UI UF CU IJSW 2017

International Joint Eco-City Studio and Workshop (IJSW)
Department of Architecture, Faculty of Engineering, Universitas Indonesia, Depok

9-20th January 2017

Working Notes
6 March 2017

Universitas Indonesia
Dr. Kemas Ridwan Kurniawan
Course: Independent Study February-May 2017

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Table of Contents

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IJSW 2017 Short Version ECO City Studio 09 01 2017

INTRODUCTION

The Global Innovation Initiative awarded a grant to the University of Florida, Cardiff University and the University of Indonesia with the aim to research and explore:

- *Novel approaches of employing green infrastructure (GI) to enhance urban sustainability*

The Joint Eco-City Studio and Workshop (IJSW) 2017 represented one activity carried out with support of this grant. There are two separate programs running in parallel. Joint activities include lectures and a field trip to Bogor. The description below concerns the Eco-city Studio.

INTERNATIONAL JOINT ECO-CITY STUDIO AND WORKSHOP (IJSW) 2017

AIMS

The International Joint Studio and Workshop (IJSW) 2017 built on the outcome of projects conducted during the 2016 International Joint Studio and Seminar (IJSS) and focused on research related to green infrastructure (GI) and sustainability of the city. For the period of the joint studio and workshop faculty from all three institutions involved in the grant worked with a total of 20 students from Universitas Indonesia, University of Florida and Cardiff University. Students were organized in mixed teams to facilitate intercultural dialogue and skills development.

The overall aim was to explore what interventions through green infrastructure could be employed to make a difference to water management, poverty and air pollution to help Depok City's transition to a more ecologically sustainable metropolis. In other words, the research focused primarily on the link between green infrastructure (GI) and eco-city development. This included exploring the potential contributions of different types of green infrastructure in improving sustainability in the city of Depok as well as examining knowledge about and acceptance of green infrastructure implementation in the local context.

Additionally, students and faculty from the IJSW benefited from joint lectures and a field trip of a parallel workshop on *Health and Green Infrastructure* which was hosted 16-18 January 2017 at Universitas Indonesia (Faculty of Engineering and Faculty of Medicine) and supported by funding from Cardiff University/ESRC Global Research Challenges Impact acceleration funding. This joint activity added an additional perspective and dimension to the meaning of creating sustainable, ecologically sound urban environments in terms of the impact of environmental conditions on public health.

The outputs from the IJSW represent a distinct piece of work but upon return to their home institutions, University of Florida and Cardiff University students will continue working on their projects in either independent study or in the case of Cardiff University as part of the Eco-city Live Project module. They will deepen analytical work and subsequently develop a set of policy recommendations and measures that would promote the transition of a major megacity to become a more sustainable (low-carbon) Eco-city in final reports. Universitas Indonesia graduate students will

also continue to develop their research and will produce a book to document the outcome of IJSW 2017 under the auspices of an independent study course.

OBJECTIVES

- to improve provision of green open spaces
- to address increasing concerns about food security in the city through urban farming
- to evaluate water management issues and heightened threat of nutrient pollution of water
- to consider whether preservation issues (do or could/should) include environmental concerns
- To assess what is the relationship between culture and the environment in the contemporary stewardship of resources.

RESEARCH TOPICS

For IJSW 2017 the following three research topics were identified and matched to sites and locations in the vicinity of UI campus in Depok.

GROUP 1	**AIR POLLUTION & GREEN INFRASTRUCTURE**	**UI Lakes, Jl. Margonda**
GROUP 2	**SOCIAL BEHAVIOR AND WATER POLLUTION**	**Setu Rawa Besar**
GROUP 3	**THE VALUE OF URBAN GREEN INFRASTRUCTURE**	**Setu Babakan**

INTERNATIONAL JOINT ECO-CITY STUDIO AND WORKSHOP PHASES

The research and design process involved three phases:

1. **Site Visits & Orientation**
   Orientation:
   Field Survey, Site Survey, Internet and Literature Research
   Define Issues and Analysis

2. **Studio Works**
   Flow and Network Diagrams and Design Guidelines Strategy
   Development Design Guidelines for Design Intervention

3. **Seminar and Colloquium**
   Refinement & Publication & Exhibit

The Joint Internatioanl Eco-City Studio and Workshop (IJSW) 2017 concentrates on project definition, field surveys, problem identification, design research and proposed design interventions to facilitate green infrastructure. The process is dependent on individual participation, group work and discourse between the respective disciplines within a critical framework.

The experience allows for development of decision making and leadership abilities to address complex urban and environmental issues and to examine the trade-offs involved. Each research topic group is expected to reach the same level of ability.

ASSIGNMENT

A group research project involving field research, in-house studio works, colloquium presentations and final plenary session with presentations in relation to the topic of healthy and sustainable eco-cities.

ACTIVITIES

1. **ANALYSIS – INPUT**

- to observe and collect data
- to conduct literature reviews and incorporate relevant data
- to assess planning policies
- to identify strengths and weaknesses (challenges); problems and opportunities
- to compile questionnaires and assess quantitative data
- to conduct verbal interviews and to consider qualitative data
- to document existing conditions with photographs, video, sketches, oral interviews (with permission if recorded),
- to access secondary data (maps, plans, multi-media, etc.) from a variety of sources
- to identify research topics and development issues

2. **FIELD SURVEYS**

- Debriefing of first impressions
- Discussion of project details and refining/revising strategies for data collection depending on site conditions
- Mapping and Analysis of traffic flows, water, people and waste flows

3. **STUDIO WORKS**

- Mapping, Assembling Data
- Actively engaging in discussion of design issues
- Diagramming of Context and Function
- Identification of Key Words for Each Site (Maximum 3 Key words)
- Description of Project Concept
- Sketching, Modeling, Tracing, Collage, Layering
- Working together in a groups and individually to identify and to agree on a design proposal
- Having a good time and enjoying the creativity of the design process

4. **SYNTHESIS**

- To compile data, photographs, sketches and multi-media input into Power-point Presentations (Maximum 20 slides/presentation/15 minutes)
- To prepare text and written presentations within the Power-Point Presentations
- To document sites with video for future editing
- To develop policy recommendation(s) to make a location (city/district/neighborhood) more sustainable (transitioning towards an eco-city).

5. OUTPUT RECOMMENDATIONS

- To develop policy recommendation(s) to make a location (city/district/neighborhood) more sustainable (transitioning towards an eco-city).
- To formulate a set of policies and measures that seeks to resolve planning or development problems in the transition of urban areas to (low-carbon) eco-cities.
- To focus on the link between green infrastructure and eco-city development in the Jakarta/Depok megapolitan region
- To explore the potential contributions of different types green infrastructure (GI) to improving sustainability in Jakarta (Indonesia)
- To propose design ideas for the acceptance of green infrastructure implementation in the local context.

6. WORKSHOP LEARNING OUTCOMES

- Input to the website and data clearinghouse, which will provide continuous project updates
- Case studies to be used for instruction
- Identification of Research Topics for Publication
- Publication of IJSW 2017 of Student Work and Sequence of Activities with Recommendations

1.	**Colloquium 1**	**20 pages max per Group Power Point Presentation** **Field Survey Results**
2.	**Colloquium 2**	**20 pages max per Group Power Point Presentation** **Issues and Proposals**
3.	**Plenary**	**20 pages max per Group Power Point Presentation** **Design Proposal to address Green Infrastructure Issues Each Site**

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Opening Remarks

Prof. Kemas Ridwan Kurniawan, PhD
Universitas Indonesia
10 January 2016
17 03 1 IJSW Opening Remarks 18 01 2017 V3 DW DRAFT

Welcome to the International Joint Eco-City Studio and Workshop (IJSW) 2017. This is the third time for the Green Infrastructure Initiative (GII) grant to be held in Depok between Universitas Indonesia, University of Florida and Cardiff University. Welcome to our 'green campus'. I would like to give special thanks to Prof. Dr. Muhammad Asvial, M. Eng., Vice Dean, Faculty of Engineering, Prof. Yandi Andri Yatmo, S.T., M.Arch., Ph.D, Head of the Department of Architecture, Prof. Ir. Triatno Yudo Harjoko., Msc, Ph.D (Universitas Indonesia, Department of Architecture), Dr. Andrea Frank, PhD (Cardiff University), Prof. Christopher Silver, PhD, FAICP, and Prof. Jerry Murphy, JD, AICP, CFM (University of Florida) for attending the opening ceremony. It is a pleasure to see both familiar and new faces here today.

To paraphrase Charles Dickens in *A Tale of Two Cities*, (1859), urbanization represents both the 'Best of times and the worst of times.' We are living in the Anthropocene Age in which urbanization is recognized as being a global phenomenon. Many researchers from the United States to the United Kingdom to Indonesia recognize that we are living on an urban planet.

The overall aim of this UI UF CU Joint Studio and Workshop is to explore what interventions through green infrastructure are possible to make a difference in water quality management, poverty and air pollution. These inquiries are to help Depok City in its transition to becoming a more ecologically and

economically sustainable megapolis. Our discussions will include possible ways of implementing green infrastructure to inspire acceptance in a local context.

For my opening remarks, I would like to start by bringing you on a journey about eco-cities in Jakarta. In looking at these aerial views of Jakarta, we are removed to an idyllic bird's eye view of what Jakarta is and a vision of what it might become. We see the harmony between Man and Nature in our national symbol MONAS and the giant Titan Arum flower. The aerial view of Fatahillah Square shows the colonial urban fabric and the balance between urban places *(polis)* and pockets of trees around the former Town Hall. Around the Grand Canal (*Kali Besar)* we see that water and green infrastructure were part of the colonial urban typology. The inherent relationship between water and architecture is readily apparent. Remnants remain of Ebenezer Howard's "Garden City of Tomorrow' in Menteng's urban fabric. Modernism brought the *Gelora Bung Karno* Stadium and the separation of the CBD and Green Suburbs in Kebayoran Baru. Sukarno's National Stadium remains in a field of green, as Jakarta's urban lungs in the central business district.

Besides the beauty of Jakarta, we also recognize difficult urban issues. Jakarta's mangrove forests are disappearing with development, industrialization and the portent of climate change and global warming. Yet, Jakarta is still a human city. Witness the young boy fishing in an abandoned construction site. Note the happiness of the family riding a tandem bicycle. Nonetheless, urban development brings problems of traffic congestion in Jakarta. New public infrastructure for trains and mass transit is necessary. On a positive note, car-free days return the city streets to Jakartans. Our mission is to move Jakarta towards becoming an Eco-City. In the future, Jakarta and Depok's architecture may purify water and air and provide shelter.

Today we welcome you as participants in the process of generating ideas to transform our cities of Jakarta and Depok into Healthy Eco-Cities for the Future.

Aerial View of Jakarta: A Future Green City
http://www.airpano.com/Photogallery.php?gallery=214&photo=6702

Water and green Infrastructure are part of colonial urban fabric in *Kota Tua*.
http://www.airpano.com/Photogallery.php?gallery=214&photo=6694

Urban development brings problems of traffic congestion in Jakarta.
https://www.theguardian.com/cities/2016/nov/23/world-worst-traffic-jakarta-alternative

Car-free days return the city streets to Jakartans.
https://www.theguardian.com/cities/2016/nov/23/world-worst-traffic-jakarta-alternative

Our Aim: Jakarta & Depok: Towards a Healthy Eco-City
http://www.airpano.com/Photogallery.php?gallery=214&photo=6707

In the future, Jakarta and Depok's architecture may purify water and air and provide shelter for a Health Eco-City of the Future.
http://inhabitat.com/water-purification-skyscraper-purifies-jakarta-rivers/jakarta-water-purification-skyscraper-10

UI UF CU IJSW 2017

Opening Remarks

Prof. Jerry Murphy, JD, AICP, CFM
R&D Development Director of Resilient Communities
University of Florida
10 January 2017

Good morning. I am so pleased to back here at University of Indonesia and the Department of Architecture in the Faculty of Engineering, and to offer greetings on behalf of the College of Design, Construction and Planning, University of Florida and Chris Silver, Professor and Co-Principal Investigator of our Green Infrastructure grant project. He is here in Jakarta, and will join us later today, but is presently with two colleagues from the UI's Faculty of Engineering, presenting a project proposal to a USAID review team that we hope will extend and broaden our collaboration in Green Urbanism. I am Jerry Murphy, Project Director of the Florida Resilient Communities Initiative in the UF Department of Urban and Regional Planning, a project that engages students and faculty to assist localities in Florida to address environmental and planning challenges that move them toward a greener agenda. I was here last year for the first few days of the International Joint Studio and Seminar (IJSS) 2016. .

My expertise is in land use planning, flood plain management, landscape design and spatial mapping and I look forward to working with students to understand these aspects of green infrastructure. I returned to Indonesia in late February 2016 to lead a team of 7 UF landscape architecture students to Pangkalpinang to assist the city with their green infrastructure challenges. That city had just experienced a devastating flood (every bit as encompassing as the floods here in Jakarta), and so we focused on ways to better utilize its water resources (lakes and a riverfront) to both address better water management, but also to create more livable urban spaces and a greener city. And if Pak Heri, Pak Gamal and Pak Chris are successful in the quest for additional support for our urban collaborations from USAID, this work in green urbanism is likely to continue in the next four-to-five years.

On behalf of the UF team, I want to begin by extending a very special thanks to our friends here in the Architecture program, along with colleagues from related areas of study, for hosting this second research workshop in conjunction with our collaboration on advancing research, education and public discourse on green infrastructure. The decision to return to Depok this January for a second time was, we believe a wise move, even though it diverged slightly from the original plan set forth in the grant proposal that helped to make this collaboration possible. You see, we discovered last January that the opportunity for our partnership, faculty and students to step out into the field to explore the challenges of advancing the applicability of green infrastructure strategies in the Jakarta metropolitan region required more than just a one-time encounter. And we discovered last year a true interest among the communities we examined here in Depok, the UI campus, Setu Babakan, and Setu Rawa Besar, to find ways to enhance the quality of their environments, if they opened themselves up to scrutiny by students eager to help devise responses to their environmental challenges. And we felt that this requires more than a one-shot investigation, but a longer term and more in-depth assessment and engagement. So returning to Depok made sense from that standpoint. Of course, we also believe that there is great value examining Depok's challenges and potential interventions so we may better approach similar challenges to implement green infrastructure around our partner institutions of Cardiff University (where we met and toured in May 2016) and the University of Florida where we met early on in the collaboration and where we will wrap up this phase of our collaboration later this year.

All-in-all, there are four of us here from UF, including me and Dr. Silver and two students. One is Iliana Jaimes Mayor, a student in the master of sustainable development practice at UF and who spent several months here in Depok this summer doing research on her master project which examines water management on the Depok campus from the standpoint of different stakeholders. The other student is Allison Reagan, who is completing her final project in the Bachelor of Science in Sustainability and the Built Environment on measuring and assessing walkability in cities. At the same time, she is working on a Masters of Urban and Regional Planning. She also works for a local government planning office and is dealing with issues related to green infrastructure and development.

We look forward to the next two weeks to strengthen our collaboration by achieving several objectives. One is to outline and develop a delivery strategy for a certificate program in green urbanism that we intend to offer from all three of our partner institutions. Another is to broaden our discussion of green infrastructure beyond issues of water management to include issues related to air quality, energy consumption, and also the links between the green agenda and public health. And we want to identify ways to disseminate our learning and experiences through scholarly publications.

In closing, again let me thank the Faculty of Engineering (FTUI) and the Department of Architecture for hosting this critically important activity under our grant program. We look forward with anticipation to the next two weeks together. *Terima Kasih*

UI UF CU IJSW 2017

Opening Remarks

Prof. Andrea Frank, PhD
Cardiff University
10 January 2017

Hello, I would like to relate greetings from my colleague Dr. Li Yu and the nine students from the University of Cardiff. It is a pleasure to be here. This is my third visit to Jakarta and each time I seem to get to experience different seasons. This year's studio is part of the Global Innovation Initiative Grant which focuses on Green Infrastructure and how it can contribute to enhancing urban sustainability. The purpose of the grant is to explore novel approaches at the three locations of our respective institutions (University of Florida in the US, University of Indonesia in Indonesia and Cardiff University in the UK).

We know that green infrastructure in general can be useful in different environments, but are aware that all three locations have very different needs and characteristics. For example, in Europe with its temperate climate, green roofs work well for water retention, but we do not know if and-how well the same technology would work here in Jakarta in a tropical climate. The characteristics of water management may be similar in the UK and the US, but quite different for Indonesia. We need to be considerate of the circumstances. There is much to learn and it made sense to come back and build on what we started here during our last visit in 2016.

Last year we came with 28 students from Cardiff University and 5 students from University of Florida who were joined by 30 or so students from University of Indonesia. This year we will work with fewer students, but on similar sites and projects. And we still have a mixed cohort of CU, UF and UI students. As we hope to build on the design and findings from last year's project, let me tell you a little about these projects. In all we had three project sites with two student groups working on each of the sites during IJSS 2016.

The first project site was the UI campus and its water intake areas. The UI Campus contains multiple lakes, which are all fed from various waterways such as the Kali Baru River. Two groups worked on two separate inflows. One group worked on the Kali Baru, another on a Stream that runs into the campus near the *Politeknik Negara Jakarta*. There is a lot of poor quality water flowing into the UI lake system and the idea was to investigate the sources upstream and develop solutions. Such solutions were to include design as well as policies and involved working with the local government and local residents. When we consider how to manage the water, green infrastructure, such as the use of reed beds to filter the water may be a possibility. Also who is monitoring the water quality? Could, for example, science students from UI be engaged as part of their studies to regularly and systematically monitor water quality?

For the Kali Baru group, there was initially a suggestion that the main source of pollution would be a traditional market near the Santika Hotel. The students' investigations revealed, however that the problem is far more complex and it is unfair to just blame the market. There is a need to work with a wider set of stakeholders, according to the previous group's findings. People living along the stream were not aware of the risk of polluted water. We have to take time to learn and listen. The second group interviewed residents in the neighborhood adjacent to the stream and considered designs to mitigate the toll road that is separating the green corridor along the river that helps to naturally cleanse the water from this intake. The currently planned canalization of the river is at risk of clogging

up with solid waste and causing flooding – so preventing solid waste accumulation is one of the issues. The neighborhood residents clean the stream regularly from debris, but as the students discovered, some residents also prefer to burn their waste in the garden rather than to recycle or pay for waste collection.

A second site was the area of Setu Babakan, a conservation district and cultural centre with the aim to preserve and celebrate Betawi culture. Two student groups worked there. Linking back to native cultures does not necessarily mean that it is environmentally sustainable. In fact it seems from last year's findings that the efforts to pursue economic developments around tourism are counterproductive to environmental protection.

The final two teams were working on the largest lake in Depok City – Setu Rawa Besar which has a complex set of problems with illegal settlers and again waste issues. We learned last year that the plans of the government to improve the situation involve eviction of some of the residents, which is a contentious approach.

This year we will have only 3 groups. We will be making available the material from last year for your information. One group each will work further on the two lakes (Setu Rawa Besar and Setu Babakan) building on past findings and work. The third group will look at the UI campus and surroundings and broaden our work to include not only water, but issues of green infrastructure and air pollution.

Thank you all for being available again for this event and making it a success again. Thank you for having us.

UI UF CU IJSW 2017

Opening Remarks

Prof. Yandi Andri Yatmo, S.T., M.Arch., Ph.D,
Head, Department of Architecture
Universitas Indonesia
10 January 2017

I would like to thank all of you for coming here to Universitas Indonesia. In Europe, there is a big chill. Here it has just been raining, so I believe it is the right time for you to be here in Jakarta. On behalf of the Department of Architecture, I welcome you here with these short remarks.

UI UF CU IJSW 2017

Opening Remarks

Prof. Dr. Muhammad Asvial, M. Eng.
Vice Dean, Faculty of Engineering
Universitas Indonesia
10 January 2017

I am here today to welcome the three universities to this event. In the future, hopefully we can make not only these three collaborations, but also we have many opportunities to involve other partners. There are various programs, which I will briefly outline. First, for students there is the "Resolve Program" at UI that allows exchange students to stay one semester or one academic year.

There is another program for visiting professors to stay a maximum of two weeks with all expenses and living accommodation fully paid.

For students from Florida and Cardiff, it may be possible to stay one semester during the academic year with a living allowance of US$500.-/per month. This year we have students from Germany and next year we will have visiting students from Cambodia.

There also is a program for Joint Research Collaboration with DIKTI (the Indonesian Government), which accepts research proposal for joint activities. There are joint publications linked to SCOPUS and international journals (such as IJTech).

We also invite you to participate in the FTUI QiR (Quality in Research) Conference to submit papers and attend the conference with the theme of 'I Dwell', which will be held in Bali this year.

We look forward to this and future collaborations.

Kementerian Riset Teknologi Dan Pendidikan Tinggi Republik Indonesia
Ministry of Research, Technology and Higher Education of the Republic of Indonesia

http://international.ristekdikti.go.id/

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“Field Survey Universitas Indonesia Master Plan”

Prof. Dr. Gunawan Tjahjono , Universitas Indonesia
10 January 2017

UI UF CU IJSW 2017

“Field Survey Kota Tua, Old Town, Jakarta”

Dr. Kemas Ridwan Kurniawan, Universitas Indonesia
10 January 2017

UI UF CU IJSW 2017

"Ecological Planning for the Sustainable Megacity: Jakarta's Challenges with Water"

Dr. Christopher Silver
University of Florida
11 January 2017

I work with a lot of architects and they usually end up showing about 150 slides in a presentation. Planners often show indicative urban plans, but they do not take into account how the spaces function ecologically. The challenges continue and keep on changing over time. The objective of my research has been to look at linkages between urban development and water management. The objective was to first examine water management strategies over the past four centuries, starting in Batavia. I am not just looking at the ecology, but also looking at how the city adjusted to the way water and the land worked and to consider just how good science and technology are applicable to the situation at the time. Flooding is indicative of a whole range of issues. Modeling cities and ecosystems is part of the exercise. (For example, for Cities and Sustainable Eco-Systems, refer to Peter Newman). Cities can become more sustainable by modeling urban processes.

There are many common issues between planning, development and ecology. Yesterday on the tour we surveyed the area between Kali Besar and Pasar Ikan. In this area disharmony was part of an incidence related to flooding (2008). The annual flooding tends to happen between January and February. There have also been floods in June. In 2010 the flood debris was indicative of the capacity of the river system's handling of the trash and water levels up to the degree that there is a negative impact on the quality of life. The Jakarta Basin serves as the watershed for 13 rivers. In June 2007, there were major floods throughout Southeast Asia. In June 2011 Bangkok experienced major flooding. In the same month and year, Orchard Road in Singapore, a main shopping street, experienced major flooding. In the United States we have extreme weather conditions ranging from Hurricane Katrina in New Orleans, follow by Hurricane Sandy in New Jersey. There is the challenge of building a city that is resilient to ecological impacts, either from storms or climate change. For example, this Gulf of Mexico Storm Pattern Map gives us an indication of the frequency of storms.

Turning once again to Jakarta, one method of inquiry was to overlay maps of the flooded areas (1992, 2002, and 2007). It is common knowledge that Jakarta is in a river delta in a watershed of 13 rivers. The next step is to overlay a map of the urbanization of Jakarta. From historical documents we can see not only how many floods there were, but instead how few floods there were. The biggest problem was not the flooding, but the seasonal droughts and the impact on agriculture. In the period from 1699 to 1990, there were only six major floods (1699, 1714, 1854, 1918, 1942 and 1990). The Dutch started to build the beginnings of the West Flood canal. In the 1920s, the Dutch also built earthen dams, one of which was breached in 2009, which caused a major flood in Jakarta. Construction was started on the East Flood Canal and in 2014 the World Bank Dredging program started. The New York Times report: "What's Clogging Jakarta's Waterways? You Name it," (3 October, 2016) points out the relationship between water and trash and why rivers are clogged in Jakarta.

Going back to Batavia and Colonial times, in the 17-th century, the city was created as a "Euro-topical System," a geographical system related to European places. Based on the city plans of Amsterdam and Rotterdam, the City Fathers of Batavia created a city, roadways and canals which were built on higher ground. The Old Bridge (Chicken Bridge), which we saw yesterday, is part of the old system of harnessing water in a positive way. Here is Kali Besar, the Grand Canal of Jakarta, which is an historic preservation project under the direction of Architect Budi Lim. The problem with the canal lays in the

fact that it is lying below sea level. The city is sinking and the water level stays the same. The Dutch built this elaborate system of canals connected to the rivers, which was part of a whole network of forts, shops, warehouses and houses linked to nature. The old lithograph shows the colonial warehouse district on the canal near the *Castel.* The Grand Canal Street in Batavia was one of the most fashionable streets. Chinese workers dredged the canals until the late 19th-century, so Batavia was well-established as a canal city.

At that time Batavia was big, but it was not a booming city. It was fairly dense. The biggest problems occurred when the dredging was stopped and the water in the canals stopped flowing. Tanjung Priok Port was built because the rivers were not wide enough or deep enough for the big ships. Thereafter, there was no maintenance of the canals for the smaller ships. The canals became lazy backwaters, pretty, but not very functional. Batavia was no longer a water city. Kali Besar (Grand Canal) was only used by small boats.

After Independence (1945-1949), the rivers and canals of Jakarta were tasked with handling the needs of massive population growth. People migrated to the city looking for jobs, but there was no infrastructure. People had to use the canals for their basic needs, such as bathing and washing.

The method of using maps and overlays was continued to mark the growth of the city in Jakarta. The City and the development built over the rivers, in support of the cycle of development and destruction. The population growth rate continued to expand. Kampungs, filled with urban immigrants, were pushed up to the edge of the river and in many cases these kampungs were built over the rivers. Clearing the rivers' edge is one of the priorities of the current government, but there may have to be a compromise between entirely taking the land and allowing some settlement.

In the 2007 flood Jl. Thamrin was severely flooded. What were the causes? Many questions were asked and many reasons given. Channeling the Ciliwung River, decreasing the amount of dredging, narrowing the river waterway (where the Ciliwung was once 150 meters wide, it is now probably only 25 meters wide), etc.

It is not the amount of rainfall that is the problem, but water management. Comparing the average annual rainfall in Jakarta (1755 mm), Miami (1570 mm), Gainesville (1202 mm) and Cardiff (980mm), the main difference is that none of the other cities have 13 rivers. Watershed management is a key challenge in Jakarta. The water needs of the city are way beyond the capacity of surface water, so the only resource available is extraction from the aquifer. There is no substantive evidence of climate change having an impact on Jakarta. Subsidence and high tides are the problems.

Mitigation efforts are underway. In 2007, a small flood wall was built, but as the city sinks, the water seeps over the wall. Sometimes the access to the airport was cut off for 3-4 days because the road was flooded. Consequently, an upper road was built to get to the airport. The City of Jakarta (DKI) with support from the World Bank also started a project to restore the canals, which was necessary and controversial at the same time because it meant displacing people. There are not enough quality surface areas to supply water and housing for up to 30 million people with private wells for housing and deep wells for industry. There is chaos upstream and downstream. There is a need for coordination of the water management from Bogor to Depok to Jakarta.

Ian McHarg in *Design with Nature* (1969) started the design process by looking at natural systems first. Geology, Hydrology, Flood Plain and Conservation Development Zones were among the types of maps McHarg used. Also to be considered are rain diagrams, erosion, conditions of debris in the water,

which reduces the size of the waterway or the inability of water to penetrate into the ground because of the type of soils, etc.

The whole line of the argument of 'Designing with Nature,' is that it is not just good for the living environment, but also the economy, air quality, water quality, control of erosion and supporting habitats. In Jakarta Governor Fawzi Bowo re-started to build the East Flood Canal (1973-2015), which was an impressive infrastructure project. The embankments have permeable pavements, so the water seeps downwards, but the main problem is that it covered only a small portion of the city (2,500 hectares), but the remainder of the city (65,000 ha) is unaffected.

There is also the problem of subsidence. Measurements went downwards to 1.4 meter, to 2.1 meters to 4.1 meters. The years from 1974-2010 give an indication of the subsidence map and the impact of sea level rise on Jakarta. In some places, bridge lowering occurs and in some places bridges are sinking lower than the roadways.

When President Jowoki was Governor of Jakarta, he was known as the "Ecological Governor." His administration's plan was to restore all 13 of the rivers, to boost the remaining green spaces and to instigate national planning. One project was the Pluit Reservoir *(Waduk*), which meant taking part of the fishing village away to restore its natural habitat. Pantai Mutiara is an older development, which was the first primarily waterfront community with luxurious houses and mooring spaces for yachts. For many people it was their second home. In January 2013 there was a big flood, which some would regard as an inconvenience for the affluent, others would regard as a devastating loss.

An alternative eco-system strategy would be to look at stormwater management to restore the rivers, to use diversion strategies in conjunction with water management and sedimentation, etc. There are three examples of ecosystem strategies: Bishan-An Mo Kiog Park, (2011) Cheonggyecheon Park in Seoul (2011) and Mississippi River Flooding Reimbursement Program (2011).

The Bishan-An Mo Kiog Park (formerly Bishan Park, 1988-2011) in Singapore is an example of a stormwater management system on 62 hectares along the Kallang River. Water-cleaning facilities are located in the linear park. It used to be all channelized and it looked like Los Angeles. The project took out the concrete and used a Dutch concept: "To Let the River Go Where It Is Meant to Go." The water gets diverted into a small lake and natural systems are used to clean the water.

When the Mississippi River flooded in the USA in 2011, farmers were reimbursed for flooding, which sent nutrients into the soil that helped restore some of the ecological systems.

Cheonggyecheon *(chung-yay-chun)* Restoration Project and Park, Seoul, South Korea, (2005-2011) removed the freeway and restored the stream into an urban amenity of a 3.6-mile linear park for the public. High performance landscapes replaced a portion of the highway system in the city center. The project emphasized aesthetics and the quality of life in the city. Over time vegetation has filled in and restored the eco-system. The project brings 'green back into the city', but we also have to look at the larger system. There is also water treatment and a high tech approach with a flood gate.

In conclusion, water management is based on a regional approach, which is hard in Jakarta because there are separate governments. The objectives are to restore the ecological system with the planning system that addresses water management issues and by using urban ecology as the foundation. The whole idea is to think about the context and to what extent the city and the environment can be harmonized.

Questions and Answers

1. **Comment** **Prof. Andrea Frank, Cardiff University**

You have suggested in your presentation that we should think of the underlying eco-system and landscape in how we layout the cities and let them grow. There are city examples in the high mountains in Austria on steep slopes which have therefore a particular morphology and urban shape. Are you suggesting then, when we consider cities in deltas – should they have a different form/morphology that reflects this?

2. **Answer** **Prof. Christopher Silver, University of Florida**

A radical answer is that you don't develop those kinds of cities. The argument is based on the stance that it is impossible to build there and you should never build there. Is it possible to design it and make it and have it compatible with the physical development? Possibily but, it may still result in a landslide, which leads back to the issues that no development is in itself naive.

How can you have that kind of development? A different kind of development is necessary to protect critical natural areas. Take the example of the four-story flats to house displaced fishermen. The problem is that their single/double storey fishermen's housing is very land-intensive. It is much more efficient to have higher density housing, but there is resistance from the fishermen who do not wish to live in 4-story flats, away from their community, (away from the sea).

In the US, we look at a higher density solution to protect the environment. Do we want to live that way? – No. We want our individual plots, so then it becomes a political issue about places, where you should build and what you can build.

Anything that functions well operates on the principle of it being pleasant and accommodating, so what does it matter if your space is on the 2nd floor or the 30th floor? People come around to the idea.

3. **Question** **Abi, Universitas Indonesia**

Is there only one way to do a plan for Green Infrastructure and Sustainable Development? Is the source of the problem not only in the infrastructure?

4. **Answer** **Prof. Christopher Silver, University of Florida**

Assuming people value the environment, the human factor is important. Jakarta has good planning, but only during the past decade and only when it was considered slightly leaning towards the ecological system. Before that time, it was just a plan to remove the garbage from the river. You have to ask fundamental questions about development. The built environment has to be built on the natural environment.

5. **Questions/Comments** **Prof. Li Yu, Cardiff University**

Is it a design for a city or for a green building? What are people's values and what are people's habits? First, you are talking about a design for a building, an energy efficient building, which is popular worldwide. The questions: 'How does it work?" "How does it function?" especially when people do not realize what it will be. Research is mostly conducted about energy efficient buildings. All the lamps have to be turned on and off automatically. This is not a human response. If green building saves

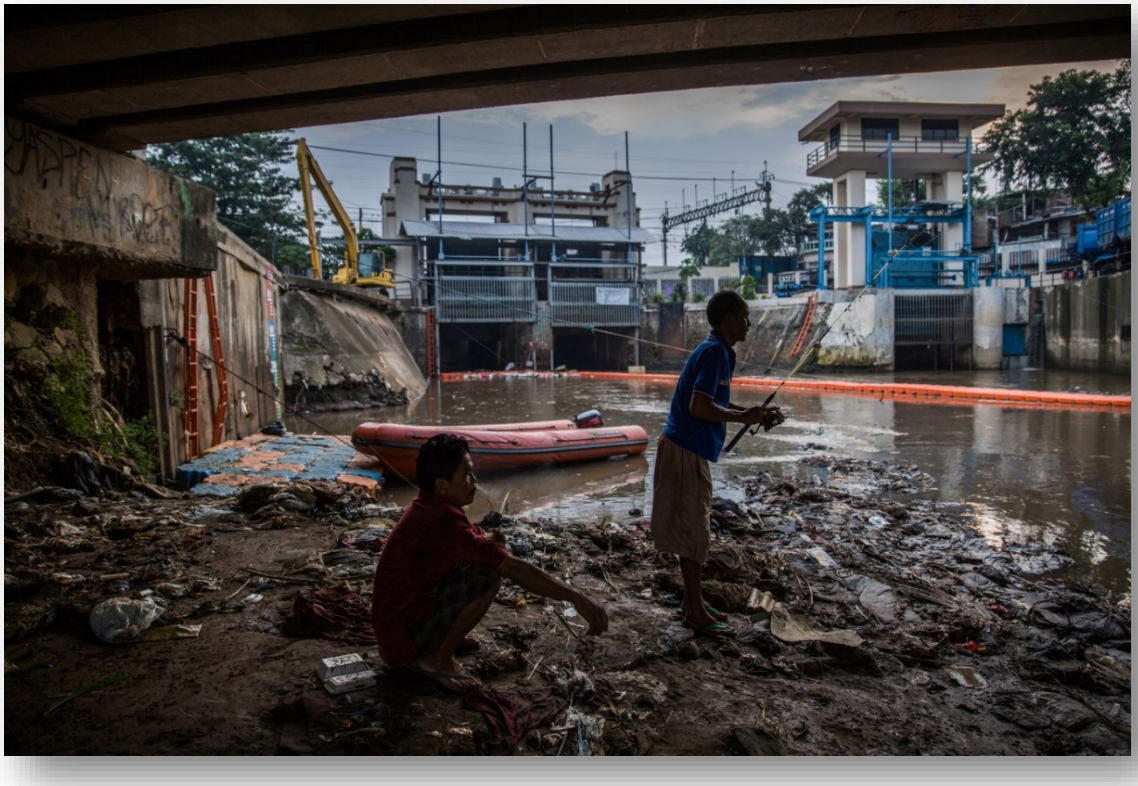
energy on heating, then it is about financial issues. Even if you are too hot in the room, people just open the window, especially if the heating charge is a flat rate.

As an architect you have to create an image and then deal with the institutional issues, people's values and behavior – that's my point.

6. Answer **Prof. Christopher Silver, University of Florida**

Macro issues allocate land for different uses according to a regulatory system for the efficient allocation of resources. A good example is in Singapore where there is a program to follow energy efficient regulations to design a highly efficient building. (Green Mark in Singapore is equivalent to LEED in the USA or BREEAM (Building Research Establishment Environmental Assessment Method) in the UK.

The principle is that you can be paid back if you design an energy efficient building through a system of credits, which may be offset on your electrical or utility charge. Economic motives drive politics, which drive regulations. Economic motives drive the political drive, which in turn drive the regulatory drive. If the idea is to make one's self happy, then making a place for people will satisfy the needs for energy efficiency and office needs.



Fishing next to the Manggarai floodgate. About 20 percent of the city's daily waste ends up in local rivers and canals; the city's public works department has determined. Credit: Kemal Jufri for The New York Times
https://www.nytimes.com/2016/10/04/world/asia/jakarta-indonesia-canals.html

UI UF CU IJSW 2017

"Mobile Research Techniques"

Dr. Jerry Murphy
University of Florida
11 January 2017
17 5 4 IJSW Mobile Research Techniques 31 01 2017 DRAFT

Density is a statistic. Compactness is a design situation. Density drives congestion on the roads. Jakarta is an example of congestion with trucks turning in one-way systems. Congestion arises in meeting people's needs on a daily basis. Think of compactness. It is a design challenge.

Among the strengths of conducting field studies are they are relatively fast, allow observation of the environment and provide rich accounts of behavior. However, weaknesses involve analysis of large data sets. It may be hard to record detailed behavior and, in the short term, the data may not show trends in behavior. Supporting technologies include data collection devices, such as videos, GPS, 'wearable' self-positioning devices, RFID (Radio-Frequency ID-entification) devices and wi-fi.

In observational fieldwork, natural characteristics and geo-spatial features may be collected using special remote cameras. However, hidden cameras are not commonly used, although they are effective, because they do not change the behavior of the participants.

An artificial observer's involvement, (someone who is introduced to make observations) means that a researcher can get a rich, holistic understanding and he/she can record information contextually and selectively. A weakness in this kind of data collection concerns an invasion of privacy. In that regard, be careful how you affect the outcomes. Survey questions may hamper observations or be a distraction. Supporting technologies include notepads, wearables, video device and cameras.

Artificial activities involve 1-2 researchers or groups in a spontaneous activity, which may occur only infrequently. The disadvantage is that it may feel "staged" or inauthentic in comparison with reality. Remote use could occur with an online community.

Artificial technologies include 'tech probes', such as GIS and GPS or new technologies. An advantage is that artificial technologies can be gauged in context before they are fully developed. Weaknesses are related to damage control in relation to social responses, which are hard to control or predict.

Relative to the artificial duration, we only have a two-week window in this studio to allow for data processing. Afterwards we will take the data away and analyze it.

We are all participant observers in this studio and fieldwork. As researchers, our potential strength is our understanding about the activities and their potential meaning. The weaknesses may be in trying to record data while being involved in a potential task at the same time.

The next category is interviewing, which is a great way for detailed intervention by talking to participants and asking questions one-on-one. Interviewing is a good way to get detailed information in many locations. Weaknesses include time-consuming compilation and data analysis. Participant

behavior varies from telling or not telling the truth or a lack of awareness and mismanagement of information. If conducted remotely, the credibility of the data may be questionable.

There are four categories of interviews, namely: out-of-control interviews, contextual interviews, structured or unstructured interviews, and focus group interviews. Out-of-control interviews are often held in the office of the researcher, as a matter of convenience. However, participants may be uncomfortable, less forthcoming and unable to refer to familiar objects in their immediate surroundings.

Contextual interviews are held in the usual location of the user to conduct his/her activities. The user may feel more comfortable in familiar surroundings, with an easier rapport and an ability to demonstrate objects in familiar surroundings. However, these interviews may be more difficult to arrange or the environment may be unsuitable for interviews.

Structured interviews, by definition, ask specific questions, whereas unstructured interviews ask open-ended questions. Unstructured interviews may result in unknown concepts, which require time for exploration.

For focus group interviews, one researcher talks with a specific group of people, which allow quick gauging of group opinion, obtains feedback from many people and is the only realistic method for some group settings. The weaknesses in group interviews in that group 'think' may bias data, assertive members may lead the conversation, and there may not be enough time to get each person's detailed feedback.

Next in this lecture is the topic of Emergency Management, as a comparison between Indonesia with *Badan Nasional Penanggulangan Bencana* (BNPB – The National Disaster Management Body) and in the USA (FEMA – Federal Emergency Management Agency), which is related to flooding. Three years ago, in West Nusa Tenggara, it was necessary to allow time to recover from the floods. The approach to recovery evolved over three stages. The Indonesian approach is very different from that of the United States. The Indonesian government looks at the commercial issues, without looking at the underlying causes, such as housing density, economics, transport and community facilities. BNPB has a budget of US$75 Million (1 Trillion Rupiah).

See: http://www.bnpb.go.id/uploads/migration/pubs/573.pdf).

The question arises, "How does BNPB make these categorizations and/or characterizations?"

In the US, preliminary damage assessment summary is conducted by building officials, who have the expertise to determine how badly damaged the area/buildings are. Data can be collected by "windshield surveys" (2016) as a one-day drive-through the community for purposes of damage assessment. Then "Field Operatives" go door-to-door to get a sense of community damage. This method can be useful in this regard for field surveys.

I hope this has been a helpful description of field work and data collection.

INSERT TABLE HERE (I PAGE Horizontal)

QUESTIONS, ANSWERS, COMMENTS

Comment **Prof. Andrea Frank, Cardiff University**

What Jerry is saying is that we can collect data, while walking or riding in a car. You can, for example, dictate your observations into your mobile phone. It is valuable to use the "Geo-Coding e- " function to know where the operation is so it can be mapped out in relation to roads.

Comment **Prof. Jerry Murphy, University of Florida**

That is right. FEMA uses something a bit more formalized. Operatives now have forms on the computer on which you can input data in a GIS (Geographic Information System). There is a map of the area to help you match observations with locations and do the final report.

Comment ***Prof. Andrea Frank, Cardiff University***

For example, you can observe particular behavior where people are playing or are dumping waste and map this.

Comment **Prof. Jerry Murphy, University of Florida**

Yes, or for the water in the setu (lake) you can observe where the debris is captured, to follow each step of the way.

Comment **Prof. Andrea Frank, Cardiff University**

Later on, you can tackle finding solutions.

Comment **Prof. Kemas Ridwan Kurniawan, Universitas Indonesia**

To trigger the interview method, you can first of all determine: "What are your questions?"

Comment **Prof. Andrea Frank, Cardiff University**

Yes, please remember that faculty is here to help you. Start to design your activities with the facilitators. Go through the Questionnaires with them. Do they answer the research questions? If you do not get the right answers, with our tight timetable it is unfortunately not possible to repeat the interviews, so be careful and think through the questions.

Comment **Prof. Jerry Murphy, University of Florida**

Another good approach is to consider: "What are the takeaways?" "What would you like to get out of the project?"

UI UF UC ISJW 2017

"IJSS 2016 Group 3 - Southern Upstream UI Lakes"

Mushab Abdu Asy-syahid
Universitas Indonesia
11 January 2017

17 7 2 IJSW Mushab 20 02 2017 DW DRAFT

As Prof. Frank explained in the opening remarks there were two groups that worked on the intake streams for the UI campus lakes. I was part of the group that worked on the Southern Upstream area where the new toll road is being constructed near the *Politeknik Negara Jakarta*

For the International Joint Studio and Seminar January 2016, we began with examining problems on site, for example mapping social behavior, identifying the issues and the problems and geographical conditions. After making some observations, we discussed and developed a short hypothesis. Our research involved local participants and local neighborhood leaders. The methodology included literature reviews, but we also conducted preliminary site visits and observations. We conducted in-depth interviews and distributed questionnaires. Often people on site did not have a good understanding about the questions, and we had to simplify the questions. We compiled the data and the findings and then identified key words.

The solutions were not only about infrastructure, but also focused on social behavior. As an example of mapping the conditions of the neighborhood, we compiled the data and drew a trash collection map. We noted that in the informal housing areas, people had a tendency to throw their trash behind their houses, rather than paying for garbage collection.

Also we had to cross-check the answers. Sometime the answers were given in a normative way, but the answers were not real and they did not match the facts. We had to develop the project in relation to the local living conditions. We followed the flow of the rubbish to create a diagram. From this diagramming and mapping exercise, we proposed interventions. One example is that the solution was based on non-physical artifacts and was extracted instead from social behavior. When we conducted the site visits we had to think in terms of what the local community wanted to say. There was also the problem of translation.

Questions, Answers, Comments

Comment **Prof. Chris Silver, University of Florida**

One of the things that is useful and it is often better to frame your questions around behavior. How to you use the water around the lake? What do you use the water for? Make observations. Do you ever fish in the lake? What do you do with the fish? Think of behavioral questions in order to avoid value questions, such as "What do you think?" *These questions are much more difficult to answer.* How is the water jug cleaned? Nothing is too strange to ask. The strength of the project last year (IJSS 2016) was the feeling of the place.

Comment **Prof. Andrea Frank, Cardiff University**

To follow on from this – as Chris and Mushab suggest, it is good to check if questionnaire responses match behavior. Last year one of the groups was interested in recycling behavior after seeing the many

recycling bins. But, do people know what should go into each one of the colored bins? And although respondents stated they would recycle, when the group checked out the bins, it became clear that there was obviously confusion about how to use them properly as each one had the same kind of waste inside. So this shows that people do not separate the trash as indicated by the colours.

To see if they understand recycling you could interview people. Ask simple factual questions rather than open-ended questions.

UI UF CU IJSW 2017

"Lessons from Eco-city Development and Planning"

Dr. Li Yu
Cardiff University
12 January 2017

17 5 5 IJSW Dr Li Yu 31 01 2017DRAFT

We are first trying to understand why we are talking about Eco-cities. Today 50% of the population in the world lives in cities. Urbanization consumes 0.5% of the world's land area and 80% of the global GDP is generated in cities.[1] The city accounts for 70%-80% of the greenhouse gas emissions[2]. The city is the victim of climate change and its generator, urbanization, is continuing to grow and create a great risk. It is a nightmare, but there is great potential too. First, this is because of our belief in the function of the city, which used to work well, but now it has to change. Second, the so-called modernization and the possibilities of science instilled a belief in us that human beings can change the world and a belief that nature can meet our demands. We believed in the car, new technology and the future of development. There were advantages and also risks.

City development is dependent on energy, petrol and gas for production, living and increasing the quality of life. The city is an engine for development and also a generator for climate change, which is being felt by changes in the cycle of rainfall and changes to average temperatures, broadly speaking. According to UN Habitat, urbanization and climate change are converging with negative impacts upon human beings and human settlements within the perspective of social, economic and living quality. UN Habitat estimates that by 2050, 70% of the population will be living in cities.[3] This growth is a feature of urbanization and is a projection of potential demand and supply. Urbanization takes place mainly in developing countries. Urbanization attracts migrants from rural to urban areas, resulting in consumption of energy as people are attracted to the lifestyle in megacities, which is their appeal. Megacities today typically occur in developing countries and Asia in particular, which is very similar to Latin American growth in the 1970s-1980's, only now it is Asia.

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[1] *PriceWaterhouseCoopers, UK, (2015), "Rapid Urbanisation: A New Urban Agenda: Accommodating 2 billion new urban citizens" Accessed on 1 February 2017. "While sustainable cities occupy only 0.5% of the world's land, cities consume 75% of its natural resources and account for 80% of global greenhouse gas emissions." (World Bank, 2007). http://www.worldbank.org/en/topic/urbandevelopment/overview#3*

[2] The World Bank, (2016), "Urban Development: Overview," Accessed on 1 February 2017. "...80% of global GDP generated in cities ...over 50% of the population lives in urban areas today... they consume close to 2/3 of the world's energy and account for more than 70% of global greenhouse gas emissions. http://www.worldbank.org/en/topic/urbandevelopment/overview

[3] UN Habitat (2015), "United Nations Adopts SDGs, cities in greater focus," October 2015, Accessed on 1 February 2017. "The world is rapidly urbanizing. Today, over half the global population lives in urban areas, which will accommodate an additional three billion people by 2050—70 per cent of the world's population." http://unhabitat.org/united-nations-adopts-sdgs-cities-in-greater-focus/

A hundred years ago climate change was not identified as a problem. People did not realize the implications of car use. It is because of all these challenges that the concept of Eco-cities and sustainability is so appealing. Research from the University of Westminster, London has identified that Eco-cities have become the main development scheme everywhere. This research also identifies different types of Eco-city development: New Towns, Urban Expansion and Retrofitting. Eco-cities use EcoTechnology to renew and regenerate existing cities. Yet in places like China, Eco-cities are not really the future, it is for political reasons that only parts of Chinese cities are Eco-cities. Ninety-seven percent (97%) of cities want to be 'Eco-cities', but sometimes it is only a slogan. The main development schemes are different. Why is this the case? There are two reasons: 1. Some Eco-cities deal with climate change and sustainable development patterns. 2. Other Eco-cities do not know how to deal with the challenge, so local governments along with local engineers and development firms are left to develop Eco-cities.

Some people try to do some innovations to deal with the challenges facing us in the next 100 years. It is a kind of contradiction. From my research, it is true. No matter if the developing country or the consultants are trying to find a new solution, a voice to influence development resounds.

In the USA, the recovery of damage to urban areas is a high priority, for example the recovery may occur with affordable architecture and locally-grown agricultural produce. There are 10 principles of an Eco-city as defined by urban ecologists. 1. To revitalize land use, 2) To revitalize transport priorities, 3) To restore damaged urban environments 4) To create decent, affordable, safe, convenient mixed housing, etc. INSERT 10 Principles.

There is a wide range of principles, which could also try to deal with damage to the environment. There are so many different discussions about green urbanism.

Exactly what is the co-principle for sustainable development? According to the Brundtland Report (1987), "Sustainable development is the kind of development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Researchers have identified three main components of research in sustainable development: 1) Social Equality or Equity, 2) Environmental Protection, 3) Economic Growth. These three components create a contradiction amongst themselves, for example, economic development versus the economy or social equity may result in a loss of economic efficiency or an increase in the economy may result in a cost to social equity. We can use a 'green economy' or ecological social equity – whether either can solve the economy, well that answer will come. Most countries concentrate on the economy.

Insert Diagram of Ecology, Equity and Economy

Field studies in Europe involve discussion with local planners where net development is a priority across the board, neither the environment nor social equity, but the economy is the priority. When we are talking about sustainable development we have to realize (and we often forget) the environment, particularly social equity. There are a couple of eco-city projects, namely Tianjin and Masdar to be discussed as a comparative measure.

Tianjin Eco-city is a joint project between the Singaporean and Chinese governments. In China, you are not allowed to build on cultivable or agricultural land. Tianjin is built on saline land. In 2008,

contracts were awarded for a wide range of green infrastructure types, such as wind energy or using a sustainable grid. A 'Sponge City' operates on the concept of a sustainable urban drainage system. Tianjin uses solar energy to generate electrical power and intertidal wind farms are also used to generate electricity. There is an electrical bus and there are bike lanes. It all seems to be a fine and attractive development. The city is 30km2, built to accommodate 300,000 people. However, now there is only approximately a population of 40,000 people. In a survey, local residents were asked whether they are interested to move to Tianjin, but most say it is too far away.

Masdar Eco-city was designed by Foster and Associates as a 'Silicon Valley' for clean, green and renewable energy. Its target is to be a technology generator, instead of only using technology. The objective is to create innovation. Technology has a voice in the development of the Eco-city. Masdar features a light rail system, a personal rapid transit system, solar power and zero emissions.

While these two Eco-city projects offer approaches and mostly technological solutions to environmental issues and consumption of resources in cities – many problems remain. I want to share some lessons we learned in Dongguan, a riverside city in Guangdong Province, north of Shenzhen, is well known case study of an industrial city built on agricultural land. The Chinese government opened the door to attract investment for economic development, resulting in pollution from factories such as paper mills discharging their wastewater into the river. The problem is there was not a good enough solution and capacity for wastewater treatment. After site visits and different kinds of research related to the theme of 'Transformation,' water pollution issues were starting to be addressed. Similar to Depok, Dongguan used to be an agricultural area. The transformative process was to change Dongguan into an 'ecological town', a garden city in the Pearl River Delta. A 'Sponge City' was devised to deal with the flooding and also at the same time to deal with a solution for the water pollution. It cost £1.2 Billion to close down the factories, the majority of which were paper mills. There was extensive research into water systems, green buildings with public engagement in an institutional format. But there were also some lessons learned and criticism related to Eco-cities which placed too much emphasis on technology. It was an interesting debate. Also there was input from the government and business groups related to profitability, but social equity was being ignored.

Green Buildings also mean energy efficient buildings. It is not only about design, but also about a comprehensive mechanism or system. People at that time paid a lump sum for electricity. Why save money? If it was too hot, people would just open the window. In Cardiff, water is not yet measured. People just pay a flat rate. Water consumption is not measured by cubic meters (m3) consumed or how much is consumed. The other issue is to use only a fraction of the energy, but no one calculated the cost. Part of the problem is a lack of views and proposals on a comprehensive transition from energy consumption to energy management and savings. If one solution is to close down the factories, then, "What are the consequences?" For example, "What do we want to increase – people's lifestyle or conserving the environment?" Ecological modernization can occur by using high tech. Then there is a need for high-skilled laborers, but in Indonesia and China, there are mostly low-skilled laborers. What then is the future? Planners alone may not have the ideas and agency of how to balance this ecological equation.

An Eco-city should be sustainable – but why? This is a term from the last century. Why is this so? First, we must understand that "Rome was not built in a day (or overnight for that matter!)." Fast-

paced development is contradictory to both production and lifestyle. So the challenge is to find a solution, a pan-city solution. At Eco-city conferences in the US, many Americans are interested in Chinese *feng shui*, the ancient Chinese art of placement. Confucius said, in so many words, that 'Perfection is a virtue, which is according to harmony." Eco-cities are all about equilibrium.

Insert exact quote.

Question & Answers, Comments

Question **Prof Chris Silver, University of Florida**

*Are there any good examples from megacities related to Eco-cities in a more comprehensive way? In Europe, there are smaller cities. Paris and London are not called Eco-cities, yet they incorporate Eco-city policies. Tim Beatley wrote a good book on the 'Eco-cities of Europe' (**Green Urbanism: Learning from European Eco-cities,** (2000), Island Press). The statistics point to Europe and indicate that is not where the growing population centers are. How do you get beyond this rhetoric?*

Question **Diane Wildsmith, Universitas Indonesia**

What Eco-city principles are relevant to the three lakes in UI and Depok?

Answer **Prof. Li Yu, Cardiff University**

There is no clear definition of 'Eco-city'. Some Eco-cities represent solar power, since they may have a factory to produce solar panels. In Tianjin, lessons can be learned from where eco-city principles have failed. For example, the bike lanes are not designed as a network. There are interruptions. There are gated communities, which break the accessibility and flow of the bike lanes. This is where the (27?) indicators could be a benchmark for eco-cities. Eco-city principles also encompass transport. For example, the government policy placed the Metro line 36 kilometers away from the city center. The connection still has to be built. Looking at the population of Tianjin, most of the residents come from other cities. Then Tianjin becomes a place for second homes. There are good primary schools and high schools. There are lessons to be learned from the provision of educational facilities. The experience relates in how to deal with internal issues. Financial arrangements can decide everything. For example, consider the percentage of car use. What is the reason? Identify the problem. Identify the reasons: Why is there failure? Why is there success?

Question **Prof. Jerry Murphy, University of Florida**

In relation to the Bruntland Report and the diagram of three intersecting circles for Ecology, Equity and Economy, economic issues actually dominate the other two, so in fact the circles are not equally weighted. How much is the global shift towards capitalism an economic driver in Eco-cities?

Answer **Prof. Li Yu, Cardiff University**

Yes, that is the reason. At the same time, we come to another point. For example, there is a traditional fishing village. Why do the people come back to a very poor area when they do not have access to the job opportunities? For example, the rivers are poisoned by the factories. Do you live for today or do you live for eight weeks? This is the choice. We discuss very simple issues with the local

government. When we create some uncertainty, risk or instability, we ask questions: "What will be the consequences and what will be the solution?" You need to find some innovations, some new ideas. It may be there is not a theory at all, say 'ecological modernization', but it does not make any sense. In Germany there is a high level of education, but the only lesson that can be learned is that only 20% of the migrants have a high school level education. Logically, "How can you expect them to find a job?"

Question **Eka Pradipta, Universitas Indonesia**

How do you choose or select good input from scientific research or social research?

Answer **Prof. Li Yu, Cardiff University**

That is something we are trying to learn in our practice of eco-modernity, so we come back to the ancient Chinese philosophies. There is not a simple answer. In post-modernity there are multiple stakeholders. You have to consider multiple approaches, pragmatisms. Marxism and other economic systems have advantages and weaknesses. Why not use different kinds of approaches or ideals to address a problem. The post-modern world has changed.

Comment **Prof. Andrea Frank, Cardiff University**

*It is hard to get beyond capitalism. We need a paradigm shift (post-capitalism). I don't have a solution but one of my favorite analogies for how to think of our situation has been made by Herman E. Daly, (**Beyond Growth: The Economics of Sustainable Development,** (1996), Boston: Beacon Press), a former World Bank economist who wrote about economic sustainability and opened up his think tank to promote a new way of thinking about economics. He stated that using technology will get us only that far; we can optimize resource use and become more efficient through recycling and energy savings for example. But, looking at the metaphor of a ship, if we overload it, (beyond the plimsoll[4] line) the ship will sink, no matter what. The Earth is our ship and we cannot overload our planet.*

Comment **Prof. Kemas Ridwan Kurniawan, Universitas Indonesia**

Thank you Professor Li Yu. In summary, the 'Lessons' we have learned is that there are multiple choices for eco-city planning.

[4] The **Plimsoll line** is a reference mark located on a ship's hull that indicates the maximum depth to which the vessel may be safely immersed when loaded with cargo. Going beyond this line threatens the ship to sink.

UI UF CU IJSW 2017

"Field Practicum Universitas Indonesia June-August 2016"

Iliana Jaimes Mayor
Candidate Master's Degree in Sustainable Development
University of Florida
12 January 2017

17 6 8 ISJW Iliana 16 02 2017 DW DRAFT

The field practicum requires spending 10-12 weeks in a developing country to study sustainability in the built environment as part of the requirements to obtain a Master's Degree in Sustainable Development at the University of Florida. The general objective of the field practicum was to gain an understanding of current UI practices about water use management, water pollution and flooding. The specific objective for my practicum in Depok was to gain an understanding about and what are people's responses to water problems and how to start to solve such problems through a method of questions and answers to raise public awareness.

The conceptual framework was based on discovering how water management is affected by different aspects, such as water supply, drainage, etc. The focus was on campus facilities and responses from the government and academic community. The plan was to get input for green infrastructure research and the influence of green infrastructure to create a better environment. The research aim was to outline a diagnostic of current water management practices. There were several different methods used: an ethnographic study, participatory mapping, interviews with professionals and questionnaires to build on good principles of data collection in order to perform an integrated analysis of water management on the UI campus and in surrounding areas.

The ethnographic surveys were undertaken on seven different sites to interview local people about their perceptions of water management. The sites were at the Economics Faculty, the Engineering Faculty, the Main Library, the Psychology Department, and the Health Department and at the UI Train Station. The ethnographic study covered people's perceptions about transit, green infrastructure, water, water fountains and trash management as well as rainwater management and gutters. The different sites also concerned issues related to water use, consumption, water resources, etc. The study also raised questions about water pollution, its causes and preventive measures during the rainy season or during peak flooding times. The questions also concerned people's general knowledge about flood-prone areas and possible prevention of flooding.

The second method involved participatory mapping with two groups of four students each. The activity involved drawing cognitive maps, identifying water resources and flood-prone areas, places for wastewater disposal, sources of water pollution and any other water-related places. Both groups recognized the existence of the six UI lakes and one pond. The flood-prone areas are located at the Economics and the Engineering Faculties. Water Pollution occurs most frequently at Pondok Cina and the UI Train Station.

The third method involved surveys. There were 15 questions, requiring responses on a Likert scale, rated from 1-10. The questions were related to the importance of water, water quality and water

pollution and flooding. The surveys were conducted on different sites in the Architecture, Polytechnic and Law Faculties. There were 96 surveys with a margin of error of 10% using a random and casual method of questioning. Surveys were also undertaken at Setu Babakan, Setu Rawa Besar, North and West of Campus and on the East on Margonda. The survey involved 100 students and 75 people in the community. The results focused on three main topics: Water Use, Community Awareness and Water Pollution. The students exhibited a greater degree of awareness about water issues.

Interviews were conducted with Dr. Ing. Dwita Sutjiningsih about Stormwater Management, Prof. Dr. Ir. Riri Fitri Sari about UI Green Metric Ranking and Sustainability, Prof. Dr. Ir. Abimanyu Takdir Alamsyah about coastal cities, Dr. Kemas Ridwan Kurniawan, Supervisor for Field Practicum, Diane Wildsmith about eco-cities, Farah Nabila Putri, UI Masters Student Liaison, Depok City government officials, etc. Topics included religious customs, sanitary issues and environmental affairs.

A SWOT Matrix identified the strengths, weaknesses, opportunities and threats. UI sanitation officers described their activities in relation to water filters, wells, stormwater management, waste water treatment near restaurants and a green infrastructure pilot system. UI sanitation officers identified the opportunities as an increase in water management and the weaknesses revealed a need for more awareness from the stakeholders and the community. The threats are outside the campus where the community has a lower level of knowledge related to water management issues. Another threat includes population growth, which results in an increase in solid waste and wastewater. The students were interviewed in relation to water quality management and how it was being researched. The students identified the opportunities as being the water resources at UI. The weaknesses were the lack of awareness of the community and a lack of awareness about water consumption. The threats are related to water quality, the high amount of chlorine in the PAM piped water (*Perusahaan Daerah Air Minum*, Water Utility Company) and wastewater quality.

The conclusions of the field practicum inquiry are as follows:

There is an abundance of water resources on campus. There is the possibility of rainwater use. The presence of numerous garbage cans allows for trash management. The dynamic nature of the lake provides research opportunities, and the water can be used for recreational purposes. Clean water can be used for sanitary purposes including cleaning, irrigation and, if properly treated, for cooking; however, there is a lack of awareness and care about solid waste management. The UI campus does not suffer severe floods, which may be attributed to the existing lakes and infrastructure.

My recommendations from the field practicum are to conduct more research about water pollution, precipitation levels and rainwater use. In relation to green infrastructure, further research is necessary to increase knowledge about existing plants and for stormwater management to increase the capacity of the lakes to absorb water runoff. Another recommendation is to improve educational outreach about water resource management and research.

Questions and Answer, Comments

Question

What is your perception of water resource management at UI?

Answer **Iliana Jaimes Mayor, University of Florida**

The main question is how to increase the protection of water resources. Second, I would recommend extending the campaign of water resource management in the Biology Department to other departments to raise awareness.

Question ***Prof. Chris Silver, University of Florida***

Do you think enforcement is on the way? The government has a responsibility in relation to water resources. At the University of Florida a student-led team started a clean-up program with the University Office of Sustainability.

Question ***Prof. Andrea Frank, Cardiff University***

Is the UI Building Management aware of their water consumption? Is there any financial incentive in the longer term to save water?

Answer **Prof. Kemas Ridwan Kurniawan, Universitas Indonesia**

There are Safety, Health and Environmental Units who are responsible for maintaining the campus area. There are constant campaigns involving UI students to be aware of water pollution. The Yellow Buses are an example of the campaign to use public transportation to reduce air pollution. Also using bike paths promotes an awareness of air quality. There are signs on some toilets to save water, but not all. In particular, the Faculty of Engineering has standard operating procedures about Green Infrastructure. There is also the internationally-recognized Green Metric Program with more than 500 universities involved. The Faculty of Engineering is amongst the highest out of the 12 faculties in response to environmental awareness.

Comment **Prof. Jerry Murphy, University of Florida**

Given the broad range of youthful demographics in Indonesia, the idea of a social media campaign about water management could be productive on WhatsApp or Twitter. There is also an article in the Jakarta Post on River Normalization[1], which has relevant issues.

[1] Elyda, Corry, (2017) "River normalization to cause more evictions this year," in the Jakarta Post 10 January 2017, Accessed on 16 February 2017. https://www.pressreader.com/indonesia/the-jakarta-post/20170110/281633894922310

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International Joint Eco-City Studio and Workshop (IJSW)
and
Joint International Workshop on Green Infrastructure and Healthier Citizens

"Citizen Science, the Environment and Public Health"

Dr. Andrea Frank
Cardiff University

13 January 2017

Today's presentation on the emerging movement of citizen science reflects some of my personal learning and thinking based on experiences from last year's IJSS 2016. With citizen science we mean generally the involvement of citizens, the general public in doing/conducting scientific research in the form of experiments and collecting data. There is a wide spectrum of levels of involvement ranging from what can be classified as 'passive involvement' to 'active involvement'. At the passive end of the scale citizens participate in research and scientific knowledge production under the direction of scientists, e.g. they contribute to research by participating in experiments (e.g. testing effects of medicines etc) or providing local knowledge to interviews. On the active end the citizens lead on the inquiry. They are the driving force behind the quest to understand an issue that they are concerned about usually with the help and in collaboration with scientist. The collaboration of citizens and scientist has benefits for both sides. Scientists can often gather more data than they would have otherwise access to and citizens gain new skills and knowledge and awareness of scientific facts (e.g.

the impact of pollutants on human health). Citizen science has always existed but it is elevated to new levels due to the opportunities afforded by digital technologies, wi-fi, social media and so on.

Citizens science is a way to empower the public and is generally driven by issues that affect people, such as poor health that seem to contradict general trends at national level (e.g. higher than average cancer rates or incidences of other health conditions such as respiratory diseases). In a world where many decisions are driven by economic interests there is a growing mistrust by the public of official data and their interpretations, e.g. is genetically modified food really ok? With powerful companies and businesses is the regulator, i.e. government really independent? Neoliberal tendencies that argue for 'less government' also mean that government is having less funding to conduct, for example, environmental monitoring in a systematic fashion. In turn this often means that a lot of data that we might want to have to monitor water or air quality, flood levels and so forth are not collected and not available, leaving us in vulnerable positions where we as citizens or the government cannot set in motion preventive actions to protect our homes, property, or health.

Many examples of science involving citizens focus on aspects that affect individuals directly and personally and are health-related involving citizens volunteering for participation in medical studies or allowing scientists to use their medical histories. The SeaHero App is interesting as it uses gamification to gather anonymous data that helps dementia research involving large volumes of crowd-sensed data. The most popular science fields involving citizens to date are biology, conservation and ecology. Activities often link to issues of environmental justice such as the famous and well documented case of Love Canal (USA)[5] where a community was built basically on a toxic waste site, causing higher than average cancer rates in residents. A recent example of active citizen science is the case of mothers living near the doomed Fukushima Nuclear plant in Japan which was damaged by an earthquake and tsunami in March 2011. These mothers are concerned about radioactivity in vegetables and food produced near the plant and the health impact on their children. They were concerned about official government statements that all is well and bought monitoring equipment and taught themselves how to test food themselves[6].

The data collected by citizen scientists has helped science to rethink current assumptions and improve for example air pollution modelling. The finer grid of data points has shown that often peak levels of pollution that are threatening to health can be missed by standard monitoring and modelling techniques. Moreover, the involvement of citizens in science also can raise awareness of environmental issues in the general public and can help induce behavioral changes. For a broad involvement of the general public one needs basic and simple approaches that are easy to administer, low cost and fail proof. A good set of examples for such approaches has been promoted through the UK's OPAL national citizen science surveys (Open Air Laboratory, see: https://www.opalexplorenature.org/surveys). There are a range of different surveys looking at environmental conditions such as soil quality, air and water pollution using simple indicators that can be observed by school children and the lay public. As with natural things these surveys rely on

[5] https://archive.epa.gov/epa/aboutepa/love-canal-tragedy.html

[6] http://www.agreenroadjournal.com/2013/12/mothers-with-kids-get-grocery-store-to.html

biological indicators and they cannot easily be transferred between national contexts (climate zones and landscapes). They are a fabulous thing, but in order for them to work we need to have considerable scientific research and grounding to ensure the viability of results at that level.

In order to facilitate citizens' science projects and collaboration with scientists – increasingly citizens' science networks[7] are emerging to help share experiences and pool the scientific knowledge and how to disseminate this knowledge and engage the public. One area where citizens' involvement in data collection is growing rapidly is in the monitoring and understanding air pollution. According the EEA (European Environmental Agency) air pollution is causing around 467,000 premature deaths per annum with urban populations being particularly at risk. More specifically 85% of the urban population experiences exposure levels to fine particulate matter (PM 2.5), i.e. dust particles so fine they cannot be seen that the World Health Organization deems harmful to human health. PM 2.5 exposure can aggravate heart disease, asthma and lung cancer. However, air pollution does not just consist of harmful levels of dust measured as PM 2.5 or PM10 (larger particles); negative health impacts are also related to certain gases such as CO2, O3, NO2 and CO surpassing threshold levels. Monitoring air quality is typically done through quite expensive equipment and most cities in the world only maintain a relatively low number of these stations. In Jakarta, there are currently three stations providing publicly available data and increasingly we believe this is insufficient for understanding and measuring the impact of air pollution on urban residents' health. There appears to be no such station in the Depok area. Yet, as I said this is not unusual – even in the Western developed nations there is often no dense network of monitoring stations.

An emerging quasi standard for expressing air quality in a meaningful manner – relating it to the potential danger to human health is encapsulated in the Air Quality Index (AQI) which is a composite measure that categorizes air quality levels in 6 bands from 'Excellent' to 'Severely polluted'. Using this index makes the pollution level fairly easily comparable across national boundaries; life data is accessible for a great range of places around the worlds (See real time air quality index, http: aqicn.org/map/).

(one could insert the map for Asia/Jakarta here)

[7] See for example, http://www.nationalgeographic.org/idea/citizen-science-projects/, https://www.citizensciencealliance.org/ or http://citizenscience.org/

In keeping with the macro research question for our grant and workshop, one question we may posit then is: “Can ‘Green Infrastructure’ help mitigate or alleviate air pollution and improve air quality?” A growing number of studies in US and European contexts suggest that tree cover in particular can reduce both CO2 and NO2 levels. In order gain a better understanding of any potential relationship between air quality and green infrastructure and test hypotheses we need more data points at a finer resolution than currently available. Here is where citizen science becomes important. As necessary equipment is costly (although cheaper monitors are becoming increasingly available) one way forward is to use bioindicators, i.e. plants or animals that whose existence or absence can serve as proxy for air quality. Such bioindicators can provide localized information on air quality and if geo-coded and mapped can provide the basis for more fine grained modelling of air pollution.

In the UK, Europe and North America, one such bioindicator which has been linked to particular levels of pollutants in the air (and thus air pollution) are lichens. The OPAL survey that I mentioned earlier has been using lichen surveys quite successfully. Lichens are symbiotic organisms that can grow on trees (and other surfaces) deriving the nutrients necessary to sustain their existence from the air. In poor air they cannot grow and so a lack of lichens may indicate poor air quality. As different lichen species have different sensitivities towards gasses (such as CO2 or NO2) the presence or absence of certain species can be linked to these pollutants. The relationship is very well studied in the UK and has been turned into an approach usable by lay people through the OPAL survey whereby 9 lichen species are grouped and associated with high, medium and low levels of nitrogen.

In theory this methodology can be transferred to other countries, but the range of plants thriving in tropical climates differs from those in temperate or colder climates. Research in this area is relatively rare as yet in the tropics. One of the specialists in lichens from the UK (Dr. Pat Wolseley) however has worked with a researcher in Thailand some years ago and they have been able to create a map of air pollution levels based on data collected by school pupils. We are also fortunate to have somebody here today who has used this method in Indonesia. Please help me welcome Prof. Dr. Lisdar from Bogor Agricultural University who kindly agreed to join us today here at UI to present her research and findings from a study she has conducted with colleagues in Bogor.

To conclude: Citizens science can take different forms where citizens participate or lead research activities, collect data and create knowledge often in collaboration with scientists. It is so far most prevalent in the fields of biology, conservation or ecology but increasingly in other areas such as public health. Findings and data collected can be important means to empower communities and put pressure on politicians and policy makers to enact changes or just raise public awareness. It is, I believe, incredibly important in data poor environments, including in developing countries. In order to make the use of bio-indicators viable, we need to be aware that it requires considerable background research to establish regionally robust indicators.

Working Notes **Allison Reagan, University of Florida**

Question **Dr. Ahmad Gamal, Universitas Indonesia**

How can this relate to planning and architects and how are citizens involved?

Answer **Prof. Andrea Frank, Cardiff, University**

There is no simple answer to this complex issue. In brief there are many different ways. For example if there is sufficient data to show the particular impact of green roofs or green walls in entrapping pollution, then we can enact policies and building regulations that ensure that this will become standard practice in the building of future developments. Citizens could and have also been involved in helping to understand movement patterns and traffic and this again can be shaping the design of circulation patterns in cities.

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"Lichens as Bio-Indicators"

Dr. Lisdar I. Sudirman
Bogor Agricultural University
13 January 2017

Working Notes **Allison Reagan, University of Florida**

1. Intro
    a. Symbiotic organisms between fungi and green algae, fungi and cyanobacteria, or fungi and both.
2. Main thallus forms inn lichens
    a. Crutose, Foliose, Squamulose, and Fruticose
3. Slow-growing and live long (reason used as bio indicator).
    a. Can withstand droughts for several months and may live to be 1,000-4,500 years old
    b. Can be found in many different type of habitats, even vehicles
4. Very sensitive to air pollution (most of them)
    a. Lichen can concentrate toxins in the air
    b. Very sensitive, no protection
5. Used lichen to try to detect air pollution in Bogor City
    a. Why Bogor City?
        i. As the population of Bogor continues to grow, so does air pollution
        ii. Sulphur Dioxide, nitrogen Dioxide, Co, and Pb are air pollutants present in the air already
        iii. High vegetative cover creates a more humid microclimate in which pollutants can be trapped
        iv. Unique location of Bogor Botanical Gardens, absorbing CO2 and likely cooling the surrounding area as well as providing an ideal growing environment for lichens
    b. Looked at its population pattern in three different plots
6. Methods/Sampling
    a. Lichens sampled using 32 x 20 cm3 plastic quadrants, located on main stem. Two quadrants are used on each tree, different sides.
    b. Covers were measured by drawing the circumference of the whole thalli that were in the quadrants on a piece of transparent plastic.

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International Joint Eco-City Studio and Workshop (IJSW)
and
Joint International Workshop on Green Infrastructure and Healthier Citizens

"Living Public Policy in an Eco-City"

Dr. Ahmad Gamal
Universitas Indonesia
13 January 2017

An Executive Summary of this lecture is described below:

- Revisits the steadfast idea of compactness as the generally believed "sustainable planning practice"
- Summarizes some tensions revolving around compact city development: Open Space and agricultural land; Density Preferences; Energy Glut
- Conclusion: Building a Compact City (sustainable urban development) is more challenging than planners & architects may have imagined. This development option is socially, economically, and behaviorally challenging.

Pro/Con Arguments Related to Compact City Development

The first set of issues for compact city development relates to land use and the relationship between urban areas and their agricultural hinterlands. Open Space and Agricultural land is portrayed by the terraces of Chinese farm land. There are two arguments on Land Resources: first, in favor of compactness and second, against compactness. The arguments in favor of compactness include: Savings in prime agricultural land between 18 and 57 percent; reducing public subsidies and environmental costs. Data to support the second argument in favor of compactness includes: the urban spillover effect, which is regarded as a negative externality and the 'impermanence syndrome." The arguments against compactness, first center on welfare losses due to higher land prices and second concern the fact that food production has increased, have not declined. Africa is a case in point where in the 1990's food production declined because of primary structural development reasons, not because of a shortage in prime agricultural land.

The second set of issues related to compactness is focused on Density Preferences, as contrasted by the duality of 'City versus Suburb'. The arguments related to density in favor of compactness are first centered on energy savings due to reduced auto trips. There are extenuating circumstances related to compactness in that as densities rise, trips get shorter; there is an increase in the frequency of transit and walk modes; and vehicle trips correspondingly drop. Opposing arguments against compactness in relation to density issues point out that public transit requires higher subsidies per passenger mile than cars, ($0.29/passenger mile public transit versus S$0.005/passenger mile autos). Note that this calculation dismisses congestion pricing and carbon emissions fees.

The third set of issues, concerning compact development, is related to energy glut, energy efficiency and our position in relation to the "End of Oil." The shortages of oil and the impending "End of the Oil Age" result in arguments in favor of energy efficiency, a reduction in oil consumption in the face of depleting oil reserves and the reduction of travel distances or a reduction in urban sprawl to reduce

carbon emissions. Compact City Development results in a reduction in vehicle hours/day and a reduction in air pollutant emissions. The counter-argument against compactness stresses that oil prices have fallen dramatically, which leads to affordability for other goods and services in terms of relative prices. By living further outside the city, housing costs are lower, but transportation costs are higher, thus substituting housing prices for transport costs.

Conclusion

These pro/con arguments in relation to compact development indicate that there are real challenges ahead for architects and planners to apply sustainable design/planning measures. Three areas of inquiry arise as follows:

- Social: When it comes to food production and land resource allocation, whose interest matters: urban residents or the global population?
- Behavioral: How much public subsidy is justified to promote (or discourage) a particular behavior? (i.e. using public transit or driving)
- Economic: What is the efficient allocation of subsidy between housing & transportation?

Discussion

Comment Allison Reagan, University of Florida

There was some discussion about offering subsidies for housing within the city, as people wouldn't need to take public transit, therefore saving on public transit costs and overall oil usage. Also, in the argument related to agricultural lands, it is important to note that many of the arguments for Compactness under this topic are not very applicable to countries where relatively large amounts of farmland are available, such as the US. However, it should still be a valid concern for every country.

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International Joint Eco-City Studio and Workshop (IJSW)
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Joint Session
16 January 2017

17 6 2 IJSW Joint Workshop 16th Jan 14 02 2017 Ova edit

Welcoming Remarks **Prof. Yandi Andri Yatmo, Universitas Indonesia**

UI is keen to host this workshop, representing this very green country in Indonesia. As you know we have a problem with health and infrastructure, so this workshop is very important to us. Enjoy your four days here.

Introduction **Prof. Andrew Flynn, Cardiff University**

It has been a year since we were here, but what have not changed are the welcome and the enthusiasm. This workshop is built on the work from last year. We are trying build on this in a creative way as we think about eco-development for a required international outlook. We have brought together different disciplines with a better understanding of the problem to develop intellectually a way of how to deliver policy changes that we can witness in human health and the environment. Our ability to deliver change is poor in comparison with how we can deliver change. This workshop is building on a workshop held in Malaysia and is part of a program to involve Universitas Indonesia and *Universiti Kebangsaan* Malaysia as well as Cardiff University as 'sustainable places' institutions. Dr. Ova has reflected on her experiences in Malaysia working with the international groups to accelerate our learning that comes from communication with each other in order to understand our ideas.

The issue is Green Infrastructure and Health and how your contribution will help you see things with different eyes at a practical and an intellectual level, which is how these things happen in a place-based environment where the community identifies what is their capacity for change and what is their experience in Indonesia and in how change can be achieved.

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International Joint Eco-City Studio and Workshop (IJSW)
and
Joint International Workshop on Green Infrastructure and Healthier Citizens
Joint Session

"Learning from International Experience"

Dr. Ova Candra Dewi
Universitas Indonesia
16 January 2017
17 6 2 IJSW Joint Workshop 16th Jan 14 02 2017 Ova edit

Continuing what has been said, the Workshop on Green Infrastructure and Health was held in Kucing, Malaysia for three days with Dr. David Tan from the United Nations University. I would like to express my gratitude to the organizers. I enjoyed the workshop on health, engineering, architecture and public governance as part of the socialization about dengue fever, green infrastructure, water harvesting and an introduction to theory and methods that would be useful for system-based thinking. This workshop was to try to discover how these methods work. The third day was excellent in that first we had discussed the ideas and then together with the organizers we collected our ideas into group discussions and then we decided whether we will have a research project together.

The multi-functional aspects of Green Infrastructure and Open Space for densely-populated settlements are being discussed from a health and safety perspective. Another example to be discussed is the American Red Cross and the UI Community Engagement Project in cooperation with American Red Cross and Indonesian Red Cross. The revitalization of Green Urban Space is in Kabupaten Bogor.

Open Space is any open piece of land which is under-developed and accessible to the public. The American Red Cross has identified four locations: Kelurahan Pondok Rajeg, Karadenan, Waringan Jaya and Sukahati. Green space exists only by adding a patch at a time to make it better for the community. In this way we use a Charrette method to collect the ideas from the community about how they want to proceed with the improvement of their green open space.

A Community Charrette is held, ideally with three-four workshops. Intensive design workshops are held involving experts and the community. The date is pre-scheduled with the community. The first activities begin with data collection, sketches and activities of the community. Research questions include: "What is the definition of green space/park for the community?" Then, as the second step, the daily activities are inventoried and the functions identified. The third step is to come up with the priorities within the budget limitations. The fourth action is the placement and agreement with signatures from the community to agree on the results. The agreement is made between the Community and the American Red Cross in line with the budget.

The next phase of the project involves identification of the existing open spaces. Then a proposal to add a jogging track is discussed. Informal chatting follows with the community. Another proposal emerges to add a water catchment area with 40 cm deep gravel base placed underneath the benches to help catch the rainwater. There is another idea to add a stone therapy path and another idea to

add a playground. Compared to playgrounds in Germany and Europe, playgrounds in Indonesia reduce the tendency of children to just use gadgets. There are also benches to be added for the mothers and the adults to observe the children.

Question and Answer, Comments

Question **Prof. Andrea Frank, Cardiff University**

What a wonderful overview to show how the university and the community engage with each other. From a Cardiff perspective, this gives us a glimpse of how to implement ideas with small steps. How does it exactly work with the community? Do they have the capacity and the time? Who is the person you contact first in the community?

Answer **Dr. Ova Candra Dewi, Universitas Indonesia**

Actually, the ideas are coming from the partner (The American Red Cross), who asks that open space is allocated as a gathering point in case there is a disaster. They want to give added value to the open space. The ARC contacted the University to collaborate, first of all, to determine what the actual situation is. Each community is different; one is giving the equivalent of "100 hands" to cooperate. Another community does not care so much because they already have public access. So we start with what the community wants. We do not judge what is good or what is bad. We are only there to give moral support. We also advise on technical aspects, say the design of the jogging track and the type of materials.

Question **Dr. David Tan, United Nations University, Malaysia**

How much did the usage of the park change? What did the differences make between the various communities?

Answer **Dr. Ova Candra Dewi, Universitas Indonesia**

The community was already engaged with the playground and they ordered its development to go ahead. Before the children could come and play, but now they are more centered. The parents are more comfortable. They can sit and observe the children.

In another park, the community does not want to get involved. Normally, the community has the data so the main difference is that we have to gather data on our own. Then it turns out that outsiders use the facilities.

Question **Allison Reagan, University of Florida**

Are these space already owned by the ARC? What are the therapy stones for?

Answer **Dr. Ova Candra Dewi, Universitas Indonesia**

For the public facilities, the ARC only asks the government for permission to observe the public facilities. For the stone therapy path, the stones are placed vertically, so when you step on the stones, they massage your feet to stimulate the circulation. These ideas were coming from the community. We also offer suggestions. Someone from the community wanted to have gym facilities with a

bathroom. Due to the limited budget, not all requirements will be taken in hand. Only those with higher priority and relevant to the aim of the ARC and PMI program will be implemented.

Question **Prof. Andrew Flynn, Cardiff University**

The picture and issues that you raise are interesting about Green Infrastructure and Health, especially three conditions: first children actively and playing, second water catchment and third the football pitch. What does it mean when a grassed area is replaced by paving? You have a potentially negative situation resolving surface water impact.

Answer **Dr. Ova Candra Dewi, Universitas Indonesia**

It is because some of the community members complained about having soil or grass during the rainy season. They can hardly use the open space after the rain. The football platform already existed. We added a jogging path and the stone therapy path. Yes, we added hard surfaces, but only for those that support the activities.

Question **Laura Callaghan, Cardiff University**

Who maintains the facilities and the infrastructure?

Answer **Dr. Ova Candra Dewi, Universitas Indonesia**

Cracks in the hard surfaces should be managed by people with a technical background. They do not start with zero knowledge. The ARC also should have a local agent. In this way, PMI already have voluntary team and they are called SIBAT or *Siaga Bantuan Berbasis Masyarakat*. There are voluntary members from each neighborhood to maintain the park.

Questions, Comment **Prof. Andrea Frank, Cardiff University**
Answers **Dr. Ova Candra Dewi, Universitas Indonesia**

Q *Who pays for any maintenance?*
A It will pass over to the community, so the community will be in charge. They can also ask the local government to help them to repair any broken facilities.
Q *Will that raise long term issues as far as you are concerned?*
A Yes, we are from the Anthropology and the Architecture Departments. Part of the consideration is our exit strategy. So we ask the local government to keep an eye on the project.
We think about money when we ask about maintenance in the West.

Answer **Eka Pradipta, Universitas Indonesia**

Related to infrastructure, we did not make a lot of changes in the landscape, but we keep the priority requirements are fulfilled.

Answer **Dr. Ova Candra Dewi, Universitas Indonesia**

We encouraged them not to cut the trees, so, instead the community moved the trees. They also planted some kind of rare trees in one of our project location.

Question **Prof. Terry Marsden, Cardiff University**

How widespread are these community engagement projects?

Answer **Prof. Yandi Andri Yatmo, Universitas Indonesia**

In Indonesia, it is different. Indonesian government involvement is less than in the West. Land is divided into houses and public facilities. Then, all of the community gathers to maintain the parks and the lights. It depends on the leadership of the community. Usually, I end up with an open-ended project, giving the community something to finish so they can have ownership in the project. It is like this in rural/urban areas, even in the high class housing areas.

Question **Prof. Andrea Frank, Cardiff University**

Is it correct that each one of the faculty is working on some community project or another?

Answer **Prof. Yandi Andri Yatmo, Universitas Indonesia**

We say to the students, you should go to this village, find out about the structure of the community and who the leader of the society is. The trick in our society is to find out how the society works either 'top-down' or 'bottom-up', not going there like 'Santa Claus' to give out gifts. If this is so, then the bond is less effective. You have to give space to the community; they have the power. Then you can end up building the project at a much lower cost.

Question **XXX? Cardiff University**

Do you see outsiders come to use the facilities? Will there be fences in the future?

Answer **Prof. Yandi Andri Yatmo, Universitas Indonesia**

It could become a problem, but we do not have fences. But, first the other communities would have to merge in the society. There are 50-100 families in the community and they know each other across the generations.

Question **Prof. Terry Marsden, Cardiff University**

Are you in any way able to measure the impact on community facilities? What is the 'halo effect' of community-owned, community-led?

Answer **Prof. Yandi Andri Yatmo, Universitas Indonesia**

It depends on the project. I can explain my project, whether we are dealing with the water, or something else. In any participation project, we need our facilitators to have results. The community has their own culture, their own society. Our mission is in educating the society by doing architecture.

Question **CW?, Cardiff University**

Do you have a method of measure to evaluate before and after?

Answer **Prof. Yandi Andri Yatmo, Universitas Indonesia**

Good question, we did three projects at the same time. We look at the dynamics of each project. How liquid is it? What is the impact of the project? What is the best method for doing the project with participation of the community? One project out of three fails, but we learned a lot. For example, we had land issues, so we can see there are indicators.

Question **Prof. Andrea Frank, Cardiff University**

Is it the sociologists and/or the ethnologists (anthropologists) who provide feedback to you?

Answer **Dr. Ova Candra Dewi, Universitas Indonesia**

During the evaluation part, it is the anthropologists who are working to evaluate the project. There is an end-of-year evaluation. The budget of the partners (ARC) has to be allocated by the end of the year. The community wants this and that. The partner has the right to cut the budget if there is no result.

Answer **Dr. Paramita Atmodiwirjo, Universitas Indonesia**

It is an interesting question of how to evaluate the community projects. It depends on the type of project and the evaluation depends on the process involved. It depends on what is going on with the acceptance of the community. We have to consider what is the impact of the project? How do we develop a healthy lifestyle? For example, are we developing the reading capacity of the children? It is the same for systematic or structured interviews and informal visits. Of course, some projects do not have that kind of opportunity.

Answer **Prof. Yandi Andri Yatmo, Universitas Indonesia**

One project, for example, was to place an open library structure on the side of the street. No one was assigned to take care of it, yet after a year, all the books are still there; maybe they are slightly more used.

Answer **Dr. Ova Candra Dewi, Universitas Indonesia**

Regarding the community agreement, your questions would be better answered by the American Red Cross directly. Tomorrow we will have session with them.

Closing Remarks **Prof. Andrew Flynn, Cardiff University**

This discussion raise questions about the role of academics and also raise questions about open space, whether it is closed off or not and how communities think about open space.

UI UF CU IJSW 2017
International Joint Eco-City Studio and Workshop (IJSW)
and
Joint International Workshop on Green Infrastructure and Healthier Citizens

Joint Session

"Towards a Forward-Looking Campus through the Application of a Green Infrastructure Concept"

Dr. Ing. Dwita Sutjiningsih
Universitas Indonesia, Fakultas Teknik
16 January 2017

The UI Lakes were designed on a cascade pond system within the campus water catchment area. By definition, water catchment areas drain into a river, reservoir or another body of water. The 320-hectare UI Depok campus was built in the 1990s.[8] The campus is very beautiful with its 22.7-ha lakes, but sometimes we have problems with solid waste coming from outside the campus. Also with Lake Agatis, we have problems with water quality because of the connection with the outside waste from the surrounding communities. Usually in the dry season from April to October, there is a problem with solid waste. This year there is a longer dry season because of *El Nina*. Water quality is dynamic in a cascade pond system. The Water Quality Index measures the overall water quality at a designated location. The National Sanitation Foundation (NSF) Water Quality Index Graph shows the temporal water quality index. We can see it is a declining trend.

If we look at the watershed impervious cover dynamic from 2005 to 2015, it shows an increasing trend between stream quality decrease and watershed impervious cover. From 2014-2015, Lake Kenanga watershed impervious cover increased by 25%, in Lakes Mahoni, Ulin and Salam, the rate was 30-46% and in Lake Agatis the rate was 86%. This measure of watershed health is identical with healthy people. With a high watershed impervious cover, it is difficult to have healthy water. This challenge points out the urgency for testing.

Moving to the next topic, "What is Green Infrastructure?" Green Infrastructure is basically an interconnected network of green spaces and other environmental assets that conserve the function of the natural environment and people.[9] There are many different definitions. The U.S. Environmental Protection Agency (EPA) uses the terms 'Low Impact Development' and 'Green Infrastructure' interchangeably. Landscape architects refer to 'Green Infrastructure' as open spaces, nodes, and corridors that provide a healthy environment for the inhabitants. One of the key ideas for green

[8] Universitas Indonesia, (2016), "About UI," Accessed on 15 February 2016. "Depok campus is a green campus covering 320 hectares. UI maintains ecological conservation by utilizing only 25 percent of area for academic, research and student activities; while uphold[Ing] 75 percent for forestation." http://www.ui.ac.id/global/about-ui.html

[9] Green, Jared, (2013), "Green Infrastructure: A Landscape Approach," *In* The Dirt: Uniting the Built and the Natural Environments, Accessed on 15 February 2017. https://dirt.asla.org/2013/04/25/green-infrastructure-a-landscape-approach/

infrastructure is to promote conservation in inter-connected networks, such as wetlands and woodlands and waterways and other green open spaces, etc.

The System for Urban Stormwater Treatment and Analysis IntegratioN (SUSTAIN) advocates Best Management Practices (BMP), which determine the effectiveness of reducing pollution in sustainable systems for urban stormwater treatment, analysis and integration.[10] Bio-retention and porous pavements are two of the tools used on the UI Campus for stormwater management. Using vegetated swales and changing road surfaces into porous pavements are options. The aquatic buffer zone and the porous pavement around Lake Kenanga are notable examples on the UI campus of green infrastructure and best management practices.

The biggest challenge on the UI campus relative to water management is the area outside the campus where water flows into Lake Agatis. The things we do locally not only affect the people around us, the effects are also global.

Questions and Answer, Comments

Question **Allison Reagan, University of Florida**

In the graph on the increase in impervious surfaces, what is the most common issue?

Answer **Dr. Ing. Dwita Sutjiningsih, Universitas Indonesia**

Roof shapes in local residential buildings are predominantly sloped, so there is no possibility for flat green roofs. Houses are directly connected to the drainage systems, so the water often runs off into drainage gutters.

On campus, rough just under a third of the area is built up with academic buildings (25%), the rest of the areas (75%) are landscaped with the lakes. There are different characteristics between the inside and the outside areas, especially when we compare the Google images of 2005 and 2015, but these figures may not be accurate, as we have not included the road system.

Question **Allison Reagan, University of Florida**

I notice the buildings are very compact. On campus there are bio-retention areas and swales, but the area outside the campus is totally different. What can be done in this regard?

Answer **Dr. Ing. Dwita Sutjiningsih, Universitas Indonesia**

There is collaboration between the local community, the local Depok City government and NGO's who are starting to think about what kind of BMPs can fit within the local conditions. Several of the kampungs have vertical gardens and potted plants.

[10] United States Environmental Protection Agency (US-EPA), (2016) "System for Urban Stormwater Treatment and Analysis IntegratioN (SUSTAIN), Note: as of October 28, 2016, US-EPA can no longer support or develop SUSTAIN. Accessed on 15 February 2017. https://www.epa.gov/water-research/system-urban-stormwater-treatment-and-analysis-integration-sustain

Comment **Dr. Andrea Frank, Cardiff University**

Thank you for your presentation on how the UI campus can be a good example of green infrastructure and a laboratory for future research. It is challenging in this environment to increase the use of green infrastructure.

Questions

Q1 What does the community think? Are they open or resistant?

Q2 Could there be legislation to go ahead for shopping malls and hotels that would require the installation of more green roofs?

Q3 Are you teaching students technical skills?

Answer **Dr. Ing. Dwita Sutjiningsih, Universitas Indonesia**

A1 Last year we conducted a survey in the community to determine what they are thinking about the environment and if there is any initiative to participate. They are willing to participate, if there are any initiatives or incentives. We are willing to go deeper with this kind of inquiry.

A2 Relative to legislation, there are regulations, but these are hard to enforce.

A3 We have a course in stormwater management and eco-hydrology for master's students and audit courses for health students.

Question **Hongyu Wang, Cardiff University**

From the photo which shows the road with curbs, sidewalks and green spaces on either side, how can you provide for a continuous flow of water, especially with the obstacle caused by the curbs? How can you realize green infrastructure drainage?

Answers **Dr. Ing. Dwita Sutjiningsih, Universitas Indonesia**

We made a competition for the whole campus to include the whole spectrum of green infrastructure. We have computed that if we change to bio-retention areas, we have enough capacity for stormwater management. IF we change to vegetated swales, these can still retain the rainwater and still have the capacity to drain into the soil. In general, we avoid piping systems, because these require a lot of maintenance, which is a weakness.

Question **Allison Reagan, University of Florida**

IF you use impervious pavements, how easily can you walk on these kinds of sidewalks?

Answer **Dr. Ing. Dwita Sutjiningsih, Universitas Indonesia**

I think that it is time for collaboration with landscape architects.

UI UF CU IJSW 2016

"IJSS 2016 – S2 Graduate Design Studio"

Shintia Apriyani
Ichsan Muhammad
Universitas Indonesia
16 January 2017

17 6 9 ISJW Shintia and Ichsan 16 02 2017 DW DRAFT

Following on from the research and field surveys conducted for the IJSS 2016, the S2 Graduate Architecture Design Studio at Universitas Indonesia continued with design projects for the lakes. Two students, Shintia Apriyani and Ichsan Muhammad are presenting their design studio projects

Setu Babakan Cultural Center
Shintia Apriyani

We began by studying the history of Setu Babakan to maintain the lake as a center of Betawi culture. We separated the analysis into upstream and downstream research. The methodology included questionnaires and our design themes were centered on: Water, Open Space and Lifestyle. Our first objective was to diagram the activities. For my project I chose the movements of Betawi dance as a design trigger for the architecture and an inspiration for the architectural form of the cultural center.

Add a design description of your project. Add a couple sentences about the eco-cultural design theme. Describe the idea of green infrastructure in your project. Prepare a two page spread with diagrams and photos and original concept design.

Send slide presentation in pdf.

"Symbiosis Stream"
UI Lakes & Jl Margonda, Depok
Ichsan Muhammad

The first step in the design process was to define the issues with an analysis of movement and flows of water in order to define the real issues in the commercial area. Along Kali Baru there are very few trash cans, which cause problems to the UI stream and downstream to the Ciliwung River. There is a lack of awareness and education in the community. The issues occur at every level along the stream and at the Margonda Hotel. People are throwing their waste into the commercial area.

The location at the lower part of the University campus with the train line on one side and Jl Margonda becomes a border between the community and the University. The city itself becomes like a giant laboratory in the design. The urban strategy is to show how people live. The stream has a 'front' along Margonda and a 'back' behind the buildings. The design theme: "Symbiosis Stream" is a lateral pipeline in-between the front and back. The idea is that people would take raw materials, process these into things and then sell them so they can upgrade and improve their lives.

Diagrams were developed in the design process to show how the Symbiosis Stream works. You don't see the water because it is dirty and full of trash. The factory process sorts the trash, reuses it, processes it, cleans the water and then the recycled products are sold to consumers. The red line is the active area or the processing area.

At every phase there is a keyword that is at the intersection of the commercial and residential areas. In terms of design concept and design diagrams, the design process triggers concerns. Intersections are the act of criss-crossing goods and services. Each intersection creates a spatial area. The rule of the intersection as an overlapping space used at random to create the architecture.

Prepare a two page spread with diagrams and photos and original concept design. Send Slide presentation in pdf.

Questions: Setu Babakan

Question **Wenyu Duan, Cardiff University**

Which aspect affects your design most of all?

Answer **Shintia Apriyani, Universitas Indonesia**

The socio-cultural aspects and the metaphor of Betawi dance shape the iconic sculptural forms. In my project, I wish the architectural form to be at the center of Betawi culture to act as a magnet because the activities are so scattered now.

Question
How do you test your design? How do you prove that you can increase the value?

Answer
I try to increase the value through integration of different functions.

Questions: UI Lakes – Jl Margonda

Questions

Q1	**Iliana, University of Florida**	How do you rationalize the traffic?
Q2	**Nadia, Universitas Indonesia**	What do you think if the trash gives off a chemical reaction to the trash itself? Is there some kind of infrastructure needed?

Answer **Ichsan Muhammad, Universitas Indonesia**

The infrastructure itself can manage the technical area. Often the water goes through the current infrastructure and it cannot be cleaned, so in the new design the water is cleaned and the trash is recycled and reused.

Comment **Prof. Yu Li, Cardiff University**

I like the idea of using Betawi culture. In both of your projects, I am not sure about the possible value for the environment and social issues. You may only focus on the economy or on the culture, but what about the environment?

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International Joint Eco-City Studio and Workshop (IJSW)
and
Joint International Workshop on Green Infrastructure and Healthier Citizens

"Place-Based Data Collection in Jakarta"

Dr. Andrea Frank
Cardiff University
16 January 2017

UI UI CU IJSW 2017
International Joint Eco-City Studio and Workshop (IJSW)
Joint International Workshop on Green Infrastructure and Healthier Citizens

"Global, Regional and Local Governments: Key Concepts in Sustainable Placement"

Dr. Terry Marsden
Director of Environmental Policy and Planning
Director of Sustainable Places Research Institute
Cardiff University
16 January 2017

17 03 01 IJSW Terry Marsden Notes 17 01 2017 DW DRAFT

There are research implications on redesigning nature across the urban-rural divide. We are entering a new phase in re-designing nature. One approach is to look at the transitions and transformations necessary towards the realization of a post-carbon economy, a greener more sustainable economy. Carbon emissions and resource depletion are often conflated as topics, which are relevant to the process of urbanization in what is becoming an unsustainable old model in a new world. A new world theme is co-production.

UN-HABITAT Sustainable Development Goals (SDGs), in particular Goal 11: Sustainable Cities and Communities[11], was developed because of the un-sustainability of the urbanization process. People are locked into a concrete type of world, because they do not have the means to be sustainable, hence the need for eco-cities. One of the targets is developing global green infrastructure. We are all neighbors in this globalised world. In this process there is a governance transition in an operational sense which enables us, when the systems are going in opposite directions.

Specifically, the Well-being of Future Generations (Wales) Act (2015)[12], establishes a Commissioner and Public Services Boards (PSBs), which will seek to improve goals for the 'economic, social, environmental and cultural well-being' of communities in a sustainable way. This policy is not surprising, since, "Where Wales goes first; the rest of the world will follow."[13] The jury is out when these policies can be developed. The Sustainable Places Research Institute at Cardiff University focuses on sustainable place making in the context of systems thinking.

Regenerative sustainability is important, since in many parts of the world, there are not enough resources to be sustainable. Therefore, the process involves 'Regeneration, Reconciliation and Restoration.' If we move away partially from conventional best practices, it is about the policies of caring for change. A set of systemic processes around a nexus of human activity is occurring at the

[11] UN HABITAT, (2015), "Sustainable Development Knowledge Platform: Sustainable Development Goals", Accessed on 2 February 2017, Goal 11: Sustainable Cities and Communities "Make cities and human settlements inclusive, safe, resilient and sustainable." Adopted 2015, paragraph 54 United Nations Resolution A/RES/70/1 of 25 September 2015. https://sustainabledevelopment.un.org/?menu=1300 and http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

[12] Llywodraeth Cymru Welsh Government, (2015, updated 08 August 2016), http://gov.wales/topics/people-and-communities/people/future-generations-act/?lang=en

[13] Attributed to Ban Ki-Moon, Director United Nations ?? – when?? Where? May not be correct.

intersection between places and the city. In reference to Mariko Sato, (Head of UNHABITAT, Bangkok, 2016)[14] food systems are part of the city nexus. Another aspect is going back to the biosphere, in other words, post-carbonism, which relates to getting your food and energy from in other ways and getting off the fossil fuel energy cycle. Most of our energy and food supply comes from a decreasing land base. One example is extensive (organic) farming in Sarawak, Malaysia. As farming becomes less sustainable, we are asking for more productivity. As a result, the intensity of the bio-economy is going to grow. How do you measure the gap? The manufacturing of nature needs to be used in a more sustainable way. Take nature seriously and look at multi-functionality as part of the circular economy. Consider how to subtract the most materiality from plants. If we look at lignum, as both a source of biomass, bio-energy and food, the chemists are saying that we something like this into food. It is an exploding field of science. So when we build on forestry land, this is not a frontier that is going to last. We are at the end of chain of cheap natural resources and cheap labor.

As cosmopolitan dwellers, how are we going to recreate nature in a radical and profound way? How are we going to survive as a human species? Resource efficiency is the key. Although I am a late convert to waste management, I am convinced of its effectiveness and efficiency in the circular economy. Sustainable place making systems involve a nexus of public policy and resource efficiency. Increasingly, we recognize that we need to put governments together, using more resource-efficient systems. It is not just an engineering problem, but a social problem.

If we look at the rise of the circular economy, we have to think about the carbon footprint, built form and the people in the city, who are dependent on the widening gap between needs and resources. How big is the carbon footprint? How many Jakartas can Indonesia, let alone the world sustain? Do we need to hold on a bit and recalibrate the way we live? How can we spatially establish a circular economy? Does it start with Finnish eco-villages? What are megacities? They are mosaics of districts. When we think about the eco-city, we think about districts, like in Amsterdam.

If we look at the urban-rural tradition in the 20th-century, the city is regarded as a centralized resource draining the hinterland for the benefit of processing the needs of the agglomeration of people. The world needs 50 global cities. Yet, we could argue that the idea of a centralized city is an old idea. Then if we look at typologies of networked cities that are decentralized, we come up with an idea that is more like Integrated Circuits Technology (ICT). This is a typology that needs to be more significant. I would argue in terms of a circular economy that a distributed network of people in each place, who all expect to have the same rights, which should be a model within the wit of human beings. However, this idea can be seen as being quite heretical in some economic geography circles.

In looking at eco-structures, aside from the bias of the urban-rural divide, Jakarta would die, if it was cut off from the rest of the world. We need to evolve a typology that is distributive in order to look at the restructuring of natural areas into new functional zones based upon different ecosystems. In the first phase, nature is lost. In the second and third phase, commoditization occurs and urbanization is encapsulated in a distinct entity. In the third phase nature is a commodity. Nature is transformed according to the very nature of nature and its reproductive systems may undergo genetic

[14] Sato, Mariko, (2011), "Regional Workshop on Ensuring Resilient Food Systems in Asian Cities," 17-18 November 2011, "Agro Urban Planning," at Food for the Cities, Regional Workshop, Bangkok, Fodo and Agricultural Organization of the United Nations (FAO), Bangkok. Accessed on 2 February 2017.

Check Reference

http://www.fao.org/fileadmin/templates/FCIT/workshops/Bangkok-2011/4-MSato-agrourbanplanning.pdf

modification. Clothes, pigs, sheep, and plants all become subject to genetic editing functions that naturally occur in plants.

Nature is in fact a matrix. Ivette Perfecto argues that it is better to think of Nature as a matrix, not as an urban-rural divide, but as a mosaic of nature.[15] Try to identify what we are talking about in Nature's matrix. It is no longer a two-dimensional process of greening the cities. We are talking about re-naturing the city and parceling the city in new ways. A systemic change is underway whereby we are considering how to produce food locally to reduce food miles. Take for example, rural infrastructure in Brazil, which may be used as a model for the Government of Indonesia to develop an agricology to serve the interests of the city. This model is akin to conventional colonization in that soybean megafarms are envisioned to meet the needs for protein. The pork-poultry protein paradigm is also part of green infrastructure. In terms of regional local food production and green agricology, Brazil is adjusting to population growth and pressure to restructure the rural infrastructure. In terms of bio-economic colonialism of spaces, the hinterlands are being re-interspersed around the cities. We also have to consider welfare support systems for people in these models of thinking about Nature.

In conclusion, how do we restructure green infrastructure in fast-growing areas of South East Asia? It is not just by coloring the map 'green'. Rapid urbanization results in commoditization and financialization. Development involves building roads and houses. Changing diets, such as consuming more meat, have resulted in China's colonization of Africa. Meeting the country's increasing protein needs becomes a global process in trying to procure sustenance. The overall process may be summarized in three ways. First, relocate the problem and then find some space to do new things under common property rights. How this is done will make a difference in effectiveness. Second, the connectivity and networking problems require linkages and corridors. Third, use distributive systems, not centralized systems. How does one space relate to another space? There is a functional synergy involved in the problem. How do we link Area A to Area B to produce an amenity? The ecosystem is a matrix connecting nature in the nexus, resulting in circularity. Then consider, what is the functionality? A river, as a line in space, links one place to another, say for urban gardening. To what extent is green infrastructure contributing to the circular economy in a distributive way? Bio-sensitivity is a problem in the collection of Nature in the nexus. People are also developing new cultural functions and identities. Think about people instead of systems diagrams. When we think about resources in an intensive, urbanized system, how can we create and solve some of these problems? Bio-sensitive cities are one answer, so the idea of biota becoming responsive is helpful.

[15] Perfecto, Ivette, Vandermeer J. and Wright, A., (2009), Nature's Matrix: Linking Agriculture, Conservation and Food Sovereignty, New York: Earthscan.

Questions and Answers, Comments

Question ***Prof. Li Yu, Cardiff University***

This is an interesting lecture, but it all comes back to the central proposal and the network. When we discuss an eco-city, it is disputed whether we can regard it as an urban form from certain perspectives. I am not sure how it is possible and what the pre-conditions are. Cities are super-impositions of networks, urban form and economy, like a three-dimensional high-rise.

Answer **Prof. Terry Marsden, Cardiff University**

Green infrastructure has the potential to renew water resources and act in waste management. Centralized systems are not bad. There must be an allowance to allow for heterogeneity to achieve SDGs. ICT is another example in the communications revolution that gives some opportunities. Urban districts as eco-systems offer more immediate connections to shorten the supply chains. The bio-fertilizer composting system project in Santa Catarina, Brazil is one example of an economical system that is starting to be undertaken in relation to carbon credits, but it takes political will.[16]

[16] Schmidt, Gilberto Silber, (2012), "Organic Waste Treatment by Mechanized Composting," Accessed on 2 February 2017. https://labexkorea.files.wordpress.com/2012/04/lpc.pdf

UI UF CU IJSW 2017

Colloquiums

13 January 2017
17 January 2017

17 6 10 ISJW Colloquium 18 02 2017 DW DRAFT

Two colloquiums were held in order to establish an interactive dialogue and review process during the Eco-city design studio. Colloquium 1 was held on Friday, 13 January and Colloquium 2 was held on Tuesday 17 January. Each group presented Power-Point Slides for 15-20 minutes and there were comments and questions for another 15-20 minutes. Indicative of the process of inquiry, Colloquium 2 presentations are described below in full. The review process is relevant for the final presentation development.

Colloquium 1

Add an overview and description of data collection and photographic surveys and research objectives for each group.

Colloquium 2

Group Two: Setu Rawa Besar: Issues and Proposals

Presentation

Mushab Abdu Asy-syahid **Universitas Indonesia**

The first slide is about the lake conditions. There are *e. coli* bacteria in the lake, a natural source of water and two shared toilets in the informal area built around the lake. We considered the land use zoning around the lake, the formal and informal settlements, the location of the water source and domestic waste.

Abi (Sutanrai Abdilah) **Universitas Indonesia**

The source of waste is from the temporary home industries. There is integrated trash collection system with the use of carts. The informal settlements also burn their trash.

Our research considered whether green infrastructure can be used to clean up the lake without upsetting the community. Our initial observations are that the settlements around the lake are densely packed. The data collection method combined qualitative observations to understand the relationship between the informal and informal areas. Interviews were conducted with the local RT, Pak Dalhar, who gave us information about the formal and the informal community. The informal community does not know about the government actions. There are tensions between the formal and the informal sectors about the legality of the land. In the formal sector, all houses are connected to a septic system. However, the RT knows that graywater (and blackwater) also flows into the lake. The informal settlers are valued as laborers and small shop owners. The informal settlers have to pay for their trash collection. The people who live in the formal sector used to be able to see the lake from the road, but now it is mostly filled in with informal settlements. There is awareness among the informal settlers that there is no way they can manage the waste. The formal sector owns houses in the informal settlement, which they rent out.

In our formal community interviews, some formal residents live in the *Perumnas* (Government) housing. Their perception is that the lake is not safe in terms of health. The formal residents perceive that the living conditions in the informal settlements are not good. There is awareness among the formal residents that they claim land in the informal settlement as their own. Everyone agrees that the lake must be clean.

Interviews in the informal settlement reveal that the informal settlers do clean up the lake. They keep the plastic trash bins maintained and there is a positive attitude about tourism, especially for fishing. It would be better if the lake was cleaner. They are also concerned about their housing being relocated in the event of tourism. There is a program of *kerja bakti* (community service) which is a monthly cleaning program for the lake.

Laura Callaghan **Cardiff University**

In our analysis of the informal sector interviews, the informal settlers have an awareness of the lake. The residents are concerned about the blackwater (sewage) going into the lake. Relevant data from UNICEF indicate that there are 34% higher rates of diarrhea in children (UNICEF, UN, 2007).

Our initial proposals are to build Stilt Houses for eco-tourism and to install public toilets and washing areas in the informal settlement. The polluted water seems to be coming from the outside. We are proposing to use technology to clean the water and to use a better filtration system for the market waste and also to support community waste clean-up initiatives. The community all knows each other, so this makes it easier to launch new initiatives. Our final analysis includes a diagram of three overlapping circles: the Community/NGOs, Stilt Houses and Floating Treatment Wetland (FTW). The NGOs would raise awareness that the lake is unclean and propose suggestions for community action.

Questions/Answers, Comments

Comment **Prof. Chris Silver, University of Florida**

What is interesting is the impact of the industry on the other side of the lake. For trash, the people in the informal community cannot afford to pay for trash collection, so they burn their trash. The city government can try to enforce the regulations. One of the intervention strategies for the NGOs could look at the industries on the other side of the lake and how they could be regulated. One of the questions is, "Whose garbage?' The monitoring of the waste could be better.

Comment **Prof. Li Yu, Cardiff University**

Two points are very critical. One is related to the regulations, since the majority of the waste is coming from outside. The second is the slum area that requires removal and redevelopment. How do you keep the informal settlers in the community and where are they going to live? Are they going to live in Stilt Houses? How are you going to encourage eco-tourism when the informal settlers have been there for over 30 years? In that amount of time, the local government may be changed and the informal settlers may be allowed to stay.

Comment **Mushab Abdu Asy-syahid, Universitas Indonesia**

We also found out that part of the land in the informal settlements had been legalized.

Question **Prof. Li Yu, Cardiff University**

The housing can be improved. Whose responsibility will it be to pay the stakeholders?

Comment **Prof. Chris Silver, University of Florida**

You have to finish the circle. There is a difference between clearing the land and building, which may be the same as far as the public is concerned. The NGO's connected to the slum dwellers are international.

Question **Abi (Sutanrai Abdilah), Universitas Indonesia**

Could the Stilt Houses be built for eco-tourism?

Answer **Mushab Abdu Asy-syahid, Universitas Indonesia**

Maybe the community won't want that.

Comment **Prof. Kemas Ridwan Kurniawan, Universitas Indonesia**

This is a very interesting presentation, especially since your field surveys cover both the east and west sides. In terms of urban planning, the train station is on the east side. Now the lake is in the backyard of the city. One of the issues is that the lake becomes a center of sustainability for Depok. In the late 1980s, people could clearly see the beautiful view of the lake. There is supposed to be a 50-meter setback around the lake. The 50-meter setback should be considered in your proposal as it would be necessary to clear the area around the lake. The Stilt Houses may contribute to the discussion of the setback issues, especially since they would be built above the lake.

Question ***Diane Wildsmith, Universitas Indonesia***

Have you thought of engaging the community in education initiatives through the school? Which is the most important one of your recommendations?

Answer **Laura Callaghan, Cardiff University**

We have not considered the school as yet. The relationships in-between the NGOS, CSR and the Community are quite important, especially for educational purposes.

Comment **Mushab Abdu Asy-syahid, Universitas Indonesia**

There is quite a big potential for Setu Rawa Besar for re-generation. One way could be to hold a big festival, perhaps sponsored by the government.

Comment **Prof. Chris Silver, University of Florida**

The point is that there is interaction between formal and the informal sectors. The kids all know each other so there is potential for a neighborhood association.

Question ***Allison Reagan, University of Florida***

Eco-cities concentrate on improving the quality of life. Do you have any ideas for jobs to support the community's livelihood?

Answer **Meredith Fowler, Cardiff University**

The informal community shares jobs. They are all located in the vicinity. There are service industry jobs and there are a couple of shops. For additional income, people sell food along the lake, so they would like to keep the lake clean.

Answer **Mushab Abdu Asy-syahid, Universitas Indonesia**

Migration from the villages often occurs during the holidays. This could be regarded as an opportunity.

Comment **Prof. Li Yu, Cardiff University**

Setu Rawa Besar may not be the same problem as Setu Babakan. The local community at Setu Rawa Besar did not apply the planning regulations. So if investment in Eco-tourism is the reason, then it

may be among the factors to consider because the presence of the factories might damage the environment in that area.

Comment **Abi (Sutanrai Abdilah), Universitas Indonesia**

The informal sector is afraid that the lake will be damaged. We have seen that the informal sector could become the attraction for tourists themselves, say by providing a floating raft for tourists that could be part of an eco-tour. Investment in an eco-project could be joined by CSR.

Comment **Prof. Andrea Frank, Cardiff University**

Good work. I have a few observations. Perhaps while we are thinking of spaces, would there be a place for children to play? Laura mentioned the need for an identity that might be a good idea for children. Meredith, if the water could be cleaned enough, it might be a good place for children, say to go fishing. The water could act as part of the activity. The visuals also need some work. The North Arrow needs to be on the plan to show the orientation, because you cannot assume that everyone knows where Setu Rawa Besar is located.

Comment **Prof. Jerry Murphy, University of Florida**

This is a good solid approach to work out ideas. Just a few comments about presentation style: Look at the audience, speak with more volume and include more visuals.

Colloquium 2
Group Three: Setu Babakan Surveys

Presentation

Taufik Hidayat

The Setu Babakan research started with surveys of visitors and residents. For the Visitors, gender identity was split between male and females, 52% female and 48% male. The majority of the visitors come from Jakarta and they arrived by motorcycle. Half of the visitors came with their families. Most came for recreation and most live nearby. A majority of the visitors came for sightseeing purposes and to eat fruit by the lakeside. There was not any regular frequency or pattern in their visits. The park is a nice place to chat with each other. There is light motorcycle traffic and the road quality requires improvement. The visitor's active night life disturbs the residents. It was quite interesting during our field survey, because there was a wedding reception going on.

There is a 50-50 split between the number of visitors' questionnaires and the number of residents' questionnaires. The age groups range between 35-46 years old.

Most of the residents are employed or they work independently. Only a small portion is unemployed. Most people have only up to a high school education. Only three respondents had higher than a high school education.

To our surprise, most people think that the water quality is quite good, but we can see trash floating in the water. In relation to our questions about environmental quality, according to the local people, no one could say whether the air quality was good, poor or terrible, but there are plenty of motorbikes and cars. Most people thought the amount of solid waste was normal.

Out of 50 questionnaires, 46 were valid. Our questions were divided into three parts with an evaluation about the residents. Only one of the residents thinks that the lake is in terrible physical condition. The activities around the lake vary. Most people exercise 1-3 times a week in places where people gather together to do sports. On a psychological scale, we surveyed individual emotions about the lake.

We think we need to do more analysis.

Questions and Answers, Comments

Comment **Prof. Chris Silver, University of Florida**

By beginning with the survey, you are limiting your research. Start by asking questions: What does this place need? What is its background data? By starting with the survey first, we are starting out of sequence and out of touch with the context. Deciding what the survey is supposed to do beforehand will help you define your expectations. You need to ask research questions upfront and then decide on the main points. In terms of research methodology, you do not have to present all the results, only present the significant results. When there is a lot of data, it is difficult to put all the data into one slide. You could break up your presentation into different categories: Beginning, Background, Research Questions and Methodology. Also be careful with the use of colors, tones and contrast. Some people are color blind, so your presentation should also read in black and white as well as color.

Comment **Prof. Jerry Murphy, University of Florida**

Your presentation shows the core of work you have done. The focus of your work is on the environment and water quality. Each graph can be one slide. Group the categories in ascending or descending order. Divide the surveys into two separate categories: Visitors' Survey and Residents' Survey. Think about compiling the data into a presentation poster.

Comment **Prof. Chris Silver, University of Florida**

I would like to congratulate you on your results. The results are surprisingly like the lake. It is a good place as long as you are not expecting a sparkling lake, but you are expecting a quiet place. The expectations are not for drinking water from the lake.

Comment **Prof. Andrea Frank, Cardiff University**

I was wondering if there is a difference between the visitors and the residents. Could you compare the visitors' results with the residents' results? Is there something different? If you condense and simplify your data, it will help you build a story. Also introduce yourselves at the beginning of the presentation.

Comment **Prof. Li Yu, Cardiff University**

This is a poor presentation as it only shows the outcome of data collection. What is the purpose of the presentation of your data? What is your argument? Is the lake clean or not? Attract the audience's attention with your data. If you are talking about two groups of different types of people, then identify the difference between them.

Comment **Prof. Kemas Ridwan Kurniawan, Universitas Indonesia**

Now that you have all the data, you need to move forward from that data. It is important that you show drawings about the case study itself and your analysis. The data also speaks about relationships between the data. If you just show the data, you will get stuck.

Comment **Diane Wildsmith, Universitas Indonesia**

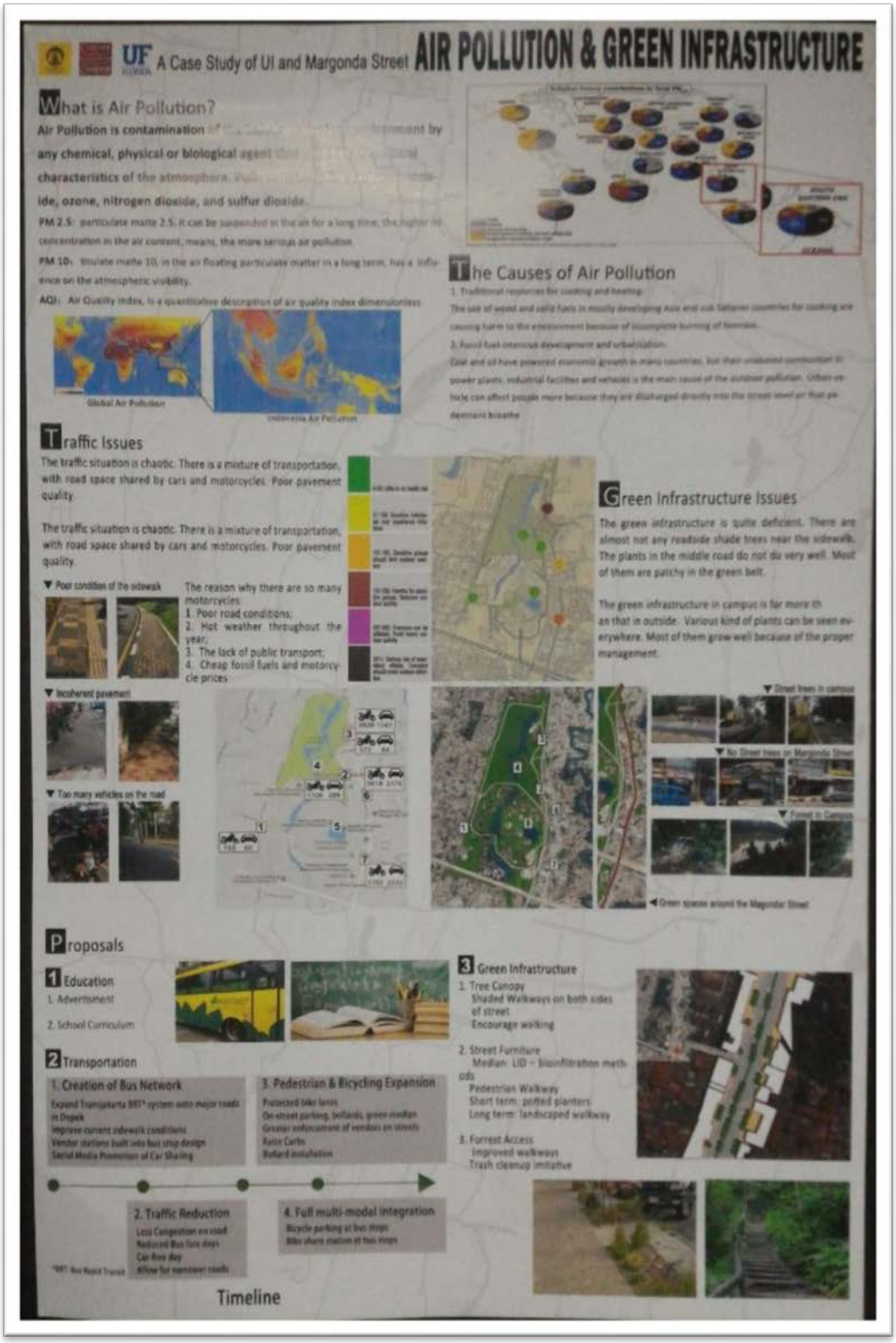
In addition to the statistical data, the presentation would be better if it was graphically and visually oriented with pictures of the activities to show how people behave. What is the theme of your research? Is the lake defined as the culture, the Eco-culture? May be your data says something else. Add visuals to describe your data and your theme in the context of an eco-city. What are the problems? Are these related to eco-tourism?

Comment **Abi (Sutanrai Abdilah), Universitas Indonesia**

Are the local people ready for eco-tourism?

Colloquium 2

Group One: UI Lakes and Margonda



1. Group 1: Air Pollution and Green Infrastructure: UI Lakes, Jl. Margonda and Surroundings

Topic Air Pollution and Green Infrastructure
Facilitator: Dr. Andrea Frank
Participants UI: Nadia Puspita Andriyanto, Indri Lestari Juwono, Intan Chairunnisa
UF: Allison Reagan

CU: Kan Dai, Hongyu Wand, Yiming Yin, Rui Yao

Presentation

Starting with Background, Context and Methodology, the first question is: "What is air pollution?" The most dangerous particulate matter ($PM_{2.5}$) levels can inflict huge damage on our lungs to harm our health. There are two main causes of air pollution: cooking and heating (as well as transport and cars). The purpose of this research is, first, to investigate causes of air pollution and second, to seek solutions to air pollution in order for Depok City to function as an eco-city and to improve the quality of life. In terms of context, one reference is the Global Carbon Dioxide Visual Map which indicates significant CO2 levels from developing countries. Traffic accounts for 36% of all air pollution in the Global Air Pollution Index in South East Asia. Relative to air pollution and traffic in Depok, the statistics indicate there are 4 Million cars and 11 Million motorcycles in Jakarta.[17],[18] The traffic rate has been increasing by 9% over the past 4 years, but the percentage of public transportation does not change.

The first hypothesis in the perception of Depok is that it is more rural and therefore, it has better air quality and is less polluted than Jakarta. We assumed that green infrastructure is able to improve air quality. The research process involved problem identification, site analysis and data collection followed by recommendations. Location of pollution points were identified for purposes of pollution analysis.

[17] Rondonuwu, Olivia, (2010). "Jakarta traffic chaos peaks in Indonesia's mass exodus," in Reuters, September 7, 2010. This article cites 14.4 mililon registered cars and motorbikes in Jakarta. Seven years later this number would have increased exponentially. Accessed on 12 February 2017. http://in.reuters.com/article/idINIndia-51325120100907

[18] Syarifullah, Muhammad, 2015), "Governor Ahok's Policy to Solve Jakarta's Traffic Jams." *In* new cities, August 30, 2015, Accessed on 12 February 2017. Statistics related to the number of vehicles including public transport are estimated to be 6.5 million units, of which 6.4 million units are private vehicles. http://www.newcitiesfoundation.org/governor-ahoks-policy-to-solve-jakartas-traffic-jams/

In the Data Analysis Phase, lichen bio-indicator research surveys were undertaken. No lichen was found on trees in the UI campus. Lichen is most often found on palm trees, so the method may not be reliable. Also the Air Quality Index may not be reliable, There are two Air Quality Stations in Jakarta (Jakarta Central, US Embassy, Jakarta South, US Embassy)[19],[20]. Influencing factors are that data is recorded only four times a day. Humidity and weather also affects the index readings. As humidity levels decline, temperature increases and air quality declines. It is not true that air quality is better in Depok (on Jl. Margonda) in comparison with Jakarta.

Traffic Factor Analysis included taking traffic counts on Jl. Margonda where the traffic is chaotic. There is a lower amount of traffic on the UI campus, which includes a mix of motorcycles and cars. The following factors were also considered during the Traffic Factor Analysis: the poor conditions of the road and the sidewalks; hot, humid weather throughout the year; cheap fossil fuels and cheap motorcycle prices. The most important factor is the un-ecologically friendly nature of the traffic itself. We often took a taxi from the hotel to the campus because the road conditions were bad.

We also investigated the eco-factors related to green infrastructure, in particular the green spaces on the UI Campus and the Green Spaces around Jl. Margonda. Our observations and findings are as follows:

1. There seems to be a lack of general planning in the UI forest, as there are no designated leisure facilities.
2. The chaotic layout of the plants could be addressed. There are many trees without labels, which could be highlighted for `eco-knowledge.
3. There is a general lack of management with readily apparent piles of rubbish.

In conclusion, temperature and humidity has the greatest impact on air quality. Further research into additional green infrastructure is recommended. Our recommendations include recognition that the major contributors to air pollution are:

1. Traffic Congestion
2. Warm Climate
3. Food Vendors
4. Unsafe road conditions for bicyclists
5. Poor sidewalks for pedestrians

Our proposal concluded that there is not really one solution for Green Infrastructure. Education including public advertisements that popularize the benefits of Mass Transport and disseminating information about air pollution to the general public are two approaches. In the category of Green Infrastructure, adding more street trees to expand the street canopy, landscaping sidewalks, low-impact development, and adding bio-infiltration methods for rainwater management are among the

[19] US Embassy, (2017) Jakarta Real Time Air Quality Index (AQI), Reading: 53 $PM_{2.5}$ "Moderate – Air Quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution." Accessed on 4 February 2017, http://aqicn.org/city/indonesia/kemayoran/

[20] US Embassy, (2017), US Embassy Jakarta Air Quality Monitor, "PM 2.5, referring to particulates smaller than 2.5 micrometers in diameter. .. Particulates less than 2.5 micrometers in diameter (PM 2.5) are referred to as "fine" particulates and are believed to pose the largest health risks." Accessed on 4 February 2017. https://id.usembassy.gov/embassy-consulates/airqualitymonitor/

recommendations for improvements. In relation to Transportation, there are several proposals, such as creation of a bus network like the Jakarta Busway, car-free days, reduced bus fares and a full multi-modal integration of all transport types, including cars, to improve overall safety. Air Quality can be a more volatile issue.

Other factors in our research included the fact that the rain interfered with our data collection. It was a holiday on campus, so that condition was also a factor that affected air quality. Our findings are that the air quality and traffic situation was not much different either on the weekdays or on the weekend. Most of our data collection occurred in the afternoon. We are also not sure of the accuracy of the Air Quality Index readings or the instrument accuracy.

Questions and Answers, Comments

Question **Prof. Li Yu**

Why do you compare Jakarta City Center with Depok City and the suburbs? It could be an interesting argument. Have you considered how to control the transport and transport demand management in the tropics? What are the human behavior patterns which affect research and analysis?

Answer

Cheap motorbikes and cheap petrol encourage the use of private transport.

Question

Are there any other policy measures that are advisable?

Answer

We did consider a subsidy for public transport, so *angkots* (mini-buses) could become more efficient. To get more people to go on the buses, maybe the subsidy could be expanded.

Question **Prof. Andrea Frank**

Cities in Europe over the years have noticed the increase in CO2 emissions and as a result have implemented emission controls. Afterwards emissions declined. Are there any regulations in Depok/Jakarta?

Answer

There are regulations for greenhouse gas emissions and emissions tests for cars, but these are only enforced as a formality.

Question **Laura**

Which one is your best proposal? How much pollution do you think could be reduced by planting trees?

Answer

Education is the best one of the proposals. Transport and Green Infrastructure are the easiest to implement. Traffic is one of the main causes of air pollution. An integrated transportation plan would be an improvement and could be implemented. To make it an official policy, an emissions plan would be advisable. In India, there are examples of food vendors being integrated with bus stops in New Delhi.

Comment

With some maintenance the Northern Forest at UI could be used an open space for the community.

Comment **Prof. Chris Silver**

These are all good presentations, which as usual raise more questions than provide answers. Where the air quality readings are taken is also a factor to be considered. For example, the US Embassy Air Quality Station in Central Jakarta is located at Merdeka Square.

What is important is that Depok is no longer rural. It is far too urbanized not to have an organized transport system. If and when the road network is finished, affording access to the toll road, this will encourage even more car use. It is important to raise the question and to make initial suggestions for a mass transit system in Depok. This needs to be taken seriously to link up with the Jakarta public transit system (the Busway) or to come up with other ideas. Most of the traffic in Jakarta occurs at the edges.

Question **Diane Wildsmith**

Could you comment on human behavior and the increased use of the social media and individual transport apps such as Uber, Grab and Go-Jek (Cars, Motorbikes or Ojeks)?[21]

Answer

In terms of human behavior, most people prefer convenience. Cars can stop and go everywhere. The reasons people call on their hand phones to use Uber, Grab and Go-Jek is that they are really convenient. Many people are changing their jobs and becoming drivers for Uber, Grab and Go-Jek. Yet, Uber, Grab and Go-Jek drivers create their own kind of traffic jams as they usually gather at transit stops, where people are likely to need to transfer and change to private transport.

Comment **Prof. Andrea Frank**

I have noticed that Go-Jek drivers have increased significantly over the last 12 months.

Comment **Allison**

[21] Van Mead, Nick, (2016), "The world's worst traffic: can Jakarta find an alternative to the car?" *In* Cities Guardian Jakarta live, 23 November 2016, Accessed on 12 February 2017. https://www.theguardian.com/cities/2016/nov/23/world-worst-traffic-jakarta-alternative

At the University of Florida, students do not need a car and they only use Uber. They also pool together to share Uber cars and rides. Social apps are also used to transfer money as well as for Uber.

In Depok, it was easier for us to take Uber from the UI Campus to Depok Town Square to the Hotel. There are so many Go-Jek drivers and they all know where to wait in the same place to pick up passengers. There is so much demand.

Comment **Taufik**

To answer your question about how we use Go-Jek, I personally do not use it as a connector between main modes of transport, but as a means of transport itself. Go-Jeks are a lot easier to take everywhere.

Question **Prof. Kemas Ridwan Kurniawan**

What is your suggestion about using lichens as bio-indicators? What else do you think will be next for indicating air pollution?

Answer

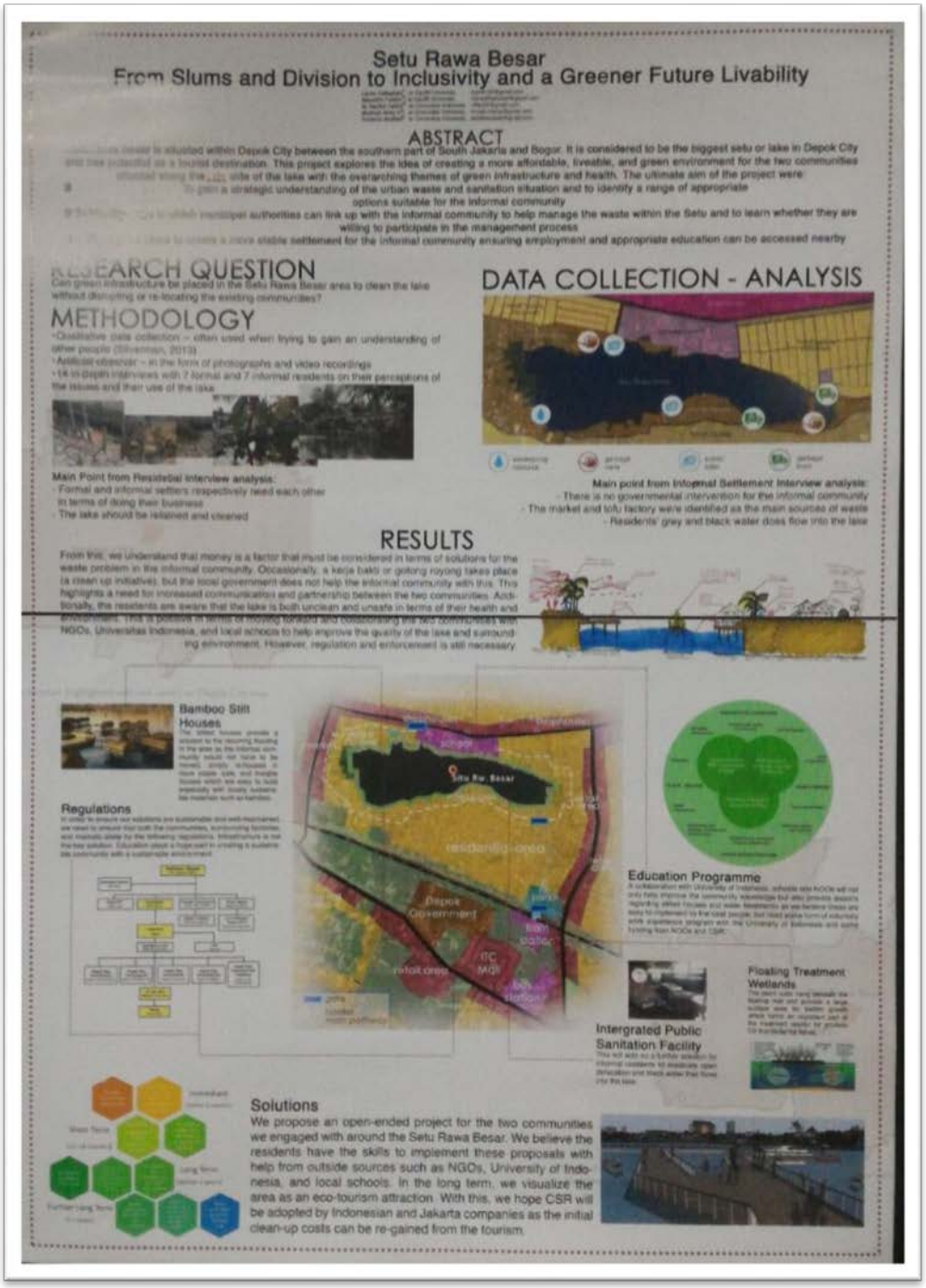
Lichens can only be used as bio-indicators. Not all of the people are familiar with whether the air is good or bad or whether air quality is related to the presence of lichens.

Answer **Allison**

Prof. Lisdar said that some lichens absorb some of the air pollution, so these would be good indicators. In other places and in other ways, lichens are seen as being “ugly”. Maybe there could be a campaign for understanding the relationship with lichens to reduce air pollution.

Answer **Nadia**

Such a campaign can be more effective in a forestry area.



2. Group 2: Setu Rawa Besar:
From Slums and Division to Inclusivity and a Greener Future Livability

Topic	Social Behavior and Water Pollution
Facilitators	Prof. Chris Silver and Prof. Jerry Murphy
Participants	UI: Mushab 'Abdu Asy-syahid
	CU: Meredith Fowler, Laura Callaghan

Presentation

The background research is a link between health and infrastructure at the same time. According to UNICEF, diarrhea rates are high.[22] Only 1.3% of the population of Indonesia is connected to a sewage system.[23]

Setu Rawa Rawa Besar is the biggest lake in Depok City. Our research question is: "Can green infrastructure be placed in the *setu* without relocating the people?

In an overview of our field survey research in Setu Rawa Besar, we traced the difference between housing and the function of the building. Shared public toilets are used by the informal housing. Solid waste management occurs in the formal housing area and is taken away by trucks. Garbage carts *(grobaks)* remove the trash from the informal housing areas.

Our initial observations are that the water in the *setu* (lake) appears to be unclean. The densely-packed population of informal settlers lives in housing made from sub-standard materials. The informal housing community is located on the water's edge. The *setu* is a place for fishing, waste dumping, and sewage disposal.

In an interview with the local *Rukun Tetangga* (RT or Village Head or village representative), Pak Dalhar explained that in the 1970's the basis for the neighborhood was that the RT represented the voice of the former settlers. Since the informal settlers are actually 'illegal', in terms of housing, the RT would like to see the lake cleared up. There are some tensions between the informal settlements and the formal areas relative to land legality and ownership, but it is not personal or a business issue.

The RT and the *Rukun Warga* (RW or Regional Head or Regional Neighborhood Division) is part of the formal organizational structure of the neighborhood. From the RT, we learned that in the 1980's the residents could see the lake. Informal residents do not have any kind of system to manage the waste (other than carts).

Formal residents acquired some land rights and they have rented out the land to the informal residents. The formal settlers can afford to pay for trash collection. The formal sector has deep wells to obtain water for drinking and washing. One person admitted dumping their greywater into the lake. Nonetheless, the informal settlers have brought a lot to the community. After an analysis of the questions to the formal community, it was revealed that most people had lived there for a long time.

Many people perceive the *setu* (lake) for be unsafe and unclean. The informal community adds value by working there. Some of the interviews with the residents indicated that they only rent the houses there because they are working near-by. The trash collected from the lake is burnt in the backyard every day. It costs Rp, 20,000.-/ per household for trash collection. There are local community support groups, but the government does not seem to help on a regular basis.

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[22] UNICEF, (2015), "UNICEF Data Monitoring the Situation of Children and Women: Indonesia," In Indonesia only 39% of the children under five years of age, receive oral hydration treatment for diarrhea. In the same data set, 59% of the population are using improved sanitation facilities, Accessed on 10 February 2017. https://data.unicef.org/country/idn/

[23] OECD, (2008), "OECD Economic Surveys: Indonesia 2008." Vol. 2008/17, July 2008 Economic Assessment, p. 69 cited in Google Books. Accessed on 12 February 2017.

The interviews from the formal sector indicated that there is a potential for the *setu* to become a tourist attraction. The lake could be for tourists, if it was cleaned up. Individuals from the informal community say they do not throw trash and waste into the lake. The perception is that all of the waste in the lake comes from the market, not from the informal sector. The informal sector does not want to be relocated. There is no government intervention for the informal community. The informal residents try to provide a service to clean the lake and control the influx of grey/blackwater.

Proposal

The best way forward is to keep the *setu* as it is. The first proposal could be the possible addition of Stilt Houses[24], which would attract tourists and give the idea of 'floating' over the water. Stilt Houses would provide a shaded area, possibly with benches underneath for the fishermen. Stilt Houses are easy to build with sustainable and local materials. The second proposal is that Floating Treatment Wetland (FTW) filters could be made with hydroponic bamboo rafts with plants for wastewater treatment and to reduce the entropy and accumulation of nutrients in the lake.[25] Storm water can be tolerated in this kind of system. The third proposal is to implement an education program whereby the community gets involved with waste treatment and clean-up. This kind of initiative could involve the University and secondary schools NGOs. An education program could be established so UI students could visit the community. Signage could be added to explain the process. The fourth proposal is to add a public sanitation facility for a communal greywater filtration system to bring the greywater back into the soil. The facility would include 5 toilets, 3 showers, 2 sinks and a septic tank per 100 people. This kind of facility would help eliminate the issue of defecation into the lake.

In terms of the Master Plan for Setu Rawa Besar, the *setu* is in close proximity to the train station. The intention is that the *setu* would no longer be in the 'back yard' but could become part of the 'front yard' of Depok City. The local school is close to the lake, so the children have easy access to the lake, which provides an educational opportunity, possibly with night classes for adults. The mall is located nearby, so that would provide an additional place for tourists who wish to shop and eat. The addition of a greenbelt is advisable.

In terms of regulations, there are factories and markets in the vicinity along the lake, which reduce the capacity for development. There needs to be an increased awareness among the stakeholders and the community to cleanse the environment and to create ecological products. The community could be encouraged to be engaged in this process. If the informal community is to stay, they need to agree to the clearance of waste from the lake.

The timescale is first to engage the community and second to raise finance and investment from NGOs and Corporate Social Responsibility (CSR) in the short term. Our conclusion is that in the long term green infrastructure can be achieved. Our conclusion is somewhat contrary to our initial Western perception, which was faced with the challenge of waste management issues

Questions and Answers, Comments

Question **Prof. Christopher Silver**

[24]Shepard, Wade, (2015), "Stilt Houses Indonesia," Accessed 11 February 2017, www.vagabondjourney

[25] Chan, Curtis, (2011), "Hydroponic rafts may be a solution to Chinese water pollution: Floating rafts," Accessed on 11 February 2017. http://news.psu.edu/story/141916/2011/12/14/research/hydroponic-rafts-may-be-solution-chinese-water-pollution

Relative to the RT's statement, "Informal people don't throw trash into the lake," and the questionnaire where people give the ideal answer that they do not throw trash in the lake, the reality is that there is trash in the lake. The informal residents are fishing along the lakeside. What do you think of the situation of the informal residents?

Answer **Nadia**

Relocation is a sensitive issue in Indonesia. According to the regulations regarding urbanization, there are two options: "To Relocate or Not to Relocate?" Who are you going to relocate and where are you going to relocate to? The local residents do not want to move. They would like to move to a house in the same location.

Answer **Abi**

People in the informal settlements clean the lake.

Answer **Mushab**

Relocation is a standard issue. We are trying to search for a positive location around the lake, possibly for Stilt Houses. There are many parts of the land around the lake that have been legalized and there are also conflicting claims about land ownership.

Question

Would it be possible to live in an Eco-Community or a Home stay?

Answer **Abi**

If there are no more informal settlers, the *setu* may become a regular place. Stilt Houses are a solution in that they free up the land.

Question **Prof. Li Yu**

I am very happy to see that there are regulations. It seems that the regulations are reasonable. The second comment is related to the change in Western perspectives. It is good to not think only about cleaning up the slum areas, but also to find a third way. Are you concerned about the number of households? What will be their impact? How will you keep the local residents happy? What kinds of buildings are you proposing? Insert Regulations at end

Answer **Eka**

There are about 200 households living around the lake. The lake is no longer as big as it was. There is a solution, but the question is what kinds of houses would be acceptable? There needs to be a larger public toilet. The location of the public toilet needs to be considered and how it will be connected to the septic tank.

Comment **Prof. Li Yu**

In the interviews in the formal sector, the discharge of greywater goes back to the lake in both the formal and informal sectors. Last year the indications were that the greywater goes directly back into the soil. It could be that both situations occur.

Comment **Prof. Andrea Frank**

Stilt Houses are useful and potentially possible. However, Depok is no longer a rural setting. There may be the possibility of eco-tourism.

Question **Allison**

Relative to the regulations, how do you think you could enforce them? How do you think you develop the lake? Where would you find the funding?

Answer **Laura**

Education involves engaging the community. Enforcement is part of the ongoing project.

Answer **Meredith**

Part of the ideal is to have an identity card to get involved in community cleanup.

Comment **Allison**

This could be a kind of monitoring.

Answer **Laura**

Financial investment could be sought for the Stilt Houses and the FLW filters. So far there is no set design and these could be changed. For CSR, the money could come back with sanitation facilities. There is a US$5 Million World Bank grant, too.

Comment City of Depok Planner Name? (Provisional Translation)

I am certainly happy to see your work and also the implementation for many things. About relocation it is a grey area. Before, there were many informal settlements and settlers around the lake. We hope there is a potential for tourism. There is a 50-meter setback around the lake. There are community regulations about sanitation and trash. If I am not wrong, there is an underground spring for drinking water. There are also water pumps and septic tanks. There is a regulation that dirty water should not flow directly into Setu Rawa Besar.

Comment
The group considered the density of the area and the applicability of Stilt Houses; the waste entering from the outside; the upstream impact; the water quality, especially the deep well and how the stream impacts the lake, etc.

Comment **Laura**
Just thinking off the top of my head, there may be regulations for 2-3 floors, may be just having Stilt Housing along the edge of the lake might be a possibility. The residents said floods may be only sporadic.

In terms of education, just having a line of bamboo at the water's edge would make it easier for the people to collect the trash, before it goes into the lake. This would help to make sure the water quality was improved. Such a bamboo fence has already been installed by the informal community themselves.

Question **Prof. Chris Silver**

Is there a formal plan for Depok City?

Answer City of Depok Planner Name? (Provisional Translation)

There is the 2007 Master Plan that you are able to access. We are in the commercial area, so the open space is limited. The lake area should be managed by the Central Government because a lake is a natural resource. The land is managed by the Depok City government and is zoned commercial. The 2012 Master Plan indicates that the settlement areas will be zoned for vertical housing.

Comment **Prof. Kemas Ridwan Kurniawan**

Relocation is a big issue. Commercial areas are allowed to have 8-10 floors. There is a contradiction between rezoning and the lakes. Not all the area is commercial. There is a setback around the lake of 50 meters. It is a regulation, but it is not necessarily the reality.

Question **Laura**

Why is there a 50-meter setback around the lake?

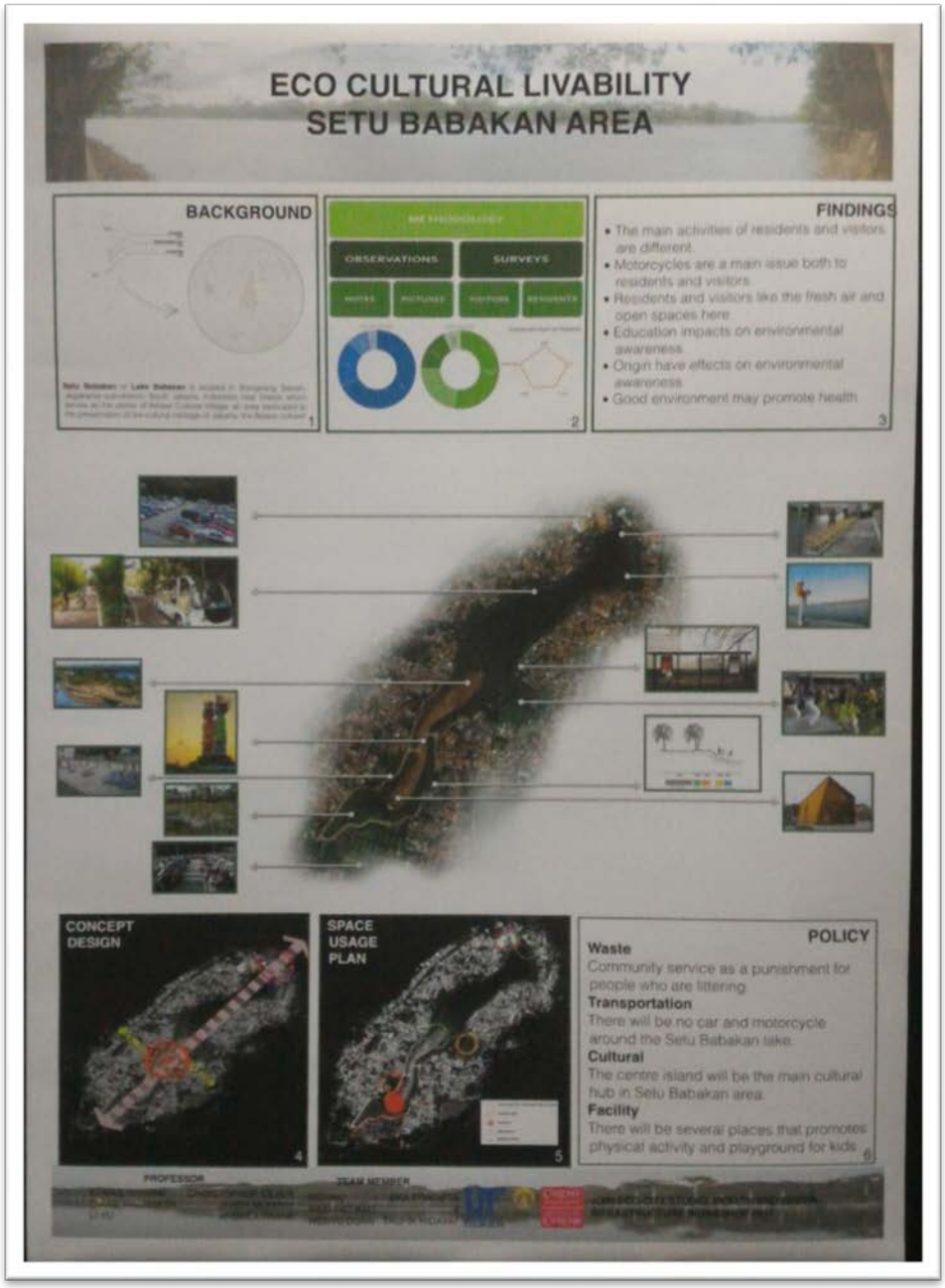
Answer City of Depok Planner Name? (Provisional Translation)

The setback is from the Central Government. It is an environmental ideology.

Comment **Prof. Kemas Ridwan Kurniawan**

The 50-meter setback around the lake is to protect the green space buffer as part of the hydrology. The 2012-2015 Master Plan is already accessible on the website.[26]

[26] Coordinating Ministry for Economic Affairs (CMEA), Japan International Cooperation Agency (JICA), MPA Master Plan Study Team, (2012), "'JABODETABEK MPA Strategic Plan' Master Plan for Establishing Metropolitan Priority Area for Investment and Industry in the JABODETABEK Area in the Republic of Indonesia, Final Report, November 2012," Accessed on on 11 February 2017. http://open_jicareport.jica.go.jp/pdf/12083945_01.pdf



3. Group 3: Setu Babakan: Eco-Cultural Livability

Topic	The Value of Urban Green Infrastructure
Facilitators	Prof. Li Yu and Prof. Kemas Ridwan Kurniawan
Participants	UI: Taufik Hidayat, Eka Pradipta
	UF: Iliana James
	CU Wenyu Duan, Wenjiao Bao, Sidi Wu

Presentation

Water is the key to Setu Babakan and Betawi culture. The future and function of the *setu* is based on the government master plan and the Betawi culture. Our research question relates to: "What is the role of green infrastructure as a cost effective, resilient approach for Setu Babakan?" The

government's role is related to Tourism, Water, Farming and Settlements. Our methodology included field observations, surveys of visitors and residents, notes and photographs. Among our observations are the positive aspects that include the presence of greenery, the recreational space available, and the gathering space for people under the trees along with boating, fishing and swimming activities in the lake. The negative aspects include trash along the lake edges, inadequacy of trash separation receptacles and the necessity of road repairs.

We conducted surveys with questions related to environmental perception and activities. Our preliminary analysis involved data collection and surveys divided into two distinct groups of people: Visitors and Residents. Our findings include comments from visitors that road quality was their main complaint. For residents the majority are families who are concerned about the noise levels and the ability for walking and fishing. The findings related to main activities are that visitors enjoy eating and sight-seeing. Residents enjoy fishing and walking. There is some overlap or conflict between the two activities in that eating areas are occupying the walking areas. In terms of feelings, the visitors like the sense of open space, whereas, the residents feel discomfort with the amount of traffic. Water, air and green space are the three most important indicators.

Those respondents with higher education levels feel a determination to protect the environment. This matches the trends in environmental data perception, but the data collected is not satisfactory enough to determine its relevance. If the environmental score was higher, then the health score would be higher.

The theme of our research is Eco-Cultural Livability based on three factors: Environment, Facilities and Culture. Our research theme is based on the hypothetical results that if by increasing the quality of life, then the quality of life will be better for both the environment and the people. The master plan concept is based on two circles of activity: one at the entrance and the other at the island with the *setu* as the single axis in-between. Eco-Cultural Livability is the main guidance for our ideas. We also asked, "What is the connection between 'Eco' and 'Culture'? The main reason or attraction is economic in that Eco-Culture means more income for the residents of Setu Babakan.

Proposal

In our proposal we discussed the idea of transportation regulations and that motorcycles and private vehicles should not be allowed and that possibly only bicycles and electric mini-buses should be allowed (in the future). We propose encouraging people that public transport should be a priority. Mini-buses and vans would be encouraged to travel 20 km/hour at a safe speed. Currently, there are 6 main bus stops for minibuses around the lake. There are two near the south and north entrances. There is a need for facilities for people's activities. We propose to focus on the island at the end of the *setu* by building a cultural center. The top of the island would be an open space for residents and tourists, plus a playground for the children. Parking areas will also be available. Cars would be parked in a designated parking area. Among the activities which might be chosen for the building program are: an outdoor gym, a communal space for activities, a separate eating area and a path or road near the lake for fishing. The intention is also to allow for bicycle parking along the lake, a provision for a cultural museums and community space.

The cultural aspects are to enhance community activities by promoting local culture around Setu Babakan. Some of the ideas include having background music, a history of Setu Babakan, local Betawi cultural performances (possibly using the existing performance stage), as well as using the *ondel-ondel* folk puppets to represent local culture at the center of the island along with water sports and fishing.

Waste issues include educational aspects in how to collect the trash efficiently, a trash pick-up service and a regular schedule. Using community service as a punishment for littering may be another way to improve trash management around the lake.

Questions and Answers, Comments

Comment **Prof. Li Yu**

I like the idea about ecological culture, since we are trying to build an eco-city for the people. The problem is, "What is the policy? What is the regulation?" We need to know about these aspects, to answer these questions if we are talking about something like ecological culture so that we can understand what activities would need to occur around the lake. People like fishing around the lake, so you could identify which would be the best places in your new plan.

Comment **Prof. Andrea Frank**

It seems to me that I would like to congratulate you on synthesizing the survey questions. Visitors don't like the traffic, but at the same time they do not consider how to get to Setu Babakan. There is an inherent conflict between commercialization and the pressure of livability that needs to be resolved. Are people aware of this conflict? This also relates to Prof Li Yu's question about strategy and regulations.

Answer

We have considered the traffic problem. For example, the mini-buses could park in the parking area near the entrance.

Answer **Taufik**

People want to have more safety for their vehicles, so they feel it is not so safe to park in a remote parking lot. That is why they choose the motorcycle parking area along the road.

Answer **Iliana**

The residents don't like the traffic, but they like the business.

Question **Diane Wildsmith**

Are there different cultural ways in which people enjoy the water? For example, how do people in China enjoy urban lakes? Is it any difference in Indonesia? For example, some people want to eat their lunch along the lake, but that blocks the view for restaurants that are on the other side of the road. How do you decide who has access to the water? The space is too narrow and everybody wants to enjoy the lake.

Answer

There is another interesting aspect that people from Jakarta need fresh air as a kind of refreshment. That is why we think people don't mention any concern about access to the lake.

Comment **Prof. Chris Silver**

This is a great job in identifying cultural aspects, but also you need to identify transportation issues. It is a kind of dilemma. It would be a good idea to refine your parking area. Why not have parking attendants to manage the parking area? First, this could generate revenue and second it would create pedestrian only zones. Try to think in finer grain detail. Think about pollution.

Question **Prof. Andrea Frank**

How many parking spaces do you need? How many visitors are there? Try to develop a transportation mobility map for the 3.7 km circumference around the lake. Try to eliminate electric buses. There may be multiple ways to get the community to resolve conflicts between passive and active issues like transport and mobility.

Comment **Prof. Li Yu**

Instead of two parking lots, you may have several smaller ones.

Comment **Prof. Jerry Murphy**

I would like to commend you for your ideas. It is best that everything works together, parking and transportation. However, from an overall perspective I am very disappointed that you did not solve all the problems. For example, in the 1960's in America there were several initiatives to deal with solid waste, such as "Keep America Beautiful." Perhaps you could have a similar initiative to "Keep Indonesia Wonderful." In the US, you would approach this kind of problem and go with a pitch, a campaign to promote one idea or another. You had a very short time to come up with ideas. It is one thing in trying to instill questions for future research, and another thing which will provide some good opportunities. I would like to commend all the teams for their efforts.

Answer **Taufik**

Our discussions were inspired by the City of Bandung, which has a policy to use social media to humiliate, for example, people throwing away trash, instead of using money as a fine to change people's behavior. Community service is another idea to inspire good social behavior. Indonesians use the social media to share everything. Paying a fine is not as effective as the social media where there is a social kind of punishment for poor behavior.

UI UF CU IJSW 2017
International Joint Eco-city Studio and Workshop

Closing Remarks

Dr. Kemas Ridwan Kurniawan
Universitas Indonesia
20 January 2017
17 6 2 IJSW Closing Remarks 12 02 2017 DW DRAFT

This year has been quite a significant experience in that our graduate students actively participated in the joint studio and workshop. They were even up until late at night to finish their presentation for today. I really fully thank all of you, all the lecturers and all the student organizers so much for your full support.

After an intensive and challenging experience together over the past ten days, we have become engaged in the complexity and contradiction surrounding the topic of green infrastructure in the Jakarta and Depok metropolitan region. Following the Joint Studio and Seminar (IJSS) 2016, this year two parallel activates emerged as program outcomes, firstly with a Studio on Eco-cities and Green Infrastructure and secondly with a Workshop on Green Infrastructure and Healthy Citizens Science.

Dr. Christopher Silver from the University of Florida delivered an overview on “Planning the Eco-city” of Jakarta as a sustainable megacity with cogent examples of restoring the ecosystem in Singapore and Seoul to bring ‘green back to the city’. Jerry Murphy, also from UF, spoke on “Mobile Research Techniques,” comparing density as a statistic and compactness as a design situation, using tools such as GPS and mobile phones. Dr. Li Yu from Cardiff University spoke on “Learning from the Eco-city Development and Planning” with Masdar and Tianjin, summarizing that there are multiple choices and multiple solutions.

Graduate students actively participated with Mushab 'Abdu Asy-Syahid presenting the findings from IJSS 2016, with Iliana Jaimes Mayor sharing her practicum results from her field surveys and questionnaires at the UI Campus 2016 plus Shintia Apriyani and Ichsan Muhammad, who presented their graduate design studio projects at Setu Babakan and the UI Lakes.

Joint activities between the parallel studio and workshop included shared lectures on topics, such as the "Importance of Citizen's Science: The Environment and Public Health," by Dr. Andrea Frank where citizens work together with scientists. Another lecture concerned the relationship between "Lichens as Bio-Indicators," and their relationship with air pollution by Dr. Lisdar I Sudirman. A commentary on "Living Public Policy in an Eco-City" was presented by Dr. Ahmad Gamal. Additionally, Dr. Ova Candra Dewi shared her experiences on "Multi-Function Green and Open Spaces" and community participation in a lively dialogue with the studio and workshop participants. Dr. Dwita Sutjiningsih from the Civil Engineering Department elaborated on the application of green infrastructure and the UI Campus lakes or ponds with insight on campus water management issues. From Cardiff University, Prof. Terry Marsden elucidated on the transition and transformation towards a post-carbon economy, ultimately resulting in a greener, more sustainable economy and urban environment. Dr. Andrea Frank spoke briefly on "Place-Based Data Collection" in Jakarta along with Prof. Terry Marsden on "Place-Based Approaches".

The Green Infrastructure and Healthier Citizens Workshop was organized with Cardiff University, Universitas Indonesia, and Universiti Kebangsaan Malaysia in association with the United Nations University. The first workshop, supported by The British Council, started in Kucing, Malaysia. The Jakarta workshop, organized by Dr. Andrew Flynn, Dr. Ova Candra Dewi and Dr. Ariani Dewi Widodo, was geared primarily towards academics and researchers with an IJSW parallel program focusing on health issues. Prof. Terry Marsden and Dr. Yi Gong spoke on "Health and Green Infrastructure". Lectures ranged from "Pediatric Respiratory Diseases" with Dr. Rifan Fauzie, "Pediatric Gastrointestinal Diseases" with Dr. Eva Jeumpa Soelaeman and "Pediatric Infectious Diseases" related to the Environment with Dr. Amar W. Adisasmito. Dr. Tan gave a talk on "Cats Content and Communication" and a representative from the Indonesian Red Cross discussed "Public Spaces for Emergencies". Roundtable discussions considered research methodologies and developing local capacities to lead to models for collaboration, network development funding opportunities for future work.

Markedly, for the Eco-city Studio, it was the field work experience in surveying the Old Town of Jakarta and then collecting data on the three nominated sites at the UI Lakes, Setu Babakan and Setu Rawa Besar, which provided the most moving and remarkable real life experiences in facing the issues of water pollution and air pollution with the possible relationship between the community and green infrastructure at a microscale. Additionally, the field trip to Bojong Gede, Kabupaten Bogor enabled direct experience with the natural environment and interaction with the community. What is also remarkable are the countless hours spent by the students in studio, in transit and at all hours to identify the issues and to hone their ideas, of course enjoying delicious Indonesian food in-between the formal activities.

The most positive outcome from the Joint Studio and Workshop 2017 is the process of discovery and inquiry with the vivid interaction amongst ourselves in the dynamic process of defining future ideas

for healthy urbanization, leading towards the development of a future eco-city in the Jakarta and Depok megapolis. During the GGI grant process over the past three years, we have experienced a relatively calm, well-ordered environment at the University of Florida Gainesville campus with its more structured approach to green infrastructure, water catchment and residential living. Another completely different experience was visiting Cardiff, which is in itself a well-established heritage city with good drainage and living accommodation. Both experiences were in sharp contrast to Jakarta and Depok, which face the challenges of high density living and meeting basic human needs in a rapidly developing megacity', recognizing full well that Universitas Indonesia thrives as a "green" campus.

The benefit of the Global Green Infrastructure grant sets the groundwork and frames our aspirations for novel ideas, which will ultimately lead to the harmonization between different global realities and sustainable development in an innovative and humane way. Therefore, we challenge you to build on this academic experience in taking the next steps to engage in 'living a green life.'

Closing Remarks
Dr. Christopher Silver
University of Florida

Thank you to all the staff and the students. I think what is important is that we made the right decision to come back to Universitas Indonesia. The teams did a great job and it was a start last year with the IJSS. This year the new teams did go back to the three lake sites and they found something different. You did a great job. We also added air pollution and transport as topics for the UI Lakes on the UI campus. At Setu Rawa Besar the Cardiff and UI team came away with a positive experience to get over our Western modes of thinking and a lot of positive feedback was the result. Setu Babakan, as a cultural identity, functions well, but there are lots of lingering situations, challenging us to find new issues and new solutions. It is my desire that we can go to all of those places again and continue to build on those experiences. We all now know it is a 50-meter setback around the lakes.

Closing Remarks
Dr. Andrea Frank
Cardiff University

I can only echo all the thanks to the staff and students. From my perspective, there is a lot of learning going on in-between with each other. It is the inter-cultural learning that is the important part. I enjoy watching when the ideas light up and it gives me hope in a world that is increasingly scary. I am grateful that we managed to all pull together.

Closing Remarks
Dr. Li Yu
Cardiff University

Where should I start? The project that all the students came for was the Eco-City. I think that it is useful for the students to find out what is an Eco-City in terms of a live project for an eco-city experience in the real world, thus adapting the day-to-day lectures to see if the theories are believable. This experience also helps the students to build up their C.V.s In our discussion; it is worth concluding that Green Infrastructure, as a topic, gives us a focus to understand problems in the real world. Students learned a lot about planning for urban research by undertaking some kind of group work. It

can be a nightmare to experience the contradictions from different backgrounds and disciplines, ranging from engineering to planning. It was an interesting experience and right up until the very end, students learned to compromise. Second, we learned how to use some concepts, some regulations, also some students learned how to do presentations, and especially for the international studio, some lessons can be learned. It is really a learning process about developing your knowledge and your skills. The MSc. Cardiff Eco-Cities is the first in the world to follow up with a live project model, which is particularly unique. So many students only experience real planning situations for 2-3 months, but in the post-grad program in the UK, they do not have this kind of experience. So I would like to thank each one of you for your participation. Perhaps, we could find a similar experience in Northern Europe, but generally we have found the living costs to be too high.

We have also been able to establish friendships and a harmonious working relationship together. I hope that we can still work together again to achieve our objectives.

General Closing Remarks

Diane Wildsmith, Universitas Indonesia

Thank you for coming to this eco-city studio and I hope that you will be able to use this experience in your future studies for eco-cities.

Jerry Murphy, University of Florida

My greatest enjoyment is to participate with you and I look forward to following your endeavors.

Abi, (Sutanrai Abdilah) Universitas Indonesia

Thank you for the learning experience, for the space and for everything related to this great and special moment. I hope we can meet again somewhere in the world.

Meredith Fowler, Cardiff University

To Cardiff, Indonesian and Florida students, I never thought I would be sad to leave this studio, but I am. Thank you.

Allison Reagan, University of Florida

I never imagined I would be in Indonesia. It is a cultural shock, but a full learning experience and a good one for the soul and the mind. Everyone has been so hospitable. I just will have to blog a bit more!

Yandi Andri Yatmo, Head, Department of Architecture, Universitas Indonesia

I would like to offer my apologies that the Dean cannot come today. Thank you all for coming with a good heart to understand us and to listen and to learn about us. That is what I felt when I was in the UK that trying to listen to others and then to make a judgment is what is best for our world. Learning that there is nothing more important that taking care of what we have and taking care of the planet is most important. I know that all the students are trying their best. Our heart is with you and hopefully with you everywhere.

PRESS RELEASE

IJSW Press Release 19 01 2017

Global Green Infrastructure Grant (GII) Sponsors International Joint Eco-City Studio and Workshop (IJSW) 2017 at FTUI Department of Architecture

The collaboration between Universitas Indonesia, University of Florida and Cardiff University was held 9-20 January 2016 on the topic of green infrastructure in the Jakarta and Depok metropolitan region. Following the Joint Studio and Seminar (IJSS) 2016, this year's two parallel activates emerged as program outcomes, firstly with an **International Joint Eco-City Studio and Workshop (IJSW) 2017** on Eco-cities and Green Infrastructure for graduate students and secondly with a Joint Workshop on Green Infrastructure and Healthy Citizens Science for researchers.

To paraphrase Charles Dickens in *A Tale of Two Cities*, (1859), urbanization represents both the 'Best of times and the worst of times.' We are living in the Anthropocene Age in which urbanization is recognized as being a global phenomenon. Many researchers from the United States to the United Kingdom to Indonesia recognize that we are living on an urban planet.

The overall aim of the **International Joint Eco-City Studio and Workshop (IJSW) 2017** was to explore what novel interventions through green infrastructure might be possible to make a difference in water quality management, poverty and air pollution in Jakarta and Depok. These inquiries are to help Depok City in its transition to becoming a more ecologically and economically sustainable megapolis. The discussions will include possible ways of implementing green infrastructure to inspire acceptance in the local context. The principal investigators included Dr. Kemas Ridwan Kurniawan and Dr. Dwita Sutjiningsih (Universitas Indonesia), Dr. Christopher Silver and Prof. Jerry Murphy (University of Florida), and Dr. Andrea Frank and Prof. Li Yu, (Cardiff University) for the Eco-city Studio. Principal Investigators in the Health Workshop included Dr. Andrew Flynn, Prof. Andrew Marsden and Dr. Yi Gong (Cardiff University) with Dr. Ova Candra Dewi and Dr. Ariani Dewi Widodo, (Universitas Indonesia) and Dr. David Tan, United Nations University, Malaysia.

There were three topics with field surveys in the Eco-city Studio, namely Air Pollution and Green Infrastructure at the UI Lakes and Margonda Street, Social Behavior and Water Pollution at Setu Rawa Besar and The Value of Urban Green Infrastructure at Setu Babakan. There were 19 graduate students and 16 faculty members from the three universities who participated in the Joint Eco-city Studio and 10 faculty members plus participants in the Health Workshop. Joint lectures and field trips to Old Town Jakarta, Depok and Bojong Gede Bogor were held for both the studio and workshop and involved interaction with members of the community.

The most positive outcome from the UI-UF-UC Joint International Eco-city Studio and Workshop (ISJW) 2017 and the Joint Workshop Green Infrastructure and Healthy Citizens Science 2017 is the process of discovery and inquiry with the vivid interaction amongst the participants in the dynamic process of defining future ideas for healthy urbanization. The benefit of the Global Green Infrastructure grant and the subsequent Memorandum of Understanding (MOU) is to set the groundwork and frame our aspirations for novel ideas for green infrastructure, which will ultimately lead to the harmonization between different global realities and sustainable development in an innovative and humane way.

518 words