilijker om aan te leggen dan als je dicht op elkaar zit met gestapelde bouw. Dus in steden zouden zij dat wel kunnen maar in de Delta zelf kan dat niet, je hebt dat zelf gezien. Overal wonen mensen.

I) Dus eigenlijk kunnen we wel concluderen dat ie vijf principles niet alles omvatten voor het Smart City concept als wereldwijd toepasbaar er missen wel een aantal dingen.

R) Ja volgens mij zul je altijd moeten doorvertalen naar de lokale situatie en vanuit de lokale situatie vertrekken en als je die aansluiting niet maakt dat is waar het nou juist vaak mis gaat in landen die of ja ontwikkelingslanden of landen die dus wel aan het ontwikkelen zijn zoals Vietnam en ook snel, ja dan wat mij op viel nu dit keer deze keer. Ik was 4 jaar geleden, 2 jaar geleden en nu dus het aantal auto's zie ik gewoon met blote ogen stijgen sinds 4 jaar geleden. Als ik dat zelfs zie. In HCMC dacht ik echt huh wat is hier gebeurd. In vier jaar tijd dat is toch niet normaal?!

I) Nee klopt.

I) En uhm dus de scooters verdwijnen dan ook steeds meer enzo.

R) Nou die zijn er voor mijn gevoel wel en dat mensen ook niet meer van de scooters afstappen. Dus ik werd verschillende keren gewoon bijna van mijn voeten gereden dat je gewoon als wandelaar, je hebt steeds minder plek. Je ziet net zo als wat in Indonesië al gebeurd is en net een stapje verder waar de middenklasse net een stukje groter en rijker is ja dat gaat daar nu heel snel gebeuren en dan krijg je in HCMC ook files. Daar heb ik ook voor het eerst in gestaan.

I) Maar als je zo kijk naar uhm naar Indonesië dat nu dus in een keer zo veel beter is geworden. Wat zijn dan voor Can Tho de belangrijkste principes om te voorkomen dat zoiets gaat gebeuren?

R) Ja heel goede stedenbouw, betere planning dus uhm groenblauwe structuren en niet volbouwen in de floodplains he wat je in HCMC ziet en wat ze daar waarschijnlijk toch ook doen dus genoeg

plekken om het water in de flood periods op te slaan en blijven investeren in groen blauwe netwerken en veel betere verkeer sanitatie planning zeg maar. Ja dat zijn die basis dingen.

I) Maar voor mijn onderzoek om dat soort informatie te vinden, dat is vrij lastig. Onder het kopje governance van het Smart City concept, zeggen ze dat onder het kopje governance ook openheid van data moet zijn en dat..

R) Ja dat is in Vietnam ook lastig.

I) Ja maar is dat niet iets voor Can Tho en Vietnam in het algemeen om er voor te zorgen dat landen van buitenaf meer informatie kunnen delen met Vietnam zelf zodat zij het Smart City ook zelf beter uit kunnen voeren.

R) Nou ja weet je het rare is uuuhm de Can Tho de stad die heeft een aantal jaar geleden door uuhm de universiteit Leuven daar zijn twee professoren van de universiteit Leuven die hebben aan dat plan uhm gewerkt en het verhaal was ook die hebben geen winstoogmerk en allemaal van die ingenieursbureau die uhm hoe heet het, verdwaalde steden dus uhm vandaar de universiteit dus. Die hebben naar mijn idee een goed plan gemaakt hoe Can Tho zou kunne groeien en hoe het duurzaam zou kunnen groeien daar vind je online de info over. Ik heb daar in de klas toen ook een les aan besteed bij jullie en maar vervolgens is er dan toch geen doorzettingsmacht daar of ontbreekt het aan lokale capaciteit ondanks dat het een goed plan is met veel oog voor de lokale situatie ontbreekt die connectie met het governance deel. En het ja dat zij zelf een goede organisatie hebben en een van de problemen is dat ik weet uit onderzoek is dat er ook in dit plan toch een soort van Westerse hoe zeg je dat ruimtelijke begrippen zijn gebruikt of hoe wij ook een kaart maken en die zij daar in hun spatial planning niet zo kennen zij werken met andere eenheden, met andere formuleringen waardoor ze er dan eigenlijk ook weer niks meer kunnen. Dus eigenlijk zou die kaart dan ook weer vertaald moeten worden naar het lokale Vietnamese begrippen of hoe zij kaarten maken en wat zij aanduiden voor een kaart en nog iets beter die verantwoordelijkheid en wie is waar verantwoordelijk voor en wie heeft daadwerkelijk zeggenschap of iets over zijn gebied. Dat maakt het heel lastig

I) Dus eigenlijk moet het gewoon beter vertaald worden dus zeg maar hoe wij als Westerse landen een kijk hebben op Smart City moeten wij anders zien als voor een Aziatische stad of Afrikaanse stad.

R) Ja ik denk het moet veel meer vanuit hun eigen cultuur ontwikkeld worden en dan vertrekken van waar de grootste needs zitten. En de grootste needs zitten volgens mij in het droge voeten houden in Can Tho, Ja dat heb je zelf meegemaakt en schoon water en sanitatie dus de basisdingen en een goede afwikkeling ja uhm zeg maar dat bus systeem tussen die steden is best oke maar binnen de stad ja is het toch. Ja hoe heet dat systeem.

I) Grab

R) ja de grabs en taxi oftewel met scooter achterop of auto maakt het natuurlijk wel verschillend.

I) Maar ja inderdaad echt voorkomen van overstroming is inderdaad wel een belangrijk aspect en ja wat u net zegt, we hebben allebei gemerkt dat als er een straat overstroomd is doen ze daar totaal niet moeilijk over. Dan rijden ze daar door heen of ze rijden een blokje om maar het is niet zo dat ze dat zien als een probleem of zo.

R) Nou tot dat je niet meer kunt rijden he ze zijn daar gewend dat de scooter het nog doet en alles hoger wat kan gebeuren dan is er wel een probleem. Tuurlijk mensen zijn veel meer adaptief dan wij en weten ook dat ze het zelf op moeten lossen en dat is ook al een groot verschil. En daar moet je misschien ook al gebruik van maken van die lokale veerkracht die daar vele maten groter is he, kijk

maar naar dat onderzoek wat gisteren eergisteren nee gisteren in het land dat iedereen wijst naar de overheid van uhm ja die moeten het maar oplossen en ik heb zelf geen zin om mijn tuin te ontwaarden en zelf geen zin om te investeren in het lekvrij maken van andere ja dat is een plus. Want zij kunnen gebruiken maken wat mensen al wat meer bekend zijn om zelf met oplossingen te komen.

I) Ja en zeg maar die resilience die is ook niet echt opgenomen in de Smart City concept uhm maar zou u dat dan meer onder smart people of Smart Living kunne plaatsen.

R) Ja ja zeker die lokale veerkracht

I) Want dat Smart Living is inderdaad wel een van de principles alleen als je dan kijkt naar de uitleg van Smart Living is dus echt zeg maar de groene gebouwen zelf en dat ze gelukkig zijn en happy en maar ja ze nemen de resilience niet mee en ik denk eigenlijk dat dat ook iets is wat nou voor het concept wel belangrijk.

R) Ja heel erg, die lokale kennis en ook ja zeg maar de hele levensfilosofie, het boeddhisme, ja ook dat invloed he van uh ja veel meer accepteren van dingen soms oom, meer dan wij. Hoe noemen ze dat hier in Nederland, joodschristelijke cultuur haha maar ja dat zijn wel dingen die allemaal invloed hebben of iets land en of mensen het oppakken zeg maar en begrip voor de situatie dat mensen zoiets hebben van ja het is nu eenmaal zo en dat het even vuil word, ja ik wil eerst mijn economische positie verbeteren. Jullie hebben makkelijk praten want jullie hebben al een goede economische positie e ja dat is bijna in alle ontwikkelingslanden dat wij hun wijzen op hun verantwoordelijkheid voor climate change en dan zeggen zij ja jullie hebben al 100 jaar geld weet je wel ja dat is heel kort door de bocht maar ja het is waar dat westerse staten die beloofd hebben met de climate change agreement te investeren in die landen en de rest blijft ook achter want je ziet dat landen ook in hun eigen land nog niet genoeg geïnvesteerd hebben. Je moet eerste beginnen bij je eigen land.
Ja en dat mis ik eigenlijk altijd een beetje in die overall concepten, die lokale culturele componenten en de kracht, dat kan iets sociaals, cultureels zijn nouja.

I) Ik heb ook gemerkt dat er in Can Tho heel veel kleine eenmanszaakjes of familiezaakjes zijn vooral op Ninh Kieu Quay. Hoe Kijkt u aan tegen de economie. Is die goed ten opzichte van andere steden in Vietnam of is er ruimte voor verbetering?

R) Oeh dat weet ik niet of die goed is, uhm ja wat ik zeg maar ja er zijn natuurlijk plussen en minnen. Plus is natuurlijk uhm dat mensen een netwerk hebben dus de netwerkstructuur is goed en voor resilience ook weer. Want als het een jaar niet goed gaat dat je neefje dan helpt of je broer of je vader dus die mensen ;leven minder individualistisch, nou dat is denk ik een plus. En dan zeker social resilinece. Uhm het kan ook een plus zijn dat je daar naar toe gaat van uhm wat in Nederland nu langzaam begint he de sharing economy dat we niet allemaal meer een boormachine in de straat als eentje een boormachine heeft en een persoon een grasmaaier en de andere persoon een ruitenwisser ik zeg maar even kunne we ook delen en waarom zouden we allemaal zo veel spullen hebben. Nouja dat is iets waar zij bijvoorbeeld al voor op kunnen zijn. Uhm wat je nog wiet als veel in Vietnam, ik weet niet specifiek Can Tho misschien wel een beetje is die monocultuur dus diversificatie allen nu komen er vaak goedkope dingen he gewoon een Nike T-shirt eh die een fabriek willen bouwen in Vietnam is gewoon goedkoop maar dat heeft niks met de lokale kracht van de economie te maken en daar hebben we het eigenlijk in de lessen ook over gehad. Als je die kracht van dat landschap dus ja wat er allemaal geproduceerd kan worden je een positief iets kan opzetten waardoor er meer opbrengst is zodat het inderdaad meer circulair word en dat er van afvalproducten zoals de schilletjes van rijst of weet ik veel wat of van de wat rijkere producten dan alleen rijst maar wat meer speciale variatie dus ja gewoon iets meer de diversiteit het uit op zich wel dat het concept

vanuit scenarios vanuit het Mekong Delta Plan die zijn zo slecht niet hoor dat is vind ik wel goed uitgedacht.

I) Sjoerd die wil daar volgens mij ook iets mee gaan doen in zijn thesis voor zijn master hij heet bij Royal HaskoningDHVe en gesprek gehad hoorde ik laatst.

R) Oke leuk.

I) Maar, zeg maar de stad zelf Can Tho is wel groeiende op dit moment vind ik de mobiliteit en de infrastructuur vind ik redelijk ik bedoel je hebt gewoon driebaanswegen in de stad zelf ja dat vind ik niet slecht.

R) Nee dat is een groot verschil met die andere stad Long Xuyen dat is allemaal wat kleinschaliger qua infrastructuur dus daar zie het al wat drukker en wat meer opstoppinkjes dus er zit wat ruimtelijke overmaat in Can Tho zou je kunnen zeggen.

I) Ja maar uhm omdat het zo groeiend is denk ik wel dat het in toekomst proberen op kan leveren omdat je de wegen niet echt meer kan uitbreiden ofzo. Uhm, hoe kijk je aan tegen de toekomst van de stad en de infrastructuur. Hoe kunnen ze dat groener, beter of wat mist er bijvoorbeeld op dit moment voor de toekomst?

R) Jaa wat me opvalt is dat er nog heel veel open riool is. De waterkwaliteit is echt niet oke het gebruik van water is juist heel positief dus als vervoernetwerk he dat is gewoon beter als de wegen dus laten ze dat vooral zo houden en dat je dat ook zo kunt behouden en dat je wat efficiënter moet verdichten want ja er zijn toch nog heel veel niet zeg maar efficient gebruikte ruimtes qua bebouwing dus efficiënte bebouwing. En ja al je dat gelijk op een goede manier doet uhm met uhm he sustainable building en weet ik het wat allemaal.

I) Ja dat is misschien..

R) Daar zijn genoeg concepten voor en dan kun je genoeg dichtheid creëren op hetzelfde oppervlak. Nu kun je de ruimte die nodig is voor het vasthouden van water tijdelijk en het bergen, die hebben ze hard nodig. Ze moeten vooral niet ten koste gaan daarvan. En je ziet nu ook dat veel.. ik ben met twee jongens die er nu zitten een boot gehuurd en een heel eind gevaren en dat al die kleinere kanalen daar zie je echt veel mensen nu die wat geld hebben en lapje grond hebben en daar een villa neerplanten ja dat is allemaal heel leuk maar niet heel erg efficiënt.

I) En u zei in het begin ook dat de connectiviteit van Can Tho naar HCMC met de FuTa (Phuong Trang) bussen en ook met vliegveld dat ze hebben dat is prima en in HCMC heb je ook echt openbaar vervoer maar in Can Tho heb ik niet echt het idee dat daar nu bussen rijden of echt openbaar vervoer is. Ik heb een keer een bus gezien die stopte bij de universiteit, maar verder…

R) Je ziet het niet duidelijk nee. Daar hebben de meeste mensen ook een scooter uiteindelijk en is het ook goedkoper helaas. Net als in Nederland eigenlijk alhoewel wij dan wel heel veel OV hebben maar.

I) Ze hebben nu wel die Grab, ik denk wel dat dat een hele goede oplossing is.

R) Uhm Ruud, Ik kijk even naar de tijd en ik moet over 5 minuten les geven in helemaal aan de andere kant van het gebouw van waar ik nu zit, als je nog meer vragen hebt kunne we anders tussen de middag nog wel even door. Ik weet niet of dat jou past,

I) Uhm ja ik ben tussen de middag niet thuis helaas. Maar ik heb ook niet zo heel veel vragen meer hoor. Misschien kan ik de vragen die ik nog niet heb kunnen stellen op de mail zetten. Ja als je nog iets hebt waarvan je denkt van ja.

R) Nee dat is prima.

I) In ieder geval bedankt voor de tijd

R) Ja sorry haha.

I) Oh nee dat geeft niet. Ik ben al lang blij dat u tijd had.

R) Oke nou ik hoop dat ik genoeg informatie heb kunnen geven en uhm nou ja succes!

I) Ja dankjewel. Misschien ook nog even leuk om te vertellen. Ik heb volgende week donderdag een gesprek met Joep Janssen.

R) Oooh leuk ja die hebben net een heel netwerk gelanceerd.

I) Nextblue

R) Storytelling. Hij had hier een gesprek met Willem den Ouden , de dean en met mij en samen met zijn compagnon waarmee hij dat doet, dat is weer een vriend van Willem zijn zoon maar uhm, ik had het idee dat heb ik ze ook geschreven want ze vroegen mij om een reactie, ik vind het niet geheel een ja zoveelste website met en ik had het idee dat dat storytelling meer als concept dat je daar wat makkelijker kon inhaken met je eigen verhalen en met bronnen en vermeldingen ofzo maar goed het is een ontwikkeling. Maar leuk. Hij heeft ook weer gastlessen gedaan pas.

R) Nou succes. Als je nog vragen hebt moet je dat maar even via de mail doen begin volgende week. Moet je maar even laten weten.

I) Ja doe ik.

R) Oke succes!

I) Dankjewel,

I) Doei.

Reflection conversation Liliane Geerling

Culture and resilience is not taken up in the Smart City concept or not taken into account when applying it to cities. The plans made by Western businesses and universities need to be translated to the culture of the country in which the city is located in order to be successful. The Mobility and Infra principle is not present in Can Tho. There is no public transport within the city either by bus or tram/trains. Transportation is mainly done via motorbikes and cars. Energy production within the city cannot be identified and neither the ‘’green buildings’’.
Geerling could not indicate the quality of the economy of the city.

Interview Joep Janssen 17-05-2018

J) Ik dacht dat je er al zat!?

R) Nee ik had vertraging.

J) Oh ja want in de eerste mail stond dat je er om 09.19 zou zijn.

R) Ja klopt maar er viel dus een trein uit en daarna had de volgende trein een kwartier vertraging. Vandaar dat ik een paar minuten later ben.

J) Want waar moet je vandaan komen dan aangezien je in Tilburg vast stond?

R) Geldrop, Vlak bij Eindhoven.

J) Ah oke ja dat ligt dicht bij Eindhoven. Ik kom oorspronkelijk uit de buurt van Den Bosch. Mijn broer woont nu in Eindhoven. Strijp S heet dat geloof ik.

R) Ja dat is wel een leuke wijk om te wonen tegenwoordig!

(Kopje koffie besteld en een tafeltje uitgezocht)

J) Leuk is dit he dat je op stations tegenwoordig een restaurantje of cafeetje hebt waar je kan eten en drinken maar ook de mogelijkheid biedt tot vergadering of interview!

R) Ja dat is het zeker je ziet het inderdaad steeds meer! In Arnhem hebben ze zelfs kantoortjes op het station die je kan gebruiken volgens mij.

J) Ja ik weet niet zo heel veel over het Smart City concept als jij waarschijnlijk en ik heb je vragen ook uitgeprint. Ik weet echt diepgaand over het onderwerp niet al te veel maar ik heb wel vier jaar in Vietnam gewoond dus daar kan ik je zeker mee helpen.

R) Ah oke 4 jaar?! Ik dacht een half jaar.

J) Ja vier jaar. Eerst twee jaar bij Vo Trung Nghia. Dat is een architectenbedrijf voornamelijk voor Ho Chi Minh. Daarna twee jaar in Vietnam om dit boek te schrijven.

(pakt het boek 'Living with the Mekong er bij)

J) Maar wat is precies het onderwerp wat jij doet?
Want jij hebt ook op de HZ gezeten toch?

R) Ja ik heb eerst vier jaar Delta Management gedaan op de HZ inderdaad en nu doe ik de premaster spatial planning met als master Cities, Water and Climate Change. Delta Management was meer gericht op water in rivieren en bij de kust en dit op water in steden. Dus hoe steden zich aan kunnen passen aan het klimaat en meer of minder regen.

J) Oke en dat is een tweejarige master?

R) Nee de premaster duurt een jaar dus dat is nu bijna klaar en de master zelf duurt ook een jaar. Dus in totaal wel twee jaar bezig voor de master.

R) Maar bij de HZ mocht je zelf met een onderzoek komen. Zolang dit maar aansloot bij de studie. Hier moet je inschrijven op verschillende thema's en binnen die thema's mag je dan wel zelf met een onderwerp komen. Ik heb er dus voor gekozen om mij ter richten op het feit dat beweerd wordt dat het concept wereldwijd toepasbaar is. Ik kijk dus of de principles zoals ze beschreven zijn voor het Smart City concept ook echt toegepast kunnen worden op elke stad in de wereld. Ik ben zelf dus in Can Tho geweest en had het idee dat deze principles niet allemaal aanwezig waren. Dat blijkt nu ook uit de gesprekken en de survey's die zijn ingevuld dat er wel een aantal dingen missen in Can Tho.
Ik kijk dus of er mogelijkheden zijn om het concept echt wereldwijd toepasbaar te maken.

J) Ja oke. Ik begin maar meteen met een foto uit het boek er bij te pakken van de huizen in Can Tho. Je ziet dat de huizen heel smal en hoog zijn. Dit geeft heel veel schaduw. In de steegjes want er zijn ook heel veel steegjes tussen de huizen. Dit heeft dus een verkoelend effect

R) Ja maar als je echt op de straat loopt dan merk je gewoon het urban heat island effect. Zo veel asfalt en heel weinig groen in de stad.

J) Ja dat is zo maar de vorm van de huizen bieden heel veel schaduw he. Je ziet dat overal in Vietnam van die smalle huizen die dicht tegen elkaar staan en heel hoog gebouwd zijn. Hierdoor kunnen er ook meer inwoners wonen in een stad. Eigenlijk zie je hier dus al dat Can Tho wel de potentie heeft om een Smart City te worden.

R) Ja en de platte daken hebben potentie om gebruikt te worden voor opwekking van duurzame energie zoals zonnepanelen. Mits het design van het huis het toe laat.

J) Ja dat is inderdaad ook waar. De meeste hebben ook al wel een zonnepaneel op het dak alleen die wordt alleen gebruikt voor de boiler dus voor warm water.

R) Ah oke dat wist ik niet. Ik dacht dat ze eigenlijk geen zonnepanelen kenden in Can Tho.

J) Ja en wat je ook ziet, ja misschien niet echt groene daken maar je ziet wel planten op de bovenste verdiepingen van de huizen. Maar ja die planten zitten wel in bloempotten dus is ook weer niet echt groen.

J) Wat je tevens ook nog ziet is dat de huizen heel multifunctioneel zijn. Bijna elk huis heeft wel een kapperszaakje of winkeltje of restaurantje op de benedenverdieping. De rest van het huis wordt dan echt gebruikt om te wonen.
Dit geeft ook echt aan dat Can Tho en Vietnam wel echt de potentie hebben om een Smart City te worden.
Hier in Nederland zie je dat ook. Eerst was deze straat he als je hier het station uit loopt aan de voorkant, alleen maar bedoeld voor het werk. He dus kantoren. s 'Avonds nadat de werknemers klaar waren was hier helemaal niemand meer te vinden. Allemaal lege panden. Nu zie je wel dat ze het hebben omgebouwd en dat er nu dus ok mensen wonen in dit gebied wat vroeger dus echt alleen puur zakelijk werd gebruikt.
In Can Tho zie je dus dat het echt wel allemaal mixed use is dus dat biedt wel echt mogelijkheden om uit te groeien tot Smart City.

R) Wel is het zo dat het vaak de Westerse landen zijn die uitgroeien en de capaciteit hebben om tot een Smart City uit te groeien. Je ziet dit zelden in een ontwikkelingsland.

J) Ja die hebben de means inderdaad en Vietnam heeft dat bijvoorbeeld niet.

R) Ook heb ik heb vernomen van een persoon waar ik veel mee op trok toen dat de prijs van huizen bepaald word oor de breedte van het huis. Dus hoe breder het huis hoe duurder het is. Vandaar dat alle huizen zo smal zijn.

J) Oke ja ik weet niet precies hoe dat zit.

R) En als je dan aan een driebaansweg een huis wil laten bouwen dan kost dat nog veel meer om in de breedte te gaan.

J) Ik heb bij Vo Trung Architecten gewerkt 2 jaar en daar heb ik gesproken met een architect en die zei nog iets over de stedenbouw.

J) (Zoekt citaat)

J) Ja hier kijk: Joep laat mij een stukje lezen uit het boek 'Living with the Mekong'' waarin een architect verteld dat het voor Ho Chi Minh belangrijk is om de bomenrijen en het water te behouden.

R) (Lach kort om het woord bomenrijen).

R) Mooi dat hij het woord bomenrijen gebruikt aangezien die eigenlijk bijna nergens te vinden zijn.

J) Ja maar hij heeft dus inderdaad wel door het wel belangrijk is voor een stad om ook rekening te houden met groen en blauw.

R) Ja dat is mooi om te lezen.

(In het citaat staat onder andere dat overheidsdiensten onderling elke ene masterplan hebben voor de stad die elkaar sterk overlappen. Ze werken zonder overleg met elkaar samen. Nam Son (naam van de architect) wilde meer dichtheid van woningen en kantoren en voorzieningen langs de grote infrastructurele projecten. Ook geeft hij aan dat de typische kenmerken van Ho Chi Minh Stad moeten blijven bestaan, het stadsleven met bomenrijen en winkelhuizen. Maar zorg in ieder geval voor veel groen en blauw, dan blijft de stad droog.)

R) Is dat misschien een van de redenen dat een master plan gemaakt door een westers land niet doorkomen?
Zoals die van Leuven wat best een goed master plan leek te zijn, ook rekening gehouden met de cultuur en hoe het land in elkaar zit, dan uiteindelijk toch niet geïmplementeerd wordt?

J) Oh het Leuven plan heb je dus al gezien?

R) Ja inderdaad.

J) Ja dat kan inderdaad. Maar zo zijn er wel meer plannen he zoals het Mekong Delta Plan ik denk dat je daar wel van gehoord hebt?

Ja dat klopt die hebben we in de lessen behandeld.

J) Ook is het zo dat private partijen veel invloed hebben en de overheid niet echt, Ze weten niet goed hoe ze het aan moeten pakken. Dat is het zelfde met afval. Als er onder de tafel geld word doorgeschoven dan kan eigenlijk alles. Net zo als met afval. Er is wel regelgeving maar word niet nageleefd.

R) Ja bijvoorbeeld Vin van Vincom, Vinpearl en die bedrijven en hotelketens. Hij heeft in zijn eentje bijna heel Hanoi gebouwd. Zou je dan niet met een Vin moeten gaan praten wil je een project van de grond krijgen?

J) Ja wel private partijen ja.

R) Zoals eerder gezegd is het wel zo dat vooral Westerse landen Smart Cities worden. Ik denk ook dat een Vin eigenlijk meer geld wil verdienen en minder bezig is met het implementeren van groen-blauwe structuren. Eigenlijk heel Vietnam. Want wij als Nederland hebben al veel geld. Ik denk dat zij de economie eerst willen laten groeien voordat ze uiteindelijk bezig gaan met het vergroenen en klimaatbestendig maken van de stad.

R) Ik heb ook ervaren dat als je een gesprek wil met iemand van de government dat je dan een brief moet krijgen waarin toestemming is gegeven om de interviews of metingen te doen. Moet je dat dan ook niet hebben als je met een bedrijf als Vin om de tafel wil?

J) Ja dat zou kunnen maar als je de steun van de Nederlandse overheid hebt kan alles. Ofja de Nederlandse ambassade.

J) Dat is ook nog iets trouwens. Vroeger gaf Nederland eigenlijk alleen maar geld weg aan bedrijven en Vietnam om zich te kunnen ontwikkelen. Nu is het vooral vergunningen. Daar zijn ze niet aan gewend dus dat gaat ook nog langzaam.

J) Wat ook belangrijk is voor het concept denk ik, is dat de Mekong ook steeds meer water vervoert. Bovenstroomse gebieden leggen steeds vaker een dijk aan waardoor het water sneller gaat stromen. Het water kan dus niet meer de ‘’uiterwaarden’’ instromen maar word direct afgevoerd.
Can Tho krijgt hierdoor te maken met hogere rivierwaterstanden.

R) Ja en het rioleringssysteem in Can Tho is ook niet al te best. Dus als er hoge rivierwaterstanden standen zijn dan komt dit rivierwater in het riool terecht en uiteindelijk zorgt dit dan weer voor overstromingen in de stad zelf.

J) Ja precies. En Can Tho, en Vietnam, hebben natuurlijk te maken met steeds meer regenval door klimaatverandering. Of ja steeds meer regenval, in ieder geval een hogere intensiteit.

R) Dat ook maar ook met toenemende droogte.

J) Ja dat ook zeker dat hebben ze ook.

R) En met zo weinig groen-blauwe structuren in de stad zal het in de stad alleen maar warmer worden.

J) Ja precies.

R) Deze waterproblematiek is ook niet specifiek opgenomen in het Smart City concept. Tenminste, geen van de principles beschrijft dit.

J) Ik denk wel dat dit van belang is ja voor het concept, voornamelijk vanwege de groter wordende intensiteit van de buien. En het feit dat bovenstroomse gebieden geen rekening houden met de gebieden onder aan de rivier. Ze bouwen dijken waardoor het water sneller wordt afgevoerd.

R) Maar ze hebben ook last van lage rivierstanden tijdens de droge periode.

J) Ja dat ook.

R) Want er worden ook dammen en sluizen gebouwd en die houden juist veel water tegen waardoor ook bepaalde vissoorten uitsterven of niet meer op de plaats van voortplanting kunnen komen.

J) Ja maar dit is meer voor de landen om Vietnam heen.

R) Ja dat bedoel ik ook. De boeren daar onttrekken water van de bassins die door de dammen gemaakt zijn en gebruiken om het land te bewateren. Hierdoor is er dus minder water beschikbaar, vooral in het droge seizoen.

R) Daar deed ik twee jaar geleden mijn onderzoek naar. Over het effect van de dammen sluizen en dijken in Laos, Cambodja, China op een bepaald gebied in Hau Giang genaamd Phung Hiep.

J) Hau Giang?

R) Ja, dat ligt tussen Can Tho en Soc Trang.

J) An Giang ken ik wel maar Hua Giang niet.

R) Nee dat hoorde oorspronkelijk bij de provincie Can Tho maar dat is nu Hau Giang geworden.

J) Word daar nog iets mee gedaan trouwens met dat onderzoek?

R) Ja Geerling (Liliane Geerling van het interview van 09-05-2018) heeft daar een ''living lab'' opgezet met als bedoeling dat er een uitwisseling is tussen de HZ en de Can Tho University. Het doel is dus om kennis te vergaren met onderzoeken die 4-5 jaar duren. Als het goed is zijn ze daar nu nog steeds mee bezig.

J) Ah oke leuk.

R) Het probleem voor mij toen was, mede doordat het gebied nog niet zo lang een provincie is, dat er weinig informatie beschikbaar was. Dus ik moest echt vanaf het begin beginnen met in kaart brengen van het gebied. WISDOM heeft wel echt goede kaarten gemaakt die veel informatie bevatten.
De andere twee studenten die in dezelfde periode in Can Tho waren deden hun onderzoek over inundation in Can Tho. Maar over Can Tho was veel meer informatie beschikbaar dan dat ik had dus dat was voor mij wel even vervelend. Maar ja van de andere kant leer je daar wel meer door.

J) Ja dat is zo!

R) Wat je dus ook hebt is zoutwater dat de delta binnen dringt. Mede door lage rivier standen. Het zoute water is lichter en komt dus verder de rivier in.

J) Ja dat klopt inderdaad en dat bedreigd Can Tho ook wel.

R) Ja nu (twee jaar geleden) kwam het zoute water tot ongeveer 50km de delta in. Can Tho ligt op ongeveer 80km van de kust dus dat scheelt niet veel meer.

J) Ja dat is iets waar Can Tho dus naast de hoge rivierstanden ook mee te maken krijgt. Dus ze hebben last van hoge rivierwater standen, lage rivierwater standen en zout water dat binnen komt.

R) En dan ook nog orkanen.

J) Ja dat ook nog.

J) Maar je ziet ook dat er in Can Tho overstromingen zijn door de hoeveelheid regen. Het riool kan dat niet aan waardoor de straten overstromen. Dat zal jij ook wel meegemaakt hebben.

R) Ja dat klopt. Maar dat is iets wat je dan wel ziet. De Vietnamezen maakt het niet zo veel uit dat een straat is ondergelopen. Ze rijden er toch gewoon door heen of ze rijden een blokje om.
Je ziet ook dat de hoofdwegen, de driebaanswegen, echt hoger liggen dan de zijstraatjes.
Hierdoor krijg je dus dat al het regenwater automatisch naar de lagergelegen gebieden loopt en een overstroming van de straat veroorzaakt
Maar toch doen de Vietnamezen er niet moeilijk over want ze weten toch dat ze het zelf zullen moeten veranderen want vanuit de overheid gebeurd er niet zo veel. Hier in Nederland kijken we allemaal naar de overheid als er iets gebeurd, zo van, los het maar op voor ons.
Zou die resilience noem ik het maar, ook iets zijn om op te nemen in het concept?

J) Ja dat is zeker een belangrijk aspect. Als het water tot zo hoog staat he.

J) (wijst met hand aan hoe hoog ongeveer)

J) Zo'n 37 centimeter, dan is de overstroming geen probleem. Dat is ongeveer de hoogte van het motorblok in elke scooter. Als het die hoogte bereikt dan is het wel een probleem want dan kunnen ze nergens meer heen.

J) Zijn er trouwens echt mensen in Vietnam bezig met resilience en Smart Cities?

R) Ja ze hebben in Can Tho een afdeling van de 100 Resilient Cities. Maar ik had vorige week woensdag een gesprek met Geerling, en zij vertelde dat er daar echt maar drie of vier mensen werkzaam zijn. Ook hebben die geen geld om veranderingen in de stad aan te brengen. Ze worden wel overal bij betrokken en de invloed is er wel, maar die is maar heel beperkt. Ze worden gevraagd om hun standpunten en daar wordt dan ook rekening mee gehouden maar meer ook niet.
En onlangs is er een overeenkomst getekend tussen de Nederlandse ambassade en de Vietnamese overheid voor het delen van kennis over Smart Cities zodat Vietnam ook echt kan ontwikkelen.

J) Wat ook nog een mooie kans is, ik ben maar hardop aan het brainstormen he, is dat Can Tho ook met bovenstroomse gebieden gaat samenwerken om de problematiek bij Can Tho zelf te beperken. Want Can Tho krijgt te maken met de gevolgen van de implementaties van stroomopwaarts. Dus als ze daar iets mee kunnen doen he bijvoorbeeld Can Tho en Phnom Penh, aangezien die aan de zelfde rivier liggen, dan zou dat ook een verbetering opleveren voor Can Tho zelf. Dus samenwerking als een soort indicator.

R) Ja dat is inderdaad een hele goede toevoeging. Net zo als de samenwerking tussen Zwitserland, Duitsland en Nederland met de rijn. Ik had toevallig afgelopen dinsdag een gesprek met mijn begeleider en die vertelde mij dus ook dat voor concept ook gezocht moet worden naar indicatoren
R) die het concept echt aanvulling geven. Denk je dat de indicator gerelateerd aan de waterproblematiek een goede toevoeging kan zijn?

J) Ja dat denk ik zeker want het is toch een groot probleem voor Can Tho.
J) En wat ook nog een groot probleem is in Can Tho is de bodemverzakking van de stad zelf.
Er wordt zo veel water uit de grond gepompt dat de stad zelf aan het wegzakken is.

R) Ja de waterproblematiek heeft mijn interesse inderdaad. Dit komt door mijn Delta Management achtergrond. Ik vind dat heel interessant. En mede door dat wegzakken en de stijgende rivier krijg je alleen nog maar meer problemen.

J) Ja precies. En dat pompen van water gebeurd, ook in de stad door arme families die gewoon een waterput bouwen om water te krijgen, maar vooral door de grote boerderijen en rijstproductie. Die hebben zo veel water nodig. Over wateropvang gesproken. Dat doen ze wel en dat is dan ook wel iets voor het Smart City concept, maar dat doen vooral de boeren maar dat is lang niet genoeg voor de planten. Dat is ook nog wel iets voor het onderzoek. Welke bedrijven er veel water uit de grond halen.

J) In Ho Chi Min City bijvoorbeeld zit Heineken. Maar Heineken is een multinational die wel een fabriek heeft in Vietnam iets ten noorden van Ho Chi Minh City. Die onttrekken ontzettend veel water uit de grond waardoor Ho Chi Min City dus ook aan het wegzakken is. Heineken is een Nederlands bedrijf en dus werkt Nederland ook indirect mee aan het wegzakken van de stad.

J) Ik heb trouwens ook gehoord dat ze tegenwoordig pesticiden gebruiken in de landbouw. Om de oogst levend te houden. Maar dit water vol met pesticiden komt natuurlijk uiteindelijk ook in de rivier terecht en dat is niet goed.

R) En ook niet goed voor de inkomsten van de boeren want ze moeten steeds meer pesticiden gebruiken om er voor te zorgen dat de gewassen blijven.

J) Ja dat is ook zo. Hanoi wil ook dat er drie keer per jaar rijst geoogst wordt. Maar dit is denk ik niet haalbaar. Ook om wat jij zegt, dat dan de wint van de boeren alleen maar achteruit gaat, of zelfs geen winst maken.

R) Ik weet van het onderzoek in Phung Hiep dat ze daar tegenwoordig ook vissen voor gebruiken. Die vissen zorgen er voor dat de boosdoeners van slechte oogst geen effect hebben. Hierdoor hebben ze ook vis die ze kunnen verkopen en dus dubbele inkomsten.

R) Phung Hiep had zelf ook een periode dat de rijstproductie weinig opleverde. Dit is een aantal boeren fataal geworden waardoor ze over zijn gestapt op of shrimpfarming, of sugar cane productie. Sommige zijn zelfs zo hard getroffen dat ze een winkeltje zijn begonnen omdat ze het geld niet hadden om te veranderen van gewas.

J) Oke dat wist ik niet.

R) Zijn er trouwens Multinationals in het zuiden? Zeg maar onder Ho Chi Minh City dus in de delta?

J) Dat weet ik eigenlijk niet. Geen Nike in ieder geval. Misschien wel een groot rijstproductie bedrijf maar dat weet ik zo niet. Ik weet wel dat er een plan was om een economische zone op te richten in Can Tho. Ik weet alleen niet of die er al is of dat die er ook echt komt. Weet jij dat?

R) Nee daar heb ik eigenlijk niks over gehoord.

J) Ik weet wel dat er in Ho Chi Minh City wel een business district is. Daar hebben ze dus wel een economische zone aangelegd.

R) Ja district 7 of 9 is dat toch?

J) Ja geloof het wel!

R) Heb je trouwens ook een rondvaart gemaakt in Can Tho?

J) Ja dat heb ik, nou, ja dat heb ik wel gedaan! Je ziet daar ook de huizen wegzakken he. Dat komt door erosie. Dat is ook een groot probleem in de delta.

R) Ja. Je ziet ook goed hoe hoog het water is gekomen. De boot waar wij in zaten moest echt zes keer stoppen om plastic uit de motor te halen haha.

J) Oh ja dat is niet best. Dat is ook wel leuk trouwens. Ook om mee te nemen in het concept. De afvalproductie en waar dat uiteindelijk verwerkt word. Want elke avond zijn de straten helemaal schoon en word het afval ergens naar toe gebracht. Als je weet waar het verwerkt word kan je ook kijken wat voor invloed dat heeft.

R) Ja daar hebben we het geloof ik met Market and Means, een vak op Delta Management over gehad. Ik geloof dat die buiten de stad lag en ook niet goed afgesloten was. Dus veel afval kwam weer op de straat terecht.

J) Als je nou de locatie kan vinden van dat afvalverwerkingsbedrijf kan dat ook nog wat opleveren. Als dat bijvoorbeeld in het noorden van de stad is kan het zomaar zijn dat een deel van het opgehaalde afval direct weer in de rivier terecht komt. Dan los je het probleem natuurlijk niet op.

R) Dat is een hele goede tip ja!

J) (Joep bladert door zijn boek maar ik zie een foto die mijn aandacht trekt).

R) Hee is dat een map van Ho Chi Minh City?

J) Ja deze kant zijn ze daar nu ook aan het ontwikkelen.

R) Ja dat zag ik inderdaad vanuit de Heineken experience tower. Dat hoge gebouw met dat helikopter platform.

J) Heet die Heineken experience tower ja?

R) Ja die zitten daar nu in dus ik dacht die zo ook genoemd werd. Maar daar ben jij ook wel in geweest denk ik aan de foto's te zien.

J) Nee daar ben ik niet in geweest. Wel mijn fotograaf die ik had ingehuurd om de foto's te maken!

J) Over de rijstproductie gesproken. Die is wel echt heel duurzaam he. In het productieproces word al het afval van de rijst zoals de schillen gebruikt om weer iets anders van te maken. Olie bijvoorbeeld. Dat word dan weer naar een andere fabriek gestuurd en die doen daar dan weer iets mee. De productie van rijst brengt echt bijna geen afval met zich mee. Dit zou je misschien ook wel kunnen linken aan het Smart City concept.
R) Ze kunnen het dus wel in Vietnam, dat duurzaam zijn. Misschien moeten we ze een schouderklopje geven haha.

R) Haha ja wie weet.

J) Nee dat hebben ze niet nodig maar ze kunnen het dus wel. En als je dat nou aantoont dat ze het kunnen gaan ze misschien ook wel dat Smart City concept overnemen en implementeren haha.

J) Dat is ook het geval met oude gebouwen. Deze slopen ze gewoon als ze er iet s nieuws willen neerzetten. Dit is natuurlijk doodzonde want die gebouwen kunnen ook van waarde zijn, maar het is zo goedkoop om een gebouw te slopen en opnieuw op te bouwen dat ze dat natuurlijk doen. He je huurt die bouwvakkers voor een euro per uur in, dat is natuurlijk niks.
Als je dan als voorbeeld Singapore neemt, die hebben voordat al die hoge gebouwen er stonden Chinese wijken. Deze zijn allemaal vervangen door de hoge gebouwen. Nu is er een gedeelte dat niet is vervangen en nog in originele staat verkeerd. Deze wijk trekt nu juist de aandacht van toeristen. Dat is ook iets wat ze in Vietnam door moeten hebben dat oude gebouwen ook van waarde zijn. Toeristen komen daar op af. Het is natuurlijk dood zonde om al die gebouwen te slopen. Als je dat nou duurder maakt dan slopen ze misschien de bovenste verdieping en bouwen daar iets nieuws op waardoor je dan toch nog het mooie oude gebouw hebt.

R) Trouwens, ik was afgelopen december nog in Vietnam met mijn broertje. Die studeerde daar ook aan de Can Tho University dus die ben ik op gaan zoeken. Maar toen liepen we in Ho Chi Minh City en toen wilde ik naar de overdekte markt die ken je misschien ook? Heeft zo'n hele grote rotonde daar voor liggen dicht bij Bui Vien.

J) Ja die ken ik wel ja.

R) Dat plein zijn ze echt helemaal aan het verbouwen. Is een grote bouwput geworden voor de metrolijn die ze daar gaan bouwen.

J) Oh ja nu al? Ik was daar afgelopen zomer en toen was het plan er al wel een tijdje maar waren ze nog niet aan het bouwen. Dat is echt een heel groot project.
Ook grotendeels betaald dor de Japanse overheid he. Die steken daar heel veel geld in dat project.

R) Ik denk dat het wel een goede zet is om de metro aan te leggen in Ho Chi Minh. In Can Tho Misschien ook wel maar dat is misschien een te kleine stad.

J) (Joep zoekt ondertussen wat plannen op en contactpersonen en zet deze op de mail voor mij).

R) Wat vind je trouwens van de connectiviteit van Can Tho ten opzichte van andere steden?

J) Ze hebben wel een vliegveld en een busverbinding maar deze is niet al te best.

J) Je doet er drie tot vier uur over om naar Ho Chi Minh City te komen.

R) Dat wel maar de verbinding is op zich wel goed toch, je betaald niet al te veel voor zo'n lange busreis.

J) Dat is wel zo maar ik vind dat de connectie beter kan ondanks die oranje FuTa bussen.
Ze rijden ook gevaarlijk hard en roekeloos.
Openbaar vervoer is daar ook niet nodig trouwens. Iedereen heeft wel een scooter.

R) Ja en ook steeds meer mensen een auto.

J) Ja alleen die zijn erg duur. Ik sprak iemand die bij Audi werkt en die vertelde dat de auto's erg duur zijn. Ik geloof dat een Audi hier €50.000 kost en in Vietnam is dat het dubbele door de invoerrechten. Dus de mensen die daar ene auto hebben zijn heel rijk.

R) Ik ken iemand met wie ik veel optrok toen ik daar zat, die heeft een kleding/schoen/parfumeriezaak en zij heeft ook een auto. Een Kia. Maar zij vertelde dat dus ook dat de auto's daar erg duur zijn. Ik kon me ook niet zo goed voorstellen dat zij met die kledingzaak zo'n dure auto kon rijden. Maar ja heb er verder niet naar gevraagd of het echt alleen verdiend was met de kledingzaak.

J) Haha ja misschien heeft ze er nog iets bij of schuift ze geld door.

R) Ja dat weet ik niet. Ik vond het fijn dat zij die auto had haha, verder heb ik er maar niet naar gevraagd.

R) Volgens mij hebben we alle onderwerpen wel behandeld op dit moment.

J) Ja dat denk ik ook.
Wel heb ik nog iets. Ik heb samen met Niels van Bergen een nieuw platform opgericht: NextBlue. Hiervoor schrijven we artikelen gerelateerd aan de waterproblematiek.
We vinden dat er te weinig geluisterd wordt naar de wensen en kennis van burgers van een land en te veel focus is op de scientific approach voor het maken van plannen.
Daarom is NextBlue een storytelling platform dat ook de kant van de burgers belicht. Want de onderzoekers die komen bijvoorbeeld een week naar een locatie toe en dan brengen ze de kennis van Nederland mee en daarna gaan ze weer weg. Er moet wel iets mee gedaan worden. Via storytelling willen we duidelijk maken dat de mening en kennis van burgers ook erg belangrijk is voor het ontwikkelen van een stad en niet alleen de scientific approach.
We willen daar dus ook meer studenten bij betrekken die naar een ver land zijn geweest zodat niet alleen Niels en ik daar artikelen op plaatsen maar ook andere. Studenten kunnen dan online komen en ook gezien worden en echt inbreng hebben in het werkveld,.

R) Ja de meeste onderzoeken die ik tot nu toe gedaan heb is voor zo ver ik weet niet heel veel meer mee gedaan op dat living lab na dan. En zo heb je ook meteen een connectie met het delen van kennis met bijvoorbeeld het verdrag tussen de Nederlandse ambassade en Vietnam over Smart Cities.

J) Ja en zo willen we dus ook meer studenten bereiken zodat ze ook iets doen met de kennis die ze hebben zodat die ook niet verloren gaat.
Daarom wil ik ook aan jou vragen of je eventueel interesse hebt om een artikel te schrijven over jouw bevindingen, ervaringen van de tijd dat je in Can Tho gewoond hebt.

R) Ja lijkt mij een heel leuk idee. Hebben jullie bepaalde richtlijnen voor de artikelen?

J) Nee we zijn echt net een paar weken bezig en weten ook nog niet helemaal precies hoe we het in willen vullen. Er staan nu een aantal artikelen online. Ook een van Niels die in Bangladesh is geweest. Je kan ook reageren op een artikel zodat er ook een discussie ontstaat op het platform zelf.
Maar maximaal een artikel van 900 woorden en als er foto's bij zitten van je tijd toen dan helpt dat ook om het aantrekkelijk te maken om te lezen.
Je kan bijvoorbeeld ook een filmpje maken over je bevindingen dat is natuurlijk ook hartstikke leuk!

R) Haha ja dat zeker, alleen heb ik geen filmmateriaal van twee jaar geleden meer, wel afbeeldingen.

J) Nee maar dat is goed.

R) Ik moet dit rapport 26 juni inleveren dus daarna ga ik wel bezig met het schrijven van een artikel over twee jaar geleden en over het onderzoek naar Smart City Can Tho.

J) Dat is goed! Leuk!

R) Goed, bedankt voor de tijd en de informatie!

J) Geen probleem, jij ook bedankt!

Questionnaire Ms. La

Dear Ms. La,

Thank you for taking time to answer the following questions for me!
In order to make some of the questions clear, I will briefly explain the research to you.
Within the Smart City subject, we as students have the opportunity to choose a subject that interests us the most. I have been to Can Tho and I have lived there for half a year so I decided to do the research about Can Tho again. Within the Smart City concept, there are a variety of possibilities in terms of principles connected to the concept. I have chosen to focus on the principles of Smart Government, Smart Economy, Smart Environment, Smart Living and Smart Mobility and Infra.
The choice for the five principles is based on the fact that Can Tho is a growing city and is becoming more and more important for the economy of Vietnam.

1. What do you perceive as being a Smart City?

In my mind, Smart city is a city that government and people connect and deal with problem through technical automatic system. It have huge and available data, it can recognize problems through these data, warn and give option for solving problem. It could help city leader make decision from these analyses. It also can simplify the procedure.

2. Which aspects of a Smart City are most important for the concept?

- human awareness
- related policy to collect/share/update data, to recognize procedure on internet is a formal document.
- data collection
- software
- hardware
- internet secure

3. In your opinion, can the Smart City concept be called a global concept in terms that the concept can be applied to any city in the world?

No. Because the definition of smart is different from city to city base on their background.

4. What aspects of the concept make it a global concept?

The “ideal” smart and future desire maybe would make it become global concept

5. Are there any aspects of the Smart City concept that do not make the concept ‘’global’’?

The background of specific city of these aspect would make it not “global”
- human awareness
- related policy to collect/share/update data, to recognize procedure on internet is a formal document.
- data collection
- software
- hardware
- internet secure

6. Are there any principles that might need some reconsideration according to you, and if so, why?

I don’t know

7. I noticed that in Surat, India, they focussed on other principles. Are there any guidelines present within the Smart City concept that make clear to which actions/preconditions a city must fulfil in order to become a Smart City?

No guidelines yet

8. Mobility and infrastructure in Western countries is much more developed compared to Can Tho. How can this principle be evaluated for the global aspect of the principle?

I don’t know

9. Can Tho is a growing city. Which issues regarding the Smart City concept are the most important to develop and how can this be achieved in such a growing city?

Those are Smart Government and smart transportation.

10. The IoT (Internet of Things) is what is Ho Chi Minh City is mainly focussing on when redeveloping the city. Do you think this is one of the main aspect for Asian countries and Can Tho in particular to become a Smart City or should the focus be at a different angle of the Smart City concept?

I like the IoT concept, I enjoy the convenience from IoT, I hope that city could manage public things like IoT. However, I don’t want IoT influent to deep into my personal life. In summary, I think that Asian countries and Can Tho should include IoT in smart city but limit in city public service control.

11. One of the biggest challenges for Can Tho in my perception is to improve the Mobility and infrastructure and to stimulate the usage of more sustainable types of transport(electrical)as well as to increase the usage of natural energy and to decrease the amount of waste by educating the inhabitants. How do you perceive this interpretation in relation to the Smart City concept?

I have no idea.

12. Reducing the waste is not taken up in one of the Smart City concepts but when looking at Can Tho, it is significantly relevant. Do you think that the concept must incorporate waste reduction within the concept?

yes

13. Energy production by using sunlight or tidal energy is not common in Can Tho. How can this be stimulated so people use sunlight to produce energy for own consumption in order to fulfil to the Smart Energy principle?

City should have some motivation policy.

14. Is it important for Vietnam and Can Tho to stimulate the implementation of energy production via Those kind of environmental friendly resources?

Yes, but very difficult.

15. I have experienced the resilience present in Can Tho. However, the concept of Smart Cities does not take this in to account. There is already a Resilient City concept. How do you perceive the

difference between Those two concepts and do you think that the resilience of the inhabitants of a city is also part of a Smart City?

Resilience is a desire outcome that we want while dealing with shock and stress.
Smart city is a series of solutions that we want to achieve resilience. When design smart system, we should include resilience, shock and stress

16. Do you have any suggestions or recommendations for me regarding the focus of the research, the Smart City concept, documents that might be relevant or relevant persons to get in touch with?

With your research topic, I have no idea.
Your survey and interview is good. I have comments for you.
While I do the survey and interview, I find it difficult for me because of two reasons.
* I just have briefly and primary concept about smart city. Therefore, I could answer questions related to “how”,…
* My English is not very good. Although I use Google translate, I couldn’t clearly understand your question.
I suggest that you should have a comprehensive Vietnamese version (it should be comprehensible, because the translator may not really understand your question). You should find out key person to do your survey and interview. If you want to apply this survey for local people (I mean not local government or institute), you should divide these questions into small group (something like their preliminary about Smart city group question, their opinion about Can Tho Smart city, their opinion about global Smart city,…) and have a brief introduction for each group. If your stakeholder is local people, I suggest the questionnaire should be more detail.
Best wishes for you!

Reflection on the outcome of the interview questions

Ms. La clearly indicates that the concept of Smart City cannot be called a global concept because it differs from city to city. She also states that there are no guidelines yet for that indicate whether a city can be called smart or not. As one of the most important aspects for Can Tho to become a Smart City she indicates the aspects of human awareness, related policy to collect/share/update data, to recognize procedure on internet is a formal document, data collection, software, hardware, internet secure. Also the IoT is an important aspect for Can Tho and the Smart City concept itself might take up resilience and waste within the concept to really become a global concept.
She also has two comments for me:
1. She has not the deep knowledge about the principles I use for the research.
2. Include a Vietnamese version of the questionnaire.

Result survey open questions

Q1. What do you perceive as being a Smart City?

R1) A city that can cope with water problems

R2) IT application for stakeholder satisfaction

R3) Smart as in able to cope with the problems the city have to deal with. Green-blue structures together with a good quality of public transport.

R4) A city where internet technology will be used to maintain the city.

R5) A sustainable city that has a good functioning managing system for the different aspects of becoming sustainable.

R6) A city which is working towards a sustainable future, including adapting to climate change

Q2. Which aspects of a Smart city are most important for the concept?

R1) Adaptable and innovative

R2) IT and Infrastructures

R3) Green-Blue structures, infrastructure both via water as the road and air, and a government that takes into account the needs of the society

R4) Good connection with the different types of technology

R5) sustainable, climate proof, building with nature, good policy and governance

R6) Management.

Q3. In your opinion, can the Smart City concept be called a global concept in terms that the concept can be applied to any city in the world?

R1) Yes

R2) yes

R3) No, because every city has different concepts. There is no specific meThod as to whether is city smart or not.

R4) Yes, but different cities have different problems. It needs to be adaptable.

R5) Yes, only it has to fit in the vision of the city. If for example a city council does not believe in climate change or sustainability, the city will never become smart.

R6) Yes, every city can become smart

Q4. What aspects of the concept make it global?

R1) Cities all around the world could become more innovative and more resilient against water problems for example, this makes that every city around the world could become a smart city

R2) IT and Infrastructures

R3) The economy. The connection a city has to other cities around the world.

R4) If every city starts to act like a smart city, things will go more effective and efficient. This will combine every city together when trade between the cities can go on a smart way.

R5) Being adaptable.

R6) -

Q5. Are there any aspects of the Smart City concept that do not make it global?

R1) Some innovations in Smart Cities could only work on a local scale, you cannot implement them in another city for example

R2) No

R3) I think that every plan, or city, must be translated to the local culture and characteristics in order to become global.

R4) I don't think so

R5) Not every government will accept it.

R6) -

Q6. Are there any principles that need some consideration according to you, and if so, why?

R1) No

R2) No

R3) Find out where culture and characteristics of a city might be suitable. And look for a government that actively involves the inhabitants

R4) No, I think we first need to make some cities smart.

R5) -

R6) -

Q7. I noticed that in Surat, India, they focussed on different principles. Are there any guidelines present within the Smart City concept that make clear to which actions/preconditions a city must fulfil in order to become a Smart City?

R1) No not really, I think

R2) NA

R3) No there is no guideline as far as I am concerned

R4) a smart city must use information technology to maintain the city. Every tipe of maintenance can be Thought of. But in my opinion one of the bests way to make a city smart is to start with the public transport sector.

R5) No idea

R6)-

Q8. Mobility and Infrastructure is much more developed in Western Countries compared to Can Tho. How can this principle be evaluated for the global aspect of the principle?

R1) you could rate mobility and infrastructure by looking at how far the development of a country is

R2) Global concepts

R3) Translate it to the local characteristics. Can Tho does have decent infra for now. But it cannot be extended when the growth of the city starts to have its effects on the infra.

R4) Can Tho cannot be compared to Western cities in terms of this principle. Other mentality, urban planning is different, means of transportation different, amount of inhabitants different.

R5) The city of Can Tho needs to accept the concept and needs to make a change.

R6) Western countries itself are already more developed than Can Tho. This means to make Can Tho smart you need to start with developing the infrastructure.

Q9. Can Tho is a growing city. Which issues regarding the Smart City concept are the most important to develop and how can this be achieved in such a growing city?

R1) Smart urban planning, this could be achieved in a growing city if different governmental bodies would work together, for example resiliened cities and the infrastructure side of the government

R2) IT and Infrastructures

R3) See answer on question 8. But also Green-Blue structures are important, especially in Can Tho because of the amount of impermeable surface.

R4) Climate change

R5) Starting with developing the infrastructure. After that public transport can be developed and less motorbikes are needed which contributes to make the city smart.

R6) City management, infrastructure, waste management, green spaces and public transport.

Q10. The IoT (Internet of Things) is what Ho Chi Minh City is mainly focussing on when redeveloping the city. Do you think this is one of the main aspects for Asian countries, and Can Tho in particular to become a Smart City, or should the focus be at a different angle of the Smart City concept?

R1) Yes, I think this could be used in Can Tho

R2) Yes

R3) Yes, but I do not know as to whether this might be really relevant and adding value to Can Tho.

R4) I do not know what IoT is, so I cannot judge.

R5) There are many problems that should be solved first.

R6) I think this is one of the main concepts. Redeveloping is important and using internet is a good source to develop the city.

Q11. One of the biggest challenges for Can Tho in my perception is to improve the Mobility and infrastructure and to stimulate the usage of more sustainable types of transport(electrical)as well as to increase the usage of natural energy and to decrease the amount of waste by educating the inhabitants. How do you perceive this interpretation in relation to the Smart City concept?

R1) I think that this perception is what a smart city is about

R2) to make awareness is very important

R3) The interpretation is correct. But electrical transport might be too complicated for Can Tho

R4) Would be nice if more electric cars would be used in Can Tho. Most of the people in Can Tho use their cars and motorbikes for relatively short distances, electric cars would be very useful for this type of driving. However, many people in Can Tho do not have enough money to be able to afford themselves an electric car with charging pole.

R5) I do not know if there will be enough money available for this.

R6) I think this is one of the biggest challenges as well for Can Tho, they can improve a lot on this kind of field

Q12. Reducing the waste is not taken up in one of the Smart City concepts but when looking at Can Tho, it is significantly relevant. Do you think that the concept must incorporate waste reduction within the concept?

R1) Yes, I am a strong believer that cities (especially Smart Cities) should incorporate waste reduction into their city. So also into the concept of a smart city

R2) yes

R3) Yes of course! Waste is a big big problem in Can Tho and Vietnam. But I think one must start with policies or fines or education of the inhabitants about the consequences of waste.

R4) Yes, rivers and canals are heavily polluted.

R5) yes

R6) Yes, for sure

Q13. Energy production by using sunlight or tidal energy is not common in Can Tho. How can this be stimulated so people use sunlight to produce energy for own consumption in order to fulfil to the Smart Energy principle?

R1) The government of Can Tho could subsidise the solar panels for example

R2) Energy from sunlight is relevant for Can Tho city

R3) By policies and by education as well. Show them the (economical) benefits of sustainable energy

R4) Campaigns to make the inhabitants aware of how profitable it can be for them.

R5) There needs to be some kind of funding for this.

R6) Giving subsidy for buying solar panels.

Q14. Is it important for Vietnam and Can Tho to stimulate the implementation of energy production via Those kind of environmental friendly resources?

R1) Yes, because Vietnam is a huge country and eventually the resources for energy will run out so sustainable sources of energy should be used

R2) Yes

R3) Yes, there is a lot of sunlight throughout the year. It would be a shame to not do something with it.

R4) Yes, however it is expensive

R5) Yes, for sure, in Vietnam is a lot of sunlight, so why should we not use that sun light?

R6) It is important, but there are many more problems that should be solved.

Q15. I have experienced the resilience present in Can Tho. However, the concept of Smart Cities does not take this in to account. There is already a Resilient City concept. How do you perceive the difference between Those two concepts and do you think that the resilience of the inhabitants of a city is also part of a Smart City?

R1) I think that resilient city and smart city should work with each other. The resilience of the inhabitant of a city is also part of a smart city

R2) Resilient City concept is a component of Smart city

R3) Both concepts relate to each other. A Smart City strives for resilience eventually by solving the problems of the city.

R4) -

R5) It could be a part.

R6) For sure, a city cannot be smart if the inhabitants are not safe..

Q16. Do you have any suggestions or recommendations for me regarding the focus of the research, the Smart City concept, documents that might be relevant or relevant persons to get in touch with?

R1) Resilient city Can Tho

R2) visit the site (Can Tho city), interview various stakeholders

R3) Look into the Mekong Delta Master plan. There are some good examples.

R4) -

R5) Can Tho resilient cities.

R6) no