

Green Growth for Sustainable Development

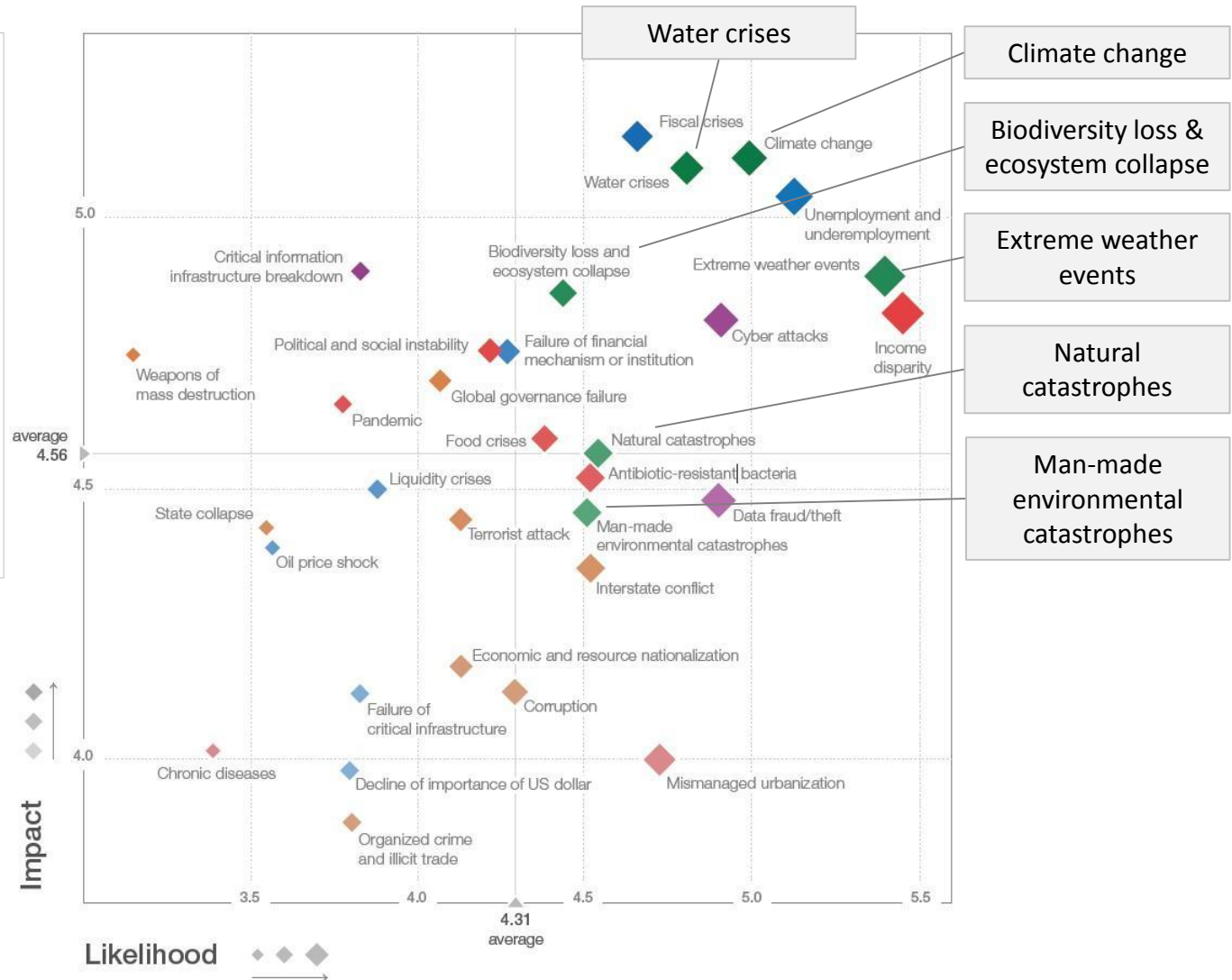
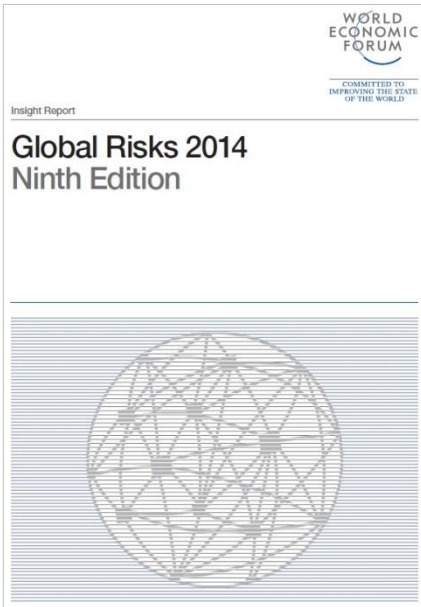
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Green Growth

Global Risks Landscape





- Is “brown growth” still an effective paradigm of economic development?
 - Industrialized by the end of the 19th century
 - No new developed country since then

- New constraints & challenges:
 - Unprecedented climate change
 - Depleted natural resources, biodiversity loss, scarce food & water
 - Deepening economic & social inequality

- “Green growth” is a new development paradigm that simultaneously addresses key aspects of
 - Economic performance
 - Environmental sustainability
 - Social inclusiveness

New Paradigm of Economic Growth: Green Growth



"The significant challenges we face cannot be resolved at the same level of thinking we were at when we created them." – Albert Einstein



Green growth is the new revolutionary development paradigm that sustains economic growth while at the same time ensuring climatic and environmental sustainability. It focuses on addressing the root causes of these challenges while ensuring the creation of the necessary channels for resource distribution and access to basic commodities for the impoverished (social inclusiveness).

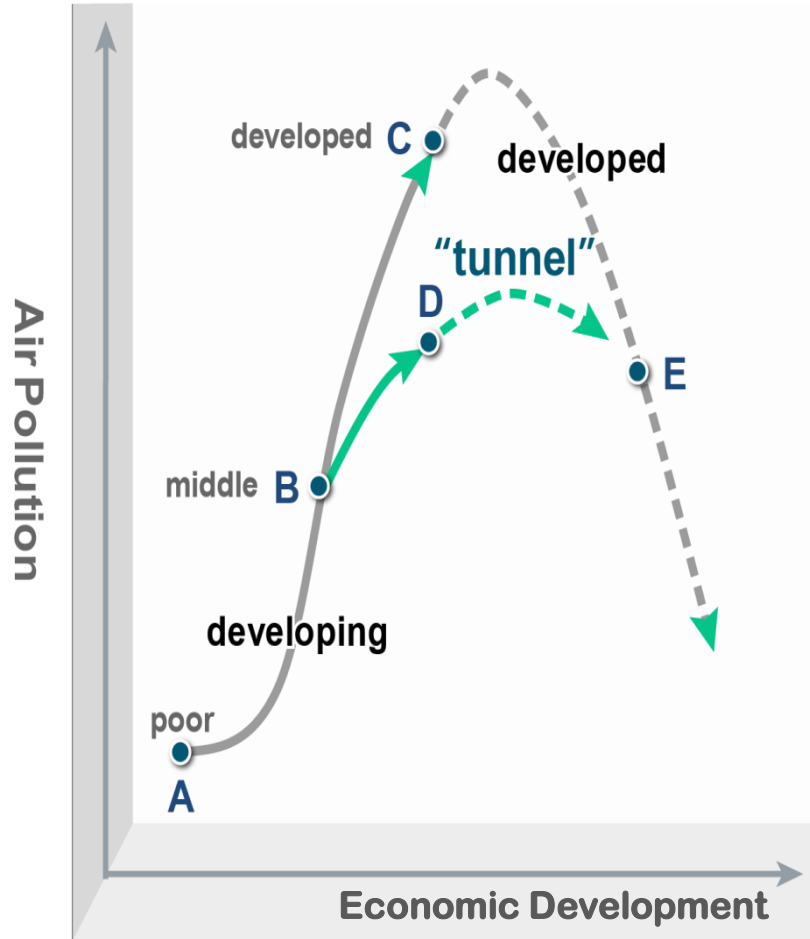


A green economy is one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. It is low carbon, resource efficient, and socially inclusive.



Green growth means fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies.

Tunneling Through a New Development Path



Mohan Munasinghe (1995, 2007)

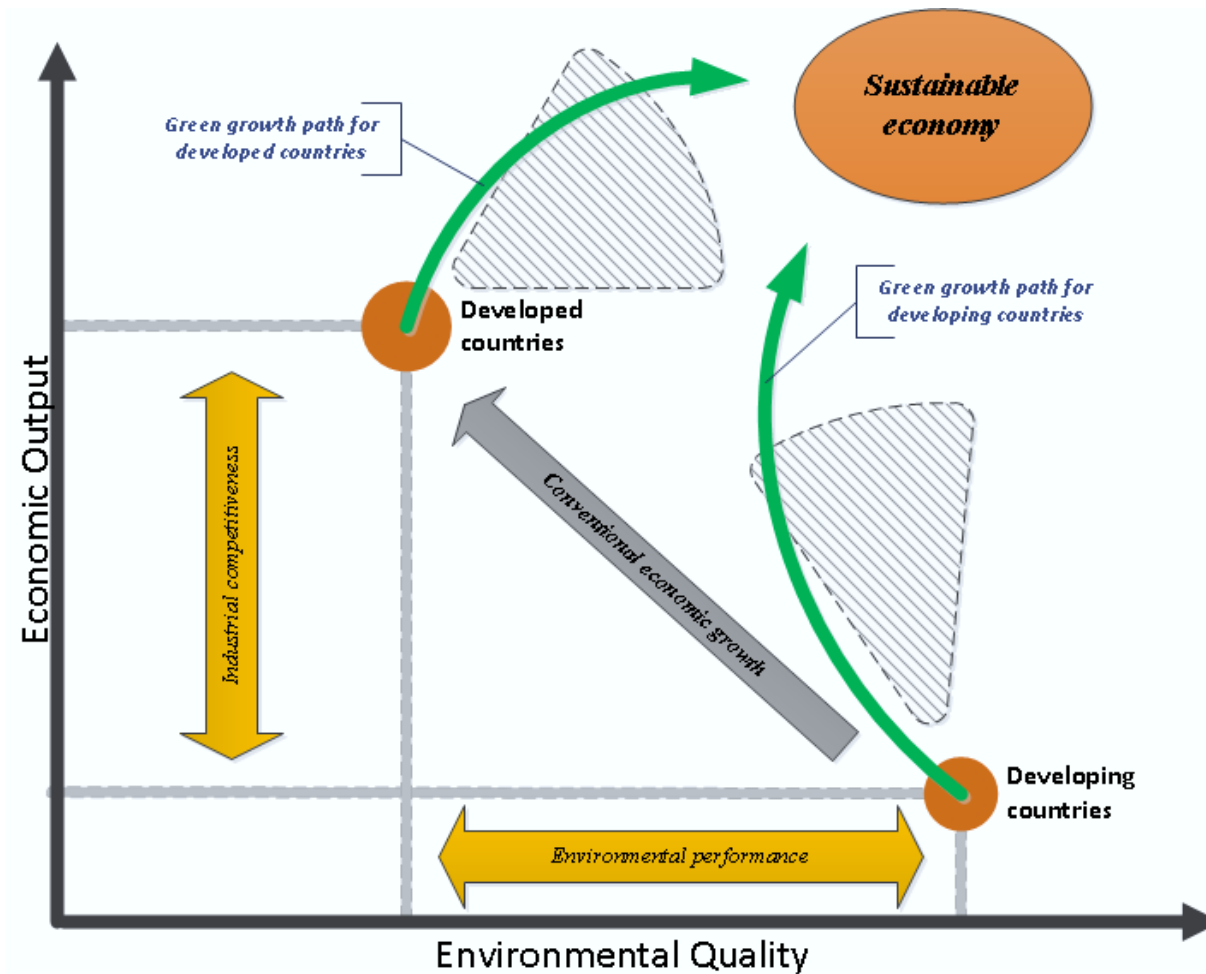
Old Path : $A \rightarrow B \rightarrow C \rightarrow E$

Following the “develop first, clean up later” path of developed countries will widen the gap and not be able to catch up.

New Path : $A \rightarrow B \rightarrow D \rightarrow E$

International cooperation through technology transfer and fund supports for measures against climate change will enable developing countries to choose the new path and act wisely from the beginning.

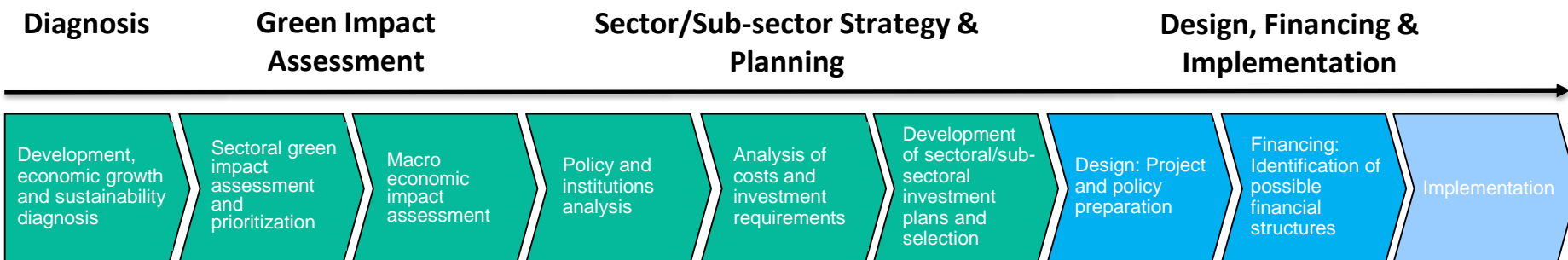
Growth Paths to Sustainable Economy



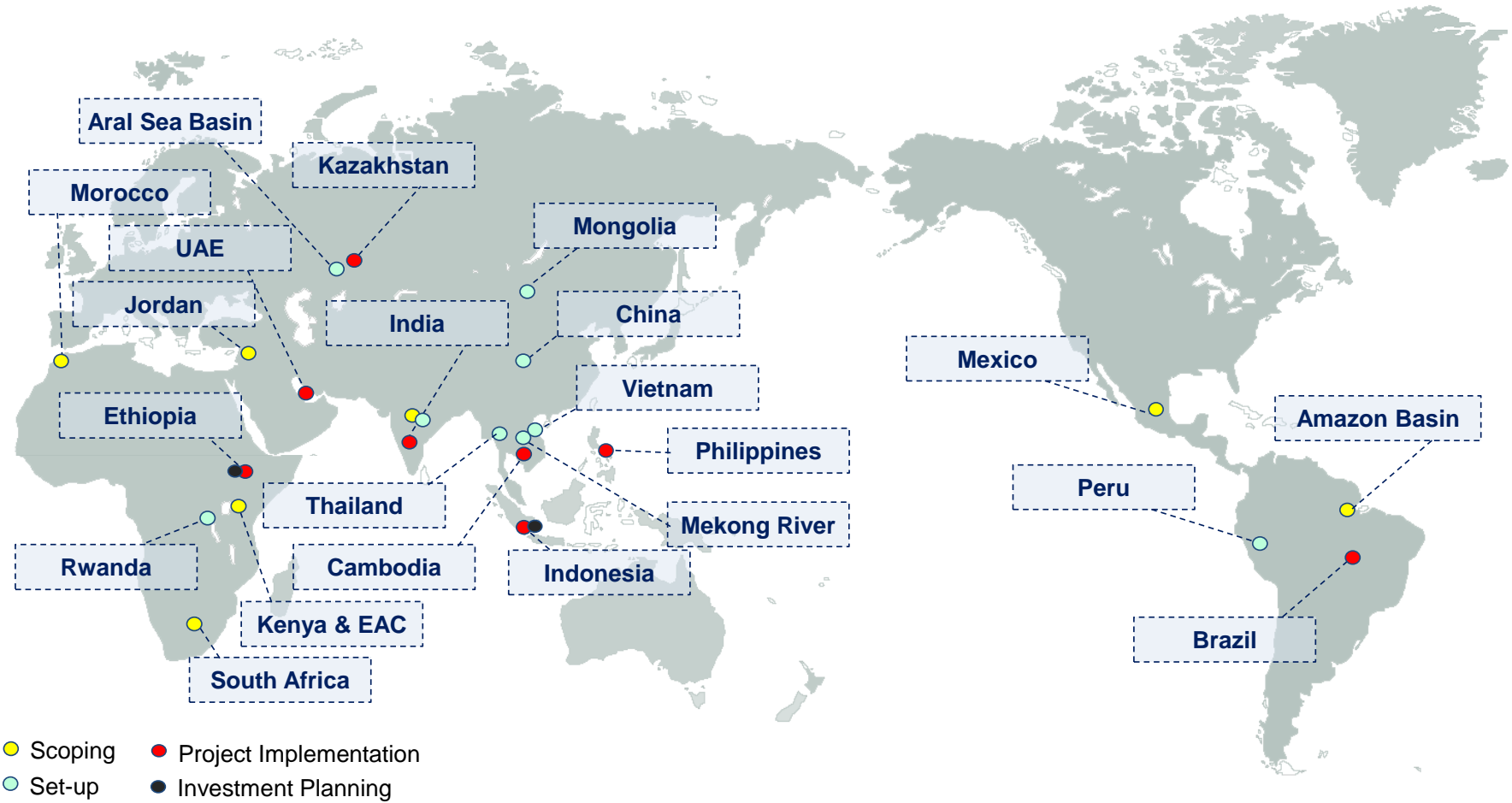
- GGGI is an international organization dedicated to pioneering and diffusing a new paradigm of economic growth, “green growth” that integrates ambitions for strong economic and environmental performance.
 - Established in June 2010 by the Korean Government
 - Converted into an international organization in October 2012
 - Headquartered in Seoul; Hub offices at Abu Dhabi and Copenhagen
 - 22 member states

- Three work streams
 - Green Growth Planning and Implementation (GGP&I)
 - Knowledge Development and Management (KDM)
 - Public Private Cooperation (PPC)





Green Growth Planning Portfolio





➤ Cambodia

- Development of the National Green Growth Master Plan and establishment of a green growth legal framework
- Cambodian government established the National Council on Green Growth led by the Prime Minister in Oct 2012

➤ Indonesia

- REDD+ Readiness, development of provincial green growth strategies, and capacity building for local officials and others to implement and maintain green growth policies

➤ Philippines

- Ecotown project designed to help vulnerable communities become ecologically stable and economically resilient to climate change

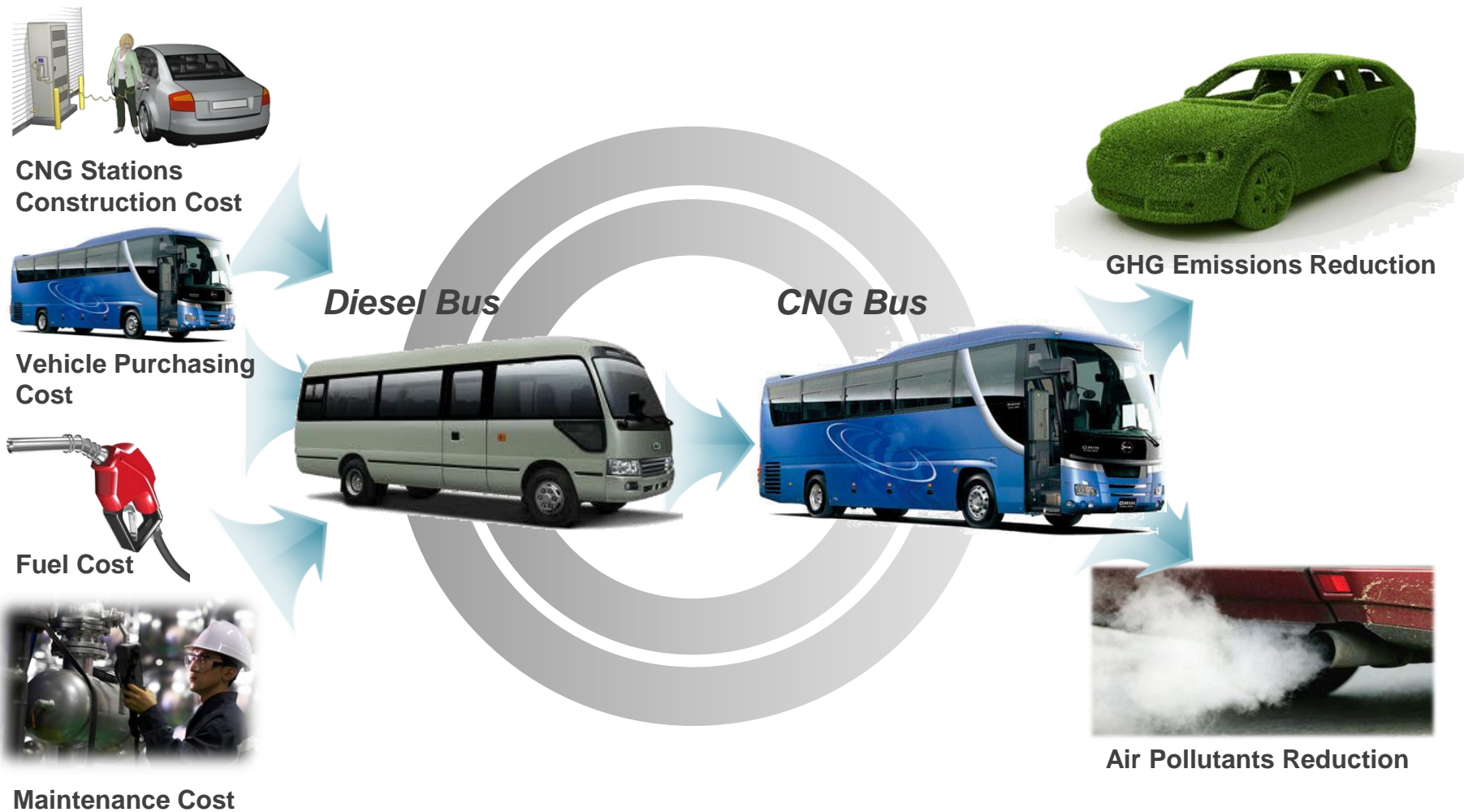
➤ Vietnam

- Establishment and implementation of the Vietnam Green Growth Strategy (VGGS) of 2011 – 2020
- Green Growth Led City Development Strategy for Da Nang



Mongolia Country Program

Greening Buses in Mongolia

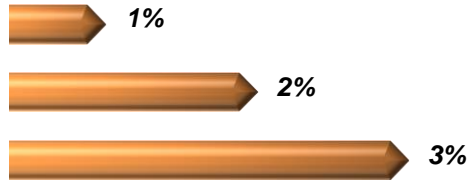


Scenario Analysis

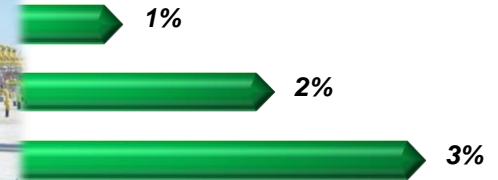


Annual fuel prices increase

Diesel



CNG



Percentage of diesel buses converted into CNG buses

5% converted



3 stations



10% converted



6 stations



15% converted



9 stations



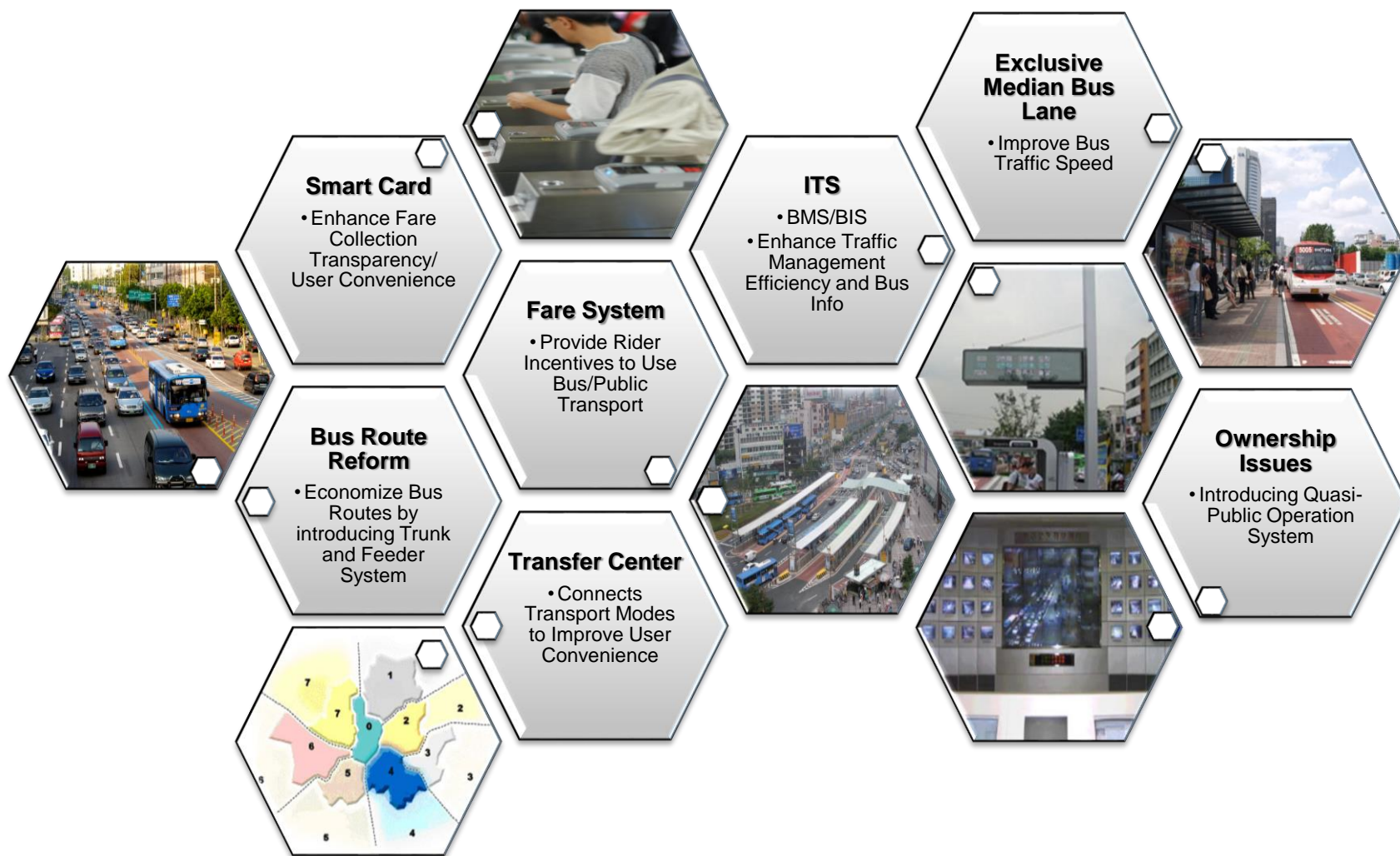
20% converted



12 stations

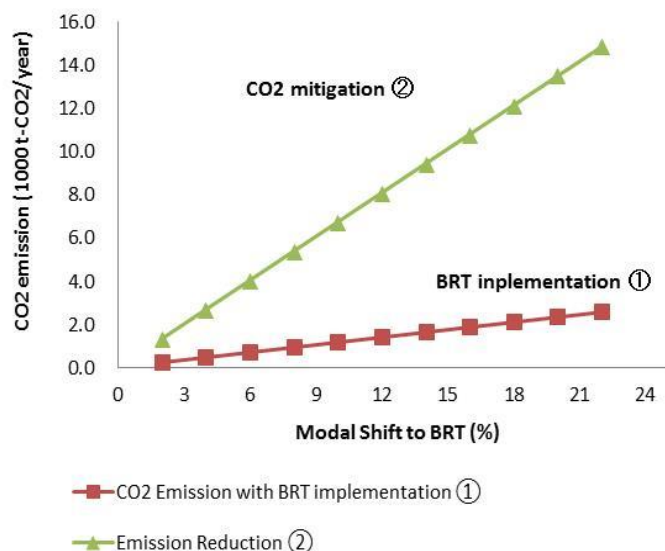


Policies to Promote Public Transport Systems

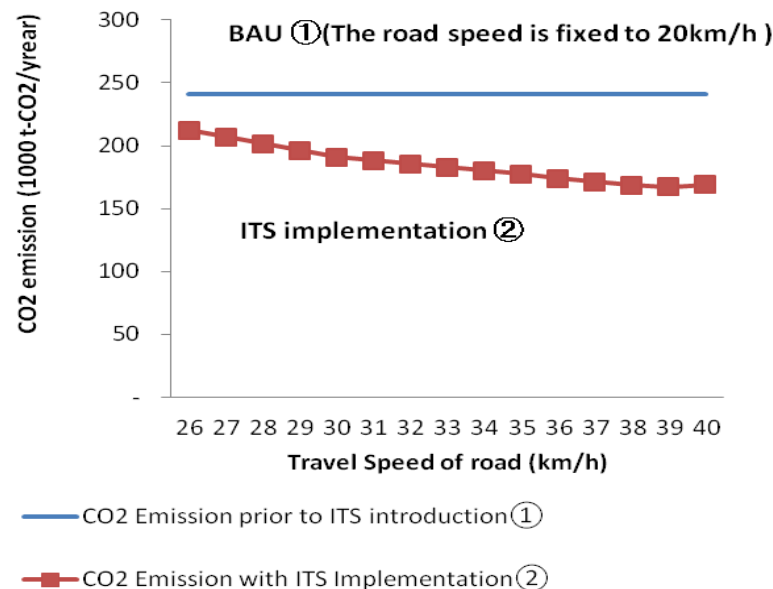




➤ Implementation of BRT



➤ Improvement of ITS



- If the implementation of BRT increases the rate of modal shift to buses to 22%, the expected reduction of CO₂ emissions is about 15,000 t-CO₂/year

- If the travel speed is improved to 40km/h through improvement of ITS, the expected reduction of CO₂ emissions is about 49,000 t-CO₂/year



- Energy use dominated by power and heat: over 40% of 2011 demand, nearly all provided by coal-fired sources
- Large coal resources used for domestic energy and increasing levels of exports, principally to China
- Significant air pollution problems, especially in urban areas
- High heating demand in winter; Dispersed population make providing heat and electricity challenging
- Significant wind and solar resources as well as some hydroelectric potential

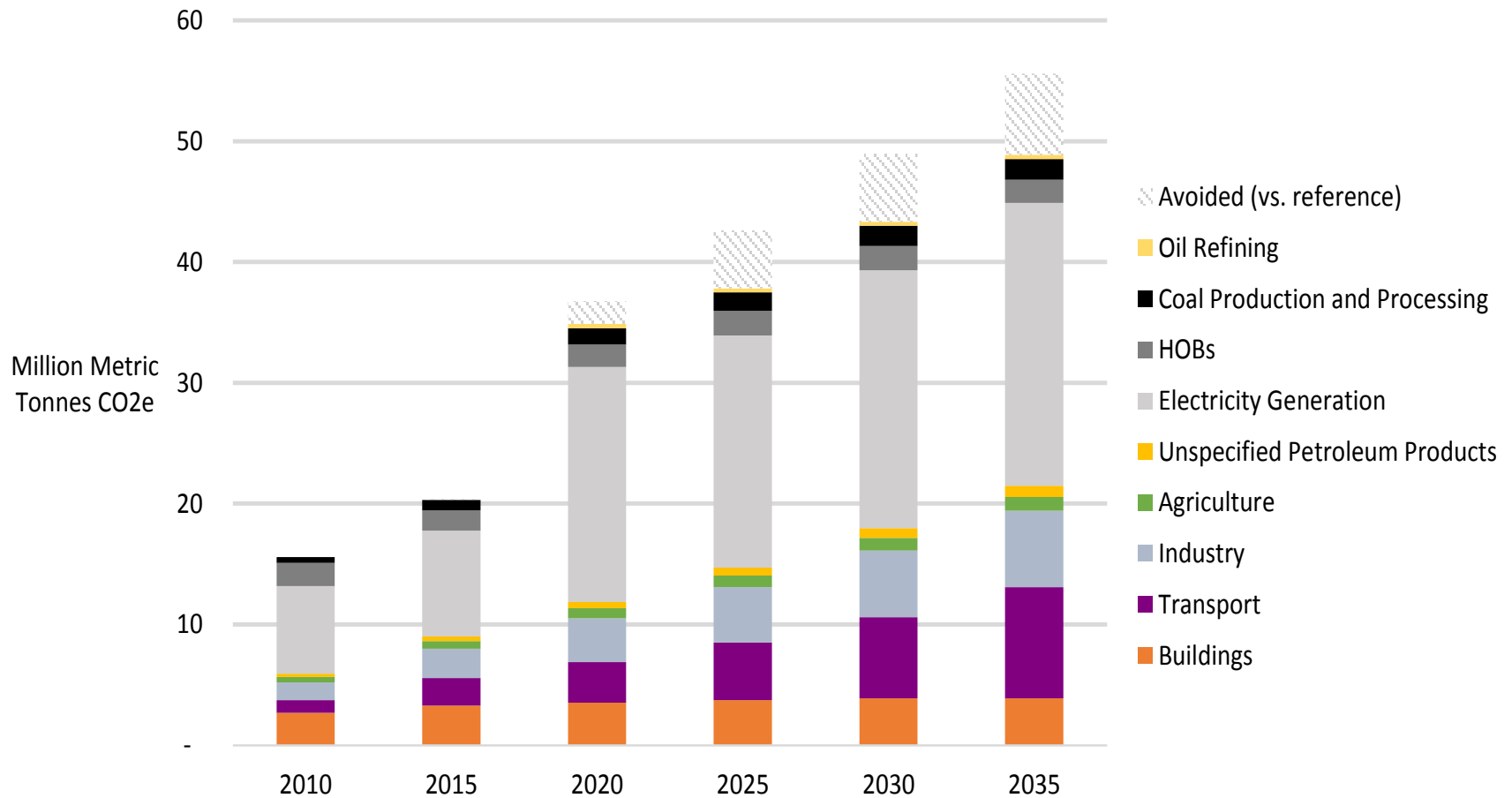


- Four broad scenarios of how energy supply and demand could evolve in Mongolia through the year 2035
 - **Reference:** Continuation of largely coal-based energy supply for a rapidly expanding economy driven by mining exports, particularly coal and copper. Gradual improvement in energy intensity of demand
 - **Recent Plans:** Same economic and demographic forecast, but with accelerated introduction of priority technologies reflecting recent developments and priorities. These include large hydro and wind plants, advanced coal combustion technology, and efficient lighting and apartment building insulation improvements
 - **Expanded Green Energy:** Same economic and demographic drivers, however with more rapid buildup of all proposed renewable energy projects accompanied by extensive implementation of energy efficiency measures economy-wide
 - **Shifts in Energy Export:** Same as Expanded Green Energy scenario but with an additional shift in the types of fuel and energy exported from coal to renewable electricity (wind and solar)
- Sectors considered are power and heat supply, buildings, transport, industry (mining and manufacturing), and agriculture
- Method is a bottom-up techno-economic analysis of energy and GHG reduction scenarios assembled using the LEAP model

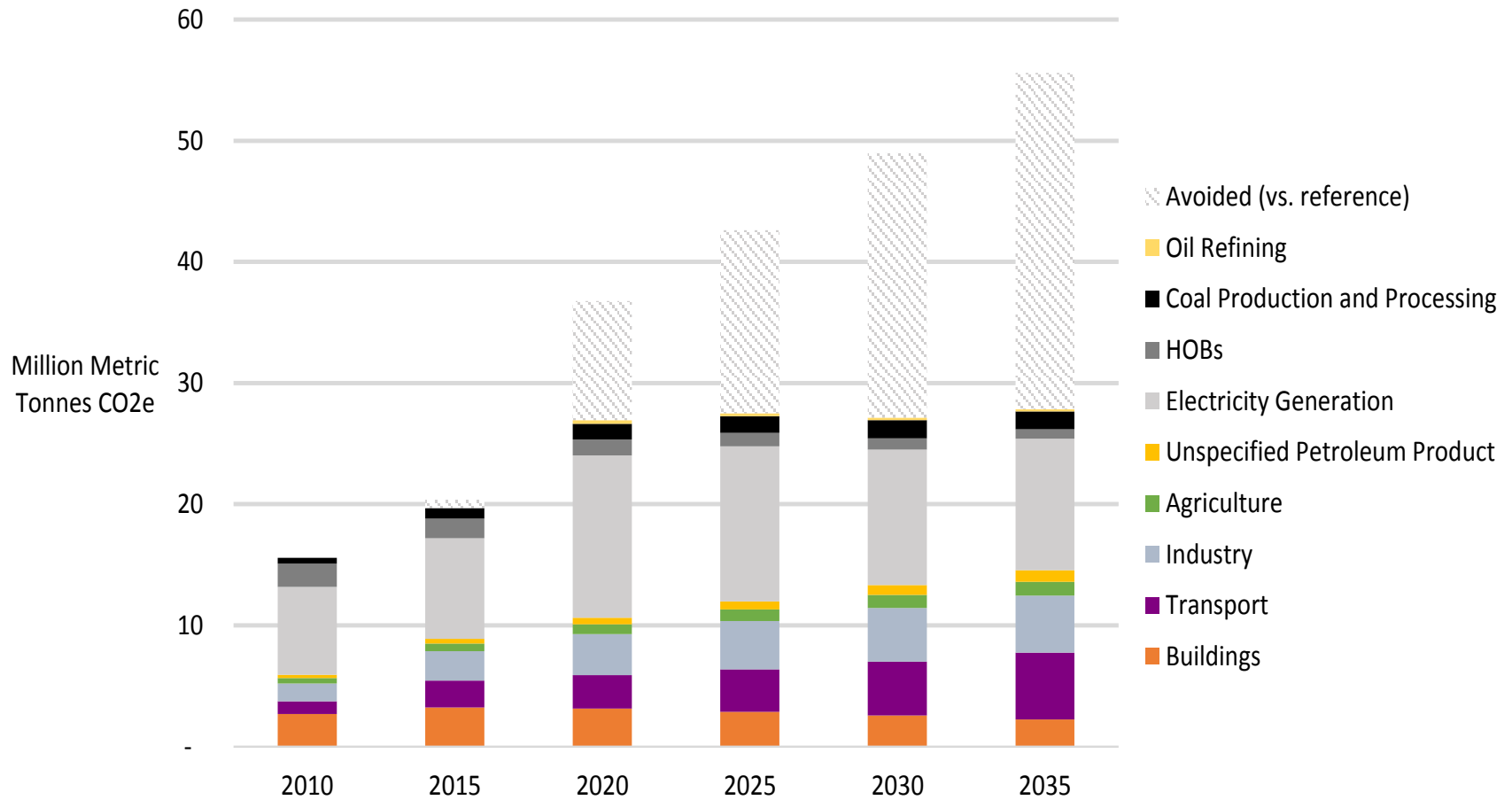


- “Territorial” or “production” basis for GHG emissions by sector and fuel
- Largest emissions from electricity generation
- Emissions rise to 56 million tonnes of carbon dioxide equivalent by 2035 in Reference scenario
- 49 million tonnes in Recent Plans scenario with most significant reductions in electricity generation
- 28 million tonnes in Expanded Green Energy scenario
 - High GHG abatement potential (> 2 million tonnes) in mining energy efficiency improvement, other industrial sector energy efficiency improvement, wind power, hydropower, appliance efficiency, and transport mode shift to rail

GHG Emissions – Recent Plans



GHG Emissions – Expanded Green Energy



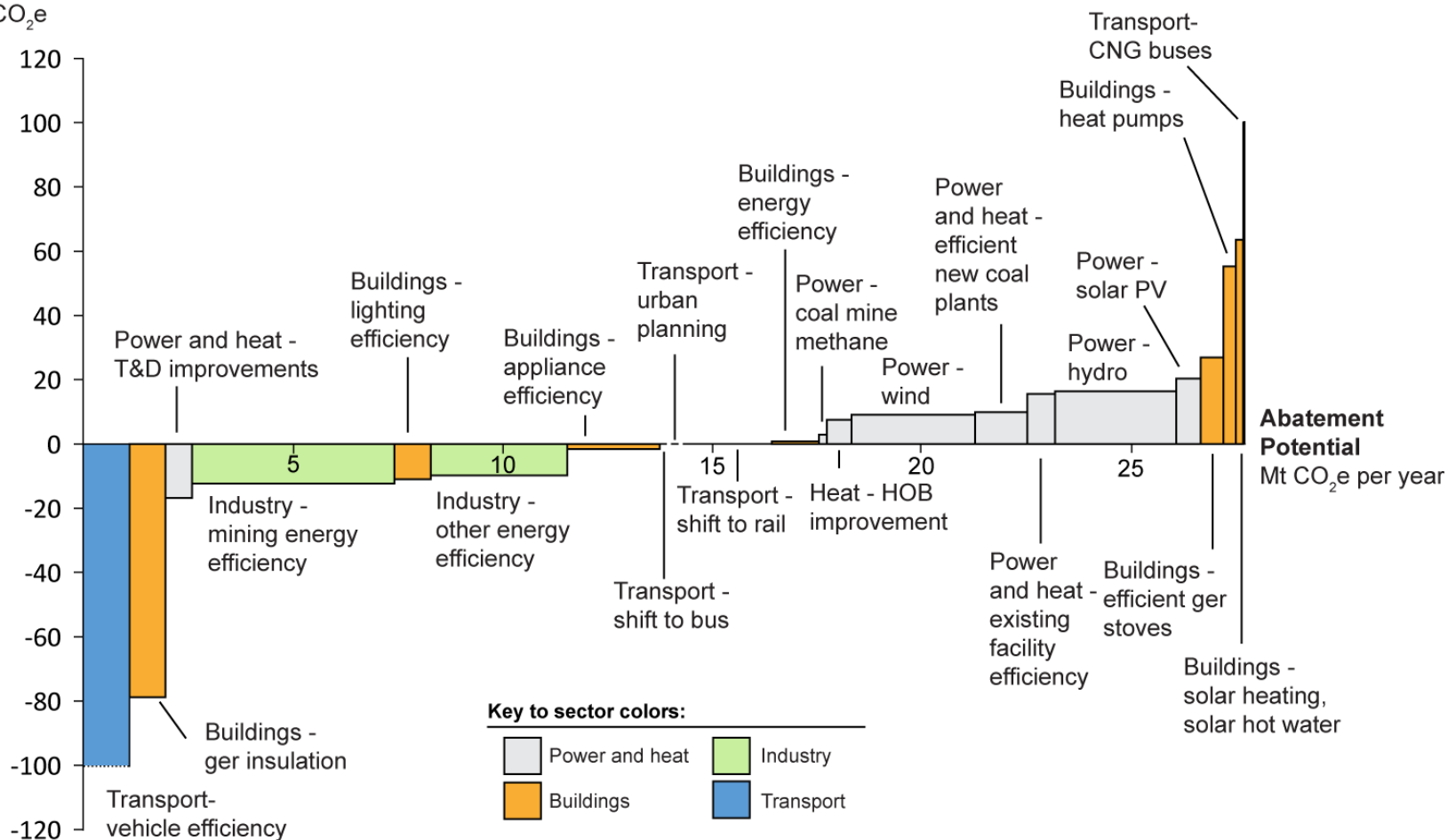


- Cost-effectiveness of the measures considered in this study (cost per ton of GHGs avoided or reduced) estimated
- Assesses incremental capital and operating and maintenance costs of key technologies as well as the savings from avoided fuel usage
- About half of the GHG abatement options in Expanded Green Energy scenario is available at negative costs
- Net present value of all options through 2035 is a benefit of USD 380 million relative to Reference scenario

GHG Abatement Cost Curve in 2035



Abatement Cost
\$ per ton CO₂e







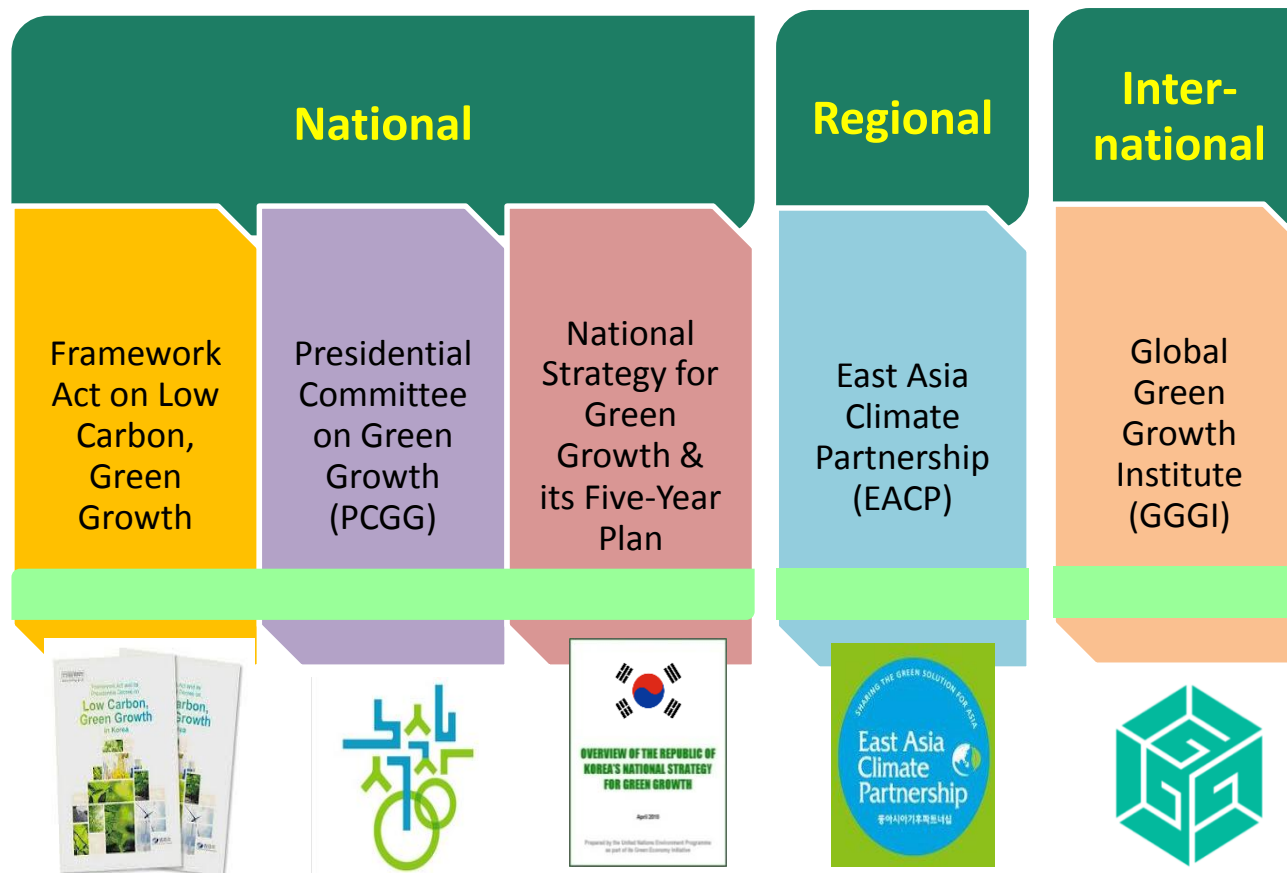
Green Growth in Motion in Korea

Shift of Growth Paradigm

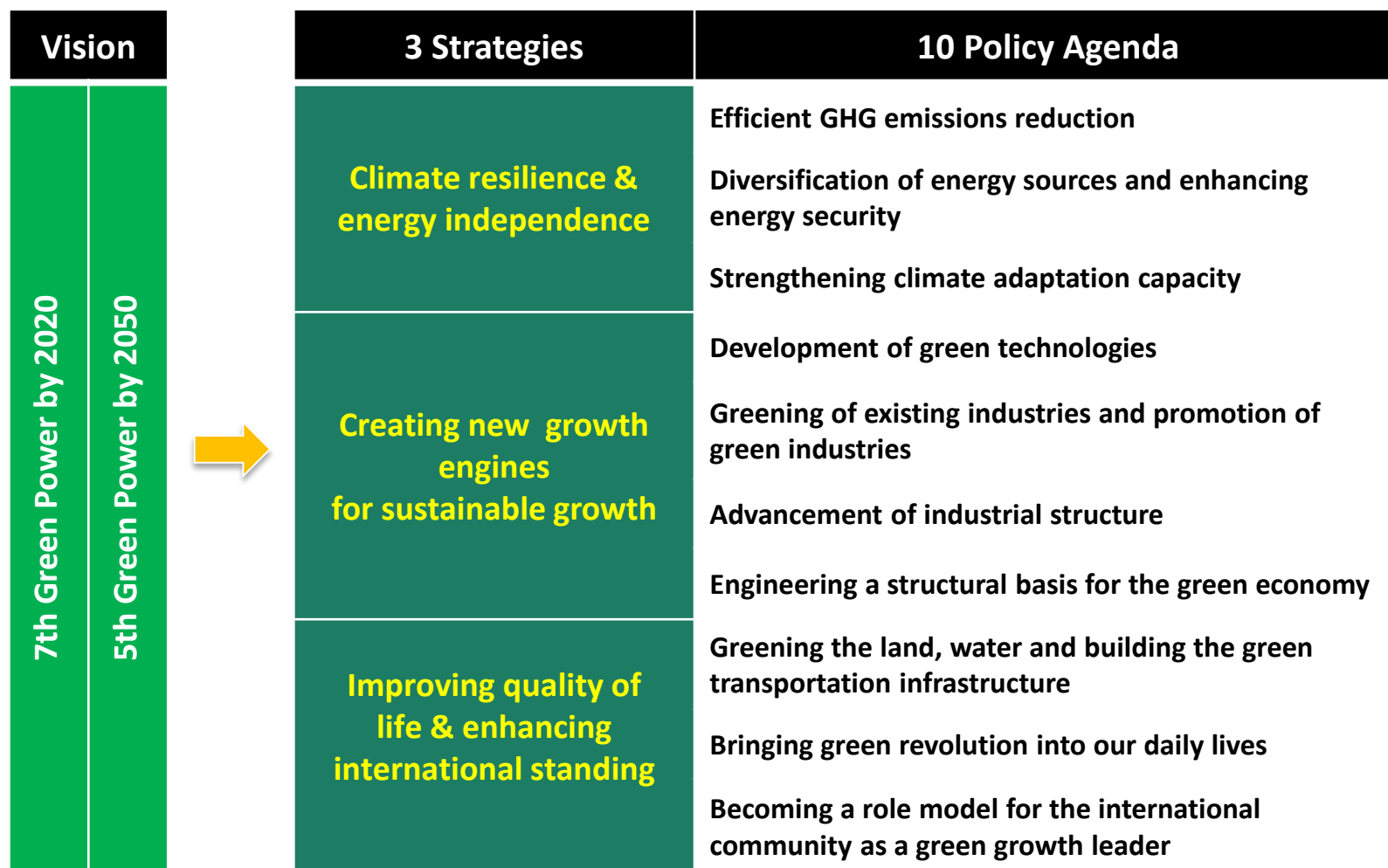


			
Past 60 Years (from 1948)		Next 60 Years (from 2008)	
Brown Growth		Green Growth	
Quantitative (traditional, fossil fuel-driven)		Qualitative (low-carbon, sustainable development)	
Factor-intensive (labor & capital)		Innovation-based (new ideas)	
More input → more output		Less input → more output	
High dependency on foreign energy sources		Energy self-sufficiency (renewable sources)	
Aid recipient		Aid donor	
Miracle on the Han River		A New Dream for the Korean Peninsula	

Legal & Institutional Framework for Green Growth



1st Green Growth Five-Year Plan (2009-2013)



Performance of Green Growth Policies



Strategy	10 Policy Agenda	KPI	Positive Progress	Last 5 Years	Recent Statistics		Unit
					Value	Year	
Climate Change & Energy	Effective reduction of GHG emissions	GHG emission per unit of GDP	(-)	→	0.641	2010	Kg Co ₂ / 1,000 KRW
		Total GHG emissions	(-)	↗	668.8	2010	Mill. Ton Co ₂
		GHG absorption by forests	(+)	↗	39.6	2010	Mill. Ton Co ₂
	Enhancing energy self-reliance	Energy consumption per unit of GDP	(-)	↗	0.251	2012	TOE / Million KRW
		Share of self-development of oil and gas	(+)	↗	13.8	2012	%
		Share of new and renewable energy	(+)	↗	3.17	2012	%
	Enhancing climate change responses	Food self-sufficiency	(+)	↘	45.3	2012	%
		Accuracy of rainfall forecast	(+)	↗	81.3	2012	%
		Government budget dedicated to disaster prevention	(+)	↗	2.37	2011	%

Performance of Green Growth Policies



Strategy	10 Policy Agenda	KPI	Positive Progress	Last 5 Years	Recent Statistics		Unit
					Value	Year	
New Growth Engine	Planning green technology development for growth engine	Share of green R&D in government expenditures	(+)	↗	16.0	2012	%
		Share of GDP dedicated to total R&D expenditures	(+)	↗	4.4	2012	%
		Number of international patent applications	(+)	↗	0.237	2012	per thousand persons
	Greening industries and fostering green industries	Domestic material consumption per unit of GDP	(-)	↘	0.625	2011	Kg / 1,000 KRW
		Share of environmental industry sales	(+)	↗	0.93	2011	%
		New and renewable energy industries	(+)	↗	9,854	2011	Billion KRW
	Enhancing industrial structures	Share of service industries value added	(+)	↘	58.2	2012	%
		Share of knowledge intensive industries value added	(+)	↗	48.3	2012	%
		Share of information and communication industries value added	(+)	↗	11.8	2012	%
	Forming foundation for green economy	Number of ISO 14001 certified businesses	(+)	↗	0.146	2012	per thousand persons
		Share of environmental taxes in overall revenues		→	2.4	2011	%

Performance of Green Growth Policies



Strategy	10 Policy Agenda	KPI	Positive Progress	Last 5 Years	Recent Statistics		Unit
					Value	Year	
Quality of Life	Creating green homeland & transportation	Urban green space per capita	(+)	↗	7.95	2011	m ² / person
		Share of public passenger transportation	(+)	↗	25.9	2011	%
		Share of GDP dedicated to environmental protection expenditures	(+)	→	2.73	2011	%
	Transition into a Green Life-style	Household energy consumption per capita	(-)	→	0.434	2011	TOE / person
		Municipal water use per capita	(-)	↘	335	2011	L / person / day
		Municipal waste generation per capita	(-)	↘	0.95	2011	Kg / person / day
	Becoming a role model nation of green growth	Share of ODA in GNI	(+)	↗	0.14	2012	%



Thank you

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