Open symposium

Decarbonized Society from Low Carbon Society

Thailand Energy System Transition to Decarbonized Society in 2050

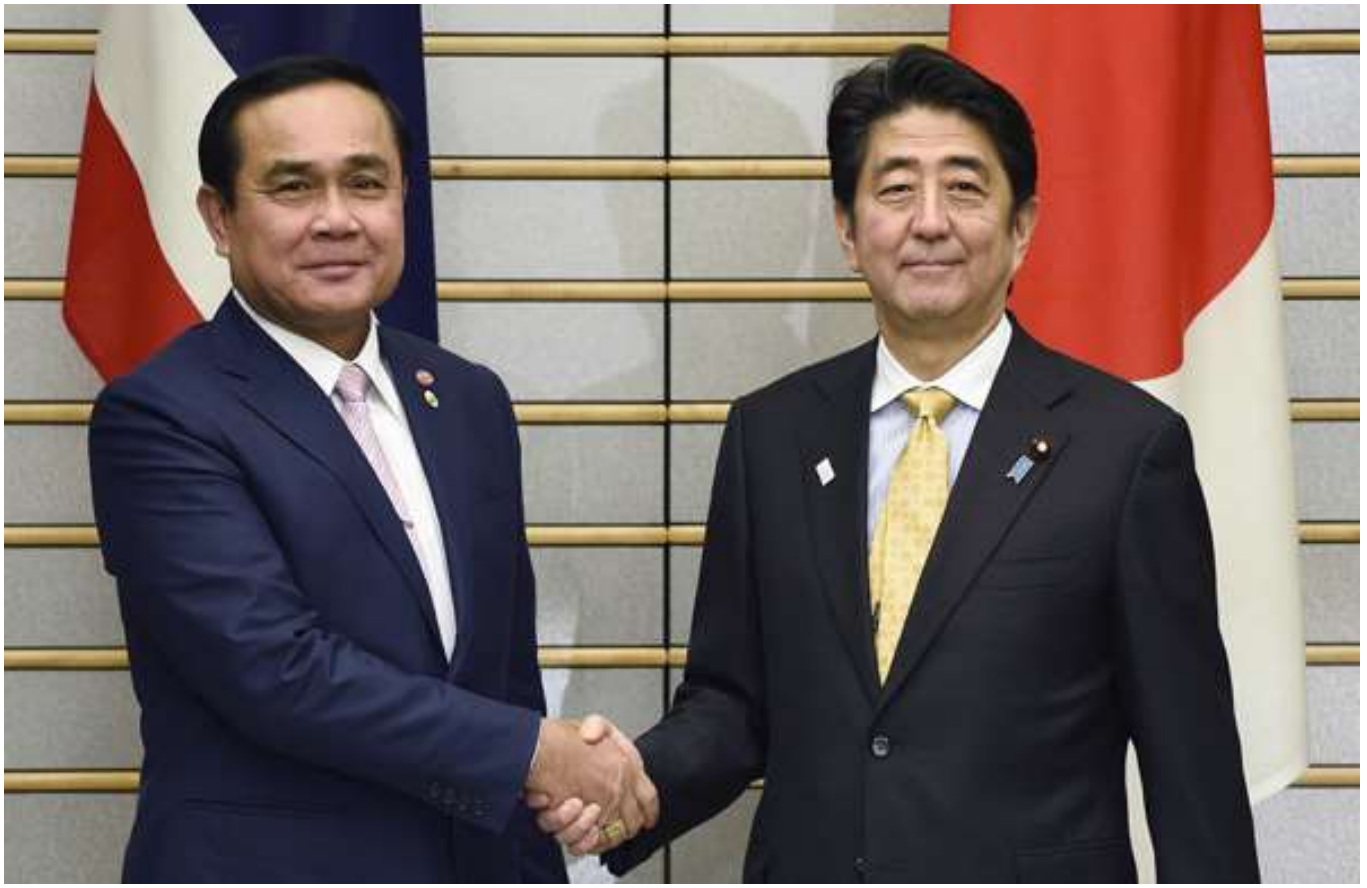
TKP Gardencity Premium Akihabara, Tokyo

November 20, 2019

Sirindhorn International Institute of Technology

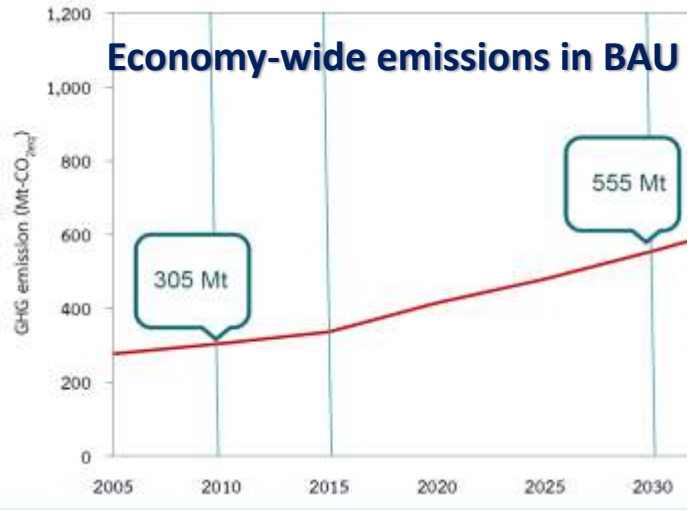
THAMMASAT University

Japan & Thailand signed emissions-offset agreement in Nov 2015



Japan signed an agreement with Thailand as part of a programme to offset its emissions in exchange for clean-energy and energy-saving technologies

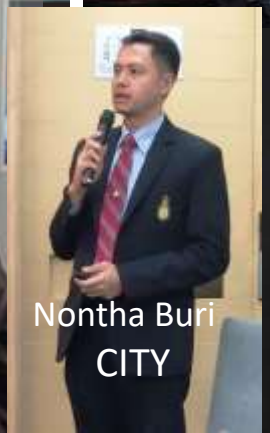
Thailand's PM Delivered National Climate Pledge at Paris Summit



"The 20% is a goal to be achieved by the country's resources alone while the additional 5% will require international support in terms of finance, knowhow and technology"

Climate Change Policies and Mitigation in THAILAND

BANGKOK, 30 October 2019



Decarbonized Society from Low Carbon Society

STEP1

Where is society going?

SETTING TARGET

Decarbonized 2050

STEP2

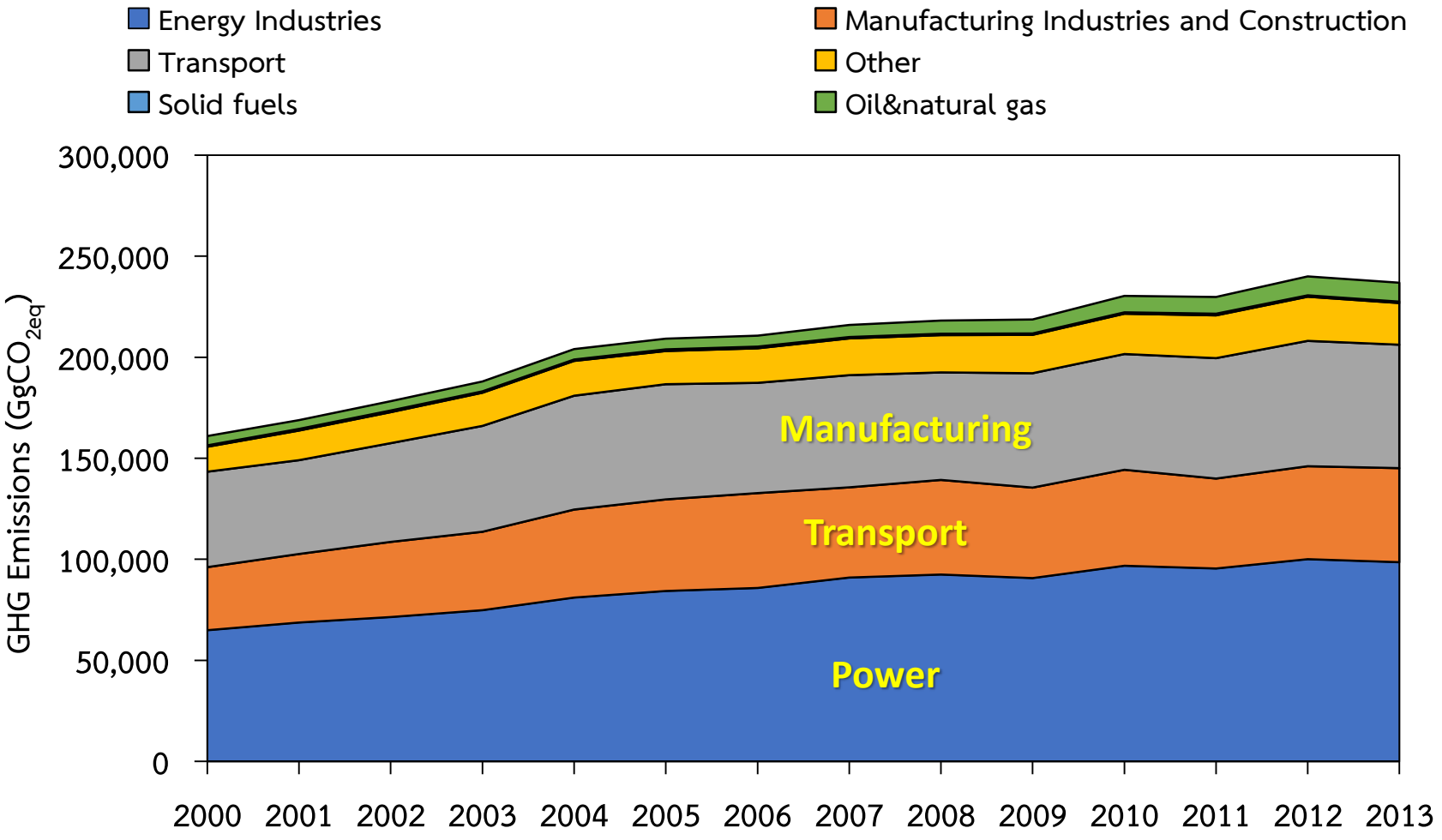
How do we get there?

ROADMAP

?

We need Roadmap to achieve Target

TRENDS OF GHG EMISSIONS IN ENERGY SECTOR



Source: Second BUR

PRESENT POLICIES AND TECHNOLOGIES OF THAILAND RENEWABLE ENERGY PLAN (AEDP 2018)

RE Electricity (MW)	AEDP 2015		AEDP 2018		Difference 2018-2015
	Target	Existing	PDP2018	New Target	
Solar PV	6,000	2,849	12,725	15,574	9,574
Biomass	5,570	2,290	3,496	5,786	216
Wind	3,002	1,504	1,485	2,989	13
Biogas (Waste)	600	382	546	928	328
Municipal Solid Waste	500	500	400	900	400
Industrial waste	50	31	44	75	25
Mini-hydro	376	188	-	188	188
Large hydro (EGAT)	2,906	2,918	-	2,918	12
Biogas (Crop)	680	-	-	-	680
Total	**19,684**	**10,662**	**18,696**	**29,358**	9,674
RE electricity (%)	**20%**	**10%**	**20%**	**33%**	13%

Source: Ministry of Energy, 2019

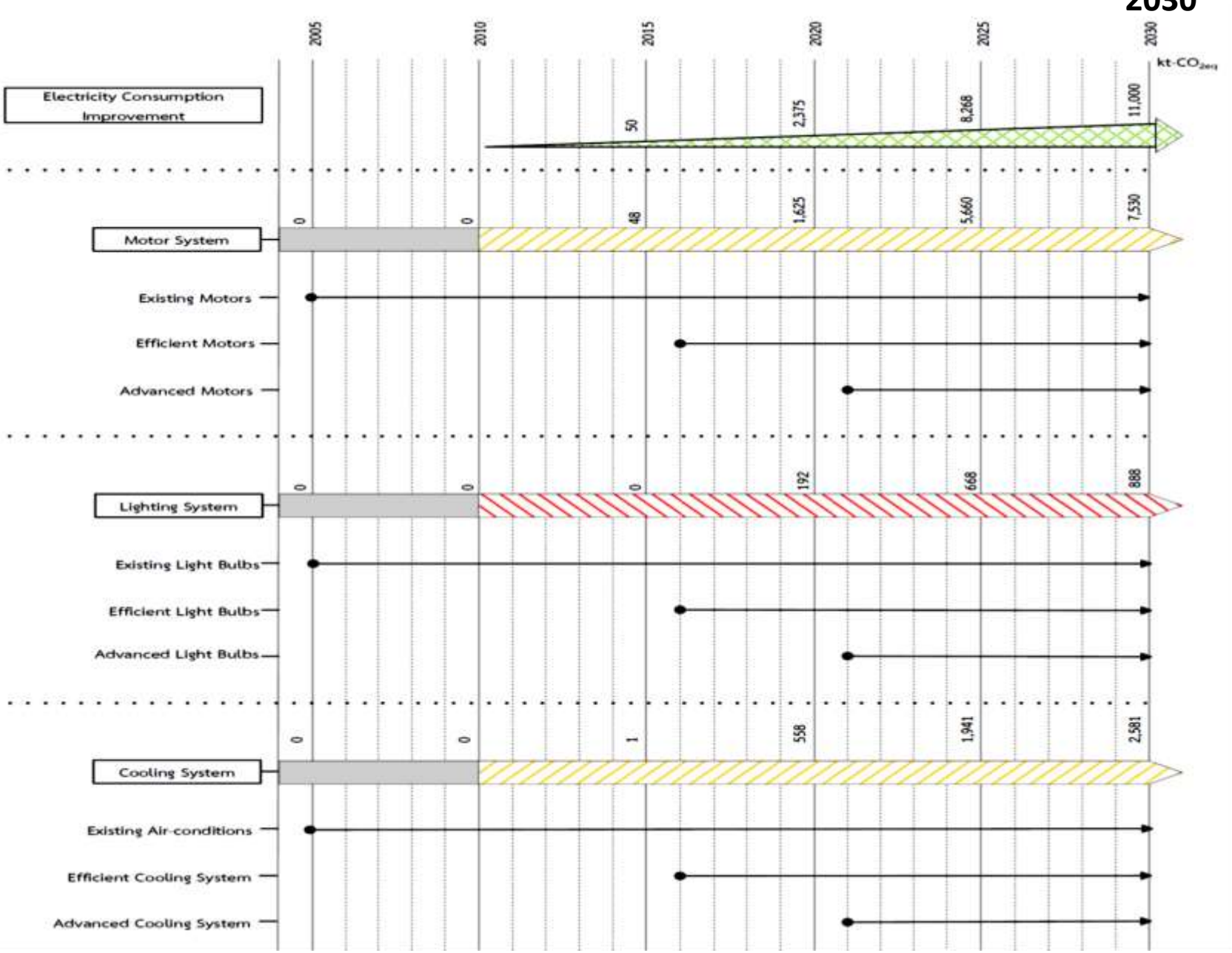
PRESENT POLICIES AND TECHNOLOGIES OF THAILAND

ENERGY EFFICIENCY PLAN 2015

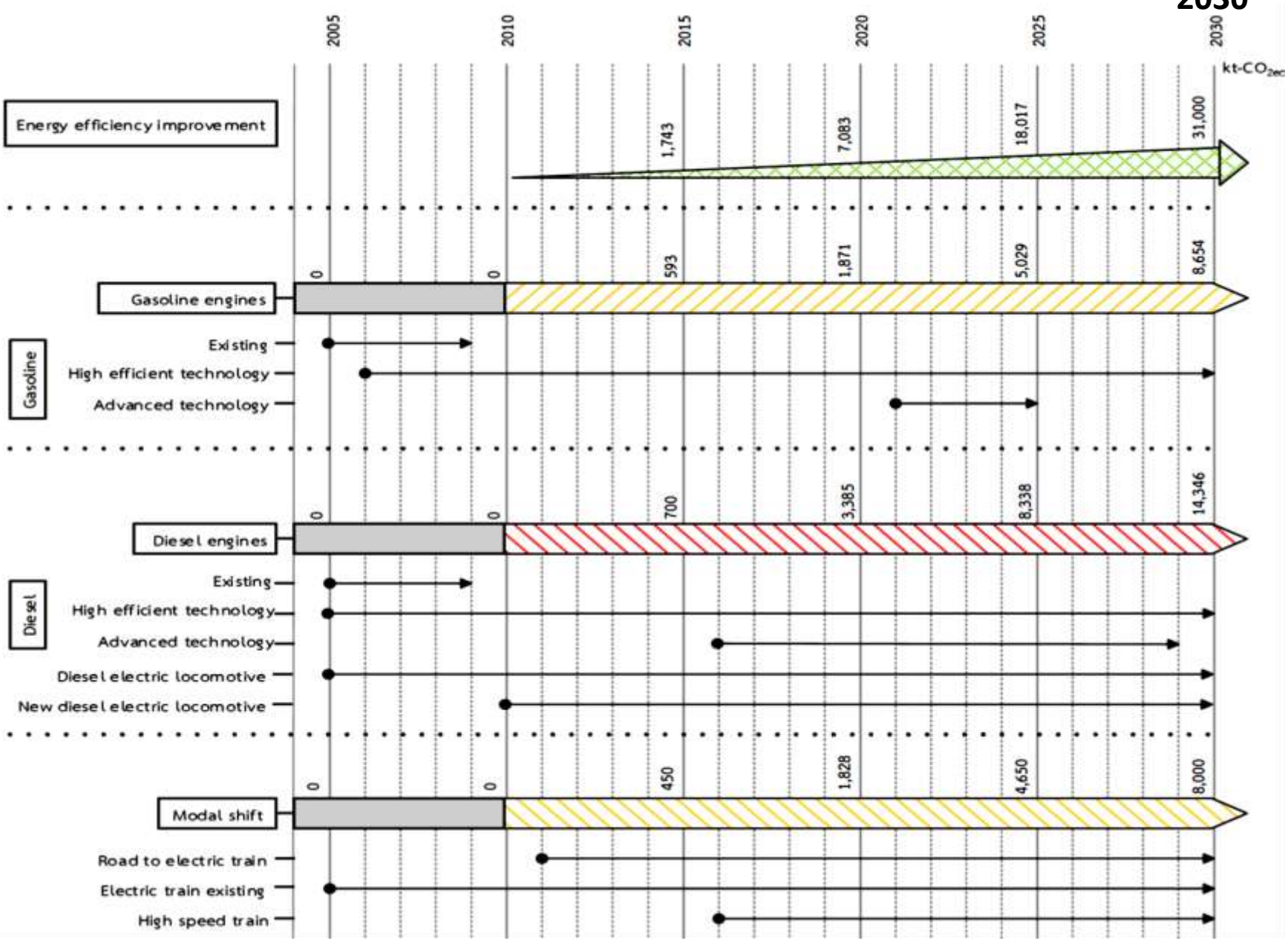
EE Measures	Energy Saving (ktoe)
	Target EEP 2015
Measure for designated factory and buildings management	5,156
Measure for building standard/building codes	1,166
Measure for energy efficiency standard and labeling	4,150
Measure on compulsory energy efficiency resource standards (EERS) for energy production	500
Measure for financial support	9,524
Measure on the use of LED	991
Measure on energy conservation in the transportation sector	30,213
Measure for promotion of education, research, technology development on energy conservation	-
Measure on personnel development in energy conservation fields	-
Measure to create public awareness on energy conservation	-

Source: Ministry of Energy, 2019

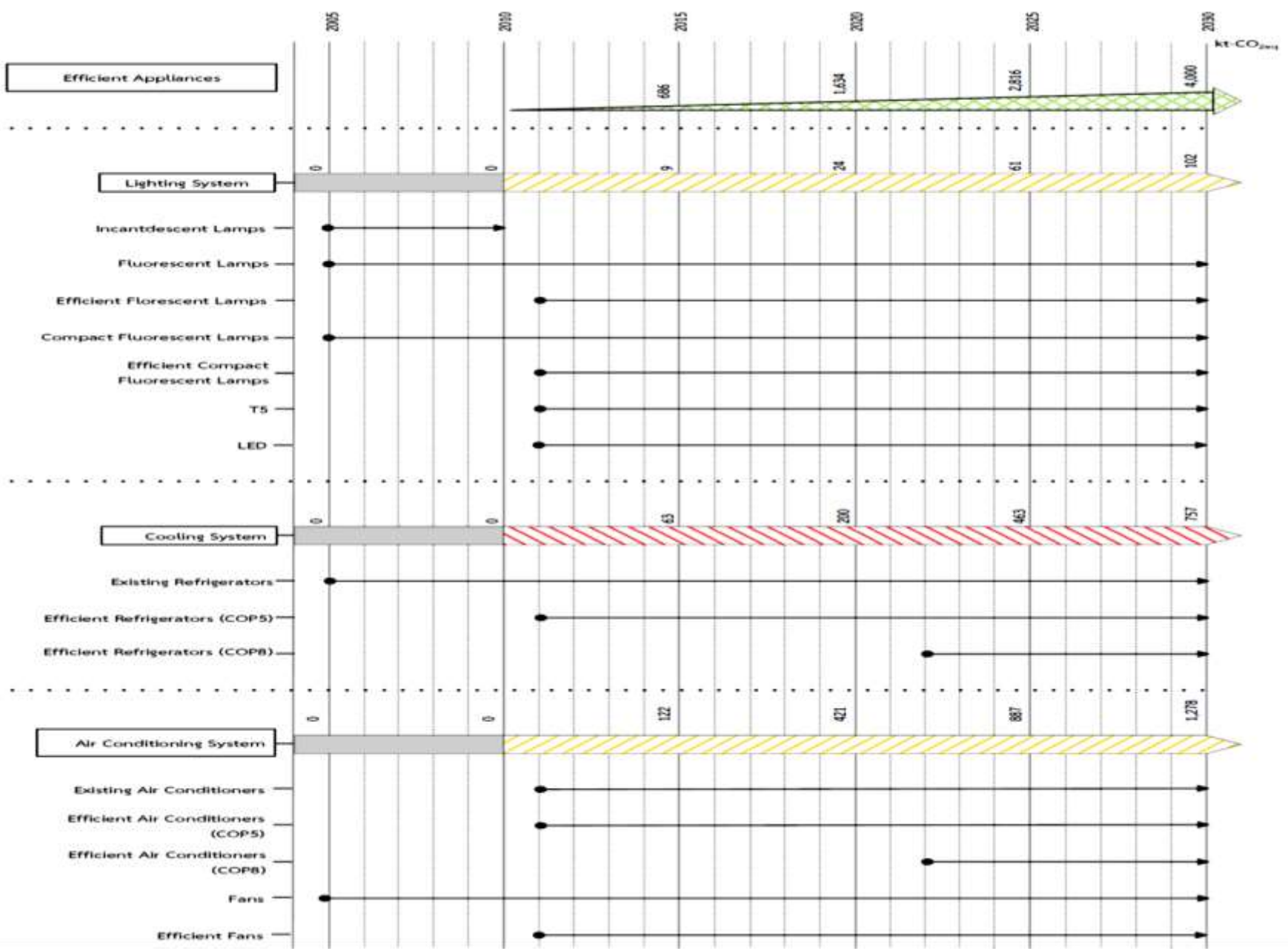
NDC Roadmap: INDUSTRIAL SECTOR



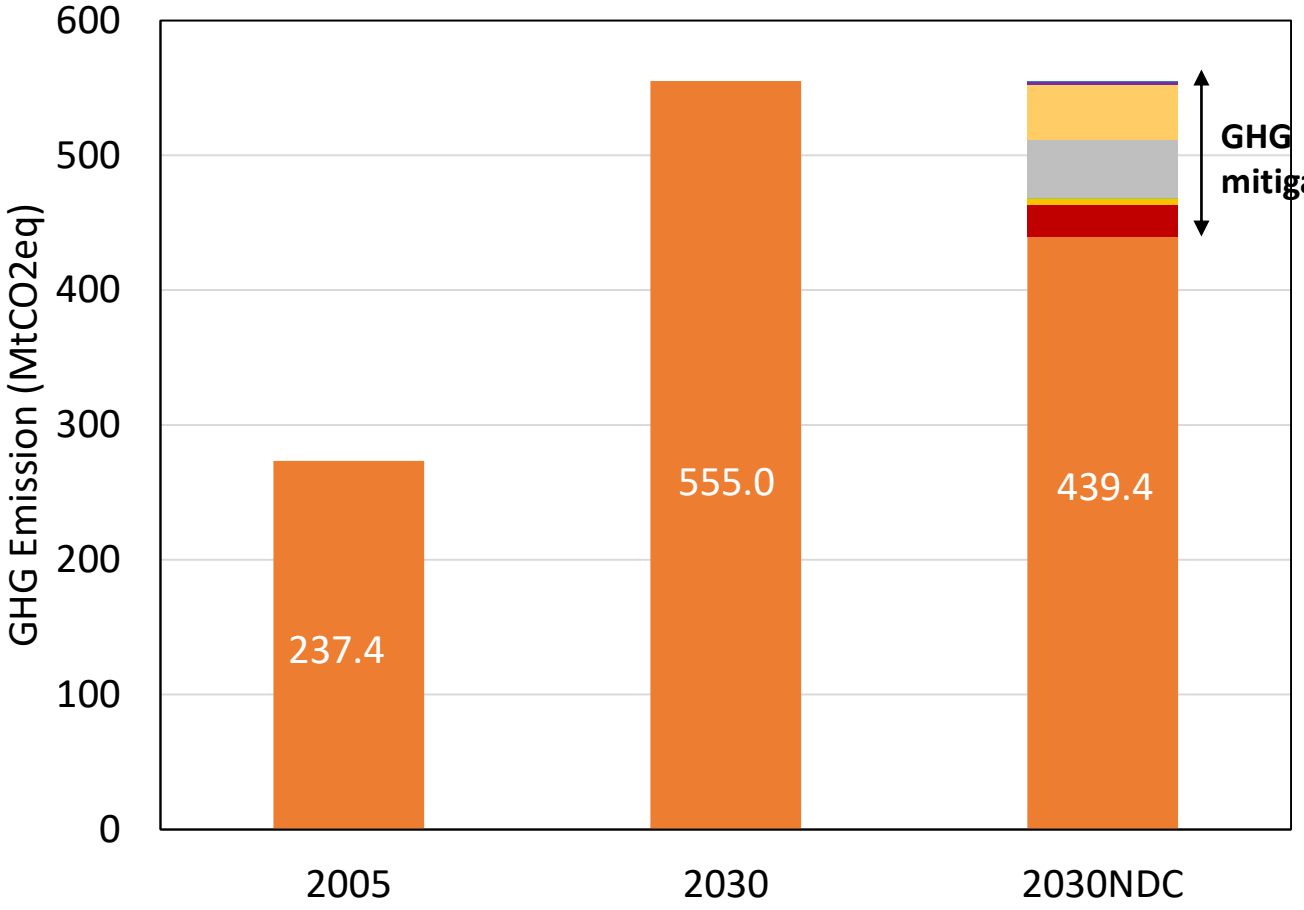
NDC Roadmap: TRANSPORT SECTOR



NDC Roadmap: RESIDENTIAL SECTOR



THAILAND'S GHG EMISSION AND MITIGATION: NDC 2030



20%

GHG mitigation

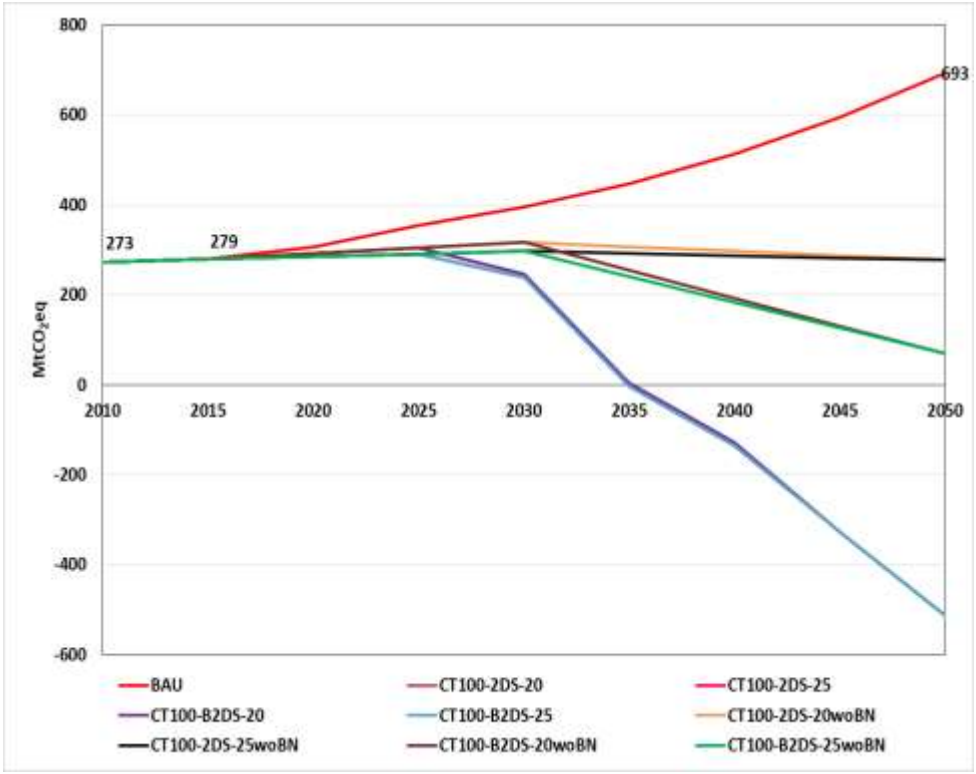
- Power 24 $MtCO_{2eq}$
- Industry 43 $MtCO_{2eq}$
- Transport 41 $MtCO_{2eq}$
- Residential 4 $MtCO_{2eq}$
- Commercial 1 $MtCO_{2eq}$
- IPPU 0.6 $MtCO_{2eq}$
- Waste 2 $MtCO_{2eq}$

Total GHG mitigation

115.6 $MtCO_{2eq}$

Thailand's GHG Emission Profile under LTS Scenarios

GHG Emission Profile under BAU, Emission & Technology Constraint Scenarios Including Carbon Tax



LTS Scenarios with Carbon Tax

Scenario	Availability of Technology	GHG Emission Constraint	
		2030	2050
BAU	All	-	-
Emission Constraint Scenarios including Carbon Tax of US$100/tCO$_2$eq			
CT100-2DS-20	All	20%	60%
CT100-2DS-25	All	25%	60%
CT100-B2DS-20	All	20%	90%
CT100-B2DS-25	All	25%	90%
Emission & Technology Constraint Scenarios including Carbon Tax of US$100/tCO$_2$eq			
CT100-2DS-20woBN	Without both BECCS & nuclear power	20%	60%
CT100-2DS-25woBN	Without both BECCS & nuclear power	25%	60%
CT100-B2DS-20woBN	Without both BECCS & nuclear power	20%	90%
CT100-B2DS-25woBN	Without both BECCS & nuclear power	25%	90%

- A higher GHG emission constraint scenarios of 20%-90% & 25%-90% during 2030 to 2050 along with the imposition of carbon tax of US$100/tCO$_2$e forces the selection of BECCS & Nuclear Power leading to negative emissions.

- In the absence of BECCS & Nuclear Power, the GHG emissions would be higher & positive during 2035 to 2050.

Conclusions: THAILAND Long-term strategy

- Possible keeping net carbon emissions can be achieved during 2030-2050.
- Net Zero CO_2 emissions strategies for THAILAND
  - CCS technologies (fossil-based fuel plants integrated with CCS and BECCS)
  - Stringent RE target
  - CO_2 emission taxes (US$500-US$1000 per tCO_2)
  - Climate change awareness
  - Capacity building for organizations, government offices and communities

Strategy 1

CCS & BECCS

- Electricity generation
- Manufacturing industry

Strategy 2

Stringent RE

- Electricity generation
- Vehicle

Strategy 3

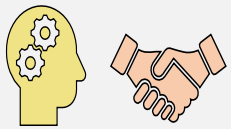
CO_2 emission taxes

Strategy 4

Climate change awareness

Strategy 5

Capacity building



どうもありがとう

Thank You