



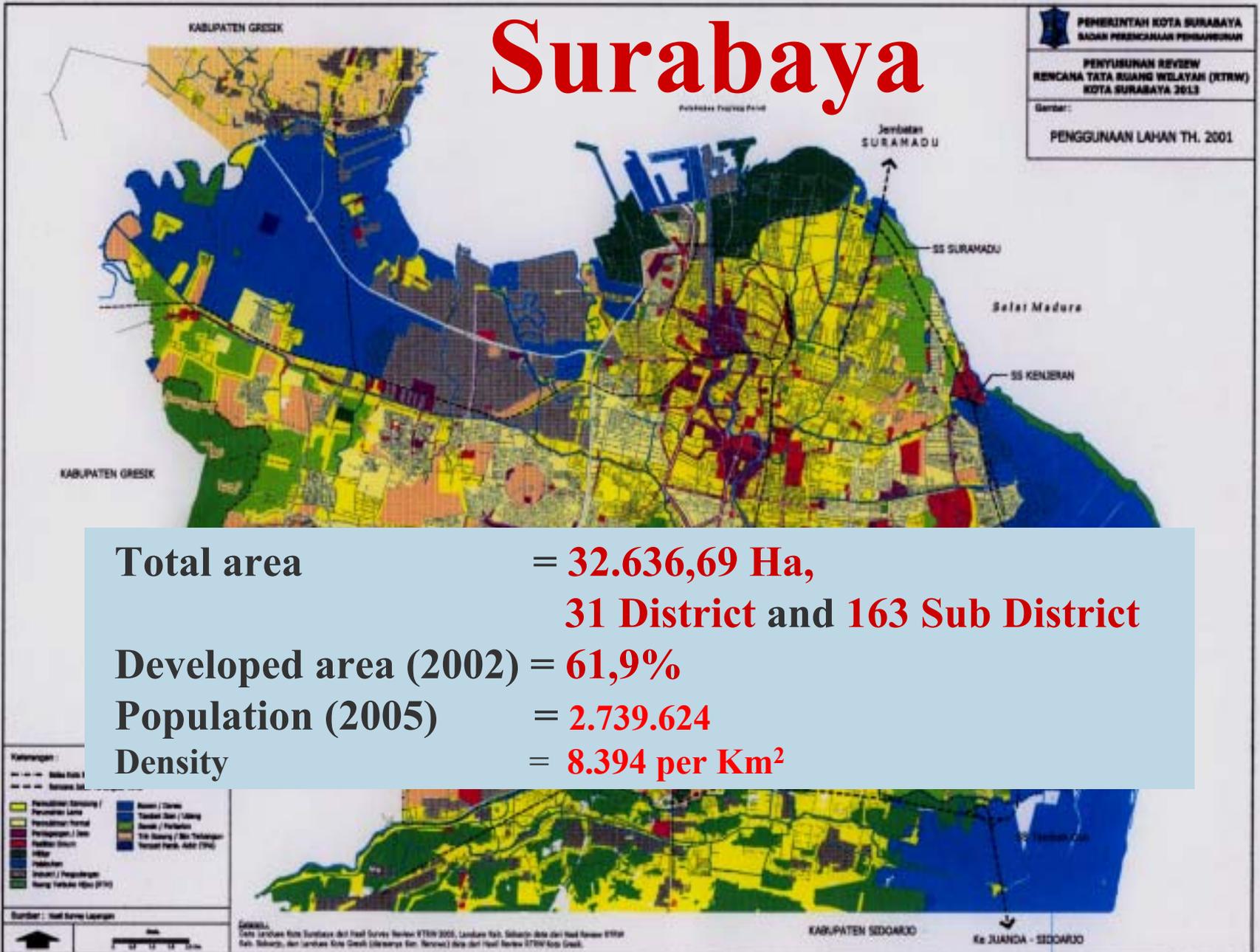
Air Quality Improving - Experiences of Surabaya City Indonesia

Prepared on

**The Sixteenth Asia Pacific Seminar on Climate Change
"Asia Pacific Regional Approach to Climate Friendly
and Climate Change - Resilient Society"**

Jakarta, Indonesia, 5 - 8 September 2006

Surabaya



Total area = **32.636,69 Ha,**
31 District and 163 Sub District

Developed area (2002) = 61,9%

Population (2005) = 2.739.624

Density = 8.394 per Km²

Surabaya

Profile Surabaya

- Surabaya is the capital city of East Java Province
- Located $112^{\circ} 12^1 - 7^{\circ} 2^1$ SL and $112^{\circ} 36^1 - 112^{\circ} 54^1$ EL
- Area 2,900.443 km²
- Population 2,739.624
- Surabaya Master Plan 2006, it is expected that Surabaya will be developed as City Service
- Since years ago Surabaya has a potential to support the development of industrial environment
- There are about 9,233 factories with 205,029 employees
- SIER its serves an industrial area that is well organized
- By development Surabaya have urban problems :
Energy combustion in residential area, solid waste, transportation/traffic congestion that can be air pollution problems



Air Pollution Sources :

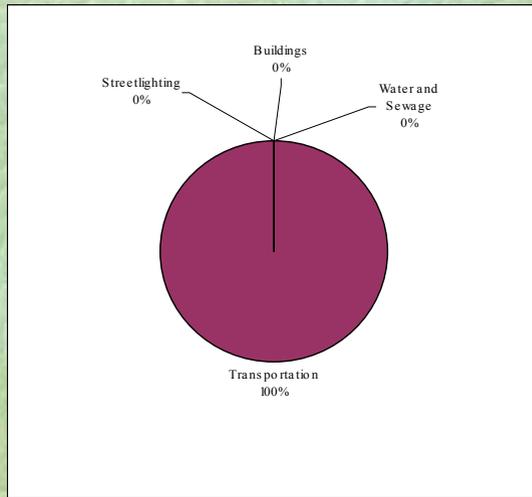
- **Air pollution problem in Surabaya sources :**
 - a. Mobile Source - Transportation**
 - b. Non mobile source - Industry , Housing, Incinerator**

- **Effort to Improving Air Quality :**
 - a. BLUE SKY PROGRAM**
 - b. SUSTAINABLE TRANSPORTATION**
 - c. INTEGRATED AMBIEN AIR QUALITY MONITORING CONTINUE**
 - d. PUBLIC CAMPAIGN AND INSPECTION & MAINTENANCE**
 - e. CNG ACTIVITY**
 - f. SURABAYA CAR FREE DAY**
 - g. YOUTH ECO EDUCATION**
 - h. PLANTATION**

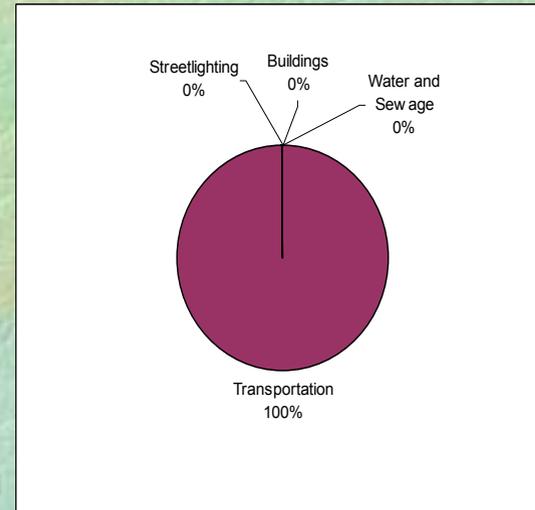
Activity in CCP ICLEI - Surabaya

- 1. I & M for corporate vehicles**
- 2. Fuel efficiency of city's vehicles**
- 3. Surabaya Car Free Day**
- 4. Blue Sky Campaign Program**

Green House Gas for Corporate Analysis

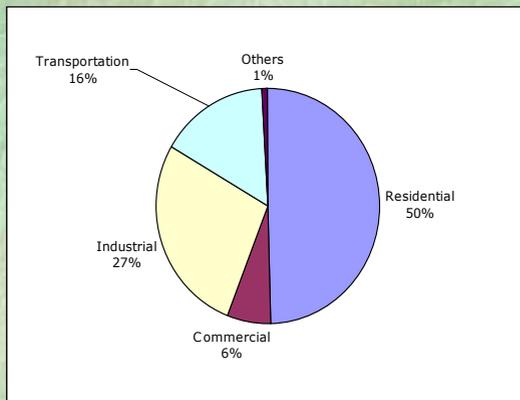


2001

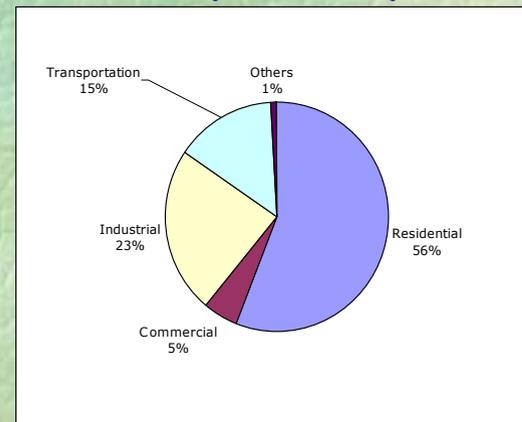


2010

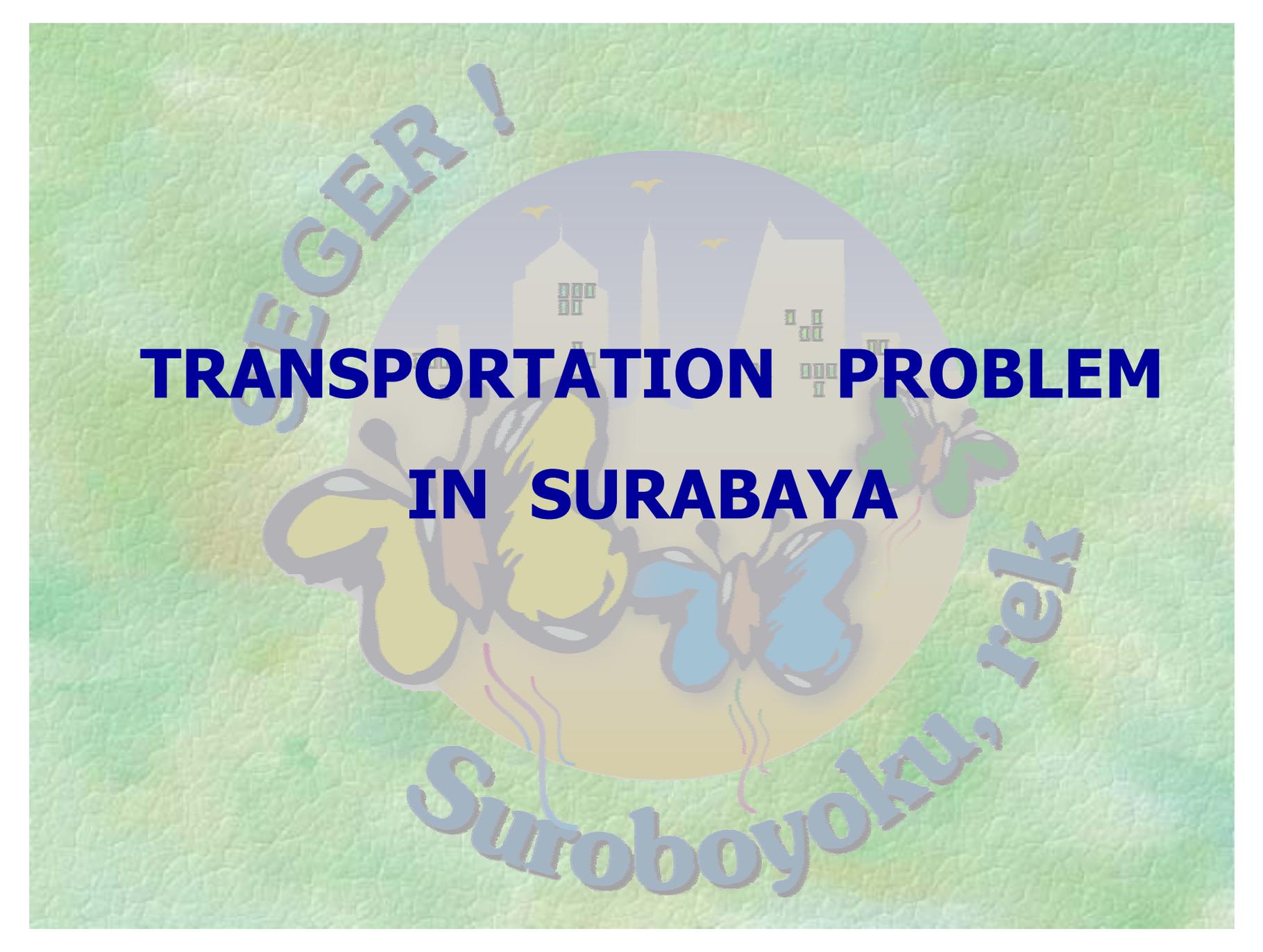
Green House Gas for Community Analysis



2001



2010

The background features a circular emblem with a city skyline at the top, two butterflies (one yellow, one blue) in the middle, and the text 'Suroboyoku, rek' at the bottom. The word 'SEGER!' is written in a large, blue, stylized font across the top left. The main title is centered in bold blue text.

TRANSPORTATION PROBLEM IN SURABAYA

Transportation problem :

- 1. Improving total vehicle which is not imbalance with road length**
- 2. Access /alternative road which is connect the city not optimal yet
example : to connect north corridor and south there is only trough
center of Ahmad Yani St.**
- 3. Enhanced community complaint about damage road**
- 4. There is not integrated yet accompany transportation**
- 5. System and arrangement parking pattern are not optimal yet**
- 6. Total private vehicle is high approximately 65 %**
- 7. Mean velocity at center of city approximately 15 - 20 km/hour**
- 7. Awareness and community comprehension in traffic discipline is not optimal yet**
- 8. The quality of public transport care is not optimal yet**

9. Air pollution from emission vehicle

10. Participation/awareness shortcoming a part of the community in develop and maintenance infrastructure and tool of transportation or road, land exemption, etc



**SUSTAINABLE TRANSPORT
POLICY IN SURABAYA**

Suroboyo

Sustainable Transportation Policy

- 1. Optimum road function with enhanced and road maintenance**
- 2. Supervision control for activity that can disturb road function
(food stall , etc)**
- 3. Enhanced security capacity to solve community complaint**
- 4. Enhanced and develop road alternative**
- 5. Enhanced quality of servicing and providing information for general
integrated transportation system**
- 6. Enhanced management and traffic engineer**
- 7. Reinforcement of institutional and law**
- 8. Structuring of public transport**
- 9. Roadworthiness test and emission test for vehicle**
- 10. Implementation of approach transport demand management**
- 11. Enhanced of transportation system which is synergies with land use
planning**



OBJECTIVE
SUSTAINABLE TRANSPORT
IN SURABAYA

Objective :

- 1. Enhanced character and road function to support urban transportation system**
- 2. Developing and develop road access/alternative as traffic lane connect accompany region of city**
- 3. Action advanced of community complaint**
- 4. Integrated transportation plan and management system**
- 5. Socialization of treatment approach Transport Demand Management**
- 6. Enhanced community development and private to structuring and parking management**
- 7. Enhanced awareness, participation and community character active in traffic discipline**
- 8. Enhanced air quality**

9. Enhanced traffic control

10. Traffic separation for heavy vehicle and public transport

**11. Implementation traffic impact assessment for activity
that can be traffic impact**

**12. Distribute primer and secondary activity which is smooth
at the whole area in Surabaya**

SEGER!

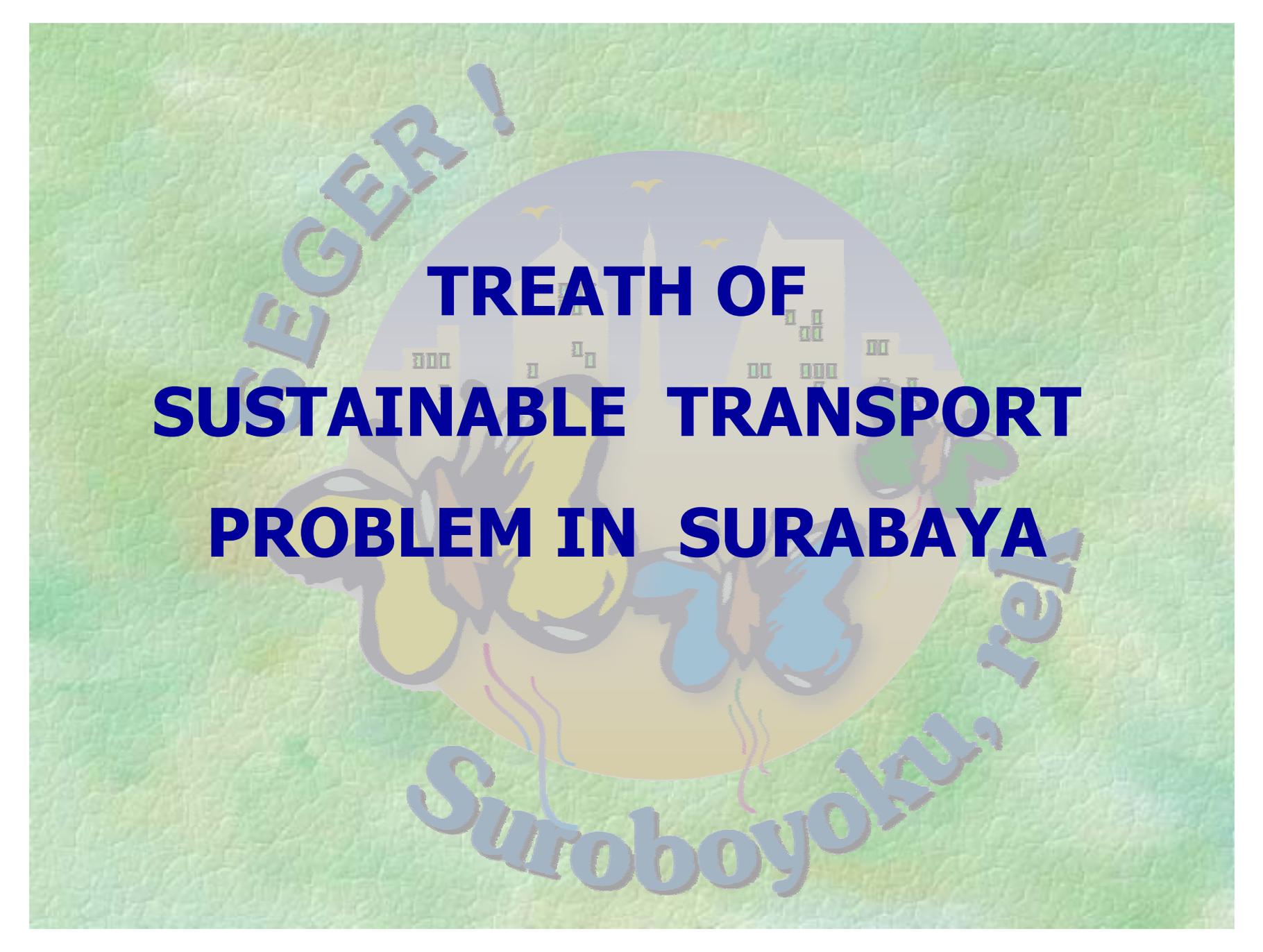
**GTZ SUTP
AND**

**THE CITY GOVERNMENT
OF SURABAYA**

Suroboyo

The city Government of Surabaya, with the assistance of the GTZ The German Technical Cooperation - Sustainable Urban Transport Project (SUTP), has developed a plan to device and implement policies toward environmentally, economically, and socially sustainable transport in the city. This will result in a range of local economic (enhanced investment eliminate),social (poverty reduction) and environmental (cleaner air) benefits, and will also contribute to a stabilization of “global“ CO2 emissions from Surabaya’s transport sector

SUTP has embarked on an integrated program, including - working closely with the city government - development of sustainable transport policies, design and implementation of a public awareness campaign, technical measures to reduce vehicle emissions, enhanced air quality management capability, adaptation of appropriate fiscal instrument and transport demand management measures, improvement of conditions for non motorized transport and pedestrians, elaboration of an effective inspection & maintenance and road worthiness program, promotion of the use of CNG, a public transport demonstration route including regulatory and institutional reforms to be applied nationally if successful, and dissemination of international experiences



**TREATH OF
SUSTAINABLE TRANSPORT
PROBLEM IN SURABAYA**

Suroboyoku, re!

TREATH OF SUSTAINABLE TRANSPORTATION IN SURABAYA

- 1. THERE IS NOT ENOUGH PROVIDED BUDGET TO
LAND EXEMPTION AND BUILD SOME ROADS THAT
WIIIL BE CAN SOLVE THE TRAFFIC CONGESTION
IN SURABAYA**
- 2. THE PUBLIC TRANSPORT FACILITY IS STILL
NOT SAFETY, COMFORTABLE AND LOW TECHNOLOGY**



**IMPLEMENTATION OF
SUSTAINABLE TRANSPORT
IN SURABAYA**

- **Cooperation with Public Private Partnership to supplying budget & approach to the community**
- **Public awareness campaign :**
Using bicycle, public transport, periodic test for vehicle, using mask, sustainable transportation
- **Sustainable transportation study :**
 1. **Inspection and Maintenance**
 2. **Improve of condition for non motorized transport**
 3. **Pilot project "Trayek" improvement for public transport in Surabaya**
 4. **Economy & management instrument for transport purifying in Surabaya**
 5. **Inspection and Maintenance system and roadworthiness in Surabaya (Inspection & Maintenance and roadworthiness Program for Surabaya win- win strategy for all)**
 6. **etc**

- **Surabaya Car Free Day**
- **Compiling**
 - a. **Regional Regulation Draft public transport renovation**
 - b. **Regional Regulation Draft Ambient Air Pollution Control from vehicle emission in Surabaya**
- **ATCS implementation (Automatic Traffic Control System)**



**AIR QUALITY MONITORING
SURABAYA**

Suroboyokku, rek

Ambient Air Quality Monitoring Network in Surabaya



RAQMC

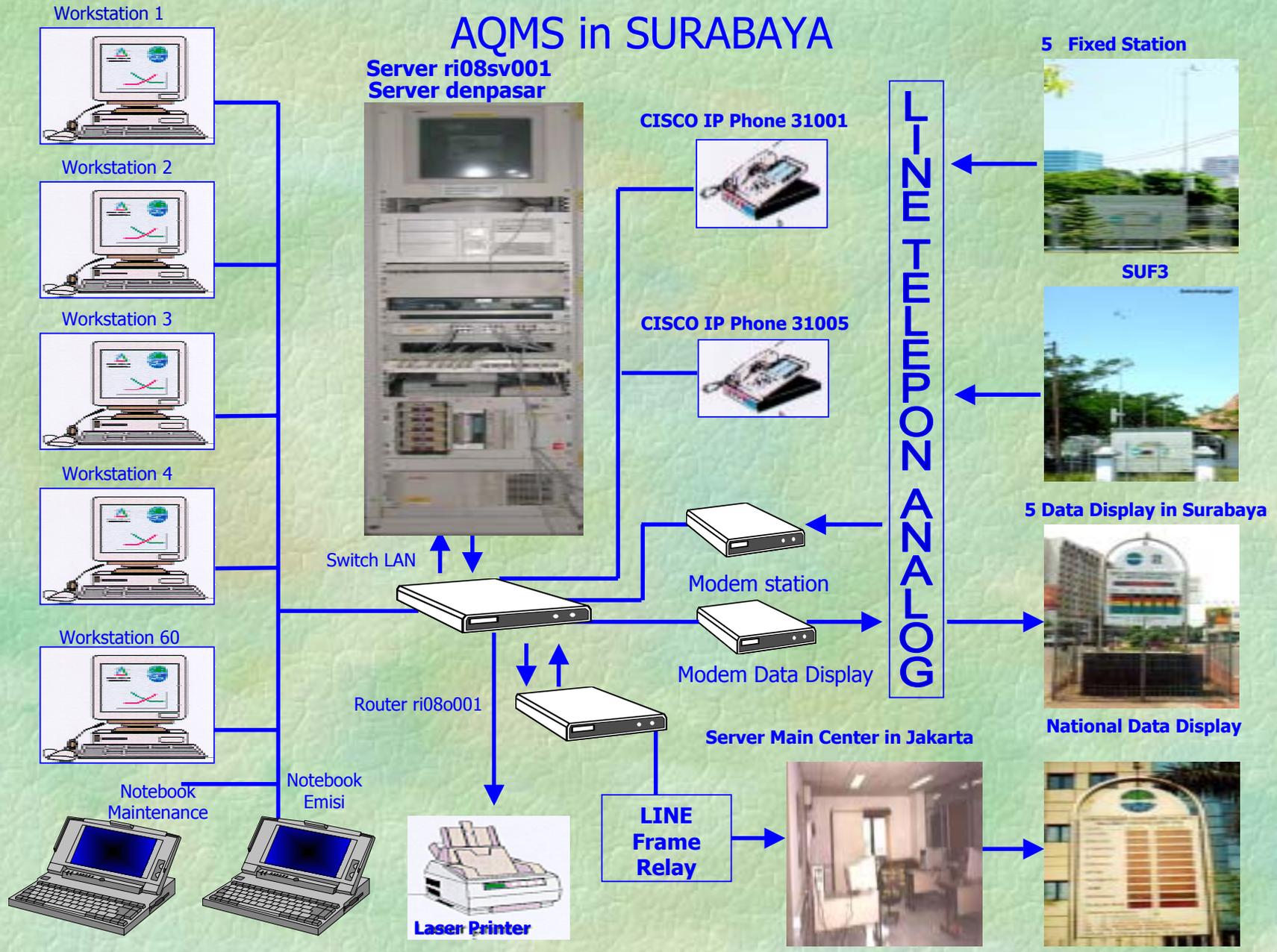
- SUF1 : Taman Prestasi
- SUF2 : Perak Timur
- SUF3 : Sukomanunggal
- SUF4 : Gayungan
- SUF5 : Gebang Putih

- DD1 : Gubeng Pojok
- DD2 : Pahlawan
- DD3 : Mayjen Sungkono
- DD4 : Achmad Yani
- DD5 : Dharmawangsa

AQMS in SURABAYA

Server ri08sv001
Server denpasar

GIZI DAN KESEHATAN



5 Fixed Station



SUF3



5 Data Display in Surabaya



National Data Display





Ambient Air Quality Network in Indonesia



Medan

4 Fixed Stasiun
3 Data Display
1 Mobile Station

Jambi

1 Fixed Stasiun
1 Fixed Stasiun PM10

Pontianak

1 Fixed Stasiun
1 Fixed Stasiun PM-10

Palangka Raya

3 Fixed Stasiun
1 Data Display
1 Mobile Station



Pekanbaru

3 Fixed Stasiun
2 Data Display
1 Mobile Station

DKI. Jakarta

5 Fixed Stasiun
5 Data Display
1 Mobile Station

Bandung

5 Fixed Stasiun
2 Data Display
1 Mobile Station

Semarang

3 Fixed Stasiun
2 Data Display
1 Mobile Station

Surabaya

5 Fixed Stasiun
5 Data Display

Denpasar

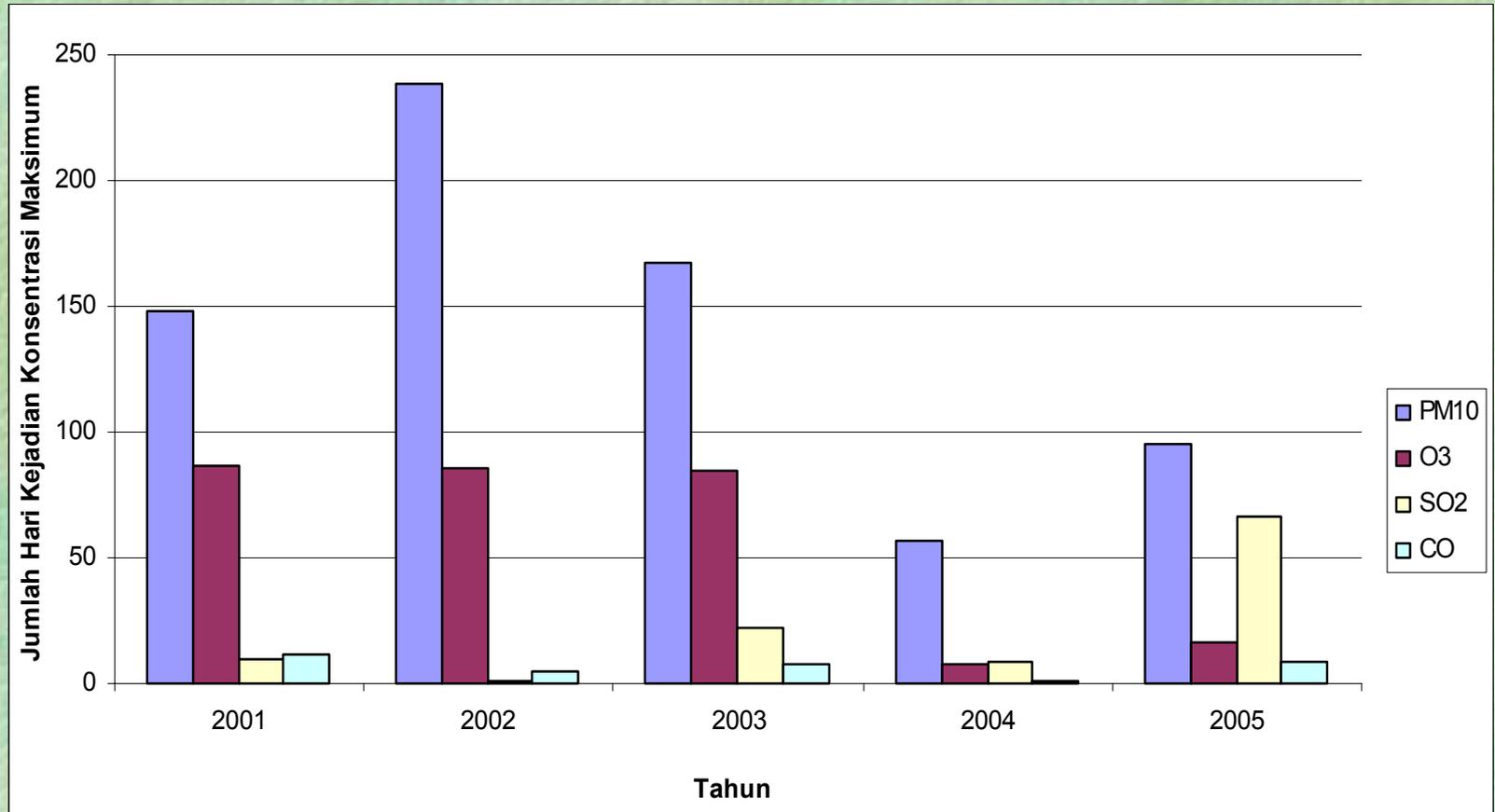
3 Fixed Stasiun
1 Fixed Station PM-10
5 Data Display
1 Mobile Station



NILAI	ISPU	MARCH – DECEMBER 2001	JANUARY – DECEMBER 2002	JANUARY – DECEMBER 2003	JANUARY – DECEMBER 2004	JANUARY – DECEMBER 2005
1 – 50	GOOD	27	42	51	63	62
51 - 100	MEDERATE	272	312	312	299	259
101 - 199	UNHEALTHY	7	11	2	4	9
200- 299	VERY UNHEALTHY	0	0	0	0	0
300 - LEBIH	DANGEROUS	0	0	0	0	0

Air Pollution dominant in Surabaya

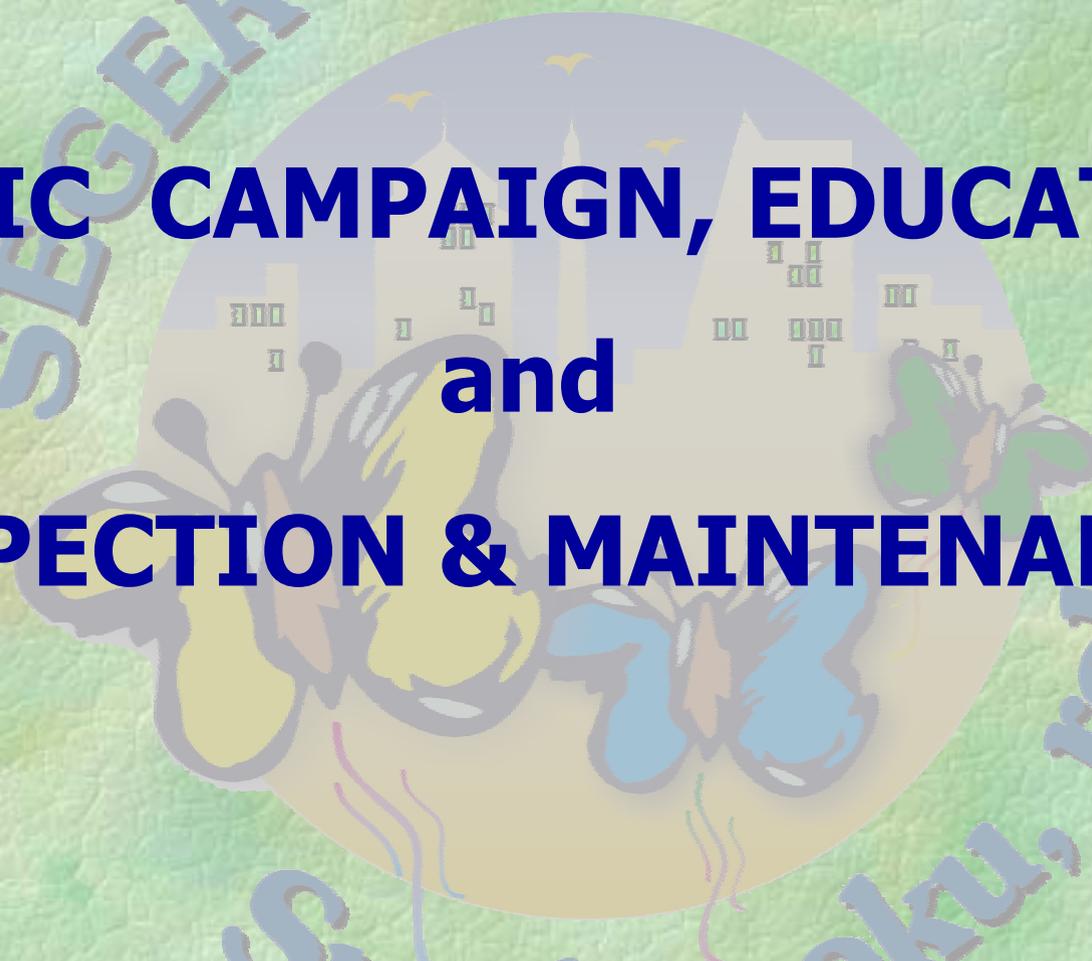
2001 - 2005



Pb and TSP Concentration in Indonesia from air quality monitoring Manual

No	Sampling 2003	Location	(Ug/m ³)	(Ug/m ³)
1	29 – 30 April	LAPAN Bandung	83,3	0,217
2	29 – 30 April	Stasiun Tegal Lega Bandung	97,1	0,378
3	30 April – 1 May	BPLHD Bandung	112,0	0,201
4	19 – 20 May	Mirota, Kaliurang St.Yogyakarta	125,3	0,338
5	21 – 22 May	Garuda Hotel, Malioboro St., Yogyakarta	147,5	0,629
6	02 – 03 June	Pedurungan District, Semarang	156,4	0,180
7	02 – 03 June	Genuk District, Semarang	467,4	0,130
8	03 – 04 June	Plaza Hotel, Setiabudi St., Semarang	158,2	1,080
9	03 – 04 June	Environmental Department Level II, Semarang	111,8	0,291
10	09 – 10 June	Display ISPU, Gubeng St., Surabaya	244,9	0,900
11	09 – 10 June	Display ISPU, Kertajaya St., Surabaya	299,7	1,570
12	10 – 11 June	Display ISPU, Heroes Monument St., Surabaya	291,1	1,260
13	10 – 11 June	Display ISPU, A.Yani St., Surabaya	330,2	0,930
14	24 – 25 June	Display ISPU, Ngurah Rai St., Denpasar Bali	132,0	0,081
15	25 – 26 June	Display ISPU, Sudirman St., Denpasar Bali	150,6	0,061
16	25 – 26 June	Display ISPU, Tengku Umar St., Denpasar	150,6	0,043
17	02 – 03 July	Environmental Departement, Cirebon	177,8	0,078
18	02 – 03 July	Sumber Kasih Hospital - Cirebon	146,0	0,040
19	03 – 04 July	Putera Bahagia Hospital - Cirebon	230,9	0,070

Standard PP No. 41/ 1999 : TSP : 230 Ug/m³ and Pb : 2 Ug/m³

The background features a circular graphic with a city skyline and two butterflies, one yellow and one blue. The text 'SEGER!' is written in a large, blue, sans-serif font, curving along the top left edge of the circle. The text 'Suroboyoku, rel' is written in a similar blue, sans-serif font, curving along the bottom right edge of the circle. The entire graphic is set against a light green, textured background.

**PUBLIC CAMPAIGN, EDUCATION
and
INSPECTION & MAINTENANCE**



Public Campaign



**Public transport campaign
which is using CNG
by Major of Surabaya**



**Public participation from
private sector to Major
of Surabaya**



Public Campaign - I & M

Inspection to Government Vehicle Giving Mask to Motorcyclist



Inspection & Maintenance Activity

Surabaya 711th anniversary with emission Inspection

Law enforcement for vehicle with high emission





PUBLIC CAMPAIGN - YOUTH ECO EDUCATION



**Public transport campaign
which is using CNG
by Major of Surabaya**



**Public participation from
private sector to Major
of Surabaya**

PUBLIC CAMPAIGN - YOUTH ECO EDUCATION



Eco Education to Student



Recycle Paper



PUBLIC CAMPAIGN - RECYCLE WASTE



Recycle Waste - Flower



EMISSION REDUCTION PROGRAM

EMISSION COMPETITION BETWEEN DEPARTEMENT/ OPERATIONAL VEHICLE OFFICE AT SURABAYA CITY 13 - 23 JULI 2004



LOMBA EMISI KENDARAAN DINAS/OPERASIONAL KANTOR TAHUN 2004



SEGER!

CNG ACTIVITY

Suroboyoku, rek



Vehicle with CNG

KOMISI EROPA
Tim Kerja
Kendaraan Berbahan Bakar Gas



Solusi-solusi baru dalam
pendayagunaan energi



Panduan para
Penentu Kebijakan pada
Kendaraan Berbahan Bakar Gas



Environmental Ministry RI with Major Of Surabaya in CNG Pilot Project for Government Vehicle in Surabaya :



From Center of Transportation Study Team and Logistic University Gajah Mada (UGM) Yogyakarta as Coordinator ICLEI Project which is Surabaya as a member, executed to through activity 100 Vehicle with CNG Pilot Project :

	Number of Vehicle	Using Fuel (lt./day)	Price	Using Price Every year	CO2 Emission (ton/year)
Benzene	100	9	1890	409.888.000	733
CNG	100	9	450	116.640.000	87
Saving			1440	293.248.000	645

With the CNG new price equal Rp. 700/lt :

	Number of Vehicle	Using Fuel (lt./day)	Price	Using Price Every year	CO2 Emission (ton/year)
Benzene	100	9	1890	409.888.000	733
CNG	100	9	700	181.440.000	87
Saving			1290	228.448.000	645

PROGRESS REPORT CNG PROGRAM IN SURABAYA

A. CNG PROGRAM

Using CNG activity since 1996/1997 year by Zebra Taxi for \pm 1000 Taxi and 2 CNG Fixed Station : Tanjungsari street and Industrial Estate Rungkut Surabaya Brebek Street (supply CNG for Zebra Taxi and Vehicle Government in Surabaya which using CNG and citizen) and 3 Mobile Station CNG : Jogoloyo, Kenjeran and Pandegiling (supply CNG for Zebra Taxi).

We had been held Transportation Development Study cooperate between Surabaya Government and GTZ , there is CNG Pilot Project for public transport with Code BZ but not yet follow by another public transportation in Surabaya.

Effort Air Pollution Protection from Mobile sources with CNG Pilot Project for 100 Units government vehicle since October 2002 until April 2003.



B. PROBLEM

Some problem in CNG Pilot Project :

- 1. There are only two Fixed Station CNG in Surabaya and so far away from center of Surabaya City.**
- 2. Spare part not provided every where in Surabaya.**

SURABAYA CAR FREE DAY



**1. April 22nd 2001 ;
Jl. Pemuda,
06.00am – 06.00pm.**

**2. August 18th 2001 ;
Jl. Yos Sudarso,
Jl. Walikota Mustajab
07.00am – 10.00pm**



Public Participation in Car Free Day

Car Free Day partnership with public participation and stake holders



Launching Public Campaign Program in CFD, partnership with Government, NGO, press, community pass through giving leaflet, and t shirts

Presentation by campaign official to the community.

This activity is very useful to give support for member and participant (Target : Bisnis group, scholl, University, Asociation Profesional, community, etc.)

Interview, this program will be concentrate for discussion /interactive dialog and board casting to some radios. This program as facility for audience in order to discussion directly.

Car Free Day



Car Free Day (CFD) was held at some road in center of Surabaya City

All area of road CFD was closed for motorcycle and another vehicle



- **Giving information for road user in order to understand area were closed for Car Free Day activities.**
- **Official monitoring and give some guideline to the road user which is area will be closed for Car Free Day activities.**



Surabaya Car Free Day with activity, “jalan sehat”, exhibition, bicycle bicycle, “becak”, painting competition

CENTER OF SURABAYA - MAJOR SURABAYA OFFICE



MERR (MIDDLE EASTEN RING ROAD)

A. YANI St.



BUS TERMINAL



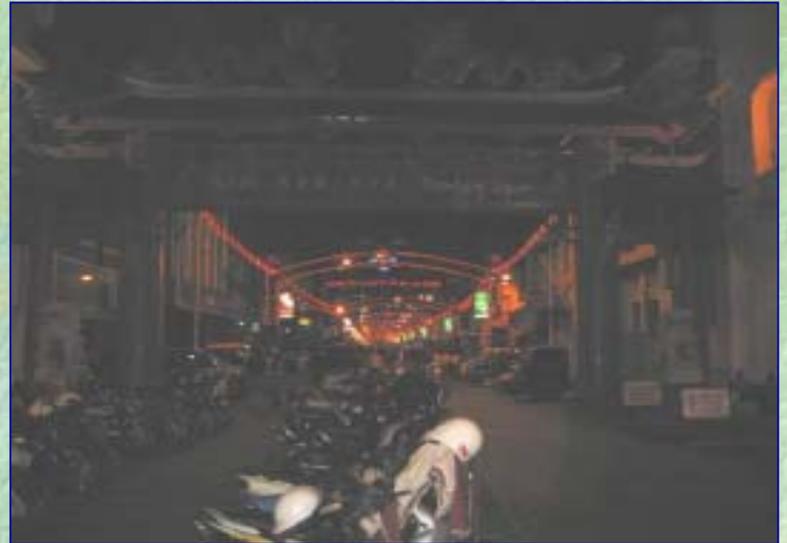
BRT (BUS RAPID TRANSIT)



Public Transport - Train - Surabaya - Sidoarjo



Car Free Zone Area (Closed 16.00 PM - 04.00 AM - Kya - Kya)



CONCLUSION

- **MANY KIND EFFORT TO IMPROVING AIR QUALITY IN SURABAYA :**
 - 1. BLUE SKY PROGRAM**
 - 2. SUSTAINABLE TRANSPORTATION**
 - 3. INTEGRATED AMBIEN AIR QUALITY MONITORING CONTINUE**
 - 4. PUBLIC CAMPAIGN AND INSPECTION & MAINTENANCE**
 - 5. CNG ACTIVITY**
 - 6. SURABAYA CAR FREE DAY**
 - 7. YOUTH ECO EDUCATION**
 - 8. PLANTATION**
- **IMPLEMENTATION THOSE EFFORT FINALLY ENHANCED IN A RANGE OF "LOCAL" ECONOMIC , SOCIAL, AND ENVIRONMENTAL (CLEAN AIR) BENEFITS, AND WILL ALSO CONTRIBUTE TO A STABILIZATION OF "GLOBAL" CO2 EMISSION IN SURABAYA**



Thanks For Your Attention

GOVERNMENT OF SURABAYA