

# Leadership Dialogue Talking Points: SDG7 in Indonesia and the Asia- Pacific

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SDG7 Conference, Leadership Dialogue  
UNESCAP, Bangkok — 22 February 2018



**Ir. Satya Widya Yudha, M.Sc, Ph.D (Cand.)**

**Vice Chairman of Commission VII &**

**Chairman of the Green Economy Caucus**

**The House of Representatives of the Republic of Indonesia**

# Agenda

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- 1. Renewable energy**
- 2. Energy access**
- 3. Energy efficiency**
- 4. Energy and health**

# Renewable energy

## Global RE investment trends



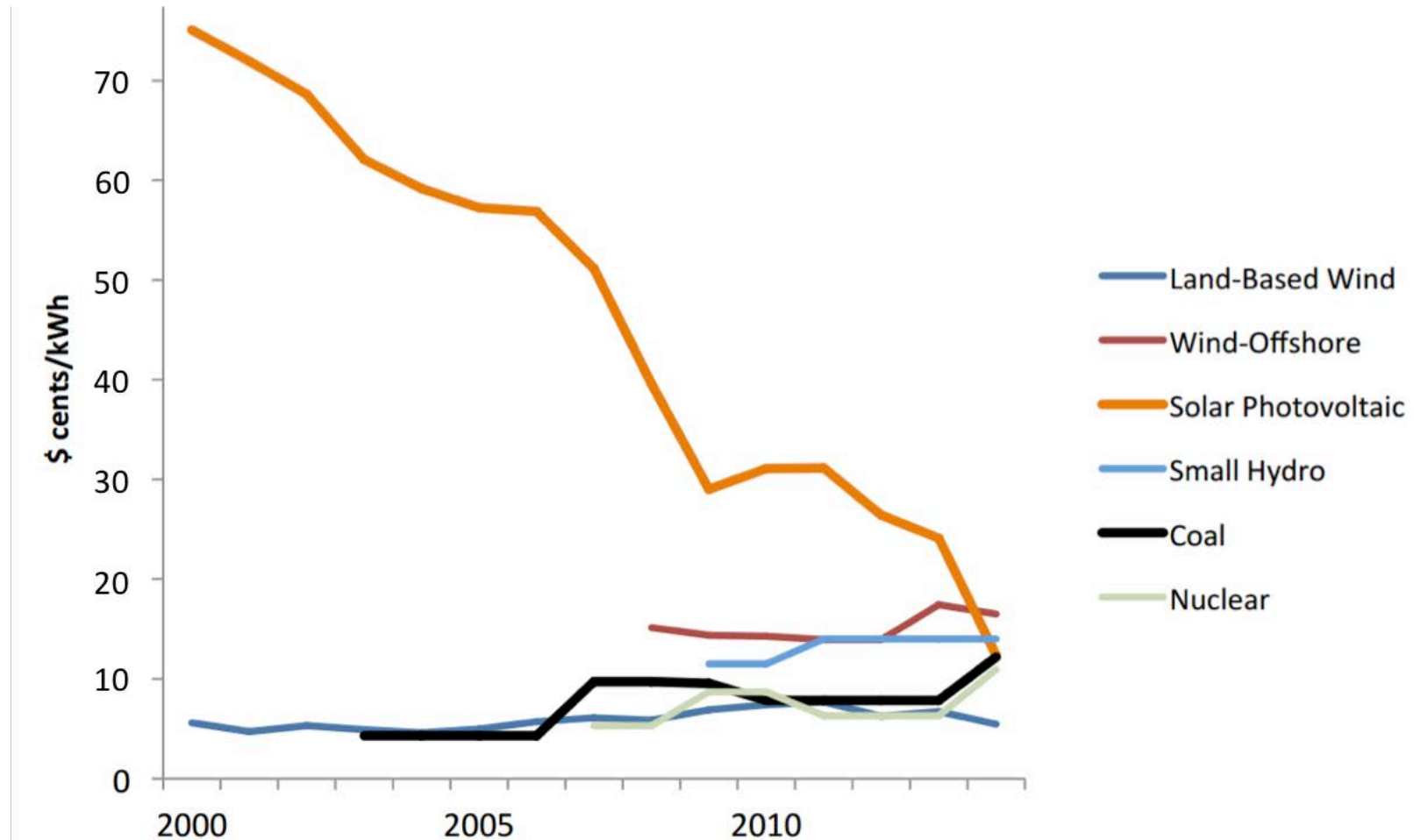
### NEW INVESTMENT IN CLEAN ENERGY 2004-16 (\$BN)

- Total annual new investment in clean energy. This includes all asset classes in all clean energy sectors.



# Renewable energy

## Global solar PV price trend



Source: World Economic Forum, Renewable Infrastructure Investment Handbook.

# Renewable energy

## Comparison of national RE targets



Country	RE target in national energy mix	Year	Status
Indonesia	23%	2025	6% (2017)
Mexico	35%	2024	15.86% (2016)
China	20% (TPES)	2030	12% (2015)
India	175 GW (additional capacity)	2024	13.2% (Oct, 2017)
Brazil	28–33% (tanpa hydro power)	2030	5.3 (2015)
South Africa	20%	2030	5.5% (2015)

# Renewable energy

## Indonesia's RE potential



No.	Type of energy	Resources	Reserves	Potential
1	Geothermal	11,997.5 MWe	17,546 MWe	29,543.5 MW
2	Hydro	75,000 MW		45,379 MW (identified resources)
3	Mini-micro hydro			
4	Biomass	32,654 MWe		
5	Solar	4.8 kWh/m <sup>2</sup> /day		
6	Wind	970 MW		
7	Uranium	3,000 MW		
8	Shale Gas	574 TSCF		
9	Coal-based Methane	456.7 TSCF		
10	Marine current	1995.2 MW (practical potential)		
11	Ocean Thermal Energy Conversion	41,012 MW (practical potential)		
12	Tidal	4,800 MW (practical potential)		

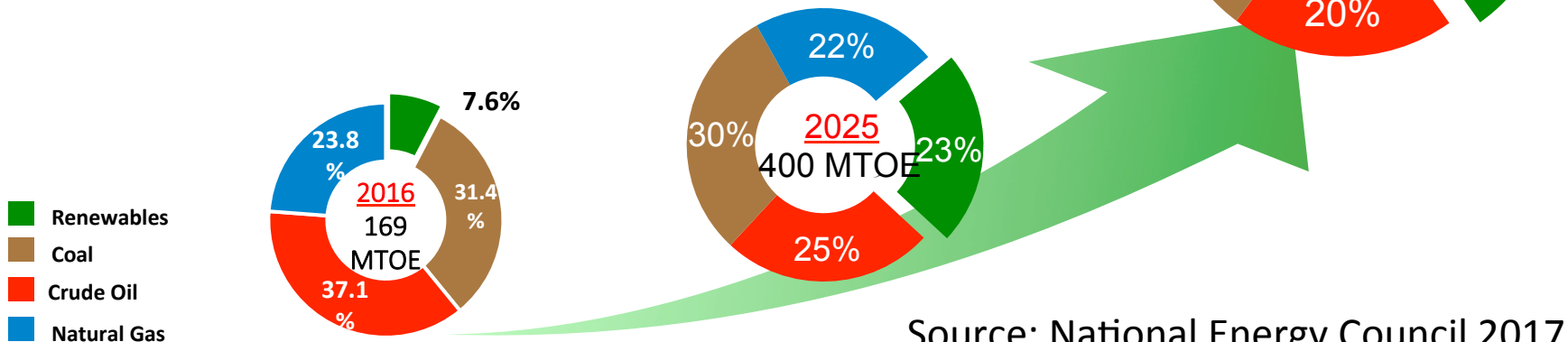
# Renewable energy

## RE target for national energy mix



- The Indonesian government is pursuing policies and strategies to increase investment appetite for renewable energy and its portion in the national energy mix.

	2016	2025	2050
Role of energy	Commodity	Prime mover of economy	
Renewables mix	7%	23%	31%
Energy provision	169 MTOE	400 MTOE	1.012 MTOE
Power capacity	55 GW (renewables 8 GW)	136 GW (renewables > 45 GW)	443 GW (renewables > 167 GW)
Energy elasticity	> 1	< 1	< 1
Elec./capita/year	865 kWh	2.500 kWh	7.000 kWh
Electrification ratio	88%	~100%	~100%



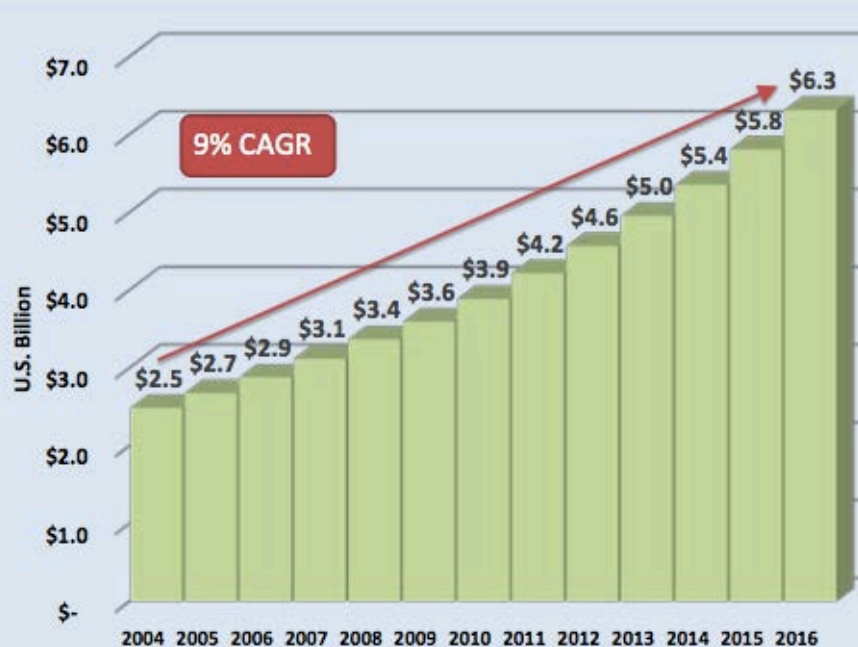
Source: National Energy Council 2017

# Renewable energy Environmental technologies market



Indonesia ranks seventh overall out of 50 countries on the 2015 Top Markets Study (TMS) with the market for environmental technologies valued at USD 6.3 billion in 2016. (International Trade Administration, 2016)

Figure 1: Indonesia Environmental Technologies Market



Source: Environmental Business International with OEEI Analysis, 2016.

Overall Rank

7

Air Pollution Control

8

Water

8

Waste & Recycling

2



# Renewable energy

## SDG 7 in Indonesian policy framework



- There are 17 specific SDGs to be achieved by 2030, elaborated into 169 targets and 241 indicators.
- SDG 13 addresses climate action, whereas SDG 7 strives to: **“Ensure access to affordable, reliable, sustainable and modern energy for all”**.
- The House of Rep. and the Government (including the National Development Planning Agency as national focal point for SDGs) are committed to integrate SDG7 into Indonesia’s national policy framework for RE development.
- This is in line with SDG 13 on climate action, the output of which is national commitment for cross-sectoral climate action through Indonesia’s NDC.



**THE GLOBAL GOALS**  
For Sustainable Development



# Renewable energy

## SDG 7: indicators/subindicators



7.1	<b>By 2030, ensure universal access to affordable, reliable and modern energy services</b>	7.1.1	Proportion of population with access to electricity
		7.1.2	Proportion of population with primary reliance on clean fuels and technology
7.2	<b>By 2030, increase substantially the share of renewable energy in the global energy mix</b>	7.2.1	Renewable energy share in the total final energy consumption
7.3	<b>By 2030, double the global rate of improvement in energy efficiency</b>	7.3.1	Energy intensity measured in terms of primary energy and GDP
7.a	<b>By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology</b>	7.a.1	International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
7.b	<b>By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support</b>	7.b.1	Investments in energy efficiency as a proportion of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to sustainable development services

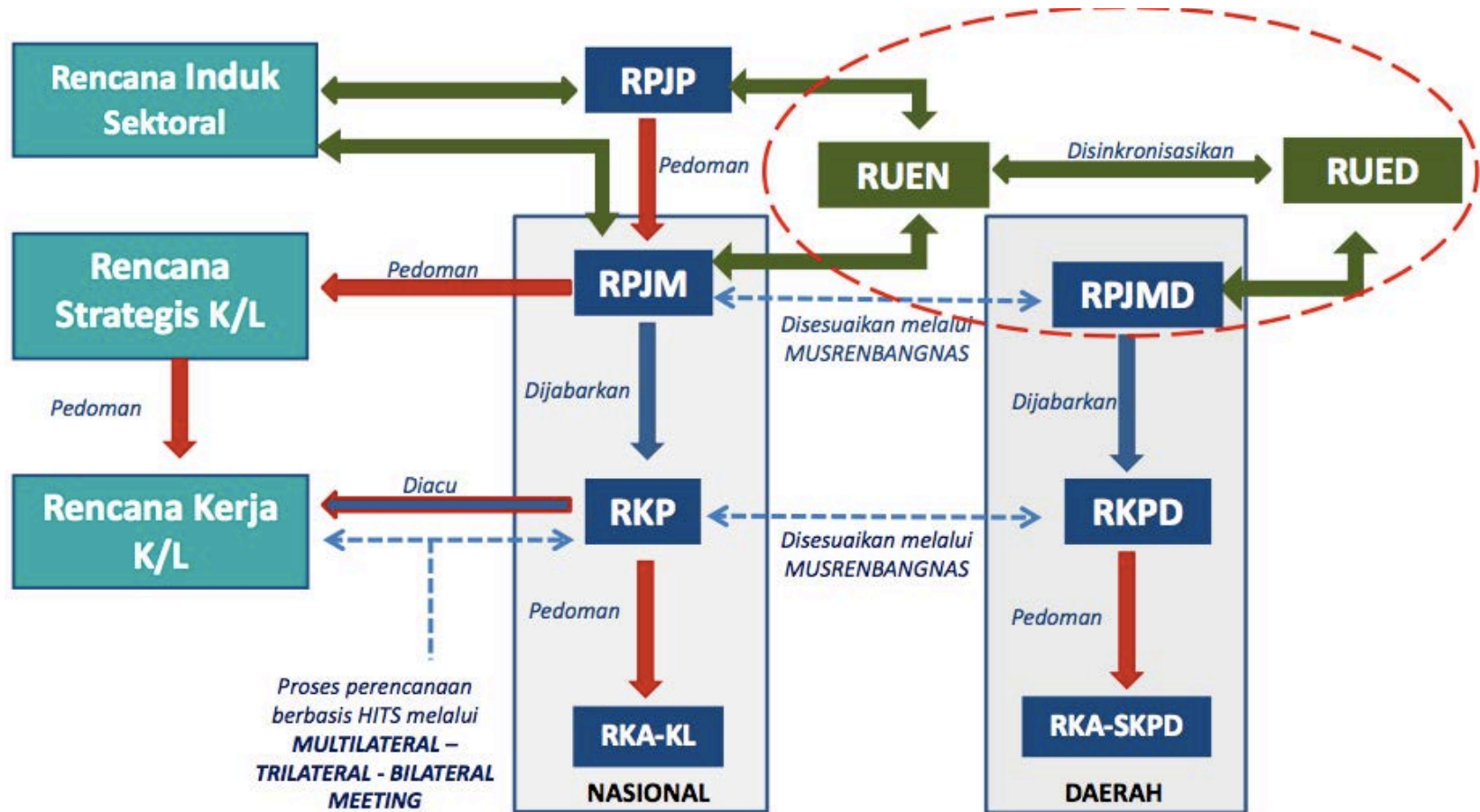
# Renewable energy

## SDG 7 in economic development pillar



# Renewable energy

## Indonesian energy policy framework



# Breaking down SDG 13

## Climate-related hazards, natural disasters



13.1	Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	13.1.1	Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
		13.1.2	Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030
		13.1.3	Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies

- Disaster management is handled by the Indonesian National Board for Disaster Management (BNPB), overseen by Commission VIII.
- Lessons learned: from September to October 2015, **daily estimated GHG emissions from fires in Indonesia surpassed average daily emissions from the entire US economy** (approximately 15.95 Mt CO<sub>2</sub> per day).
- Anticipating future crises: BNPB reported that per 22 August 2017, 538 hotspots (fires) have been detected (medium to high confidence), particularly escalating in West Kalimantan (193 spots) and Papua (143 spots).
- Haze is a prime example of how climate change engenders cross-sectoral ramifications (disaster management, geopolitics, environment, forestry and land use, law enforcement, etc.), which in turn necessitates cross-sectoral action.

# Breaking down SDG 13

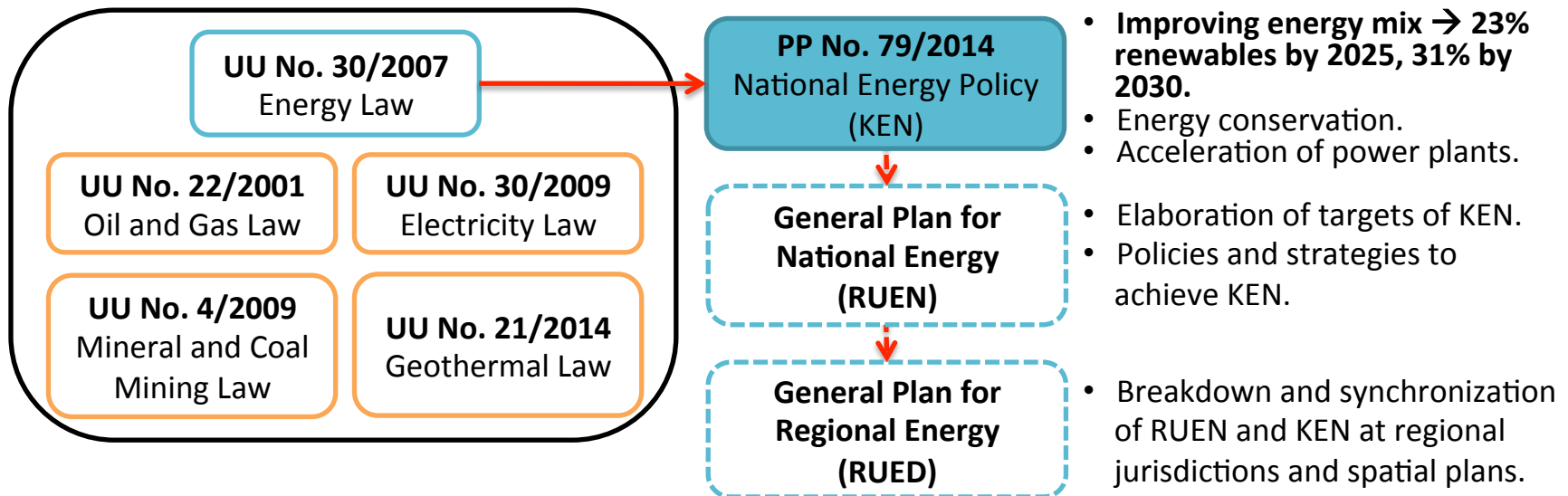
## National policies, strategies, planning



13.2	Integrate climate change measures into national policies, strategies and planning	13.2.1	Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)
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## SDG 13 → NDC → National policy, legislation

### Outline of Indonesia's energy policy framework





# Breaking down SDG 13

## National policies, strategies, planning



**INDONESIA'S NDC**  **-29% (UNCONDITIONAL)**  
**-41% (CONDITIONAL)**

	Sector	GHG Emissions in 2010 (Million Tons of CO <sub>2</sub> e)	GHG Emissions in 2030 (MtCO <sub>2</sub> e)			GHG Emissions Reduction				Average Annual Growth BAU (2010–2030)	Average Growth 2000–2012*
			BAU	CM1	CM2	MtCO <sub>2</sub> e		% of total BAU			
						CM1	CM2	CM1	CM2		
1	Energy	453.2 (33.97%)	1,669 (58.17%)	1,355 (66.61%)	1,271 (71.12%)	314	398	11%	14%	6.7%	4.5%
2	Waste	88 (6.59%)	296 (10.31%)	285 (14.01%)	270 (15.10%)	11	26	0.38%	1%	6.3%	4%
3	IPPU	36 (2.69%)	69.6 (2.42%)	66.85 (3.28%)	66.35 (3.71%)	2.75	3.25	0.10%	0.11%	3.4%	0.1%
4	Agriculture	110.5 (8.28%)	119.66 (4.17%)	110.39 (5.42%)	115.86 (6.48%)	9	4	0.32%	0.13%	0.4%	1.3%
5	LULUCF**	647 (48.50%)	714 (24.88%)	217 (10.66%)	64 (3.58%)	497	650	17.2%	23%	0.5%	2.7%
	<b>TOTAL</b>	<b>1,334</b>	<b>2,869</b>	<b>2,034</b>	<b>1,787</b>	<b>834</b>	<b>1,081</b>	<b>29%</b>	<b>38%</b>	<b>3.9%</b>	<b>3.2%</b>

\*\* Including peatland fire

\* Including fugitive

**CM1** = Counter Measure 1 (*unconditional*)    **CM2** = Counter Measure 2 (*conditional*)

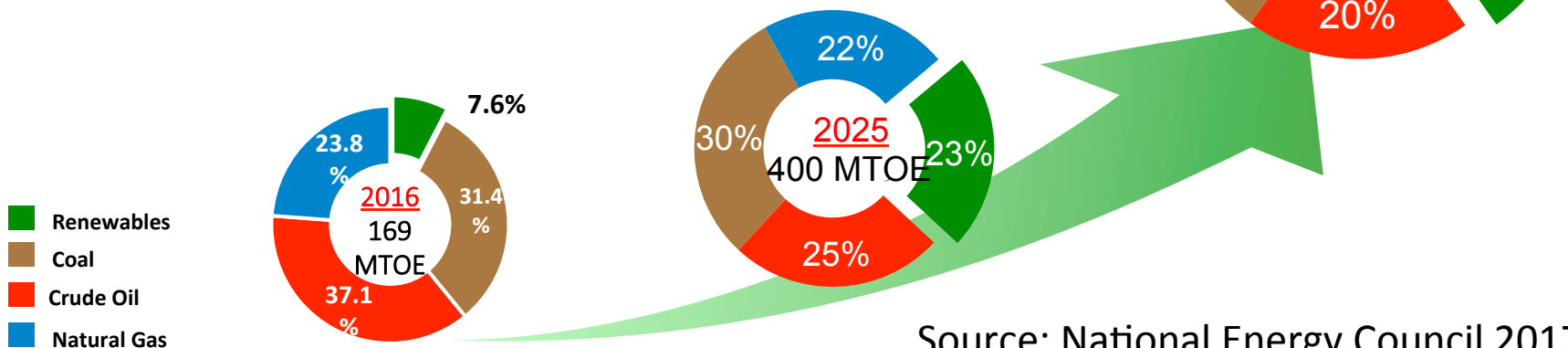
# Breaking down SDG 13

## National policies, strategies, planning



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Source: National Energy Council 2017



# Breaking down SDG 13

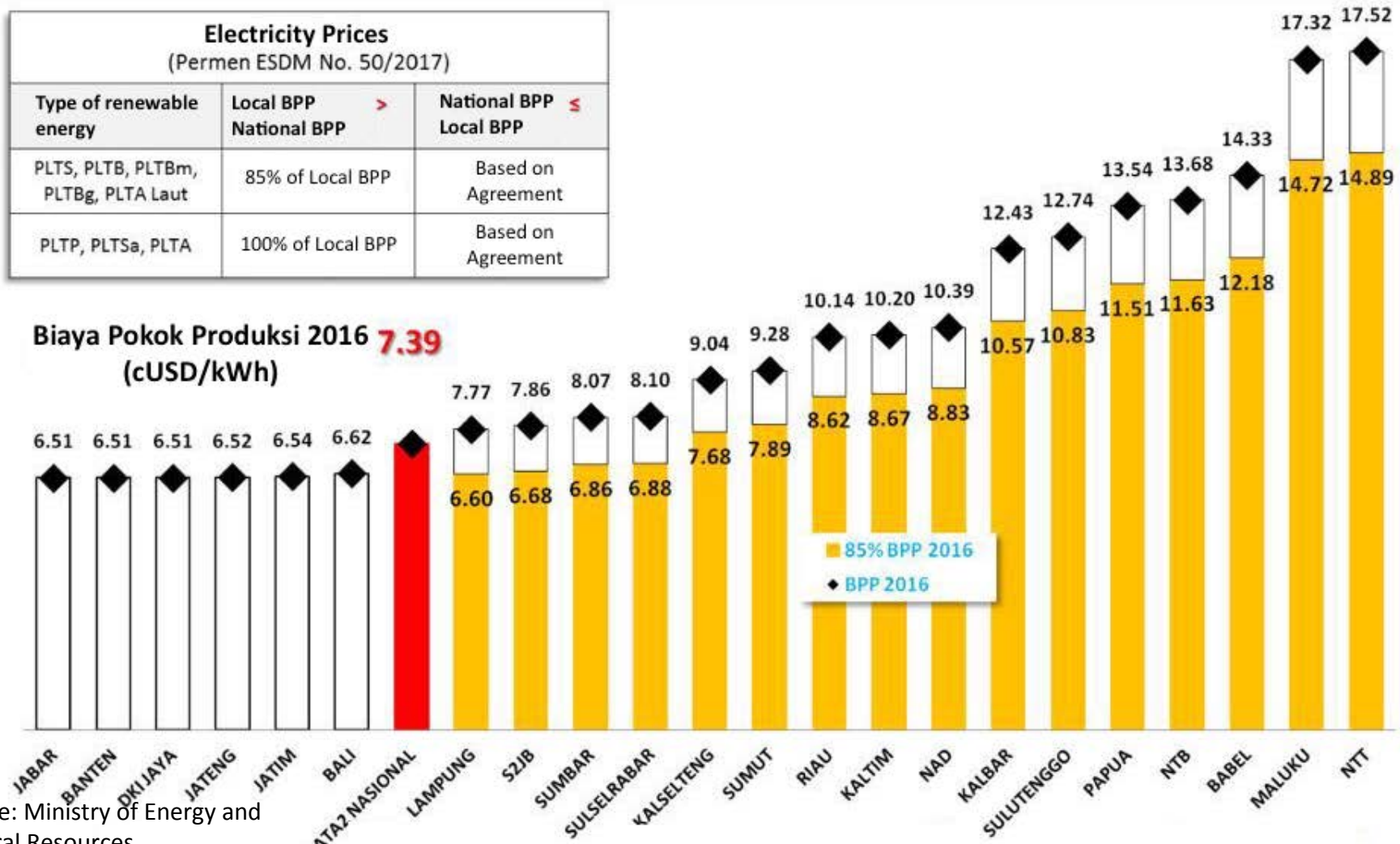
## National policies, strategies, planning



### Breakdown of electricity production costs per region

Electricity Prices (Permen ESDM No. 50/2017)		
Type of renewable energy	Local BPP > National BPP	National BPP ≤ Local BPP
PLTS, PLTB, PLTBm, PLTBg, PLTA Laut	85% of Local BPP	Based on Agreement
PLTP, PLTSa, PLTA	100% of Local BPP	Based on Agreement

#### Biaya Pokok Produksi 2016 (cUSD/kWh)



# Breaking down SDG 13

## Education, awareness, capacity



13.3	Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	13.3.1	Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula
		13.3.2	Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions

- In 2012, the Ministry of Environment issued a supplement for climate change education to teachers, integrating into curriculums in science, social science, civics, and language. The supplement also outlined practical steps for climate mitigation and adaptation within the schoolyard.
- **Collaborative involvement in formal and non-formal sectors:** Hans Seidel Foundation’s “Handbook for Climate Change” for junior high school; the British Council’s C4C (Climate For Classrooms) program for primary and secondary education; the Department of Agriculture’s Climate Field School for farmers; the Meteorological, Climatological, and Geophysical Agency (BMKG)’s guideline for climate change integration into curriculums; numerous programs and curriculum additions by the Ministry of Education and Culture.



# Breaking down SDG 13

## Funding climate action



13.a	<b>Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible</b>	13.a.1	Mobilized amount of United States dollars per year between 2020 and 2025 accountable towards the \$100 billion commitment
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Objective & Period	Amount Needed	
	IDR trillion	US\$ billion
Estimated resource envelope for emission reduction effort (per 2014)	37.8	3.7
List of Available Funds	Administered by	Type
Global Environment Facility (GEF)	UNFCCC	Multilateral
Adaptation Fund	UN	
Green Climate Fund (GCF)	UNFCCC	
Clean Technology Fund (CTF)	The World Bank	
Strategic Climate Fund (SCF)	The World Bank	
Pilot Programme for Climate Resilience (PPCR)	The World Bank	
Forest Investment Programme	The World Bank	
Tropical Landscapes Finance Facility (TLFF)	UN	Bilateral
National Mitigation Actions (NAMAs)	UK and Germany	
Indonesia Climate Change Trust Fund (ICCTF)	Bappenas	Multi-donors National Channel

# Breaking down SDG 13

## Funding climate action



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- **Parliamentary pushback:** conditions for international financial support should not be rigidly performance-based, but should include provisions for closely monitored and supervised up-front assistance.
- Lessons learned from ICCTF (multi-donors national channel): operationalization much slower than expected, very little international funding.
- Newest member on the block: Tropical Landscapes Finance Facility (TLFF) → TLFF Secretariat supported by UNEP/ICRAF.
  - US\$ 1–5 billion loan fund (TLLF) → long-term loans for **energy access to rural households & land restoration.**
  - US\$ 100 million grant fund (TLGF) → technical support & early stage costs for **renewable energy & sustainable agriculture.**

# Breaking down SDG 13

## Funding climate action



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- Estimation of NDC funding demand:
  - Project-based:  
Estimation of demand based on the roadmap for GHG emissions reduction at the project level, without factoring interconnectivity between sectors.
  - Sectoral-based:  
Estimation of demand taking into account interconnectivity between sectors.
- Options for NDC funding:
  - State National/Regional Budget
  - Grants (bilateral/multilateral)
  - Other legitimate sources (philanthropy, CSR)

# Breaking down SDG 13

## Women, youth, local, marginalized



<b>13.b</b>	<b>Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities</b>	13.b.1	Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities
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- Indonesia's NDC indicators are still being revised in order to adequately identify, involve, and mobilize small and medium enterprises as well as the informal sector for climate change adaptation and mitigation → currently too focused on large-scale industries.
- Illustration: the plastic recycling industry employs 300,000 people, outside of the hundreds of thousands of scavengers; 134 member enterprises of the Indonesian Plastic Recycling Association (ADUPI) are able to recycle 400,000 tons of plastic annually for domestic demand as well as export → **the government should capitalize, connect, and build capacity for climate action.**
- A circular economy (**reuse, refurbish, remanufacture, recycle** → **zero waste**) should replace the prevailing linear economy (**take, make, dispose** → **wasteful**).

# Renewable energy

## Private perspectives

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- In 2017, the Institute for Essential Services Reform (IESR) interviewed Indonesian RE associations and developers and received among others the following insight:
  - Lack of dialogue between government and developers to synchronize perspectives on cheap electricity and conducive RE investment climate in Indonesia
  - Bankability and return of investment are still primary issues for investors in RE development
  - Interest rates offered by local banks to developers (12%) are much higher than that offered by foreign banks (3%)
  - Lack of support and initiatives from PLN as SOE in charge of national electricity provision → developers feel it difficult to develop RE for outlying regions and industry



# Renewable energy

## Legislative outlook

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- RE is currently 7% of national energy mix, and RE growth is still low (0.4% per year –IESR)
- Downside of RE regulation:
  - Unpredictable changes in regulation for RE purchasing guidelines (Permen ESDM No. 12/2017 jo No. 48/2017; Permen ESDM No. 50/2017)
  - Discontinuation of RE incentive: Feed in Tariff (FiT)
  - Declining Renewable Energy Country Attractiveness Index/RECAI: rank 48 in 2016, 49 in 2017, 50 in 2017
- Upside of RE investment: 68 RE Power Purchase Agreement (PPA) contracts between PLN and private developers (total capacity 700 MW) and 3 Letters of Intent (LoI) with foreign developers
- There must be a strengthening of roles:
  - Government: policy innovation, provide R&D, synergy between ministries/bodies
  - Financial institutions: RE funding, lower local interest rates
  - Developers: competitive tariffs, increased quality of power infrastructure
  - PLN: better cooperation with private sector, Public Service Obligation (PSO)



# Renewable energy

## Legislative intervention

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- In 2016, Commission VII proposed a 1.1 trillion rupiah subsidy for renewable energy (around 80 million USD) but was overturned by the Budget Committee
- Commission VII is in the process of drafting a Renewable Energy Law to fill in currently existing regulational gaps
- AirQualityAsia in collaboration with the Green Economy Caucus is planning a Renewable Energy Business Leaders Roundtable hosted at the Indonesian House of Representatives

# Energy access

## Electrification ratio and forecast

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- Electrification ratio targets (RUPTL 2017–2026): 92.75% (2017) → 96.6% (2019) → 99.7% (2025)
- Electrification ratio targets for 6 easternmost provinces (Nusa Tenggara Barat, Nusa Tenggara Timur, Maluku, Maluku Utara, Papua, Papua Barat): ± 90% by 2020
- Electricity consumption per capita (996.83 kWh/capita) is still 80% of the 2019 National Midterm Development Plan target (1,250 kWh/capita)

# Energy and health

## Overview

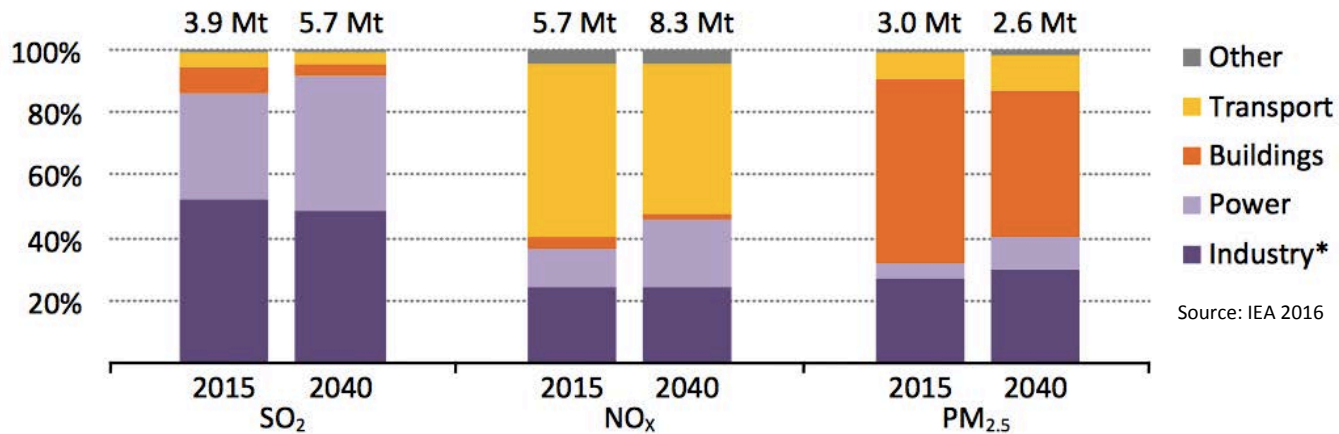
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- Land transportation contributes around 12% of total national CO<sub>2</sub> emissions, and almost 90% of urban air pollution (CO, HC, NO<sub>x</sub>, SO<sub>x</sub>, PM, O<sub>3</sub>)
- **90% of transportation emissions comes from road transportation**
- 70% of city pollution comes from the transportation sector
- Government's burden on fuel subsidy (data for revised state budget 2017):
  - National consumption of subsidized fuels is 16.11 million KI for gasoline; 15.5 million KL for diesel; 0.61 million KI for kerosene
- IEA 2016: Indonesia is ranked third globally for premature deaths due to air pollution

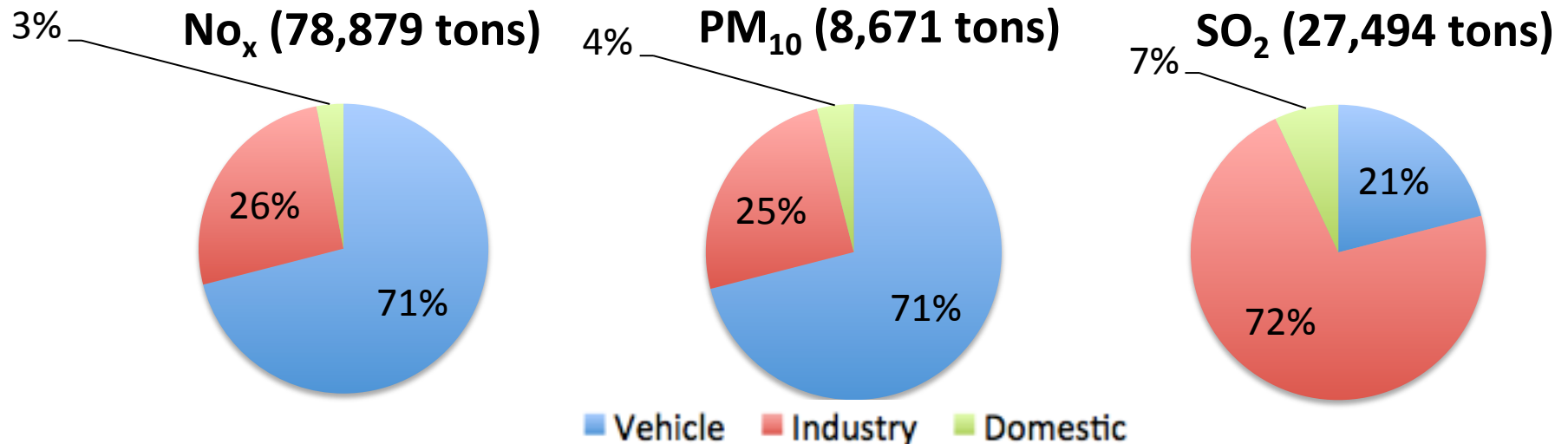
# Energy and health

## Comparison: SE Asia & Jakarta



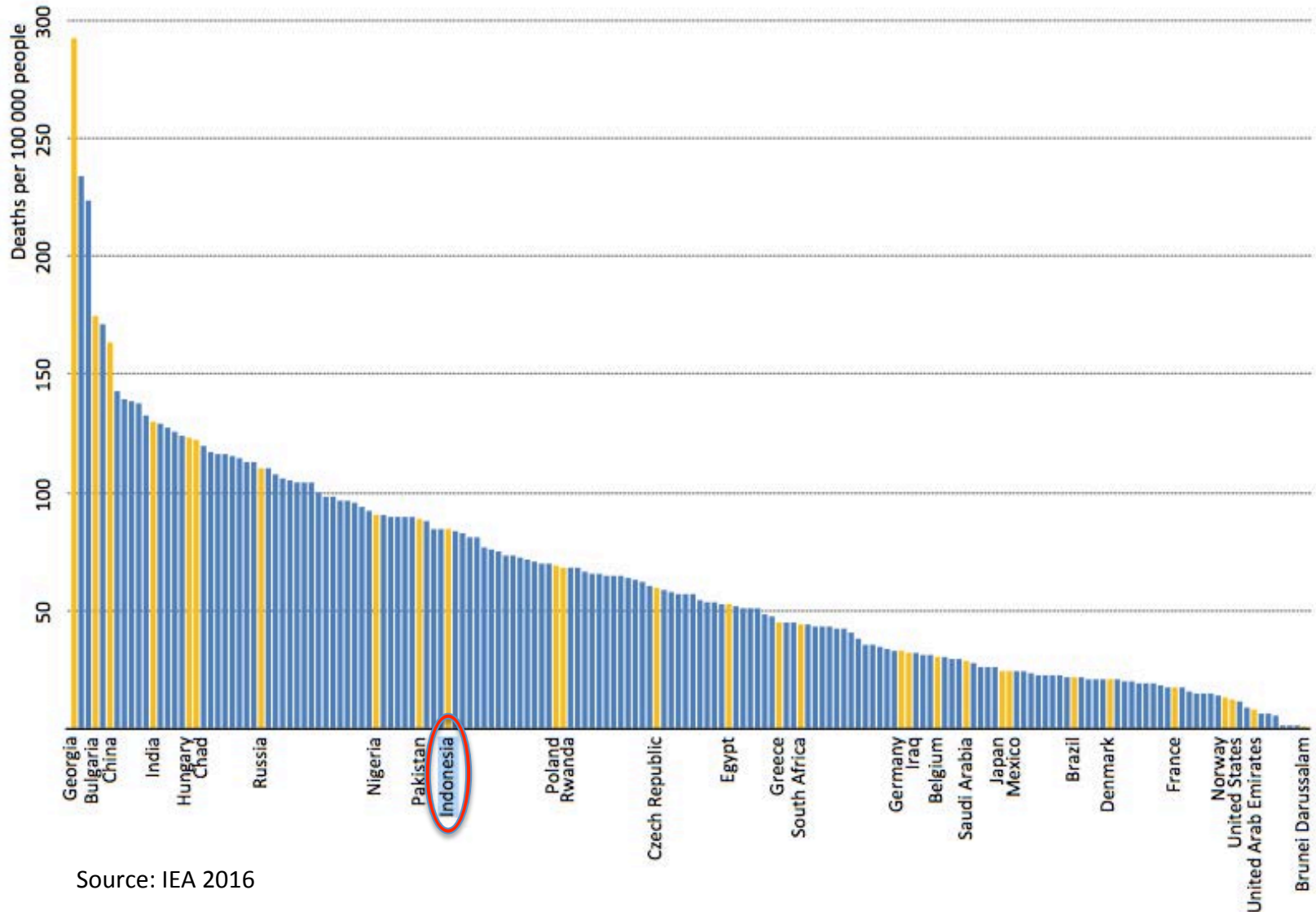
### Majority of air pollution in Jakarta (below) is from vehicle emissions

(Asian Development Bank 2006 — Forecast Until 2017, data from Ministry of Environment and Forestry)



# Energy and health

## Comparison of air pollution mortality rate



Source: IEA 2016

# Energy and health

## Effects of air pollution; case: Jakarta 2010

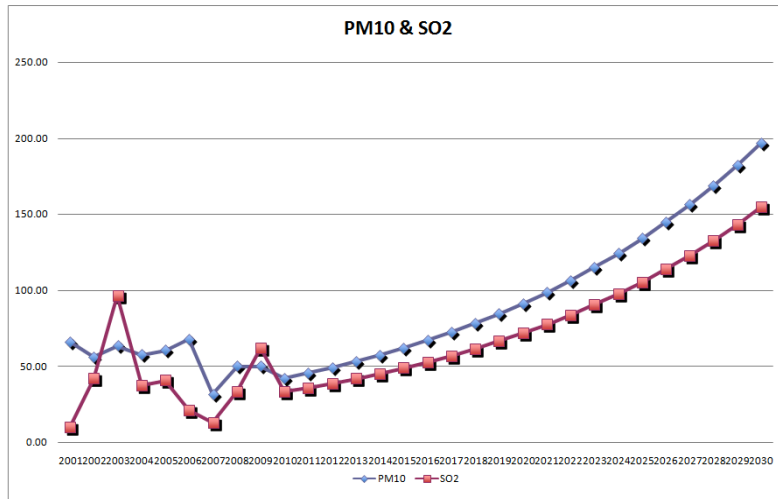


The population of Jakarta is 9,607,787 (2010)  
57.8% of the population suffers from various air pollution-related diseases:

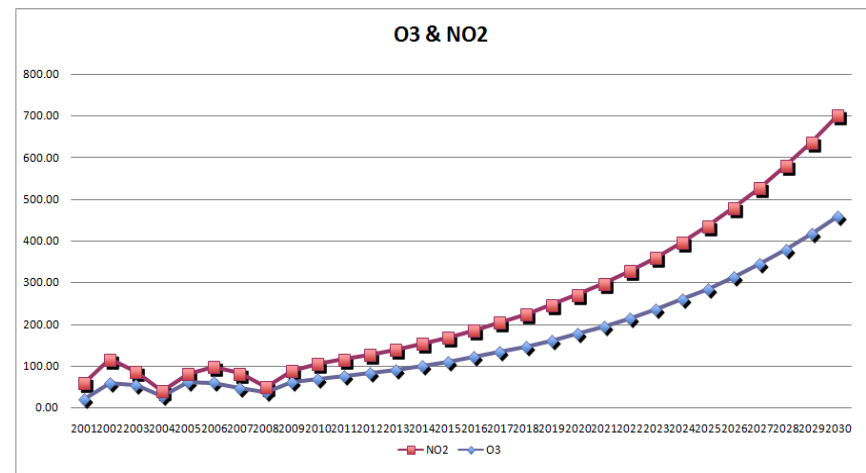
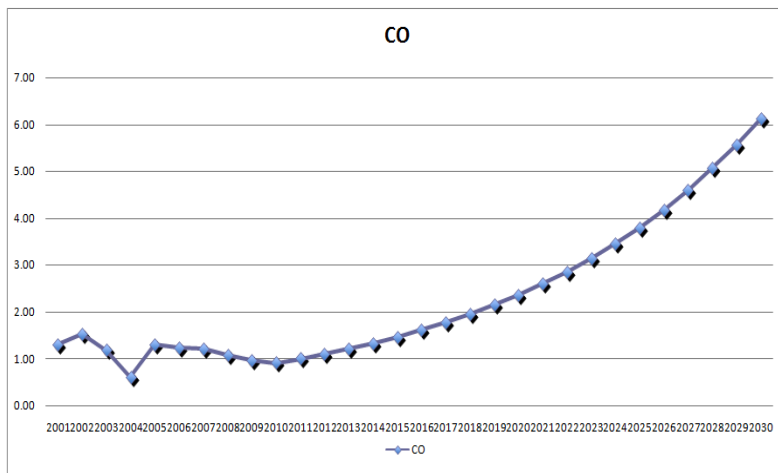
- 1,210,581 people suffer from asthmatic bronchiale (compare with 500,000 people from Ostro's research in 1994)
- 173,487 people with bronchopneumonia
- 2,449,986 people with ARI
- 336,273 people with pneumonia
- 153,724 people with COPD
- 1,246,130 people with coronary artery diseases

**Total health cost: IDR38.5 trillion / USD54 billion**

(compare with USD220 million in 1989 -> Resosudarmo & Napitupulu 2004)



Source: KPBB 2015

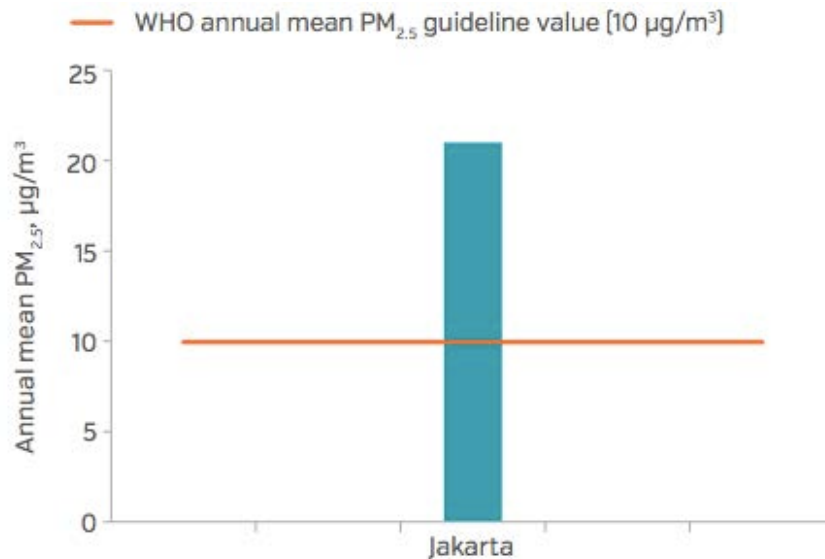


# Energy and health

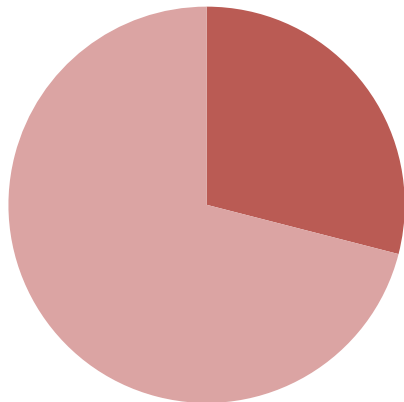
## Outdoor & household exposure



### Outdoor air pollution in cities in Jakarta, Indonesia, annual mean PM<sub>2.5</sub> (µg/m<sup>3</sup>) 2010



In 2010, Jakarta had an annual mean PM<sub>2.5</sub> level that was above the WHO guideline value of 10 µg/m<sup>3</sup>.



### Percentage of Deaths From Ischaemic Heart Disease, Stroke, Lung Cancer, COPD, ARI (2012)

- 29% (164,314 out of total 566,600) Attributable to Household Air Pollution

In Indonesia, about 45% percent of an estimated **25,300 child deaths** due to acute lower respiratory infections is attributable to household air pollution.

Source: WHO 2015



# Energy and health

## Adoption of Euro 4 standard



ACTIVITIES	2013	2014	2015	2016	2017	2018	2019	2020	2021	2025
Policy Dialogue	Sep-Dec									
Academic	Dec 13 - Mar 14									
Discussion Financing Refinery Modifications		Dec 13- Jun 14								
Balongan refinery modifications and Balikpapan		Oct 14-Sep 16								
New refinery construction										
The application of EURO 4 in Jakarta (BBG)			Oct							
The application of EURO 4 in Large Cities				Oct						
The application of EURO 4 National										
Implementation of the National EURO 5										

- Intensive dialogue about Roadmap Fuel Economy - Vehicle Emission Standard - Euro 4:
  - A variety of multi-stakeholder consultation meetings and consignment
  - Policy Dialogue "readiness refinery in implementing the Euro 4 standard in 2016":
    - Jakarta
    - Balongan refinery
    - Balikpapan refinery
- Preparation of NA Vehicle Emissions Standard - Euro 4
- Implementation of Vehicle Emission Standard - Euro 4 in 2016 gradually:
  - Modifications Balongan and Balikpapan refinery to supply fuel berstandard Euro 4 in several major cities.
  - The Ministry of Finance and the House of Representatives to discuss alternative financing / funding up grade / modification Refinery.
  - Donor agencies to help alternative financing / funding up grade / modification Refinery.
  - Breathe Easy Jakarta Program tentang penerapan Vehicle Emission Standard Euro 4 di Jakarta dengan menggunakan BBG.
- Implementation of Euro 4 nationally in 2021.
- Adoption of Euro 5 nationally in 2025.



# The Green Economy Caucus

## Promoting green legislation, collaboration



The GEC consists of members from 3 Parliamentary Commissions (Commission VII, Commission XI, and Commission I) and 5 different parties (Golkar, PDIP, Gerindra, HANURA and PAN).

### CAPACITY BUILDING FOR PARLIAMENTARY SUPPORT

**RATIFICATION OF PARIS AGREEMENT IN  
RECORD TIME**

**OVERSEEING THE IMPLEMENTATION OF  
NDC ACROSS THE MINISTRIES**

### INITIATIVES & UNDERTAKINGS



**REDD+ Workshop with UNORCID: Capacity Building  
for Legislative Staff Members (4 batches)**

#### **COP 21:**

**Parliamentary Forum at Pavilion Indonesia;  
SSE Leaders Luncheon on Climate Change;  
Parliamentary Meeting with Nordic States**

**Bali Clean Energy Forum 2016**

**Dialogue Series: Paris Agreement and the Way  
Forward for Indonesia**

**National Waste Day**

**Innovative Finance Forum: Sustaining Indonesia's  
Tropical Landscape**

**GLOBE 1<sup>st</sup> Climate Change Summit, London**

**Climate Parliament Gathering, Shanghai, China**

**Climate Asia Report Launch**

# The Green Economy Caucus

## Promoting green legislation, collaboration



The GEC with Andrew Mitchell (Global Canopy Programme), Pavan Sukhdev (GIST Advisory), and Setya Novanto (Chair of the Golkar Party Parliamentary Faction).



On February 21 2014, the Green Economy Caucus signed an MoU with GLOBE International.



GEC members, Dewi Coryati and Mercy Barends, elaborate during a legislative Q&A session.



GEC members, Aryo Djojohadikusumo and Satya Widya Yudha at the Parliamentary Forum in Pavilion Indonesia, COP 21.



# The Green Economy Caucus

## Promoting green legislation, collaboration



Chairmen of Commission VII and Chairman of the GEC ratify the Paris Agreement along with heads of various state ministries in a public session at the House of Representatives.

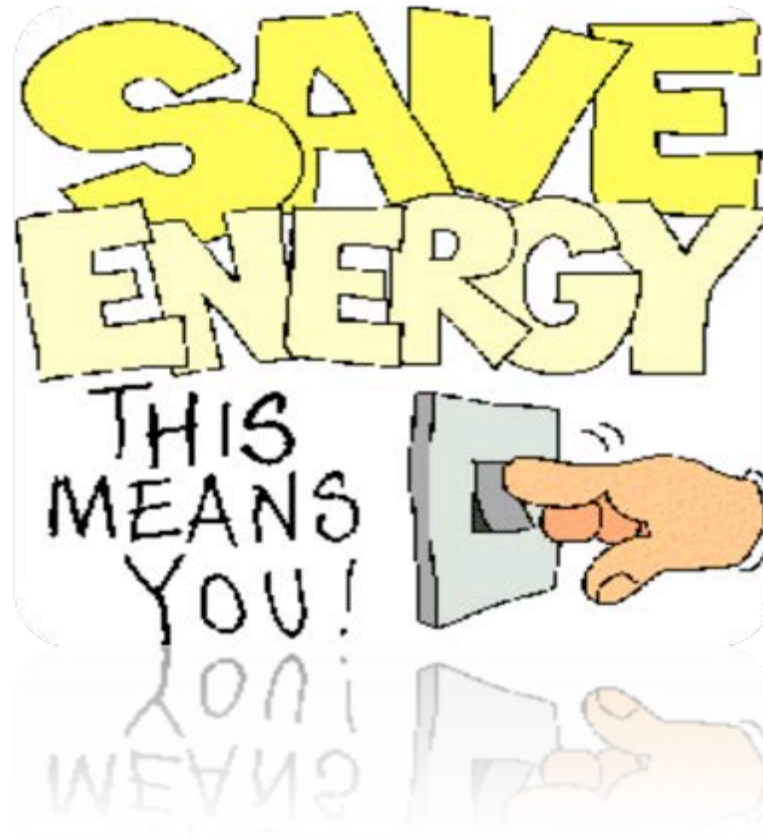


The GEC at the launching of the Tropical Landscapes Finance Facility (TLFF) with UN body leaders, government, parliament, key sector players. (left)



The GEC in collaboration with AirQualityAsia at inaugural meeting on air quality. (right)

# THANK YOU



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