Creative Collaboration in Urban Polder in Jakarta, in the Framework of Integrated Water Management

Gunawan Tanuwidjaja
Urban Planner & Researcher
Green Impact Indonesia, Integrated Urban, Drainage and Environmental - Planning and Design Consultant
INDONESIA
gunteitb@yahoo.com
http://greenimpactindo.wordpress.com/

Joyce Martha Widjaya
Principal Researcher
Research and Development Institute of Water Resources (PUSAIR), and Research and Development Institute of Social, Economy, Culture and Community Participation (PUSEBRANMAS), Ministry of Public Works
and
Lecturer
Petra Christian University
INDONESIA
joyce_widjaya@yahoo.com

Robby Yussac Tallar
Lecturer
Maranatha Christian University
INDONESIA
and
Ph.D Candidate, Hydraulic and Ocean Engineering Department,
National Cheng Kung University (NCKU)
TAIWAN
robbyyussac@yahoo.com

ABSTRACT

The urbanisations in developing countries had happened rapidly since 20th Century. The Coastal Cities were affected due to unplanned and uncontrolled developments which encroaching the rural and lowlands. And because of these unsustainable developments, many environmental issues happened to the cities such as floods. Floods were contributed by insufficient infrastructure for flood prevention and flood mitigation, unmanaged infrastructure and climate change.

Understanding these facts, we believe that Integrated Water Resource Management (IWRM) is actually needed to be implemented to solve these problems. It could be defined as "A process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems." In this case, IWRM actually comprises the efforts of controlling the land use change and urban surface run-off; drainage planning and management; landscape design; and

infrastructure provisions, which conducted simultaneously. We concluded that to conduct successful IWRM, creative collaboration among Urban Planning Authority and Drainage Management Authority is compulsory.

In the urban' low-lying lands like Jakarta, extra flood prevention and mitigation efforts are needed. A polder system is needed as is appropriate and effective for flood control. The polder is required to be managed as integrated drainage system consisting dikes, drains, retention ponds, outfall structures or pumping stations. Further, designed landscape in the polder is required to ensure its effectiveness. Polder dikes also must be planned and designed considering potential of social conflict and accessibility issue. Lastly, maintenance of infrastructures becomes a critical point for successful polder operation.

The Polder system also could not be planned separately from macro spatial plan, urban design and water management of the macro (river basin) system. Understanding this, we believed that creative collaboration in the Integrated Water Management especially in Polder System should be joined by Government, the People and the Private sector. This will eventually ensure the sustainable development of urban lowland areas.

Keywords: *Collaborative Integrated Water Resource Management, Urban Polder, Flood Mitigation, Low Impact Development, Urban Polder, Jakarta*

INTRODUCTION

The world's population has increased exponentially from 2.521 billion to 6.782 billion from 1950 to 2009. [1] The fast pace of urbanisations has increased the urban population from 30% in 1950 to 50% in 2007. Exponential urban population growth, rapid urbanisation, limited urban planning, less stringent development control, and land speculation, cause urban sprawling in the "Mega Cities" in the developing countries. 60 "Mega Cities" are emerging in the world by 2015, i.e. Singapore, Hong Kong, Jakarta, Mumbai, Bangkok and Manila (Schultz, 2006). [2]

"Mega Cities" are usually located in the coastal area, because they depend on the trade-port activities. Further, due to encroachments of lowlands areas; limited infrastructure; weak management; as well as the climate change further cause environmental disasters especially the major floods. Indonesian Mega-Coastal-Cities also faces similar floods issues. For better illustration of the flood problems and potential solution, we would discuss Jakarta further.

Jakarta is the capitol city of Indonesia and the largest metropolitan in South East Asia. It is currently inhabited by approximately 8 million persons, within area of 600 sq km. [3] Jakarta also faces unsustainable urban issues such as: urban sprawling; conversion of rural, water bodies and natural areas; traffic jams; air pollutions; urban slums and extreme annual flooding.

HISTORY OF FLOODS AND URBAN POLDERS IN JAKARTA

Jakarta has evolved becoming a metro region covering Jakarta, Bogor, Tangerang, Bekasi, Depok, Puncak and Cianjur. And it was identified as National Strategic Area (*Kawasan Strategis Nasional*) due to the expansive economic growth. And the Central Government would need to facilitate its development process.

From all unsustainable urban issues of Jakarta, we would like to discuss more on Flooding. Floods were the regular event for Jakarta City. In 1619, Jakarta or previously named Batavia was developed by Jan Pieters Z. Coen with waterfront city concept or urban polder concept following the Amsterdam. And historically Jakarta was regularly inundated because of debit's increases of its rivers. [4] And according to the documentation, Jakarta was hit by major floods in 1621, 1654, and 1918. Further, major inundations recorded happened in 1976, 1997, 2002, and 2007. [5]

Figure 1. Flood in Jakarta (1915)
Source: OVERSTROMING OP DE KERKLAAN TE BATAVIA/1915

Figure 2. Flood in Jakarta (2007)
Source: Public Works Department DKI Jakarta Presentation

The 1997's Jakarta floods occurred city-wide and created the national tragedy which attracting public even worldwide attentions. The flood covered the area of 4 sub-districts (Kelurahan), 745 houses, displacing 2640 persons with 80 cm water level. [6] Jakarta flood got worse in 2002 affecting 60% of Jakarta. It also impacted Tangerang and Bekasi area. It was reported to kill 142 persons and displace 114,441 persons. Rp 4 trillions economic loss was estimated because of the flood. [7]

Lastly, The 2007 Jakarta flood affected more than 60% of Jakarta. It also affected Bogor, Depok, Tangerang and Bekasi. 80 persons were reported killed because of flooding while 340,000 persons had been displaced. Furthermore, 74,000 houses were submerged and 670,000 people were left without electricity. 82.150 sq km of roads were reported damaged because of the floods. Rp 8 trillions economic loss was estimated because of the floods. This data actually illustrates the worsening floods in Jakarta, and increasing economic losses due to the flooding. [8]

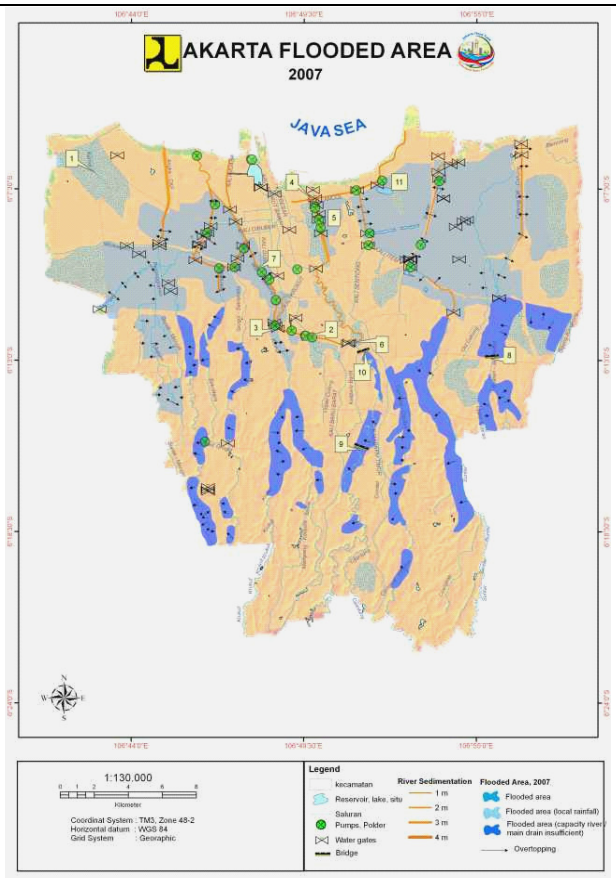

Figure 3. The Flood Pattern of Jakarta in 2007. [9]
Source: Ministry of Public Works (2008), Jakarta Flood Hazards Mapping 2007

In general, Jakarta floods are caused of two groups of factors, which are: natural factors and human factors. They are: [10]

1. Natural Factors
- Approximately, 40% of Jakarta areas are low-lying land below the highest astronomical tide.
- Flat topography of Jakarta (even concave in some area sop potential for flooding).
- 40% of Jakarta are located within the flood prone areas of the main rivers.
- High rain intensity in the upstream of Jakarta Metro Region.
- Extensive catchment affecting Jakarta (850 sq km).
- Limited water bodies capacity (drains, rivers, retention ponds and lakes).
- Geological and soil types of the Jakarta Metro Region are susceptible to land subsidence and erosion.

2. Human Factors
- Disintegration of Spatial Plan and Drainage Master Plan (macro and micro level) of Jakarta Metro Region.
- Overpopulation in several areas (strategic areas and slums).
- Extreme groundwater extraction.

- Conversion of forests, wet agricultural lands
- Conversion of water bodies (wetlands, agricultural lands, drains, rivers, retention ponds, lakes).
- Unsustainable land development practice causing increasing soil sedimentation.
- Solid waste and waste-water pollution in the water bodies.
- The unclear system role-sharing among in environmental management especially in the drainage management.

Although not comprehensive enough, The Central Government and Provincial Government of Jakarta have done several studies and master plan related to Jakarta Flood Control. The studies are: [11]

- Master Plan NEDECO (1973)
- Study Of East Jakarta Flood Control Project (1989)
- The Study on Urban Drainage and Waste Water Project in The City of Jakarta (1991)
- The Study on Comprehensive River Water Management Plan in JABODETABEK (1997)

The Flood Control Strategies prescribed in these documents are: [12]

- Retaining water in upstream area with retention ponds and land and forest conservation;
- Applying rain-water infiltration as much as possible with infiltration well and open spaces;
- Building retention ponds in the middle areas;
- Flowing the water as fast as possible to the estuaries or the seas, with the capacity of rivers and drainages;
- Building urban polder systems in the Northern part of Jakarta;
- Securing lives, vital infrastructures as well as real estates.

Figure 4. Concepts of Flood Control of Jakarta Government
Source: Jakarta Province's Public Works Department(2008), Flood Mitigation Handbook

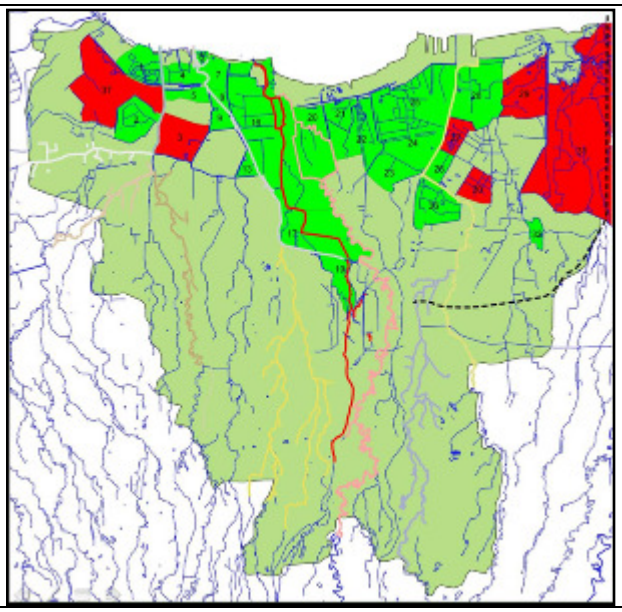

Figure 5. Polder's Master Plan in Jakarta.
Source: Jakarta Province's Public Works Department (2008), Flood Mitigation Handbook

Legend : Polder in Jakarta Region

	Finished Polder
	Unfinished Polder

Table 1. Polders Planned by Public Works Department of Jakarta Province in Jakarta Region

Source: Jakarta Province's Public Works Department (2008), Flood Mitigation Handbook

No.	Name of Polder	Area (Ha)	No.	Name of Polder	Area (Ha)
01	Rawa Buaya	50.00	21	Pademangan	635.00
02	Cengkareng	450.00	22	Kemayoran	850.00
03	Kapuk Poglar	550.00	23	Sumur Batu	278.00
04	Pantai Indah Kapuk Utara	250.00	24	Sunter Selatan	346.00
05	Pantai Indah Kapuk Selatan	150.00	25	Sunter Barat	1250.00
06	Muara Angke	50.00	26	Sunter Timur I Kodamar	200.00
07	Muara Karang	75.00	27	Sunter Timur I Utara	600.00
08	Pluit Industri	50.00	28	Sunter Timur III Rawa Badak	570.00
09	Teluk Gong	90.00	29	Sunter Timur II	1750.00
10	Jelambar Wijaya Kusumah	100.00	30	Kelapa Gading (Walikota)*	90.00
11	Jelambar Baru	100.00	31	Marunda	2240.00
12	Tomang Barat	170.00	32	Penggilingan	103.00
13	Grogol	80.00	33	Istana Merdeka	15.00
14	Rawa Kepah	229.00	34	Hankam Slipi	4.00
15	Pondok Bandung	90.00	35	Komplek TVRI Cengkareng	7.00
16	Pluit	2083.00	36	Pulomas	460.00
17	Siantar Melati	860.00	37	Tanjungan / Tegal Alur*	390.00

No.	Name of Polder	Area (Ha)	No.	Name of Polder	Area (Ha)
18	Setiabudi Barat	216.00			
19	Setiabudi Timur	132.00			
20	Mangga Dua	160.00			

Unfortunately, the master plans were not effectively implemented due to different land ownership as well as sectored approach. This could be seen in disintegration of the polder system in the North Jakarta.

CREATIVE COLLABORATION IN SUSTAINABLE URBAN POLDER PLANNING AND MANAGEMENT

Answering this issue especially in Jakarta, we believe that Integrated Water Resource Management (IWRM) is compulsory to be implemented. Global Water Partnership defined IWRM as, "A process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems." [13]

In the implementation of The IWRM, the stakeholders should consider sustainability issues, comprising technical, social, economic and environmental aspect. IWRM is conducted with holistic approach and dealing with overall hydrological cycle. Further, there are 7 steps in IWRM such as: [14]

1. Initiation
2. Vision / Policy
3. Situation Analysis
4. Strategy Choice
5. IWRM Plan
6. Implementation
7. Evaluation.

Lastly, The IWRM scope must be executed in one river basin. The river basin could consist of several administrations (district, municipalities, regency) boundaries as well as national boundaries. And it needs creative collaboration in the implementation.

For better understanding, we would explain briefly IWRM in Singapore. The Public Utilities Board is in-charge with IWRM in Singapore. The PUB is formed to ensure efficient, sufficient and sustainable water supply. The PUB duties comprise of the collection of rainfall run-off, water importing; treatment and distribution of clean water; collection and treatment of wastewater; as well as wastewater reclamation and desalination. This shows that IWRM would need collaboration between many elements of the Organisation as well as participation of Public – Private and People. [15]

In the urban' low-lying lands, extra flood prevention and mitigation efforts are needed. A polder system is needed as is appropriate and effective for flood control. The Polder could be defined as "An Integrated Man-made Drainage System consisting Dikes, Drains, Retention Ponds, Outfall Structures or Pumping

Stations. Designed Landscape in the Polder is required to ensure its effectiveness. Polder Dikes also must be planned and designed considering potential of soil strength, land subsidence, social conflict as well as accessibility issue. The maintenance of infrastructures becomes a critical point for successful polder operation. Lastly, the Polder system must be planned in integration from macro spatial plan, urban design and water management of the macro (river basin) system."

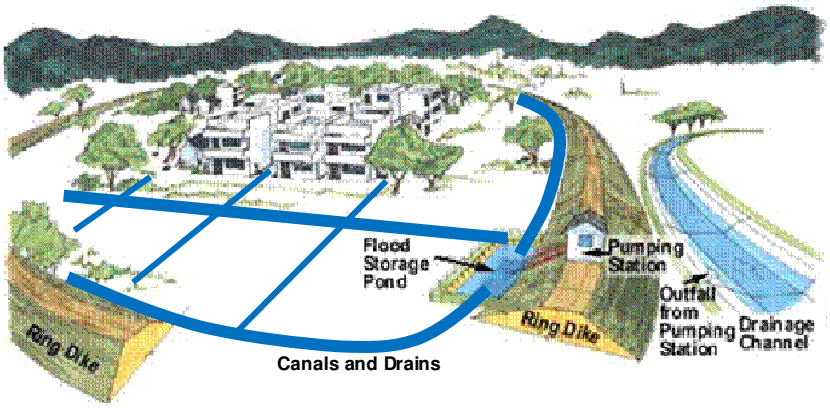

Figure 6. Simplified Illustration of Polder System [16]
Sources: Ministry of Public Works et.all. Urban Polder Guideline

In the research collaboration between The Netherlands Government, UNESCO IHE, Government of Republic Indonesia, we found main aspects for implementing sustainable urban polder as follow: [17]

- Institutional Aspect,
- Planning Aspect,
- Design Aspect,
- Land Acquisition Aspect,
- Development Control Aspect,
- Construction Aspect,
- Operation, Maintenance and Management Aspects,
- Monitoring and Evaluation Aspects.

Following the IWRM framework, we would need the polder management institution to ensure the sustainability of the Polder system. The Polder Board is an institution that is in charge to manage the polder systems especially in water management and flood protection measures. Polder Institution would be formed from Government agencies, Private sector and Communities that related to the Polder. The legal basis for supporting the existence of the Polder Board is really needed. [18]

The difficulty of solving flooding or managing the Jakarta drainage system is actually in role – sharing of Central Government, Provincial Government, Municipality, Private Sectors (Developers), Professional Consultants & Contractors and lastly Communities. Because of Jakarta Metro Region status as the National Strategic Area, the Central Government must coordinate and

facilitate the development of the area. For easier illustration, in we would describe two aspects of Urban Polder Development that need Creative Collaboration.

Table 2. Example of Inter-related Role of Government, Private and Communities in North Jakarta Municipality in Spatial and Drainage Planning-and-Management Aspects. [19]

Role in Urban Development Aspects related to Urban Polder	Level	Agencies In-Charge or Related to the Aspects
Spatial Planning & Management	Central Government	• Office of State Minister of National Development Planning (BAPPENAS); • Coordination Board of Spatial Planning (BKPRN); • Ministry of Public Works, Directorate General of Spatial Planning (DIRJEN TARU); • Ministry of Forestry, Ministry of Forestry, Directorate General of Land Rehabilitation and Social Forestry, Office of Catchments Management of Citarum-Ciliwung Rivers (BPDAS Citarum Ciliwung);
	Jakarta Provincial Government	• Regional Planning Agency of Jakarta Province (Bappeda DKI Jakarta); • Spatial Planning Agency of Jakarta Province (Dinas Tata Ruang Provinsi/ DTP Jakarta);
	North Jakarta Municipality	• Regional Planning Agency of North Jakarta Municipality (Bapekodya Jakarta Utara);
	Real Estate Developer	• Some developers like PT Pembangunan Jaya Ancol & PT Mandara Permai prescribed their own land use master plan ;
Drainage & Flood Control – Planning, Design & Management	Central Government	• Office of State Minister of National Development Planning (BAPPENAS); • Ministry of Public Works, Directorate General of Water Resources Management (DIRJEN SDA); • River Basin Organisation Ciliwung Cisadane (BBWS Cilcis); • Ministry of Forestry, Ministry of Forestry, Directorate General of Land Rehabilitation and Social Forestry, Office of Catchments Management of Citarum-Ciliwung Rivers (BPDAS Citarum Ciliwung);
	Jakarta Provincial Government	• Regional Planning Agency of Jakarta Province (Bappeda DKI Jakarta); • Public Works Agency of Jakarta Province (Dinas PU DKI Jakarta);
	North Jakarta Municipality	• Public Works Sub-Agency of North Jakarta Municipality (Suku Dinas PU Jakarta Utara);
	Real Estate Developer	• Some developers like PT Pembangunan Jaya Ancol & PT Mandara Permai prescribed their own drainage master plan (polder system);
	Non-Government Organisations/ Communities	• Community Forum of the Pluit Environmental Care (FMPL) create and manage their own polder system;

Due to complicated jurisdictions above, we understand that we could not dismantle the present organisations to create Polder Board (Urban Polder Organisation). We even feel that the Polder Board and its system should be flexible and adaptive to the current organisations. We just need to reallocate the task and financial benefit within the urban polder management. Further, the

effective coordination must be ensured for Sustainable Urban Polder Development.

To illustrate the Creative Collaboration, we took the case of "Creating Urban Polder Master Plan of Jakarta Province." We would propose the output of the process such as:

- Provincial Polder Zoning Direction
- Provincial Polder Master Plan
- Provincial Polder Design Engineering Design
- Provincial Polder Construction, Operation and Management.

And to create successful Urban Polder in Jakarta Province, we need these steps:

- Setting Polder Organisation and the Vision of Urban Polder;
- Data Collection (Politic, Social, Economical and Technical Data);
- Topographical and Infrastructure Survey;
- Data Analysis (Integrated Approach – Policy, Socio and Economic Analysis);
- Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA);
- Regular Public Consultations;
- Preparation of Integrated Spatial Plan & Detail Master Plan (Spatial Use and Infrastructure), which include:
    - Drainage and flood control plan
    - Clean water treatment and distribution plan
    - Pollution control, waste-water (sewage) collection and treatment plan
    - Solid waste management plan
    - Wastewater treatment and collection plan
    - Landscape plan;
- Preparation of Zoning Direction (including Polder Direction);
- Preparation of Urban Design Plan;
- Preparation of Feasibility Study of Polder;
- Land Acquisition
- Preparation of Detail Engineering Design (DED) for Polder System (dikes, drainage, retention ponds, outfall structures, pumping stations, wastewater treatment and pipelines);
- Controlling the urban surface run-off with Low Impact Development (LID) method;
- Landscape Design;
- Development Control (Permit Application and Issuing Process);
- Development Facilitation (Dissemination, Training, R&D etc);
- Law Enforcement (Incentives, Disincentives & Sanction);
- Other Aspects Monitoring (Building Design, EIA & Infrastructure Construction);
- Preparation of Standard Operation Procedures (SOP) of Polder;
- Infrastructure Construction;
- Infrastructure Operation and Management;
- Legal Management;
- Financial Management;
- Other Aspects Management (Solid Waste and Wastewater);
- Monitoring (Flood System, Water Pollution, Water Quality);
- Evaluation (Organisation, SOP, Infrastructure, etc);

- Infrastructure Improvement.

These steps should be shared by all stakeholders as prescribed below:

Table 3. Role Sharing and Collaboration in Polder in Province Level

Legend:
Facilitation = Fac
Initiation for Public Projects = Ini*
Initiation for Private Projects = Ini*
In charge with = Chg
Support = Su

Steps in Creating Sustainable Polder	Central Government	Jakarta Provincial Government	North Jakarta Municipality	Real Estate Developer & Private Companies	Professional Consultant & Contractor	Local Communities
Setting Polder Organisation and the Vision of Urban Polder;	Fac	Ini	Su	Su	Su	Su
Data Collection (Politic, Social, Economical and Technical Data);	Fac	Ini	Su	Su	Chg	Su
Topographical and Infrastructure Survey;	Fac	Ini	Su	Ini	Chg	Su
Data Analysis (Integrated Approach – Policy, Socio and Economic Analysis);	Fac	Ini	Su	Su	Chg	Su
Strategic Environmental Assessment (SEA) ;	Fac	Ini	Su	Su	Chg	Su
Environmental Impact Assessment (EIA);	Fac	Su	Ini *	Ini **	Chg	Su
Regular Public Consultations;	Fac	Ini	Su	Su	Chg	Su
Preparation of Integrated Spatial Plan (Spatial Use and Infrastructure)	Fac	Ini	Su	Su	Chg	Su
Preparation of Integrated Detail Master Plan (Spatial Use and Infrastructure), which include: - Drainage and flood control plan - Clean water treatment and distribution plan - Pollution control, waste-water (sewage)	Fac	Ini	Ini *	Ini **	Chg	Su

Steps in Creating Sustainable Polder	Central Govern-ment	Jakarta Provin-cial Govern-ment	North Jakarta Muni-cipality	Real Estate Deve-loper & Private Com-panies	Profes-sional Con-sultant & Con-tractor	Local Com-munities
collection and treatment plan - Solid waste management plan - Landscape plan;						
Preparation of Zoning Direction (including Polder Direction);	Ini	Ini	Su	Su	Chg	Su
Preparation of Urban Design Plan;	Fac	Fac	Ini *	Ini **	Chg	Su
Preparation of Feasibility Study of Polder;	Fac	Fac	Ini *	Ini **	Chg	Su
Land Acquisition	Fac	Fac	Chg	Chg	Su	Su
Preparation of Detail Engineering Design (DED) for Macro Polder System	Fac	Ini	Su	Su	Chg	Su
Preparation of Detail Engineering Design (DED) for Micro Polder System	Fac	Fac	Ini *	Ini **	Chg	Su
Controlling the urban surface run-off with Low Impact Development (LID) method;	Fac	Fac	Ini *	Ini **	Chg	Su
Landscape Design;	Fac	Fac	Ini *	Ini **	Chg	Su
Development Control;	Fac	Chg	Chg	Ini	Su	Su
Development Facilitation;	Fac	Fac	Fac	Su	Su	Su
Law Enforcement;	Fac	Chg	Chg	Su	Su	Su
Other Aspects Monitoring (Building Design, EIA & Infrastructure Construction);	Fac	Chg	Chg	Su	Chg	Su
Preparation of SOP of Polder;	Fac	Fac	Ini *	Ini **	Chg	Su
Infrastructure Construction;	Fac	Ini	Su	Su	Chg	Su
Micro Polder Infrastructure Construction;	Fac	Fac	Ini *	Ini **	Chg	Su
Infrastructure Operation and	Fac	Chg	Chg	Chg	Chg	Su

Steps in Creating Sustainable Polder	Central Govern-ment	Jakarta Provin-cial Govern-ment	North Jakarta Muni-cipality	Real Estate Deve-loper & Private Com-panies	Profes-sional Con-sultant & Con-tractor	Local Com-munities
Management;						
Legal Management;	Fac	Chg	Su	Su	Su	Su
Financial Management;	Fac	Chg	Su	Su	Su	Su
Other Aspects Management (Solid Waste and Wastewater);	Fac	Chg	Chg	Chg	Chg	Su
Monitoring (Flood System, Water Pollution, Water Quality);	Fac	Ini	Su	Su	Chg	Su
Evaluation (Organisation, SOP, Infrastructure, etc);	Fac	Ini	Ini *	Ini **	Chg	Su
Macro Polder Infrastructure Improvement.	Fac	Ini	Su	Su	Chg	Su
Micro Polder Infrastructure Improvement.	Fac	Fac	Ini *	Ini **	Chg	Su

And to be able to produce this, creative multi-disciplinary collaboration must be implemented in the process, including urban planner, drainage engineer, geotechnical engineer, civil engineer and landscape architect. Even in the later stage, the professional polder management team should be involved in the operation and maintenance of polder system.

CONCLUSION

We would like to conclude that Jakarta is facing great environmental pressures especially because unsustainable urban development. The low-lying areas of North Jakarta suffer the most because of the environmental degradations. Because of that, Sustainable Urban Polder has to be implemented in the area following the Sustainable Urban Development Framework. And hopefully we could reduce the impact of floods. Creative collaboration is urgently needed in the process of creating Sustainable Urban Polder due to its extensive administration boundary, extensive urban sectors approach and various land ownerships. This enforces the need of Creative Collaboration in Sustainable Waterfront Cities place-making.

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The Writer's CV

I. Personal Information

Full name	**: Gunawan Tanuwidjaja**
e-mail	: gunteitb@yahoo.com
website	: http://greenimpactindo.wordpress.com/
Mobile Phone	: +62 812 212 208 42 (Indonesia)
Place of Birth	: Bandung
Date of Birth	: 08 of August 1978
Sex	: Male
Nationality	: Indonesian
Mother Language	: Indonesian
Language Skill	: Indonesian, English

II. Education Backgrounds

Formal Education

Name of Institution	City/ Country	Study Time (Months/ Years)	Graduated from (Month and Year)	Specialization	GPA
National University of Singapore	**Singapore**	**1 year**	**October 2006**	**MSc Environment Management**	**3.86 from scale of 5**
Bandung Institute of Technology (Institut Teknologi Bandung)	**Bandung / Indonesia**	**5 years**	**July of 2001**	**Bachelor of Architecture**	**2.73 from scale of 4**

III. Informal Education

Study Time (Years)	Name of Institution	Course Name & Specialization
2008	Singapore Institute of Planner	Spatial Planning for a Sustainable Singapore (1-day seminar)
2008	Lee Kuan Yew School Of Public	"Lessons Not to Learn from

Study Time (Years)	Name of Institution	Course Name & Specialization
	Policy	American Cities" by Prof Alan Altshuler (Half-day seminar)
2007	National University of Singapore, Faculty of Engineering, PAC (Professional Activities Centre)	Short Course On "A – Z Of Oil & Gas To Petrochemicals (3-days seminar)
2007	Singapore Institute of Planner	Destination Resorts, The Next Wave (1-day seminar)
2007	Singapore Institute of Planner, Malaysia Institute of Planner and Universiti Kebangsaan Malaysia	Seminar of Planning of Iskandar Development Region (1-day seminar)
2001	The British Institute	IELTS Preparation Course
2000	Language Center ITB	English Writing Course
1999	Gradasi Bulletin Student Union of Architecture Gunadharma (IMA-Gunadharma)	Journalistic Training
1997	Architecture Department ITB	AutoCad R14 Training
1993-1995	Saint Angela's English Course	English Course level C6 to C11
1990-1992	Saint Angela's English Course	English Course level J2 to J5

IV. Working Experience

Name of Institute/Companies	City/ Countries	Position	Job Description	Contract Periods
Green Impact Indonesia Integrated Urban, Drainage and Environmental Planning Consultant	Bandung	Manager	Team Leader and Urban Planner	March 2003 to now
Agency for Research and Development, Institute of Water Resources, Ministry of Public Works, Republic of Indonesia,	Bandung	Urban Planning and Management Expert	Assistant	October 2008 to now
Jurong Consultants Pte Ltd., Planning Division	Singapore	Planner	Physical Planner	November 2006 to October 2008
National Parks Board, Republic of Singapore	Singapore	Intern	Researcher	July 2006 to Aug 2006
Agency for Research and	Bandung/	Junior	GIS Expert Assistant (Arc	Jan 2005 -

Name of Institute/Companies	City/ Countries	Position	Job Description	Contract Periods
Development, Institute of Water Resources, Ministry of Public Works, Republic of Indonesia,	Indonesia	Researcher	View 3.2), in Polder Team	Aug 2005
Satyamitra Jasapuri Engineering	Bandung/ Indonesia	Junior Architect, Estimator	House, Factory and Café Design	Aug 2003 - Dec 2004
PT. Trinitas Buana Utama	Bandung/ Indonesia	Junior Architect	Apartment Design	Aug 2002 - Aug 2003
PT. Imesco Dito	Jakarta/ Indonesia	Junior Architect	Junior Architect	Jan 2002 – Aug 2002
COMBINE	Bandung/ Indonesia	Junior Researcher	Urban Development Research, especially on Urban Garbage Management	Aug 2001 - Jan 2002
CV. Cipta Bina Sarana	Bandung/ Indonesia	Work Trainee	Junior Architect	May - July 2001
ASPEK	Bandung/ Indonesia	Program Facilitator Community Recovery Program (CRP-HUI) in RW 11, Cibangkong District	Garbage Management , Mechanism Making and Controlling of Cooperative Credit Unit	Jan 2000 - Aug 2001

V. Design Works

Name of Project	Position	Year
Under Green Impact Indonesia		
Assistance for Directorate of Spatial Planning, Public Works Department (2009), Sustainable Urban Improvement Program (SUSIP) - Executive Presentation	Team Leader and Urban Planner	Dec 2009
Drainage Master Plan Revitalisation in Summarecon, Kelapa Gading, Jakarta, Indonesia	Team Leader and Urban Planner	Apr – Dec 2009
Hospital Preliminary Design and Study in	Team Leader and Senior	Apr – Aug 2009

Name of Project	Position	Year
Pangalengan, West Java, Indonesia (Proposal to KPBS, Milk Producer Cooperative in Pangalengan)	Architect	
Community Based Development Revitalisation in PT Newmont Nusa Tenggara, Sumba, Nusa Tenggara Barat, Indonesia (Proposal)	Team Leader and Environmentalist	Aug 2009
Traditional Market Mapping, GIS Database and Analysis in the framework of Implementing Presidential Decree No 112/2007 on Development of Traditional Market and Relocation of Modern Market in Indonesia (Proposal to Ministry of Trade of Republic of Indonesia)	Team Leader and Urban Planner	Aug 2009
Integrated Water Resources Management Plan for Barangkal River, sub catchment of Brantas River Basin, in relation with Social Aspect and Institution Capacity Building (Proposal to JICA)	Team Leader and Environmentalist	Aug 2009
"9 Pearl" Elementary School in Bandung	Team Leader and Architect	2003
Proposal 99'ers Radio School (Proposal)	Team Leader and Architect	2003
Under Jurong Consultants Pte Ltd.		
Preliminary Study and Brief Development Concept of QEZ3, Petrochemical Complex, Qatar	Planner	2007 to 2008
Dera Bassi Detailed Master Plan, Greater Mohali Area, Punjab, India	Planner	2007 to 2008
Libya Africa Economic	Planner	2007 to 2008

Name of Project	Position	Year
City		
Wonogiri Industrial Park, Indonesia (Guanxi State Farm - Biofuel Plant)	Planner	2007 to 2008
Master Plan An Tay Industrial Service Centre	Planner	2007
Master Plan Zhangzhou Waterfront City, China	Assistant Planner	2006-2007
Master Plan AMRL International Tech City, Tamil Nadu, India	Assistant Planner	2007
With MSc Environmental Management Program		
"Neotiewpia" Eco Village Master Plan in Kranji Singapore	Planner & Environmentalist	2006
Under SJP Engineering		
BTC Café	Junior Architect	2004
Kopomas Factory	Junior Architect	2004
Private Houses Bandung	Junior Architect, Design Development	2003 – 2004
Under PT. Trinitas Buana Utama		
Rental Houses in Bandung	Studio Coordinator	2002 – 2003
Bukit Resik Exclusive Aparment	Studio Coordinator	2002 – 2003
Site Plan "S. Parman" Elite Housing	Studio Coordinator	2002
Under PT. Imesco Dito		
Private Houses in Jakarta	Junior Architect	2002
Freelance Project		
Cibangkong Low Cost Housing, Bandung Indonesia	Final Year Student	2001
Design Development of KARANG SETRA Hotel, Spa and Cottages, Bandung Indonesia under Cipta Bina Sarana	Junior Architect, Design Development	2001
Master Plan of Cipulir Housing Site Plan, Jakarta under Prof Ir. Danisworo	Junior Architect	2001

VI. Awards, Prestige, Activities, and Publication

Awards/ Prestige	Best Dissertation Prizes from Shell, MEM National University of Singapore, 2006-2007 Shell Grant Bursary Holder in MEM National University of Singapore, 2005-2006 Second Champion of Design Competition of Informal Traders Stand held by The Municipal\ Government of Kota Bandung, Praksis dan IMA-Gunadharma ITB Year 2001
Activities	Bandung Independent Living Center (BILIC) 2003 - 2004 : Voluntary Attendant for Difable (Disable) Person 2003 : Coordinator Research Team in Accessibility Issue for Difable (Disable) Person in Several Location in Bandung Forum Gelar Kota Bandung (City Development Discussion Forum) 2002 : Forum Gelar Kota Secretariat 2001 : Junior Researcher Ikatan Mahasiswa Arsitektur Gunadharma ITB (Gunadharma Student Union of Architecture Department of ITB) 2001 Member of Legislative Bodies of IMA - Gunadharma Member of Sustainable Human Settlement Discussion Group Coordinator of TOR Team of Sustainable Human Settlement Seminar 1999 – 2000 Coordinator of Gradasi (Architecture Bulletin of IMA-G) OSIS SMAK I BPK Penabur (Student Union of BPK Penabur Senior High School) OSIS SMP St Aloysius (Student Union of St Aloysius Junior High School)
Publications	Integration of Sustainable Planning Policy and Design of Low-Cost Apartment, in the Context of Sustainable Urban Development, National Seminar of Low-Cost Apartment, Maranatha University, Bandung, Indonesia, 2009. Bamboos as Sustainable and Affordable Material for Housing as one of alternatife material of Low-Cost Apartment, National Seminar of Low-Cost Apartment, Maranatha University, Bandung, Indonesia, 2009. Guidelines for Developing Polder System in Indonesia, Agency for Research and Development, Institute of Water Resources, Ministry of Public Works, Republic of Indonesia, 2008-2009. Developing a Landscape Evaluation Tool for Developing Countries, Case Studies Bintan Island, Indonesia, MSc Environment Management Program, National University of Singapore (Best Dissertation Award) Report of Research in Accessibility Issue for Difable (Disable) Person in Several Location in Bandung Reports of Bandung Urban Discussion Forum on Urban Solid Waste Management, January 2002. Reports of Bandung Urban Discussion Forum in Housing Needs, August 2001. Thesis of Design Studio, Case of Low Economy Flat for Cibangkong Village, Bandung, Indonesia (Kelurahan Cibangkong), Theme Pattern Language Architecture Seminar Report of Housing Development Based on Low Economy People.