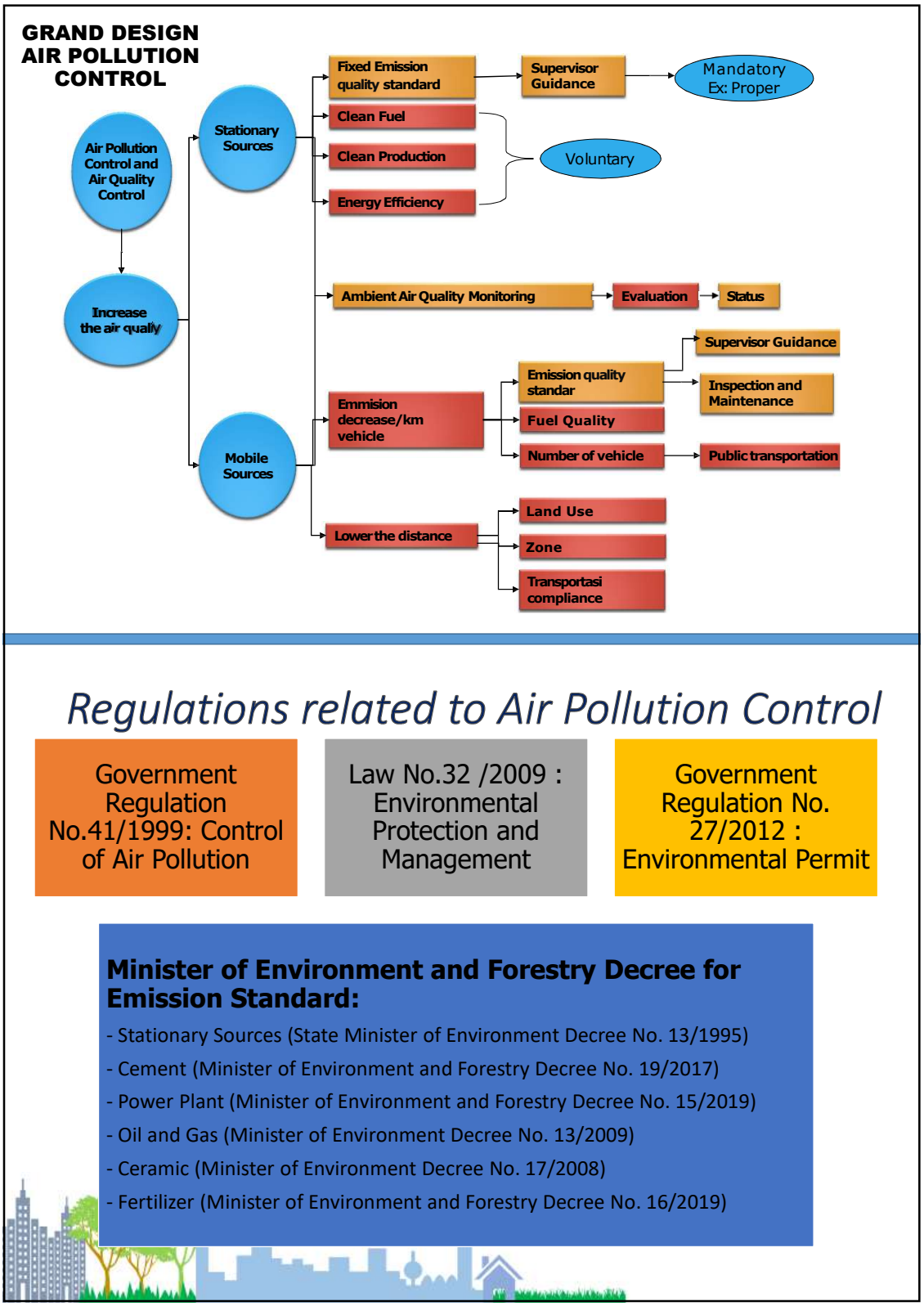

GRAND DESIGN AIR POLLUTION CONTROL
Air Pollution Control and Air Quality Control
Increase the air qualiy
Stationary Sources
Mobile Sources
Fixed Emission quality standard
Clean Fuel
Clean Production
Energy Efficiency
Supervisor Guidance
Mandatory Ex: Proper
Voluntary
Ambient Air Quality Monitoring
Evaluation
Status
Emmision decrease/km vehicle
Emission quality standar
Fuel Quality
Number of vehicle
Supervisor Guidance
Inspection and Maintenance
Public transportation
Lower the distance
Land Use
Zone
Transportasi compliance
Regulations related to Air Pollution Control
Government Regulation No.41/1999: Control of Air Pollution
Law No.32 /2009 : Environmental Protection and Management
Government Regulation No. 27/2012 : Environmental Permit
Minister of Environment and Forestry Decree for Emission Standard:
- Stationary Sources (State Minister of Environment Decree No. 13/1995)
- Cement (Minister of Environment and Forestry Decree No. 19/2017)
- Power Plant (Minister of Environment and Forestry Decree No. 15/2019)
- Oil and Gas (Minister of Environment Decree No. 13/2009)
- Ceramic (Minister of Environment Decree No. 17/2008)
- Fertilizer (Minister of Environment and Forestry Decree No. 16/2019)
1

EMISSION STANDARD FOR CEMENT INDUSTRY

COMPARATION OF BOTH REGULATIONS

(State Minister of Environment Decree No.13/1995) **KILN SOURCE**

PARAMETER	MAX LIMIT
Particulates	80 mg/Nm^3
SO_2	800 mg/Nm^3
NO_2	1000 mg/Nm^3
Opacity	20 %

THE LATEST REGULATION (Minister of Environment and Forestry Decree No.19/2017) **KILN SOURCE**

PARAMETER	MAX LIMIT (mg/Nm^3)		
	A	B	C
Total particle	75	70	60
SO_2	650	650	650
NOx	800	800	800
Hg	0,2	0,2	0,2

Note:
A : Operate before 31st December, 1990
B : Operate between 1st January, 1990 and 31st December, 2013
C : Operate from 1st January, 2014

EMISSION STANDARD FOR FERTILIZER INDUSTRY

COMPARATION OF BOTH REGULATIONS

(Minister of Environment Decree No.133/2004) **UREA PRODUCTION**

SOURCE	PARAMETER	MAX LIMIT
Primary reformer	NO_2	700 mg/Nm^3
Priling Tower/Granulation	Amonia (NH_3)	250 mg/Nm^3 300 mg/Nm^3
Gas turbine/Waste Heat Boiler	NO_2	125 mg/Nm^3
All Sources	Opacity	20 %
Power Boiler	Total particles SO_2 NO_2 Opacity	230 800 1000 20 %

THE LATEST REGULATION (Minister of Environment and Forestry Decree No.16/2019) **UREA PRODUCTION**

SOURCE	PARAMETER	MAX LIMIT (mg/Nm^3)		
		A	B	C
Primary reformer	NO_2	600	550	300
	SO_2	250	200	200
Priling Tower/Granulation	PM	150	100	60
	Amonia (NH_3)	200	125	75
Gas turbine/Waste Heat Boiler	NOx	270	250	75
Biomassa fuel	NOx	270	250	75

Note:
A : Operate before 31st December, 1990
B : Operate between 1st January, 1991 and 31st December, 2017
C : Operate from 1st January, 2018

AIR POLLUTION CONTROL FOR POINT SOURCES

EMISSION STANDARD FOR POWER PLANT

COMPARATION OF BOTH REGULATIONS

(Minister of Environment Decree No.21/2008) Steam Power Plant

PARAMETER	MAX LIMIT (mg/Nm³)					
	COAL		OIL		GAS	
	A	B	A	B	A	B
SO_2	750	750	1500	650	150	50
NOx	850	750	800	450	400	320
Total Particles	150	100	150	100	50	30
Opacity	20%	20%	20%	20%	-	-

Note:
A : Operate before 1st December, 2008
B : Operate between 1st January, 2008 and 5th April, 2019

THE LATEST REGULATION (Minister of Environment and Forestry decree No. 15/2019 Steam Power Plant

PARAMETER	MAX LIMIT (mg/Nm³)					
	COAL		OIL		GAS	
	A	B	A	B	A	B
SO_2	550	200	650	350	50	25
NOx	650	200	450	250	320	100
Total Particles	100	50	75	30	10	10
Hg	0,03	0,03	-	-	-	-

Note:
A : Operate before 5th April, 2019
B : Operate from 5th April, 2019

Flue Gas Desulfurization for reduce Sulphur and particulate emission.

Integrated and Online **Continuous Monitoring System (CEMS)** industries (cement, fertilizer, iron & steel making and carbon blank).

In the year of 2015-2016, through Program Environmentally Sound Management Performance Evaluation, several things successfully conducted:

(1) increasing energy efficiency to 249,000 Giga Joule,
(2) conservation of water by 447 million M^3,
(3) increasing of 3.2 million tons of the 3R (reuse, reduce, recycle) waste, and
(4) increasing CSR fund among society at 976 billion.
(5) CSR Fund serves as a trigger for society to develop local economy independently.

AIR POLLUTION CONTROL FOR MOBILE SOURCES

A. The implementation of Euro 4: Minister of Environment and Forestry Regulation No.20/2017

Benefits :

1. Car manufacturers in Indonesia: manufacturers don't need to do a further customization for the products to export
2. Society : people get high quality vehicles with better emission standards.
3. Urban air quality in Indonesia is getting better with the implementation. The acceleration of implementation of Euro 4 Application for Vehicle's Emission Standard policy will increase national economic benefit to IDR 3,973 T (accumulation by 2030).

3 PILARs of Policy (Push – Pull Policies)

Public Transport Role Improvement

- *Provision of bus-based urban public transport*
- Provision of supporting facilities for urban public transport
- Provision of mode integration facilities
- Provision of *Public Transport Information System*
- Socialization of Public Transport arrangement

Traffic performance improvement

- Improvement of Urban Road Performance
- *Impelementation of ICT for road Traffic*
- Implementation of *Traffic Demand Managemnet*
- Implementation of traffic impact assessment
- Socialization of Traffic Engineering Management

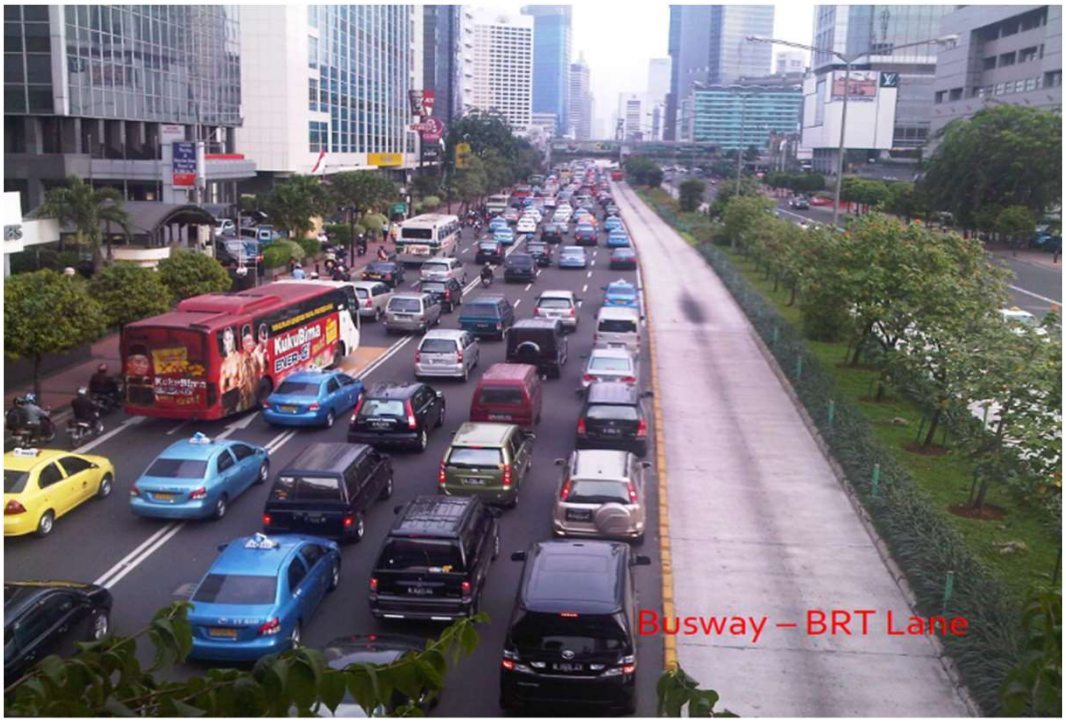
Environment quality improvement

- Provision of air quality monitoring devices in urban area
- Implementation of sollar-based traffic light and street lighting.
- Utilization of alternative fuel (Clean Fuel)
- Provision of pedestrian facilities
- Provision of bike lane in urban area
- Sosialization of environmentaly friendly transport

National Energy Planning for Transport Sector

- Develop mass public transport system (bus & railway) to improve public transport share up to 30% by 2025
- Improve transport management by developing Intelligent Transport System (ITS) in 24 Cities and Area Traffic Control System (ATCS) in 50 location
- Accelerate mass transport development and private car in using gas targeted 282 MMSCFD
- Develop policy regarding utilization of sollar for transport and facilities (station, port, airport, etc)

The Bus Rapid Transit (BRT) system in Jakarta and other cities



5

The Light Rail Transit (LTR) in **Palembang** City and currently under construction in **Jakarta**, the capital city of Indonesia

The Mass Rapid Transit (MRT) facility in Jakarta

Electric Train
to link the Airport:
Jakarta
Palembang
Medan
Padang

The Massive sidewalk in Sudirman Street Jakarta

7

Green Zone and Public Area

Green and clean Kampong in Surabaya, East Java

8

The first wind power project in Indonesia and the largest of its kind in Southeast Asia. The wind farm has 30 windmills, each with a 80-meter high tower and 57-meter long propeller blade that generates a 2.5 MW turbine to produce a total capacity 75 MW of electricity and can power up to 70,000 households

Roof-top Solar Panel at the GBK Jakarta Stadium, can produce electricity up to 1 MW

9

Air Quality Monitoring Network

AQMS Working Scheme

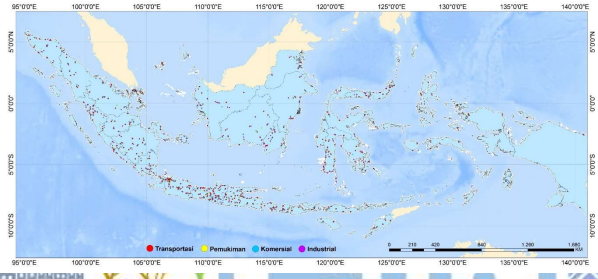
PM_{10} CO O_3 NO_2 $PM_{2.5}$ HC SO_2

Metrological:
- Wind Speed & Direction
- Solar Radiation
- Temperature
- Air Pressure
- Humidity
- Rainfall

AUTOMATIC AIR QUALITY MONITORING SYSTEM (AQMS) LOCATION

1. Jambi
2. Palembang
3. Palangkaraya
4. Pekanbaru
5. Padang
6. Pontianak
7. Banjarmasin
8. Jakarta Pusat (GBK)
9. Mataram
10. Makassar
11. Manado
12. Batam
13. Banda Aceh
14. Medan
15. Bengkulu
16. Lampung
17. Depok
18. Bekasi
19. Bandung
20. Semarang
21. DI. Yogyakarta
22. Surabaya
23. Malang
24. Denpasar
25. Kupang
26. Jayapura

PASSIVE AIR QUALITY MONITORING LOCATION



Used in 419 cities across Indonesia with 4 sample in each city which represent the location of transportation, industry, residential area, and office area.