VIETNAM TOWARDS A NET ZERO EMISSION SCENARIO

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The 28th AIM International Workshop – 9/13-9/14/2022 at National Institute for Environmental Studies, Japan (NIES)

INTRODUCTION

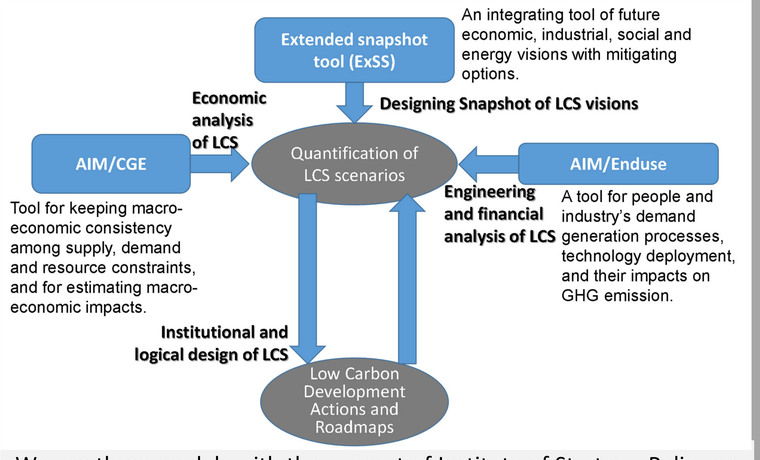
At COP26, the Vietnam 's Prime Minister pledged: "*For its part, although a developing country has only just begun the process of industrialization over the past three decades, Vietnam is a country with advantages in renewable energy, will develop and implement strong greenhouse gas emission reduction measures with its own resources, with the cooperation and support of the international* community*, especially developed countries, both finance and technology transfer, including implementing mechanisms under the Paris Agreement, to achieve net zero emissions by 2050*".

The AIM team has contributed to the preparation the long-term strategy. Results of the Asia-Pacific Integrated Model (AIM) was used for reference and consulted with line ministries, as the agreement at the 6th Vietnam – Japan Environmental Policy Dialogue between the Ministry of Natural Resources (MONRE) of Vietnam and the Ministry of the Environment of Japan (MoEJ) organized on August, 2020 virtually. The MONRE and MoEJ agreed that the development of the long-term strategy of Vietnam based on AIM (Asia-Pacific Integrated Model). The AIM model has provided an overview of long-term GHG peak of Vietnam, and suggested the potential countermeasures, as well as paths to achieve the mitigation targets.

OBJECTIVE

This study presents the scenarios and results of three AIM models (Extended Snapshot, AIM/Enduse and AIM/CGE) that use for identification of GHG emissions peak-out in Vietnam and policy measures for accelerating the GHG emissions peak-out and the expected impacts.

METHODOLOGY



We use three models with the support of Institute of Strategy, Policy on Natural Resources and Environment (ISPONRE) of Viet Nam; ExSS (Extended SnapShot) model to assess the emissions in 2050, AIM/Enduse [Vietnam] to assess the technology options to achieve the future GHG mitigation, and AIM/CGE [Vietnam] to assess the economic impacts to reduce the GHG emissions.

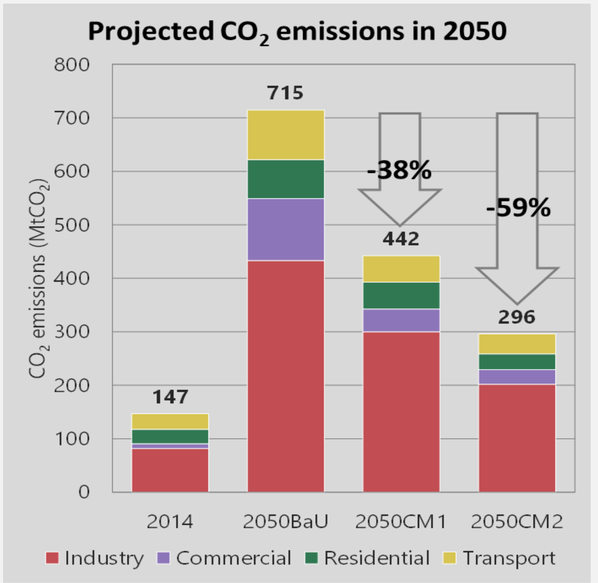
RESULTS

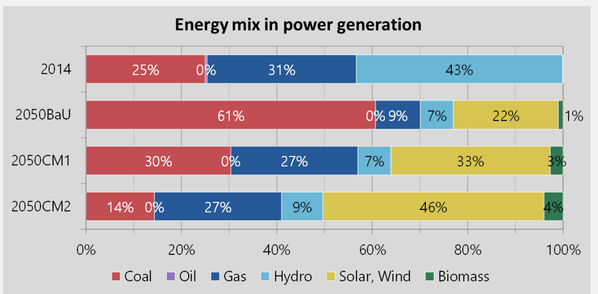
We chose 2050 as the target year and 2014 as the base year for projection because the latest Vietnam GHG Inventory is for 2014.

Scenario	Characteristics
Business as Usual (BaU)	- GDP growth: medium growth scenario in SEDP 2020-2050 (2016-2020: 5.9%; 2021-2030: 6.6%; 2031-2040: 5.8%; 2041-2050: 5.4%) - Countermeasures to reduce CO_2 emissions are not implemented - Scenario not taking energy policy constraints into account
Countermeasure 1 (CM1)	- Socio-economic assumptions: same as BaU - Countermeasures are implemented to achieve the CO_2 emissions reduction target - Energy policy constraints are taken into account, such as RE targets in REDS, restriction on coal-fired generation, successful EE penetration - Change of transport mode share and travel distance are assumed by this study
Countermeasure 2 (CM2)	- Socio-economic assumptions: same as BaU - Implementation of countermeasures are accelerated compared with CM1 - Energy policy constraints are taken into account, such as RE targets in REDS, restriction on coal-fired generation, successful EE penetration - Change of transport mode share and travel distance are assumed by this study

Estimated socioeconomic indicators

	Unit	2014	2050	2050/2014	CAGR
Population	persons	90,493,000	108,464,000	1.20	0.50%
No. of households	households	24,248,000	36,154,667	1.49	1.12%
GDP per capita	'000 VND/person	39,564	198,283	5.01	4.58%
GDP	bil. VND	3,580,238	21,506,592	6.01	5.11%
Agriculture		529,705	1,705,769	3.22	3.30%
Mining and quarrying		268,776	1,165,987	4.34	4.16%
Manufacturing		1,176,972	7,031,498	5.97	5.09%
Construction		197,587	606,106	3.07	3.16%
Service		1,407,197	10,997,232	7.81	5.88%
Outputs	bil. VND	10,514,033	61,345,584	5.83	5.02%
Primary		1,367,775	4,404,541	3.22	3.30%
Secondary		6,507,179	36,316,658	5.58	4.89%
Tertiary		2,639,080	20,624,384	7.81	5.88%
Passenger transport demand	mil. pass-km	104,353	182,011	1.74	1.56%
Freight transport demand	mil. ton-km	52,501	321,049	6.12	5.16%





In Renewable energy share is 43% in CM1 scenario, following "Renewable Energy Development Strategy to 2030, with a vision to 2050". Renewable energy share is 59% in CM2 scenario, following C4 scenario in "Vietnam Energy Outlook Report 2019".

- To achieve carbon neutrality without unreasonable transition, it is necessary to set the peak year before 2035.
- Power generation in Coal Power Plant will be peak in 2025 and decline to zero by 2050
- New Gas Power Plants should be equipped with CCS or be prepared to install CCS. CCS should be started after 2030 at latest.
- More than 50% of new Biomass Power Plants should be equipped with CCS or be prepared to install CCS by 2050.
- Hydrogen should be Equivalent to 25% of total final energy consumption in 2020 is required by 2050.
- CCS in the industry sector: It would be required in cement sector and iron and steel sector by 2050.
- All passenger cars should be EV after 2030, freight cars should be BEV or FCV after 2040.

CONCLUSIONS

To achieve the net zero emission, it is estimated the amount of investment around 308 billion USD (investment cost after 2022 is discounted at the rate of 10%). The investment on renewables and batteries in power sectors and EV in transport sector account for the majority of the additional costs. The international support will accelerate the peak out, to help the country achieve both GDP growth and GHG emission reduction.

Even the Vietnam national long-term climate change strategy has been approved, it still needs a good and effective coordination amongst line ministries, with the direction from the top leader in implementing existing climate change policies. Regular review and update of ministries action plan are important to achieve the target of the Net Zero Emission by 2050 for Vietnam.

Acknowledgments: The authors express their thankfulness to Mr. Tan (Ministry of Natural Recourses and Environment, Vietnam and Dr. Lam (Vietnam National Productivity Institute) for their collaboration.