

***IMPACT OF
SUSTAINABLE
GREENING
AT THE SCHOOLS &
INDUSTRIAL ZONES
IN MYANMAR***

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Myanmar National Environmental Policy, Strategic framework & Master Plans



Green Growth Topics Addressed by GGBP



Reference: Lessons from Country Experiences - Green Growth Best Practice (GGBP)

Sustainable Development Challenges in Myanmar

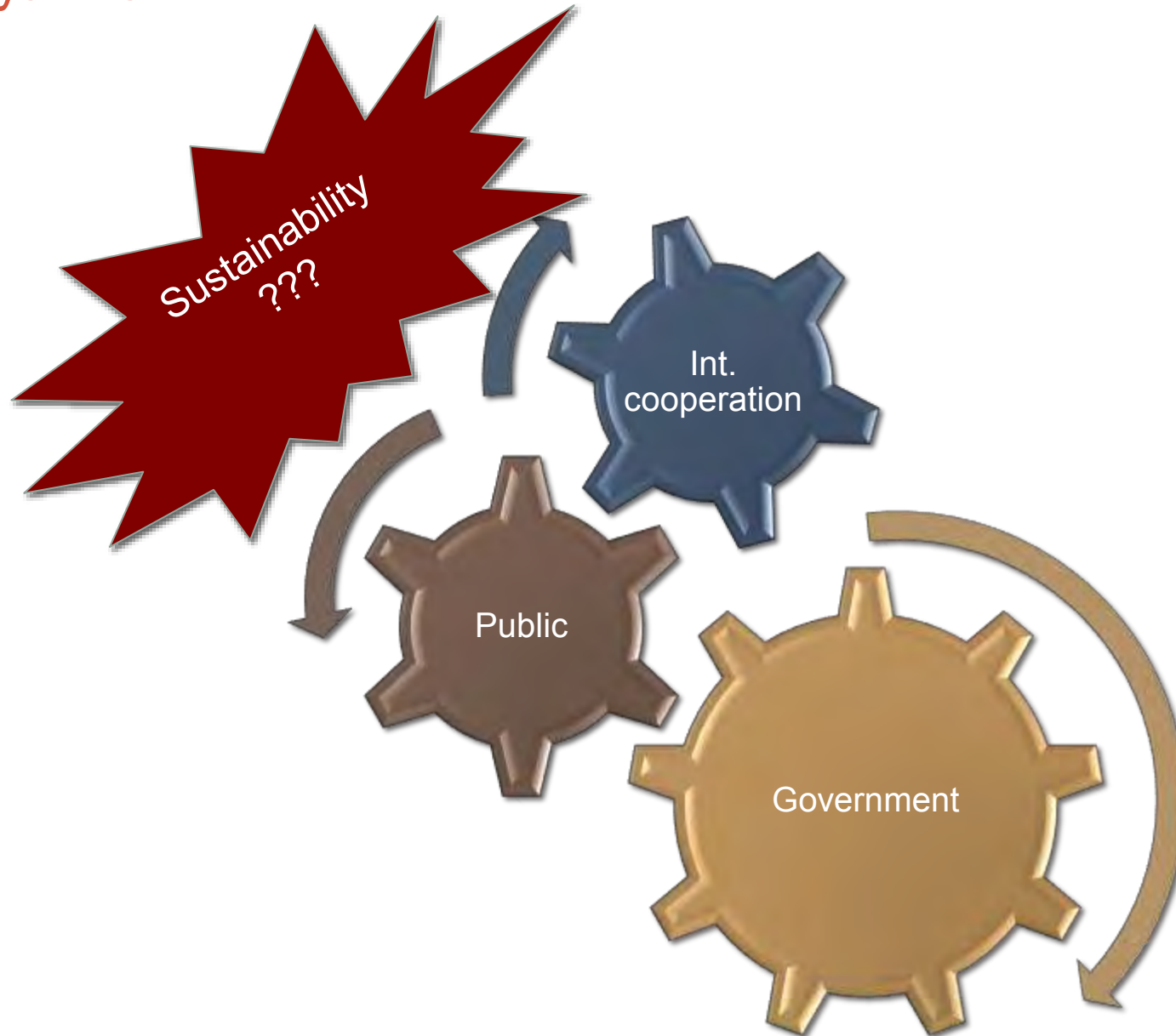
Myanmar is widely regarded as one of the most biodiversity rich countries in the Asia-Pacific Region.

The most significant environmental conservation and sustainable development challenges facing Myanmar:

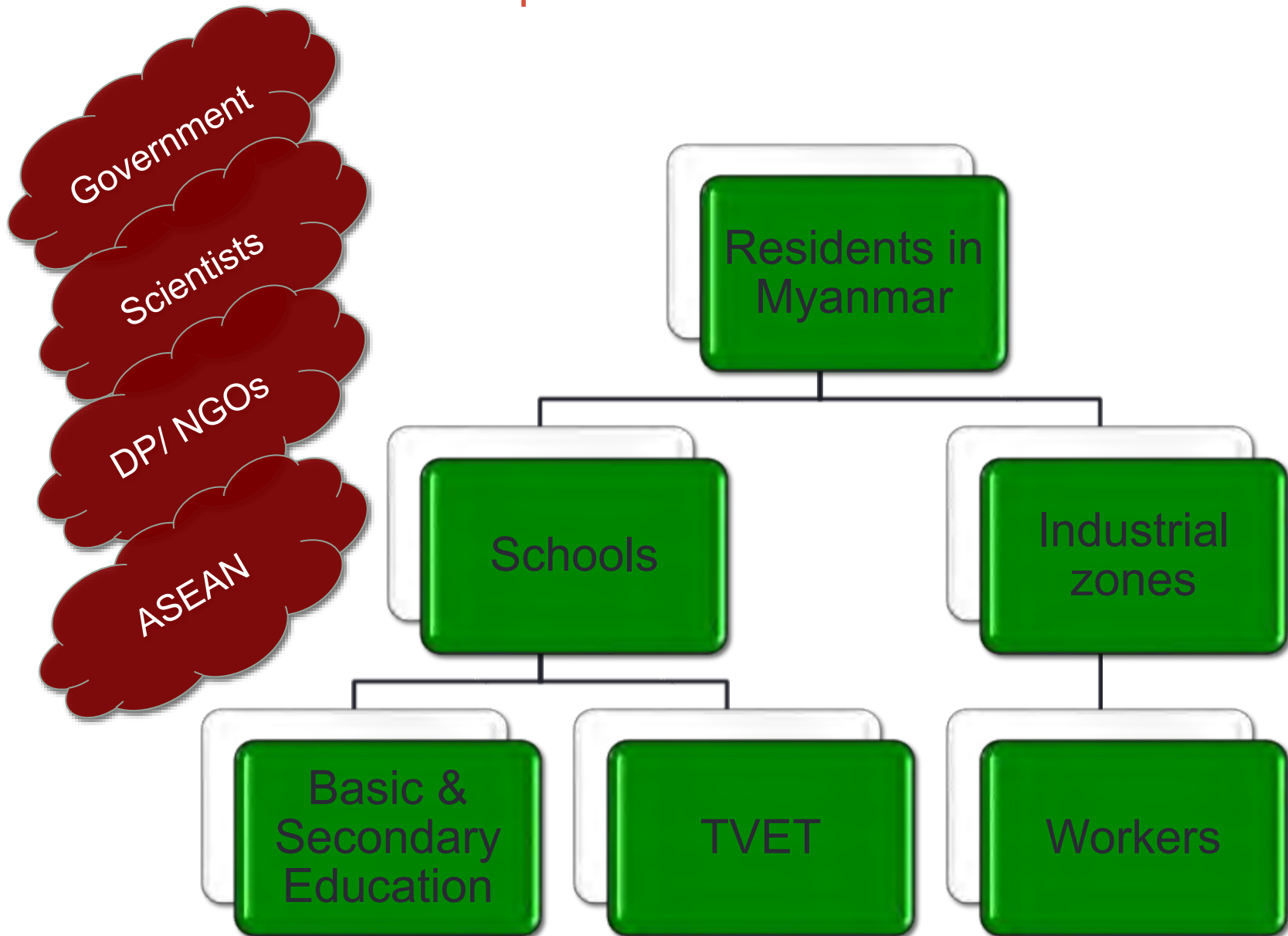
1. Biodiversity
2. Land use and spatial planning
3. Marine and coastal
4. Water resources and river basin health
5. Air quality
6. Energy
7. Climate change mitigation and adaptation
8. Waste management
9. Food safety
10. Sustainable production and consumption
11. Cultural and natural heritage

Reference: Strategic Framework for the National Environmental Policy of Myanmar

How to protect the development of environmental challenges in Myanmar?



Who are the key actors to implement the sustainable environmental development?



Green schools/ Eco-schools system

“ Education is the most powerful weapon which you can use to change the world and finally to enable everyone to understand the value of a green environment.”

Objectives

- Participate proactively in the implementation of good environmental practices
- Promote eco-culture by shifting the schools' mindset into going green for a sustainable development through everyday school life
- Provide substantial opportunities to schools to explore various environmental concepts that can be implemented, improved, developed or retrofitted at their respective premises

Green Schools Program



Basic Education High School No.2, Sanchaung is actively applying green school activity in which main building is colonial era with 13 acre (5.26 Hectare) campus is a landmark protected by the city and listed on the Yangon City Heritage List

Make Your Yangon Beautiful: “Doh Eain” Project



Back alleys of downtown Yangon are generally use as rubbish dumps attracting pests and pose health risks to residents



“Doh Eain – our home” aims to turn these many miles of forgotten wasteland into “Clean & Healthy recreational spaces featuring gardens, street, art & children’s play grounds”



Industrial zones, Ports and Special Economic Zones in Myanmar

EXISTING INDUSTRIAL ZONES

Ayeyawady Region (3)

- Hinthada
- Myaungmya
- Patheingyi

Bago Region (1)

- Pyaw

Magway Region (2)

- Yananchaung
- Pakokku

Mandalay Region (3)

- Mandalay
- Meiktila
- Myingyan

Mon State (1)

- Mawlamyaing

Sagaing Region (2)

- Monywa
- Kalay

Shan State (1)

- Taunggyi

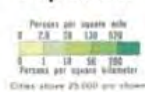
Tanintharyi Region (1)

- Myeik

Yangon Region (4)

- Eastern Township
- Western Township
- Northern Township
- Southern Township

Population



NEW INDUSTRIAL ZONES UNDER PROCESS

Bago Region (1)

- Bago Industrial Park Project

Chin State (1)

- Paletwa

Kayin State (1)

- Pa-an

Mandalay Region (3)

- Yatanapon
- Nya Pui Taw Tetkon
- Myo Thar Industrial Park

Mon State (1)

- Paya-thonzu

Rakhine State (1)

- Ponnagayun

Shan State (1)

- Nam On (Muse)

Tanintharyi Region (1)

- Maunthaung Region Economic Zone

DEEP SEA PORTS

Dawei

Tanintharyi Region

Kyauk Phyu

Rakhine State

Patheingyi

Ayeyawady Region

Sittwe

Rakhine State

Kalargote

Mon State

SPECIAL ECONOMIC ZONES IN DEVELOPMENT



Yangon Region

Yangon port

Rakhine State

Sittwe Port

Kyaukphyu Port

Thandwe Port

Ayeyarwaddy Region

Patheingyi Port

Mon State

Mawlamyaing Port

Tanintharyi Region

Dawei Port

Myeik Port

Kawthaung Port

Country area: 261,228 sq miles
Population(2014): 58.38 Million

Dry Waste Generated of Industrial Zones

Industrial zones in Yangon	24
Garments	126
Foodstuff	334
Chemical	56
Iron and metal process	519
Cold storage & Fish processing	45
Paper & Cardboard	105
Distillery	9
Forest product	148
Public Use goods	709
Others	1511
Total factories	3562

IZ location	No. of IZ	No. Factory	Waste (Ton)
East Dagon	1	41	3
North Dagon	1	95	11
Dagon Harbor	2	94	4
South Dagon	3	2356	13
N. Okkalapa	2	342	57
S. Okkalapa	1	85	0.4
Theketa	1	123	3
Mingalardon	2	40	6
Shwepyithar	4	249	6
Hlaingthayar	7	137	6
Total	24	3562	109.4

- Industrial Waste collected = **109.4 Ton ~ 150 Tons** per Day via On Call system in Yangon Region (292.426 sq miles)
- Household Waste Generated: 2000 Tons per day
- Carbon reduction: 6.5 million trees in the Yangon area

Environmental monitoring plan (EMP) in Thilawa SEZ

Rainwater harvesting



Sewage Treatment Plant



EMP Criteria

- Air Quality
- Water Quality
- Waste
- Noise & Vibration
- Ground Subsidence
- Hydrology
- Risk for infectious Disease
- Working Conditions
- Accident

Waste treatment, Ecosystem plant



Vocational School



EIA Study

- Living Environment (pollution status)
- Natural Environment
- Social Environment

EIA and EMP conducted Thilawa SEZ in the Yangon Port with approximately 262 Ha. of industrial area, 267 Ha. of logistic area and 169 Ha of resident and commercial area Jointly operated by Japan and Myanmar at the construction phase.

	Environmental Item	Basic concept of Cumulative Impact Assessment in Thilawa SEZ <i>(Example)</i>
1.	Air Quality	Impact on air quality NO ₂ and PM ₁₀ concentration was selected to be estimated due to vehicle traffic increased by the three projects.
2.	Water Quality	In the project plan, drainage water from the project area will run through the drainage ditch and retention pond, and will be discharged to Shwe Pyauk Creek,. The cumulative impact should be assessed on water quality of Shwe Pyauk Creek when all of three project start their operation.
3.	Waste	When all three projects start their operation and the number of tenants that start its operation is going to increase, amount of industrial and business related waste generated from the three projects will proportionately be increased. It is needed to evaluate impact of generated industrial and business related waste in terms of receiving capacity of the final disposal site located in Zone A.
4	Noise and Vibration	Therefore, impact of noise and vibration increased by vehicle traffic should be assessed which is generated from operation of all three projects and all the tenants in the industrial, logistic and commercial areas of three projects start their operation, traffic volume will be increased cumulatively in and around the Thilawa SEZ.
5	Flora/Fauna and Ecosystem	The cumulative impacts on ecosystem will be assessed by considering the change of each land area including grass land, shrub, and reservoirs caused by the development of whole Zone B.
6	Community Health and Safety	Community safety might be influenced by the increase of traffic volume in and around the Thilawa SEZ caused by the operation of all three projects

Future plan

- All your valuable inputs are warmly welcome!



**Thank you very much for
your kind Attention.**

Special Thanks to

- Dr. Than Than Thwe, Joint Secretary, Thilawa SEZ Management Committee & Director, Department of Conservation for Parliament & Resident Housing, Ministry of Construction
- Dr. Sandar Mya Nyein, Principal, BEHS 2, Sanchaung, Ministry of Education
- Dr. Soe Soe Han, Lecturer, Department of Physics, & Prof. Dr. Khin Khin Win, Head of Physics Department, Yangon University, Ministry of Education
- Dr. Win Maung, Chairman, Myanmar Environmental Institute
- DAAD Regional Office, Hanoi

Are we sure the air we breathe is safe for our health?

Dr. Fina Tams, MScIH

DAAD Alumni, MScIH Charité Universitätsmedizin,
Berlin, Germany



Did you know?

1. 92% of people worldwide do not breathe safe air (Source : <http://www.who.int/mediacentre/news/releases/2016/air-pollution-estimates/en/>)
 - 80% of urban resident are exposed to air quality level > WHO Limit
2. An estimated of 6.5 million deaths were associated with air pollution in 2012 (11.6% of global death). 2/3 occurred in WHO's South-East Asia and Western Pacific regions

Air pollution is a leading cause of many common killers.



What is actually air pollution i am referring to?

- * Ambiance air pollution
- * Indoor air pollution

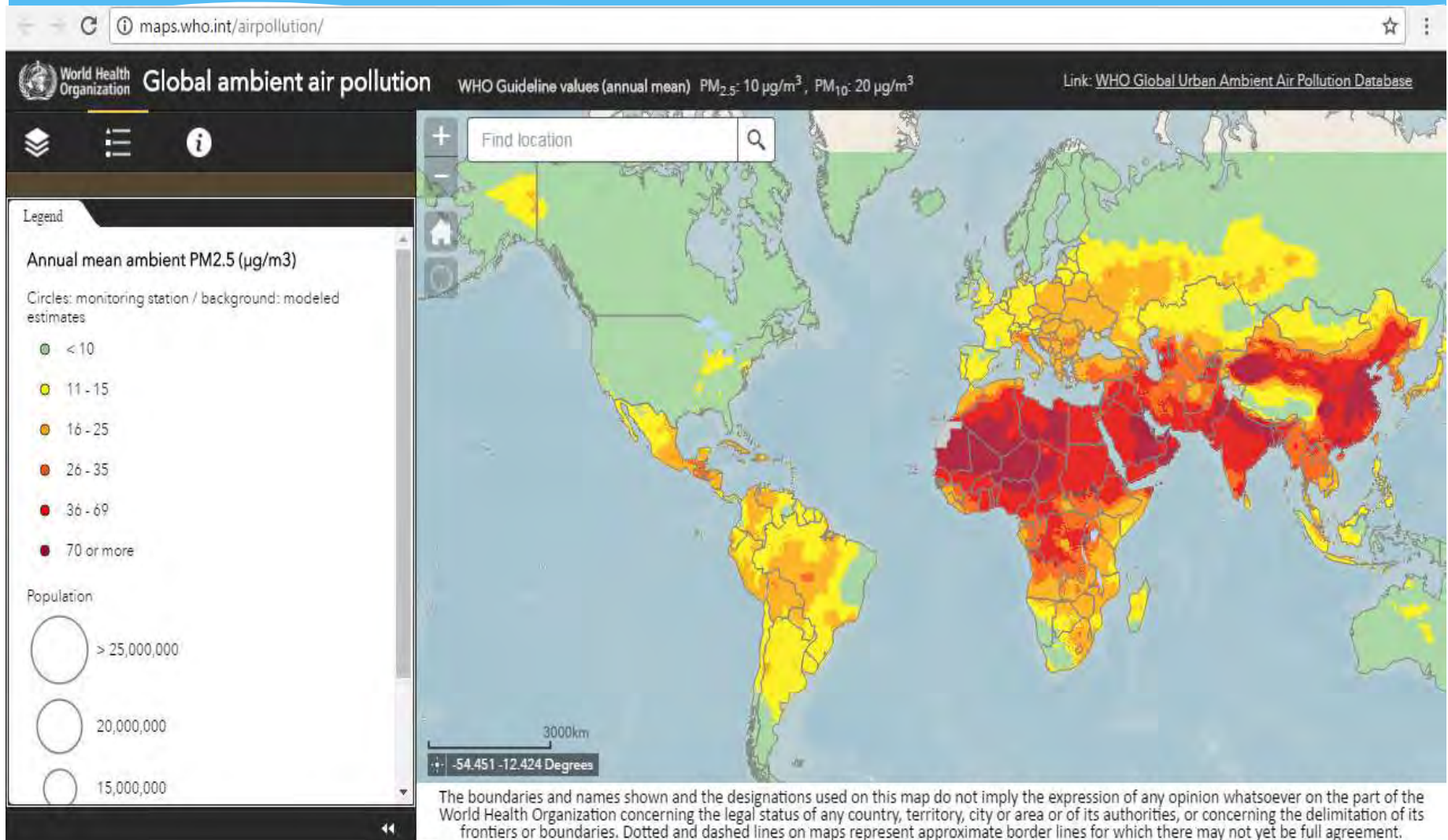
What is the air component and its health effect?

Pollutant	Sources	Health effects
Carbon monoxide (CO)	Motor vehicles, burning of fossil fuels.	Blood absorbs carbon monoxide more readily than oxygen, reducing the amount of oxygen being carried through the body. Carbon monoxide can produce tiredness and headaches. People with heart problems are particularly at risk.
Sulfur dioxide (SO ₂)	Coal and oil burning power stations, mineral ore processing and chemical manufacture.	Attacks the throat and lungs. People with breathing problems can suffer severe illness.
Nitrogen dioxide (NO ₂)	Fuel combustion	Affects the throat and lungs.
Volatile Organic Compounds (VOC)	Motor vehicles, fuel combustion, solvent use.	Some VOCs cause eye and skin irritation, headaches or nausea some are classed as carcinogens.
Ozone (O ₃)	Formed from nitrogen oxides and hydrocarbons in sunny conditions. These chemicals are released by motor vehicles and industry.	Ozone attacks the tissue of the throat and lungs and irritates the eye.
Lead	Exhaust gases from motor vehicles that use leaded petrol, smelters.	Particles containing lead in the air can enter the lungs. The lead can then be absorbed into the blood stream. Over a period lead can affect the nervous system and the body's ability to produce blood.
Particles	Motor vehicles, burning of plant materials, bushfires.	May cause breathing difficulties worsen respiratory diseases. Some particles contain cancer-producing materials.

Air quality normal measurement?

PSI (NAAQS)	TSP ($\mu\text{g}/\text{m}^3$)	PM10 ($\mu\text{g}/\text{m}^3$)	PM2.5 ($\mu\text{g}/\text{m}^3$)	Air Quality Description
$0 \leq 50$	0 – 75	0 – 50	0 – 15	Good
$51 \leq 100$	76 – 260	60 – 150	16 – 65	Moderate
$101 \leq 200$	261 – 375	160 – 150	66 – 150	Unhealthful
$201 \leq 300$	376 – 625	360 – 420	151 – 250	Very unhealthful
≥ 301	≥ 626	430	251	Hazardous

<http://maps.who.int/airpollution/>



What has been done?

- * Breathelife 2030 :
- * <https://www.youtube.com/watch?v=n3DM5scRpns>
- * <http://breathelife2030.org/> → 22 cities
 - * Bandung, Indonesia
 - * Singapore, Singapore
 - * Senai, Malaysia

What is our contribution? When and where?

Keeping our air safe can start with taking actions to limit our impact, many of which also promote physical activity and help save money.

Manage waste

Minimize emissions from your waste—compost food and garden items, recycle non-organic trash if available, reuse grocery bags and dispose of remaining trash by local collection. Never burn trash as this contributes directly to air pollution.

Cook and heat clean

Burning coal and biomass (e.g. wood) contributes to indoor air pollution when used for cooking and outdoor air pollution when used for heating. Check efficiency ratings for home heating systems and cookstoves to use models that save money and protect health.

Move mindfully

Use public transportation, cycling or walking to get around. Consider low or no emission vehicles if a car is necessary. Diesel vehicles, particularly older ones, are large contributors of black carbon which are carcinogenic for health and damaging to our climate.

Conserve energy

Turn off lights and electronics not in use. Use LED bulbs, if available, as a non-toxic alternative to CFLs, which contain mercury. Rooftop thermal solar systems may be an option for many to generate hot water affordably and photovoltaic systems can be a clean and healthy source of

Call for change

Call on local leaders to adopt national air quality standards that meet WHO guidelines. Support policies that strengthen emissions standards and provide incentives for purchase of cleaner vehicles, low-energy appliances and energy-efficient housing.

An Example : Air pollution in Jakarta – a mega city

- * **Road transport** is the major source of air pollution in Jakarta
- * Cost of illness due to all sources of air pollution increased from US \$ 40 million in 1994 to US \$ 3.1 billion in 2010 (MOE-UNEP PCFV)



Priority Activities toward Air Pollution Control by government

1

- Use eco friendly fuel (gas fuel)

2

- Emission Test for Vehicles

3

- Emission Control

4

- Car Free Day

5

- Public Transportation



Source : “Air Quality Control Monitoring and Policy from transportation sector” presented in the Public discussion on Air Pollution in Jabodetabek by Environmental Health Department, DKI Jakarta Province on 4 April 2017

6

- Green Area

7

- Traffic Management.

8

- Alternate Vehicle Plat in the main road (Odd and even)

9


- Eco-driving

10

- For indoor pollution : Non Smoking Area



Source : “Air Quality Control Monitoring and Policy from transportation sector” presented in the Public discussion on Air Pollution in Jabodetabek by Environmental Health Department, DKI Jakarta Province on 4 April 2017

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