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Dongli Lake Eco Info Park

A design proposal to enhance ecological awareness and foster environmental care among the residents of an urban district in Tianjin, China

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ABSTRACT

Dongli Lake is a lake situated in the northeast of Tianjin in China. In the ecologically sensitive area just north of Dongli Lake, a new urban development for around 70 000 people was constructed. Before the transformation the area consisted of wetland, and small-scale agricultural in the forms of fishponds and farming. The area was described as high in biodiversity such as bird-and insect life, thanks to its unique environment.

In 2004 a conceptual master plan for the new urban development was compiled, within what came to be called 'the Dongli Lake project'. Within this master plan an ecological approach was used as one important aspect. The ecological approach focused on preserving much of the original structures of fishponds, wetland, and reed. The purpose was to retain the biodiversity of the site, and stay true to the character of the landscape.

I visited the Dongli Lake project area in 2016, eleven years after the conceptual master plan was carried out. By then, most of the new district was already built and people had been moving in. During my visit, I interviewed some of the residents to find out what they knew about the ecological values on which their home district was largely constructed. From those interviews I got the impression that the ecological awareness in regard to the site was lacking among the residents.

I identified the lacking awareness as a potential problem since knowledge among the habitants regarding a given site's ecology, is a cornerstone in sustainable ecological design. Without ecological awareness among the residents, an ecological landscape project is extremely vulnerable to change that may inadvertently cause its failure.

As a respond to the issue of lack in ecological awareness among the residents, I came up with the idea of designing an ecological information park connected to the area: The Dongli Lake Eco Info Park. The concept of the park was 'ecological knowledge spreading'. The park aimed to enhance ecological awareness with the long term goal of also fostering environmental care in regard to the site, targeting the local population.

SAMMANFATTNING

Background

Dongli Lake är en sjö belägen i nordöstra Tianjin i Kina. På den ekologiskt känsliga platsen just norr om sjön uppfördes en ny stadsdel för cirka 70 000 invånare. Innan denna bebyggelse tillkom så bestod området mestadels av våtmark samt jordbruk i form av fiskdammar och småskalig odling. Området hade hög biologisk mångfald i form av fågel- och insektsliv.

Konsultbolaget Sweco blev 2004 betrodda att konstruera en övergripande konceptplan för områdets utveckling, inom vad som kom att kallas Dongli Lake-projektet. Inom ramarna för denna konceptplan antogs en ekologisk approach som ett av huvudtemana. Denna approach fokuserade huvudsakligen på att till stora delar bevara de ursprungliga strukturerna på platsen, i form av fiskdammar, våtmark och vass. Syftet med detta var att bevara områdets biologiska mångfald i så stor utsträckning som möjligt, samt att behålla landskapets ursprungliga karaktär.

Jag tilldelades ett stipendium från Sida, Swedish International Development Cooperation Agency, för att inom ramarna för detta examensarbete studera Dongli Lake-projektets ekologiska aspekter. Så kom det sig att jag i februari och mars 2016 besökte Dongli Lake projektområdet, elva år efter det att konceptplanen för området tagits fram. Vid tiden för mitt besök var området i stort sett färdigbyggt och människor var till stora delar inflyttade.

Under besöket till projektområdet genomförde jag ett antal intervjuer med invånare i stadsdelen. Syftet med intervjuerna var huvudsakligen att undersöka hur mycket invånarna visste om de ekologiska värderingar som låg till grund för stadsdelens utformning. Från dessa intervjuer fick jag det tydliga intrycket att invånarnas medvetenhet rörande platsens ekologiska grund, var bristfällig. Senare kom jag att diskutera detta med yrkesverksamma i Kina inom stadsplanering och/eller landskapsarkitektur. De var inte förvånande över bristen på medvetenhet rörande de ekologiska aspekterna hos befolkningen. Snarare ansåg de att denna bristande ekologiska kunskap sannolikt var något generellt hos den kinesiska befolkningen. Detta skulle till viss kunna kunna härledas till att miljöutbildningen på kinesiska skolor åtminstone tidigare har varit lågprioriterad.

Jag hade redan studerat litteratur rörande ekologisk design, vilket Dongli Lake projektet kvalade in som. I denna litteratur gjordes tydligt att kunskap hos lokalbefolkningen rörande en plats ekologiska värderingar, vilket leder till anknytning och omsorg om landskapet, är en essentiell del av ekologisk design. Utan denna kunskap är en ekologiskt designad plats väldigt känslig för förändringar, vilka i slutänden kan leda till att platsen oavsiktligt fallerar.

Som ett svar på denna bristande ekologiska kunskap hos lokalbefolkningen kom idén att designa en ekologisk informationspark i anslutning till Dongli Lake projektområdet: Dongli Lake ekoinformationspark. Konceptet för parken skulle huvudsakligen vara ekologisk informationsspridning; dels gällande de ekologiska värderingar som platsen delvis var konstruerad på, dels gällande den allmänna ekologin på platsen som exempelvis dess biologiska mångfald. Ekoinformationsparken skulle syfta till att höja ekologisk medvetenhet och främja miljömässigt omhändertagande hos lokalbefolkningen i Dongli Lake projektområdet. Detta med förhoppningen att på sikt öka platsens ekologiska hållbarhet.

Mål

Det övergripande målet med uppsatsen blev att få generellt ökad kunskap inom ekologisk design, och mer specifikt hur denna kan implementeras. Målet blev också att undersöka och i design implementera hur ekologisk kunskap kan överföras till parkbesökare, med syftet att öka besökarnas ekologiska medvetenhet gentemot en utvald plats.

Frågeställningar

- Vad är den mest lämpade platsen att förlägga en ekologisk informationspark på, i anslutning till Dongli Lake-projektområdet?
- Hur kan en park designas för att på ett lättillgängligt sätt förmedla ekologisk kunskap till parkbesökare, med det slutliga syftet att höja ekologisk medvetenhet och främja miljömässigt omhändertagande hos lokalbefolkningen?

Målgrupp

Uppsatsens målgrupp var stadsplanerade och landskapsarkitekter, samt studenter inom dessa områden. Särskilt för de intresserade av hur man kan arbeta med ekologiskt informationsspridning i park- eller naturmiljö, både på mer traditionella och mer nytänkande interaktiva sätt.

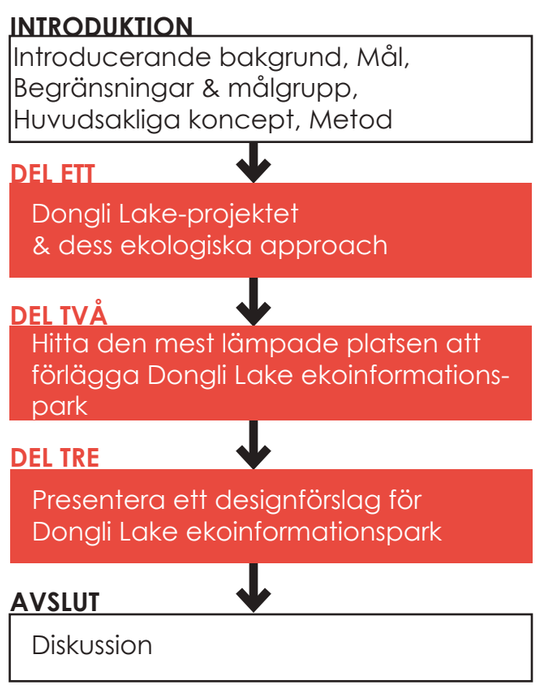
Målgruppen var också beslutfattare inom Dongli Lake-området, samt framtida stadsplanerare och landskapsarkitekter som kan komma att arbeta med området. Detta i synnerhet då jag i slutskedet av mitt uppsatsskrivande blev informerad om att det finns faktiska planer på att utveckla området där mitt designförslag förlagts. Jag hoppas att min uppsats ska kunna fungera som inspiration och tankeväckare i arbetet med denna utveckling, då jag tror att mitt koncept med ekologisk informationsspridning kan komma till gagn för platsen såväl som dess ekologi.

Metod

Inom uppsatsen användes flera olika metoder. Dessa metoder är oftast inte separerade, utan blandades inom uppsatsen för att ge en så bred bild som möjligt av varje givet ämne. Några metoder som kan nämnas är studier av litteratur, observationer, studiebesök samt intervjuer med såväl boende i Dongli Lake-området som yrkesutövare inom stadsplanering och landskapsarkitektur i Kina.

Uppsatsens uppbyggnad

Efter den inledande introduktionen består uppsatsen av tre huvudsakliga delar. Dessa följs av en avslutande diskussion.



Del ett: Presentera Dongli Lake projektet och dess ekologiska approach

I första delen presenteras Dongli Lake-projektet, i syfte att få en större inblick i detta samt en ökat förståelse för de ekologiska aspekter som projekter delvis byggde på.

Del två: Hitta den mest lämpliga platsen att förlägga Dongli Lake ekoinformationspark

Denna del inleds med att jag presenterar några grundförsättningar för platsen, vilka på olika sätt kan vara viktiga att ha i åtanke för det fortsatta arbetet. Exempel på sådana förutsättningar är klimat och kommunikationer. Jag presenterar också en kort sammanfattning vad några invånare i Dongli Lake-projektområdet anser om sitt område.

Efter detta undersökte jag Dongli Lake-projektområdet närmare genom att genomföra ett antal olika analyser. Dessa analyser lade sedan grunden för att finna den mest lämpade platsen för parken. Sekundärt fungerar analyserna som en vidare presentation av projektområdet, vilket kan vara värdefullt för den läsare som inte själv besökt platsen ifråga.

Analyserna som genomfördes var:

- Lynch-inspirerad analys
- LCA (landscape character assessment)-inspirerad analys över de byggda strukturerna
- Analys över grön- och blåstruktur
- LCA-inspirerad analys över parkliknande områden

Slutsatserna som dras från dessa analyser ledde i slutänden fram till att bestämma den mest lämpade platsen för ekoinformationsparken. Jag motiverade med hjälp av slutsatserna från analyserna mitt val av plats. Ihoplindat med motiveringen av platsval finns även tankar om designfördelar som den valda platsen kan komma att föra med sig.

När platsen för ekoinformationsparken väl var bestämd följde en fotoinventering av valda plats och dess närmaste naturomgivningar. Syftet med denna var dels att vidare introducera platsen för läsaren, och samtidigt att fungera som ett minnesunderlag för min egen del.

SAMMANFATTNING

Del tre: Presentera ett designförslag för Dongli Lake ekoinformationspark

För att visa mina tankegångar inför parkens utformning inleddes denna del med att jag förtydligade konceptet av ekologisk informationsspridning samt anknytning till landskapet för att öka omsorgen om detta, och varför detta är viktigt för en plats med ekologisk design likt Dongli Lake-projektområdet. Som ett underornat koncept fanns även ”low impact design”, vilket kan ses som en gren av ekologisk design. Jag gick sedan närmare in på de olika sätt som jag valde att arbeta med ekologisk informationsspridning i parken.

Efter detta presenterades resultatet och slutsatserna av ett antal studier jag genomfört i syfte att på olika sätt få inspiration till designen av parken. Jag tydliggjorde här vad jag tog med mig från varje del till den slutgiltiga designen.

Slutligen presenterades programmet för Dongli Lake ekoinformationspark. Programmet i sig är relativt övergripande, varför jag även valde att närmare presentera hur dessa olika programpunkter implementerades i den faktiska designen.

Följande på programmet presenterades en illustrationsplan över Dongli Lake ekoinformationspark så som den skulle kunna se ut, samt några snitt från parken för att närmare illustrera skala och uppbyggnad.

Diskussion

Diskussioner fördes om hur det är viktigt att som landskapsarkitekt gå hela vägen när det gäller ekologiskt design. Det vill säga, inte bara rita platser baserade på ekologiska designprinciper utan även att se till att dessa värden ingjuts i lokalbefolkningen. Detta för att skapa platser som på riktigt är ekologiska hållbara över tid.

Vidare diskuterades runt hur det redan finns ett intresse av att få ekologisk kunskap hos den kinesiska befolkningen, som en följd av bland annat påtagliga luftföroreningar i städerna samt en oro runt matens kvalitet. Därför resonerade jag att ekologisk informationsspridning skulle kunna landa väl hos befolkningen.

Diskussioner fördes även runt de metoder som användes inom arbetet. Slutligen gavs förslag på uppslag för framtida forskning.

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Me on a visit to the the Great Wall of China

Environmental issues have always been a great concern of mine. During my studies to become a landscape architect I have gained much valuable knowledge and been given tools to create places that are sustainable at many levels. However, all of my studies within the landscape architect program have been based in Uppsala, Sweden. Knowing that environmental issues is a global challenge, it bothered me that I so far never had worked with a landscape architect project outside Sweden. This is how I came to look abroad for my master thesis.

I started searching the web for projects related to ecological design and sustainable planning, and came across the Dongli Lake project. This was a project were an ecological approach had been used in the creation of an urban district outside Tianjin in China. I contacted Peter Krigström, who was the chief landscape architect within the Dongli Lake project. He found interest in my ideas of writing my master thesis in relation to the Dongli Lake project, and agreed to help me.

I was granted a scholarship from the Swedish International Development Cooperation Agency, Sida, to perform a 'Minor Field Study'. This gave me the economical opportunity to carry through my research in China.

By the time I left Sweden on my own in order to spend two months in China I was admittedly nervous. But even greater was my curiosity and joy for the journey and research to come. This joy has accompanied me all through the thesis, and I hope it will come through to the reader.

The world of today is facing many environmental challenges, of which global climate change is widely considered to be one of the major issues (NASA 2015). The severe effects of the increasing temperature are already observable in such as shrinking glaciers, rising sea levels and desertification. There is also a higher frequency of extreme weather conditions such as severe storms, drought and flooding. Moreover, scientists predict that the global temperatures will continue to rise for decades to come, as a consequence of big amounts of greenhouse gases produced by human activities.

Linked to the issues of global warming is the use of the planet's resources. As for today, the human population overuses these resources by 50% (WWF 2014). Ergo there would be need for 1.5 globes in order to keep our current way of living. But with growing welfare and industrializing of the developing countries, this number is increasing. If every world citizen were to adapt to the lifestyle of the western countries of today, there would be need for 3.5 planet Earths. This is for obvious reasons not possible. But then again, every country has the right of welfare and development, and of course it would be indefensible to deny the developing countries increased living standards. To make ends meet in this equation, the human population overall need to adapt to a sustainable lifestyle.

Urbanization trends and the need for sustainable cities

In the process of creating a sustainable lifestyle, the cities of the world will play a key role. With over 50% of the world's population currently living in cities and an estimated increase to 70% within the next few decades, urbanization is a strong and global trend (WWF 2015). The cities of today already contribute to an estimated 70% of the world´s energy related green house-gases (Baeumler, Ijjasz-Vasquez & Mehndiratta 2012).

Furthermore the cities often struggle with correlated environmental issues such as waste management, storm water handling, lack of biodiversity and extensive urban sprawl. In order to achieve and maintain sustainable cities, major investments have to be made (WWF 2015). This will concern all levels of the city; the spatial form of the city as a whole with its' green-and blue infrastructures and large-scale transportation systems, as well as small-scale local design solutions and changed attitudes amongst the city's inhabitants (Baeumler, Ijjasz-Vasquez & Mehndiratta 2012

Urbanization in China calls for ecological urban development

China is a country that has shown rapid economical growth over the last decades, with an increasing use in energy and higher carbon-emissions as a consequence. As with the rest of the world, the trend of urbanization is highly present in China. It is estimated that the cities of China will grow with a population of 350 million residents over the next 20 years (Baeumler, Ijjasz-Vasquez & Mehndiratta 2012). The environmental consequences of such rapid expansion are calling for great consideration.

Today, many Chinese cities are already struggling with serious environmental issues such as heavy air pollutions and insufficient waste management. It is, and will be, a huge and important challenge for China to secure a sustainable development of its cities. In this process, environmental conscious urban planning will be an essential part in which the landscape architect should be involved. The degree of success in this mission will affect both the future generations of Chinese as well as the planet overall, since the consequences of this enormous country's development will be felt far beyond the country's borders (Day 2005).

The Chinese government creates guidelines for sustainable urban planning

The Chinese government is aware of the need for sustainable urban planning. As a response to this, they put up guidelines concerning how cities should be planned (Global Times 2016). The guidelines are meant to deal with what is referred to as 'urban ills' resulting from poor urban design. These ills are said to include congestion, pollution and designing either over-large buildings or buildings which are considered 'too exotic' (Global Times 2016). According to Krigström (2016), who has been engaged in many urban planning projects in China, the governmental guidelines are strong tools in governing the direction of urban planning.

One recent example of guideline brought out by the Communist Party of China Central Committee and the State Council is a govern document which instructs cities across China to open up the large numbers of gated residential compounds. This is to be done in order to ease traffic congestion and make the cities more walkable (Global Times 2016).

Contemporary trends in sustainable urban planning in China

Many professionals working in China within landscape architecture and/or urban planning agreed there has been an increasing trend in the country towards more ecologically sustainable urban planning during the last 10-15 years (Buck 2016; Krigström 2016; Li 2016; Nilsson 2016). One widely discussed issue has been the cities resilience to excessive storm water. This has given rise to the popular term 'sponge city', referring to an aspiration to create more storm water absorbing capacity in the cities (Krigström 2016; Li 2016). Other common words in accordance with the ecological ambitions in contemporary Chinese urban planning are 'smart city' and 'eco city'.

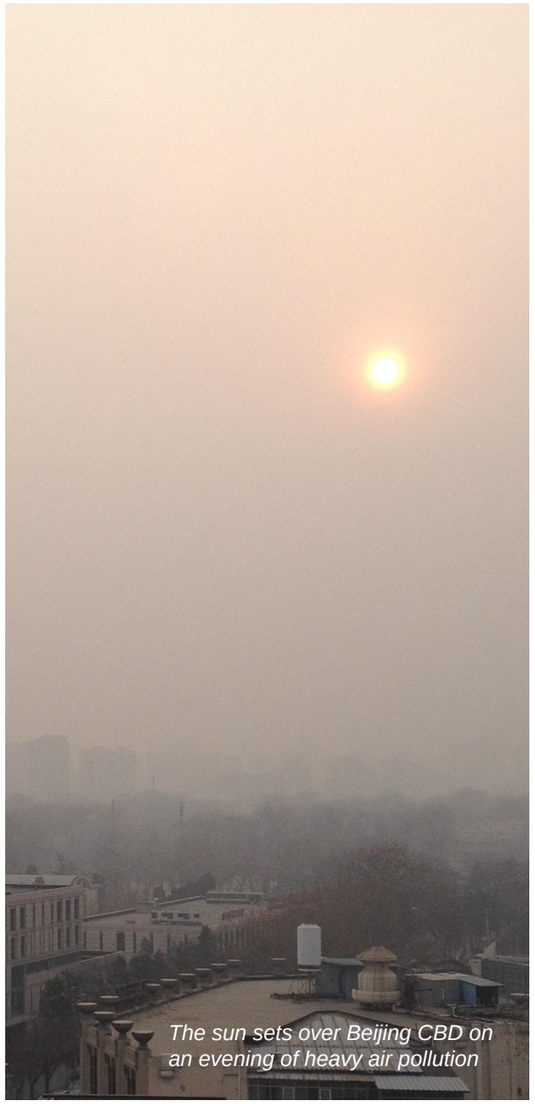
The green trends within urban planning in China are likely to continue (Buck 2016; Krigström 2016; Li 2016; Nilsson 2016). Krigström (2016) regarded anything else as inevitable, since the environmental issues of contemporary China are so present and substantial. Krigström (2016) also pointed to China's outspoken high ambitions regarding environmental goals at the United Nations conference on climate change in Paris 2015.

Ecological cities make liveable cities

The efforts in China aiming to create ecologically sustainable cities are clearly good news from an environmental point of view. As a bonus, it has been shown that cities that embark on a transformation for ecological sustainability also become more liveable, efficient, and competitive (Baeumler, Ijjasz-Vasquez & Mehndiratta 2012). Sustainability on different levels often correlates in that way. According to Thompson (2002) a city should strive for a tri-valiant design in order to be sustainable, where the environmental, the social and the aesthetic values are all essential parts.

The Dongli Lake project: an example of ecological urban design in China

The Dongli Lake project, located in the outskirts of Tianjin in China, is one example of a project partly created on the principles of ecological design. One of the concepts for the masterplan of the project, was the 'landscape concept'. This concept included 'ecological concern', 'respect for the existing landscape and cultivated structures', and 'incorporation of water, wetland, and wildlife'. (Sweco 2005).



The sun sets over Beijing CBD on an evening of heavy air pollution

Pre-study & problematization

In this chapter, the process that led up to the Aim and Research questions is presented. Part of this process took the form of a pre-study, which consisted of interviews with the residents of the Dongli Lake project area, interviews with general Chinese citizens, discussions with professionals, and studies of literture in regard to ecological design and ecological education in China.

The conclusions from the pre-study led up to the Aim and Research questions, as a response to the identified issues.

Knowledge and environmental care among the residents: an imporant aspect of ecological design

The fact that the Dongli Lake project was partly built on an ecological approach was what got me interested in the project in the first place, as explained in the Preface of the thesis.

When I read up more on ecological design, which is introduced further on page 5 of the thesis, I learnt that knowledge among the habitants regarding a site's ecology is an important aspect (Rottle & Yocom 2010). This fosters environmental care among the residents, which in turn is essential for the sustainability of a place created with ecological design.

Lacking ecological awareness among the residents of the Dongli Lake project site

So what was the ecological awareness like among the residents of the Dongli Lake project area? To find out, I conducted several interviews with the residents of the site (see Appendix 3). The purpose of the interviews was mainly to investigate what the residents knew about the ecology of the place they lived, and to what extent they were aware of that the site was created on an ecological approach. More information on the interviews is presented in the Method-chapter.

From the interviews, I got the impression that the ecological awareness among the residents was lacking. Few of the interviewed persons were familiar with the ecological approaches on which the Dongli Lake project area was largely constructed. I realised how this was problematic for the site's long-term ecological sustainability, in accordance with the theories of ecological design (Rottle & Yocom 2010).

Lacking environmental awareness might not be uncommon in China

A general lack in ecological awareness among the Chinese population was in conformity with the impression of professionals within landscape architecture and/or urban planning with whom I later on discussed the matter (Buck 2016; Krigström 2016; Li 2016; Nilsson 2016). It suggested that lack in ecological awareness might not be uncommon within the Chinese population.

Lacking ecological awareness might derive from omitted ecological education in China

After having interviewed the residents of the Dongli Lake project area, I found interest in getting some further insight into what the ecological education looked like in China, since knowledge often starts with education. This was a way to understand if the findings of lack in ecological awareness might be a general issue in China, like the interviews in the Dongli Lake project area as well as my discussions with professionals suggested.

To look further into this, interviews were conducted with eight Chinese citizens who had been growing up in China (see Appendix 2). The purpose was to find out what the education had been in China for children aged 6-16 years in regard to environmental issues, and how to live ecologically sustainable. More information on the interviews is presented in the Method-chapter.

The six grown-up persons who conducted the interview claimed they had been given little or none ecological education. The two persons under the age of 13 on the other hand claimed they *had* been given ecological education. The findings could suggest an increase in ecological education in China, but also that the today grown-up generation have not been much part of such education during their younger school years.

The findings that ecological education at least *has* been omitted, was further confirmed by a study by Lee & Tilbury (1998). It was there concluded that environmental education, if included at all, was usually accorded low priority.

Response to the issue of lacking ecological awareness in the Dongli Lake project area

As a response to the issue of lacking ecological awareness among the residents of the Dongli Lake project site, I came up with the idea of designing a park connected to the Dongli Lake project area. This park would educate the residents of the ecology of the area, and thus enhance the resident's ecological awareness. This would consecutively foster environmental care over the site, in compliance to the theories of ecological design (Rottle & Yocom 2010).

I chose to entitle this park 'Dongli Lake Eco Info Park'. The term 'eco info park', a contraction of 'ecological information park', was something I created myself; at least I had not came across that explicit term before. However, the idea of conveying ecological information in regard to a specific site's ecology is commonly seen in e.g. national parks.

Aim

The overall aim for the thesis was to gain a greater understanding of how ecological design could be implemented. The aim was also to explore how ecological knowledge could be conveyed to visitors of a park in order to enhance their ecological knowledge, which in turn would foster environmental care, and consecutively ecological sustainability of the site in question (Rottle & Yocom 2010).

Research questions

What should be the most suitable location for an ecological information park in connection to the Dongli Lake project area?

How could a park be designed to in a responsively way convey ecological information, in order to enhance ecological awareness and foster environmental care of a site among the local residents?

The structure of the thesis

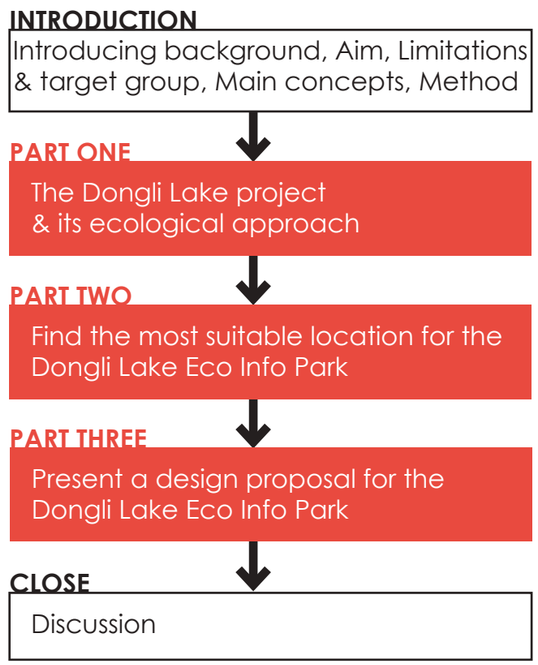
The process of creating an ecological information park in connection to the Dongli Lake project area divided the thesis into three major parts, following after the initial introdution.

In part one, I look more into the Dongli Lake project to gain a deeper understanding of the project itself; specifically the ecological approach on which the project was partly created.

Part two presents the process of finding the most suitable location for the ecological information park. Analyses of the Dongli Lake project site were conducted for this purpose, in order to gain a deeper understanding of the site. Within the conclusions of the analyses I also discuss what design advantages the chosen location in itself could bring.

Part three presents a proposal for how an ecological information park could be designed in order to enhance ecological awareness among the habitants, with the long term goal of fostering environmental care over the site.

After this follows the final discussion.




Chaoyang Park, Beijing

Limitations

Within this thesis, there were certain limitations. Some of those I decided myself, whilst some came as a result sprung from practical issues.

Inspiration from the Chinese people & original landscape of the park, but not from traditional Chinese garden design

The thesis started off with a personal interest in how a landscape architect could design to promote ecological sustainability. This, in combination with that the Dongli Lake project already was partly based on an ecological approach, made me chose ecological information spreading as the main concept of the park, which is one important aspect of ecological design in the strive to foster environmental care and consecutively ecological sustainability. There is also low impact design embedded in my design proposal.

However, did not use inspiration from traditional Chinese parks within my proposal. The main reason for this was that traditional Chinese garden design strives to create an ideal landscape, which often comes with the prize of largely transforming and re-shaping the original landscape(Krigström 2016). I judged this to be conflicting with the idea of promoting the original landscape of the site. I didn't want to transform the landscape within the park, but instead embrace it and enhance its own uniqueness.

With that said, the Eco Info Park was to large extends inspired by the Chinese people. The original idea of the creation of the Eco Info Park started with interviews with Chinese people. Furthermore, much of the program for the Info Eco Park sprung from observations on how Chinese people behaved in parks in China. Moreover, I was inspired by professionals who themselves had been working in China for many years.

Limitations due to access issues to the Dongli Lake project area

Getting in and out of the Dongli Lake project area turned out to be problematic for someone not living there. There were guards to and within the area with whom I could not communicate due to language barriers. This limited my number of visits to the project area to two days. However, two full days turned out to be enough for my specific purpose, especially when combined with studies of satellite images.

Limitations in research due to language barriers

The background research on the Dongli Lake area as a whole, as well as future plans for the area, had to be mainly based on oral information. Likely there would have been more information online, but due to me not speaking nor reading Chinese, that information was not accessible to me. In some cases I was able to use the browser Google tool 'Google Translate'. Though with that said, the oral information that I used came from what I judged to be trustworthy sources, such as professionals within landscape architecture and/or urban planning, who had been involved in the Dongli Lake project, and working in China for many years.

Moreover, it would have been interesting to study a report on what kind of biodiversity was present in the area in order to make that biodiversity more visible in the final design. Such report was said to exist, but I was not able to find it.

Another limitation was only being able to visit the Dongli Lake project area and the parks during the cold winter season. It would have been interesting to visit during the summer as well, in order to better experience the full green structure, and what activities took place during that time.

Limitations in map preciseness for the area of my design proposal

It was unfortunately not able to find information regarding land levels for the location I chose for my design proposal. This would have been useful in order to heighten the land properly in regard to storm water run-off and accessibility. The heights presented in my sections are based on estimations from my visits, starting off with the lowest level at the lake. The heights in my proposal could be used as a basis for a more detailed drawing in the future, after the area has been properly measured.

In the same manner, it was not possible to get a detailed map over my chosen park area. I used my visits and the documentation from those, as well as satellite images as a basis for my proposal. Therefore, the positions of trees are estimated and should have to be corrected to suit the exact circumstances, if the park was to be built. My proposal was then again not an exact drawing but a design suggestion, mainly focused on finding a good location for the new park and bring forth the ideas of ecological information spreading and ecological design.

Limitations in botany choices

I chose to put a limit when it came to precise decisions of species of trees and plants in the area. I didn't have the accurate knowledge of what species would be suited for this delicate Chinese setting. But in accordance with my concept the chosen species should be native and well-adopted to suit the climate, soil, and character. The final decision of species is consequently left to someone with expertise within the field of Chinese botany.

Target groups

The target groups for the thesis were urban planners and landscape architects, including students within those fields. The thesis particularly targets those with an interest in working with ecological knowledge enhancing in park environments and similar, both in traditional ways as well as in more innovative, interactive ways.

The target group was also decision makers associated to the Dongli Lake project area, including future urban planners and landscape architects who might come to be involved in this area. This particularly since I, at a late stage of my work, was informed that there might be actual plans to develop the area in which my design proposal was situated (Nilsson 2016). Thus, my hope is that my thesis could work as an inspiration in this work. I believe that the concept of ecological knowledge enhancing could come to favour the site as well as its ecology and sustainability.

The following page introduces some main concepts of the thesis. Understanding the theory behind those is important for the overall understanding of the thesis.

Ecological design

Ecological design aims to improve ecological function, and to preserve and generate resources in the landscape that humans can make use of. It embodies actions that in different ways improves environmental health, and make plans for a site based on the ecological qualities and processes of a place (Rottle & Yocom 2010).

What qualifies as ecological design?

To qualify as ecological design, a design should actively be shaping the complex environments in a way that helps to maintain and if possible increase the integrity of a region's ecological relationships (Rottle & Yocom 2010). Part of this is promoting resilience and biodiversity.

The important aspect of ecological awareness among the residents, which fosters environmental care of a site

To make a place designed on ecological approaches resilient and sustainable over time, awareness among the habitants in regard to a place's ecology is an important aspect. This ecological awareness in turn fosters environmental care among the residents, in regard to the site.

Ecological awareness and long-term public involvement is therefore necessary for the ecological and social success of a project. Such long-term engagement among the habitants can be achieved by engagement, and functional projects that foster attachment and caring. If the ecological aspects of an ecologically designed project fail to be communicated, the project will be extremely vulnerable to change that may inadvertently cause its collapse (Rottle & Yocom 2010).

Low impact design

Low impact design, LID, is a method to design ecologically. It could be understood as a branch of ecological design. It is mainly focused on how to locally manage storm water in an environmentally conscious, resilient way. Examples of this could be to use less paved areas in a city to allow water infiltration, green roofs on the buildings to hold up the rain water, or to lead storm water into green areas for infiltration. As a bonus the green areas add values such as increased biodiversity and higher green ratio (Low Impact Development Center 2016).

LID can also be interpreted as it was done in the New Zealand's version by Ignatieva, Meurk and Stewart (2008). It was there associated with the use of native plants and attracting native species.

Ecological awareness through relationship to the landscape

Encouraging people to develop a strong relation to the environment and landscape is an important aspect which fosters care of the environment (Arnell et al. 2009).

One way to arise such awareness is by allowing people to explore and experience the landscape. This can lead to the development of a sense of wonder and a sense of place, fostering the awareness and appreciation that motivate people to further understand and care for the landscape (Athman & Monroe 2001).

Ecological awareness through raised knowledge

On top of the importance of developing positive experiences within the landscape, it is also of importance that people gain more knowledge about the landscape. Knowledge will in turn raise their ecological awareness. The aim with raised knowledge is to affect attitudes and/or behaviours in people, and in the long run in society (Arnell et al. 2009).

Ecological information park as a platform for enhancing awareness and fostering care

As earlier described, I wanted to create what I chose to call an 'ecological information park' in connection to the Dongli Lake project area: Dongli Lake Eco Info Park. This park would work as platform to create attachment to the landscape, learn about the ecology of the site, and through this foster environmental care of the site. This would hopefully help the site as a whole to become more ecologically sustainable, in accordance with the theories of ecological design. The park moreover contained elements of low impact design, which could further contribute to the park's resilient.

As explained previously, the thesis consists of three major parts. Before those parts is an introduction, and afterwards a discussion.

Part one:
The Dongli Lake project & its ecological approach

Part two:
Find the most suitable location for the Dongli Lake Eco Info Park

Part three:
Present a design proposal for the Dongli Lake Eco Info Park

The green boxes in the table next are steps of the thesis within the major parts. The steps follow the chronological order of the steps of the process, finally leading up to the proposal of the Dongli Lake Eco Info Park.

A mixture of methods was used within each step. The reason I came to mix methods within the different steps was the ability to give a broader picture of complex issues.

For instance, to present the Dongli Lake project in a proper way I wanted to use both information from literature studies of Sweco's printed material, map studies of Sweco's material, interviews with professionals who had been part of the Dongli Lake project, and studies of satellite images to show what the area looks like today as in 2016.

The method-table table was constructed in order to make the process and what methods were used for each step clear to the reader. Each method is described more in detail in the Method-pages to follow.

Green box = Steps in the thesis

Blue box = Methods used

RED TEXT = Major parts of the thesis

Steps of the thesis, chronologically	Methods used
INTRODUCTION	
Initial introduction: Environmental challenges	- Studies of literature - Interviews with professionals
Pre-study & problematization	- Interviews with residents of the Dongli Lake project area - Interviews with professionals - Interviews with general Chinese citizens - Studies of literature
Aim & Reseach questions	
Limitations & target group	
Main concepts	-Studies of literature
Method	
PART ONE	
The Dongli Lake project & its ecological approach	- Studies of literature - Studies of satellite images - Studies of literature: Sweco's written material - Studies of maps: Illustrated maps from Sweco - Interviews with proffessionals
PART TWO	
Find the most suitable location for the Dongli Lake Eco Info Park - Analysis of the Dongli Lake project area	- Studies of literature - Satellite images studies - Documentation of the Dongli Lake project site for inventory and analysis *Laid the foundation to* - Lynch-inspired analysis - LCA-inspired analysis of the built structures - Green- & blue structure analysis - LCA-inspired analysis of the park-like areas
- Present & motivate location of the Eco Info Park - Photo inventory of the chosen location	- Interviews with residents of the Dongli Lake project area - Photo inventory ot the site for my future park
PART THREE	
Present a design proposal for the Dongli Lake Eco Info Park - Park concept: ecological information spreading - Design inspirations for the Eco Info Park	- Studies of literature - Observational study in Chaoyang Park, Beijing - Study visits for genereal observations on parks usuage in China - Observations at the site for my future park - Study visit to Qiaoyuan Park in Tianjin - Interviews with professionals
- DESIGN PROPOSAL: Dongli Lake Eco Info Park	
CLOSE	
Discussion	

The following pages contain a deeper introduction to the methodology of the thesis. Since many different methods were used within the thesis, the methods in this method-chapter are not presented in any chronological order of usage. To know what methods were used for what step of the thesis, please see the method-table on the previous page.

Note also that the length of text and/or pictures each method is presented with within this Method-chapter has no correlation with the importance of a given method.

Some methods will further on be more traceable and clearly presented along the thesis, whilst others might not be as visible but has been of importance for the brainwork behind e.g. the 'Aim' and 'Research questions'.

Studies of literature

Literature was used as a part of the basis for the thesis. It was primarily used as a background information source in order to learn more about given issues. The literature was both in electronic and printed form, and consisted of books, reports, webpages, dictionaries, and newspapers.

The literature used was found mainly by using the library search of Swedish University of Agricultural Sciences' homepage. The search words were e.g. 'ecological design' and 'low impact design'. I was also recommended literature by my supervisor, Professor Maria Ignatieva.

Sweco's written material on the Dongli Lake project

Documents from Sweco were studied, developed in relation to their work with the Dongli Lake project in 2004-2005. I was provided this material by Sweco.

Map- and satellite image studies

Satellite images over the project area were studied, provided by Digital Globe and Google Earth (2016). This helped me understand the project site, and allowed me to study the different structures. The satellite images were also part of different types of site analyses, such as e.g. the LCA inspired analyses, and the Lynch inspired analysis presented later on in the Method-chapter.

Illustrated maps from Sweco on the Dongli Lake project

Within the material I was provided from Sweco regarding the Dongli Lake project, there were illustrated maps over the area's development and the concepts. Those illustrated maps were studied and compared, in order to gather an understanding of the site and the ecological approach of the project.

Semi structured interviews

All interviews conducted were semi-structured, and in accordance to this method I had set questions but also opened up for attendant questions when applicable (Lantz 2013). This method was chosen in order to get as much information as possible within the interview situations.

Interviews with professionals

Interviews were conducted with four professionals working in China within landscape architecture and/or urban planning. The purpose of the interviews was to gather information about the e.g. the Dongli Lake project, urban trends in planning in China, ecological awareness in China, and whether they had any input for or thoughts on my design proposal for the Eco Info Park. For detailed interviews questions, see Appendix 1.

Mind that not all questions were asked to all professionals, but chosen to suit their background.

The professionals interviewed are introduced below, of whom many are regularly referred to within this thesis. More emphasis is on Krigström and Nilsson, who were both involved in Dongli Lake project back in 2004-2005. Those are simultaneously the interviewed persons most commonly referred to within the thesis.

Peter Krigström: Chief landscape architect in the Dongli Lake project

Peter Krigström is a landscape architect based in Malmö, Sweden. He graduated as a landscape architect from the Swedish University of Agricultural Sciences in 1986, before which he had been undertaking horticulturalist studies. This combination of studies gave him a broad knowledge which he claimed has been useful in his career.

Krigström has during his years within the profession been involved in many major landscape architect- and urban planning projects, mainly around the Skåne area in Sweden but also abroad. Since 2001 he has been working regularly with various projects in China.

Krigström has always been interested in environmental issues. He described how he in his youth was attracted by the thought of 'saving the world' but how those thoughts gradually matured into something more realistic, in terms of striving to achieve ecological values, rich biodiversity, and enhance the natural beauty in his projects.

Tan Ying Nilsson: Planner, coordinator and interpreter in the Dongli Lake project

Tan Ying Nilsson is an urban planner, specialized in sustainable urban planning, based in Gothenburg in Sweden. She grew up in Beijing where she in 1998 graduated from Tsinghua University as a Doctor of Engineering within urban planning. She has also worked as a lecturer at the Department of Urban Planning and Design in the School of Architecture in Tsinghua University.

Nilsson moved to Sweden in the year of 2000 and started working at Sweco in 2002. In Sweco she has been the chief representative for the Chinese market. She has also been regularly involved in many urban planning projects in China, where some of the most recent ones have been conceptual planning of Yufu River ecological area in Jinan in 2014, and sustainability review of Yanqi Lake ecological demo district in Beijing in 2013.

Li Chun: Co-worker at the Sweco office in Beijing

Li is an urban planner and urban designer. She grew up in Tianjin but is today based in Beijing. Li undertook a bachelor degree of Architecture in 2001-2006 at the Taiyuan University of Technology. She graduated from the master program of sustainable urban design in Lund University 2011, Sweden. Li assisted as an interpreter during my interviews in the Dongli Lake project area.

Andrew Buck: Co-worker at the Turenscape office in Beijing

Deputy director of urban planning for the international studio at the Turenscape office in Beijing. Buck graduated from Cornell University in New York USA 2014, and has been working in China for six years.

Interviews with residents of the Dongli Lake project area

When I visited the Dongli Lake project area for the first time, I conducted interviews with seven local residents. The purpose of the interviews was mainly to investigate how much the habitants knew about the ecological values of the place where they lived. The questions related to those issues were:

- What do you know of the ecology of this urban district?

- Did you know that Dongli Lake was planned with an ecological approach?

The outcome of those interviews was part of the pre-study, and worked as an essential inspiration to the actual idea of the Dongli Lake Eco Info Park. The interviews also helped me to some extent to understand what it was like living in the Dongli Lake project area, which had some influence on choice of final location for the Info Eco Park.

The respondents were picked randomly on site, with the ambition to get a mixed representation in regard to age and gender. The people interviewed were agreed to be kept anonymous. During the interviews I used a recording device to be able to re-listen to the interviews later on. Urban planner Li assisted me as an interpreter during the interviews. See Appendix 3 for detailed questions.

Four legged residents of the Dongli Lake project area, not interviewed within the thesis

Observational study in Chaoyang Park, Beijing

My design proposal for the Dongli Eco Info Park would be situated next to a lake, which meant that water would likely be an important element there. Hence, an observational study was carried out aiming to find out how Chinese people could behave in a park setting next to water. The information gathered in the observational study was later used as part of the basis for the design proposal for the Dongli Lake Eco Info Park.

The observational study took place in Chaoyang Park, which was situated in central Beijing and is the city's largest park (Beijing Chaoyang Park Development Company 2012). The southern part held an amusement park, whilst the northern part more had the character of a landscape park with long views and nature-like appearance.

Chaoyang Park considered itself a public park, even though this of course could be a subject of discussion since it both has entrance fees and opening hours (Beijing Chaoyang Park Development Company 2012). In any case it was a well-visited park, which gave me the opportunity to observe large amounts of people and their behaviour.

The spot chosen for the observation study was a stretch with nature-like appearance next to a small lake called the Lotus Lake in the northern part of the park. The spot was chosen in regard to what my design proposal could come to look like, with both elements of water and nature-like landscape. A good view for me as an observer was also important, as well as a spot where I could be distant enough from the observed people to not interfere with their behaviour.

From my chosen observation spot I had a clear view of a grassy slope leading down to the water. It had a paved walkway passing by on top of the small hill, but the visitors could also chose to take an informal walk next to the water, crossing over the lawn. Furthermore there was a wooden pier on which the visitors could cross over the water, even though this was a bit of a detour from the common route.

My prime objects with the study were to find out:

-Did people seem to prefer walking on the paved walkway or did they cross the grass to walk next to the water, on an informal path?

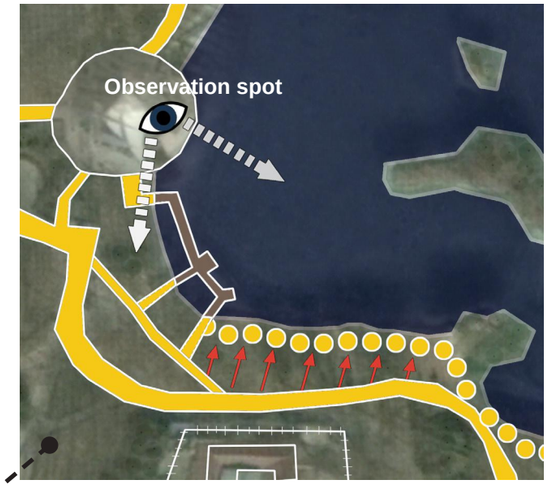
-Did people choose to walk over the pier in the water, even though this was a detour?

-Did people stop by the water?

-If they stopped by the water, what activities did they perform?

The observational study was carried out at four different occasions during the end of March 2016: weekday morning, weekday afternoon, weekend morning and weekend afternoon. Each session lasted for 1 hour. Around 200 people were observed in total. The weather for each session was sunny, like the weather in Beijing mostly is in March (Weather Spark 2016). The temperature during my observation sessions ranged between +5 degrees and +12 degrees Celsius.

Observation site in relation to Chaoyang Park. Satellite image provided by ©Digital Globe and ©Google Earth (2016)



1. The oberservation site

Legend to picture 1 & 2

- Informal path by the water
- Paved walkway
- Wooden pier
- Slope direction

2. View from observation spot

Study visits for general observations on park activities in China

During my time in China I visited many park. The purpose of the visits was to understand what types of activities people in China used the parks for. I wanted to use this information as a basis for my future design proposal. My question when I visited the parks was:

- What kind of activities do Chinese people perform in Chinese parks?

During the visits to the parks I made written notes and took photos, in order to remember what types of activities people were performing in the parks. I did not count how many people performed what activity, but just noted all the activities I spotted. At a later stage, I divided those into 'calmer activities' or 'active activities'.

The parks I visited in Beijing were: Chaoyang Park, Behai Park, Regan Park, New Summer Palace, Jinshang Park, the Forbidden City gardens and the Lama Temple gardens.

The reasons I visited those specific parks were for practical issues: Beijing was the place I lived during my China visit; henc those parks were in convenient distance for day trips. The specific parks I came to visit in Beijing were recommended to me by professionals within urban planning and/or landscape architecture. They recommended those parks since they knew them as well-visited parks, which would mean a good opportunity for me to study different activities there.

I also travelled to Xi'an where I visited the Huangcheng Park and the gardens by the Wild Goose Pagoda. I came to visit those two parks since they were famous parks in Xi'an, so it seemed likely that I would be able to observe many people performing different kinds of activities there.

The parks were all visited during February and/or March in 2016, which meant winter or early spring with a temperature ranging between +5 and +15 degrees Celsius.

Study visit to Qiaoyuan Park in Tianjin, a park with ecological design

In order to gather inspiration and deeper knowledge about ecological design, I wanted to visit a Chinese park which was designed with an outspoken ecological approach.

On a visit to the Turenscape Office in Beijing I met co-workers Buck and Lung (2016) who encouraged me to visit the Turenscape designed Qiaoyuan Park in Tianjin. This park had many features of a wetland and was designed with an ecological approach. Since the area for my proposal also had a wetland character, the Qiaoyuan Park was a suitable object to study. Hence, I travelled to the park in order to gather inspiration for my design proposal.

The study visit was carried out on March 17, 2016. This was a day of cloudy weather and a temperature of +11 degrees Celsius.

Study visits to the Dongli Lake project area

I visited the Dongli Lake project area during two full days in order to gain a deeper understanding of the site, which would also eventually help me conduct different analyses of the site in order to find the best location for the Eco Info Park.

The visits took place on 4th and 25th of February 2016. The weather was sunny and the temperature ranged between +5 and +13 degrees Celsius

Documentation of the Dongli Lake project site for inventory and analysis

During my visits I made careful documentation in order to be able to use the material later on for analysis. The documentation methods were mainly photographing, but also sketches and written notes. I brought printed maps of the area that I could write and draw on during my visits.

Observations at the site of the suggested future park

When I visited the Dongli Lake project area the second time, I had decided on the location for the suggested future park. This gave me the possibility to specifically observe in what ways people were using that park area today. This information served as a design inspiration within my proposal, in order to be aware of how different design solutions could encourage versus discouraged the ways people could use the area in the future. It was a way to help me make more conscious decisions.

Photo inventory of the site for the suggested future park

A photo inventorty was performed at the site of the suggested future Eco Info Park. I started off at the suggested point of the future entrance and walked to an existing entrance 1 kilometre away. During this walk I took photos to produce a photo inventory. The purpose of this inventory was to further introduce the reader to the site, which could help the reader to better understand the final design proposal. The photo inventory was also a help for me to remember the site better for the future proposal.

On a study visit to the Dongli Lake project area

Analyses of the Dongli Lake project area

In order to find the most suitable location for the Dongli Lake Eco Info Park, I conducted some analyses of the Dongli Lake project site. Those were based on the study visits of the Dongli Lake project area, and on satellite images provided by Digital Globe and Google Earth (2016).

The analyses were also meant as a way to help the reader of the thesis, who might not have visited the area themselves, to get a better understanding of the area and further the final design proposal.

Lynch inspired analysis

Kevin Lynch described in his book 'The image of the city' the mental image of a city, as it could be perceived by people (Lynch 1960). He divided the mental image that people have of a given city into five main elements: landmarks, nodes, paths, edges, and districts. Lynch considered those elements and how they relate to each other important for a city's readability (Lynch 1960). Even though the method was developed in a Western context, it could be considered useful in a global perspective, since the mentioned elements exist everywhere.

In this thesis, I used a Lynch-inspired analysis as way for me to understand the Dongli Lake project area. This was an interpretation of the Lynch analysis, used in the same way as it has commonly been used at the landscape architect program at SLU Ultuna, Sweden, during 2011-2016.

The analysis was way for me to gain understanding of the area. It was also a way to present the area for the readers who might not have been visitors themselves.

The elements I, as a visitor of two days to the Dongli Lake project area, identified were:

Paths: Paths were described by Lynch as the canals on which the observer potentially moves. They could e.g. be roads or walkways. Within my analysis, I identified the major streets within the area.

Landmarks: Whilst Lynch (1960) described landmarks as 'points of orientation', I rather used this term as 'points of attraction'. Those landmarks were spots or building which I judged that most of the residents would likely be familiar with, e.g. schools. A place that many people are familiar with could be used as a point of orientation, as Lynch bid, even if it might not be clearly visible from a distance.

Barriers: Lynch (1960) wrote about 'edges', of which barriers that close off one region from another could be one example. In my Lynch-inspired analysis, didn't use 'edges' as a broad term, but instead chose to focus specifically on 'barriers'.

Nodes: Lynch (1960) described nodes as strategic spots in the city which are the intensive foci from which the visitor is travelling. Those could e.g. be crossings of major paths, and it was this definition I used in my Lynch inspired analysis.

Districts: Lynch (1960) also identified districts, as sections of a city held together by common, identifying characters. I did not use districts as part of my Lynch-inspired analysis. Instead, I identified different areas within twp LCA-inspired analyses, which I judged would be similar to Lynch's 'districts'. Those were instead presented under the LCA-analyses.

LCA inspired analysis of the built structures

Landscape character assessment, LCA, can be used describe a landscape with reference to the characteristics that combine to make a place distinctive (Tudor 2014). It divides the landscape into distinctive areas, which share common perceived features.

Within this thesis, I used a method inspired by the landscape character assessment. The purpose of this analysis was to further understand the built environments of the site, as well as to introduce the Dongli Lake project site to the reader.

I started off by looking at satellite photos of the area, provided by Google Earth and Digital Globe (2016). From those photos, certain structures among the build patterns, size and shape was traced. I draw lines on the printed satellite images in order to get a rough estimation of the different areas.

When I visited the Dongli Lake project area, I brought those printed satellite images along. Once at the site, it was easier to judge what buildings and quarters could be said to belong to the same area. Adjustments were made on the area borders of the printed satellite images on site.

This divided the Dongli Lake project area into seven different building areas, held together by common characters. The common characters I perceived related to the building where mainly concerning building height and size, building style, and material of the buildings.

The seven areas identified and their common characters were then presented along with photos, together with a map that shows the location and boarders of the areas.

Green- & blue structure analysis

I came to investigate the green- and blue structures of the area. It felt meaningful to study those structures since I wanted to create a new park which consisted of both green- and blue elements. The blue-and green structures were also part of Sweco's ecological approach which made them interesting to look at.

This analysis started by observations of satellite images over the Dongli Lake project area, provided by Google Earth and Digital Globe (2016). From those, I was able to get a first insight into the green-and blue structure of the area. In order to confirm and further look at those structures, I visited the Dongli Lake project area.

I did not divide the green or blue structure into different layers of vegetation, but concluded rather on the presence, size, and location of green-and blue structure.

I finally presented the study by using a satellite image over the area, where the green versus blue structures were exaggerated. This was a way to illustrate those structures in a clear way to the reader, as well as to give the reader an understanding of presence, size, and location of the green- and blue structures.

For definitions of green structure and blue structure, see glossary in Appendix 4.

LCA inspired analysis of the park-like areas

Since I wanted to create a new park in the Dongli Lake project area, I judged it to be of importance to investigate where other parks in the area were located and what characters those parks held.

In order to do this, I performed an LCA inspired analysis over the park-like areas within and in direct connection with the Dongli Lake project area. An LCA-analysis allows the performer to investigate and describe a landscape from its perceived connecting characters, which divides the landscape into distinctive areas (Tudor 2014).

Also in this analysis I begun with satellite map studies, with satellite images provided by Google Earth and Digital Globe (2016). On the satellite images, I spotted green clusters which could be perceived as parks.

When I arrived at the Dongli Lake project site, I brought printed satellite images with me to be able to visit those areas. From the visits, I could conclude whether or not the area was perceived as a park. From the visits I was also able to draw a more distinct line of the park-like areas. I was also able to find out more about the character of a given park-like area.

When I walked around in the Dongli Lake project area, I also found some further green areas which I perceived as parks which I had not been able to spot on the map on beforehand. In total, eight park-like areas were found of which two were sport areas.

The different areas were presented further with characters, photos and locations on a map in the LCA-inspired analysis of park-like areas.

For definitions of park-like areas, see glossary in Appendix 4.

Satellite image used to track different structures and areas within the analysis. Provided by ©Digital Globe and ©Google Earth (2016)

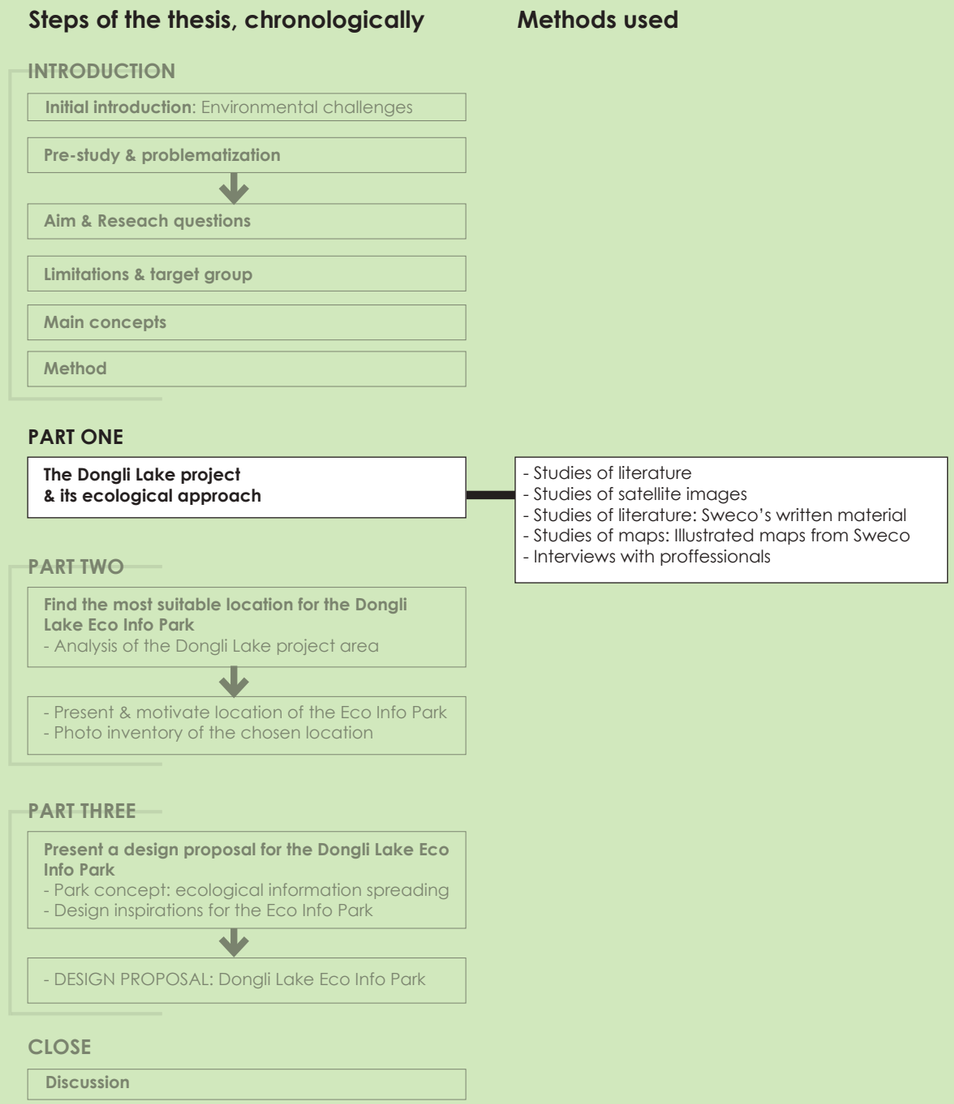
Aim: Introduce the Dongli Lake project & its ecological approach

This is where Part One of the thesis starts. The aim of this part is to get a deeper understanding of the ecological approach of the Dongli Lake project. Understanding those ecological values is essential since the final park design proposal will aim to implement those values into the population, in order to eventually create enhanced ecological awareness and foster environmental care of the site.

In order to find that understanding and make sense of it, there is a need for a basic understanding of the actual site. This is initially done by exploring the geographical context of the site, starting off by shortly explaining the country of China and gradually narrowing down to the Dongli Lake project area. This gives the site a coherence.

Once the geographical context is cleared out, I look deeper into the Dongli Lake project and its ecological approach. This was based on material from Sweco, who created the conceptual master plan for the Dongli Lake project in 2004-2005, of which the ecological approach was one aspect.

Finally there is a retrospective reflection on the ecological aspects of the Dongli Lake project, based on an interview with Peter Krigström who was Sweco's chief landscape architect within the project. The purpose of the interview was to get a longer perspective on the ecological approach, and to further understand the complexity of working with those issues.



Every place has a context, and this context is often important to have a grip of, in order to be able to understand a place. This chapter looks further into the context of the Dongli Lake project area. It starts of with its geographical context; Firstly the country of China, and gradually narrowing down to the Dongli Lake project site.

People's Republic of China

China is the most populous country in the world and the third largest in regard to size. China had 1380 million citizens in 2015 (Lundahl 2016). The big majority of these people live in the eastern parts of the country. In the year of 2008, China had 175 cities with a population exceeding 1 million inhabitants, and 18 cities with a population exceeding 3 millions.

Since China is such a large country it spans over a range of climate zones, from tundra climate in the northern parts and warm tempered climate in the southern (Lundahl 2016). This also brings about a variety of ecological regions, of which 50 has been identified.

The most commonly spoken language in China is Mandarin Chinese (Utrikespolitiska institutet 2016). There are many different religions represented in China, of which the major ones are Chinese folk religion, Confucianism and Daoism, Buddhism, Islam, and Christianity.

Highly developed civilizations were present in China as early as 2000 years ago (Utrikespolitiska institutet 2016). Porcelain, paper, and silk are only some inventions that were used in China many hundred years before they reached Europe.

The Great Wall of China: one of the remains of the many highly developed civilizations that have ruled China

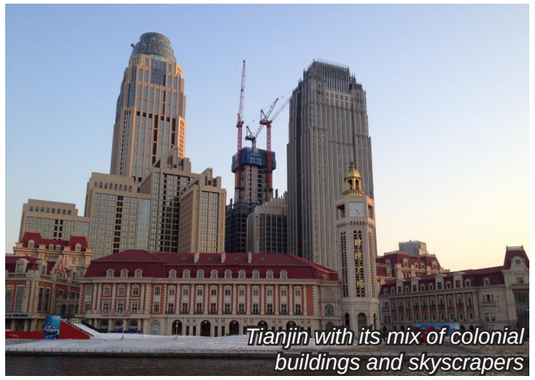
In 1949, the Communist Party took control over China after a long time of war. They still today, 2016, have the absolute power over the country (Utrikespolitiska institutet 2016). Furthermore, they exercise a hard control over the media. This takes the form of blocked webpages, internet monitoring, imposes upon foreign media and imprisonment of journalists. The official news agency, Xinhua, is under control of the government and only mediates the picture of China that the government wants to present. Other news agencies are only allowed to publish the same information as Xinhua when it comes to, for instance, political meetings within the party (Lundahl 2016).

Since 1978, China has had a more rapid economic development than any other country. Since the year of 2010, China is the world's second largest economy measured by gross domestic product. This have given China an important role as one of the major powers of the world (Utrikespolitiska institutet 2016).

Tianjin

Tianjin is a municipality in the northeast of China. The municipality had around 10.5 million inhabitants in 2009 of which 3.7 million were living in the city of Tianjin (Nationalencyklopedin 2016).

Tianjin city is situated around 170 km south east of Beijing. It holds one of China's major harbours and is an important centre for industry and merchandise.

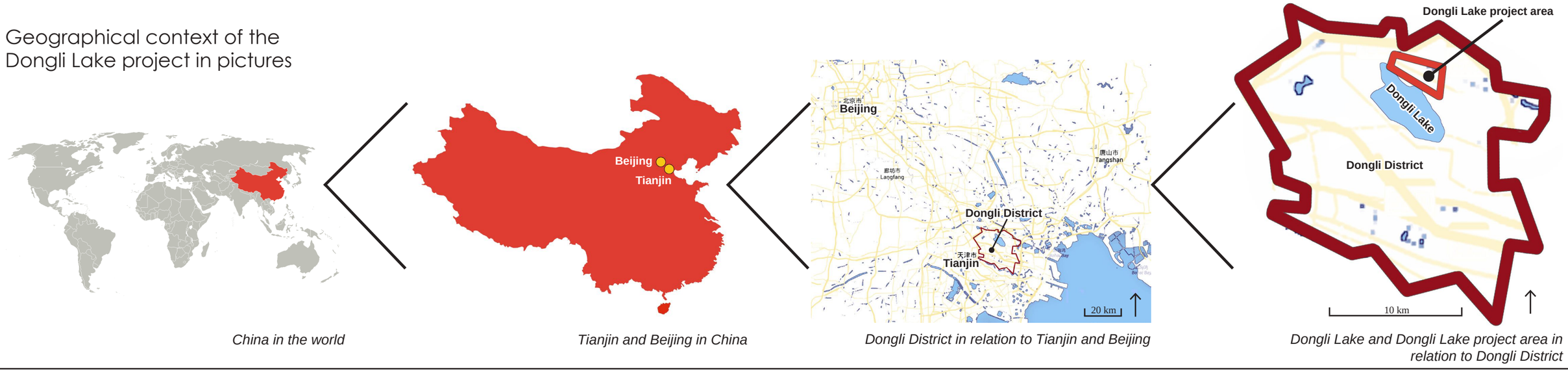


Tianjin with its mix of colonial buildings and skyscrapers

Tianjin City Dongli District

Dongli district is a part of the municipality of Tianjin. The district is located northeast of the Tianjin city centre. It had an estimated population of around 0.6 million people in 2010 (National Bureau of Statistics of the People's Republic of China 2016).

Geographical context of the Dongli Lake project in pictures



China in the world

Tianjin and Beijing in China

Dongli District in relation to Tianjin and Beijing

Dongli Lake and Dongli Lake project area in relation to Dongli District

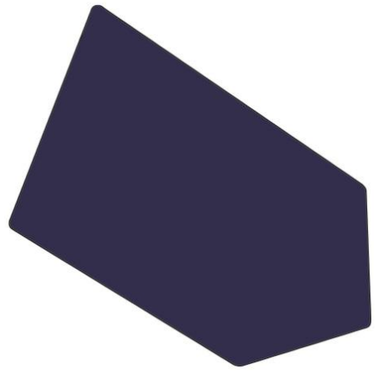
Dongli Lake: the lake

Dongli Lake is a manmade lake, located about 15 kilometres northeast of central Tianjin in China (Krigström 2016). It has an ambit of around 10 km (Digital Globe & Google Earth 2016). Dongli Lake was probably created in order to support the agriculture activities in the area (Krigström 2016). The lake is sometimes locally referred to as the 'small freshwater ocean' (Danchuan 2007).

Satellite image of Dongli Lake, provided by ©Digital Globe and ©Google Earth (2016)

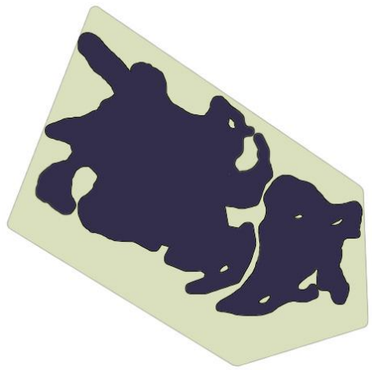
Photo of Dongli Lake

The lake originally had a quite geometrical form, but at some point after 2005 the shape of the shoreline all way around the lake was transformed (Krigström 2016).



Shape of Dongli Lake before the transformation

The new shoreline was constructed by adding landmass, creating a more organic and curved form. Some islands were also created, as well as a passage over the lake which divided it into two parts.



Shape of Dongli Lake after the transformation

This transformation was probably made with the intent to make the lake look more like a natural one instead of manmade (Krigström 2016). It also functions as a security zone for occasional flooding, since the built environments are now further away from the lake. The new shape made the actual water surface area of the lake smaller, whilst at the same time creating a larger ecotone between the built components and the lake (Nilsson 2016).

Part of the new shoreline of Dongli Lake

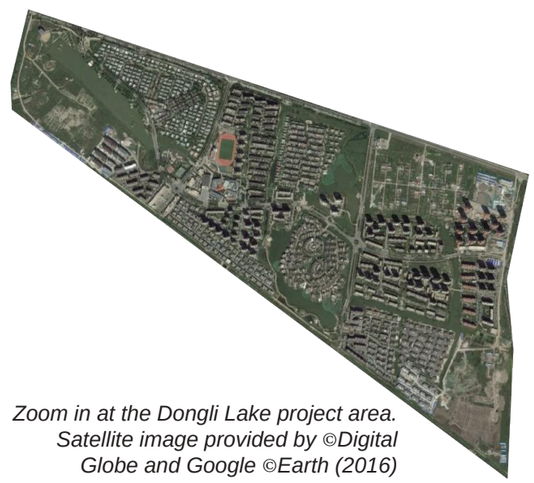
Fishing occurs in Dongli Lake, and the sold fish is marketed as more healthy than the fish breed in fish farms (Nilsson 2016). It is however unclear what the water quality status of the lake actually is. It is surrounded by many industries that might cause pollutions, and agricultural land that may create over-fertilization (Schindler & Vallentyne 2008).

People fishing on the ice of Dongli Lake

Dongli Lake project area

When I within this thesis refer to the Dongli Lake project area, I will be referring to the same area as Sweco did in 2004-2005 when they were working with the Dongli Lake project (Sweco 2005). This area is located north of the lake and is marked out on the map below.

The Dongli Lake project area marked out in red. Satellite image provided by ©Digital Globe and ©Google Earth (2016)



Zoom in at the Dongli Lake project area. Satellite image provided by ©Digital Globe and Google ©Earth (2016)

The following pages looks deeper into the ecological approach of the conceptual master plan for the Dongli Lake project.

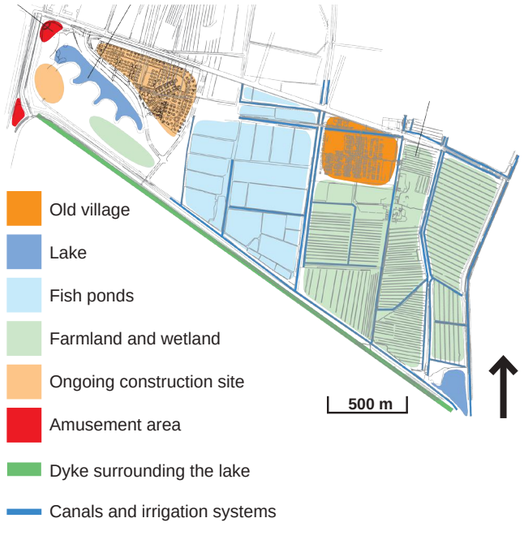
Sweco were the ones who produced this conceptual master plan, and this is how it came to be that I was much in contact with Sweco's office in Beijing. They helped me by providing material related to their work with the conceptual master plan. I also got to interview some of the professionals who had been working within the project

The Dongli Lake project area before the project started

The Dongli Lake project area is situated in an ecologically sensitive area (Sweco 2005). Before it was exploited, the area contained of wetland, and agricultural in the forms of fishponds and farming. It was described as being high in biodiversity of bird-and insect life, thanks to its unique environment (Krigström 2016; Nilsson 2016).

The map below shows what the district looked like by the time that Sweco got involved in 2004. The construction of new buildings had by then already started in 2002 and can be seen on the map. Hence, that specific part was not comprised by the ecological approach of the later produced conceptual master plan.

Map of the Dongli Lake project area in 2004 (Sweco 2005)



How the ecological approach for the Dongli Lake project came to be

A new urban district was built in the Dongli Lake project area, starting in 2002. The district was to hold 60 000 - 70 000 people.

Vanke Co. Ltd, one of the major development companies in China, were the ones who initiated the project. They still own and are responsible for the area today as of 2016 (Krigström 2016; Li 2016).

In 2004, the consultant company Sweco got entrusted to produce a conceptual master plan for this development. Sweco thought an ecological approach would be suitable for the site, since it was located in a wetland area with high biodiversity and many existing structures that could be used (Krigström 2016).

Vanke, the client, was optimistic about the ideas regarding the ecological approach to the project. It suited the client's ambitions with adapting a more ecological image, at the same time as it saved the company money by less transforming of the landscape and less non-native plant material (Nilsson 2016).

Furthermore, there was a changed strategy for Tianjin City which called for a more ecological approach for the whole Dongli Lake area. The ecological approach of the Dongli Lake project went well along with that (Sweco FFNS Arkitekter AB 2005).

It should be mentioned that the ecological approach of the conceptual master plan, by Sweco referred to as 'the landscape concept', was not the only concept that Sweco had for the site. There was also an 'urbanism concept' and a 'transportation concept'. However those will not be brought up at any more point since they are not of relevance for the thesis

Further into the ecological approach

The landscape concept focused in large to preserve existing structures of the canals, fishponds, reed, and wetland. This was identified to be the places with the richest biodiversity (Sweco 2005).

This was done by transforming the existing canal- and ditch system into ecological corridor. By preserving the existing structures of agriculture- and water system structure into the new urban development, the historical aspect of the site would be visible in the new urban structures (Sweco 2005).

Krigström (2016) explained how Sweco didn't want to give the site too much of a garden character, which he claimed otherwise is a common way to design urban housing areas and parks in China. Instead Sweco wanted to preserve the wetland and the reed character.

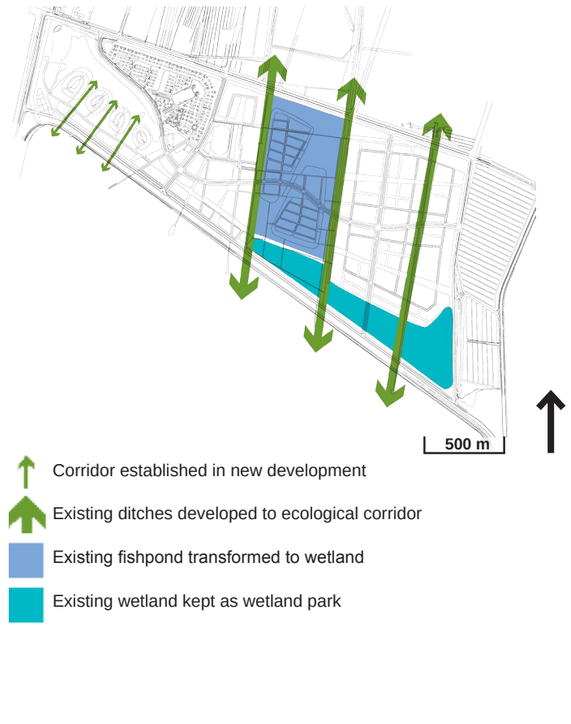
Krigström (2016) was of the opinion that there is a risk of every place looking the same in the end, if it's always designed into an ideal garden landscape. By preserving more, the landscape could keep some of its history, become more unique, and have better conditions of maintaining high biodiversity. Although, Krigström (2016) adds, cultivation of the landscape always inevitably means interference to some extent.

Sweco summed up the landscape approach in three points:

- Ecological concern
- Respect for the existing landscape and cultivated structures
- Incorporation of water, wetland and wildlife

It should be mentioned that Sweco in their conceptual master plan also had ideas regarding things as e.g. water circulation for water cleansing, garbage recycling, and ecological systems for cooling the houses. It is hard to know which of those ideas that have actually been carried through (Krigström 2016). But since I was not able to find out, nor to spot those parts, I chose to focus on the parts of the ecological concept that could be more clearly seen for me as a visitor. Those were also the parts of the concept that the professionals involved in the project could confirm had been carried through (Krigström 2016; Nilsson 2016).

Environmental concept diagram (Sweco 2005)



10 years later:
Retrospective reflections on the Dongli Lake project. Interview with Sweco's chief landscape architect within the project.

'Trying to integrate the built structures with the ecological and historical structures came very natural to us when we worked with the Dongli Lake project', explained Krigström (2016) who was the chief landscape architect within the Dongli Lake project at Sweco in 2004-2005. He reckoned that this was the part of the project's ecological aspect that came to be most successful and is the most visible today, even though it has been somehow chipped on after Sweco left the project.

Krigström was happy that the client, Vanke, embraced the ecological part of the project as much as they did when it came to preservation. Even though Krigström personally thought it was bit unfortunate that the entire old farmer village was erased due to lacks in forms of sanitary and electricity aspects.

A far as the more technical parts of the project concerns, e.g. recycling of energy, garbage handling, environmental friendly houses, and local cleaning of grey water, Krigström said it is in the concept but somehow harder to identify. He was not sure to what extent it had been implemented after Sweco left the project.

When it comes to gated communities, which is very common in the Dongli Lake project area today, Krigström explained how that was something they did not want from Sweco's part, but it was hard to avoid. According to Krigström, the 'neighbourhood thought' with closed communities has been a strong trend in China springing from security reasons. However, Krigström reckoned it interferes with Sweco's original thoughts of the Dongli Lake project area of being an open, easy walkable area. He thought the gated communities also might not make the green corridors function as well as they were originally supposed to, since the spatial restrictions make them less accessible.

On the bright side, Krigström added, the neighbourhoods are usually free from cars. The cars are kept in underground garages, leaving the neighbourhoods greener. In general, Krigström reckoned that the areas and quality of green spaces close to people´s homes are higher in China in comparison to Sweden. This could partly be a result of how the close-to-home outdoor environment is more of a selling argument in China.

Krigström was of the opinion that there might be a problem with the relatively short time span that Chinese building projects is usually constructed within. For example, the phase two which Sweco constructed for the Dongli Lake project, was largely built and sold only one year after Sweco handed over the plans. The risk with such rapid development, said Krigström, might be that it comes with short time solutions. Also, when an area is very quickly constructed, there might be less opportunity to implement newly developed techniques that could be more efficient from an environmental point of view.

In the conceptual master plan of Sweco, there were plans for two ecological centers which would teach visitors and local pupils about the unique ecology of the Dongli Lake site. The plan was to connect those centers to a green axis running through the area. Krigström said those ideas were appreciated to begin with, but that they disappeared further down the road of the project after Sweco left.

All up, Krigström was pleased with the outcome of the ecological aspects of Sweco's work at the Dongli Lake project. He reckoned there were big improvements from the original plans in regards to preservation of the biodiversity and the history of the landscape. More of the uniqueness of the landscape was preserved and is still visible today as in 2016. Krigström was also happy about the green recreation within the area, and how citizens thanks to the preserved structures could fish in the canals just next to their houses.

Man fishing in one of the canals in the Dongli Lake project area. Picture used with permission from the man.

Aim: Find the most suitable location for the Dongli Lake Eco Info Park

This is where part two of the thesis starts. The aim of this part is to find the most suitable location for the Dongli Lake Eco Info Park.

Firstly, I present some basic conditions of the site which is a fundament to the site. I also present the opinions of some residents of the Dongli Lake project area, regarding what it according to them is like to live there in 2016.

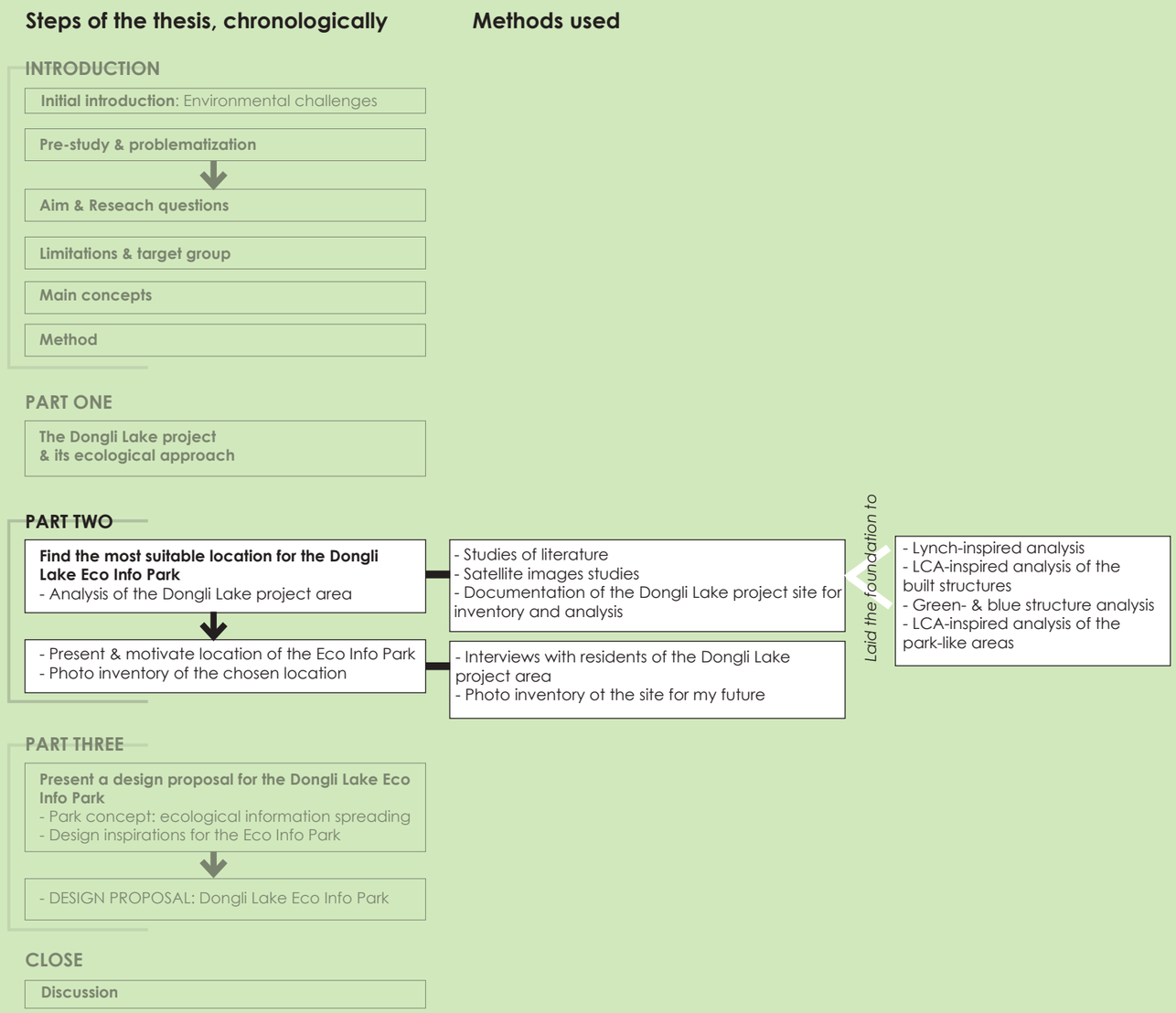
After that, I investigate the Dongli Lake project area through different analyses. Those are the basis of the final decision of the location of the park. As a bonus, those analyses further introduce the site to the reader who might not have visited the park themselves.

The analyses performed were:

- Lynch inspired analysis
- LCA inspired analysis of the built structures
- Green- & blue structure analysis
- LCA inspired analysis of the park-like areas

I then present the choice of location for the Eco Info Park. I motivate why I came to chose that specific place through the conclusions I drew from the analysis. Entangled within the motivations of location-choice, is the advantages of what future design opportunities this specific location could bring.

I finally present a photo-inventory for the chosen location, in order to introduce this place further to the reader. This photo-inventory also helped me remember the site better for the final park design proposal



Conditions of the Dongli Lake project area

Some basic conditions of the Dongli Lake project area are here presented, as was found from interviews with professionals in regard to the Dongli Lake project, literature, as well as inventory of the site. The ambition was to create a clearer picture over what prerequisites the site held.

Climate

The area is generally dry. The vast majority of the total rain falls during two weeks in August, which could cause occasional flooding during those weeks (Nilsson 2016). The summers could be hot with temperatures up to +35 degrees Celsius, and the winters cold with temperatures down to -20 degrees Celsius.

Soil

When the sea level was at its highest after the last age ice Weichsel around 20 000 years ago, the Dongli Lake area was covered by salty seawater. When the sea levels once again dropped, the area was left with heightened salt levels in the ground water (Nilsson 2016). This meant high chloride levels in the ground water, which is a common case for coastal areas that has a history of being sub sea level (Sveriges nationalatlas 2009).

There was salinisation of the ground water in the Dongli Lake area. This could likely be explained by high fresh water outtake from local wells. Such salinisation is a major risk when digging wells in areas near the coast, especially if the outtakes of water from those wells are high (Sveriges natitionalatlas 2009). This has probably been the case in the Dongli Lake area because of farming which has demanded large amounts of fresh water.

Flora and fauna

The high concentration of salt in the soil has limited the natural flora to trees, scrubs and plants that are tolerant to high salt levels (Nilsson 2016).

The project site was built on a former wetland, high in biodiversity in regard to birdlife and insects (Krigström 2016). Those species were adapted to the wetland climate of high presence of open water, and large stands of reed.

Communications

The Dongli Lake project area is located about 15 kilometres from the nearest subway station (Digital Globe & Google Earth 2016). There are buses connecting the project site to Tianjin city. Getting to the project area by car is however convenient thanks to connecting roads; I experienced this personally on my way to the study visits in Dongli Lake project area, and this was further confirmed by residents of the site.

Residents of the Dongli Lake project area

The majority of the habitats didn't work in the project site but commuted to Tianjin city (Nilsson 2016). There was a large amount of retired people living in the Dongli Lake area, which some residents in interviews claimed to be due to a wish to get away from the busy city life. Many children were also spotted in the site.

Education

One primary school was located in the project area.

Commercialism

The Dongli Lake project area had a few smaller grocery shops as well as a few restaurants. An empty shopping area was also spotted.

The city of Tianjin's overall plan for the area

In the general master plan of Tianjin, the extended Dongli Lake area was described as having high ecological values and biodiversity, mainly in forms of birdlife and insects (Nilsson 2016). Because of its geothermal springs and rich ecology, Dongli Lake area was pointed out as an attractive tourist area (Danchuan 2007; Krigström 2016).

The voices of some residents

When I interviewed some residents of the Dongli Lake project area, my main objective was, as previously mentioned, to find out about the ecological awareness of the site.

However, I also took the opportunity of asking some questions in regard to what it was like living in the Dongli Lake area. I will here present some of the major aspects that people brought up during those interviews. See Appendix 3 for detailed interview questions.

Commercials

Many people pointed out how there were not enough shops and restaurants in the area. Many went to Tianjin city for shopping.

Communications

The communications seemed to be an issue to many residents interviewed. Many expressed how they felt as if the area was somewhat disconnected from Tianjin city. Many residents also didn't think the buses went with enough frequency.

Child aspect

Many of the people I interviewed were in the company of young children. Some interviewed residents claimed how the district was a good place for children, as well as for older people, because of the many green areas. Furthermore, many of the interviewed residents were of the opinion that the area was calm and peaceful. Some interviewed requested more places for the children to play.

Some of the residents by a playground.

Lynch inspired analysis

In order to explore the physical structure of the Dongli Lake project site, inspiration was drawn from a method developed by Kevin Lynch (Lynch 1960). A Lynch's analysis is performed by studying certain elements that is considered important for a city's readability.

The elements of a city's structure are, as according to Lynch (1960) landmarks, nodes, paths, barriers, and districts. However, when I performed the Lynch inspired analysis within the thesis, I did not point out the districts. More about the work method behind this analysis can be read in the Method-chapter of the thesis.

Landmarks / spots of attraction

I identified six landmarks within the Dongli Lake project area. All of the identified landmarks could also, as it turned out, be seen as spots that would attract visitors.

The landmarks turned out to be rather clustered and all connected to important paths.

1. Theme playground: Angry Birds
2. Sports area, tennis and basket ball
3. Small town square with sales centre
4. Soccer field
5. Primary school
6. Shopping street

Nodes

Two main nodes were identified within the area. Those were both roundabouts where major paths met.

Paths

There were many streets as well as smaller walkways in the Dongli Lake project area. Within this analysis, the main bigger paths are demonstrated.

Running through the whole area was the so called 'spine' boulevard. The thought behind this road was to connect the whole area and give adequate room for both pedestrians, bikes and cars (Sweco 2005). From my impression it seemed to fill that purpose.

The two other main paths were the two roads connecting the spine with another major road, north of the area. Those were important paths to enter the area, and they seemed well used.


One major path: the Spine boulevard.

Barriers

Since the Dongli Lake project area contained many gated communities, there were many barriers to a visitor. Those barriers were mainly found around the more exclusive blocks. There were also more or less transparent barriers around the actual project area, likely to prevent unwanted visitors. Furthermore the water itself functioned as natural barriers, not marked out on the map.

In between the project site and the large park area next to the lake there was a large ditch and a fence. The fact that there was only one organized entrance to this large park area further turned the ditch-and fence into a barrier.

Original satellite image provided by ©Digital Globe and ©Google Earth (2016)

A fence worked as a barrier and disconnected the Dongli Lake project area from the large park area in association with the lake

LCA inspired analysis of built elements

Landscape character assessment, LCA, can be used describe a landscape with reference to the characteristics that combine to make a place distinctive (Tudor 2014). This LCA inspired analysis is in regard to the built structures of the Dongli Lake project site.

Based on common characteristics, the site was roughly dived into eight areas. Number one to six were mainly living areas, whilst number seven to eight were mainly commercial areas.

The different areas are here presented and explained in further detail, pointing out some characteristic features of each. More about the work method behind this analysis can be read in the Method-chapter of the thesis.

1. Four to seven floors brick houses

A smaller area with characteristic brick houses which brought the thoughts to England. In between the houses was a courtyard for the residents, which held green much vegetation and playing equipment. The area was not able to walk freely through, but only had one entrance. This area was next to the construction site, and from what I could see more brick houses with the same design was about to be built next to the existing ones.

Original satellite image provided by ©Digital Globe and ©Google Earth (2016)

2. Three to six floors apartment houses in green environment

The heights of the those apartment houses were lower than that of many others. It ranged between three and six floors. The courtyards were more open and accessible than in many other areas of the Dongli Lake project site.

3. Luxury single family houses or chain houses

The characters of the buildings had in common that they were mainly one family houses or chain houses. The heights of the buildings were lower, usually between two and three floors. The buildings had a luxurious look about them, and many had private water access. The areas containing this building type were generally more closed and private, and harder to access for visitors as myself.

4. Left over buildings from the old farmer village

This area contained what was left of the old farmer village, which existed before the Dongli Lake project started. Some of the houses still seemed to have people living in them. Even though, the area gave a worn-out and abandoned impression. There are already plans to build new buildings in this part as well, so it is a matter of time how long the existing buildings will remain (Nilsson 2016).

5. High rise tower buildings in green environment, eight to 20 floors

The buildings of this area were perceived as high. Even though some were lower with around eight floors, many also counted up to 20 floors. The area in between the building was easily accessible, and had a park like character. Some playgrounds were also found.

6. Commercial area with shops, restaurants and primary school

The area was were most of the shops and restaurants were located. The buildings were mainly relatively low, spanning from two to three floors. Brick was a commonly used material. Most of the area was connected to the main road that run through the area, 'The Spine'.

7. Empty commercial centre

The commercial building of this area was clustered around an open plaza. All of the buildings were empty, except for a sales centre. There were no people at the plaza at the times of my visits.

Green-& blue structure analysis

When I visited the Dongli Lake project area, I perceived it as having a high green ratio. There were many trees and bushes along the streets. The courtyards of the houses, and also in between building, were often park-like. The map below shows the Dongli Lake project area with the green structures exaggerated.

Blue structure was also highly present in the Dongli Lake project area. Many of those were remains of the previous structures of the fish ponds, in accordance with the ecological concept explained earlier. The main blue structure is exaggerated with blue colour in the map below.

LCA inspired analysis of park-like areas

Landscape character assessment, LCA, can as earlier stated be used describe a landscape with reference to the characteristics that combine to make a place distinctive (Tudor 2014). This LCA inspired analysis is in regard to the park-like and re-creational structures of the Dongli Lake project site.

Those areas, as I perceived them based on their characteristics, are marked in yellow on the map below. Areas for sport activities are marked in red.

Original satellite image provided by ©Digital Globe and ©Google Earth (2016)

1. Large nature-like area

This area was not part of the Dongli Lake project area as defined when Sweco worked with it. It was instead part of the new shoreline, constructed after 2005. However, there was an access through a gate, marked on the map below. The area was rich in planted trees, but not very park-like. It more resembled nature. This park area had a three meter wide asphalted trail running through it, which continued further all around the lake

2. Smaller park-like area arranged within the bigger area 1

Within the large and nature-like area one, was a smaller section which was more arranged and park-like. It had a short cut lawn, and a situ concrete walkway lead down to a wooden land pier.

The only gate to area one and two were found in relation to this park.

3. Grass lawn next to water

An area connected to the playground in area four, but divided by a road. It is debateable whether or not this should be perceived as a park, as it was mainly a big lawn of grass. Maybe it was rather an unprogrammed open green area

4. Theme playground

A large playground with 'Angry Birds' theme. On both my visits, this was a well-visited place for younger children and their parents and/or grandparents.

5. Wetland park

Wetland park with an informal path running through it, which was the only walkway through the area. This park area was flooded to extents during the weeks of the year when the rain fell (Krigström 2016). There were some informal piers built into the water at some spots.

I had to do some jumping over holes to be able to follow the informal walkway; hence the park was not very accessible. It also was somehow tricky to find the entrance to the park.

6. Narrow park areas along the water

I perceived those parks as mainly meant for the people living in the close neighbourhood. They had some smaller playgrounds, arranged walkways and benches. Those park areas were located close to water.

7. Sport area, soccer

A soccer field surrounded by racetracks for running.

8. Sport area, basketball and tennis

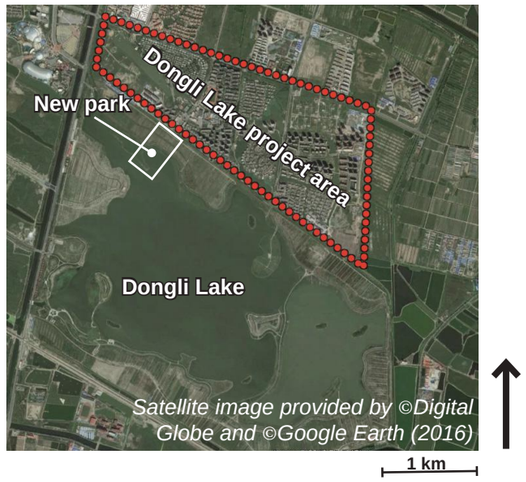
Sport areas for basketball and tennis.

The most suitable location for the Eco Info Park

The area marked out in yellow below is the site within which I chose to place the Dongli Lake Eco Info Park. I considered this location the most appropriate area for the park, after having conducted the previously presented analyses.

I here present some conclusions from the different analysis which motivates my choice of location. I often refer back to the actual analyses, which I why I recommend the reader to compare the text with the actual, previous presented analyses in order to get the whole picture.

Entangled within the motivations of location-choice, are the advantages of what future design opportunities the chosen location brings.



Conclusions from the Lynch inspired analysis

These were the conclusions from the Lynch inspired analysis, within which some design opportunities are entangled.

Park entrance close to many points of attractions

The Eco Info Park's entrance will be close to many other points of attractions pointed out in the Lynch analysis, such as the commercial centre and school as well as a major playground and sport areas. Already having many people visiting this area could make room for spontaneous visits and that the park becomes visible rather than hidden. Furthermore, the park entrance will make an additional point of attraction, and clustered with the others, the whole area will likely become more attractive.

Park entrance will be close to major node

As also appeared in the Lynch analysis, there was a major node next to the new park entrance. According to the space syntax theory, this would naturally bring more people to the park since more people would be moving around in the area (Hillier & Iida, 2005).

Closeness to school opens up for the schools to use the park frequently

One of the points of interest was the primary school. Placing the park within walking distance from the school creates opportunities for the school to use the park as a platform for ecological education. The students could in this way get a deeper understanding and greater pride of the urban district in which they live, which comes as a consequence of enhanced ecological awareness (Rottle & Yocom 2010). The park and its surroundings could also be used by the school for outdoor physical education.

Barrier cutting of the lake from the built environments

The Lynch analysis also identified a barrier cutting of the larger park area, in which the Eco Info Park will be located, from the built environments. This barrier consisted of a fence and a ditch. This barrier would have to be opened up to some extent in order to make the park-area as a whole more accessible.

Since the fence might also bring the Chinese visitors a sense of safety (Global Times 2016; Nilsson 2016), it shouldn't be removed completely. Instead I would suggest a well visible main entrance, complemented by some more informal entrances along the fence. The smaller entrances should be connected to already existing roads within the built environments.

If desired, the park could by keeping most of the fence be closed during night times which is usually the case in China (Nilsson 2016). It also opens up for the possibilities of entrance fees which could be a way of funding the maintenance of the park (Nilsson 2016). With that said, entrance fees in my opinion would not be ideal since I reckon it would make the park less accessible, which would conflict with the purpose of spreading ecological information to all the inhabitants. My strong suggestion is therefore trying to find other ways to fund the park than entrance fees.

Conclusions from the LCA inspired analysis of built elements

These were the conclusions from the LCA inspired analysis of built elements, within which some design opportunities are entangled.

Could bring life to the empty commercial centre

The new park will be located with its entrance connected to the today empty commercial centre, area 7 on the LCA-map. The expectation is that many people in the future will pass through the park entrance; ergo they will also have to walk through the plaza of the today empty commercial centre.

Having people moving through here on their way to and from the park could make the shopping centre livelier and give better opportunities for business. Hopefully this will give the commercial centre a better chance to establish e.g. shops and restaurant. This is in accordance with space syntax studies that showed that business is better in shops where many people move by between locations (Hillier & Iida, 2005).

The open plaza was empty and unused at my visits. This

plaza could make a pre-room to the park and with enough space for many people, whilst bringing life to the plaza. The open plaza also enabled free line of sight towards the lake.

Close to existing commercial area with shops, restaurants and school

The new park will also be close to another existing, livelier commercial centre, area 6. This would hopefully make more people attracted to the park entrance close by.

Close to construction site which will eventually mean more people

There was ongoing construction of more apartment brick houses right next to the new park. This will eventually become a large housing area holding many people, who will have direct access to the park and lake. This access will in turn make the new housing area more attractive to prospective buyers, since it's been shown that housing areas close to large urban parks sells significantly better and to a higher price (Coughlin, Hammer & Horn, 1974).

Conclusions from the green- & blue structure analysis

These were the conclusions from the green-and blue structure analysis, within which some design opportunities are entangled.

Make Dongli Lake, the lake, more present

There were much green-and blue structure present in the Dongli Lake project area, as can be seen in the analysis of the green-and blue structure. However the major lake, Dongli Lake, was very unpresent in the Dongli Lake project area. It was to large extents cut off from the Dongli Lake by physical and visual barriers. There was nowhere from ground level in the housing areas from where the lake could be seen during the times when the trees had leafs.

The chosen location of the Eco Info Park presents the opportunity to make the lake more present in the area, by creating a clear view of the lake from the park entrance and the connected plaza within the today empty commercial centre

Conclusions from the LCA inspired analysis of park-like areas

These were the conclusions from the LCA analysis of park-like areas, within which some design opportunities are entangled.

Make the unique forest-and lake environment more accessible

There were some park areas identified within the green structure of the Dongli Lake project area, as identified in the LCA analysis over the park-like areas. However the large area in the south, area 1 in the LCA park-analysis, was the only of its kind. None of the other parks had the same character of nature-like forests and lake. This area was also the only park area large enough for exercising like jogging, biking or taking longer walks.

This area was quite unaccessible due to the barrier identified within the Lynch analysis and there was only one gate leading in to the area. It is unfortunate that this for the area unique site was so hard to get to. The chosen location for the Eco Info Park would present the opportunity to make this whole area more accessible to the Dongli Lake project area.

Will not compete with other parks due to unique character

Since the other parks in the area had other characters, opening up the park area in the south would make a good complementary and not compete with the other parks. The only nature-like park present within the Dongli Lake project area was the Wetland Park in the northern part. However that park presented another type of nature, where reed and water lilies made up most of the vegetation.

Could benefit from existing park-area nearby

There was already one existing arranged park area next to the Dongli Lake, area 2. This park had the advantage of being close to the high tower buildings, as identified in the LCA-analysis of built structures. Those high tower buildings accommodated large amounts of people. I reckon the connections between this park and the new park should be strong in order to encourage people to move between the two parks.

Satellite image provided by ©Digital Globe and ©Google Earth (2016)

Possibilities to use asphalt trail to get around the lake

There was a three meter wide asphalted trail running the location in which the Eco Info Park will be located. This trail continued further all around the 10 kilometres around the lake.

This presents the opportunity for people to use the Eco Info Park as a starting point for going around the lake. To walk, run or bike the 10 kilometres around the lake could be a good opportunity for exercise, as well as a way to get close to and experience the environments around the lake.

Satellite image provided by ©Digital Globe and ©Google Earth (2016)

Sum up of advantages of the chosen location

- Close to many other attractive spots and major node
- Close to the local primary school
- Could bring live to the today empty plaza & commercial center
- Close to newly built housing areas, today under construction
- Will make the lake, Dongli Lake, more present
- Will give access to unique nature-like environment
- The new park and the present park nearby could benefit from each other
- Possibility to use existing asphalt trail to go around the lake

Inspirations for the future design proposal

-Create a well visible main entrance, complemented by some more informal entrances

-Create possibilities for the local school to use park

- Cut off cars from the new park
- Use empty plaza as pre-room to the new park
- Open up line of sight to the lake from the plaza
- Make the forest more accessible

Photo inventory of the site

In order to introduce the choosen location further to the reader, I performed a photo-invetory of the site and its park-surrendings. The photo-inventory also helped me remember the site better for the final park design proposal. The numbers on the map to the right represents the spots where the different photos were taken.

MAP OF WHERE THE PHOTOS WERE TAKEN

1. Houses face the park & ditch barrier

2. Houses face the park & ditch barrier

3. Entrance to the park through empy center

4. Buildings face the park, & dirt road

5. Following dirt road to Dongli Lake

6. Bay shaped shoreline of the Dongli Lake

7. Demonstration of an 0.5 m drop to the water

8.View over the lake

9. Asphalt road through park, 3 m wide

10. Trees planted in regular pattern all over area

11. Demonstration of heigh of the largest trees

12. Fence cut of park from housing areas

Aim: Present a design proposal for the Dongli Lake Eco Info Park

This is where part three of the thesis starts. The aim of this part is to present a design prosal for the future Dongli Lake Eco Info Park.

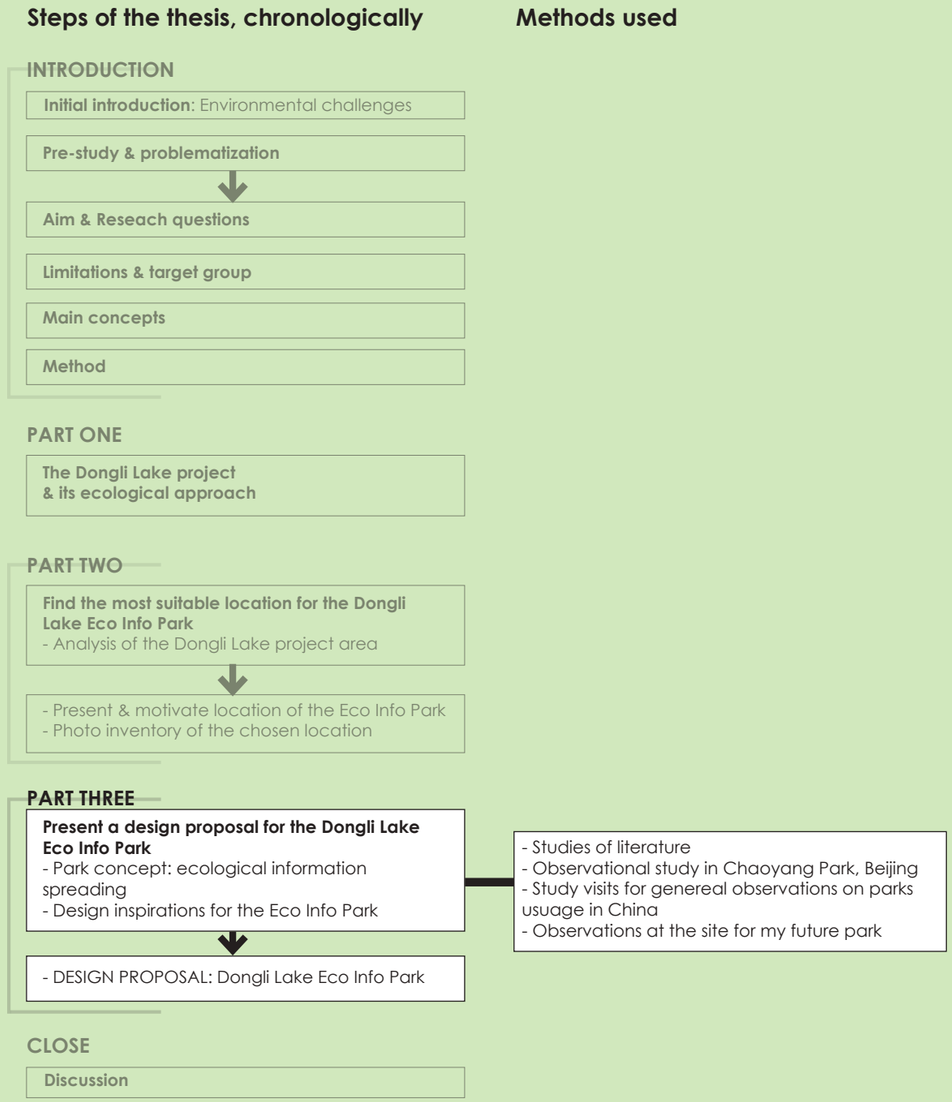
This part starts off by clearing the concept of ecological information spreading. This is an essential part of ecological design in order to make a place designed on ecological approaches sustainable.

Low impact design can be seen as a branch within ecological design. I use this as a subordinated concept, as I thought some of those aspects should come useful in the park design.

I then present different ways through which I work with ecological information spreading within the Eco Info Park

After that, the results and conclusions of some conducted studies are presented. The purpose of those studies was to in different ways gain inspiration to the final design of the park. I point out what from each study I carry with me to the final design.

Finally, the actual program of the park is presented. The program itself was on purpose made quite broad, why I also explain the different parts of the design in further detail and how those are implementations of the program. The last pages display an illustrated plan over the Dongli Lake Eco Info Park, three sections from the park, and finally an illustration.



This chapter goes deeper into the chosen concept of enhancing ecological awareness and foster environmental care. I have previously explained why ecological awareness among the residents, as well as attachement to the landscape, are important for the ecological sustainability. Thus some of the here presented information works as a repetition.

Further on, I go into more detail about ways that ecological information could be conveyed in a park environment. I present a few examples of how information could be conveyed.

Park concept: Enhance ecological awareness & foster environmental care

Within this thesis I put focus on the aspects of ecological design that underlines ecological awareness and environmental care within the local population. Rottle and Yocom (2010) stated that without communicating the goals and visions to the local residents, an ecological landscape project is extremely vulnerable to change that may inadvertently cause its failure. Hence, this is important in order to make a place with ecological design sustainable (Rottle & Yocom 2010).

This was why my focus came to be to increase ecological awareness and foster environmental care among the local residents. This was done by, through the park, enhance ecological knowledge by spreading ecological information, and by striving to create attachment to the landscape itself by making it more accessable and welcoming to people.

My chosen focus was, as previously mentioned, a response to the lack of ecological awareness among the residents of the Dongli Lake project area in regard to their home district.

What ecological information should be spread

The main information should be in regard to the ecological principles on which the Dongli Lake project was partly created. This could help the residents understand why their district looks the way it does, and hopefully instil pride in the local population.

For instanse, much reed character was preserved in my design proposal, presented later on. The ecological information could point this out, where to find this reed, and what species could live there. It could as another example point out and teach aboute native trees of the site. Thus, the ecological information should primarly be in conncetion to the actual site. This in order to enhance ecological awareness and foster environmental care over the site itself.

The creation of attachment to the landscape

By being able to make personal familiarity with the landscape by learning about it and experiencing it, people are likely to feel more engagement towards it (Athman & Monroe 2001). To experience the landscape in a positive way could also foster attachment to the landscape itself. This could be by personal experience of plants and animals in the area, as well as positive sensory expressions connected to the landscape: like the feeling of dipping one's feet into the water. Also just spending time in the landscape increases the possibilities of attaching to it.

Low impact design, a subordinated concept

I will also to some extents use LID as part of my concept, even if this will be subordinated. I find that the ideas of LID concerning local storm water handling and use of native spices could be applicable to the Eco Info Park. The usage of those principles would further be demonstrating good ecological examples which could underline the ecological pride I want to create.

How to convey information about the ecology of a site

The imagination is more or less then limit when it comes to possible ways of spreading information to visitors of a park. I here chose to look further into a few ways that to my judgement would be suitable for the Eco Info Park. This judgement was drawn from examples on how other parks and visitor centres chose to spread information, combined with own personal experience of what I perceive as pedagogical and attractive information spreading.

In 2015, I took interest in studying how two botanical gardens in London worked with information spreading to their visitors. I visited the parks myself in order to study this, and the result was an unpublished report on the subject of information spreading in parks. Some of the conclusions I drew from that work will be used as an inspiration within this design proposal when it comes to information spreading in general, and specifically sign design.

I also took inspiration from some nature reserves in Sweden and their work of conveying ecological information to the visitors.

Educating children about ecology is important in order to create ecological sustainability (Orr 2005). In conformity, I also looked at ways of engaging the local school.

Signs

Signs holding information is a commonly seen way to spread information to visitors of a park. Signs has many advantages: creating character, being relatively inexpensive, and inform 24 hours a day, to mention some (Division of interpretive planning 1998).

When using signs, the amount should be considered. Too many signs could make the visitor overwhelmed, resulting in that none of the signs are read (Ottosson 2015).

Furthermore, the design of the sign itself should be well-balanced. Too much or small text could result in loss of interest.

Additionally, a blend of different kinds of signs could make them more interesting. But then again, not too many different kinds since that would make the impression split (Ottosson 2015).

An example of a well-balanced sign informing about a specific tree. Photo from Kew Gardens, London

Nature paths

A nature path is a marked out path in the nature created for recreational and often environmental informative purposes (Nationalencyklopedin 2016d). It is often used to spread information about the specific nature of which the path is running through, for example how the landscape was shaped and what species can be found in the area (Stockholm stad 2015; Vattenriket 2016).

When designing a nature path, there are some important aspects to consider. Athman & Monroe (2001) listed some of those aspects: to make the path accesible, to locate the path in a varied setting, to choose the starting point of the path carefully, to allow the visitors to learn along the path, and to make sure that the path has a well considered lenght, to mention some.

An overview of some of the nature paths in Sweden showed that the lengths vary, for example the nature paths of Vattenriket in Kristianstad varied between 0.7 and 5 km in length (Vattenriket 2016). However, the primary teacher Ottosson suggested that a nature path for children in the primary school age, as the school in Dongli Lake project area, should preferably not exceed one km (Ottosson 2016).

Involve the local schools

Building a sustainable world cannot succeed unless the future generation is ecologically literate (Orr 2005). Therefore it is important to make the information of the Eco Info Park appealing to children. One way to do this could be to encourage the local primary school to use the park for environmental educational purposes. This could also build a pride and understanding within the children for the site itself and foster environmental care. Athman & Monroe (2001) pointed out how environmental care among childred is created through knowledge and responsibility.

Web page for the park

To spread information about the park, a web page should be created. This web page should hold information about the park itself, such as activities in the park. It should also give a deeper introduction on ecological themes that are brought up in the park.

One way to instill environmental care of a site, is to let people participate in the monitoring of ecological conditions (Rottle & Yocom 2010). People could report on what fish, birds, insects, plants etcetera that has been spotted on the site. This could be reported on the webpage of the park. Also things as water level of the lake could be monitored.

QR codes

Quick response codes, QR-codes, are symbols that can be scanned with a smartphone (Nationalencyklopedin 2016e). The phone translates the code into text, or forwards the phone to a web page. One commonly usage area for QR-codes is on signs, where the code can be scanned to get more information about a given issue.

Smartphones are commonly used in China, with 563.3 million estimated phones in 2016 and expected growing numbers (Statista 2016). Since smartphones are so commonly used, QR-codes could make an interactive and fun way to convey information. Another bonus with the QR-codes is that the information they link to can easily be updated, which gives opportunities for accurate and changing information.

Division of interpretive planning (1998) listed some of the advantages with using such moderne technology as: greater interactivity, ability to zero in on specific interests, greater graphic interest and effects, ability to relate to audiences such as teenagers, and ability to update information.

In previous chapter I further introduced the concept for the Eco Info Park, ecological informations spreading, and how this could be done in different ways.

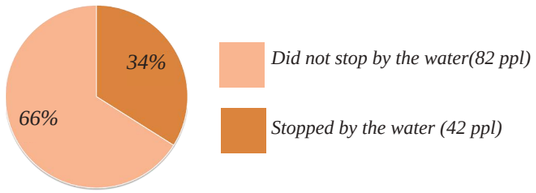
This chapter presents different inspirations for the actual program and design of the Eco Info Park. It contains results from the conducted observational study in the Chaoyang Park and conclusions from that, as well as conclusions from the study visits. Finally some tips from professionals regarding my park design are presented.

All of this will affect the final park design, which makes this chapter relevant for the reader, in order to understand the final program for the park as well as the final park design.

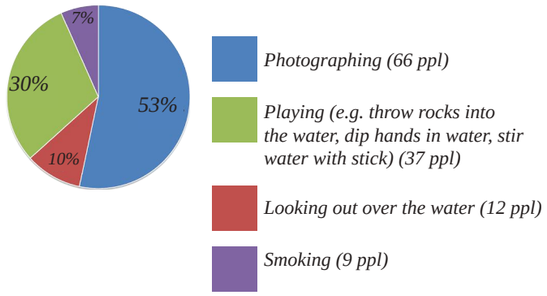
Result from the observational study

As part of my research for the design proposal, I conducted an observational study, described more in detail under the 'Method'-chapter. The aim of the observational study was to find out how Chinese people could behave in a park setting next to water. I here present the results from this observational study.

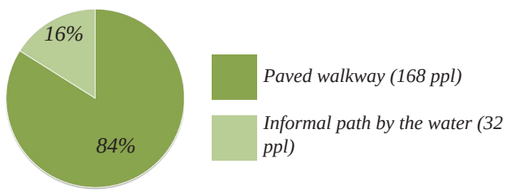
Whether people chose to stop by the water



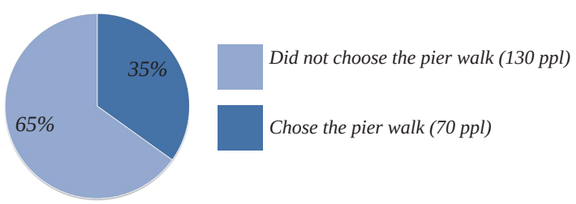
What activities people engaged in when stopping by the water



Where people chose to walk or jog



Whether people chose the pier walk detour



Conclusions from the observational study

I was surprised to see how many people actually used the informal path, even though the walked pavement was both much more convenient and visible. This went along with what some of the professionals I interviewed said: that there is a longing for nature in many of the urban habitants of China.(Krigström 2016; Nilsson 2016).

Many people also chose to talk the pier detour and to stop by the water to perform different activates. This could be perceived as that people enjoyed the actual water presence and wanted to in different ways interact with it.

When interacting with the water, photographing was by far the most popular activity. This could be seen as a consequence of many people having access to smartphones, making it easy to take photos (Statista 2016). It suggests that it could be a good idea for the Eco Info Park to have many picturesque spots, where people could take photos and 'selfies' with their phones. I should also promote the opportunity for people to 'hashtag' the photos for an Instagram tag associated to the park. This could be good, free advertising of the park whilst at the same time creating a photo album under that hashtag.

The second most popular activity by the water was to play. Both children and adults performed this activity. In order to do such things as e.g. dipping hands, it is important to be able to get close to the water by allowing easy water access. Such possibilities for direct water contact should be available in the park. To make this possible there needs to be at least one place where the 0.5 meter drop from the beach to the water surface is reduced. This drop existed by much of the shoreline today as identified in the photo inventory.

Inspirations for the future design proposal

- Save much of the nature
- Create places for water contact through smoothing out the 0,5 meter drop at some parts of the park
- Create picturesque spots for photo-taking
- Create a hashtag for the park

Observations from the study visits in parks in China

I was told by people working within urban planning and landscape architecture that Chinese people tend to use parks more intensely and for a wider range of purposes compared to Western countries (Buck 2016; Krigström 2016; Nilsson 2016). This turned out to be in accordance with what I came to experience at study visits in Chinese parks. Activates I observed were:

Active forms of activities

- Different types of ball games
- Writing poems in water on the ground
- Playing instruments
- Dancing, both waltz and more contemporary dances
- Practicing sword fights
- Inline skating
-Kite flying
- Singing
- Racing with electric toy cars
- Jogging
- Boating on ponds
- Ice skating on ponds

Calmer forms of activities

- Picnicking
- Doing yoga
-Smoking
- Playing
- Enjoying views
- Taking photos and filming
- Playing board games
- Reading
- Conversing in larger and smaller groups
- Bringing pets, both dogs, cats, and birds
-Bird feeding
- Enjoying the sunshine on benches

Conclusions from study visits in parks

I was surprised to experience in how many different ways Chinese people used the parks I visited. This led me to the conclusions that there needs to be opportunities both to be active in different ways and to find restful peace in the future Eco Info Park. But all the activities should be as closely as possibly connected to the possibility to learn more about ecology and enjoy the present environment, in accordance with my main concept of enhancing ecological awareness.

Inspirations for the future design proposal

- Create possibilities for many different types of activities
- Create room for both calm activities and more active activities
- Connect the created activities to the possibility to learn more about ecology and/or to enjoy the nature

Observations from the study visits to the site of the future design proposal

There were not many people present in the area of my future design proposal, which was remarkable seeing how large the area was and that it was the only place where the inhabitants could get access to the big lake. In total during my two visits, I spotted twenty persons in this park area. This should be put in the perspective of that there was approximately 60-70 000 inhabitants in the Dongli Lake project area.

All people I met in the park seemed to have entered through

the only arranged gate to the area. It was also around this area the majority of the few visitors were found. Some of those people were hanging out on the wooden land pier in connection to the park entrance. I did not see any benches or other sitting opportunities throughout the whole area.

Many people that I met were biking, walking or jogging along the only arranged track through the area: the asphalted three meters wide road. There were also a few cars speeding around this road, likely for enjoyment. When the cars drove by, the pedestrians had to step aside into the bushes. On my first visit to the area, the lake was still covered with ice. I then spotted some people ice-fishing.

Conclusions from study visits to the site of the future Eco Info Park

Trails in a park have shown to have the strongest relationship with park use for physical activity (Kaczynski, Potwarka & Saelens 2008). Furthermore trails in the park make the visitors able to get close to the nature of the park. Therefore roads are importante and should be present in the new park.

The main road through the park that already existed should be kept, also since it should cause more environmental damage than the outcome should be worth to produce a new one. The road was also very accessible, thanks to the material of asphalt and width. The road ran through the whole area and beyond, which presented opportunities to keep jogging, biking or walking along the lake for long distance if desired. The whole walk around the lake was around 10 kilometres. It was unsure whether the whole road was in the same well maintained condition as the parts I visited, but if not, this should be looked over to in order to ensure accessibility all around the lake.

However, cars should not be allowed in the park, other than maintenance vehicles. The cars conflicted with the pedestrians, bikers and joggers and made the road unsafe for those.

Furthermore there should be more places to sit in the whole park area, which might be especially important to bring older visitors to the park.

Inspirations for the future design proposal

- Create trails to promote running, walking and biking but limit the access for cars only to maintenance veichles
- Create more places to sit

Study visit to the Qiaoyuan Park in Tianjin, a park designed with an ecological approach

I visited the Qiaoyuan Park in Tianjin, which was a park with ecological design designed by the Chinese company Turenscape. From this park, I found certain inspiration which I will use in my future park design. The inspirations from the visit are presented here.

Curved board walk along the water

There was a long wooden board walk in the park, which varied in width and smoothly followed the shoreline of the river.

Watch towers

There were 12 watch towers present in the Qiaoyuan Park. They were about 10 meters high and from the top the visitor had a good view over the park. Seeing the park from above gave a good overview and understanding of the quite large park. From the top, the visitor could look out over the wetland landscape below. Climbing one of the towers was also a fun experience in itself.

Conclusions from the study visit to the Qiaoyuan Park

I liked the shape of the board walk and how it curved along with the shoreline. It gave me a feeling of that the boardwalk had been carefully adapted after the shape of the landscape, rather than the other way around. I think this goes well along with the idea of my park of embracing the nature instead of re-shaping it. There was a bay in the location of my future park that would be suitable for such boardwalk.

Inspired by the towers in the Qiaoyuan Park, I reckon that a watch tower could be an interesting and informative contribution to the future park. But instead of 12 towers I would rather have one single tower, but higher. A high watch tower could be an exciting experience to climb, and as a reward enjoy the view from the top.

From the watch tower, the visitors should be able to get a good view over both the park and the Dongli Lake project area. Seeing the landscape from above could enhance the understanding of coherence.

In the top of the watch tower there should be maps over the Dongli Lake project area as it looked like before and after the area was transformed into an urban area. It should also point out the areas that have been preserved, so that the visitor could more clearly see and understand what preservation means.

The information in the top of the watch tower should also make visible the historical structures of the Dongli Lake project area and in what ways and what areas they are still traceable today. This will enhance the understanding and pride of the area and its uniqueness. Furthermore, a high watchtower would also function as a landmark and a point of orientation in the park.

Inspirations for the future design proposal

- Create a curved boardwalk that follows the shoreline of the bay
- Create a watch tower that works as a landmark, an attraction, and a chance to understand the ecology of the site better

Tips from professionals concerning the park design

When I interviewed professionals working in China within landscaping and urban planning (Krigström 2016; Li 2016; Nilsson 2016), I took the opportunity to ask for input to my future park design. I did not make use of all of the advice, but the ones I found suitable, as presented in the list below. The advice from professionals who worked within urban planning and/or landscape architecture was of course very valuable for me, and this is why I wanted to use that advice as part of my design inspiration.

- 'The winter in the Tianjin area is cold, and the summer is hot. Therefore it is important to create both places for sun and for shade.'

- 'Create room for different moods and people. Both room for meeting and socializing, and room for calmness and rest.'

- 'Probably a more nature like environment should be appreciated. There is a long for nature in the Chinese people.'

- 'Regarding urban farming, it should be hard to do in any larger scale since the quality of the soil is not so good. Further on, this would need a lot of water for irrigation which could cause an issue. But maybe some more small scale farming for the school could be arrangeable, for educational purposes.'

- 'The understanding of the site should be enhanced. Why does this place look like it does? And what is unique about it? What birds and insects live there? And information about the food and energy cycle, how every species contribute and has its own place in nature.'

- 'Activities are always appreciated. Running and jogging are becoming increasingly popular in China. Maybe something like orienteering could be introduced in the area. And water sports which give the chance to come close to nature, like canoeing or kayaking.'

Inspirations for the future design proposal

- Create places in the sun as well as in the shade
- Keep a nature-like environment to large extends
- Create small scale farming for the local school, for educational purposes
- Inform about the ecology and biodiversity connected to the site
- Create places for jogging
- Introduce something like orienteering
- Create possibilities to get close to nature by water sports

This where the actual design proposal of the Dongli Lake Eco Info Park starts. Firstly, I present the program for the Eco Info park. This program was the sum of all the conclusions I came to in the during the analyses, the concept of ecological information spreading and LID, as well as the previous two pages of design inspirations for the Eco Info Park.

The program was on purpose made quite broad. However, after the program points are presented I go into further detail about the implementations of the design.

Program for the Eco Info Park

- Create an attractive, well visible main entrance to the park.
- Create attractive spots in the park, high in character.
- Create possibilities for activity.
- Create possibilities for rest and peace.
- Create possibilities for water interaction.
- Create possibilities for outdoor education for the local school children.
- Maintain much of the character and vegetation of the area today, but make the landscape more accessible and welcoming to allow place attachment. No new trees are planted, but the ones already growing in the site are carefully built around. As for the flowerbeds and reed, only native species adapted to the site are used. This program point relates to low impact design.
- All the non-permeable surfaces are slightly sloped towards the vegetation areas, allowing local infiltration. The buildings in the park have green roofs. This program point relates to low impact design.
- In different ways enhance people's ecological awareness and pride of this unique environment, in order to foster environmental care.

The Info Eco Park in further detail

The different parts of the design prosal are here presented more in detail. Next to the heading of each part is a symbol. This symbol shows what part/parts of the program it is implementing.

Furthermore, there are circled numbers in front of some headings. Those numbers represent actual places on the map of the Eco Info Park, presented on the next page.

1. Entrances

The main entrance is the one connected to the today empty shopping centre. In the future this will hopefully be a lively plaza, blending into the entrance of the Eco Info Park. From the plaza the park entrance is clearly visible, and the lake can be spotted 200 meters away. There is also a clear line of sight to the watchtower, which becomes somewhat of a landmark in the park. The line of sight also passes by the Eco Café with its characteristic round shape and green roof.

Other than the main entrance there are two smaller, more informal entrances to the park. Those connect to existing roads, making it convenient to get to the park.

Sketch of the main entrance, which should be clearly visible. From the entrance the visitor have a line of sight to the Eco Café and the watchtower. Also the lake could be seen.

Walkways

The walkways are made up of bright situ concrete. The material is accessible for everyone and the brightness of the material makes the room lighter; something that could come useful in the more shady parts of the forest. The already existing asphalt road is kept and used as a main road connecting all the way around the lake. All up there will much more trails than before, but without the cars.

Active forms of activities

There will be plenty of opportunities for activity in the park. For instance visitors can jog, bike or walk on the walkways along the park. There is also the possibility to rent a canoe or kayak to see the lake from another perspective and get a close nature experience.

Calmer forms of activities

Those not wishing to be as active will find plenty of places to sit in the park to just enjoy the view, converse with friends or watch other people. The platform at the very end of the wooden pier opens up for the possibility for yogaing with a spectacular view.

Spots for photographing

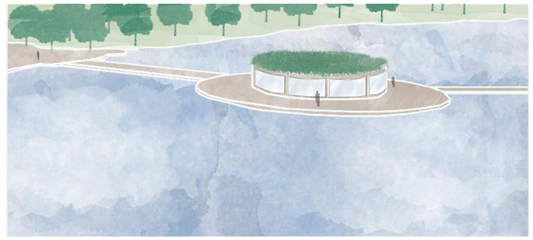
The Dongli Lake Eco Info Park will have many nice photo spots. The reed labyrinth, the wooden pier walk, and the view from the watch tower to mention some. The photos could be tagged with the hashtag #donglilakeecoinfopark to create a common album for the park.

2. Renting a canoe or kayak

Renting a canoe or a kayak will be possible from the renting house with green roof along the wooden pierwalk. The boats can be launched straight from the pier. This could be a great way to see the lake from another perspective and get a close nature experience, as well as getting exercise.

3. The Eco café

Only a 200 meters walk from the entrance is the Eco café, with its characteristic round shape and green roof for absorbing the storm water. On cold days the visitors could cuddle insight and watch the lake, and on days of nice weather they could sit in the outdoor area. The Eco café will also in different ways provide information about the ecology of the Dongli Lake, for instance perhaps some information about the local birds could be printed on the tables.



Sketch of the Eco Café, with its characteristic round shape and green roof for absorbing the storm water. The long wooden pier continues into the lake.

4. The long pier in the water

The long wooden pier in the water stretches into the lake. Walking or running on it could be a fun experience for kids and adults alike. At the end of the pier is a round platform with benches around it. This could be a spot to take a rest, have a picnic, enjoy the views or do yoga.

5. The boardwalk along the shoreline

The boardwalk smoothly follows the natural shoreline. Its shape widens up and narrows down in a playful way. Playful are also the stepping stones in the water on which the visitors can take a little detour. Along the entire boardwalk runs a sitable stone wall behind which local flowers are planted. Following the boardwalk makes the visitors pass the canoe renting house, to eventually end up by the watch tower. See page 34 for illustration.

6. The watch tower

The watch tower is somewhat of a landmark in the park, visible all the way from the entrance. Climbing the stairs of the 15 meters high tower will be a challenging but fun experience. From the top the visitor could enjoy a great view over the Dongli Lake urban district, the Eco Info Park, and the lake.

There are signs at the top of the watch tower, showing photos over what the Dongli Lake project area looked like

before the transformation, and point out in a map which of those areas are still preserved. The visitor might be able to spot some of those locations from the tower!

7. The reed labyrinth

The reed labyrinth is inspired by the reed growing naturally in the area. It is a playful way for the visitors to get a closer relation to the commonly occurring reed of the area. Within the labyrinth there are signs at different spots, informing in a fun way about the ecology of the site. The build up could be like an adventure course, where the dead ends of the labyrinth represents and inform about bad environmental choices, whilst the right way through the labyrinth informs the visitor about good environmental choices, e.g. that taking care of the natural environment will lead to a prospering bird life.

8. The nature-like beach area

The nature-like beach is still very nature-like but with the grass kept shorter and some trees taken out in order to let the sun filter through the canopy. This could make up a picturesque spot to bring a blanket and have a family picnic. There are also many benches here allowing people to rest and enjoy. This is the area where the 0,5 meter drop to the water surface is smoothened out, allowing the visitors to walk all the way down to the water. Here, the kids could play with the water in ways like dipping their hands, or stir the water with sticks.

Engaging the local school students

The position of the Eco Info Park near the local school presents the opportunity for the school to use the park for environmental education purposes. For instance the nature path could be used as an area for quiz walks. The nature path is provided with two
9. outdoor class rooms which also could be assembly points. One is located in a forest environment, and the other in a lake environment.

10. Urban farming for the local students

Just by the park entrance there is a farming area reserved for the schools to educate about growing different plants and learn to take care of those. The location of this area is picked in order to make it close to the school, as well as being able to show the farms for other people in order to foster pride in the students over taking care of the living environment. If the school in the long run would not want to make use of this opportunity, the area could easily be transformed into a flower bed for native flowers. It could also be transformed back again at a later stage if interest from the school would reoccur.

11. Nature path

There is a clearly marked out nature path, starting of just near the entrance of the park and bringing the visitor to both forest and lake environment. The path is 1 km of length, suitable for school children in their primary school age (Ottosson 2016). Along the path there will be signs educating about the surroundings. There will also be QR-codes to follow and scan with a smartphone

QR-codes

QR-codes make a modern and interactive way to learn more about the ecology of the site. It is suitable for an urban district in China since many people own a smartphone (Statista 2016). The information that the codes are linked to are easy to update, which opens up for the opportunity to keep the information accurate.

There could be system where the visitor of the park logs into her or his account, and gets information and/or quiz questions adjusted to the visitor's age. There could be weekly nature quizzes arranged where the score board of the result gets published on the webpage of the park. This would trigger people's lust for competition, get people out and about in the nature, whilst at the same time enhancing the visitors ecological knowledge.

The QR-codes should be used along the nature path, but not there exclusively. They could also be used as a form of orienteering covering the whole extended park area, where the visitors could treasure hunt for QR-codes. The maps of the codes available would be presented on the webpage of the park, so that they could be downloaded to a smartphone. There is also the possibility to develop a phone application for this activity. This would be a fun challenge, a chance for exercise, and a way to get close to nature.

There could be both QR-trails on land and along the beach reachable by a canoe or kayak. The position of the QR-codes should be changed by the staff of the park every week and new maps should be uploaded on the webpage in order to present new challenges and keep the interest up.

Signs

The Eco Info Park also contains more traditional ways of information about ecology, such as signs. They are to be designed in an interesting way and also contain pictures and maps, in order to keep the reader's interest up.

I have already mentioned a few places where signs should be used, such as in the reed labyrinth and at the top of the watch tower. But there should be many signs all around the park to inform about the ecology of the site. Some could be put in surprising locations.

Web page of the park

The webpage of the park should be appealing to visit as well as informative. There should be practical information about the opening hours, if any, as well as maps of the park. There should also be information about activities that happens in the park, such as e.g. arranges group jogging or nature classes for children.

On the webpage there should also be a score board for the QR-quiz results, as well a nature report site where people could report and upload pictures of different animals and plants spotted in the area. There will also of course be information about the ecology of the site and the ecological approach on which the Dongli Lake project site was partly constructed.

The local school has its own part of the site where they can put up photos of what activities the students perform in the park, such as photos from the urban farming. This will create a pride in the children over what they do and learn in the park, and how they take care of the environment.

There should also be a link to an Instagram album under the hashtag #donglilakeecoinfopark, contributing to the sense that the park belongs to every visitor, creating something together.

DESIGN PROPOSAL:
DONGLI LAKE
ECO INFO PARK

1 Main entrance
2 Building for canoe- or kayak renting
3 The Eco Café
4 The long pier in the water
5 The boardwalk along the shoreline
6 The watch tower
7 The reed labyrinth
8 The nature-like beach area
9 Outdoor classrooms
10 Urban farming for the local students
11 Nature path

Original forest
Nature-like beach area
Building with green roof
Flower bed with native flowers
Wooden pier
Situ concrete
Planted reed
Tree with round bench

The plaza extends all the way to the entrance

Informal entrance

A similar informal entrance in this direction

Benches

Entrance room

Narrow passages between the rooms gives a feeling of the rooms opening up like a clearing

Forest room

Reed room

Benches

Drop taken out allowing water contact

Existing asphalt road continues all the 10 km around the lake

Part of the pier leveling down to the water to launch canoes/kayaks

Sitable stone wall

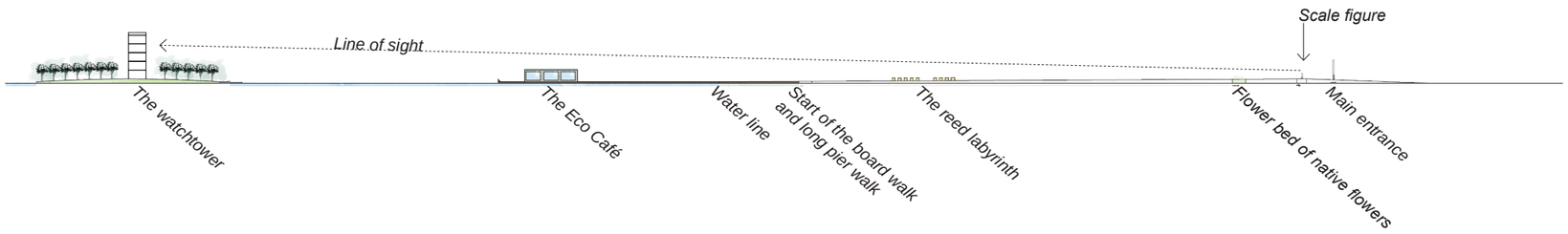
Stepping stones

Benches

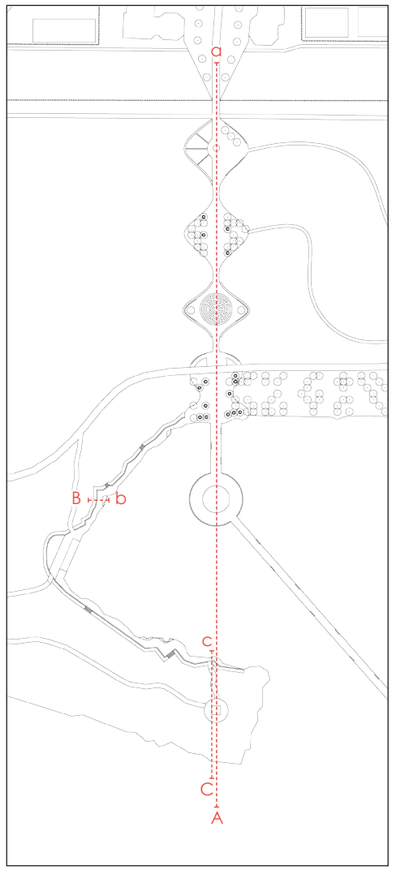
Benches

1:2000

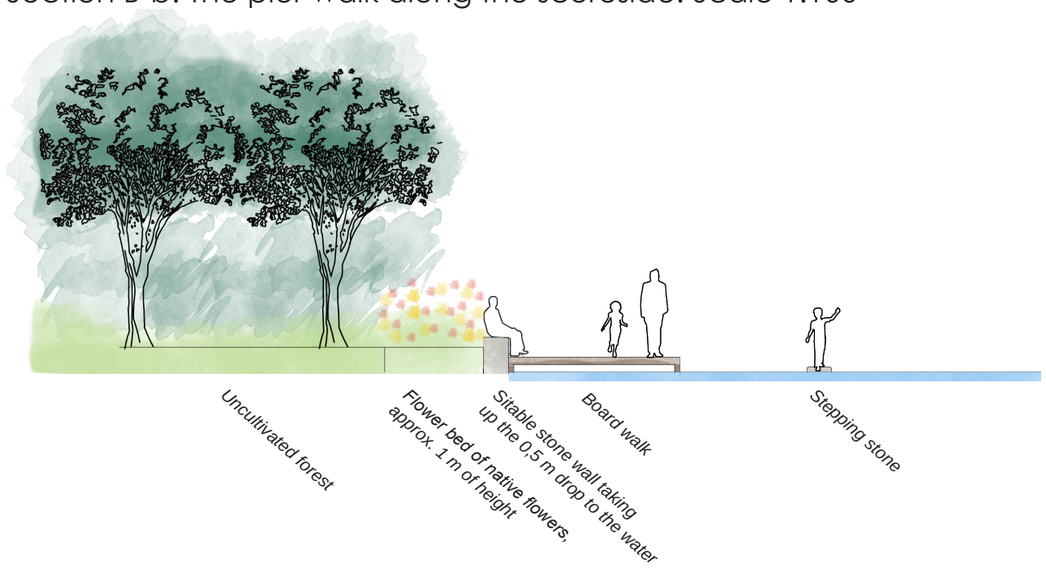
Section A-a: The long view. Scale 1:2000



Section map



Section B-b: The pier walk along the scoreside. Scale 1:100



Section C-c: The cape of the watch tower. Scale 1:200

Illustration of the boardwalk, with its curved shape smoothly following the shape of the bay. Both the boardwalk and the stepping stones encourage a playful way to get close to the water. Behind the boardwalk is a sitable stonewall taking up the 0,5 meter drop from the beach to the surface. Behind the stonewall is a flowerbed of native flowers, both for decoration and to give the sitting visitors shelter behind their backs. The native flowers are also a great opportunity for the visitor to learn more about native botany. At the same time the native flowers contribute to the biodiversity, and can attract local spices of insects and birds. Behind the flowerbed is the original forest.

The world of today is facing many environmental challenges. To deal with those challenges, the human population overall need to adapt to a sustainable lifestyle. In the process of creating a such lifestyle, the cities of the world will play a key role. With over 50% of the world's population currently living in cities and an estimated increase to 70% within the next few decades, urbanization is a strong and global trend (WWF 2015).

As with the rest of the world, the trend of urbanization is highly present in China. It is estimated that the cities of China will grow with a population of 350 million residents over the next 20 years (Baeumler, Ijjasz-Vasquez & Mehndiratta 2012). The environmental consequences of such rapid expansion are calling for great consideration. In this process, environmental conscious urban planning will be an essential part in which the landscape architect should be involved.

I have in this thesis looked at how landscape architects can contribute to the creation of ecologically sustainable cities. This was done by looking at an already built project; the Dongli Lake project, which was partly created on an ecological approach. I wanted to know how this project had worked with the ecological aspects.

In order to get a further insight on ecological urban planning, I studied literature on ecological design. In this literature it was concluded how ecological consciousness and environmental care among the local residents were essential aspects to make a project designed with ecological design sustainable. However, when I visited the Dongli Lake project area, I found how those aspects were lacking.

As a response to that issue, I created the proposal for the Dongli Lake Eco Info Park. The purpose of the park was to enhance ecological knowledge and foster environmental care among the local residents. If the park was actually built, it would hopefully create what was today missing in the Dongli Lake Project area: ecological consciousness and environmental care. Hence, the creation of the park would help the overall design of the Dongli Lake project area to become more sustainable in accordance to ecological design.

Ecological sustainability all the way

My reflections are that ecological design for the landscape architect is not only the work of creating ecological solutions on a paper, and then having those built. It is also essential to implement those values in the local population in order to make a place ecologically sustainable for real. I have the feeling that aspect is often overseen. This is unfortunate, since a place then in the long run *won't* be ecologically sustainable, in spite of high ambitions from the landscape architect and client.

It should here be added that when it comes to the Dongli Lake project, Sweco actually did have plans of mediating the ecological ideas to local residents by creating two 'Ecology Centres'. However, those did not come through to the building phase.

I think there should be many good ways that landscape architects through design could instil ecological values in the local population. In this work, I think ecological information spreading is a key. One way to work with ecological information spreading could be like I have demonstrated in this thesis, by creating a park that will both build on and spread the ecological knowledge. But for sure, there would also be other ways to do this for the create mind that a landscapes architect often holds.

Do the Chinese people want ecological knowledge?

China is a country that has shown rapid economical growth over the last decades. This has come at the cost of increased use of energy and higher carbon-emissions (Baeumler, Ijjasz-Vasquez & Mehndiratta 2012). Whilst Chinese people of course would welcome higher living standards, I also got the impression from my visit that there was an increasing worry among the Chinese population concerning environmental issues. This worry was partly a consequence of the heavy air pollutions, which were very present and visible in most of the Chinese cities. There were also concerns regarding food consumption saftey, which had lead to many Chinese citizens, who can afford it, chose to buy foreign produced food instead of locally produced. This in itself could be an environmental and economical issue.

I have within this thesis come to find how the ecological education at least has been lacking in China. This at the same time as I judge there to be an increasing inquisitiveness among the Chinese population in regard to environmental issues. Hence, I think more ecological knowledge would be welcomed among many Chinese citizens. Therefore I think my park, with its quest to spread ecological knowledge, would fall out well among the residents. My impression is that they want ecological knowledge. And I am guessing this should not be the case only for the Dongli Lake project area. Instead I think that landscape architects should be able to, through design, enhance the ecological knowledge all over China.

With that said, ecological information spreading should of course not only be on the landscape architect's table. Parts of the society such as schools and communities should also be essential parts of ecological education. But I still reckon that a lot can be done as a landscape architect, as has been demonstrated in this thesis.

Methodology discussion

The aim and research questions for the thesis sprung from a problem that I came to identify during my first visit at the Dongli Lake project site: how ecological knowledge of the residents in regard to their home district was lacking. The aim and research questions for the thesis came as a response to this existing issue. This was important for my motivation, as well as it made my work seem of actual importance.

However, even though my way of finding an aim and research questions mostly had pros, there were also some cons. One of these cons was that it took time and efforts to find the aim and research questions. The process leading up the aim and research questions was quite complex, with inputs from as well literature, as discussions with professionals, as interviews with residents, and interviews with general Chinese residents. The process thus happened in a mixed way, rather than being a clear line of thought from A to B. This came to be a bit tricky to present in the thesis in a clear way.

It was the same way with the methods. Since my thesis touch on many different subjects, I came to use e.g. the interviews with professional to answer many *different* questions. For example, the professionals could be asked on both their work in the Dongli Lake project, the urban trends in China, and on to give input for my design. I was fortunate to be given the time from those professionals on discussing so many different issues, and I came to learn a lot. However, this again might possibly be a bit confusing to the reader since I did not just look for one single answer.

It is possible that my thesis would have become clearer if I knew from the start exactly what my reseach would come to be. Then I might have been able to separate the methods more, rather than mixing them. However, it would have been impossible to find out my aim and research question beforehand back in Sweden, since they sprung from interviews with the residents on site in Dongli Lake. So all up, I think that me finding an accurate aim and research question the way I did, was worth the price of the possible confusion for the reader in regard to the mixed methods.

Going back to the aim and research questions, those were based upon my impression on how ecological knowledge of the residents in regard to their home district was lacking. A general lack of ecological awareness in the Chinese population was further confirmed by professionals with whom I discussed the issue. I derived this partly to shortage in environmental education in the Chinese schools. Such shortage was confirmed by interviews with Chinese residents regarding their own environmental education in school, as well as by literature. However, neither literature nor the Chinese residents I interviewed could of course surely confirm that the lack of ecological awareness among the residents of the Dongli Lake project site, was actually real. This lack was something I concluded from the residents I interviewed on the site. However, I can of course not be a hundred percent sure that those interviewed residents of the Dongli Lake project site were in fact representative for the whole population of the district. In order to surely state this, a larger investigation should have to be made.

In regard to the analyses I performed to find the most suitable location for the Eco Info Park. Those were based on how I as a visitor perceived the area from two days visits. It might be that someone living in the area would have a different view on things. For this sake, if the park was to be built, I would strongly advice to somehow include the local population in the decision-making process of finding a location. They should furthermore also be able to give input concerning the actual design, in order to make the park as well-liked and functional as possible.

Suggestions for future research

- Would the ideas I present regarding how to enhance ecological awareness work in another country or context?

- Could ecological knowledge be spread in connection to more traditional Chinese garden design? How would such park look?

- If my park was to be built: Retrospective study ten years later. Have the ecological awareness and environmental care raised in the local population?

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The conceptual map from Sweco is used with permission.

Photos within the thesis are taken by the author, Johanna Ottosson.

Interview with professionals

1.Could you please tell me a bit about yourself and your background?

a) Where did you grow up?
b) Why did you become a landscape architect?
c) Where did you study to become a landscape architect?
d) What year did you graduate?
e) Some examples of projects you have been involved in during your years in the profession?

2. Why and when did you take interest in an ecological approach of urban design?

3. Why and when did you take interest in working in China?

4. Could you please shortly explain the relationship between Sweco and SWK?

5. How did Sweco first get in contact with the Dongli Lake project?

6. How come that you in person got involved in the project?

7. What was your role within the project?

8. Did you have a set time of number of hours to complete the job with the master plan? If so, approximately how much time was this?

9. How come you decided to use an ecological approach as part of your concept when working with the Dongli Lake project?

10. What was the client's (Vanke Real Estate) opinion regarding the ecological approach?

11. You had a series of workshops with the client during the initial part of the process.

a) How was those workshops structured?
b)What was the purpose of the workshops?
c) What was concluded during the workshops?
d) Did the workshops help you and your team in the following design process?

12. What ideas of yours got a positive response from the client?

13. What ideas of yours was the client less enthusiastic about?

14. What initial ideas from your team, in regard to ecological design, didn't go through to:

a) The master plan
b) What actually was built in the end
c) Can you tell a little bit about those ideas?
d) Why didn't they go through in the end?

15. Did you work with any form of community participation before or during the construction of the master plan?

If yes:
a) How was this performed?
b) What was people's opinion?
c) Did this influence the final design
d) If yes, in what ways?

If no:
e) How come you decided not to?
f) Do you think community participation would have brought additional value to the project?
g) Do you think the project would have looked different if there would have been community participation?
h) If yes, in what ways?

16. Were other professions (other than landscape architects and urban planners) consulted in the making of the master plan, in regard to the ecological aspect?

a) In what way did their expertise help the project?
b) Is there any additional expertise you think would have been valuable?

17. Could you please tell me more in detail about the different aspects of the Dongli Lake project that

a) Historical structures – integration of valuable existing
b) Preservation of biodiversity
c) Waste water management
d) Wetlands / ponds
e) Waste management
f) Mobility management / Transport management
g) Mosquito control
h) Alternative energy solution.

18. Have your project group, or anyone else that you know of, constructed a maintenance plan for Dongli Lake (or specific parts of it)?

If no
a) is there a certain reason to why not?

If yes
b) What does this plan look like?
c) What areas does it cover?
d) How far in time does it stretch?
e)Who is responsible for following the maintenance plan through?

19. Have you or your team done any follow-ups of the Dongli Lake project?

20. Do you know if the client, or anyone else, has done any follow-up of the Dongli Lake project?

21. Do you have insight in how Dongli Lake is functioning today? In general.

22. Do you have insight in how the ecological aspects designed for Dongli Lake are functioning today?

a) Historical structures – integration of valuable existing
b) Preservation of biodiversity
c) Waste water management
d) Wetlands / ponds
e) Waste management
f) Mobility management / Transport management

g) Mosquito control
h) Alternative energy solution

23. As for the parts of Dongli Lake that are functioning well (as far as you know of), do you have theories on why?

24. As for the parts that are functioning less well (if any, as far as you know of)

a) Do you have theories on why?
b) Do you think anything could have been madte differently in the initial planning, or in the construction, to improve those parts (if any)?

25. What do you think could be done today (if anything) to come to terms with the less functioning parts (if any)?

26. What challenges to you think Dongli Lake will face in the future?

a) In general
b)From an ecological design perspective

27. Do you know of the client, Vanke Real Estate, has continued working with ecological approaches in their projects after the Dongli Lake project?

28. Do you remember any particular experience or insight you gained during your work with the master plan for Dongli Lake? Could be both positive and/or negative experience.

29. What was for you personally the best part of working with the Dongli Lake project?

30. Can you see influence from the cultural context of China in the design for Dongli Lake?

If yes
a) in what ways?

31. Can you see influence from the fact that you and some of your team members are Swedish in the design for Dongli Lake?

If yes
a) in what ways?

32. What, if any, do you think would look different if the same project was carried out in Sweden?
a) In regard to the process
b) In regard to the design
c) In regard to the place today

33. What are your thoughts on the future regarding ecological urban planning in China?

34. What are your thoughts on the future regarding ecological urban planning in the Sweden?

35. What are your thoughts on the future regarding ecological urban planning in the world?

36. What lessons (in regard to ecological urban design) can Sweden learn from China in your opinion?

37. What lessons (in regard to ecological urban design) can China learn from Sweden in your opinion?

38. What are the major trends within city planning in China today, according to you?

39. In what ways do urban planners talk about sustainable design and ecological approaches today in comparison to 15 years ago in China?

40. Do you reckon that there has been a shift towards more green urban planning?

41. What terms and expressions are used when talking about green urban planning in China today?

42. Do you think green urban planning is a temporary trend in China or do you think it will continue?

43. In the “Design description” for the conceptual master plan, it is written that “sustainability is not only a character of psychical and functional aspects it is also a human attitude. In Dongli lake area, both in the common schools and in the specific institutions such as the ecological centre, ecological education should be offered”.

a) Do you know if such ecological education in offered in schools today in Dongli Lake?
b) Do you know if there is an Ecological Centre?
c) Do you know of any other methods used to raise ecological awareness in Dongli Lake?

Tips for my future Dongli Lake Eco Park project

1. What tips do you have for me when designing a park in a Chinese setting?

2. What elements do you think should be in the park?

3. What do you think should be in the park to attract Chinese visitors?

4. Do you think a more nature-like environment would be appreciated?

5. Any tips on what to focus on to bring ecological design and ecological approaches into my park design?

6. What parts of the ecological aspects / ecology do you think I should focus on to spread information about? E.g. birdlife, ecological thought behind Dongli Lake, recycling, global warming etc.

7. What ways do you think would be successful in enhancing ecological awareness in a park environment?

APPENDIX 2

Interviews with general Chinese citizens

1. What was the education like (age 6-16 years) for you growing up in China, when it came to learning about environmental issues and how to live ecologically sustainable?

2. Do you know what the education is like for Chinese children today (aged 6-16 years) when it comes to environmental issues and how to live ecologically sustainable?

3. How are the opportunities for the ordinary Chinese citizen to live environmentally friendly?

a) how much information in society is there on sustainable life?
b) what are the possibilities of garbage recycling?
c) can you choose trusted environmentally friendly products in the food store?
d) are people taught of the environmental benefits of walking or bicycling (or go by public transport) instead of using the car?
e) Are people encouraged not to throw litter on streets / in water/ in the streets?
f) Are people encouraged to live in a way that lessens toxic garbage?
g) Are people encouraged to live in a way that lessens air pollution?

4. Do you have the feeling that more people are talking about and are concerned about environmental issues today in China, than 10 years ago?

APPENDIX 3

Interviews with residents of the Dongli Lake project area

1. Do you live here in Dongli Lake?

2. How long have you lived here for?

3. How do you like living here?

4. What is your impression of Dongli Lake?

5. What do you know of the ecology of this urban district?

6. Did you know that Dongli Lake was planned with an ecological approach?

If yes:
Did this have an impact in your choice to live here?

7. Do you experience Dongli Lake to be an environmental friendly place?

If yes:
Do you think this adds value to Dongli Lake?

8. What is good about this urban district?

9. What is working less well in this urban district?

10. What do you think could be improved here?

Glossary

Biodiversity
Richness in the variety of different species, as well as richness in the genetic variations within a species (Elvingson & Nilsson 2016).

Blue structure
Open and often somehow cultivated water in or near the built environment (Boverket 2010).

Ecosystem services
Functions and services that ecosystems provide the humans (Nationalencyklopedin 2016a)

Green area ratio (GAR)
Amount of the total space in e.g. an urban district that is made up of green structure. High GAR is said to promote greater liveability, ecological function, and climate adaptation in the urban environment (Cidlowski, McGlynn, Stack & Wooden 2015).

Green structure
The connected system of green areas, such as parks, lawns, and trees in a built environment (Boverket 2010).

Nature-like
With characteristics that resemble what is generally perceived as nature (Gustavsson 1982).

Park-like
With characteristics that resemble what is generally perceived as a park: a large constructed garden area, created and cultivated by humans for recreational purposes (Nationalencyklopedin 2016b).

Sustainable development
'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (The Brundtland Commission 1987).

Space syntax
A method of urban analysis examining pedestrian moving patterns in the urban texture (Ratti 2003).