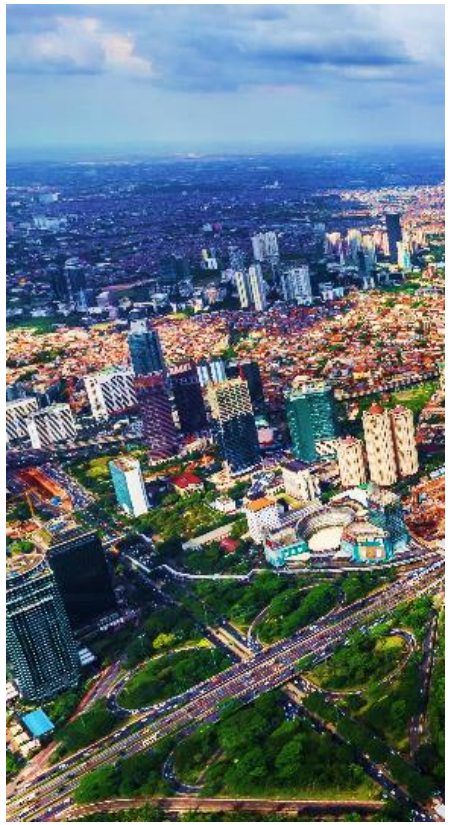
Air Pollution Reduction Strategies of Jakarta



PROFILE of JAKARTA

Land area of 662,33 km^2
Sea area of 6,997.50 km^2
Inhabited by 10,075,310 people
Density of 15,211.92 people km^{-2} (2014)

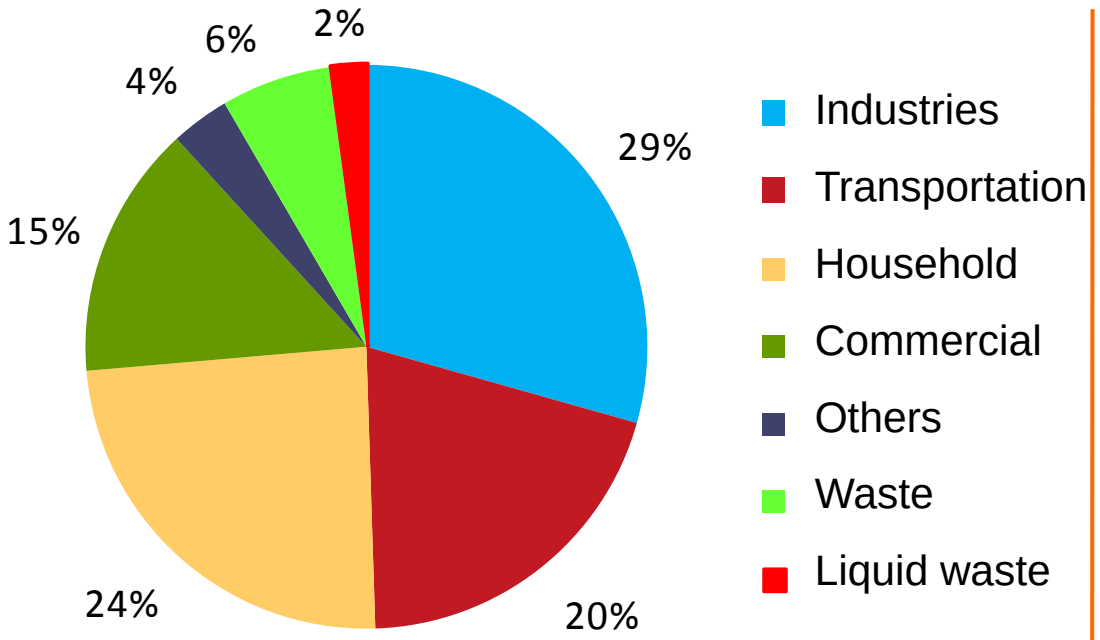
Officially a province with special capital region status, but commonly referred to as a city

Consist of:
- Five administrative cities (Kota Administrasi) and one administrative regency (Kabupaten Administrasi)
- 44 sub-district (Kecamatan)
- 267 urban village (Kelurahan)

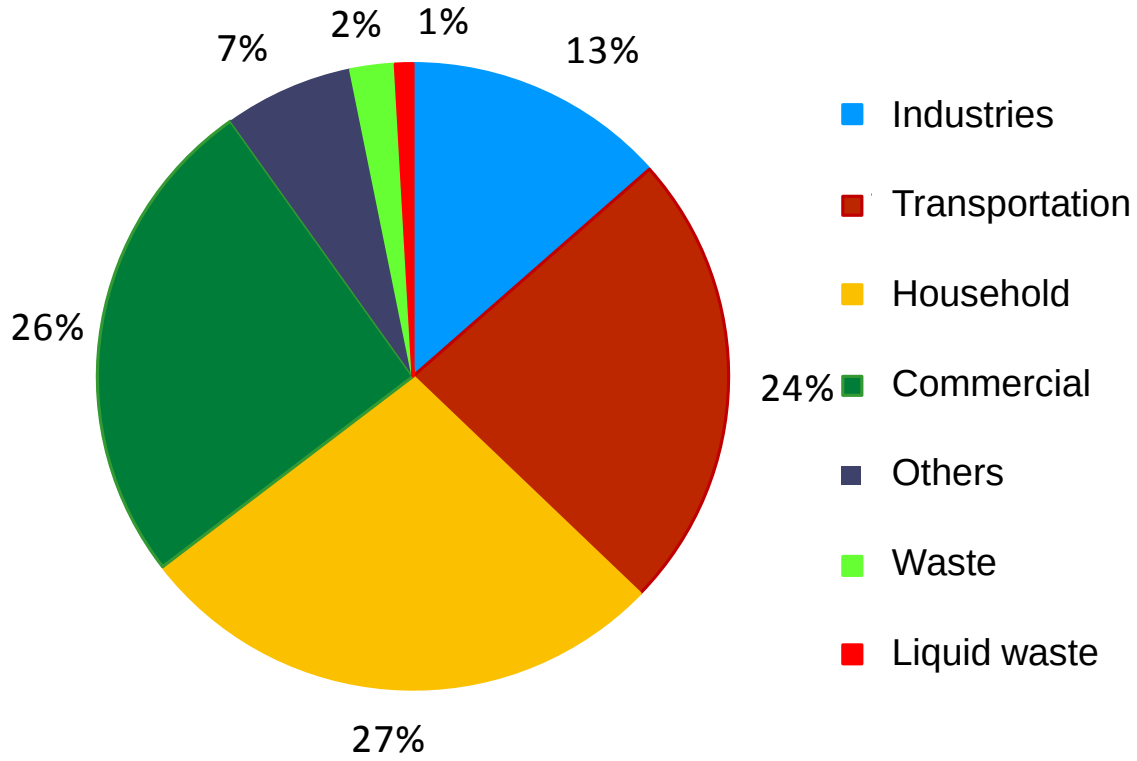
Border:
- **West**: South Tangerang City; Tangerang Regency, Banten Province
- **South**: Depok city; Bogor City; Bogor Regency, West Java Province
- **East**: Bekasi City; Bekasi Regency, West Java Province
- **North**: Java Sea

SOURCES

Based on Governor Regulation of 131/2012 on Local Action Plan for GHG Emission Reduction



2005: 35.09 million Tones CO_2e



2030: 113.94 million Tones CO_2e

Dominant sources of air pollution: Transportation, Industries, and Household

AIR QUALITY MONITORING

Based on Environment Minister Decree of 45/Menlh/1997 on Air Pollution Standards Index

Air Pollution Standards Index (Indeks Standar Pencemar Udara = ISPU) are:
Figures that do not have units that describe ambient air quality conditions at a particular location and time based on the impacts of human health, aesthetic values and other living things.

Parameters measured:

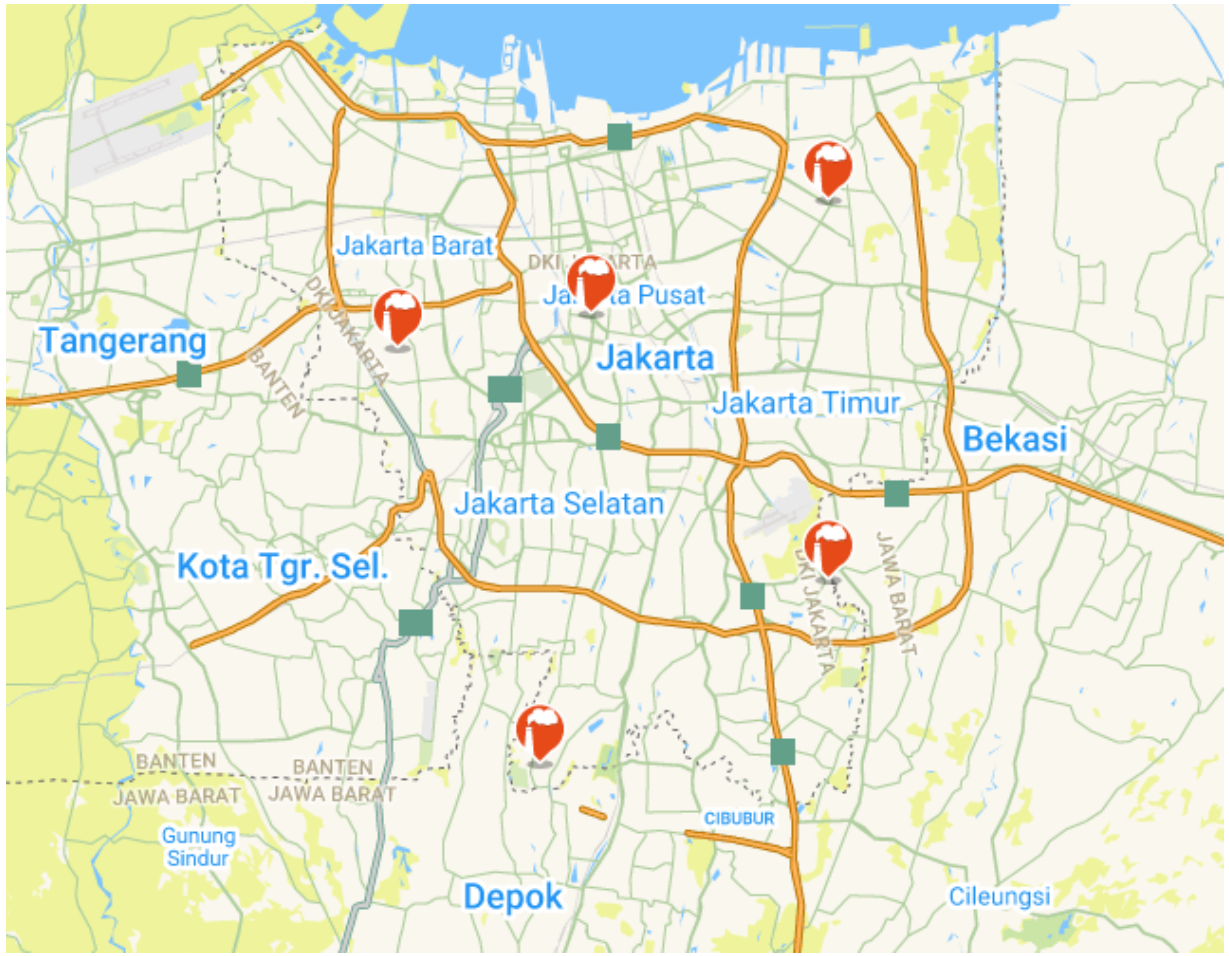
1. Particulate (PM 10)
2. Carbon dioxide (CO)
3. Sulfur dioxide (SO_2)
4. Nitrogen dioxide (NO_2)
5. Ozone (O_3)

AIR QUALITY MONITORING STATUS

Air Quality Monitoring Stations
(Stasiun Pemantau Kualitas Udara = SPKU)

1. Bundaran HI (DKI 1)
2. Kelapa Gading (DKI 2)
3. Jagakarsa (DKI 3)
4. Lubang Buaya (DKI 4)
5. Kebun Jeruk (DKI 5)

Air Pollution Standards Index monitoring result has been displayed at **http://smartcity.jakarta.go.id/maps/** and also displayed at the Command Center of Jakarta Environment Department.



AIR QUALITY MONITORING RESULT

Category	2012		2013		2014		2015		2016		2017	
	Day(s)	%	Day(s)	%	Day(s)	%	Day(s)	%	Day(s)	%	Day(s)	%
Good	4	1%	4	1 %	12	3%	43	12%	26	7%	43	12 %
Moderate	63	19%	144	40 %	256	70%	258	71%	245	67%	212	58 %
Unhealthy	149	44%	190	52 %	89	24%	64	17%	93	26%	110	30 %
Very Unhealthy	114	34%	27	7%	8	3%	0	0%	1	0%	0	0%
Hazardous	6	2%	0	0 %	0	0%	0	0%	0	0%	0	0%
Total days counted	365	100%	365	100%	365	100%	365	100%	365	100%	365	100%

REDUCTION

Based on Governor Regulation of 131/2012 on Local Action Plan for GHG Emission Reduction

To accelerate achievement of GHG emission reduction supported by 30:30 commitment signed by DKI Jakarta Governor :

a commitment to reduce energy, water, and GHG Emissions by 30% in 2030

Grand Design Green Building Targets for 2030:

- Electric energy savings of 3,785 GWh → for illuminating >32 thousand units House / Flats 1300W
- Water energy savings of 2,4 billion liter → equal with water consumption for >1100 unit houses/flats
- **CO_2 emission reduction** → 3,37 million ton CO_2e → equal with CO_2 reduction from 815.000 trees planted

REDUCTION

1. Programs with high authority of Jakarta Provincial Government (Can be completed by Jakarta Provincial Government):

Energy sector Transportation

- **Busway** : 15 corridors until 2030 + elevated busway
- **Feeders busway** : Available at every corridor
- **Monorail (elevated Busway)** : Length of 14,1 km
- **Bicycle path** : Length of 150 km at 2030
- **Rejuvenation of public transport** : Bus, angkot, and taxi - an increase in the fuel economy
- **Vehicle Inspection (uji KIR)** : Public transport , truck, pick-up - 5% fuel efficiency
- **Freight transport** : Rerouting at busy hours from highway (30 km) - increased traffic speed
- **Parking management** : Parking ban on the road, higher parking rates in the city center
- **Intelligent transportation system (ITS)** : Along busway corridors
- **ERP** : Along main road and busway corridors
- **TOD** : Park-n-Ride at Ragunan
- **Ecodriving** : For bus, fuel efficiency at 7%

1. Programs with high authority of Jakarta Provincial Government (Can be completed by Jakarta Provincial Government):

Energy sector	Commercial	**Green Building** : City Hall, Parliament Building, Junior High School Building, Governmental Building
	Others	**Street lights** : 367,070 energy-efficient street lamps
		Renewable energy development using solar power plants : street lamps, buildings, and in Kepulauan Seribu using solar cells
		Traffic lights : 5208 energy-efficient traffic lights

1. Programs with high authority of Jakarta Provincial Government (Can be completed by Jakarta Provincial Government):

Waste sector	Solid waste	**Collecting Landfill gas** : Bantar Gebang Landfill
		ITF/Composting : 4 locations in Jakarta
		3R : MBT, bricketing, and others at ITF and Bantar Gebang Landfill
	Liquid waste	**Waste Treatment Plant off-site** : Liquid waste integration off-site
		Waste Treatment Plant on-site : Improved waste treatment technology on-side

2. Programs with moderate authority of Jakarta Provincial Government (Jakarta Provincial Government assisted by Central Government / Donor Countries):

Energy sector	Household	**Energy Conservation** : Utilization of energy-saving electrical appliances
	Transportation	**MRT** : 23.3 km North-South (2016); 47.6 km North-South & West-East (2027)
		Gas Fuel : Public transportation (angkot, bus, taxi, bajaj), government & private vehicle 7%
		Personal car emission test : All private cars
	Industry	**Energy conservation** : Demand Side Management, and efficient technology
	Commercial	**Govermental buildings**: 3440 green building and energy conservation
		Non-governmental buildings : green building and energy conservation
LULUCF Sector	Forest	**Green Open Space (RTH)** : Non-Jakarta Provincial Government Asset

3. Programs with weak authority of Jakarta Provincial Government (All by Central Government):

Energy sector	Household	**Energy diversification :** Substitution of kerosene with LPG
	Transportation	**Fuel** : Regulation / fiscal incentives - Fuel efficiency 5-10%
		Train : double track Jabodetabek Commuter Train
		Hybrid Vehicle : Regulation / fiscal incentives of passenger cars, fuel efficiency of 30-40% per km trip
		Biofuel : % blend bioethanol 15%; biodiesel 20%

PROGRAMS FOR IMPROVING AIR QUALITY IN JAKARTA

1. Enforcement of vehicle emission test
2. Air quality monitoring
3. Promoting environmentally friendly fuel (such as gas fuel)
4. Chimney emission control
5. Car Free Day
6. Promoting public transportation

PROGRAMS FOR IMPROVING AIR QUALITY IN JAKARTA

7. •More Green Open Space (RTH)
8. •Traffic Management
9. •Traffic control based on vehicle license plate (even-odd number)
10. •Socialization of eco-driving
11. • Non-Smoking Area

EMISSION TEST

Based on Regional Regulation of 2/2005 on Air Pollution Control

Emissions Test by communities in the 'Program Langit Biru' from 2005 to 2016 with 168,230 vehicles tested.

Emission tests conducted on private vehicles, government vehicles, and also garbage trucks at 2017 with :
Total number of vehicles measured: 11,011 vehicles
Vehicles passed : 9,734 vehicles (88.40%)
Vehicles that did not pass : 1,277 vehicles

CONVERSION
FROM FUEL OIL TO GAS FUEL
(BBM to BBG)

Based on Governor Regulation of 141/2007 on the Use of Gas Fuel (BBG) for Public Transportation and Government Vehicle

Data of vehicles using BBG:

- Busway : 585 units
- Double-decker Bus : 18 Units
- Taxi : 2,360 units
- Bajaj : 14,206 units

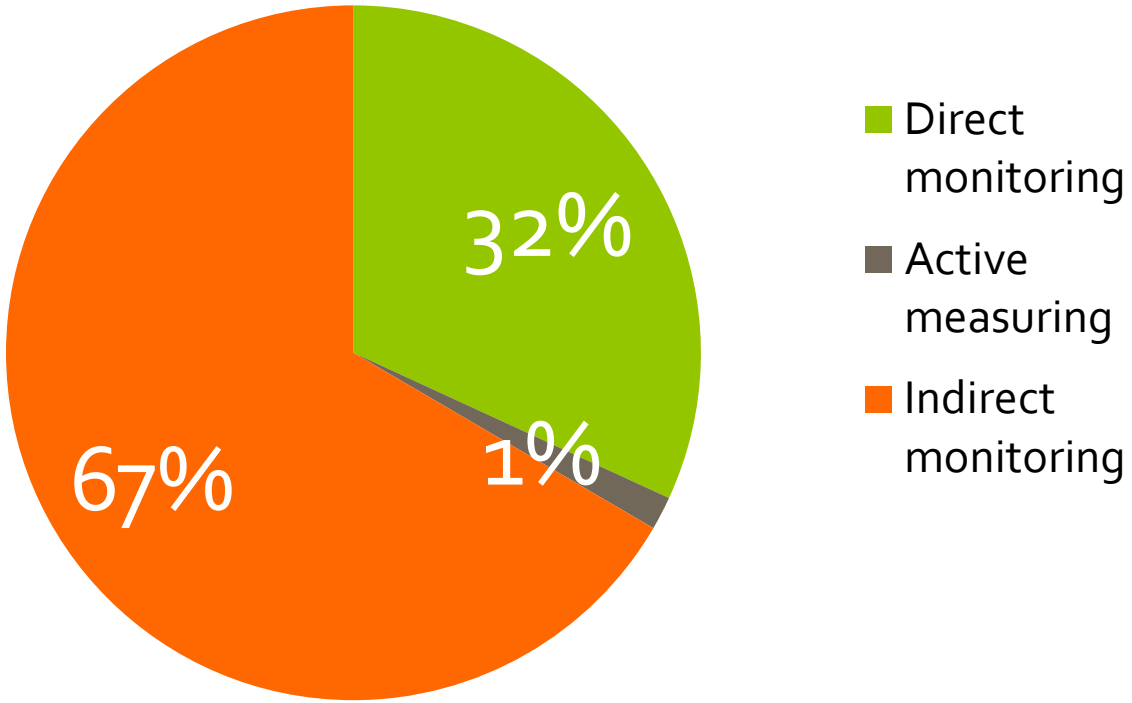
Total Gas Fuel Station and Mobile Refueling Unit (MRU):

- SPBG : 13 Units
- MRU : 4 Units

INDUSTRIAL AND COMPANY CHIMNEY MONITORING

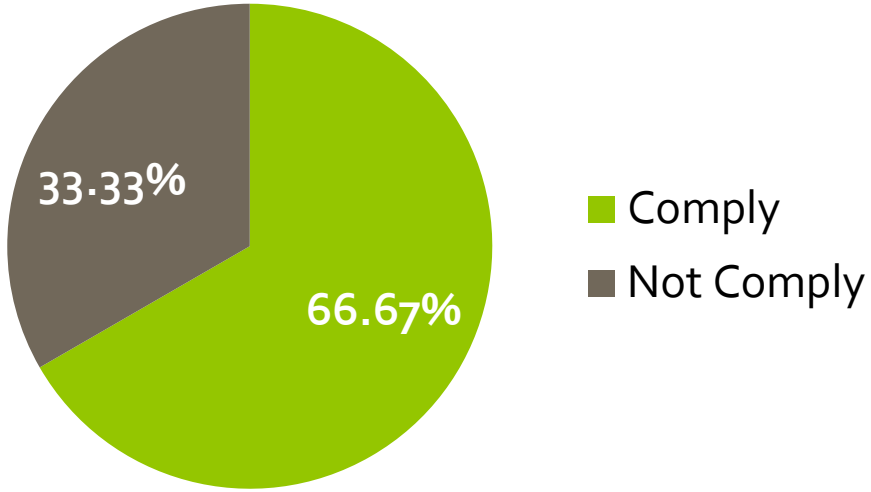
Total Source Emission Monitoring until October 2017

Direct monitoring	123
Active measuring	6
Indirect monitoring	257
Total	386



INDUSTRIAL AND COMPANY COMPLIENCE

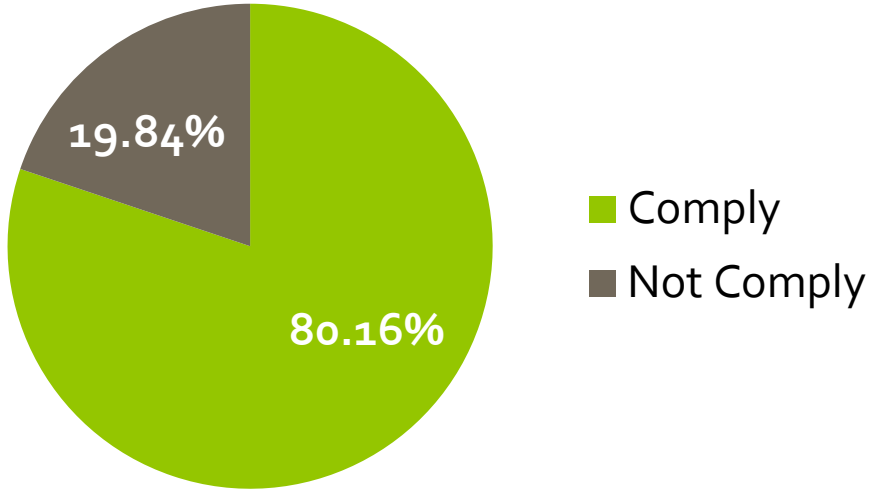
Direct Monitoring



Direct Monitoring Parameters:

- ☑ Point Source Emission Laboratory Test
- ☑ Quality Standard Fulfillment
- ☑ Submission of Technical Requirements (Sampling Hole, Working Floor, Ladder)

Indirect Monitoring



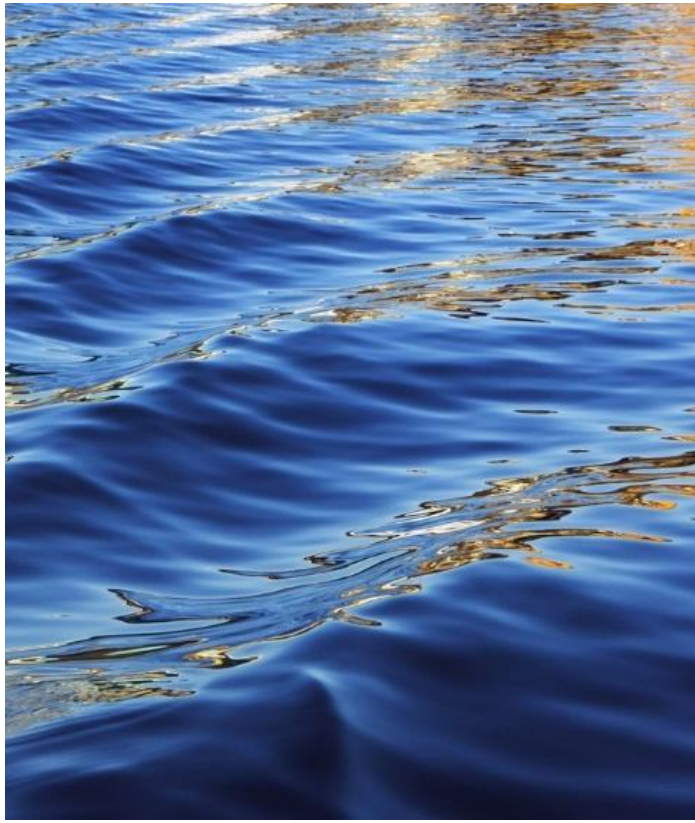
Indirect Monitoring Parameters:

- ☑ Point Source Emission Laboratory Test
- ☑ Quality Standard Fulfillment
- ☑ Submission of the Point Source Emission Report

PLAN

1. Necessary to accelerate the air quality improvement plan in accordance with the Governor Regulation of 131/2012 on the Local Action Plan for Greenhouse Gas Emission Reduction
2. The emission test of all vehicles owned by Government of Jakarta
3. Conversion from fuel oil to gas fuel (BBM to BBG)
4. Installation of Gas Fuel Converter for garbage trucks owned by Environment Department of Jakarta, then gas fuelled trucks for the next procurement. Further, promoting conversion to gas fuelled vehicles for the other departments in Government of Jakarta and large companies, including Transjakarta buses.
5. Implementation of Governor Regulation of 141/2007 on the Use of Gas Fuel (BBG) for Public Transportation and Government Vehicle
6. Procurement six units of Air Quality Monitoring Station (SPKU), so the total station will be 11 units
7. Addition of air pollution monitoring parameters, i.e. PM 2.5 because currently only monitored PM 10

Thank you



Sources: Government of Jakarta (jakarta.go.id)