Energy and Health: Reflections from Indonesia

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The House of Representatives of the Republic of Indonesia
Land transportation contributes around 12% of total national CO₂ emissions, and almost 90% of urban air pollution (CO, HC, NOₓ, SOₓ, PM, O₃)

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 Kl for gasoline; 15.5 million KL for diesel; 0.61 million Kl for kerosene

IEA 2016: Indonesia is ranked third globally for premature deaths due to air pollution
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 CO2 per day). A massive spike in emissions can be seen on October 14, when 4,719 fires were observed.

More than 75,000 people suffered from upper respiratory infections as a result of the haze. GHG emissions from 1 week of fire on 1.6% of Indonesia's land area = 5–10% of Indonesia's annual GHG emissions (Cifor).
Air pollution in Indonesia
Premature deaths from coal

• Indonesia Electricity Project (35GW) used to contradict Indonesia Energy mix target as regulated by the GR 79/2014 on National Energy Policy.

• Greenpeace Indonesia and Harvard University Research Report (August 2015): the 35GW development project was originally 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 → before parliamentary intervention.
Composition of pollutants
Comparison: SE Asia & Jakarta

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<th>Year</th>
<th>SO₂</th>
<th>NO₃</th>
<th>PM₁₀</th>
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<td>2015</td>
<td>3.9 Mt</td>
<td>5.7 Mt</td>
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<td>2040</td>
<td>5.7 Mt</td>
<td>8.3 Mt</td>
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- **SO₂ (27,494 tons)**
- **NO₃ (78,879 tons)**
- **PM₁₀ (8,671 tons)**

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

- **NO₃ (78,879 tons)**: 26%
- **PM₁₀ (8,671 tons)**: 25%
- **SO₂ (27,494 tons)**: 21%

Source: IEA 2016
Where do we stand?
Comparison of air pollution mortality rate

Source: IEA 2016
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
Effects of air pollution
Outdoor & household exposure

Outdoor air pollution in cities in Jakarta, Indonesia, annual mean PM\textsubscript{2.5} (µg/m\textsuperscript{3}) 2010

In 2010, Jakarta had an annual mean PM\textsubscript{2.5} level that was above the WHO guideline value of 10 µg/m\textsuperscript{3}.

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
Vehicle forecast: 2030
Unstoppable growth?

Source: KPBB 2015
How do we move forward?

International commitment: SDGs

- **SDG 3.9** - By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

- **SDG 11.6** - By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

- **SDG 12.4** - By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment
1. Emissions inventory and monitoring as a baseline of the Air Pollution Control Planning City

2. Improved vehicle technology and fuel
   – Encouraging the use of alternative materials (CNG, Biofuel, etc.)
     • The use of CNG for public transport (Jakarta: bajaj and Transjakarta; Palembang: Transmusi)
     • The use of used cooking oil in Transpakuan in Bogor
   – Encouraging policies emissions testing and vehicle maintenance
   – Encouraging Fuel Efficiency (Eco-Driving)
   – Use of hybrid technology, electric, and fuel cell
   – Conversion from gasoline-based fuel to gas-based fuel

How do we move forward?
Policy
How do we move forward?

Policy

3. Alternative modes of transportation
   – Public transportation (BRT, MRT, Rail Transportation)
   – BRT: Transjakarta, Transmussi, Transbatik Solo, Transpakuuan (Bogor)

4. Other policies
   – Structuring space (Green Open Area/RTH, zoning, etc.)
   – Setting work hours, traffic engineering
   – Improved “parking rate”
   – Car Free Day (coverage and intensity increased): Jakarta, Bandung, Solo, etc.
**How do we move forward?**

**Adoption of Euro 4 standard**

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- 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.

- Adoption of Euro 5 nationally in 2025.
Positive market potential
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)
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

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 1st Climate Change Summit, London

Climate Parliament Gathering, Shanghai, China

Climate Asia Report Launch

REDD+ Workshop with UNORCID: Capacity Building for Legislative Staff Members (4 batches)
The Green Economy Caucus
Promoting green legislation, collaboration

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

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

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

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