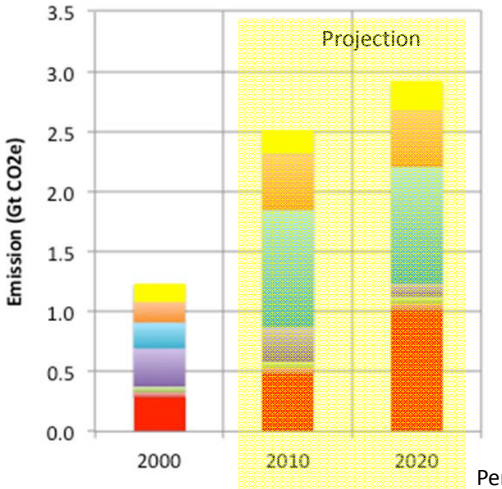
Promoting an Integrated Knowledge Based System for Scientific LCD Policy Making in Asia

Rizaldi Boer

Centre for Climate Risk and Opportunity Management in South East Asia and Pacific, Bogor Agriculture University

Introduction: Projection of Indonesian Emission under the BAU up to 2020 (*based on SNC; MoE 2010*)



AFOLU	3.55	7.61	6.14
Non-AFOLU	2.26	3.09	5.01
Total	5.81	10.70	11.15

Per Capita Emission (ton CO2

With 41% ERT (26%+15%) of by 2020, per capita emission is expected to be 6.6 tCO_2

To meet the global target, we expect to reduce our per capita emission by 2050 to

1.27 tCO2

The need to decarbonized our development deeply

Deep Decarbonization of Development

(Siagian et al., 2014)

- Energy & Industry Sectors: Deep decarbonization **by 2050** through a combination of measures:
  - Energy use efficiency,
  - Fuel switching to gas,
  - Deployment of renewable, nuclear, and CCS and
  - Structural change of the economy especially in the industrial sector (share of service sector to GDP growth should be increased more than industry sector)

DEEP DECARBONIZATION OF DEVELOPMENT

(Siagian et al., 2014)

- **Possible Pathways to Deep Decarbonized Development**
  - High efficiency Coal (Combustion efficiency >50%) and and CCS about 3,300 Mton (eq. to 286 Mton/yr; stored in the abandoned and depleted oil and gas reservoirs), and natural gas (no more oil for power plant)
  - Massive use of biofuels for transport, industry, and power generation (85 Mton/yr)
  - RE: 30 GW HEP (potential 75 GW), Geothermal 25 GW (Potential 29 GW), Biomass energy 15 GW, PV 90 GW
- **If only half of the CCS and Biofuel scenario is possible:**
  - HEP need to be increased to 61 GW, but potential location HEP mostly in Eastern part of Indonesia while the demand center in Western Part of Indonesia
  - Biomass energy (Biomass Combustion) increased to 20 GW.
  - Solar power is constraint by grid reliability (intermittent renewable, maximum only 25% of total grid).
  - Land availability and competition with other sectors also inhibit the production of biofuel (above scenario will require 18 Mha)

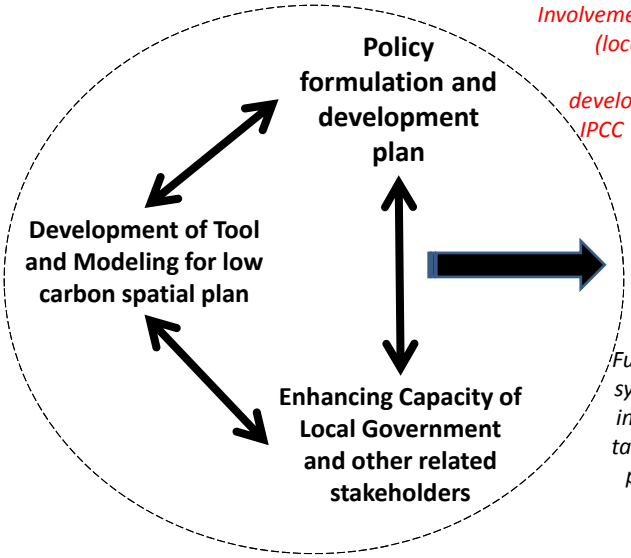
Deep Decarbonization of Development

- By 2030, AFOLU can potentially become net-sink by 2030 at a rate of about -0.29tCO_2e/cap and by 2050 about 1.08 tCO2 without changing government target to meet rice self sufficiency and palm oil and wood production.
- The mitigation measures are by
  - Reducing dependency on natural forests in meeting wood demands through the increasing use of low-carbon stock lands or degraded lands for the development of timber plantation
  - Enhancing carbon sequestration by increasing forest regeneration and land rehabilitation
  - Reducing forest conversion in meeting land demand for agriculture by increasing the productivity of the existing agricultural land and planting intensity as well as optimizing the cultivation of unproductive lands
  - Restricting use of peat land for agricultural development and the implementation of low-emission technologies in peat land and crop cultivation

Deep Decarbonization of Development

- In Indonesia, forest and land use will play important role to achieve meet the global target, however as Energy, this sector also faces big challenges to realize the such emission level (land tenurial issues, land productivity, low farming practices, water availability, high opportunity cost – mining resources etc)
- Local governments need tools to assist them in evaluating alternative land uses (balanced between economic growth, emission, food security and energy security) – **Policy on Land Use Spatial Plan**

Land-Based Mitigation Actions Indonesia (LAMA-I) with Bappenas

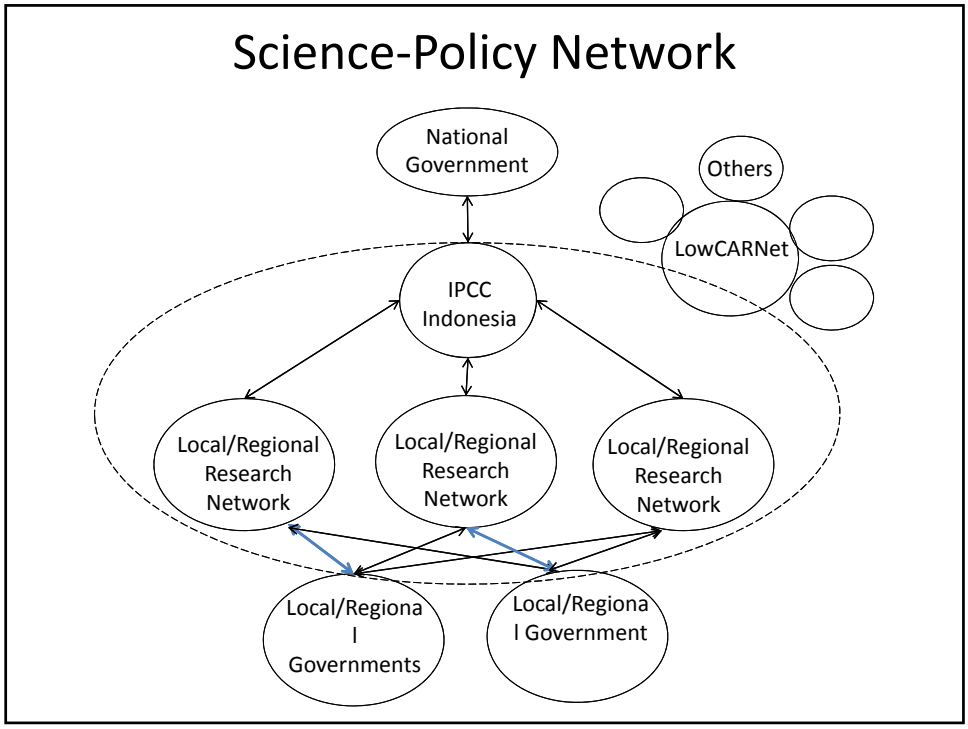


Involvement of more local scientists (local/regional universities) in LowCARNet and capacity development is very important ~ IPCC Indonesia and FCCRN and other Research Networks

Functioning spatial planning systems at district level that include emissions reduction targets along with economic planning, maintenance of watershed functions and ecological buffers

Forest-Climate Change Research Network has been established

- IPCC Indonesia was formed in 2012 (*www.**ipcc-indonesia**.org*)
  - Provide scientific inputs for policy makers in policy formulation
  - Synthesize scientific findings and implication on development
- FCCRN was established in four regions in 2003 (1) Kalimantan-Sulawesi-Maluku-Papua; (2) Bali-Nusa Tenggara, (3) Sumatera, dan (4) Jawa
- Objectives:
  - Enhance capacity of researchers from local/regional universities
  - Increase coordination, consistency, and coherency of research program on forest and climate change among institutions
  - Think Tank and Hub of information/communication for policy makers


Science-Policy Network
National Government
Others
LowCARNet
IPCC Indonesia
Local/Regional Research Network
Local/Regional Research Network
Local/Regional Research Network
Local/Regional Governments
Local/Regional Government