

Workshop on Low-Carbon Society Modeling and Scenario Making Process

Research Proposal on Low Carbon Society Development in Cambodia

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Cambodia Overview

- More than 80% of Cambodian people lives in rural areas
- Cambodia effected by environmental degradation and climate change on economy, social, environment and human health;
- The poverty rate remain high comparing to other countries
- RGC set its strategy for poverty reduction via RS, and NSDP and other related national strategies for economic development purpose;
- Vast majority of people rely on traditional fuel wood for lighting, and cooking and heating, for instance 97.83% of rural household depend on fuel wood and charcoal for cooking;
- In urban area, households around 53.6% have access to electricity, and 8.6% in rural area;
- Government's target to guarantee the 100% of villages access to energy in 2020;



Objective

- Introduce Low Carbon Society (LCS) approach into Cambodia;
- Identify appropriate LCS scenario for Cambodia to ensure sustainable economic development;
- Mainstream and facilitate the relationship between policy makers and researchers on LCS development closely;
- Propose measures for avoiding climate change, and precursors to zero carbon society and renewable-energy economy;
- Discuss the possibility of developing a low-carbon society in Cambodia;
- Create awareness among Cambodia's authorities, government, stakeholders, and communities for low carbon development; and
- Seek an appropriate energy technology options to introduce into Cambodia to ensure environmentally friendly development society for economic growth without any trade-off.



Expected Output

- Closely link the relationship between policy makers and researchers on LCS development and implementation in Cambodia;
- Improve knowledge on LCS development and its importance for economic development goal;
- Identify the appropriate policy option for LCS in Cambodia for climate change mitigation; and
- Energy efficient improvement for Cambodia society for economic development and enhancement.

Power Supply in Cambodia

3 main groups of power supply customers:

- EDC – Public Sector Utility (Phnom Penh and 6 large towns = 155MW ~85%);
- MIME Provincial Electricity Operators (10 Provincial Towns = 20MW ~10%); and
- Private Power Suppliers (4 Provincial towns and many rural areas = 10MW ~5%).

State of Electricity consumption in GWh 2000-2008

	Estimate	Estimate	EAC	EAC	EAC	EAC	EAC	EAC	EAC
Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
HFO/Diesel (GWh)	270	350	370	596	715	807	1,034	1,294	1,410
hydro (GWh)	-	-	29	41	28	35	51	50	47
Wood Biomass (GWh)	-	-	-	-	-	0	2	5	5
Coal (GWh)	-	-	-	-	-	-	-	-	23
Imported (GWh)	60	60	60	58	59	82	110	167	374
Total (GWh)	330	410	459	695	803	924	1,196	1,516	1,859

Comparing GHG Inv. 1994 and 2000



Expected growth in electricity generation, population growth and kWh/year/person

Year	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
GWh/year	330	924	1,858	3,278	5,629	8,808	11,242	14,348	18,312	23,371	29,828
Population '000	12,760	13,866	15,053	16,357	17,707	18,973	20,100	21,121	22,086	22,997	23,795
kWh/person/year	26	67	123	200	318	464	559	679	829	1,016	1,254
Gg CO ₂ emissions	385	1008	1453	1212	1931	2849	3539	4430	5567	7023	8888
kg CO ₂ /kWh	1.17	1.09	0.78	0.37	0.34	0.32	0.31	0.31	0.30	0.30	0.30

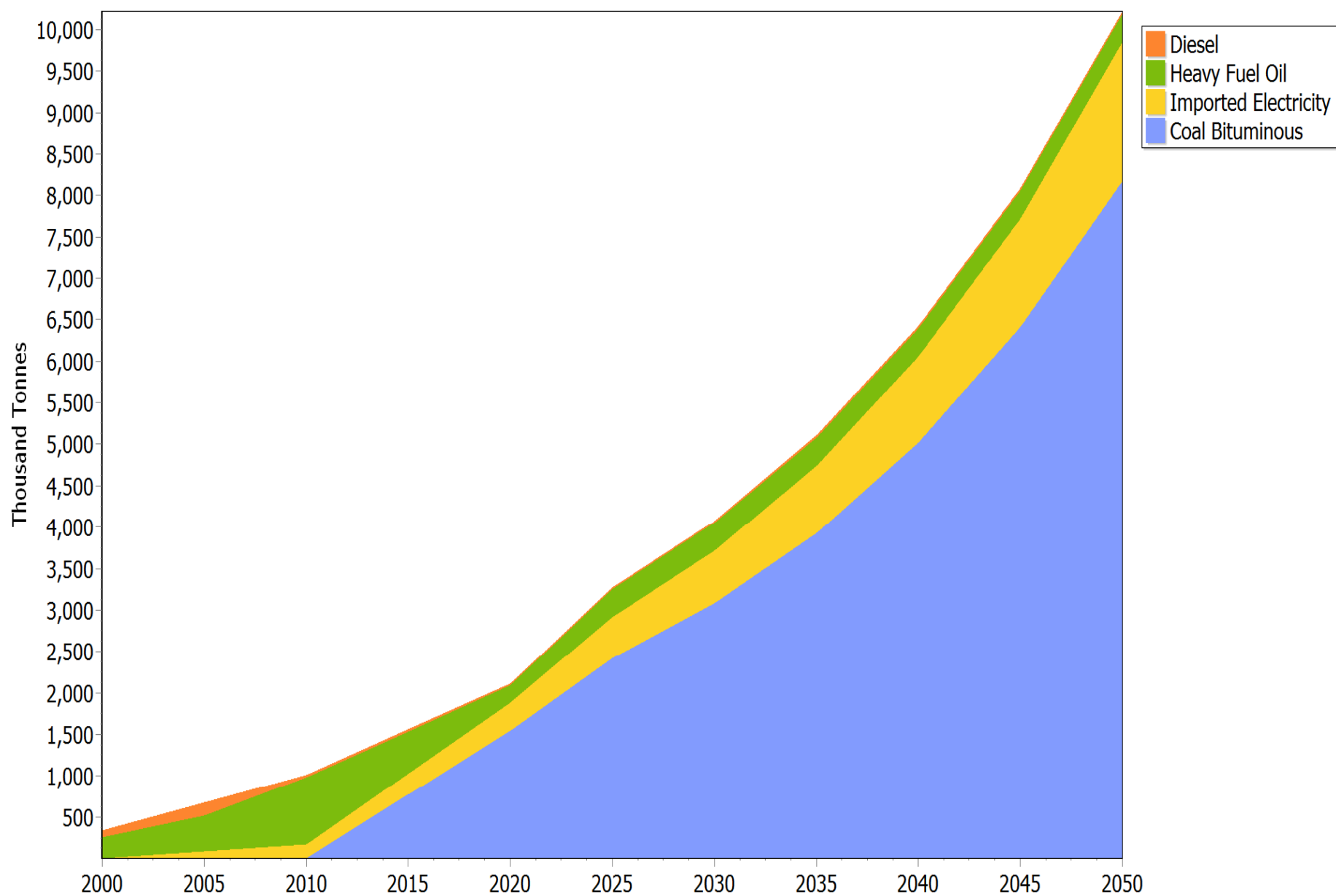


Emissions in Gg CO₂ eq. for EDC generation from 2000-2050

	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Diesel	89	164	27	27	27	27	27	27	27	27	27
Heavy Fuel Oil	251	429	820	515	211	339	339	339	339	339	339
Imported Electricity	0	83	166	250	333	496	633	807	1030	1315	1678
Coal Bituminous	0	0	0	771	1542	2415	3082	3933	5020	6406	8176
Total	339	677	1014	1563	2113	3277	4081	5107	6416	8088	10221

Environmental Results: Global warming potential CO2 eq

Scenario: Reference, Fuel: All Fuels, GWP: All GWPs





Cambodia's Energy Policy

- National Energy Policy;
- Cambodia's Energy Strategy;
- Cambodia National Policy on Renewable Energy based Rural Electrification;
- Cambodia Power Development Plan (2010-2016);
- Other energy related policies and strategies;
- However, there is no policy, strategy and research on LCS in Cambodia; therefore it is time for our generation to consider and develop it to ensure environmentally friendly economic development.



Asian Pacific Integrated Model (AIM)



What is AIM?

AIM(Asian Pacific Integrated Model) is a group of computer models developed by a team composed of NIES(National Institute for Environmental Studies), Kyoto University, and several research institutes in the Asian-Pacific region.

Why do we need AIM (LCS development) Scenario in Cambodia?

- The number of population is gradually increasing;
- National economic development strategy in response to people need leading to increasing energy demand;
- The amount of energy use is also increasing for economic development and households consumption;
- CO₂ emission is also increasing for years ahead, especially with the increasing use of electricity;
- Thus, Cambodia has to consider best practice to reduce carbon emission (development without trade-off); and
- Avoid repeating the past faulty of economic development of industrialized countries.



How the importance of AIM model for Cambodia?

- The objective of AIM is to design and assess policy options for stabilizing GHG emission in Cambodia.
- It will be used to:
 - 1) determine national GHG reduction targets and in the implementation process; and
 - 2) assess national feasible reduction potential of GHG emissions.

Where can AIM be applied (In what other sectors rather than energy)???





Thanks for your attention!