10th BAQ
Better Air Quality Conference
Kuching, Malaysia
14-16 Nov 2018
Borneo Convention Centre Kuching, Sarawak, Malaysia

DPR - RI

Tackling Coal to Reach a Low-Carbon Economy: Institutional Commitment & Carbon Pricing

Air Quality and Clean Energy Dialogue

Satya Widya Yudha

Board Member
AirQualityAsia

Chairman of the Green Economy Caucus
The House of Representatives of the Republic of Indonesia

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Where does Indonesia stand?

I. The ten member countries of the Association of Southeast Asian Nations (ASEAN) collectively are the world's seventh-largest economy and the fifth-largest destination for foreign investment in 2016. Strong economic growth has fuelled a 70% increase in energy demand since 2000, and the region now accounts for 5% of total global demand, with **Indonesia accounting for over 35% of the region's total energy demand**.

II. Indonesia is in a dwindling yet stubborn fossil fuel economy → estimated coal deficit by 2046, crude oil depletion by 2029, natural gas depletion by 2050, yet currently only ±8% renewable energy in primary energy mix.

III. Indonesia is internationally committed in its Nationally Determined Contribution (NDC) to reduce emissions by 29% (unconditional) or 41% (with international assistance) by 2030.

IV. Innovations in green financing or development aid are at best superficial ***if*** the entire structure of Indonesia's fossil fuel economy is not transitioned into a low-carbon one.

V. The National Development Planning Agency is leading a **Low-Carbon Economy/Green Growth Program** with the following goals:

1. Develop projects that are **bankable based on Nationally Determined Contributions (NDC) and Sustainable Development Goals (SDGs)** assessments, and connect with suitable sources of finance.
2. Incorporate **green growth enablers for investments** into sectoral, district, provincial, and national plans.
3. Design **innovative economic and policy instruments** to reduce risk and enable capital flows into the sector.

VI. A successful transition to a low-carbon economy must factor in the **externality costs of fossil fuels** and implement **carbon pricing mechanisms.**

Indonesia's Nationally Determined Contribution

INDONESIA'S NDC → 2030 → **-29% (UNCONDITIONAL)**
-41% (CONDITIONAL)

	Sector	GHG Emissions in 2010 (Million Tons of CO_2e)	GHG Emissions in 2030 ($MtCO_2e$)			GHG Emissions Reduction				Average Annual Growth BAU (2010–2030)	Average Growth 2000–2012*
						$MtCO_2e$		% of total BAU			
			BAU	CM1	CM2	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%
	TOTAL	**1,334**	**2,869**	**2,034**	**1,787**	**834**	**1,081**	**29%**	**38%**	**3.9%**	**3.2%**

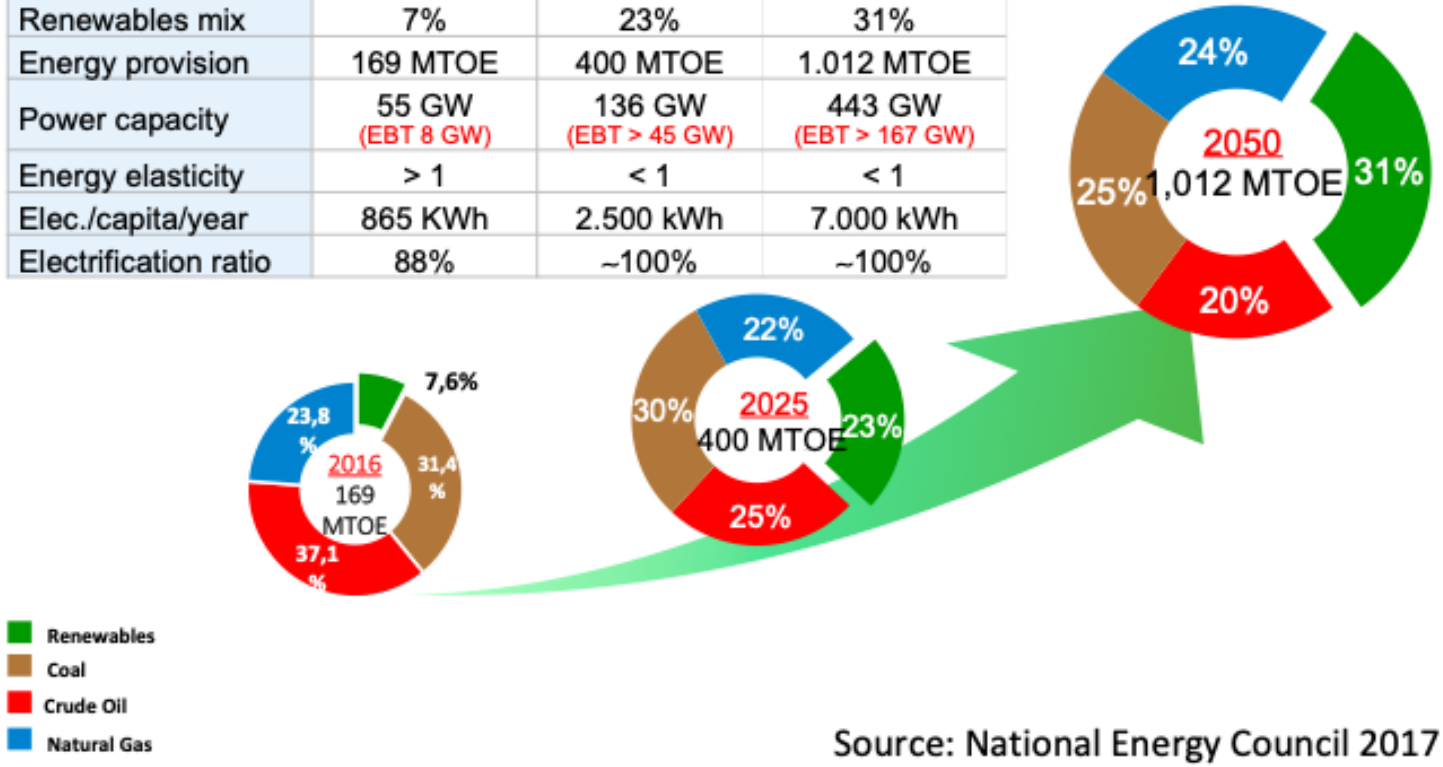
** Including peatland fire

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

* Including fugitive

Indonesia's energy mix policy

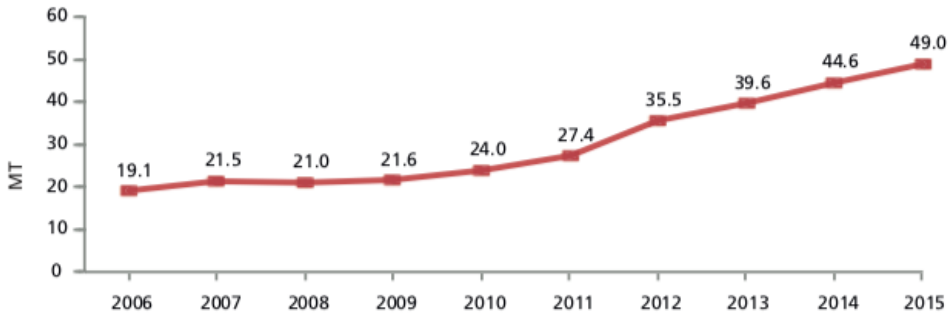
	2016	2025	2050
Role of energy	Commodity	Prime mover of economy	
Renewables mix	7%	23%	31%
Energy provision	169 MTOE	400 MTOE	1.012 MTOE
Power capacity	55 GW (EBT 8 GW)	136 GW (EBT > 45 GW)	443 GW (EBT > 167 GW)
Energy elasticity	> 1	< 1	< 1
Elec./capita/year	865 KWh	2.500 kWh	7.000 kWh
Electrification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



Source: National Energy Council 2017

Indonesia's coal-fired power plants

Use of coal for power generation has more than doubled over the past decade in Indonesia

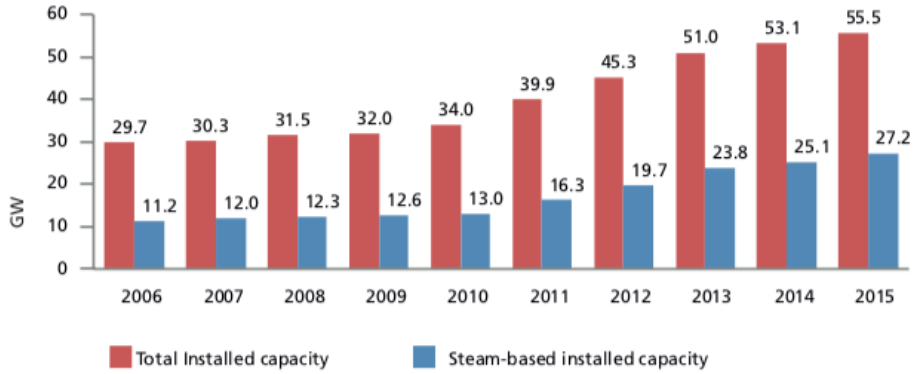


Note: MT: million tonnes

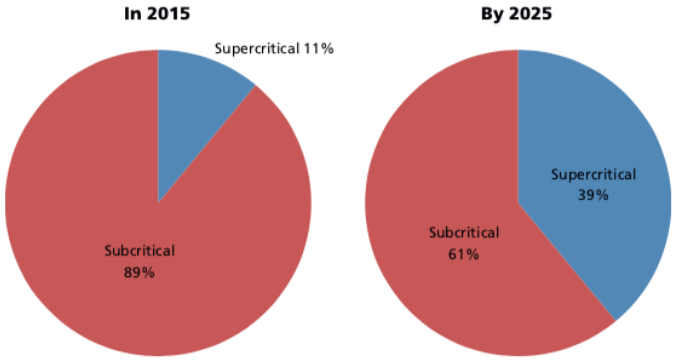
I. Indonesia's coal-fired power plants are expected to continue to be developed, concurrent with RE development per Indonesia's energy mix policy.

II. However, emphasis will be added on a new wave of supercritical and ultra-supercritical fleet of power plants with higher energy efficiency and more stringent standards.

Steam-based capacity in Indonesia has expanded at faster rate than total capacity in the past decade



Share of super-critical technology in Indonesia is set to expand substantially in the coming decade



Source: ICEL 2017

Indonesia's emissions standards

I. The legal framework for environmental management in Indonesia is defined by Environmental Protection and Management (EPMA), 2009. Enacted in October 2009, it replaced the 1997 Law Regarding Environmental Management, which in turn had replaced a 1982 statute. EPMA, 2009 seeks to integrate environmental protection and management across economic activities to ensure sustainable development.

II. The general framework for controlling air pollution from mobile and stationary sources is provided by the Government Regulations No. 41 of 1999 (PP 41/1999) on Air Pollution Control, issued under the Law No. 23 of 1997. These regulations set out the National Ambient Air Quality Standards (NAAQS) covering thirteen pollutants.

III. For the stationary sources of pollution, which include factories, refineries, boilers and power plants, air pollution standards were first introduced by the Ministry of Environment in 1988, and were updated in 1995. The most recent revision in the standards was in May 2007 (for industrial boilers) through Decree No. 7 (PermenLH 7/2007) and in December 2008 (for thermal power plants) through Decree No. 21 (PermenLH 21/2008).

IV. Key challenges in emissions control in Indonesia: (1) weak policy framework, (2) loose emissions standards, (3) underperformance of installed equipment, (4) inadequate capacity of regulators, (5) inadequate penalty mechanisms, (6) inadequate monitoring practices and issues with CEMS, (7) limited awarenss on pollution control, (8) access and cost trade off.

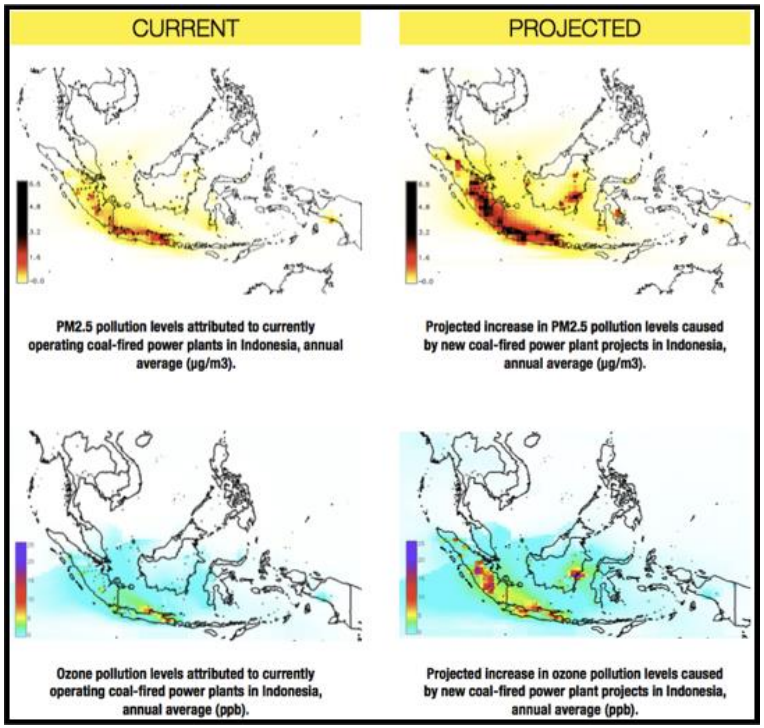
Source: ICEL 2017

Legislative pushback for coal-fired power plants

I. Indonesia Electricity Project (35GW) would have contradicted with Indonesia Energy mix target as regulated by the GR 79/2014 on National Energy Policy.

II. Greenpeace Indonesia and Harvard University Research Report (August 2015): the 35GW development project was expected to increase the number of premature deaths due to pollution from coal-fired power plants from 6,500 people/year to 28,300 people/year.

III. The Indonesian Parliament has since successfully reduced the number of coal-fired power plants from >80% to 50% (a small institutional victory; many challenges ahead).



How do we move forward? Factor in externality costs

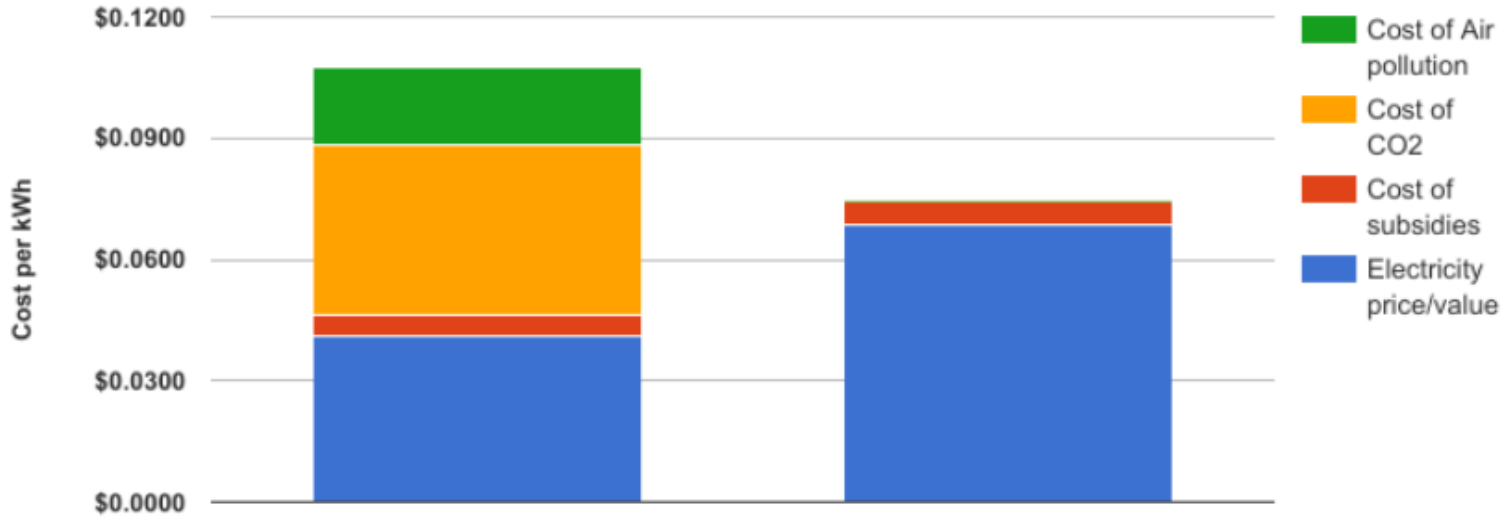


Figure E1. Comparison between the costs of coal (left) and renewable energy (right) – cost per kWh

I. IISD-GSI 2017: When generation costs and subsidies are considered on a per-unit basis, coal appears to be the cheaper form of electricity generation. However, when the cost to society of air pollution and CO2 emissions are taken into account, the "true cost" of coal is significantly greater than the cost of renewable energy.

II. Put another way, **subsidies that support the deployment of renewable energy may increase short-term financial costs, but also lead to the generation of electricity that effectively reduces air pollution and CO2 emissions, reducing the cost to society over the longer term.**

How do we move forward? Implement carbon pricing mechanisms

I. There are two main types of carbon pricing:

emissions trading systems (ETS) and **carbon taxes**.

An **ETS** (sometimes referred to as a cap-and-trade system) ***caps the total level of greenhouse gas emissions and lowers the cap over time***. Companies are allowed a limited, and falling, number of emissions permits. Those industries with low emissions are able to sell their extra allowances to larger emitters. By creating supply and demand for emissions allowances, an ETS establishes a market price for greenhouse gas emissions. The cap helps ensure that the required emission reductions will take place to keep the emitters (in aggregate) within their pre-allocated carbon budget.

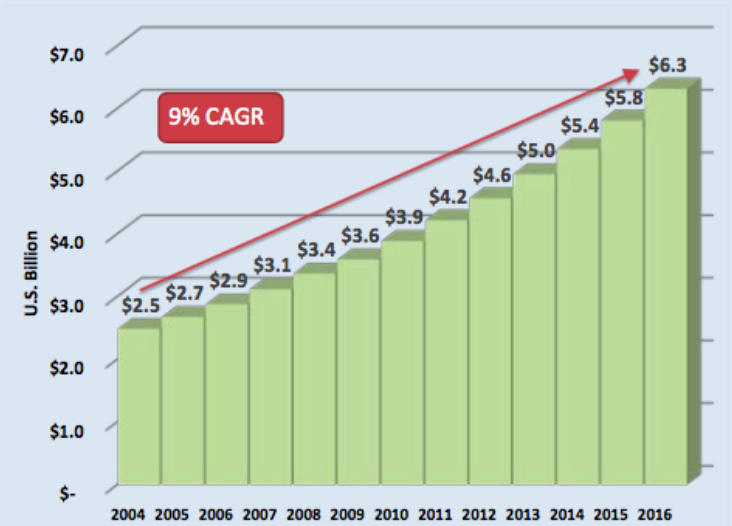
A **carbon tax** ***directly sets a price on carbon*** by defining a tax rate on greenhouse gas emissions or – more commonly – on the carbon content of fossil fuels. It is different from an ETS in that the emission reduction outcome of a carbon tax is not pre-defined but the carbon price is.

"Price it right, tax it smart, do it now." —Christine Lagarde

How do we move forward? Capitalize on environmental technologies

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	Air Pollution Control
7	8
Water	**Waste & Recycling**
8	2

Opportunity for creating jobs in the dedicated niches associated with environmental technologies. **Green growth promotes green economies.**

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