



SURABAYA

TOWARD SUSTAINABLE CITY

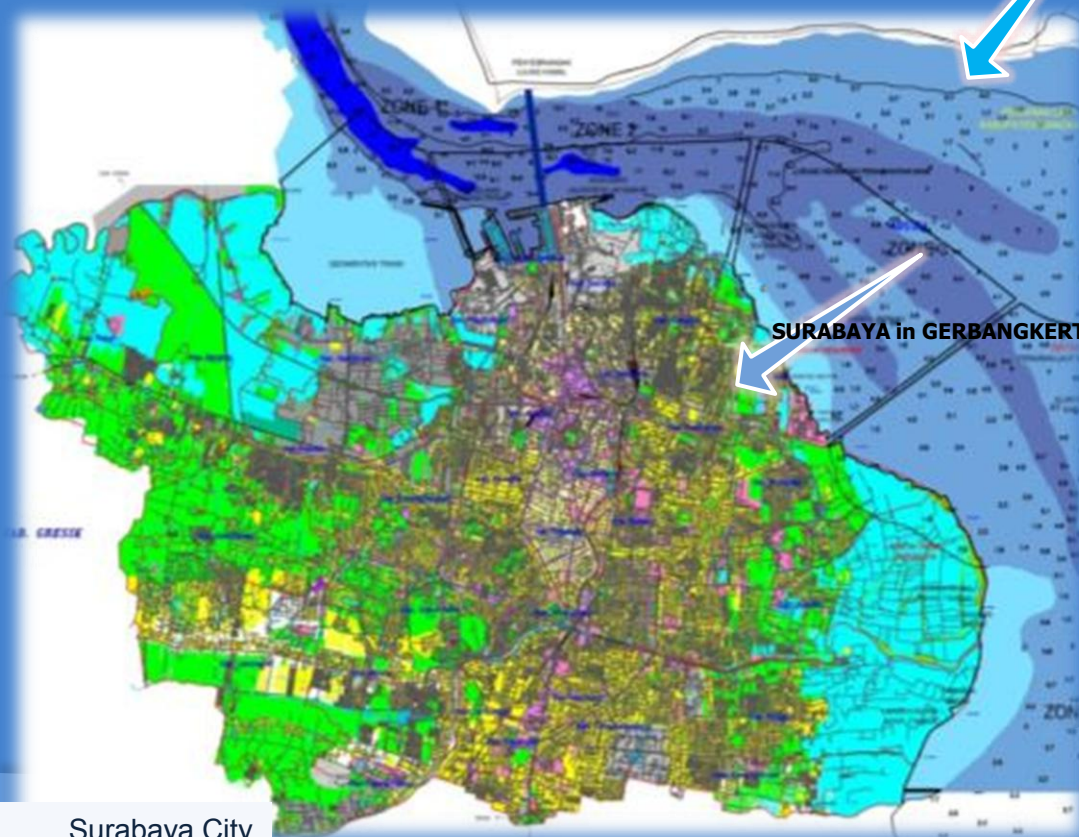
MUSDIQ ALI SUHUDI
HEAD OF SURABAYA ENVIRONMENTAL AGENCY



International and National



Surabaya in East Java Province scope



SURABAYA in GERBANGKERTOSUSILA

Surabaya City

SURABAYA CITY ORIENTATION

In national scale, Surabaya is the 2nd biggest city after Jakarta and the center of development of Eastern Indonesia area.

Regionally, Surabaya is the capital and center of trades and services in East Java area.

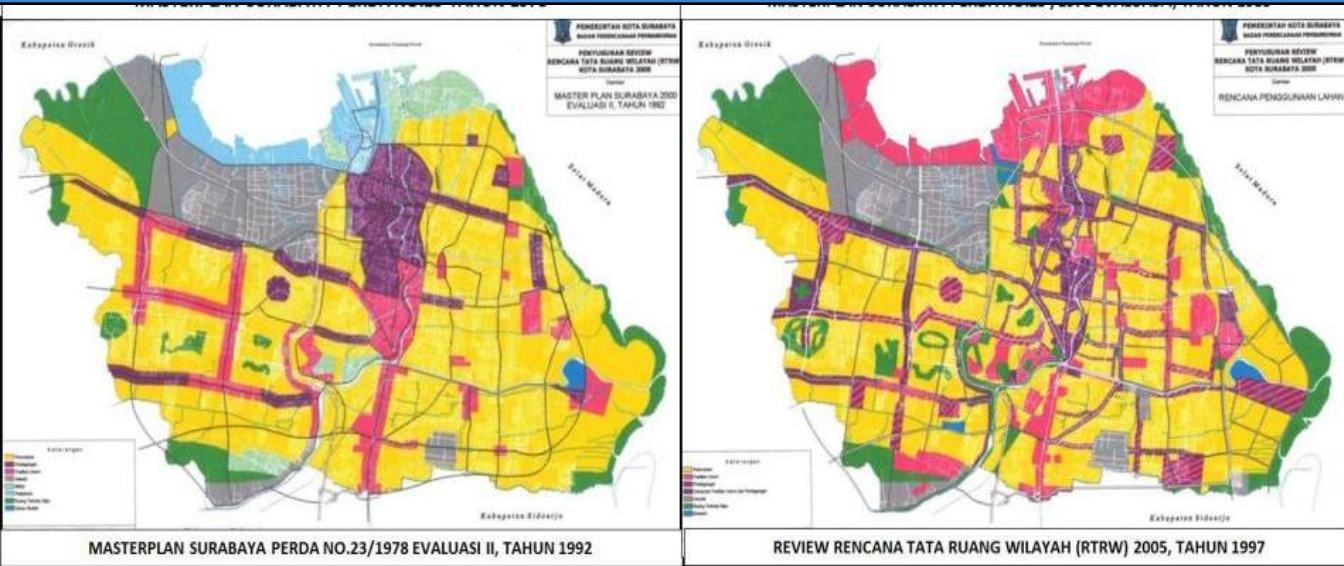
- Area** : ± 33.048 Ha
- Population** : ± 3 million
- Districts** : 31
- Sub Districts** : 160

EFFORTS UNDERTAKEN BY SURABAYA TO REDUCE CARBON EMISSION

- A. GREEN OPEN SPACE**
- B. TRANSPORTATION**
- C. SOLID WASTE AND
WASTEWATER**
- D. ENERGY**
- E. FOOD SECURITY**

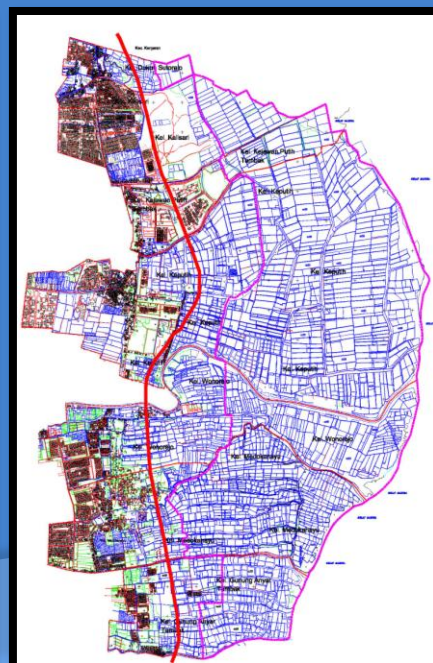
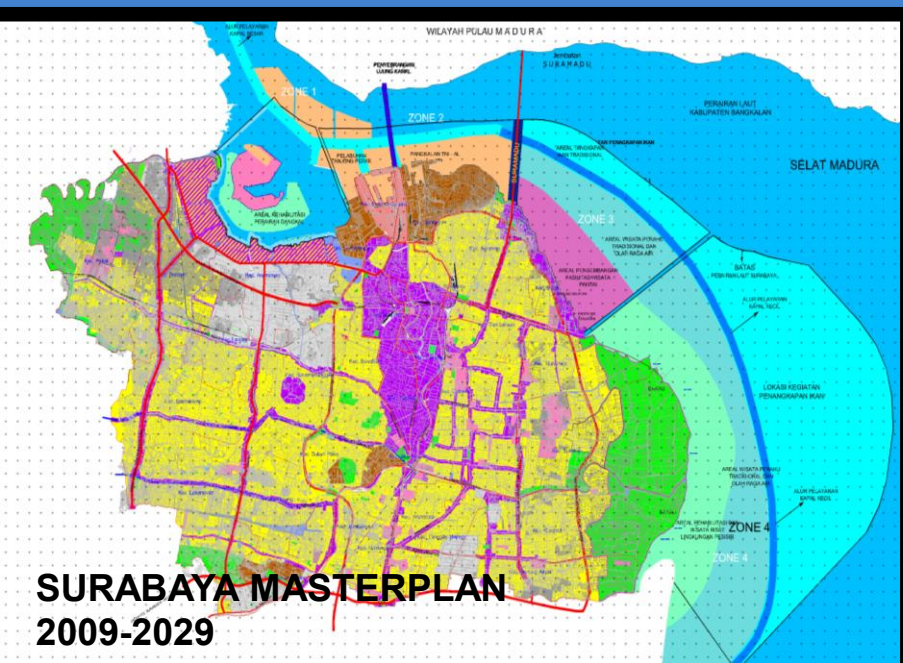


A. GREEN OPEN SPACE



1. Revision on City Planning in the East Coast of Surabaya that includes approximately 2.500 Ha (25 km²). The area is turned from formerly being housing and commercial area into conservation/ green open space area

DEVELOPMENT OF SURABAYA CITY PLANNING

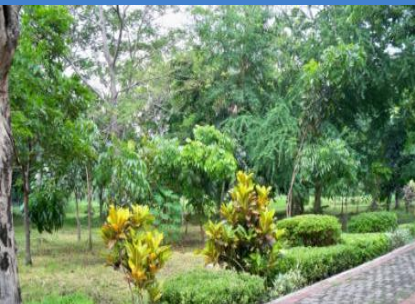


Conservation Area (EAST COAST SURABAYA)



IMPROVEMENT GREEN OPEN SPACE

NO	Type of Green Open Space	Area (Ha) 2009	Area (Ha) 2010	Area (Ha) 2011	Area (Ha) 2012
1	Cemetery	178,45	178,45	178,45	178,45
2	Field & stadion	220,68	220,68	220,68	220,68
3	lakes, reservoirs, boezem	144,33	144,33	144,33	144,33
4	GOS community in settlement	108,15	108,15	113,93	113,93
5	GOS conservation area	4.115,90	4.115,90	4.115,90	4.115,90
6	Forest City	41,16	41,16	41,16	41,16
7	Parks	1.861,74	1.862,54	1.863,64	1.863,64
Total GOS		6.670,41	6.671,21	6.678,09	6.678,09
Surabaya		33048,00	33.048,00	33.048,00	33.048,00
Percentage (%)		20,18	20,19	20,21	20,21



ITS CITY FOREST



TAMAN MUNDU

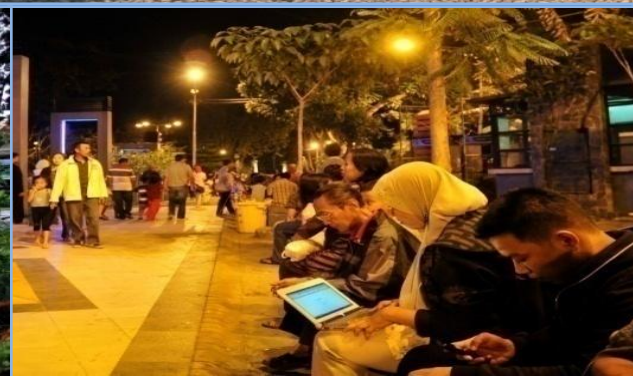


TPU KEPUTIH



TAMAN BUNGKUL

2. Building city parks and City Forests in some locations



RAINBOW PARK (ex.gas station)



BEFORE



LANSIA PARK(ex.gas station)



BEFORE



KOMBES M. DURIAT PARKS

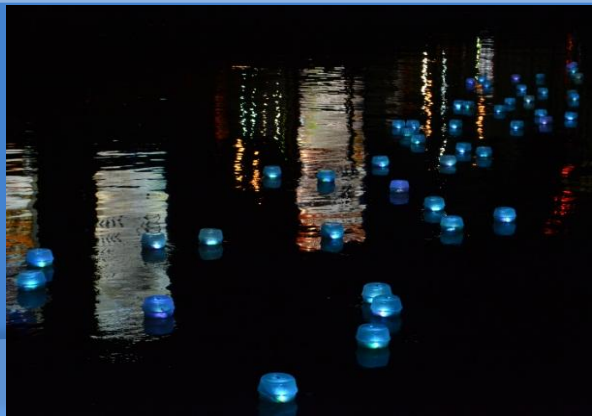




BEFORE



AFTER



Taman

Ekspresi



KEPUTRAN PARKS – River Side



BEFORE



AFTER



FLOWERS IN SURABAYA



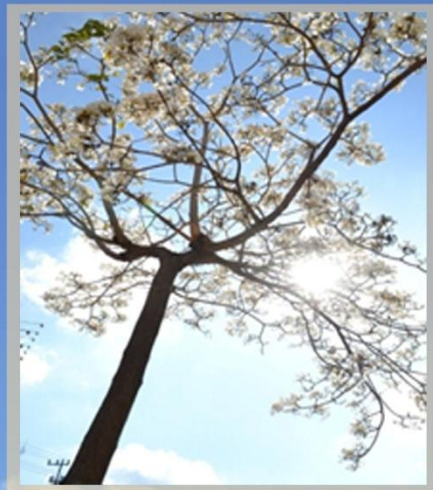
FLOWERS IN SURABAYA



FLOWERS IN SURABAYA



WHITE TABEBUYA TREE

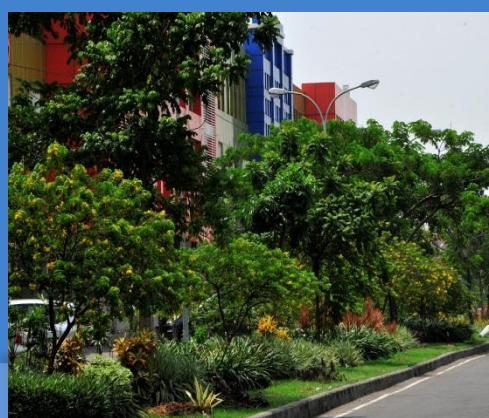


GREEN SPACE AT DR. SOETOMO street



GREEN SPACE AT SOEKARNO – HATTA street

HIJAU



GREEN SPACE AT DIPONEGORO street

HIJAU



GREEN SPACE AT MAYJEND SUNGKONO street



Taman Bungkul



Garden to Garden Service

BLC (Broadband Learning Center)



*Taman
Flora*



FORESTING – BALAS KLUMPRIK



FORESTING – PAKAL



INSTALLATION OF BIOPORI IN PARKS



Green Roof Garden



Perkantoran



Sekolahan



GOS AT KAMPOONG/VILLAGE

4. Encouraging public participation in greening kampongs (Surabaya green and clean)



D. SOLID WASTE & WASTE WATER MANAGEMENT



1. Solid Waste Management:

- a. Reducing waste from its source (composting house and waste bank)
- b. Modernizing landfill final disposal (under construction)
- c. Empowering community by creating environment facilitators and cadres

14 COMPOSTING HOUSES

COMMUNITY-MANAGED COMPOST HOUSES

Gundih



Kedung Baruk



USING COMPOSTS GENERATED FROM ORGANIC WASTES



Organic waste generated by residents (households) is processed into compost to be used in the greening of their respective territories. Residents use the compost as needed.



The compost is optimized by residents to be used free of charge, so the settlement becomes green and lush.



SUPER DEPO SUTOREJO



Super Depo Sutorejo

UNDERGROUND TEMPORARY DISPOSAL SITE



COMMUNITY BASED WASTE MANAGEMENT

Composting by Takakura Basket



Dukuh Kupang
Sub district



Babat Jerawat

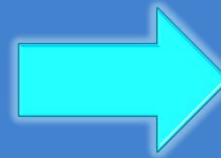


Banyu Urip



05.12.2009 11:21

Pakis



waste processing results
by Takakura is fertilizer



Aerobic composter for household

recycling waste into handicrafts



INDEPENDENT WASTE BANK

BRATANG VILLAGE



Waste Sorting



Depositing wastes to the bank



Waste weighing



People check their waste saving

SOME WASTE BANKS IN SURABAYA



Gundih Village



Dukuh Setro Village



WASTE BANKS IN SURABAYA

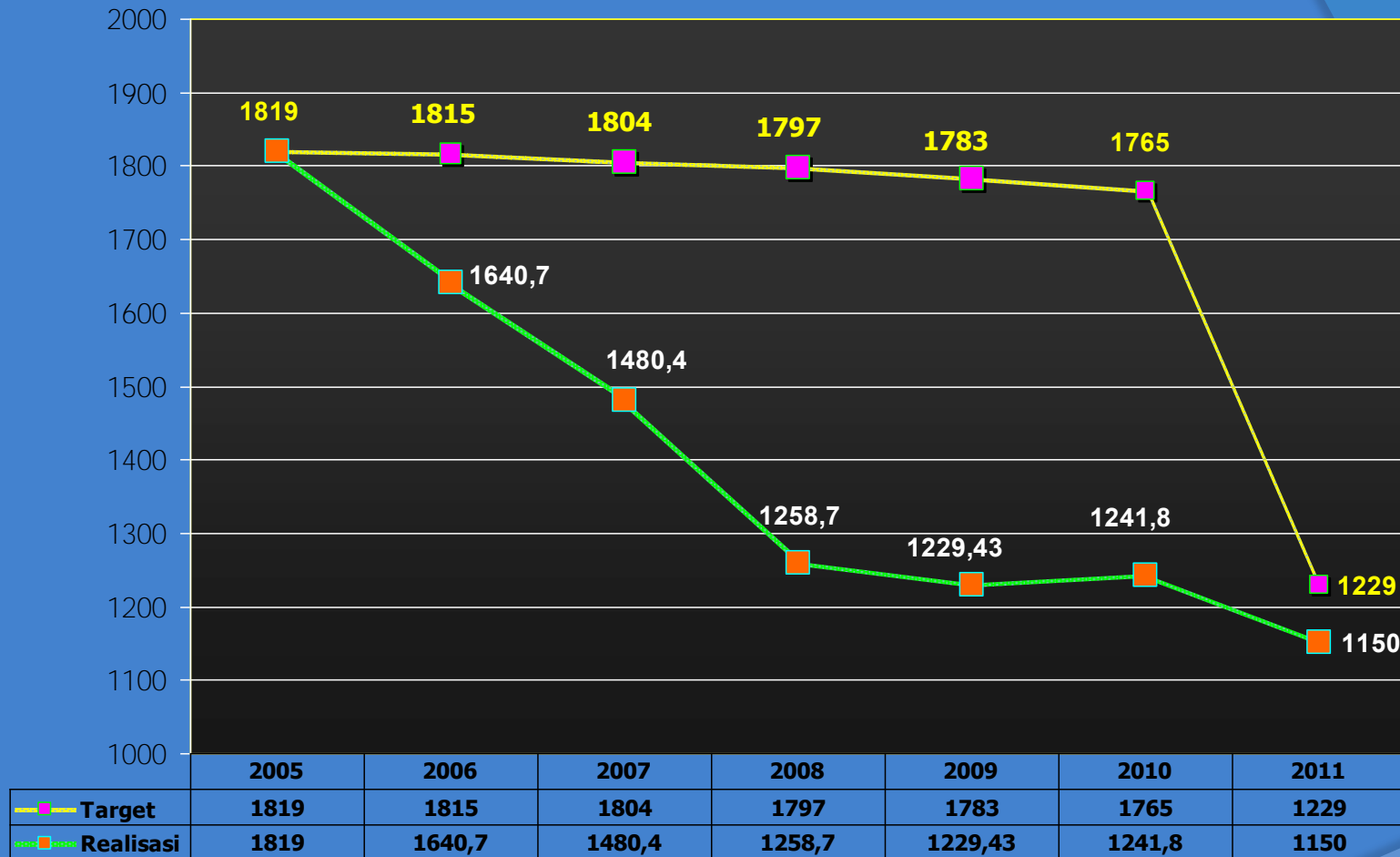
The number of customers and profits

Name	Customers	Profits
1. Bank Sampah Bina Mandiri	± 703	± 67.000.000,00 / Month
2. Bank Sampah Rukun Karya	± 168	± 2.000.000,00 / Month
3. Kelurahan Jeruk, Kecamatan Lakarsantri	± 151	± 1.018.000,00 / 2 Months
4. Kelurahan Gading, Kecamatan Tambaksari	± 120	± 1.812.500,00 / 2 Months
5. Kelurahan Bulak Banteng, Kecamatan Kenjeran	± 45	± 1.049.000,00 / 2 Months
6. SMP Negeri 14 Surabaya	± 300	± 600.000,00 / 2 Months
7. SDI Yamassa	± 400	± 2.000.000,00 / 2 Months
8. SDN Lidah Kulon I	± 100	± 600.000,00 / 2 Months
9. SDN Kaliasin I	± 510	± 800.000,00 / 2 Months

There are 100 active waste banks in Surabaya

- Established in **28 sub-districts**
- The amount of reduced inorganic wastes reaches **7,14 Tons / weeks**
- The average earning of each waste bank is **Rp. 250.000,-/month up to Rp. 2.000.000,-/month**
- In year 2012, there will be **65 newly-built waste banks** (priority is given to sub districts which do not have any waste bank)

Waste Entering to The Benowo Final Disposal Site



Sumber : Data Dinas Kebersihan & Pertamanan Kota Surabaya Tahun 2012

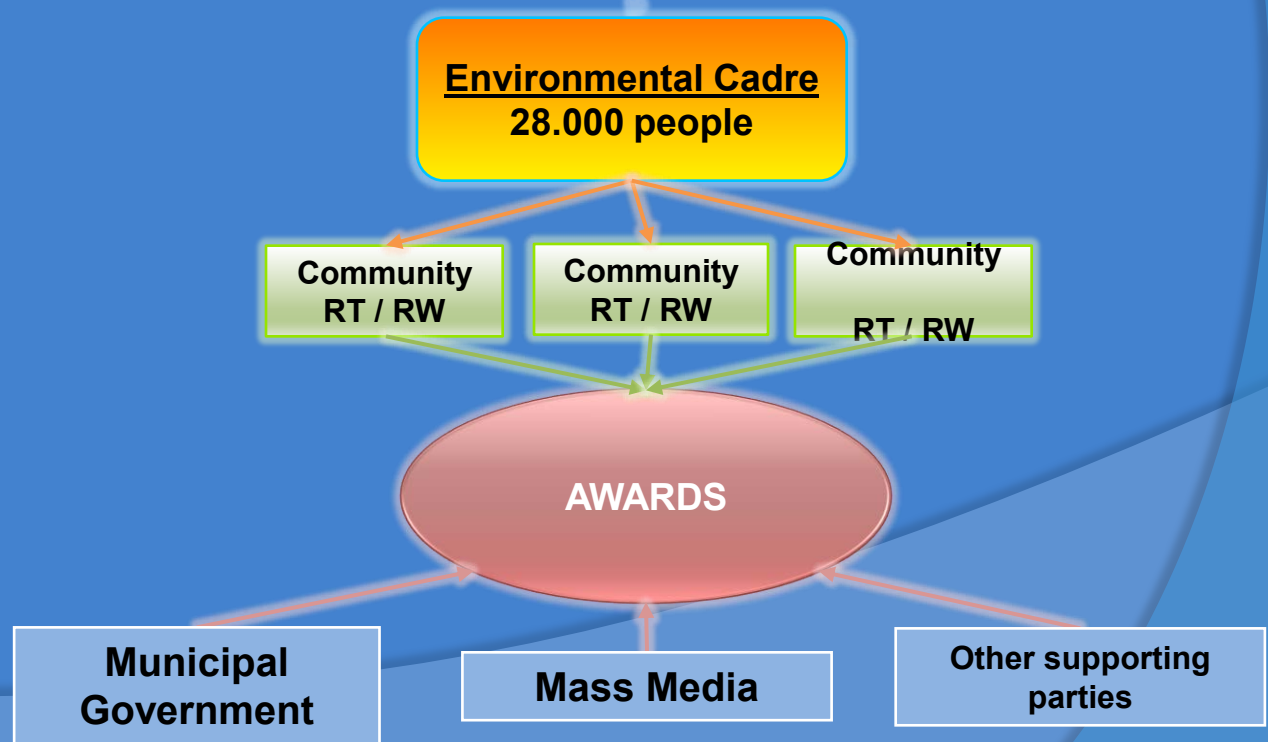


WASTE TO BIOGAS (The Benowo Final Disposal Site)



EMPOWERING COMMUNITY

RECRUITMENT OF ENVIRONMENTAL CADRE



WASTE WATER MANAGEMENT



Dupak



Tanjungsari

1. Developing integrated waste-water treatment (the feasibility study has just been completed)
2. Comunal waste-water treatment plan



Communal WWTP was built by the community

Barata Jaya

SEWAGE TREATMENT PLAN



- Capacity : 150 – 200 m³ / day
- Location : Keputih Sukolilo

MARGORUKUN ALLEY VI RW 10 GUNDIH VILLAGE



TRJ (Tandon Resapan Jumbo) WWTP



2 tube filter



Reservoir WWTP in which there are filters

COMMUNAL WWTP BUILT BY COMMUNITY



Location Plan



Construction



Konstruksi Reaktor Grey Water

COMMUNAL WWTP BUILT BY COMMUNITY



RW V Morokembangan



RW III Jambangan



RW VIII Gading



RW XIV Simokerto



Kampung Gadukan

COMMUNAL WWTP BUILT BY COMMUNITY



Kel. Tembok dukuh RW II



Kel. Babat Jerawat RW IX



Kel. Jeruk RW III



Kel. Lidah Kulon RW I



Kel. Balas Klumprik RW V

E. URBAN FARMING

Urban Farming program (utilizing home yard, vacant land and land owned by developer which has not been built to plant food crops, horticulture, and inland fisheries)



URBAN FARMING PERTANIAN



Kel. Pakis, Kec. Sawahan

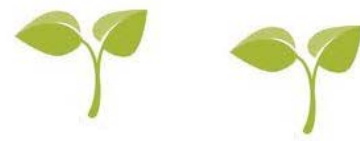


Kel. Kertajaya kec. Gubeng



Kel. Keputih, Kec. Sukolilo

Urban farming Agriculture



Kel. Greges, Kec. Asemrowo



Kecamatan Bubutan



Kecamatan Kenjeran



Kel. Keputih, Kec. Sukolilo

CHILLY KAMPOONG/VILLAGE



Kelurahan Made, Kecamatan Sambikerep

FISH KAMPOONG/VILLAGE



Kelurahan Pakis & Pakal, Kecamatan Sawahan

CO₂ Emission in 2009-2012

Source	Emission (Tonne CO ₂)
Electricity	24.528.639
LPG consumption	1.133
Fuel for transportation	6.722.142
Fuel for Industry	600.045

SOLUTION FOR ENERGY ALTERNATIVE

Solar Cell PJU



Sollar Cell Traffic Light



1. LED light
2. Solar Cell
3. Developing gas fuel to replace gasoline
4. Energy efficiency in industrial area (Surabaya Industrial Estate Rungkut)

C. TRANSPORTATION

CAR FREE DAY AT DARMO & TUNJUNGAN



EMISSION TEST

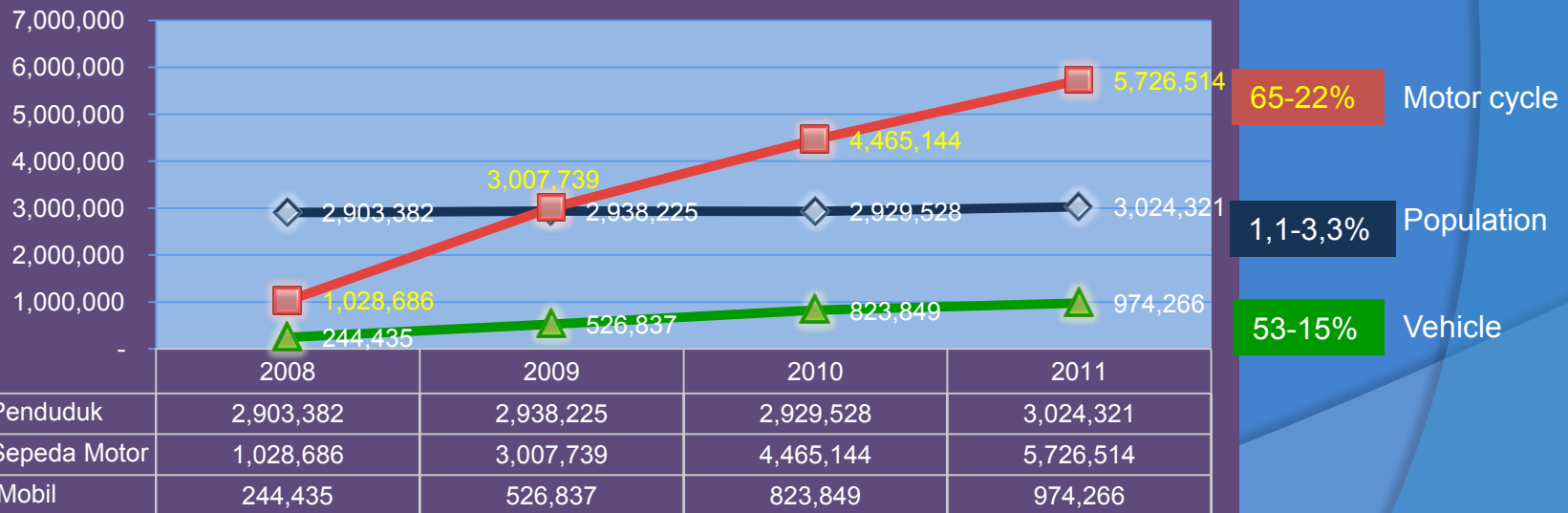
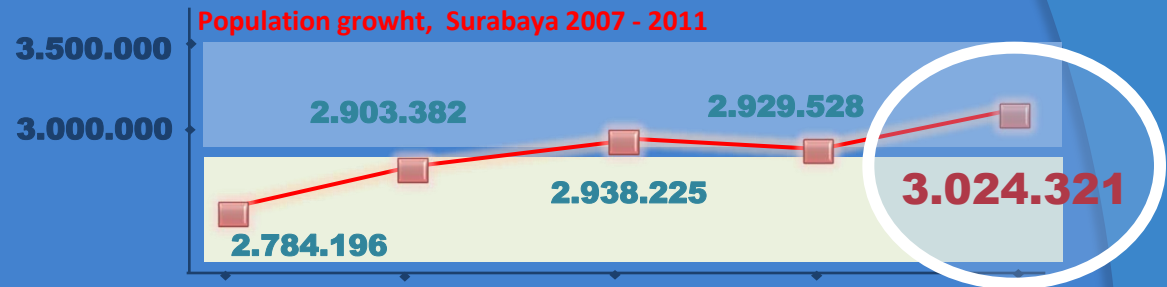


1. Holding Car Free Day in 5 locations in city center
2. Doing motorized vehicle emission test



DEVELOPING MASS TRANSPORT (Tram & Monorail) NO INNER CITY TOLL ROAD

POPULATION : 3.024.321 jiwa



	2008	2009	2010	2011
◆ Jumlah Penduduk	2,903,382	2,938,225	2,929,528	3,024,321
■ Jumlah Sepeda Motor	1,028,686	3,007,739	4,465,144	5,726,514
▲ Jumlah Mobil	244,435	526,837	823,849	974,266

CO₂ EMISSION FROM VEHICLE IN SURABAYA GATEWAY BASED ON SURVEY TRAFFIC COUNTING

Jl. Wonokromo	54.518 tonne CO ₂ /year
Jl. A Yani I	49.941 tonne CO ₂ /year
Jl. Gunung Sari	34.139 tonne CO ₂ /year
Jl. Greges	19.015 tonne CO ₂ /year
Jl. A Yani II	18.986 tonne CO ₂ /year
Jl. Margomulyo	17.474 tonne CO ₂ /year
Jl. Raya Balongsari	7.248 tonne CO ₂ /year
Jl. Rungkut Industri	6.803 tonne CO ₂ /year
Jl. Menganti	5.508 tonne CO ₂ /year
Jl. Gresik	5.247 tonne CO ₂ /year
Jl. Rungkut Menanggal	2.972 tonne CO ₂ /year
Jl. Margorejo	2.864 tonne CO ₂ /year



SURABAYAMRT
MASS RAPID TRANSPORTATION SYSTEM

Surabaya Mass Rapid Transportation (SMART) Tram and Monorail Project




Monorail & TramLine

No	Stasiun
US-1	Joyoboyo Trem
US-2	Bonbin
US-3	Taman Bungkul
US-4	Bintoro
US-5	Pandegiling
US-6	Panglima Sudirman
US-7	Kombepol M Duryat
US-8	Tegalsari
US-9	Embong Malang
US-10	Kedungdoro
US-11	Pasar Blauran
US-12	Bubutan
US-13	Pasar Turi
US-14	Kemayoran
US-15	Indrapura
US-16	Rajawali
US-17	Jembatan Merah
US-18	Veteran
US-19	Tugu Pahlawan
US-20	Baliwerti
US-21	Siola
US-22	Genteng
US-23	Tunjungan
US-24	Gub. Suryo
US-25	Bambu Runcing
US-26	Sonokembang

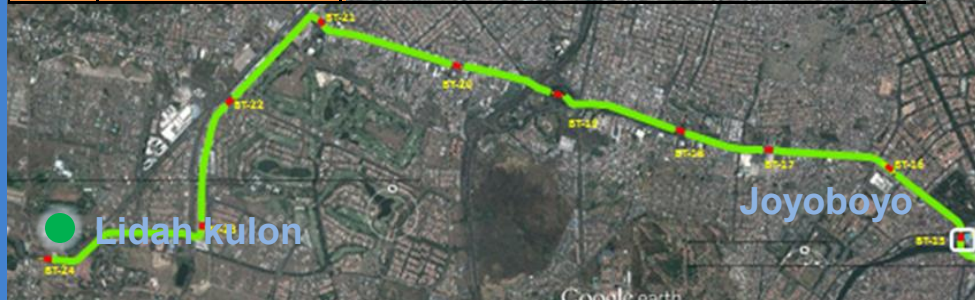
Hinterland

Terminal Intermoda
Kebun Binatang, Masjid dan Sekolah
Taman, Rumah Sakit
Sekolah
Hotel, Perdagangan, Bank, Travel

**Tram (North-South)
Joyoboyo – JMP ± 16,7 Km**



Pusat Oleh-oleh
Hotel, Perdagangan, Bank, Travel
Sekolah, Gedung Kesenian
Pusat Perkantoran
Pusat Perkantoran



Nomor	Nama Stasiun
BT-1	Kejawanan
BT-2	Mulyosari
BT-3	ITS
BT-4	GOR kertajaya indah
BT-5	Darmahusada Indah Timur
BT-6	Unair Kampus C
BT-7	Darmahusada
BT-8	RS Dr Sutomo
BT-9	Stasiun Gubeng
BT-10	Jl Raya Gubeng
BT-11	Irian Barat
BT-12	Bung Tomo
BT-13	Ngagel
BT-14	Wonokromo
BT-15	Joyoboyo
BT-16	Adityawarman
BT-17	Pakis
BT-18	Dukuh Kupang
BT-19	Bundaran Satelit
BT-20	HR Muhammad
BT-21	Simpang Darmo Permai
BT-22	Lontar
BT-23	Unesa
BT-24	Lidah Kulon

**Monorail (East-West)
Kejawanan – Lidah kulon ± 23 Km**



KETERANGAN :
 MONORAIL
 TRAM

Sumber :
 Pra Studi Kelayakan AUMC Pemkot Sby (2012)



Jl. Pasar keputran



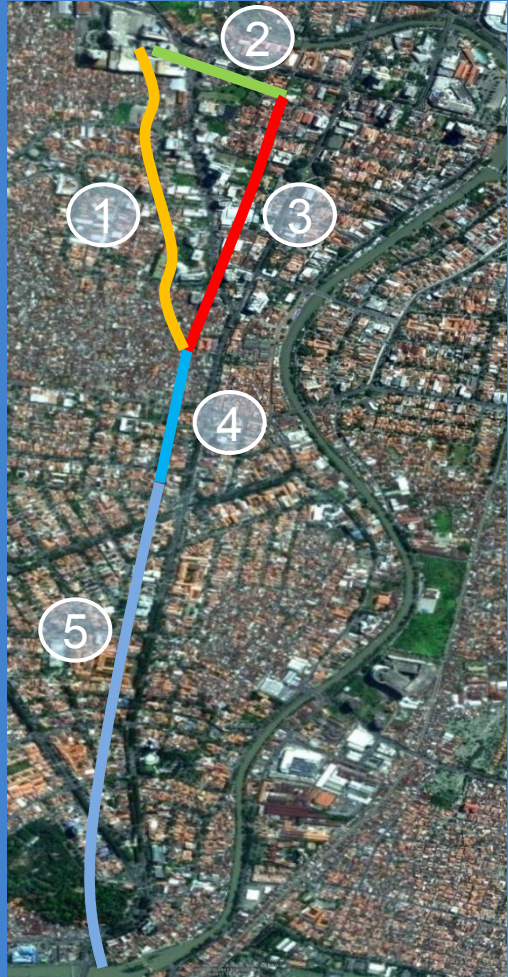
Jl. HR. Muhammad



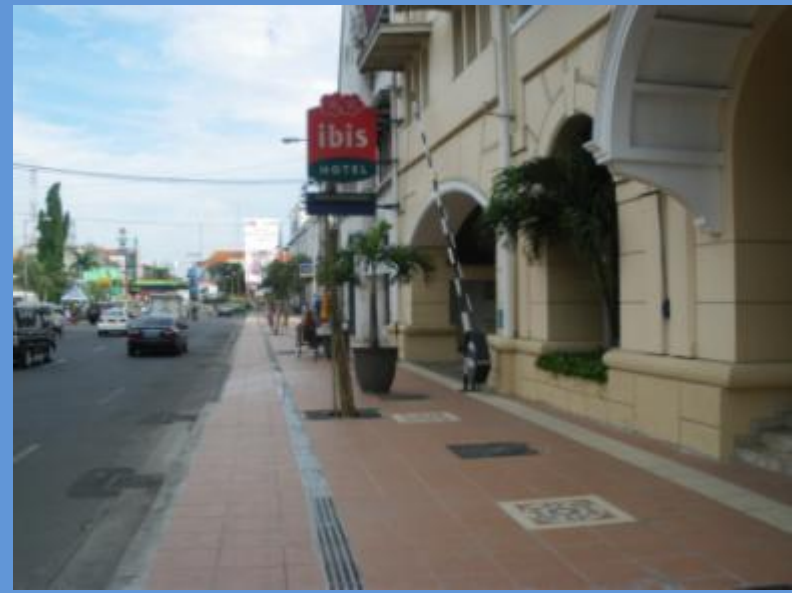
Jl. Bukit Darmo Boulevard



Jl. HR. Muhammad



CYCLING TRACT



Pedestrian Ways at Darmo st, rajawali st dan ibis - sahid hotel





THANK YOU

