Low Carbon Actions in Asia
- Modeling to Bridge Science and Policy -

Ten Actions toward Low Carbon Asia

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(On behalf of S-6 project members*)

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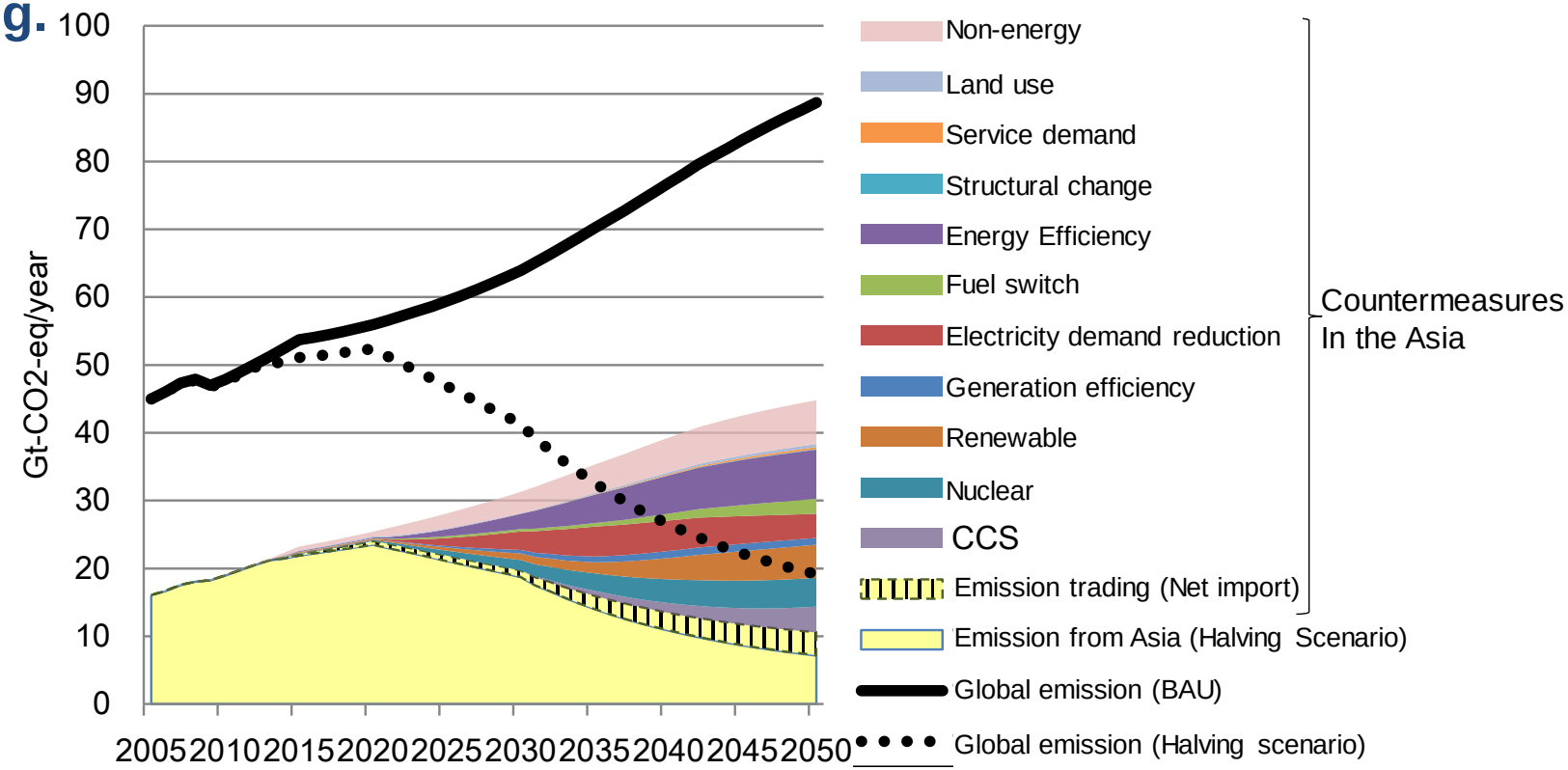
Universiti Teknologi Malaysia (UTM), Malaysia

* Results come from a research project to establish a methodology to evaluate mid- to long-term environmental policy options toward Asian low-carbon societies (Low-Carbon Asia Research Project) supported by the Environment Research and Technology Development Fund (S-6) of the Ministry of the Environment, Japan.

Why Low Carbon Asia?

- Economies of Asia are expanding.
- If the current trend to invest in high carbon infrastructures continues, GHG emissions will grow and associated environmental problems will threaten the growth as well as daily living.
- Shifting to low carbon societies has the advantage to avoid lock-in high carbon infrastructures while improving economic standards of living.



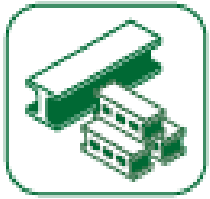
Ten Actions toward Low Carbon Asia

Action 1 Urban Transport

Hierarchically Connected Compact Cities

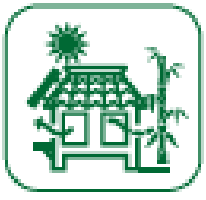
Action 2 Interregional Transport

Mainstreaming Rail and Water Transport in interregional Transport



Action 3 Resources & Materials

Smart Ways to Use Materials that Realize the Full Potential of Resources



Action 4 Buildings

Energy-Saving Spaces Utilizing Sunlight and Wind

Action 5 Biomass

Local Production and Local Consumption of Biomass

Action 6 Energy System

Low Carbon Energy System Using Local Resources

Action 7 Agriculture & Livestock

Low Emission Agricultural Technologies

Action 8 Forestry & Land Use

Sustainable Forestry Management

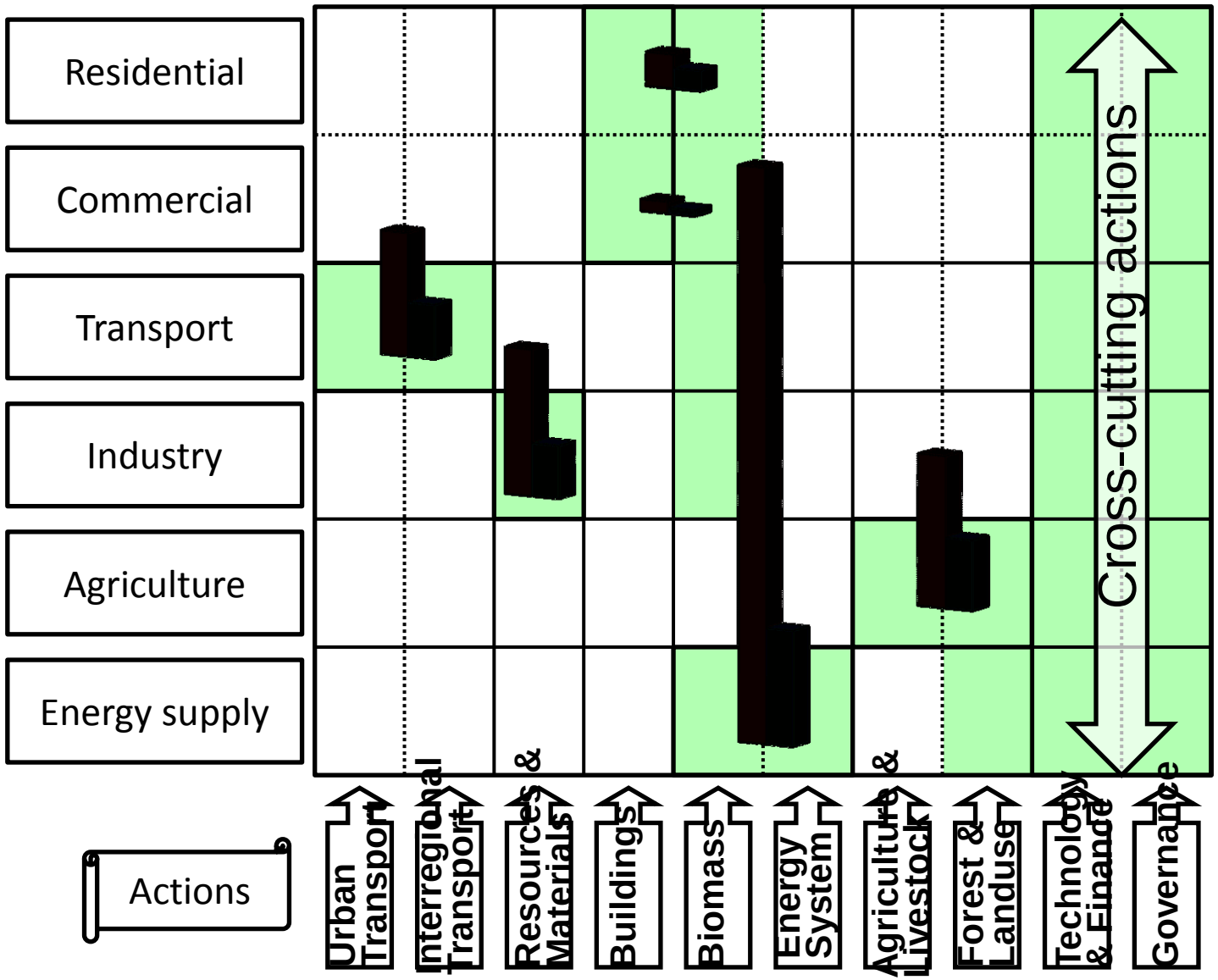
Action 9 Technology & Finance

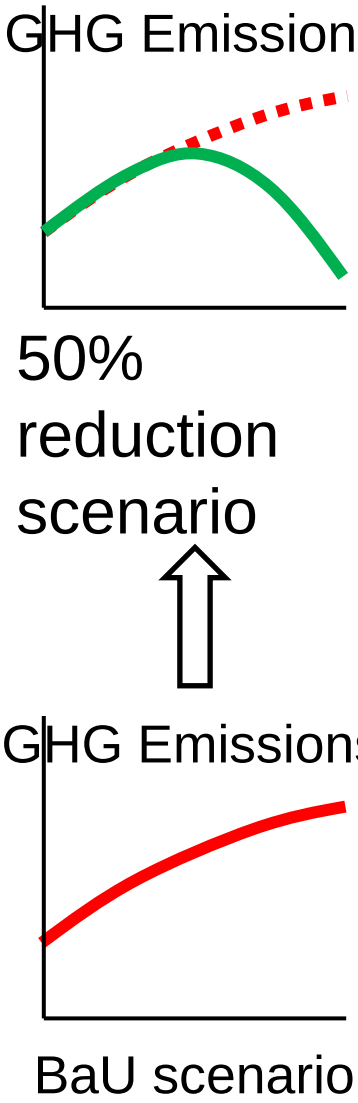
Technology and Finance to Facilitate Achievement of LCS

Action 10 Governance

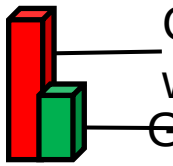
Transparent and Fair Governance that Supports Low Carbon Asia

Contribution of actions to GHG mitigation





Sector where actions mainly contribute to GHG reduction



GHG emissions in 2050 with BaU scenario

GHG emissions with actions

Actions and their three main points

Action 1: Urban transport

Hierarchically Connected Compact Cities

- **AVOID strategy**: Compact cities with well-connected hierarchical urban centers (transit-oriented development)
- **SHIFT strategy**: A seamless and hierarchical transport system (railway, bus rapid transit, conventional buses, paratransit, personal mobility)
- **IMPROVE strategy**: Low carbon vehicles and transport system (small vehicles, renewable energy + biomass fuel)

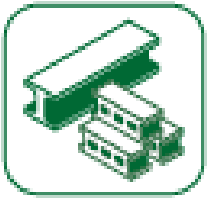
Action 2: Interregional Transport

Mainstreaming Rail and Water Transport in Interregional Transport

- **AVOID strategy**: Spatial development driven by a low carbon interregional transport system
- **SHIFT strategy**: A rail/water-oriented intermodal passenger/freight transport system (high-speed passenger railways, freight railways, and maritime/river transport)
- **IMPROVE strategy**: Low carbon automobile/airplane technologies (electric vehicles, alternative fuels, lightweight vehicles/vessels)

Actions and their three main points

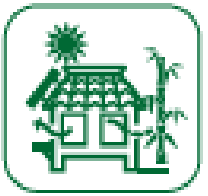
Action 3: Resources & Materials



Smart Ways to Use Materials that Realizes the Full Use Potential of Resources

- Production that dramatically reduces the use of resources
- Extension of product lifespan to reduce the use of resources
- Development of systems for the reuse of resources

Action 4: Buildings

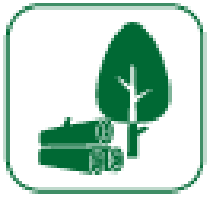


Energy-Saving Spaces Utilizing Sunlight and Wind

- Realization of energy-saving spaces by buildings with high insulation
- Incentives for diffusing energy-efficient appliances
- Verification of energy saving efforts through third-party evaluations

Actions and their three main points

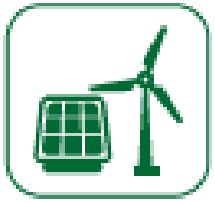
Action 5: Biomass



Local Production and Local Consumption of Biomass

- Sustainable biomass utilization with sustainable food products
- Low carbon energy system using local biomass resources in rural areas
- Improvement of in-house environmental quality with modern biomass utilization

Action 6: Energy System



Low Carbon Energy System Using Local Resources

- Sustainable local energy system with renewables
- Smart energy supply and demand system
- Enhanced energy security with collaboration between low carbon energy sources and fossil fuels

Actions and their three main points

Action 7: Agriculture & Livestock

Low Emission Agricultural Technologies

- Water management in rice paddies
- Highly Efficient fertilizer application and residue management
- Recovery and use of methane gas from livestock manure

Action 8: Forestry & Land Use

Sustainable Forestry Management

- Forest protection and effective plantation
- Sustainable peatland management
- Monitoring and management of forest fires

Actions and their three main points

Action 9: Technology & Finance

Technology and Finance to Facilitate Achievement of Low Carbon Society

- Stable incentives for companies to invest in technology research and development
- Adequate financial support for technology diffusion
- Incentives for enlightened consumers to choose low-emission products

Action 10: Governance

Transparent and Fair Governance that Supports Low Carbon Asia

- Construction of a transparent and responsive administrative management framework
- Corporate activities based on fair business practices
- Enhancement of environmental policy and technology literacy

Challenges (1/2)

- Invest in a low carbon infrastructure by setting the future vision at the initial stage of economic growth.
- Promote efficient use of resources and a drastic reduction in demand for resources themselves.
- Promote a combination of centralized and decentralized energy supply system and facilitate the effective use of renewables.

Challenges (2/2)

- Overcome financial constraint to meet the up-front costs associated with capital intensive energy system transformation technologies. Financial and technical support will be needed to develop low carbon infrastructures. However, financial assistance from developed countries is not sufficient for the required investments in technological development and diffusion. All countries need to play their respective role.
- In order to improve organizational and institutional transparency, an effective administrative management framework needs to be established.

Gandhi's idea of decentralized and sustainable economy of the future...

"In my imagined world, in addition to decentralized village industries, large scale industries like electricity generation, ship-building and machinery manufacturing are included too. However, the causal relationship must be changed. As of now the industrialization is taking place to destroy the rural (decentralized) industries and rural life. The "industrialization of the future" will take place in order to strengthen the decentralized, sustainable life and village industries." (in reply to a question from Dr. Lohia, in 1940; M. K. Gandhi, "Ahimsa in Practice," Harijan, Vol. III, No. 51, January 27, 1940, pp 426-429).

Thanks!

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