SUSTAINABLE DEVELOPMENT BSD CITY NEWTOWN DEVELOPMENT- Low carbon initiative through City transport model and Green Building

Ir.Ignesjz kemalawarta MBA
Director Sinarmasland

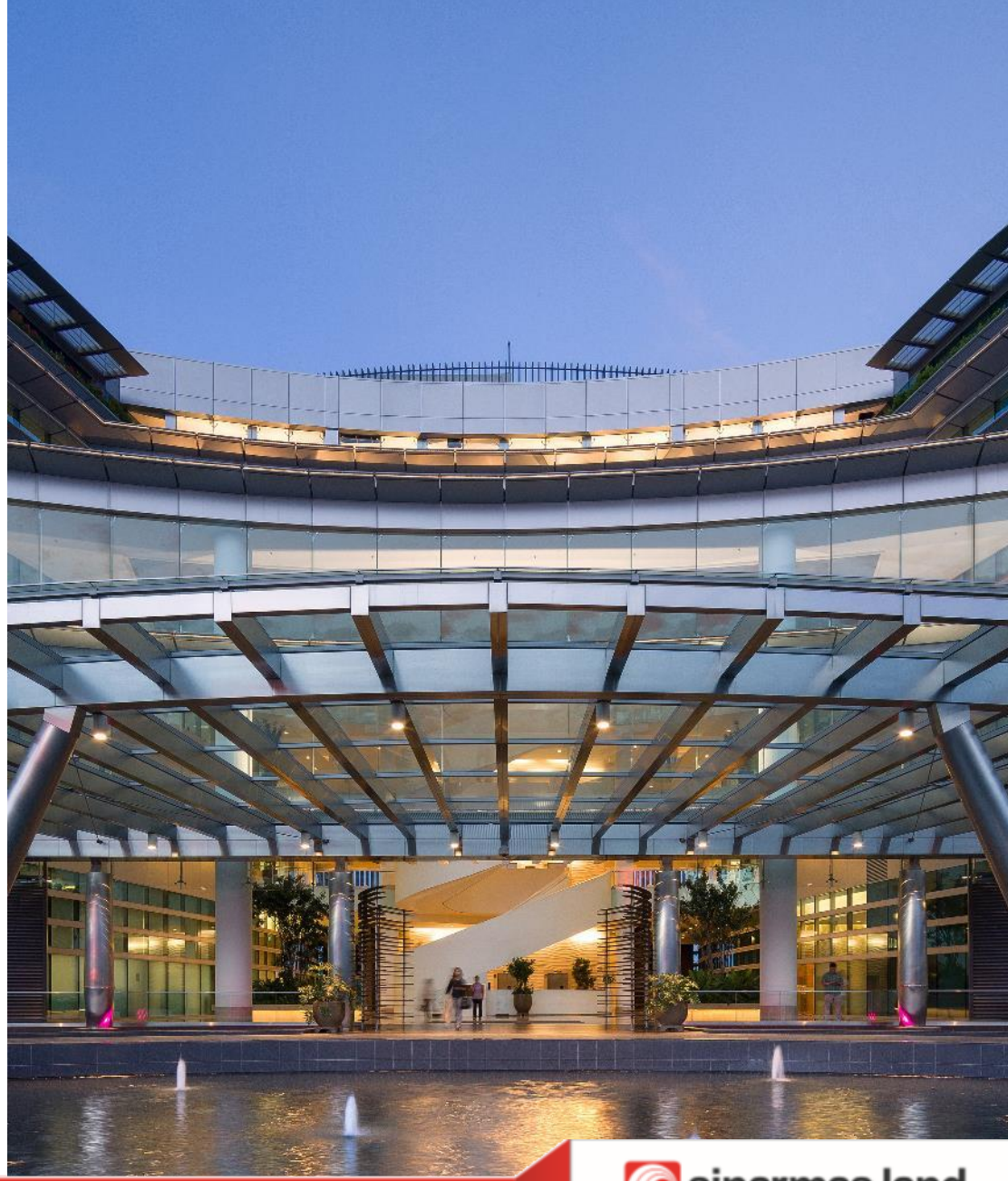
Preparing for
3 rd Annual Meeting Lo CARNet Meeting
Bogor-Indonesia
November 25 th 2014

symbol of New era Sustainable Development
BSD Green Office Park


The Building of Sianrmasland Plaza
Green Building Certificate by Greenmark GOLD 2011
Energy saving
Water saving
Lower CO2 emission 600 t CO2/year

PRESENTATION OUTLINE

1. Sinarmas Sustainable Development and Triple Bottom line
2. BSD City Growth
3. Environmental/ProPlanet Program
4. Corporate Social Responsibility /Pro People Program
5. Project Images



1

Sinarmas

Sustainable Development/ Triple bottom line

REASON WE BUILD **GREEN OFFICE PARK** @ BSD CITY

SUSTAINABILITY

Tomorrow's world

World population in 1960 was 3 billion. In 27 years it had swelled to 5 billion. Today, just 24 more years later the 7 billion mark has been reached and the reality of 9 billion is fast dawning. We believe this pace will translate into highly attractive opportunities to deliver innovative, creative, and sustainable property solutions. **Making the most of our available resources without compromising our future.**

Sinar Mas business pillars

sinarmas

APP pulp and paper products	sinarmas financial services	sinarmas land real estate and development
smart agribusiness and food	smartfren live smart telecommunications	DSS energy and infrastructure

All SinarMas businesses are committed to the highest business, environment and social standards for sustainable, inclusive growth.

It is today one of Asia's leading enterprises, consisting of 6 main business pillars and also undertaking important initiatives in healthcare and education.

In total Sinar Mas creates 380,000 jobs and supports 500,000 additional jobs in In

Corporate organisation, President Office

sinarmas

Board of Trustees
Shareholders. Final Approval of All Major Initiatives

Advisory Board
Enhance Global Credibility and Presence

Business Pillars
President Director, Managing Directors Aligning Business Objectives and Corporate Sustainability Values

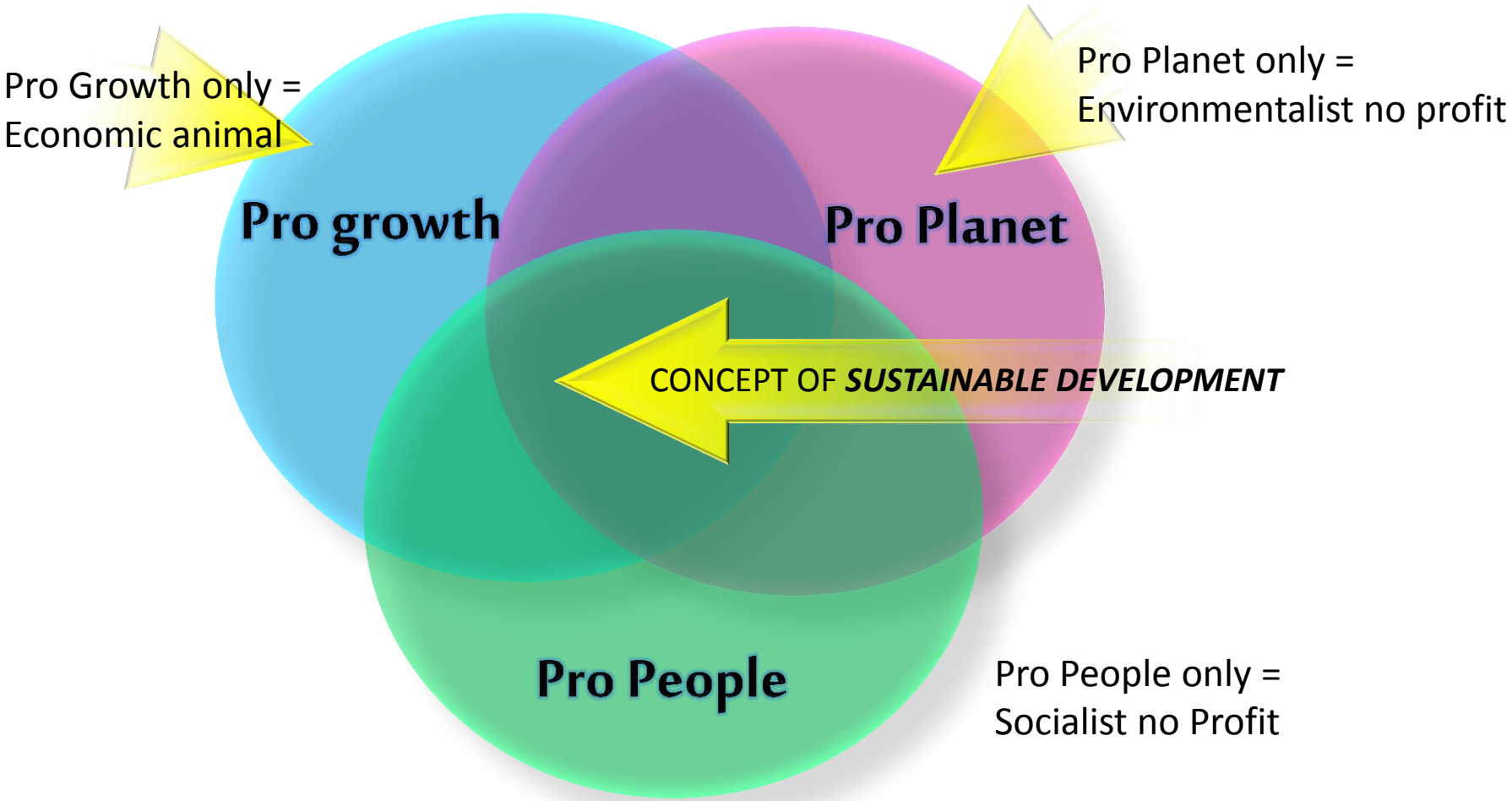
President Office
Coordinates, oversees and supports **Diplomacy** and **Advocacy** activities of the business pillars

Corporate Forum
Responsible to supervise the creation, implementation and communication of Sustainability Strategies and Values, as well as the Integration of strategies and values into all the businesses

Serve the PEOPLE, Work Group (to organize, recommend and carry out key Initiatives)	Save the PLANET, Work Group (to organize, recommend and carry out key Initiatives)	PROFIT & Growth for Better Indonesia, Work Group (to organize, recommend and carry out key Initiatives)
• Promote Education • Support start-up businesses •Community Empowerment • Job Training •Cooking Oil Bazaar (BMG) • Wakaf Al Qur'an	•Protect Forests and support Reforestation •Protect Wildlife and Indonesia's Bio-diversity •Enhance eco-friendly activities • Promote, preserve Indonesia's culture & art • Museum of Sinar Mas founder ETW	• Involve Sinar Mas to develop global solutions • Support bringing together Indonesian, regional and global views and opinion leaders •Promote Sinar Mas to lead research and debate in critical economic, social, environmental topics

Sinarmas Tripple Bottom line

Balance among Pro Growth –Pro Planet – Pro People



sinarmas land

Our **Believe, Vision, Strategy** and **Business Model**

Sinar Mas Land believe on **Endless progress**

Company commitment to build environment that capitalizes on **Knowledge, Technology and Innovation** – for a Better Future

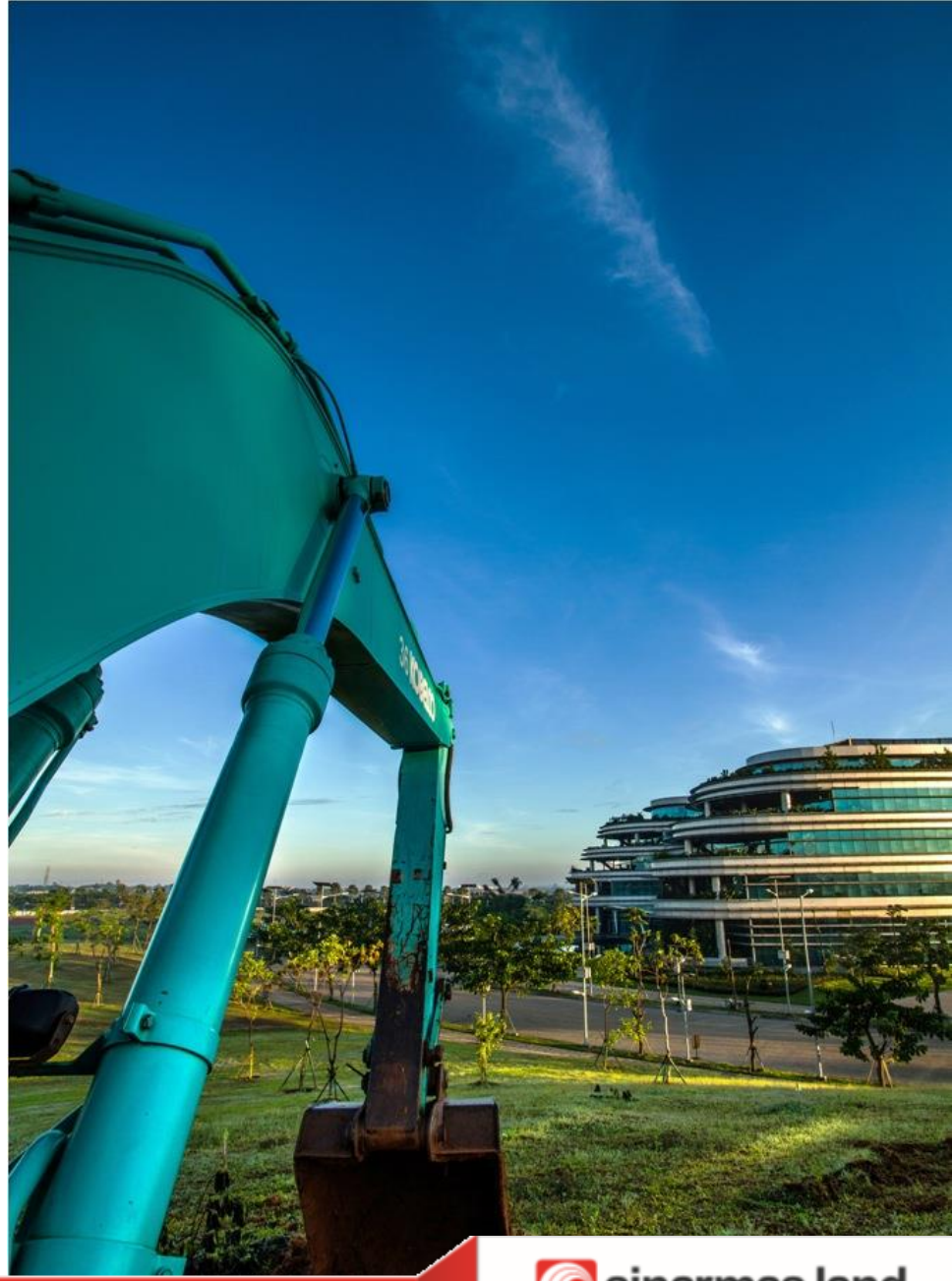
Our **Vision is to become the Leading Property Developer in South East Asia**

Our **Focus to be TRUSTED by our Customers, Employees and other Stakeholders**

Our Portfolio Strategy: **SCALE, DIVERSITY and LONGEVITY**

Our **SUSTAINABLE BUSINESS MODEL** characterized by

- **SCALE** and **LONG-TERM HORIZON ,**
- **CAPTURE BEST GROWTH,**
- **MITIGATE THE RISK** and
- **CAPITALIZE ON THE OPPORTUNITY** through **Property Cycle phases**

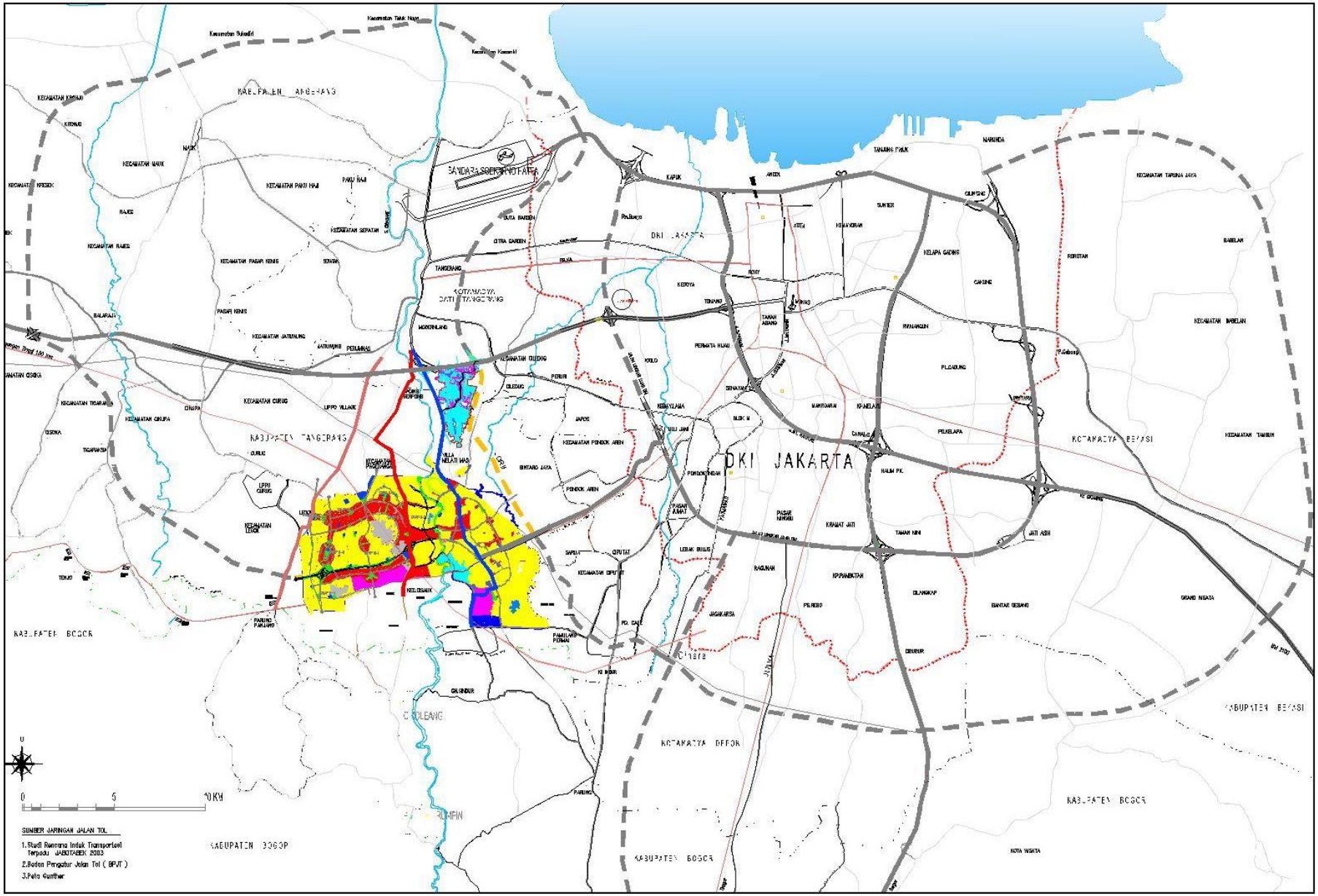


2

BSD City

Growth

BSDCITY LOCATION



BSDCITY

Big City. Big Opportunity

- **Most ambitious Urban Planning project** in Indonesia
- Located in **South West of Jakarta**
- Has been **developed over the last 25 years**
- Combine **housing, business and commercial properties**
- Total area **6,000 ha** (half size of Paris)
- **2,000 ha developed** area, **35,000 houses, 180,000 people**
- **+/- 30 min from City Center , Accessible from 2 major toll roads** (Kebon Jeruk & Pondok Indah)

BSD City Development

- POPULATION FOR 1 MIL PEOPLE
- HIGH QUALITY PRODUCT
  (RESIDENTIAL,COMMERCIAL,INDUSTRIAL)
- ACCESS TO JAKARTA
  (TOLL ROAD,TRAIN,REGIONAL ROADS)
- CITY FACILITIES
  (CAMPUS,SHOPPINGMALL,GOLF COURSE, CONVENTION CENTRE, HOTEL, ENTERTAINMENT etc)

BSD CITY NEWTOWNSHIP INITIAL DEVELOPMENT (1989-2006)










Priority In Regional and Local Infrastructure, Small Housing And Basic Facilities

Growing The City

Housing Development (Small-middle-high), Offices,Industrial Area, Entertainment Centre, Modern Market, Hotel





Wisma BCA Office

Entertainment

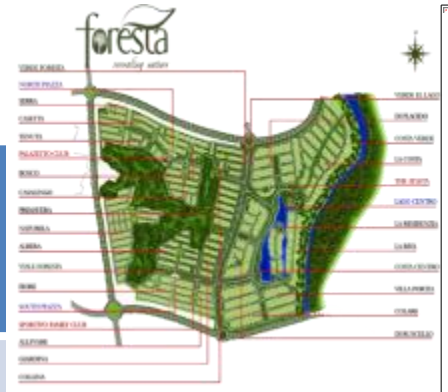
Santika Hotel

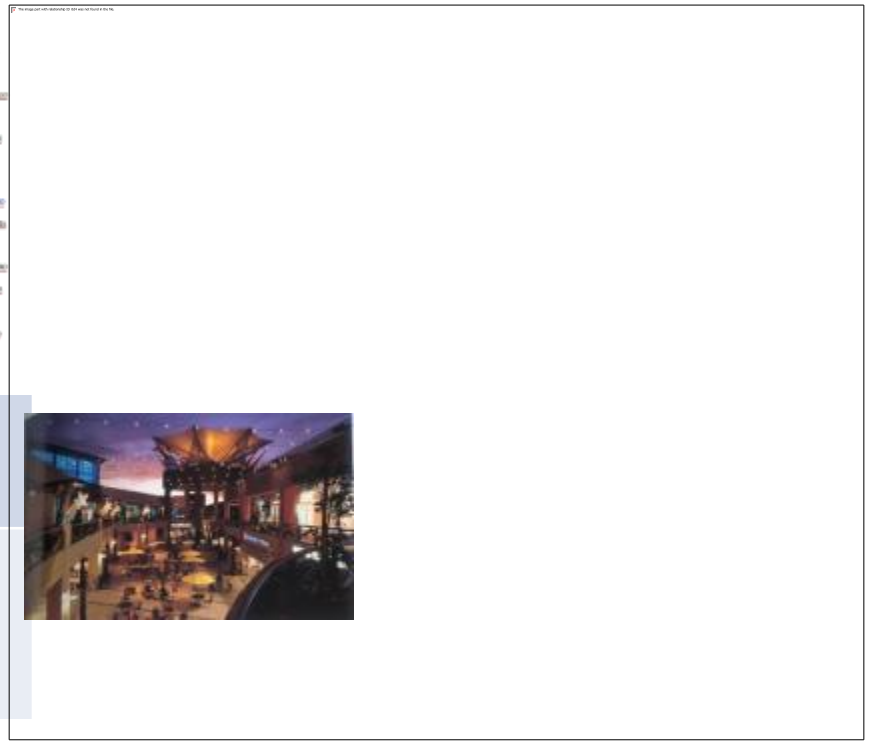
Bank BNI BSD
Kanwil baru

OCEAN PARK

GERMAN CENTRE

Newtown Acceleration Stage(2007-2020)





→ New Marketing Office ,
→Housing Clusters (Foresta, De'Park, Icon, Avani dst.)
→BSD Green Office Park
→Sinarmas land Plaza (Head Office)
→Shopping mall

→Campus Development
Swiss German University,
Prasetiya Mulia Business School,
Atmajaya University
→Office Development

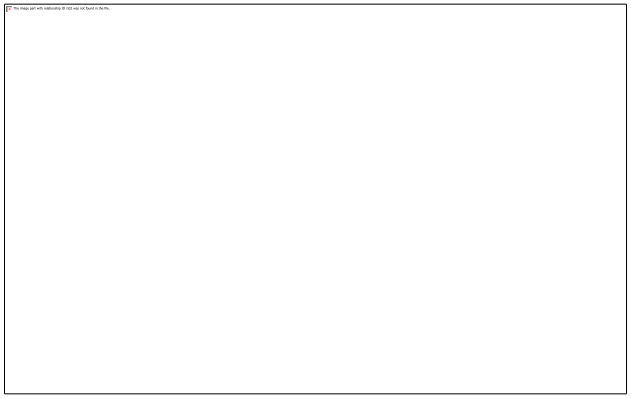
COX DESIGN ON CONVENTION CENTRE IN BSD CITY

The Breeze and Shopping Mall - BSDCity

breeze bsd city

Casa de Parco Apartment @ BSDCity

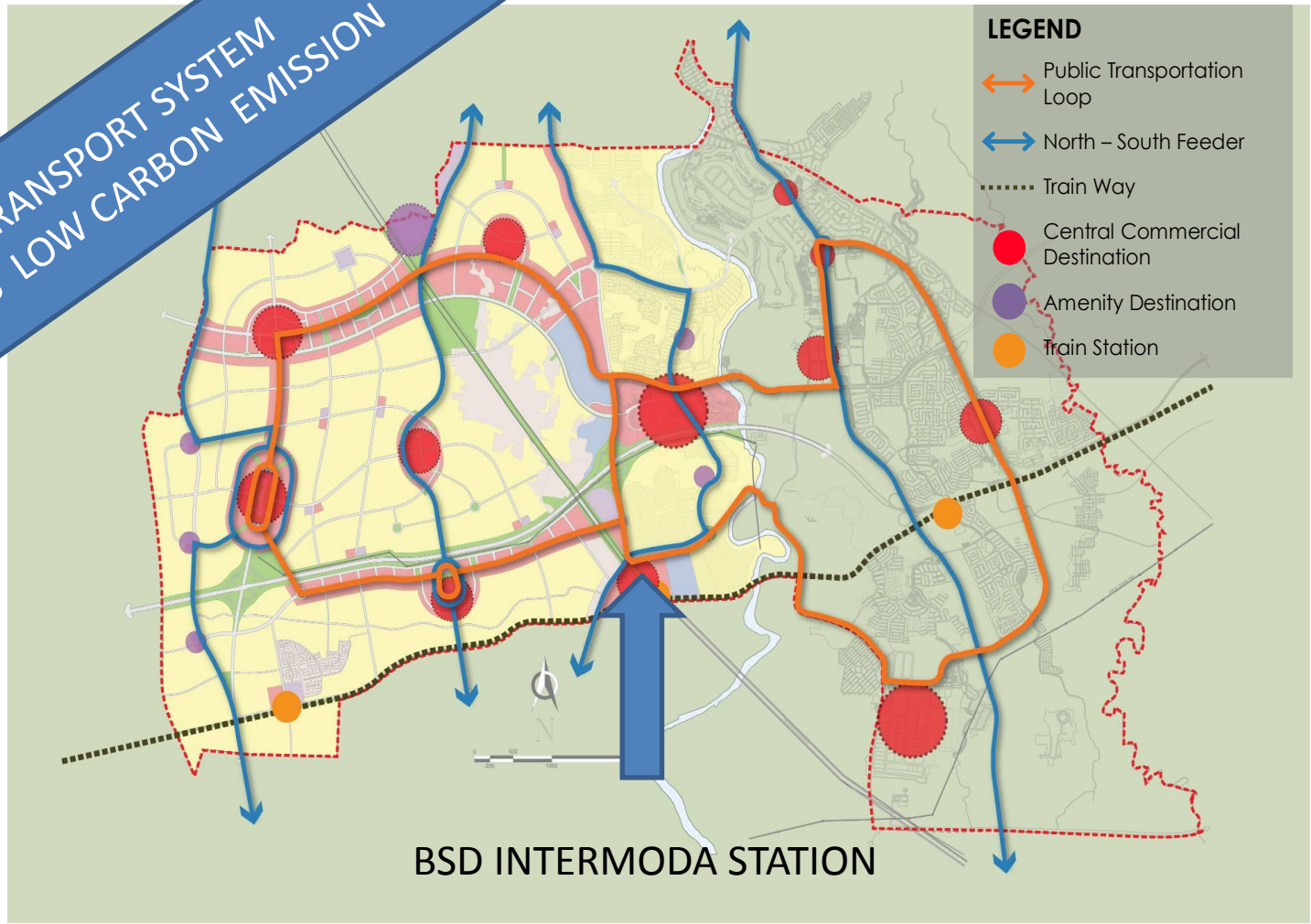
NAVA Park @ BSDCity



Intermoda Transportation Supported By Commercial Facilities

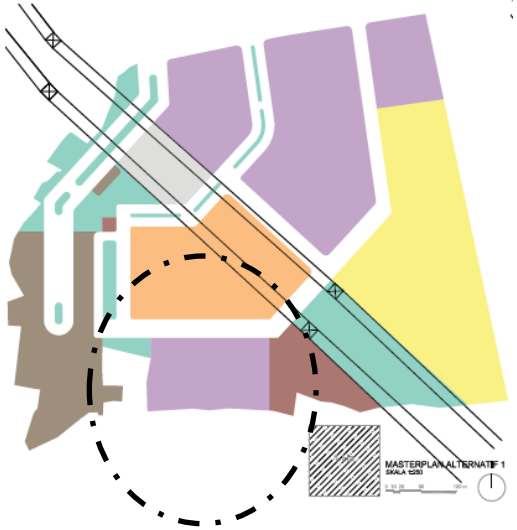
1

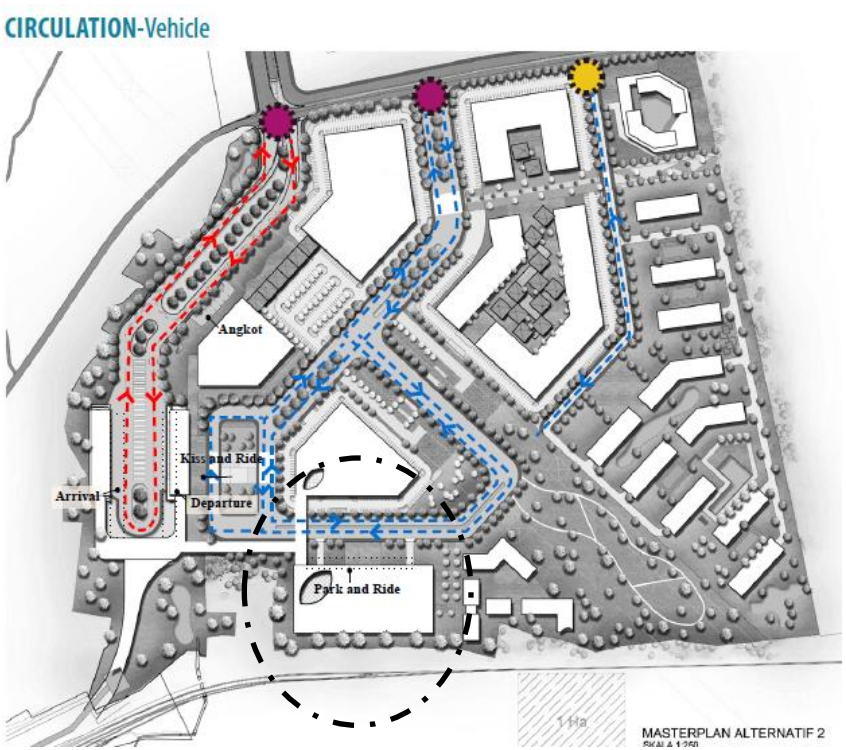
CITY TRANSPORT SYSTEM TOWARDS LOW CARBON EMISSION



LOOP TRANSPORT SYSTEM WITH GOOD PUBLIC TRANSPORT + USING TRAIN BSD –JAKARTA WILL REDUCE CO2 IN DEVELOPMENT AREA

BSD CITY INTERMODA PRELIMINARY CONCEPT





BSD CITY INTERM0DA

3 MAIN FUNCTION

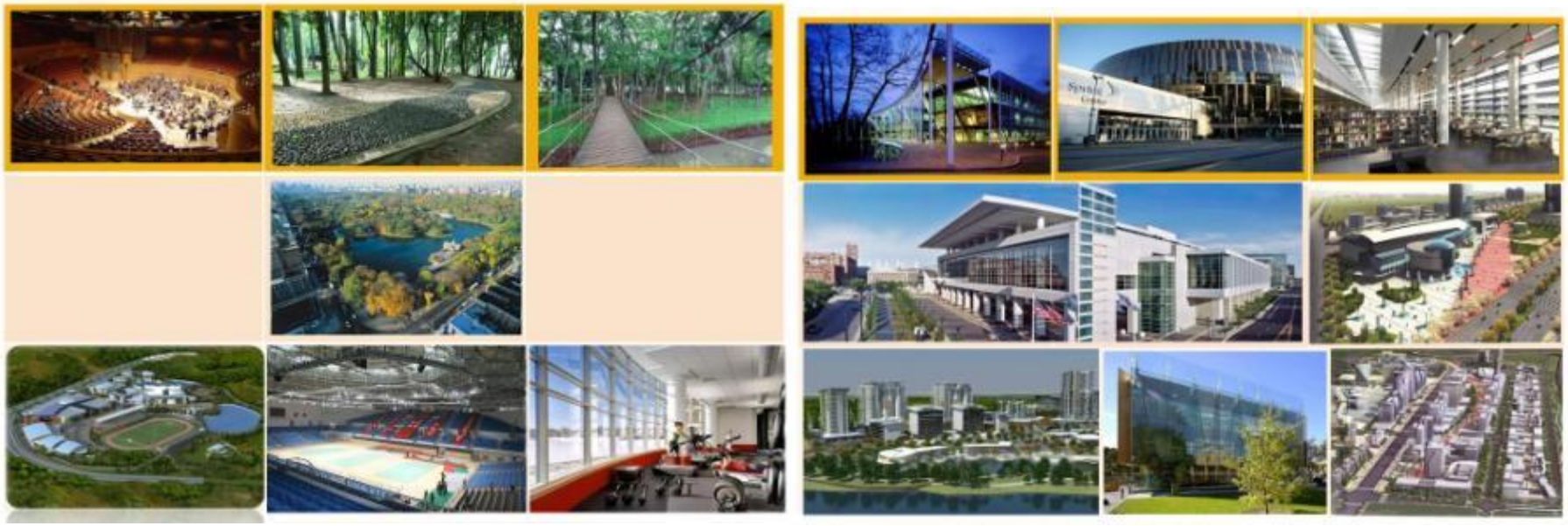
1. TRANSPORTATION HUB AND MOVEMENT AMONG TRANSPORTATION MODA
2. COMMERCIAL
3. LIVING (MULTISTOREY APARTEMENT)

CONCEPT PLAN OF BSD INTERMODA STATION

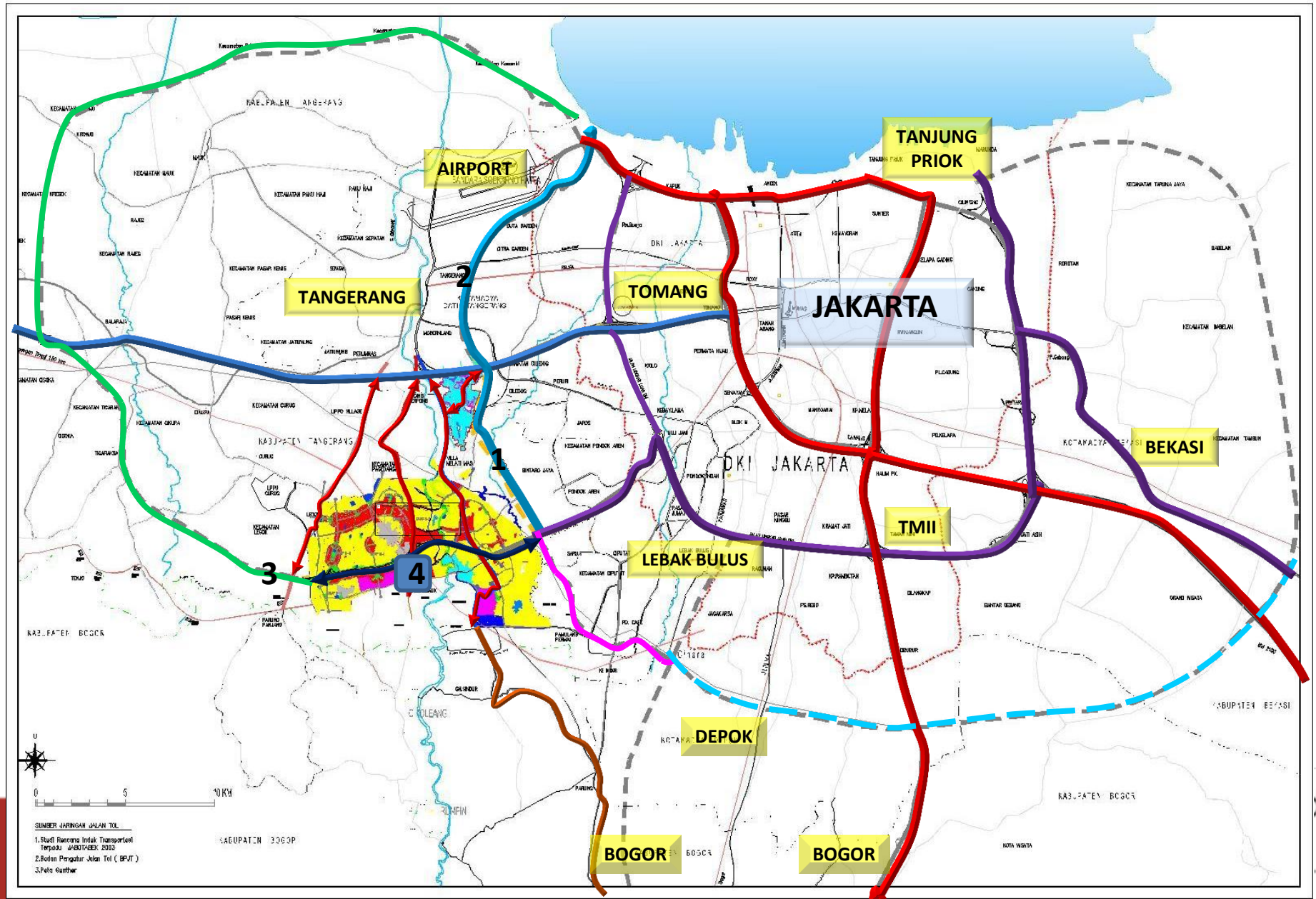
BSD HOUSE→ CAR/PUBLIC TRANSPORT
→INTERNAL LOOP SYSTEM →
→INTERMODA STATION→TRAIN →
→JAKARTA TRANSPORT SYSTEM/
→MRT→ BSD

MINIMIZE CARBON PRINT THROUGH MINIMAL USE OF CAR AND TO PUSH USING PUBLIC TRANSPORT SYSTEM

BSD City Establishment Stage (2021-2035)



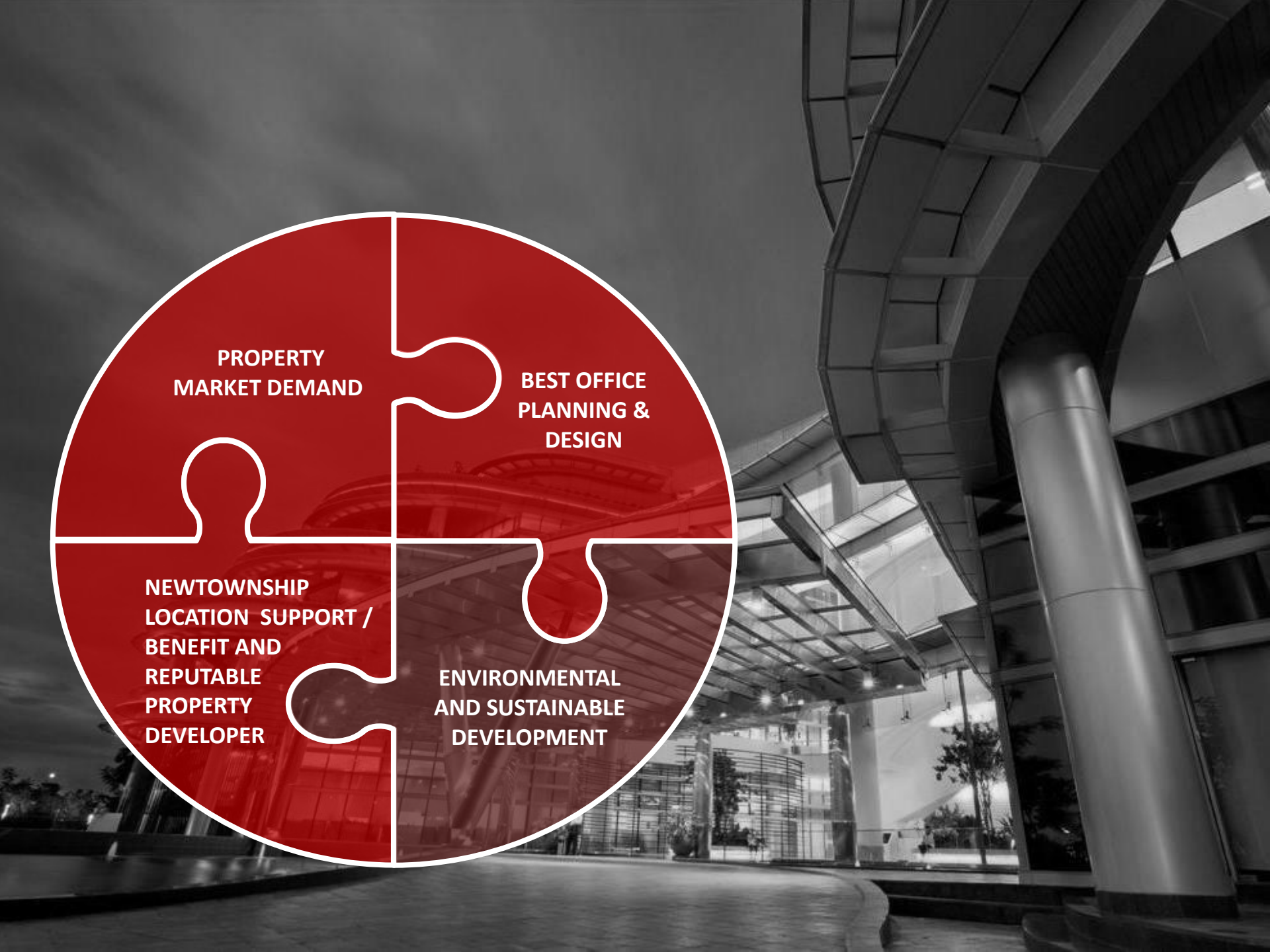
- City Parks,
- Convention And Culture Centre,
- Sport /Stadion
- Recurring Income Projects
- Stadium Facility


AIRPORT
TANJUNG PRIOK
TANGERANG
TOMANG
JAKARTA
BEKASI
TMII
LEBAK BULUS
DEPOK
BOGOR
BOGOR
1
2
3
4
DKI JAKARTA
KABUPATEN TANGERANG
KABUPATEN BOGOR
KABUPATEN BEKASI
SUMBER JARINGAN JALAN TOL
1.Studi Rencana Induk Transportasi Terpadu JABOTABEK 2003
2.Badan Pengatur Jalan Tol (BPJT)
3.Peta Gunther

3

Environmental/

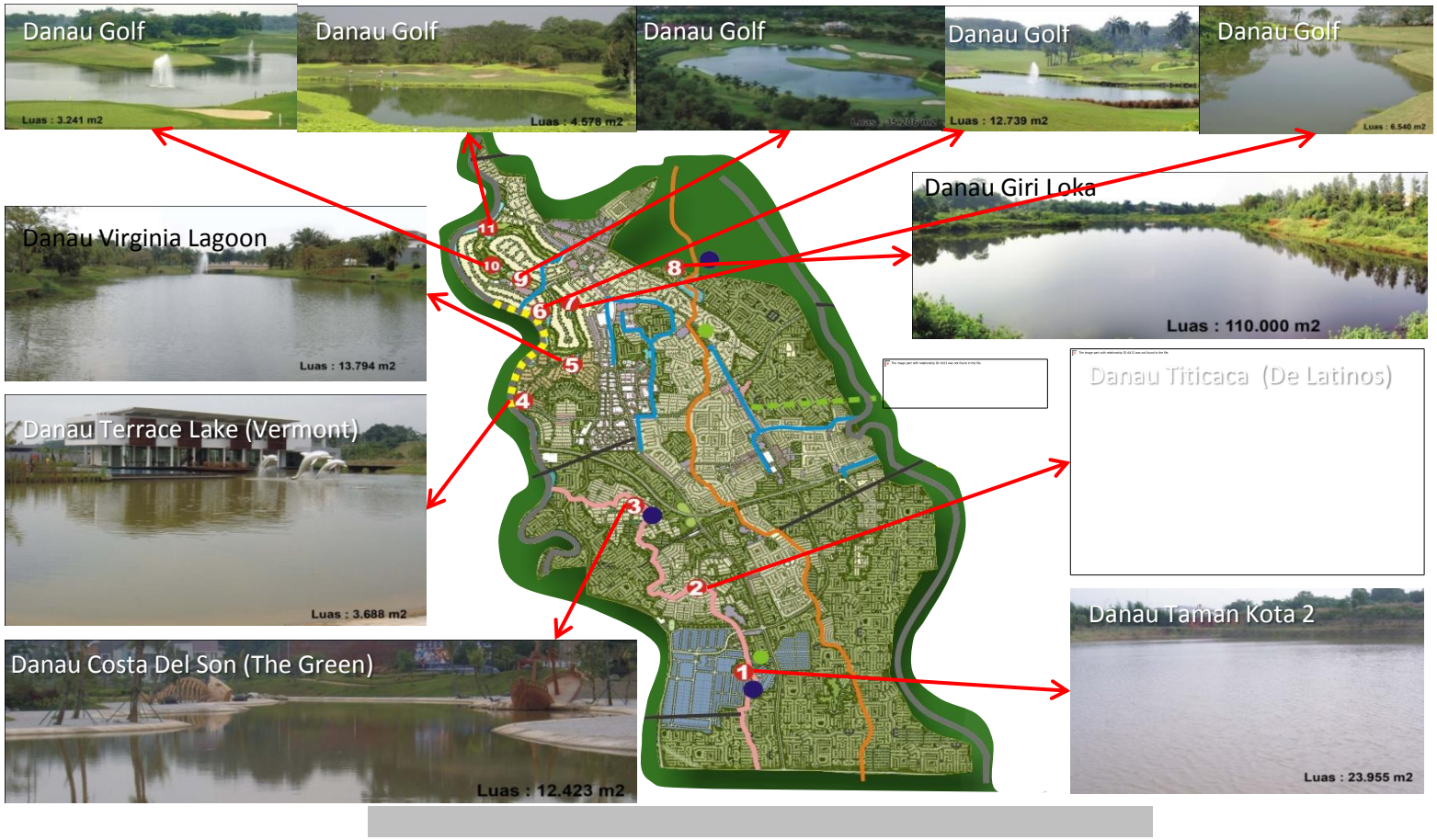
Pro Planet program


PROPERTY
MARKET DEMAND
BEST OFFICE
PLANNING &
DESIGN
NEWTOWNSHIP
LOCATION SUPPORT /
BENEFIT AND
REPUTABLE
PROPERTY
DEVELOPER
ENVIRONMENTAL
AND SUSTAINABLE
DEVELOPMENT

ENVIRONMENTAL PROTECTION THROUGH GREEN DEVELOPMENT APPROACH

1. WATER RECHARGE /STORM WATER MANAGEMENT
2. **ENERGY SAVING AND WATER SAVING THROUGH GREEN BUILDING PROGRAM**
3. **CO2 REDUCTION TOWARDS LOW CARBON DEVELOPMENT**
4. RESPONSIBLE BUILDING MATERIAL USED
5. CASE STUDY SINARMASLAND PLAZA

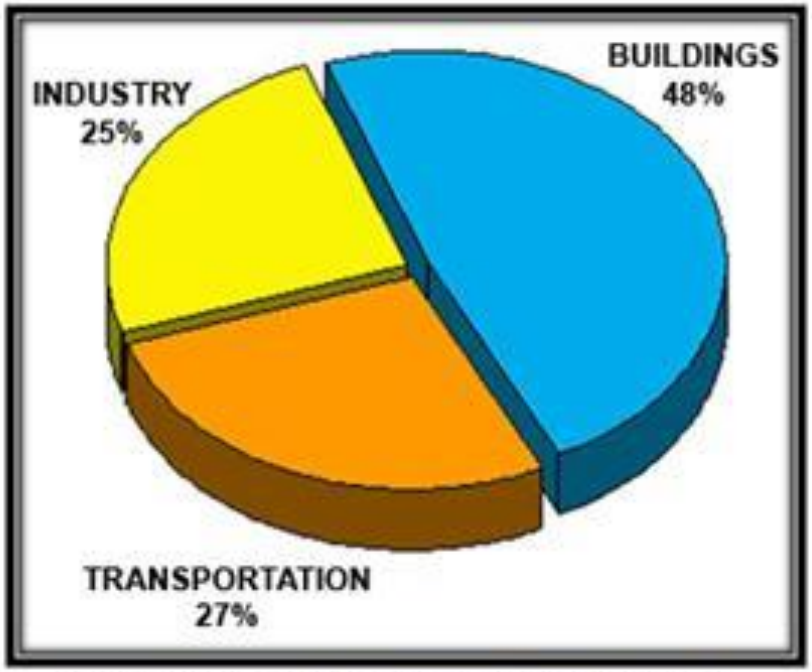
1. WATER RECHARGE—
11 LAKES IN BSD STAGE I



2.ENERGY SAVING AND WATER SAVING PROGRAM

A. GREEN BUILDING PROGRAM
B. START TO USE RENEWABLE ENERGY SOURCE
C. ENERGY AND WATER SAVING FROM GREEN BUILDING

WORLD ENERGY CONSUMPTION



Building Sector is the greatest contributor to the World Energy Consumption = 48%

Data: US Energy Information Administration

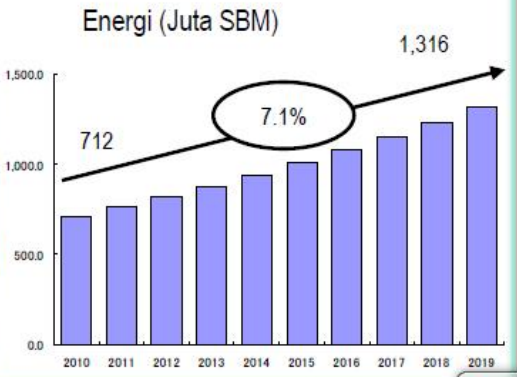
KEBUTUHAN ENERGI TERUS MENINGK

Pertumbuhan Ekonomi

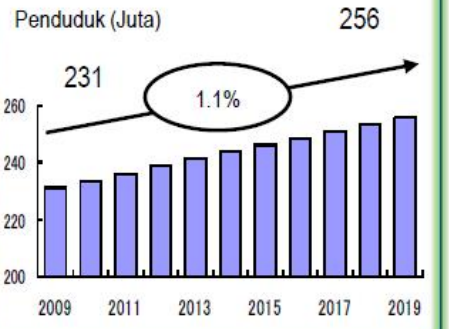
- BBM : 48%
- BB : 27%
- GAS : 21%
- EBT : <5%

FOSIL >95% (2011)

Pertumbuhan Kebutuhan Energi



Pertumbuhan Penduduk



SUBSIDI ENERGI SANGAT TINGG

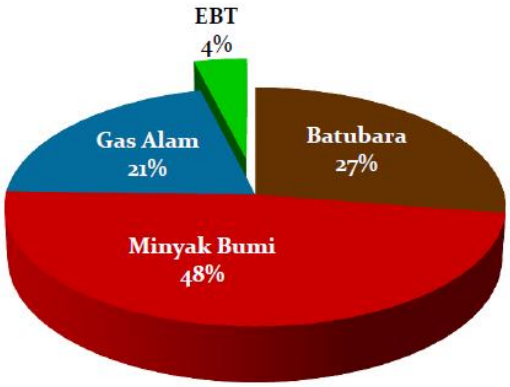
- TOTAL : Rp 310 T
- BBM, LPG, BBN : Rp 210 T
- LISTRIK : Rp 100 T

2013

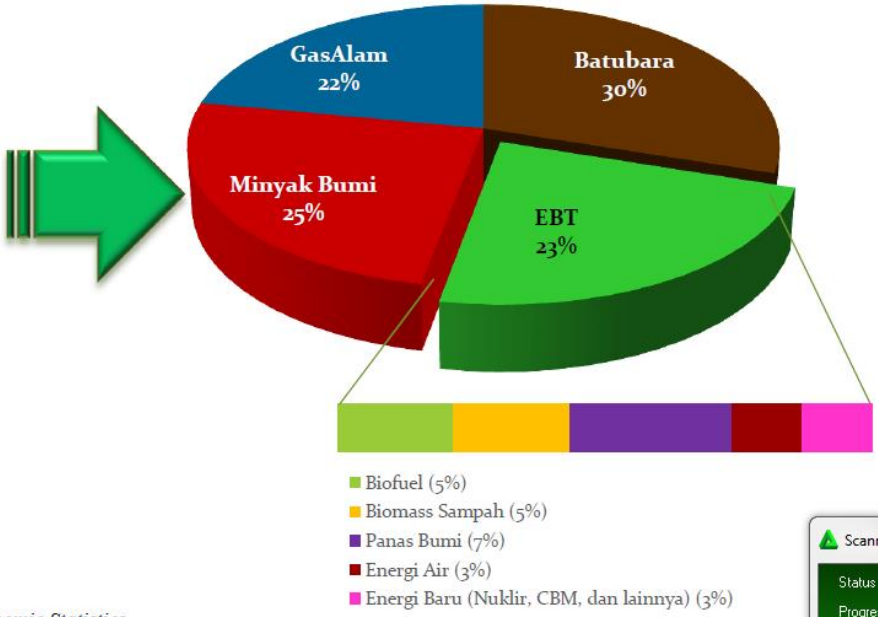
Gambar grafik diolah berdasarkan draft Kebijakan Energi Nasional

KONDISI & TARGET BAURAN ENERGI PRIME

KONDISI SAAT INI TAHUN 2012

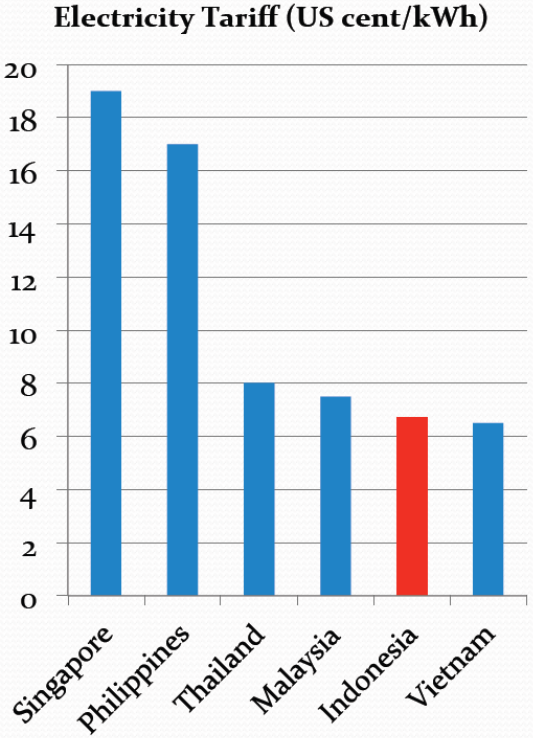


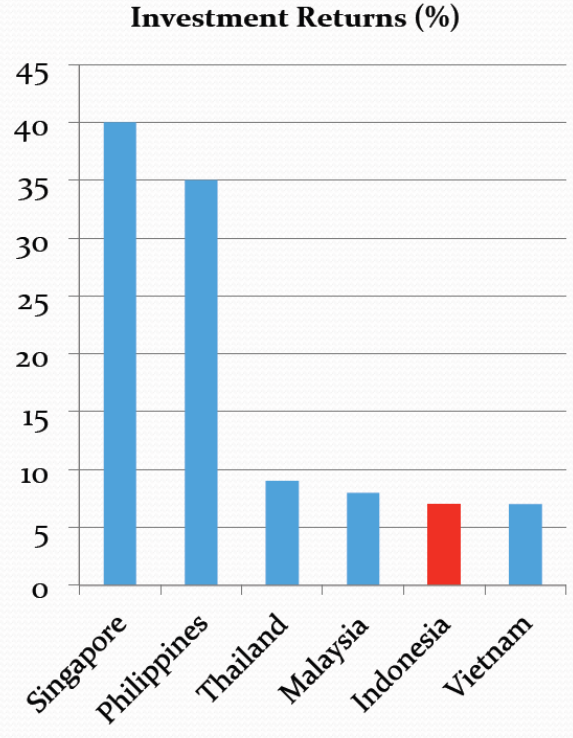
TARGET TAHUN 2025 DRAFT KEBIJAKAN ENERGI NASIONAL



Keterangan:
- Kondisi saat ini berdasarkan *Handbook of Energy & Economic Statistics of Indonesia* 2013
- Tidak termasuk biomass dan penggunaan non-energy

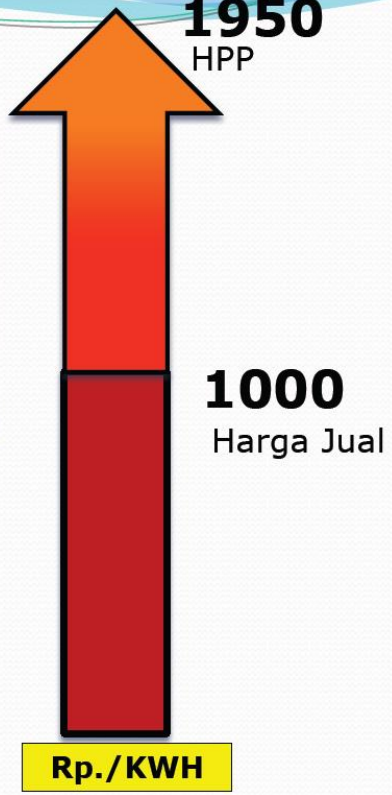
- Penurunan Intensitas Energi 1% per tal
- Elastisitas energi kurang dari 1 pada 202
- Mengoptimalkan Sumber Energi Baru dan





Catriona McLeod, CFA - , ReEx Capital Asia in ACEF Conference 2011, Manila

Harga listrik PLN

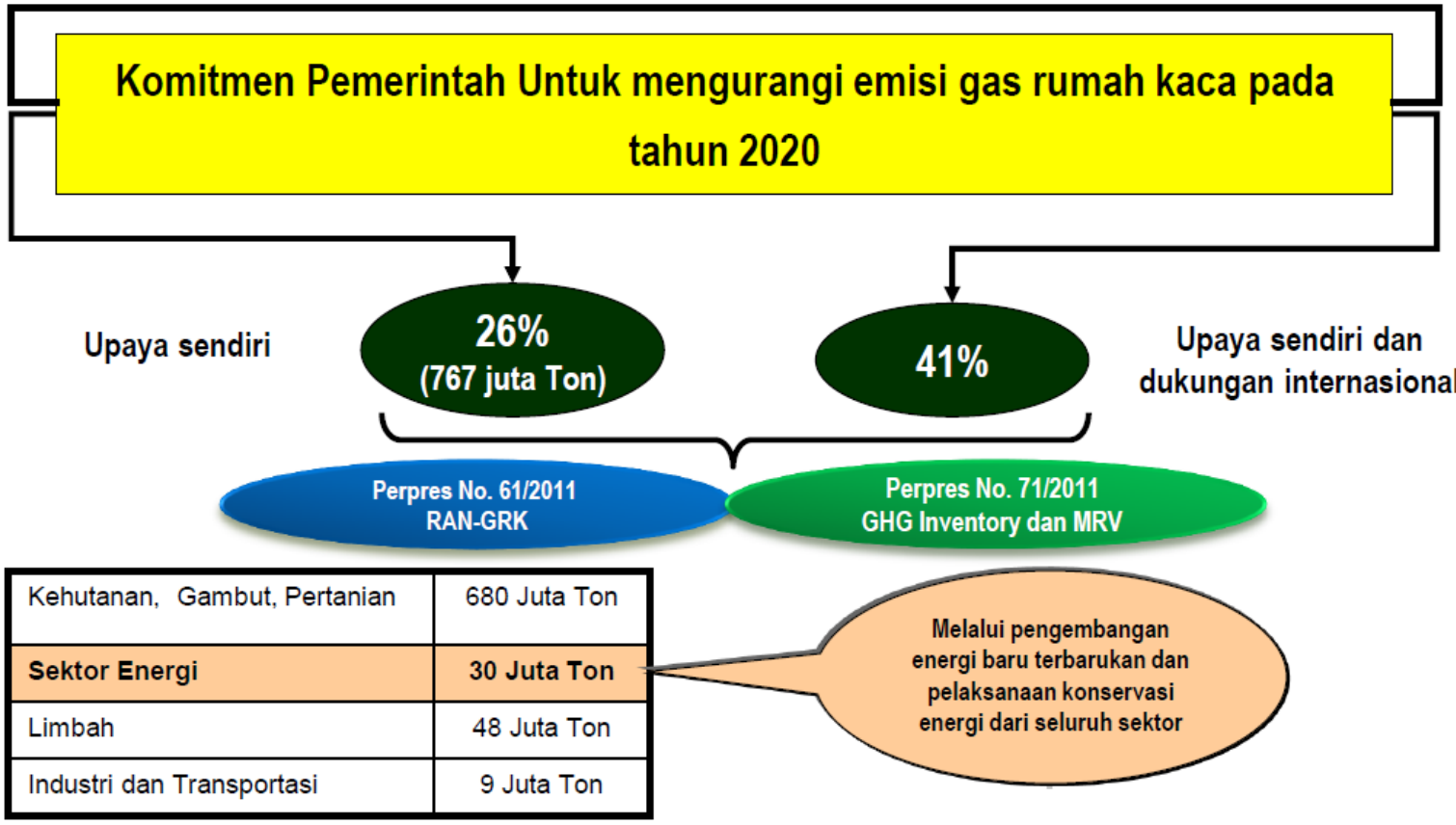


POTENSI PENGHEMATAN ENERGI

Sektor	Konsumsi Energi Per Sektor Tahun 2012 (Juta SBM) *)	Potensi Penghematan Energi	Target Penghematan Energi Sektoral (2025)
Industri	305 (39,7%)	10 – 30%	17%
Transportasi	311 (40,4%)	15 – 35%	20%
Rumah Tangga	92 (12%)	15 – 30%	15%
Bangunan/ Komersial	34 (4,4%)	10 – 30%	15%
Lainnya (Pertanian,Konstruksi, dan Pertambangan)	26 (3,4%)	25%	-

Sumber: *Draft* Rencana Induk Konservasi Energi Nasional (RIKEN) 2011

Keterangan:
- Tidak termasuk biomass dan penggunaan non-energi
- *) Angka sementara sampai dengan Desember 2013


Komitmen Pemerintah Untuk mengurangi emisi gas rumah kaca pada tahun 2020
Upaya sendiri
26%
(767 juta Ton)
41%
Upaya sendiri dan dukungan internasional
Perpres No. 61/2011
RAN-GRK
Perpres No. 71/2011
GHG Inventory dan MRV
Kehutanan, Gambut, Pertanian
680 Juta Ton
Sektor Energi
30 Juta Ton
Limbah
48 Juta Ton
Industri dan Transportasi
9 Juta Ton
Melalui pengembangan energi baru terbarukan dan pelaksanaan konservasi energi dari seluruh sektor

KEBIJAKAN UTAMA

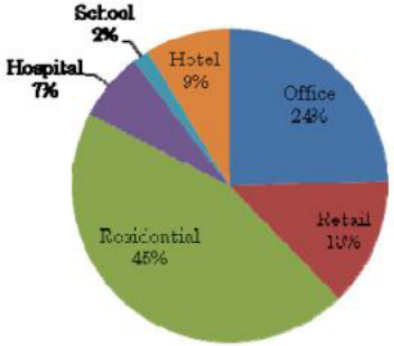
Diversifikasi Energi untuk meningkatkan pangsa energi baru terbarukan dalam bauran energi nasional (***Supply Side***).

Konservasi Energi untuk meningkatkan efisiensi penggunaan energi di sisi suplai dan pemanfaatan (***Demand Side***), antara lain sektor industri, transportasi, rumah tangga, dan komersial

KONSUMSI & POTENSI PENGHEMATAN ENERGI SEKTOR BANGUNAN GEDUNG

Konsumsi Energi di Subsektor Bangunan Gedung (Jakarta)

Building Type	Energy consumption (kWh/annum)
Office	3,362,819,859
Retail	1,830,617,976
Residential	6,153,347,430
Hospital	965,958,630
Hotel	1,199,195,823

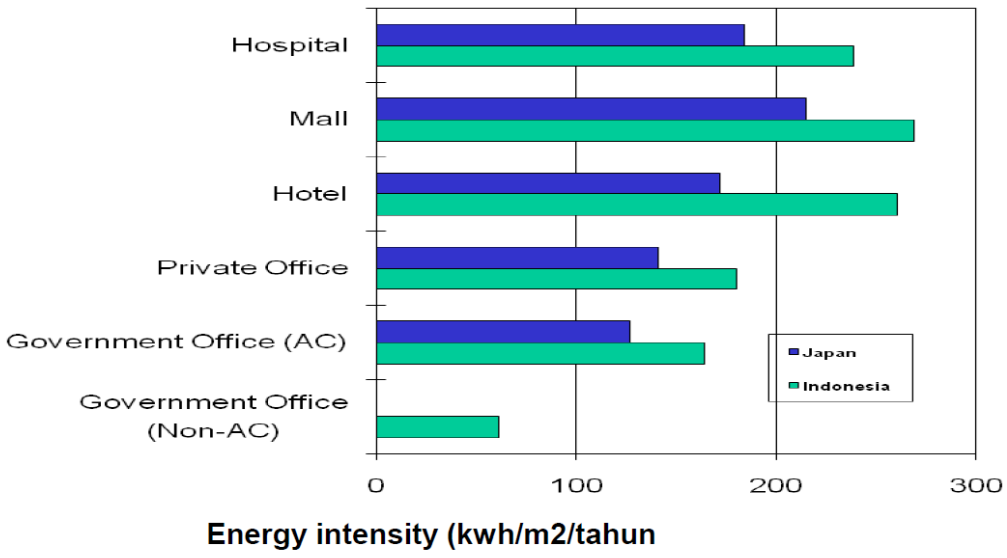


Potensi Penghematan di Subsektor Bangunan Gedung (%) (Jakarta)

Assumption for potential energy savings	>5 yrs (Building age)	<=5 yrs (Building age)
Office	20.5	15.5
Retail	21	16.5
Residential	15	12
Hospital	22.5	18
Hotel	25.5	19.5

Sumber: Studi KESDM JICA, 2012

INTENSITAS ENERGI DI SEKTOR BANGUNAN GEDUN

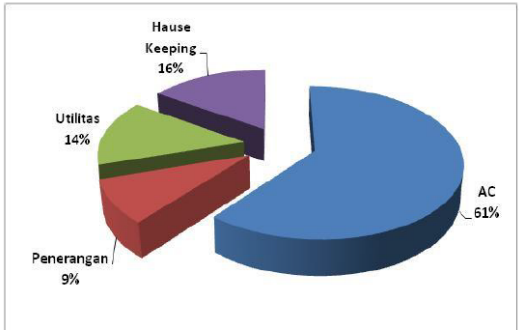


ATEGI PENGHEMATAN ENERGI PADA BANGUNAN GE

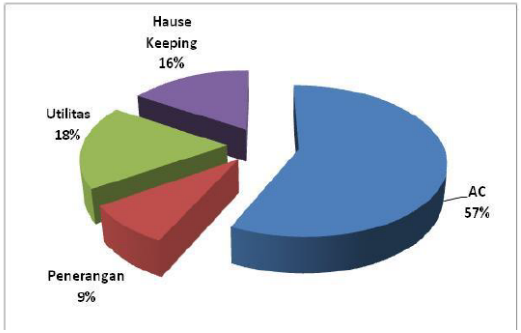
Fokus penghematan energi pada gedung ada pada:

- **Sistem AC**
- **House Keeping**
- **Utilitas**
- **Sistem Penerangan**

Distribusi Potensi penghematan energi



Distribusi Potensi penghematan biaya



A. **GREEN BUILDING** by ENERGY SAVING, WATER SAVING, ENVIRONMENTAL FRIENDLY MATERIAL AND CONSTRUCTION, WASTE MANAGEMENT

1. **Reduce heat into the building and land** by Implementation of Low–E Glass and material with high albedo
2. **Water saving** fixtures
3. **Energy saving** : Using Fotovoltaic In German School Building, Traffic Light, streetlight at BSD Green Office Park, Ice Colled Capacitor For Air Condition System In German School
4. **Waste management** : Biofill Septictank Standardization
5. **Health & Comfort** : Window To Wall Ratio > 25% In Housing

implementation of green building using green building criteria(Greenship,Greenmark)

ISSUES

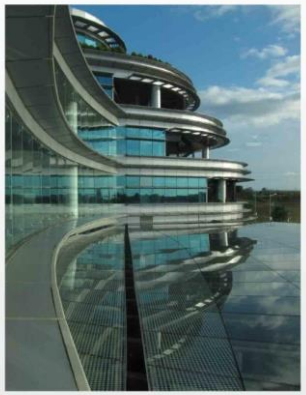
	LEED		Green Mark		GREENSHIP	
Categories	**No. of Credit**	**%**	**No. of Credit**	**%**	**No. of Credit**	**%**
Sites	26	23,6%	-	-	17	16,83%
Water	10	9,1%	14	10 %	21	20,79%
Energy	35	31,8%	79	56,3%	26	25,74%
Material	14	12,3%	-	-	14	13,86%
IEQ	15	13,6%	8	5,6%	10	9,9%
Management	-		32	22,7%	13	12,87%
Innovation	6	5,5%	7	5,4%	-	-
Reg. Priority	4	3,6%	-	-	-	-
TOTAL	**110**		**140**		**101**	

2

GREEN BUILDING EFFORT TO CONTRIBUTE LOW ARBON DEVELOPMENT

GREEN BUILDING CERTIFIED IN BSD CITY

BSD Green Office Park South Tangerang



Sinar Mas Land Plaza South Tangerang

Prasetiya Mulya Business School South Tangerang

BNI South Tangerang

GOP 6 South Tangerang

Institut Teknologi dan Sains Bandung

GOP 9 South Tangerang

BSD Strata Office South Tangerang

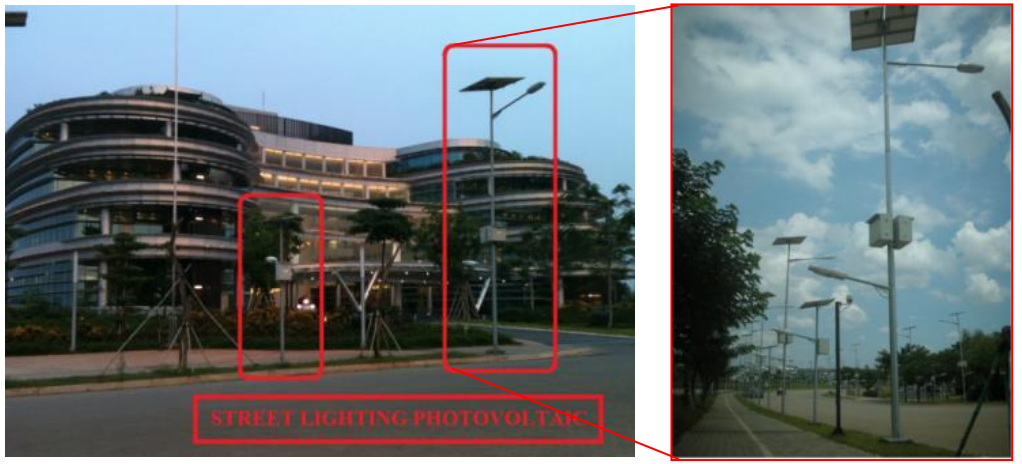
20 GREEN BUILDING CERTIFIED IN BSD

- TARGET FOR 20 CERTIFIED GREEN BUILDING
- ENERGY SAVING 20* 60KWH/M2/YEAR
- WATER SAVING 30*360 l/year/PEOPLE
- NO CO2 EMISSION 20* 1000 TON/YEAR

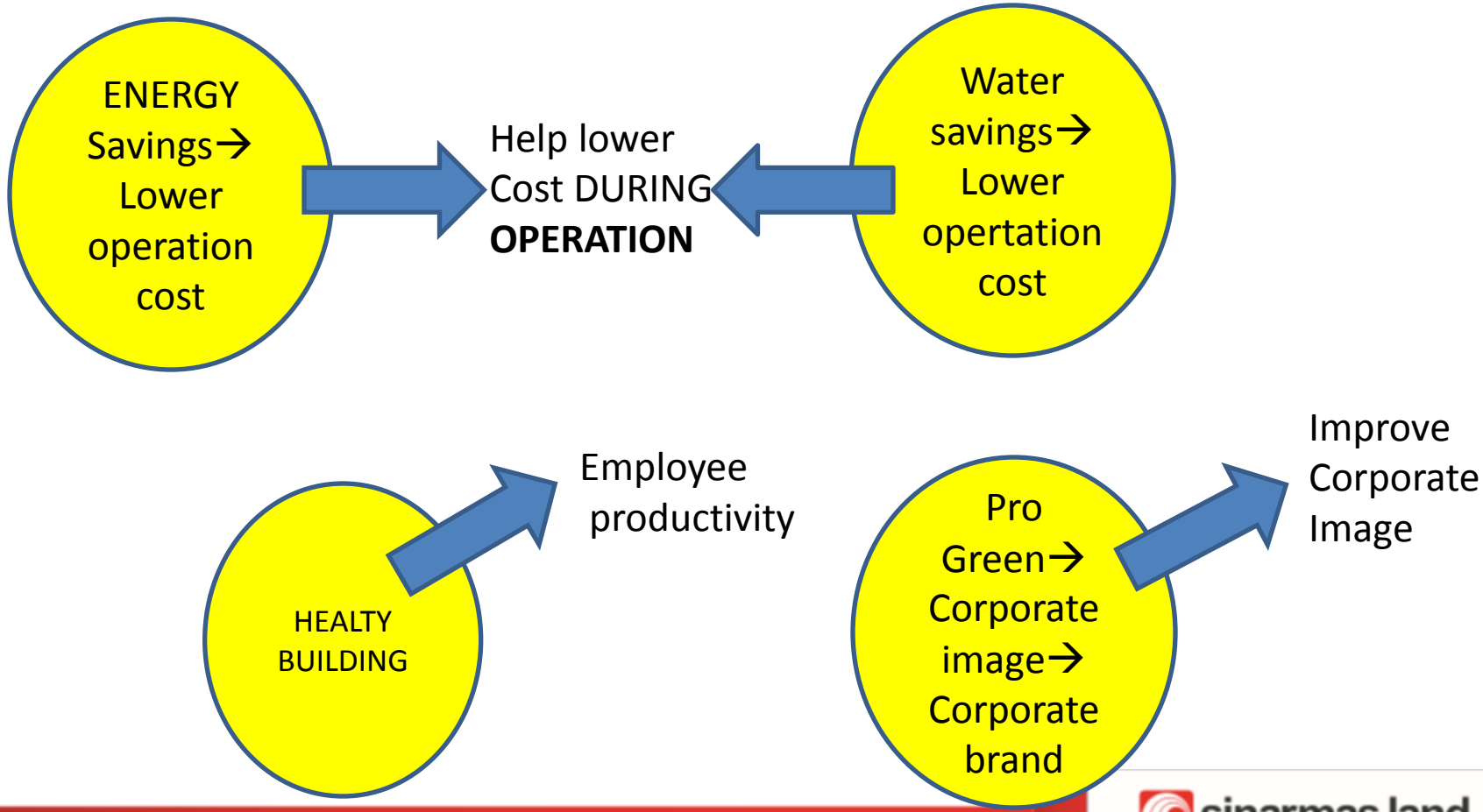
SINARMAS LAND PLAZA
BSD City, Indonesia

B. START TU USE RENEWBLE ENRGY FOR STREET LIGHTING

- Energy consumption 126 kwh/m2/year.
- Renewable energy used in the Photovoltaic LED street lightings



C. ENERGY AND WATER SAVING FROM GREEN BUILDING



ENERGY SAVING FROM

1. **MICRO CLIMATE TO MAKE SITE COOL**
   (BUILDING ORIENTATION+ WIND DIRECTION+LANDSCAPE+ BUILDING HEIGHT)
2. **PASIVE COOLING EFFORT**
   (ORIENTATION,MATERIAL,GLASS)
   LOWEST OTTV CALCULATION
3. **HVAC→ LOWEST W/TR or HIGH COP**
4. **LIGHTING→ LOWEST W/M2** FOLLOW LUX STANDARD,SENSOR etc
5. **CHOOSE ME EQP** (LIFT,ESCALATOR ,PUMPS) THAT HAVE ENERGY SAVING PLUS PROPER COMISSIONING FOR ALL ME EQUIPMENTS

→ LOWEST ENERGY STRUCTURE WITHIN THE BUILDING

CONTOH AC (ENERGI TERBESAR DALAM BANGUNAN)__> KW/TR

EEC 1

EFISIENSI DAN KONSERVASI ENERGI
ENERGY EFFICIENCY AND CONSERVATION

Tabel 28. Nilai COP yang direkomendasikan dalam SNI 6390 : 2011

Jenis Peralatan	Kapasitas unit	Sub Katagori	Efisiensi Minimum	
			COP	kW/TR
Split	<65.000(Btu/jam)	-	2,7	1,303
Value Refrigerant Value	-	-	3,7	0,951
Split Duct	-	-	2,6	1,353
Pendinginan Udara	< 150 TR	Recip	2,8	1,256
		Screw	2,9	1,213
	> 150 TR	Recip	2,8	1,256
		Screw	3	1,172
Pendinginan Air	< 150 TR	Recip	4	0,870
		Screw	4,1	0.858
	> 150 TR	Recip	4,26	0,826
		Screw	4,40	0,799
	>300 TR	Centrifugal	6,05	0,581

WATER SAVINGS FROM

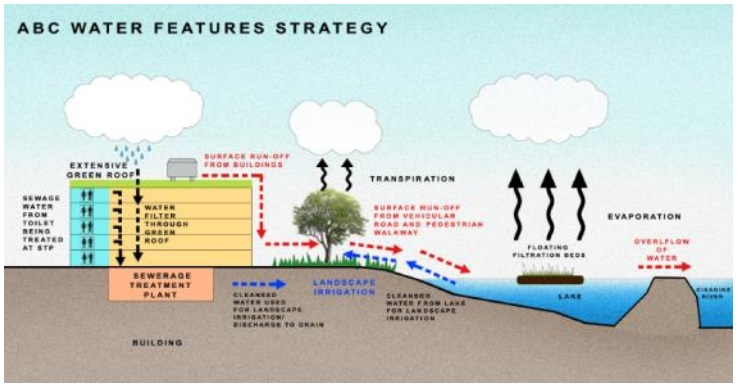
- USING MOST **LOW FLOW RATE** FOR WATER FEATURE
- USING **RECYLE WATER** FOR FLUSHING,POURING LANDSCAPE AND MAKE P COOLING TOWER(NOT USE PRIMARY/EXPENSIVE WATER PRICE)
- **ADD PRIMARY** WATER FROM RAIN WATER BY FILTERING BEFORE TO GWT→ KURANGI PASOKAN PAM

Water management

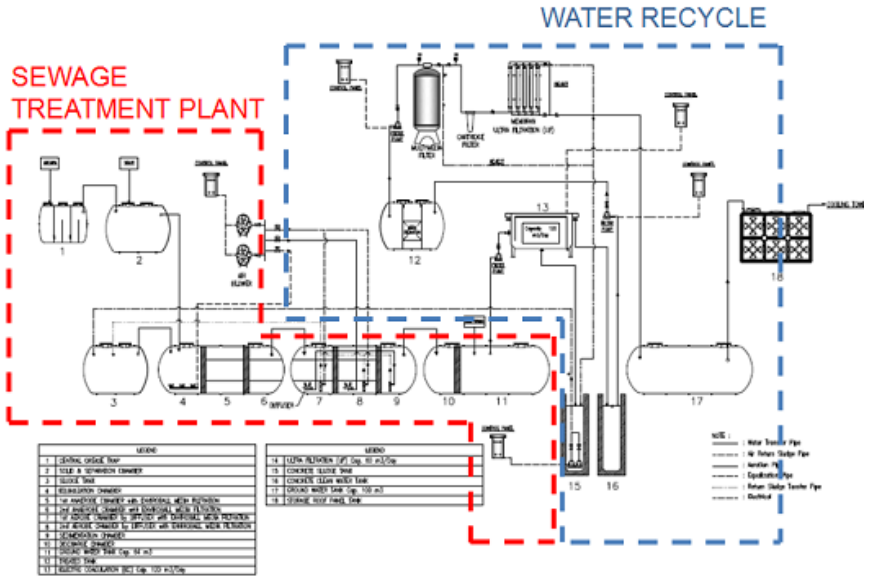
- Using sensors, dual flush, water saving toilets and fixtures.
- Infiltration wells around the building.
- Rain water and disposed water are recycled and reused for make up cooling tower.
- Waters savings reached 23% lower compared to similar code complaint office building.
- Water efficiency management.
- Overflow water is flowed to collecting lake.

Waste management

Waste disposal bin separation



Waste Management



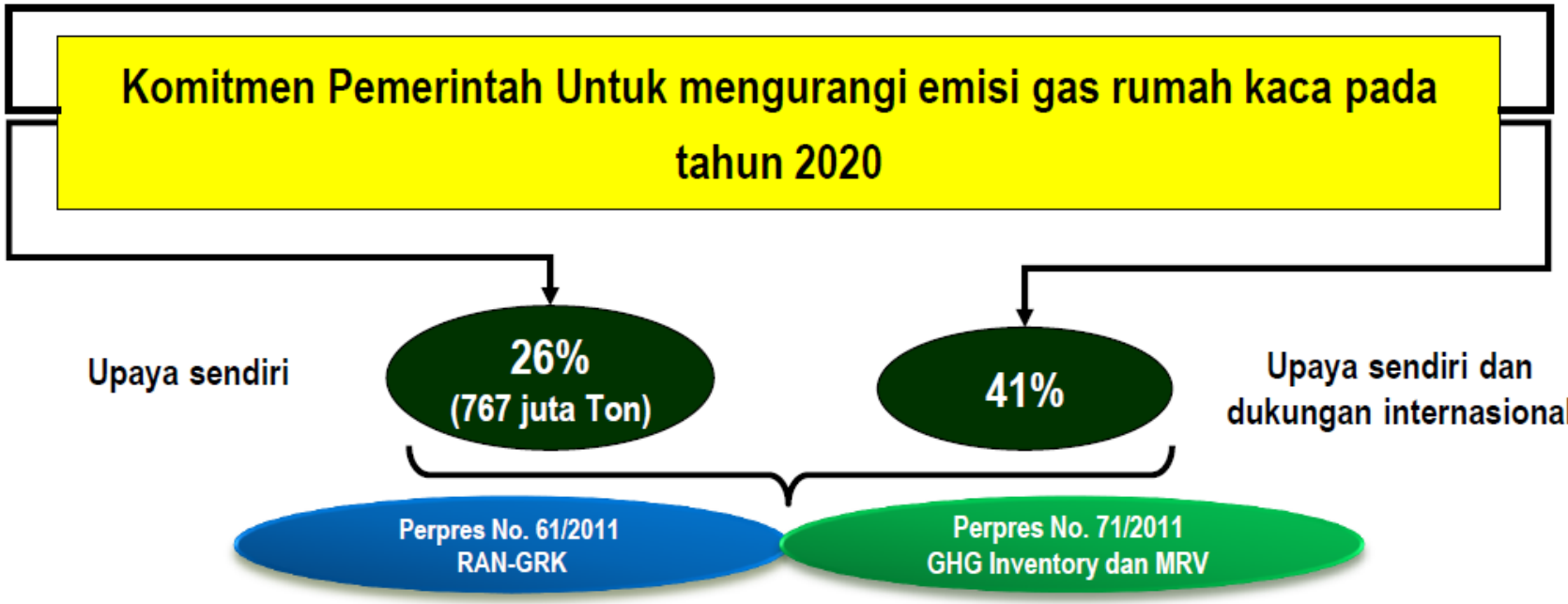
Cap: 120 M3/day

Bin separation

3. CO2 REDUCTION TOWARDS LOW CARBON DEVELOPMENT

- CO2 CONVERTION FACTOR FROM ENERGY SAVING AND WATER SAVING
- MAXIMIZE SAMANEA SAMAN (TREMBESI PLANTATION AND NURSERY
- START CALCULATING CO2 SURPLUS /MINUS DURING DEVELOPMENT AND OCCUPATION/OPERATION STAGE IN BSD CITY

INDONESIA NEED TO HAVE CO2 REDUCTION



Kehutanan, Gambut, Pertanian	680 Juta Ton
Sektor Energi	**30 Juta Ton**
Limbah	48 Juta Ton
Industri dan Transportasi	9 Juta Ton

Melalui pengembangan energi baru terbarukan dan pelaksanaan konservasi energi dari seluruh sektor

4.RESPONSIBLE BUILDING MATERIAL USED

- ENVIRONMENTAL FRIENDLY MATERIAL (GREEN LABEL,ISO 14000)
- OZON DEPLETION REFRIGERANT
- RECYCLE MATERIAL
- PREFABRICATED MATERIAL TO REDUCE CO2 FOOTPRINT
- UTILIZING UNUSED MATERIAL

SINARMAS LAND PLAZA

BSD City, Indonesia

UNIQUE PROJECT DETAIL

MANAGEMENT

Construction Phase

- Environmental friendly process in construction and operation stage using steel for main construction material and pre fabricated elements.

- Using environmental friendly material : Low VOC, zero ODP refrigerant R - 134 A.

SINARMAS LAND PLAZA

BSD City, Indonesia

UTILIZING UN USED MATERIAL

SUSTAINABILITY

Sustainability approach during construction

- iron waste for temporary facility and for precast material.
- concrete waste to be recycled as car stopper.
- collection of steel waste → reused by other party.
- Using steel frame construction material and precast concrete.
- 90% material are local/regional within radius <20km.
- Using green material, material rcycle content, environmentally friendly product

5. CASE STUDY IN SINARMASLAND PLAZA BSD GREEN OFFICE PARK

SINARMAS LAND PLAZA

BSD City, Indonesia

BSD GREEN OFFICE PARK

- Located in the heart of BSD City.
- Good accessibility, transportation system.
- Supported with city facilities.
- Within a 28 ha Green Office Park district – part of 9 low-rise office buildings.
- Green space/park, pedestrian bicycle lanes.
- **Sustainable site development.**

BSD GREEN OFFICE
PARK
Intelligent Business District

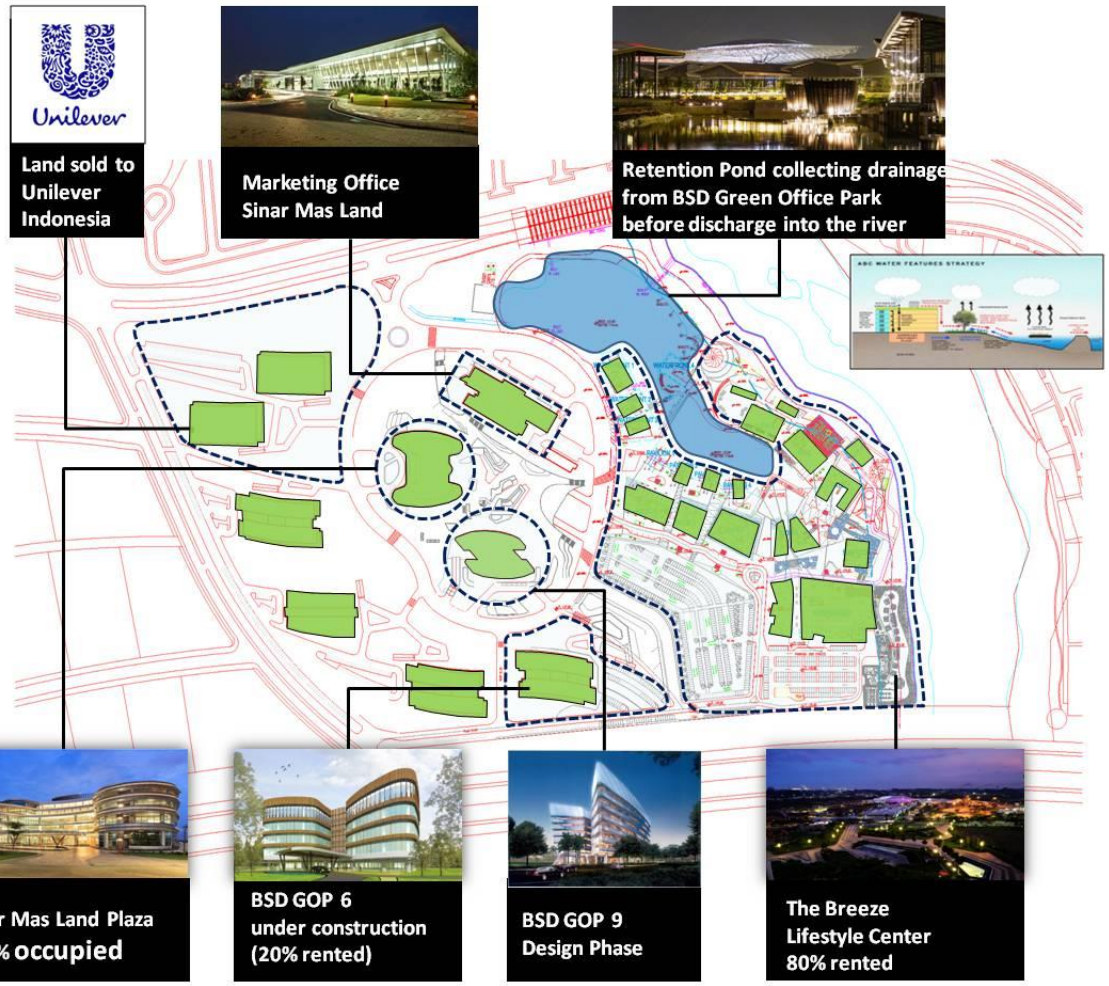
- a **25 ha Green Office Park district** located in the heart of BSD City
- Part of 11 low-rise Green office buildings
- Good accessibility, and transportation systems
- Supported by **surrounding city facilities**
- **Sustainable site development**
- **Confirmed Tenants & Buildings:** Sinar Mas Land HQ, The Breeze Lifesytle Mall, Unilever HQ, GOP 6, GOP 9
- **Green Mark Gold Award** (BCA) Singapore**, FIABCI Prix d'Excellence Award Gold Winner, Asia Pacific Property Award**

www.sinarmasland.com
Sinar Mas Land @sinarmas_land

sinarmas land
Building for a better future

BSD GREEN OFFICE PARK

Sinar Mas Land Plaza and BSD Green Office Park Masterplan



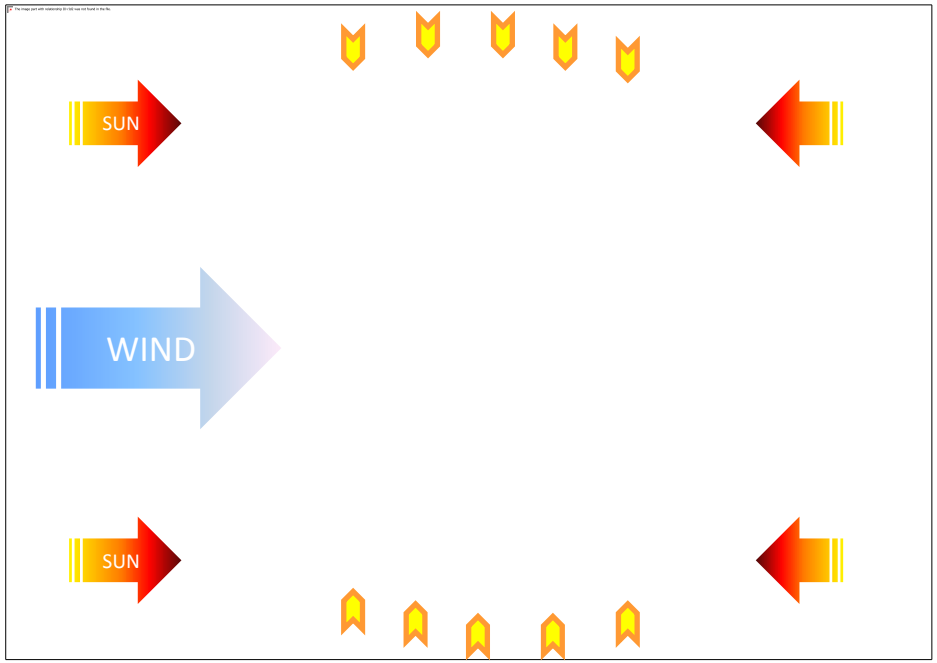
SINARMAS LAND PLAZA

BSD City, Indonesia

UNIQUE PROJECT DETAIL

DESIGN

- Orientation of building North-South to maximize daylighting and reducing heat gain.
- Computational Fluid Dynamics (CFD) Analysis to support building orientation.
- Two office massing blocks with Air Conditioning.
- 4 floors atrium lobby without using AC.
- Modern tropical office building



SINARMAS LAND PLAZA

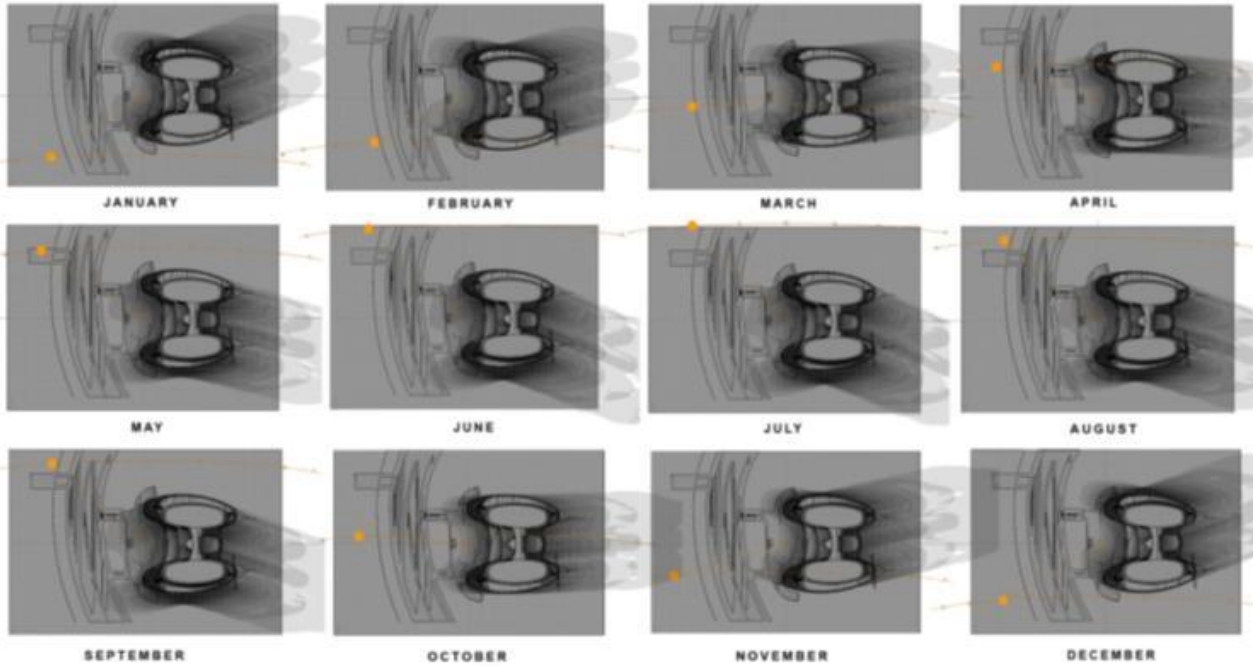
BSD City, Indonesia

UNIQUE PROJECT DETAIL

SUSTAINABILITY

Passive design

- Building orientation based on daily sun path and wind analysis to get optimum daylight and thermal comfort.



SINARMAS LAND PLAZA

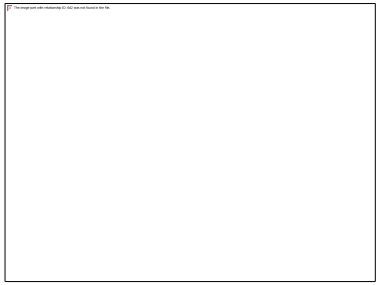
BSD City, Indonesia

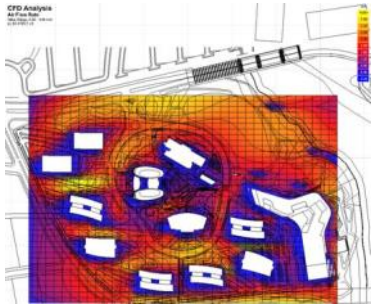
UNIQUE PROJECT DETAIL

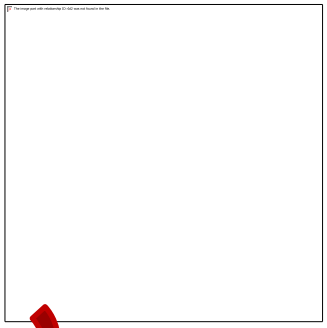
SUSTAINABILITY

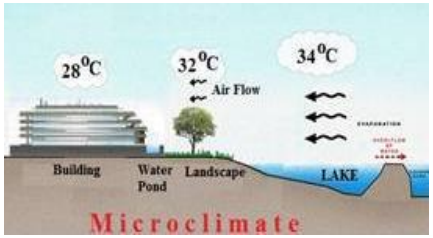
Passive design

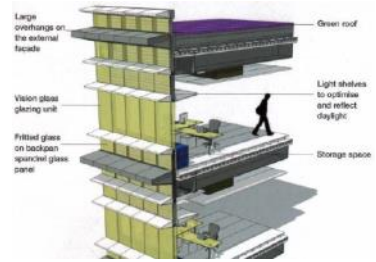
- Building orientation based on daily sun path and wind analysis to get optimum daylight and thermal comfort.
- Sun shading / light-shelves to block glare of sunlight and to reflect light further to office area.
- Natural ventilation at lobby, toilets, pantries, corridors.
- District cooling by applying green landscape, water features, and lake.
- Application of green roof in every building.

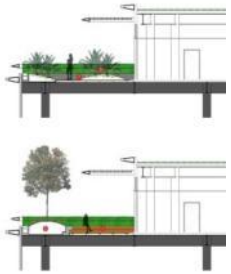












SINARMAS LAND PLAZA

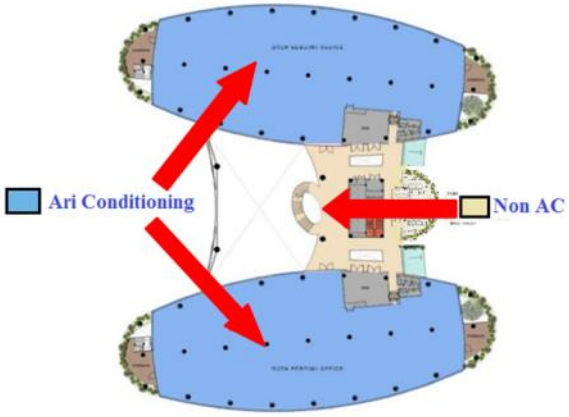
BSD City, Indonesia

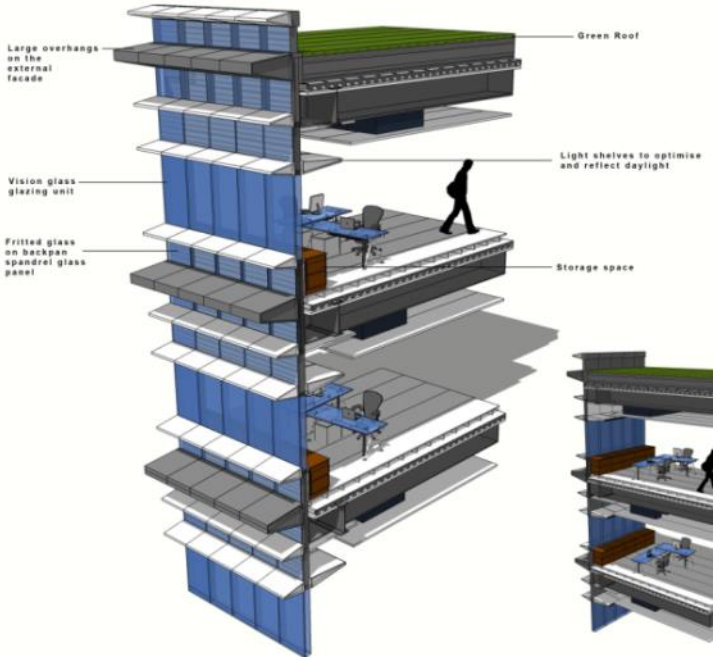
UNIQUE PROJECT DETAIL

SUSTAINABILITY

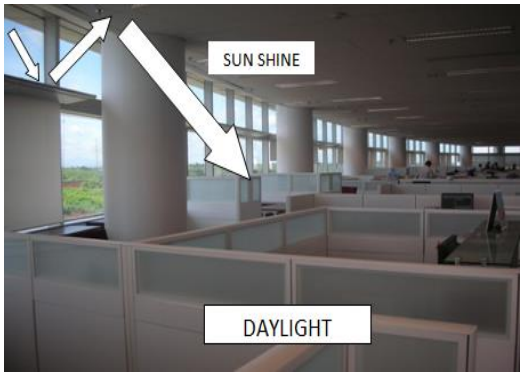
Passive design

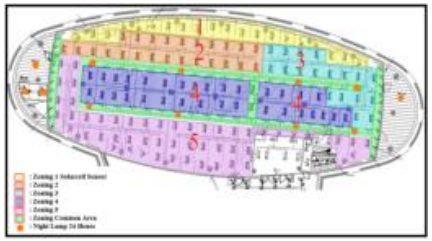
- 60% building area with air conditioning
- Sun shading / light-shelves to block glare of sunlight and to reflect light further to office area.
- Natural ventilation at lobby, toilets, pantries, corridors.
- District cooling by applying green landscape, water features, and lake.





Maximazing Daylight





Lighting Group

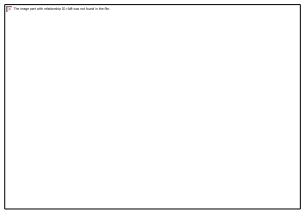
SINARMAS LAND PLAZA

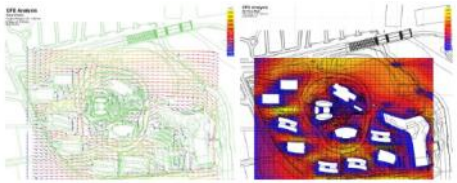
BSD City, Indonesia

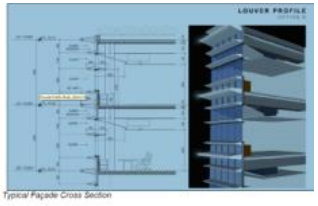
UNIQUE PROJECT DETAIL

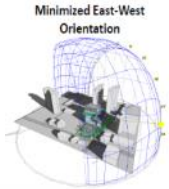
SUSTAINABILITY

- Green Development At BSD City Scale 6000 Ha
- Micro Climate Optimization on Site
- Passive Cooling Effort on Building
- M&E Equipment Selection









UNIQUE PROJECT DETAIL

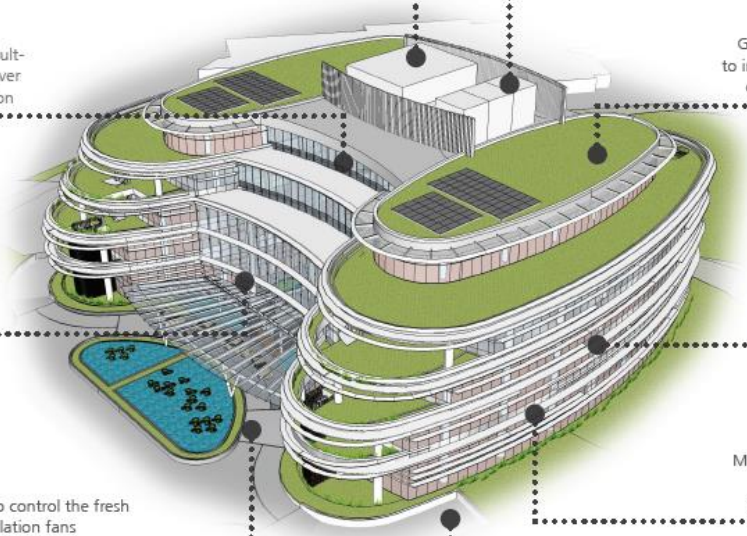
SUSTAINABILITY

High efficiency air distribution plant to reduce energy consumption

Energy efficient lighting resulting in 38% improvement over baseline energy consumption

Naturally ventilated Atrium, toilets and staircases

CO2 Sensors at carpark to control the fresh air and the usage of ventilation fans



High efficiency chillers to reduce energy consumption

Green roofs and roof gardens to increase insulating properties of roofs and decrease runoff

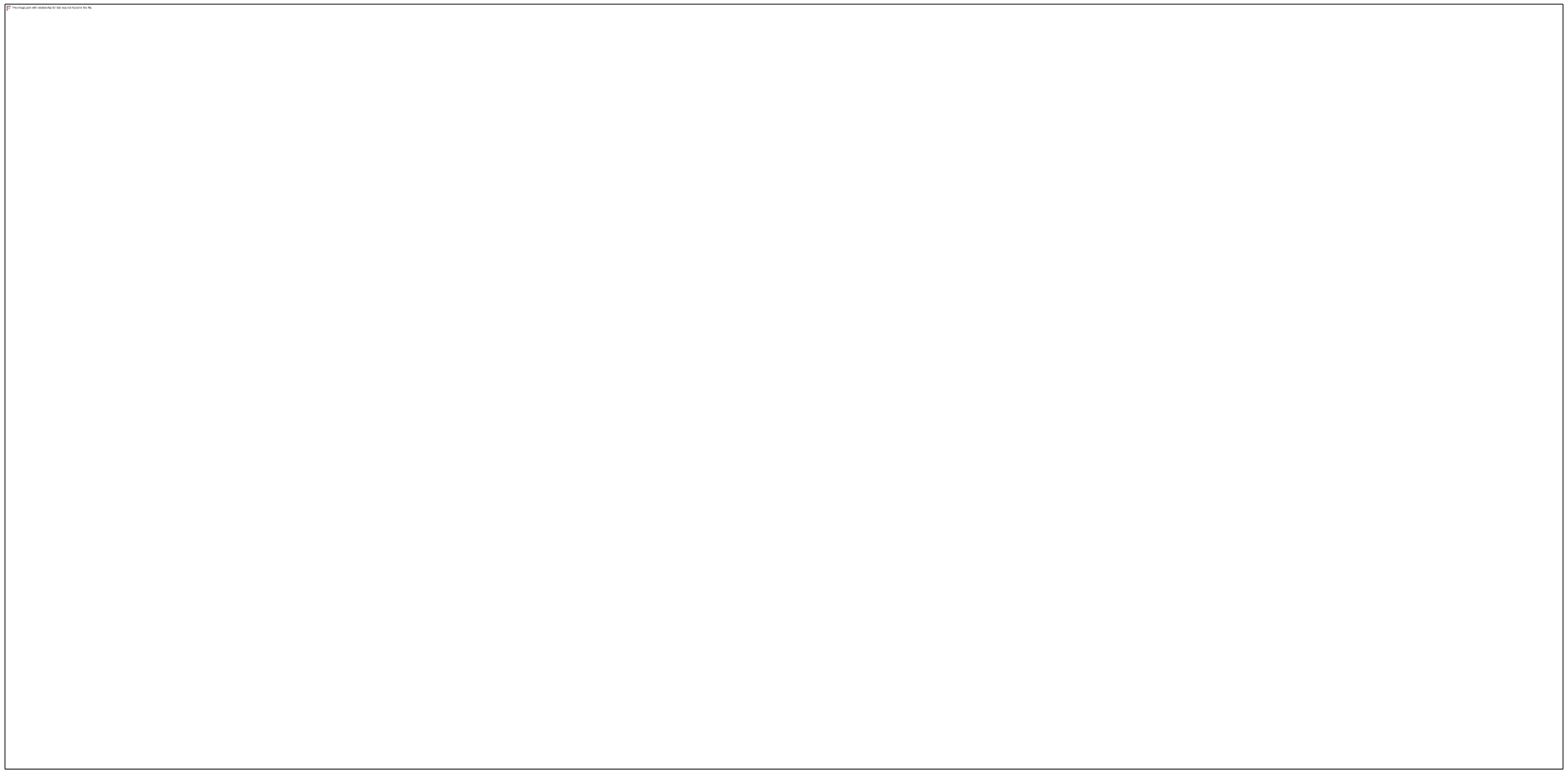
Use of sun shading & low-E double glazed glass on the facades to optimize HVAC loads and enhance occupant comfort

Motion sensor lighting for common areas, corridors, and toilets

Provision of bicycle park in basement car park

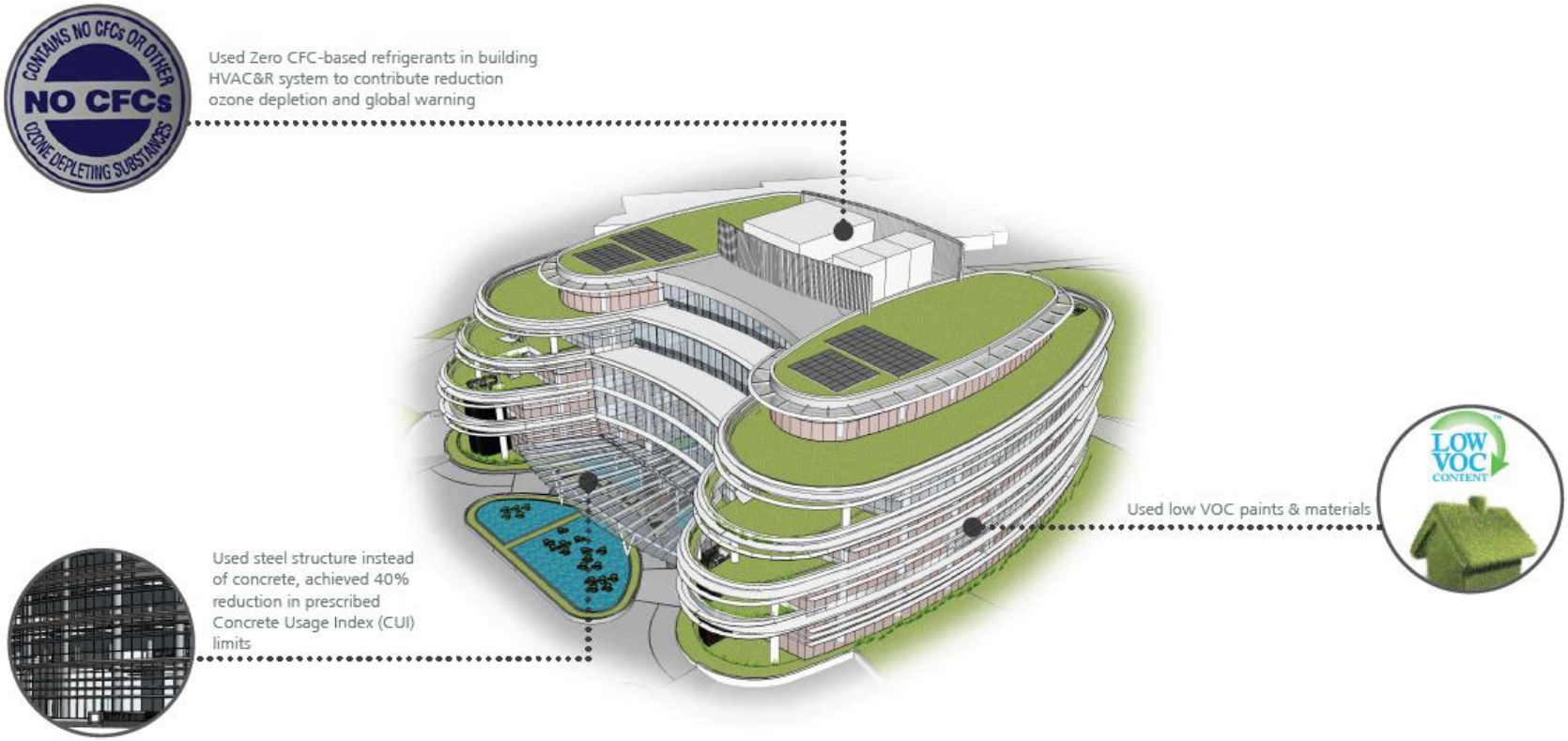
UNIQUE PROJECT DETAIL

SUSTAINABILITY



UNIQUE PROJECT DETAIL

SUSTAINABILITY



SINARMAS LAND PLAZA

BSD City, Indonesia

UNIQUE PROJECT DETAIL

SUSTAINABILITY

Water Pond

Sinar Mas Land Plaza Building has 6 water ponds, one of the function of which is to cool the air flow outside of the building, which will eventually lower the temperature in the building, since the air flow from the outside enters the building by natural ventilation system.

SINARMAS LAND PLAZA

BSD City, Indonesia

UNIQUE PROJECT DETAIL

SUSTAINABILITY

Active design

- Use Energy Efficiency AC (Chiller efficiency 0,55 Kw/TR,Chiller plant system 0,77 kw/TR).
- Using BAS monitoring system.
- AC system 25°C, RH 65%.
- Using solar sensors at perimeter office area for lighting efficiency.
- Pressure different control, CO2, RH temperature and CO sensors to improve building performance.

Part 0 | Pre-requisite

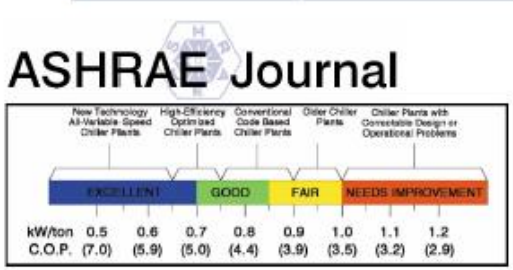
Air-Conditioned Building

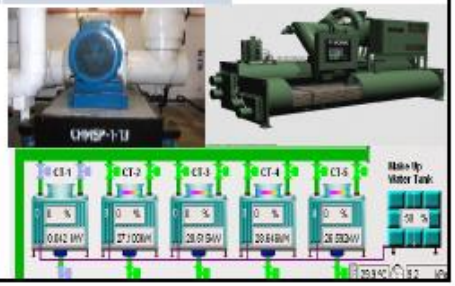
3. Prescribed system efficiency of air-conditioning system to be as follows:

(I) For building using water-cooled chilled water plant		
Green Mark Rating	Peak building cooling load (Rton)	
	< 500	≥ 500
	Efficiency (kW/ton)	
Certified	0.8	0.7
Gold	0.8	0.7
GoldPlus	0.7	0.65
Platinum	0.7	0.65

Green Implication:
-High Energy Consumption for air-conditioning

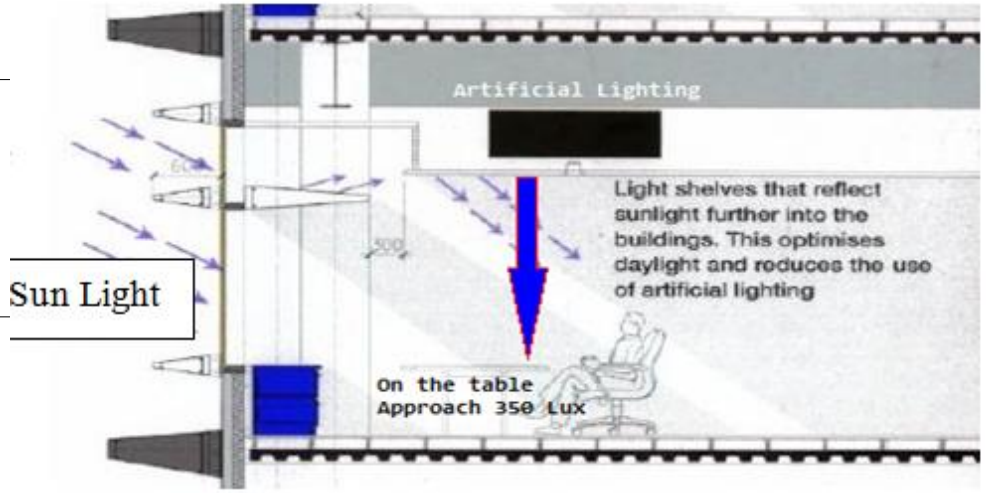
Green Solution:
- Use high efficiency chiller plant equipment





Chiller Plant	(kW/ton)
Chiller (A)	0.55
Chilled water pump (B)	0.12
Condenser water pump (C)	0.04
Cooling tower (D)	0.06
System efficiency (A + B + C + D)	**0.77**

Artificial Lighting



4 Lighting systems: 6.5 W/m^2
Light Level or Illuminant on table is more than 350 Lux.

Ventilation Carpark

NRB 1-7 Ventilation in Carparks

Encourage the use of energy efficient design and control of ventilation systems in carparks.

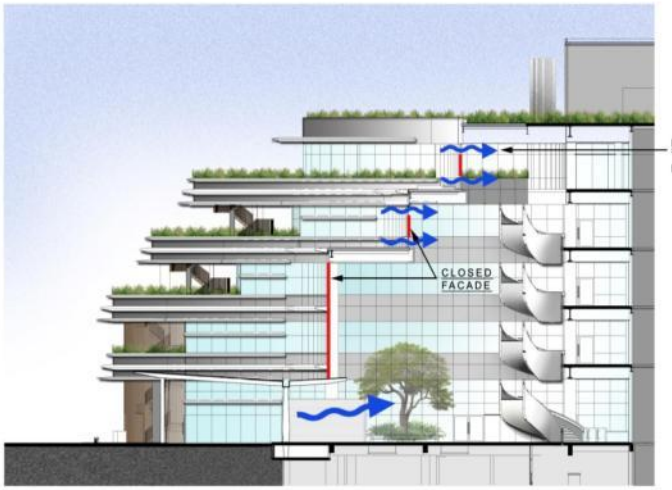
(a) Carparks are designed with natural ventilation.

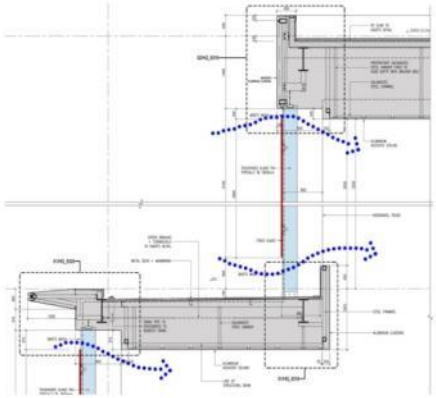
(b) CO sensors are used to regulate the demand for mechanical ventilation (MV).

SINARMAS LAND PLAZA

BSD City, Indonesia

Natural Ventilation

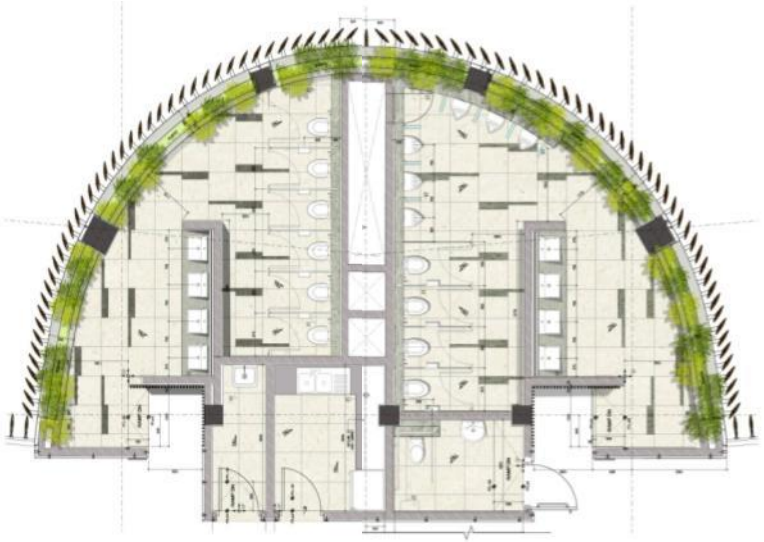




SINARMAS LAND PLAZA

BSD City, Indonesia

Natural Ventilation



SINARMAS LAND PLAZA

BSD City, Indonesia

Thermal Comfort

Micro Climate Optimation

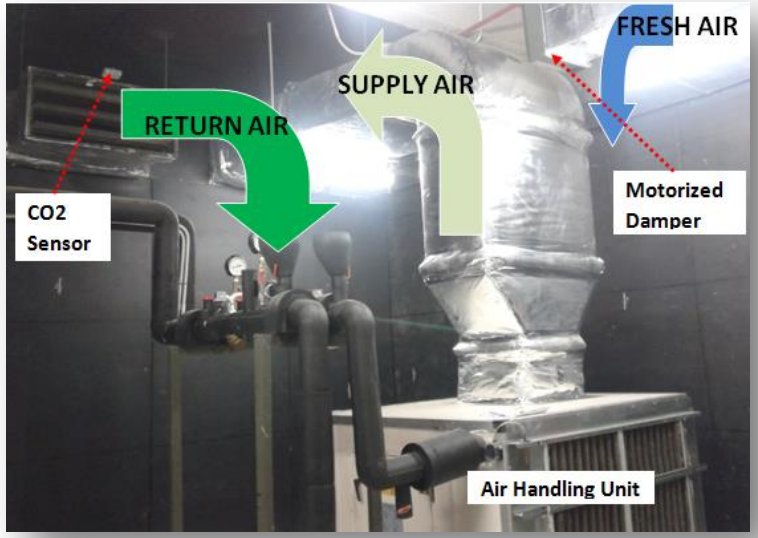
Indoor Air Conditioning

VARIABLE SPEED DRIVE

CHILLER SCREW TYPE

Thermostat

Fresh Air Introduction



If more than 1000 ppm CO2 the fresh air damper will be open.

RH, CO2 dan Temperature Sensors

High Frequency Ballasts

NRB 4-5 High Frequency Ballasts

Applicable to offices, classrooms and the like

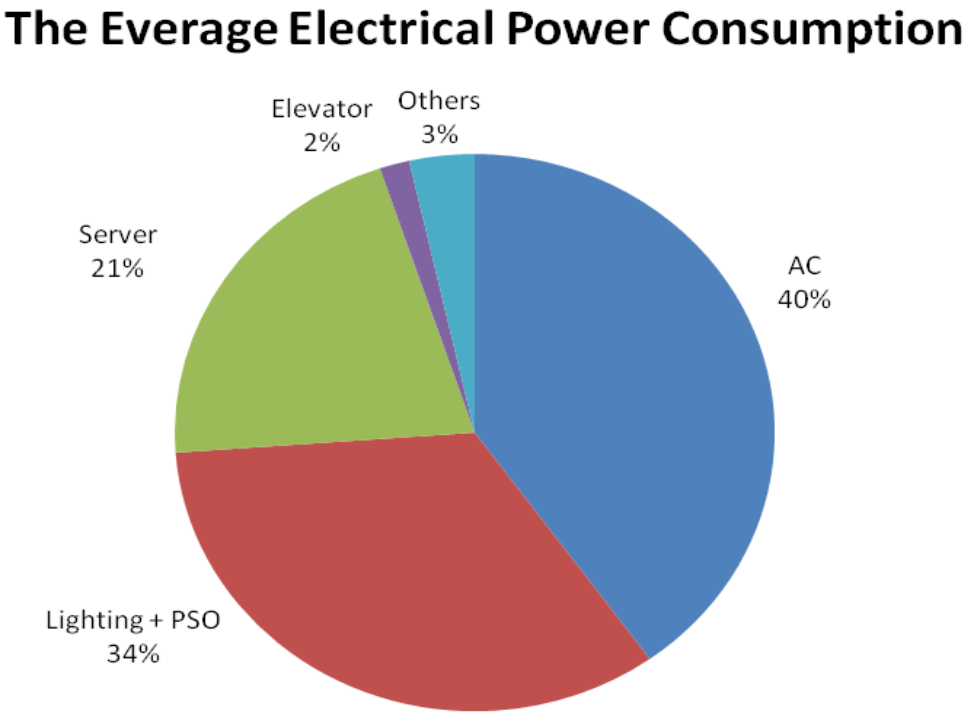
Improve workplace lighting quality by avoiding low frequency flicker associated with fluorescent lighting with the use of high frequency ballasts in the fluorescent luminaries.

Energy Efficiency Index/EEI

The overall consumption of office area is as follows;

Lighting& PSO 34%, AC 40%, IT Server 21%, Elevator 2%, Others 3%.

EEI = 126 KWh/M2/Year



SINARMAS LAND PLAZA

BSD City, Indonesia

UNIQUE PROJECT DETAIL

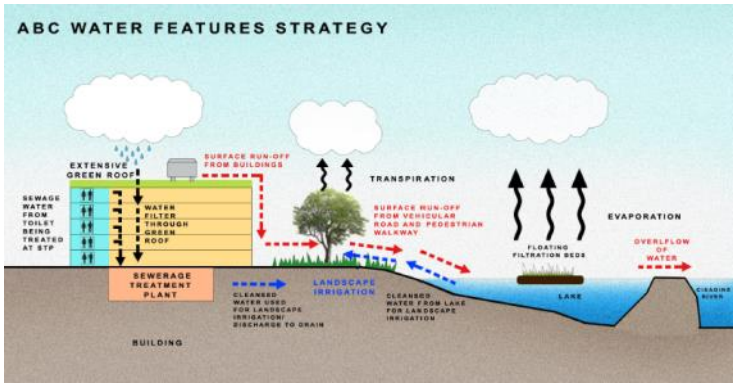
SUSTAINABILITY

Water management

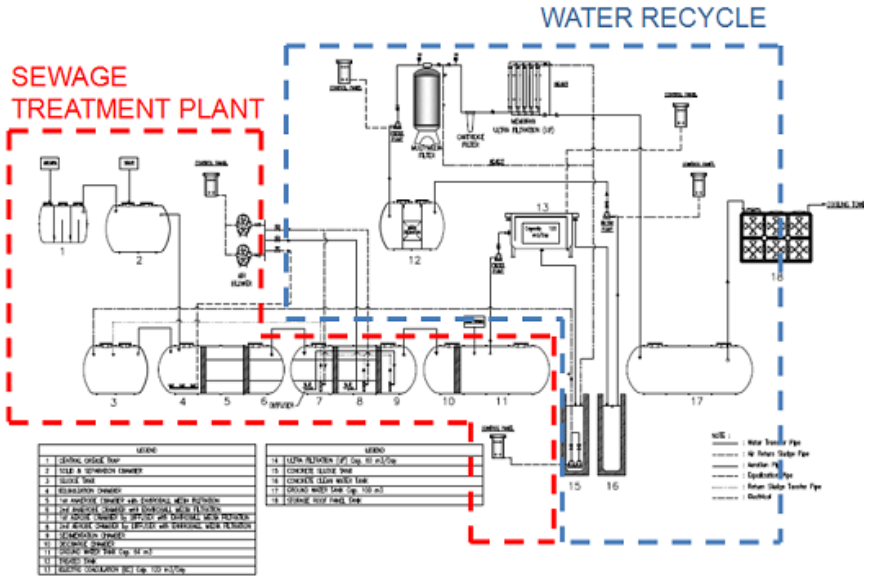
- Using sensors, dual flush, water saving toilets and fixtures.
- Infiltration wells around the building.
- Rain water and disposed water are recycled and reused for make up cooling tower.
- Waters savings reached 23% lower compared to similar code complaint office building.
- Water efficiency management.
- Overflow water is flowed to collecting lake.

Waste management

Waste disposal bin separation



Waste Management



Cap: 120 M3/day

Bin separation

SINARMAS LAND PLAZA

BSD City, Indonesia

UNIQUE PROJECT DETAIL

MANAGEMENT

Construction Phase

- Environmental friendly process in construction and operation stage using steel for main construction material and pre fabricated elements.

- Using environmental friendly material : Low VOC, zero ODP refrigerant R - 134 A.

SINARMAS LAND PLAZA

BSD City, Indonesia

UNIQUE PROJECT DETAIL
SUSTAINABILITY

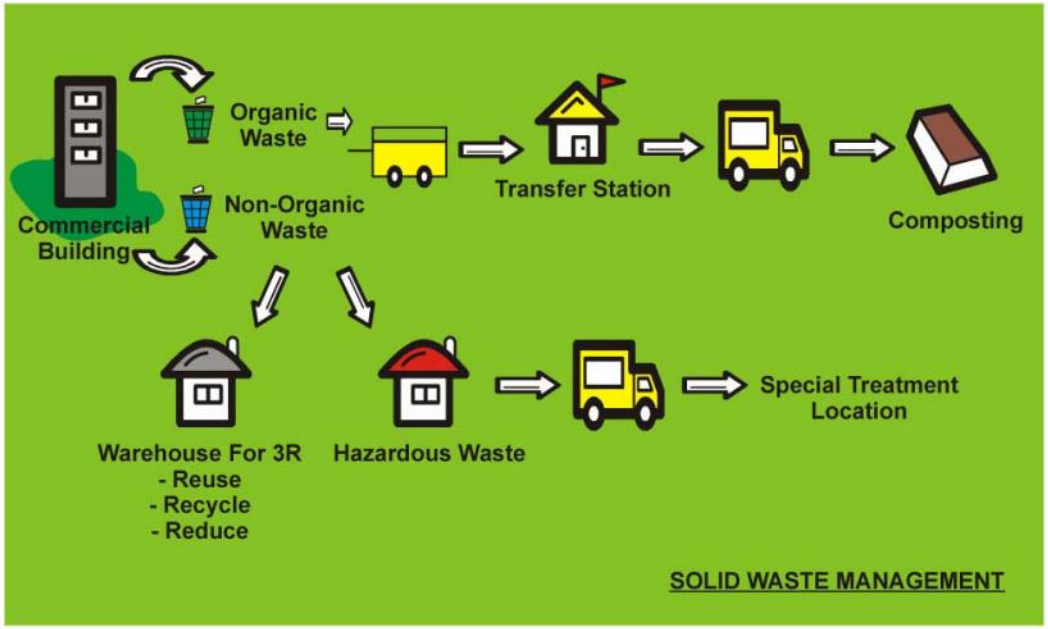
Sustainability approach during construction

- iron waste for temporary facility and for precast material.
- concrete waste to be recycled as car stopper.
- collection of steel waste → reused by other party.
- Using steel frame construction material and precast concrete.
- 90% material are local/regional within radius <20km.
- Using green material, material rcycle content, environmentally friendly product

UNIQUE PROJECT DETAIL
SUSTAINABILITY

Sustainability approach during operation

- separated garbage bins in every floors.
- bins are made from recyclable medium / HDPE with minimum content of recycled material 20% .
- All bins are collected to big container and picked-up daily.



SINARMAS LAND PLAZA

BSD City, Indonesia

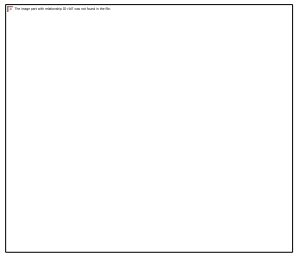
UNIQUE PROJECT DETAIL

MANAGEMENT

Operation and Maintenance Phase

- Elevator maintenance
- Electricity maintenance
- Fire fighting maintenance
- AC installation maintenance
- Facade maintenance
- Training







SINARMAS LAND PLAZA

BSD City, Indonesia

SUSTAINABILITY PROJECT AWARD

ENVIRONMENTAL SUSTAINABILITY

- Energy consumption 126 kwh/m2/year.
- Renewable energy used in the Photovoltaic LED street lightings.
- Water consumption saving and waste management schemes.

SINARMAS LAND PLAZA

BSD City, Indonesia

SUSTAINABILITY PROJECT AWARD

SOCIAL-CULTURAL SUSTAINABILITY

- Integrated connectivity and shuttle bus to reduce use of motor cycle.
- Building amenities open and directly accessible from office areas → The Breeze Lifestyle Centre.
- Provide new area in BSD City designed with green and sustainable approach.
- Benefit for employment during construction and operation stage.
- BSD Green Office Park as integrated green approach inspiring other party to do so and develop green industry.

SINARMAS LAND PLAZA

BSD City, Indonesia

SUSTAINABILITY PROJECT AWARD

ECONOMIC SUSTAINABILITY

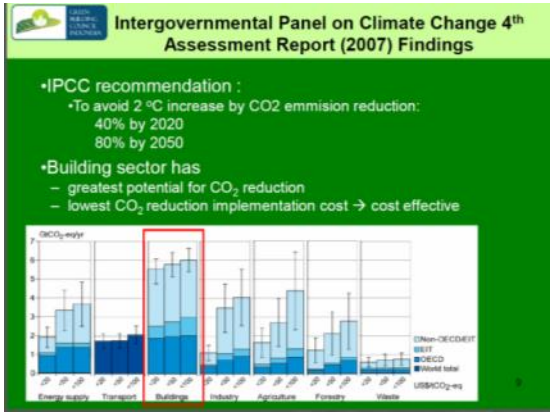
- Local source material as main priority and use local material product in big part of the building.
- Material landscape from same province to reduce carbon print from transportation.
- Infrastructure material from less than 500 km (around 20 km only) distance to reduce carbon print.

SINARMAS LAND PLAZA
BSD City, Indonesia

SUSTAINABILITY PROJECT AWARD
INNOVATION POINT

Mitigation of CO2

- From planning and design process
- As result from Energy Efficiency CO2 non emission 600 tons/year
- Construction process – 90% local product from 20 km distance
- Use green material products
- Use material /product with recycle content
- Good environmental management system during construction (using steel as man structure and prefab material



SINARMAS LAND PLAZA

BSD City, Indonesia

SUSTAINABILITY PROJECT AWARD

PROOF IMPACT

- **AC system 0,77 kw/TR**
- **Cooling load 73 w/m2**
- **Lighting 6,5 w/m2**
- **Transportation vertical using VVVF type, roomless and gearless**
- **CO sensor in parking area with active fan 30 ppm**
- **Saving energy from street lamps 44016 kwh/year**
- **Reduce CO2 emision 600 t/year**
- **Recognition by other party ASEAN Energy Awards 2013-2014, FIABCI International Awards, Asia Pacific Property Awards, Sustainable Business Awards**

1. Distribution free magazine to **educate** how to conserve the environment
2. Yearly **green festival** program
3. Environmental care **campaign**

GREEN ATTITUDE IS TO PREPARE CUSTOMER ATTITUDE TO DO "GREEN "IN THE COMMUNITY

BSDCITY
BIG CITY, BIG OPPORTUNITY

Upaya Mengajak Warga Berpartisipasi Melakukan Berbagai Kegiatan Untuk Memelihara Lingkungan Sekitarnya



4

Pro people

Corporate Social Responsibility

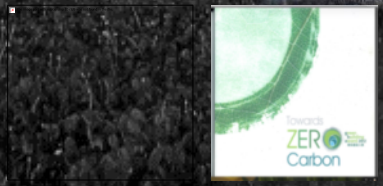
UN MDGs

Menuju Usaha yang Berkelanjutan

CITYSCAPE AWARDS
EMERGING MARKETS 2014

PACIFIC PROPERTY AWARD BEST OFFICE BUILDING – ASIA 2012-2013

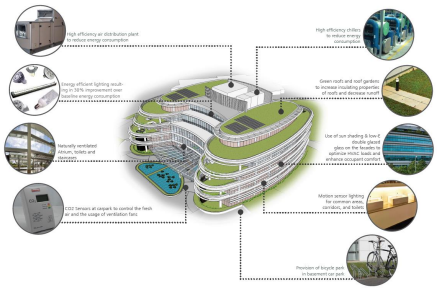
FIABCI AWARD 2013



FINALIST HONGKONG GREEN BUILDING AWARDS 2012

ASEAN ENERGY AWARD 2013 & 2014

OUR EFFORT COMAPRE TOCONTRIBUTION OF TEN ACTION TO REALIZE LOW CARBON DEVELOPMENT IN ASIA



ACTION	OUR IMPLEMENTATION	
Hierarcically connected compact cities	City transot system,compact zoning plan	v
Mainsreaaming rail and water		
Smart was touse materials that realize potentiap esources		
Energy saving spaces utiliizng sunlight &wind	Pasive design and censor used	v
Local production biomass		
Low carbon Enegy System usng local resources	Using solar panel for streetlight	v
LE Agriculture tech		
Foresty managemant		
Technology and finance LCS		
Transparent anf fairGovce		

End

of presentation

(show video)