FACILITATIVE SHARING OF VIEWS

THAILAND

19 June 2019

Presentation outline

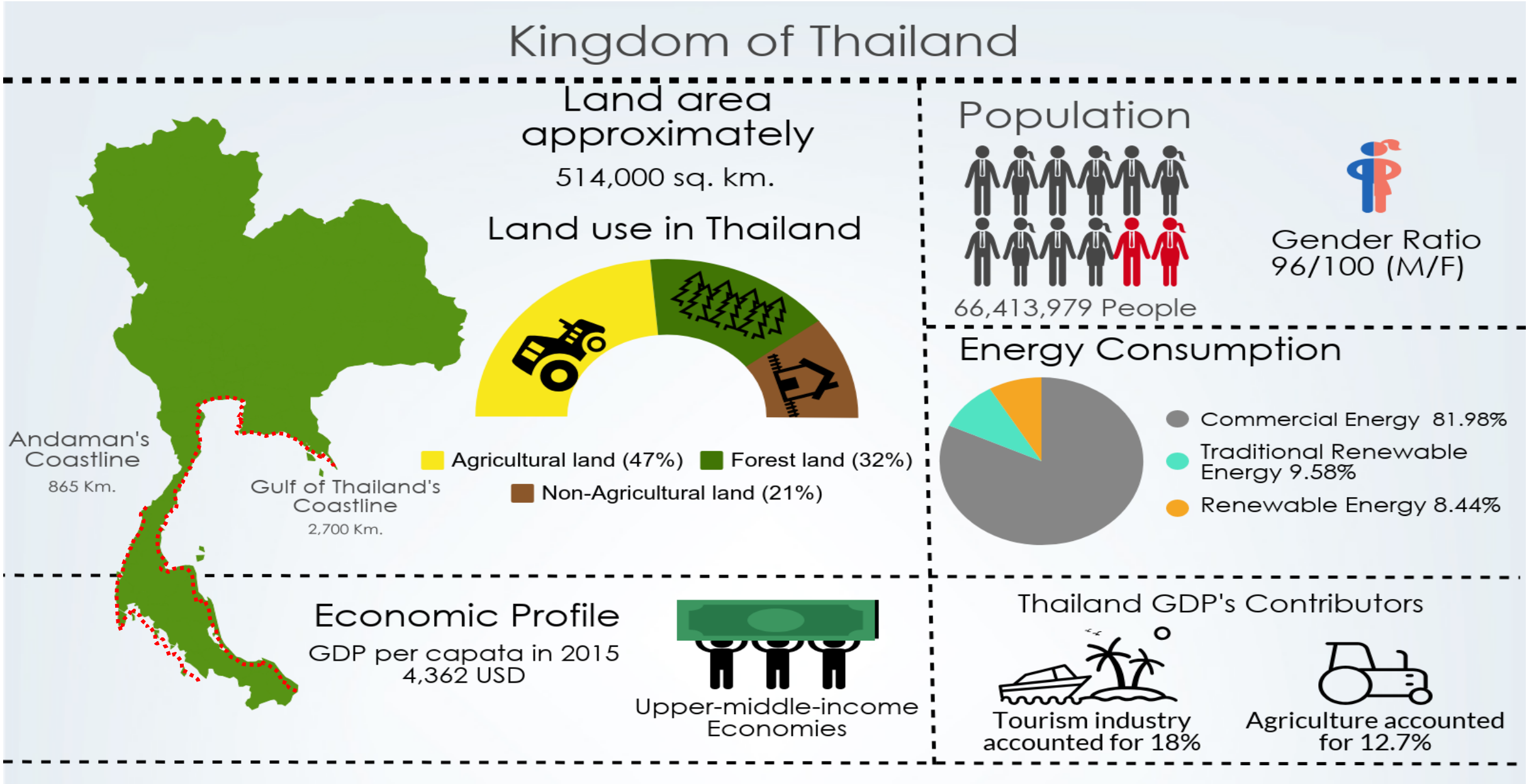
Part I: Summary of BUR and recent development

- National context
- GHG inventory
- Mitigation actions and effect
- Barriers and support needed and received

Part II: Experience and lessons learned in participating in the ICA process

Part III: Response to questions received

Part I Summary of SBUR : National context



Part I: Summary of SBUR : Institutional Arrangements

Institutional Arrangements: National Committee on Climate Change Policy

Prime Minister — **Chairman**

Minister of Natural Resources and Environment

Minister of Foreign Affairs — **Vice-Chairman**

NCCC members:

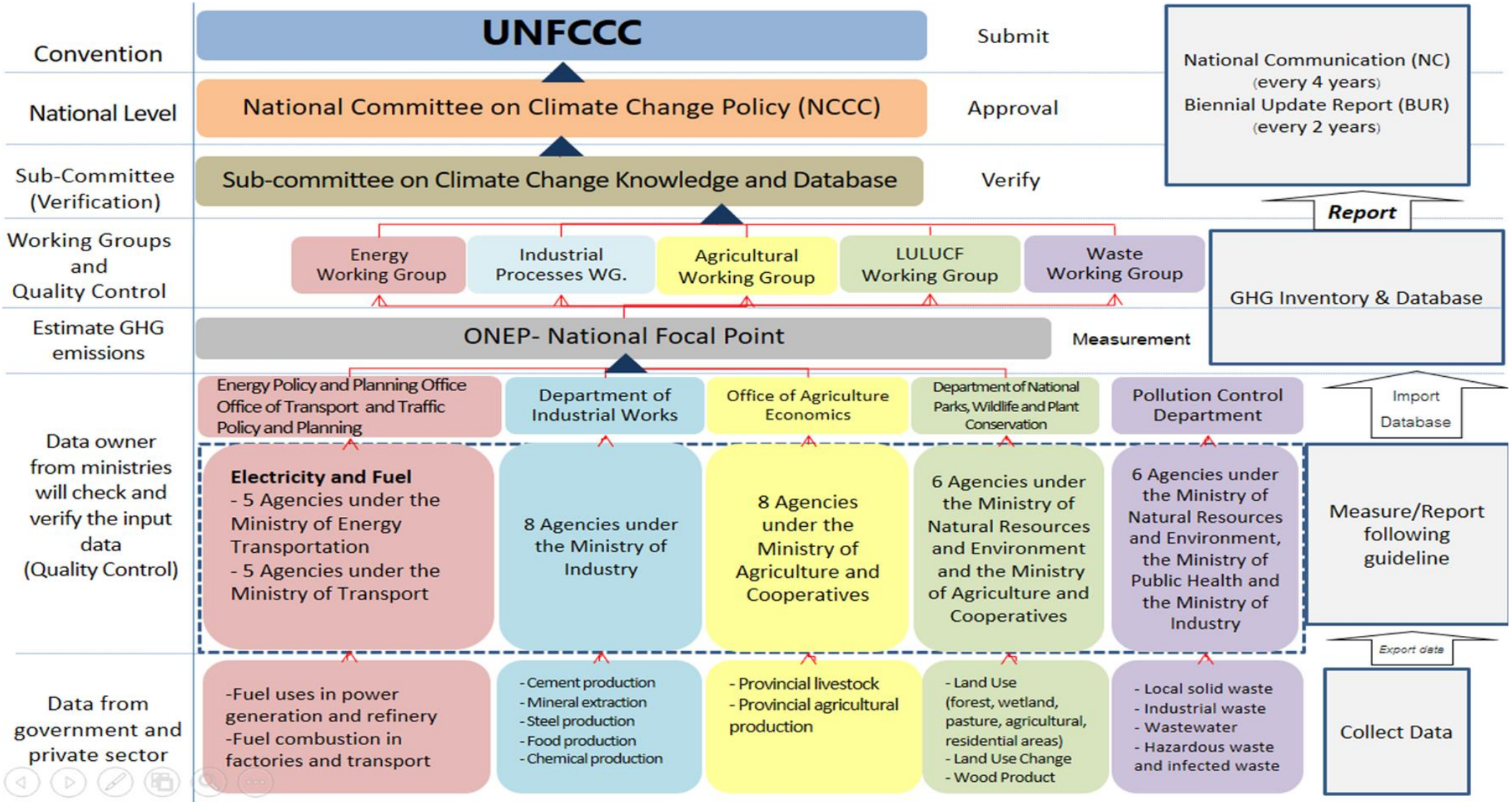
1. Prime Minister's Office
2. Ministry of Finance
3. Ministry of Agriculture and Cooperatives
4. Ministry of Transport
5. Ministry of Information and Communication Technology
6. Ministry of Energy
7. Ministry of Commerce
8. Ministry of Interior
9. Ministry of Science and Technology
10. Ministry of Education
11. Ministry of Public Health
12. Ministry of Industry
13. Bangkok Metropolitan Administration
14. Office of the National Economics and Social Development Board
15. Bureau of Budget
16. 5-9 Experts

Secretariat
Permanent Secretary, Ministry of Natural Resources and Environment

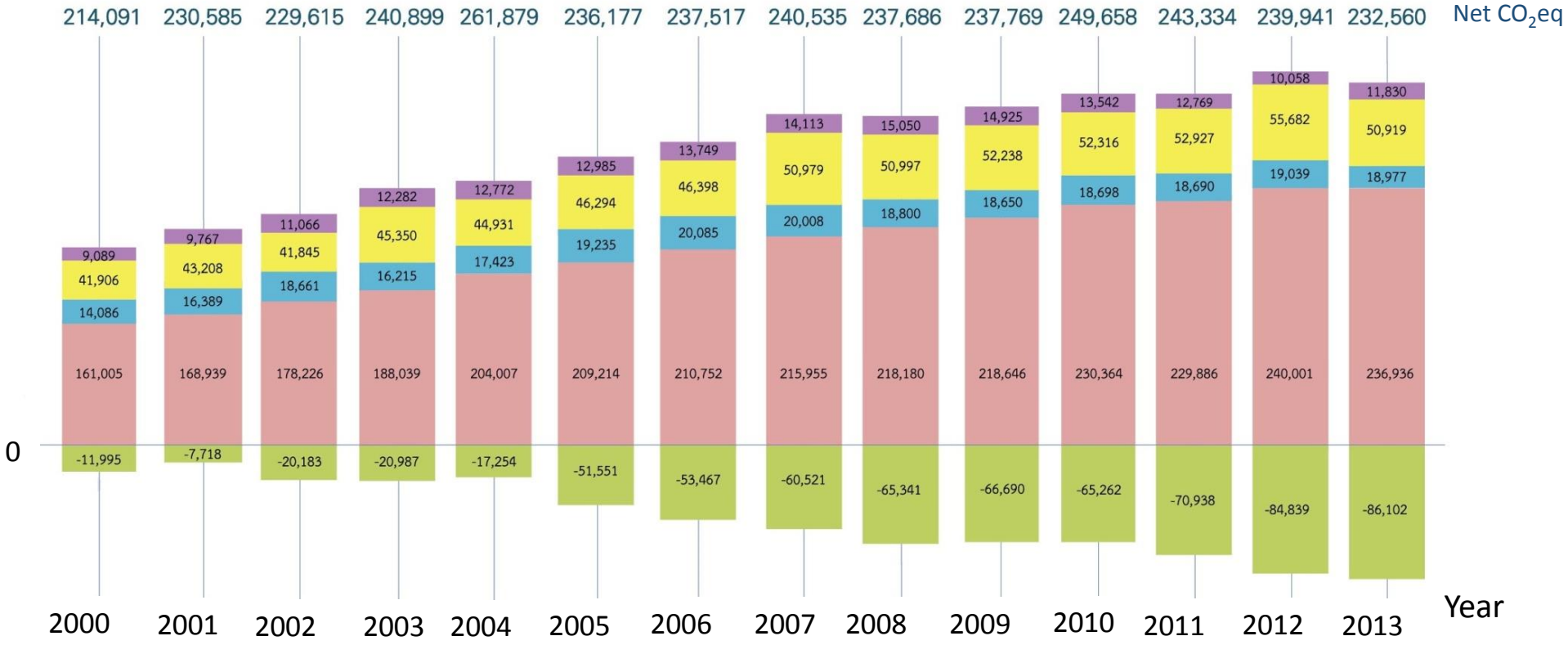
- ONEP
- TGO

Sub-committee on Climate Change Policy and Planning Integration	Sub-committee on Climate Change Knowledge and Database	Sub-committee on Climate Change Negotiation and International Cooperation	Sub-committee on Action for Climate Empowerment and Public Relation
Chair: Permanent Secretary, MNRE **Vice-Chair1**: Secretary General, ONEP **Vice-Chair2**: Secretary General, NESDB **Members**: 24 persons **Secretariat**: ONEP	**Chair**: Permanent Secretary, MNRE **Vice-Chair**: Secretary General, ONEP **Members**: 29 persons **Secretariat**: ONEP	**Chair**: Permanent Secretary, MNRE **Vice-Chair1**: Secretary General, ONEP **Vice-Chair2**: Director-General of the Department of International Organizations (DIO) **Members**: 18 persons **Secretariat**: ONEP & DIO	**Chair**: Permanent Secretary, MNRE **Vice-Chair**: Director-General, Department of Environment Quality Promotion (DEQP) **Members**: 22 persons **Secretariat**: DEQP

Part I Summary of SBUR : Institutional Arrangements for Greenhouse gas inventory preparation



Part I GHG Inventory : GHG Time series 2000 - 2013

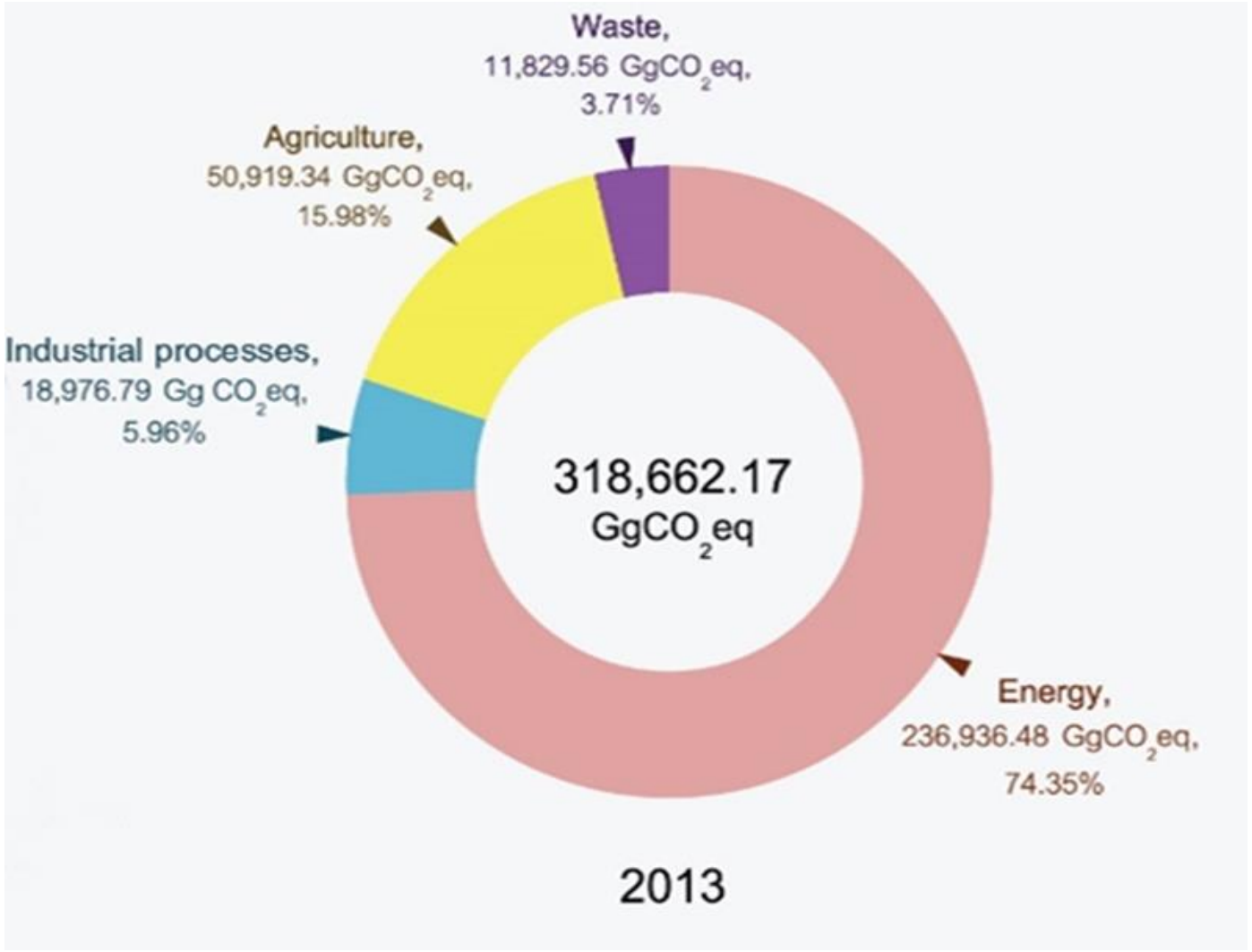


In 2013, CO_2 emissions represents more than **76%** of the total GHG emission, followed by emissions of methane, CH_4 **(19%)** and nitrous oxide, N_2O **(5%)**.

74% of equivalent emissions, from the **'Energy' sector**.

Energy Sector. Industrial processes Sector. Agriculture Sector. Waste Sector. LULUCF Sector.

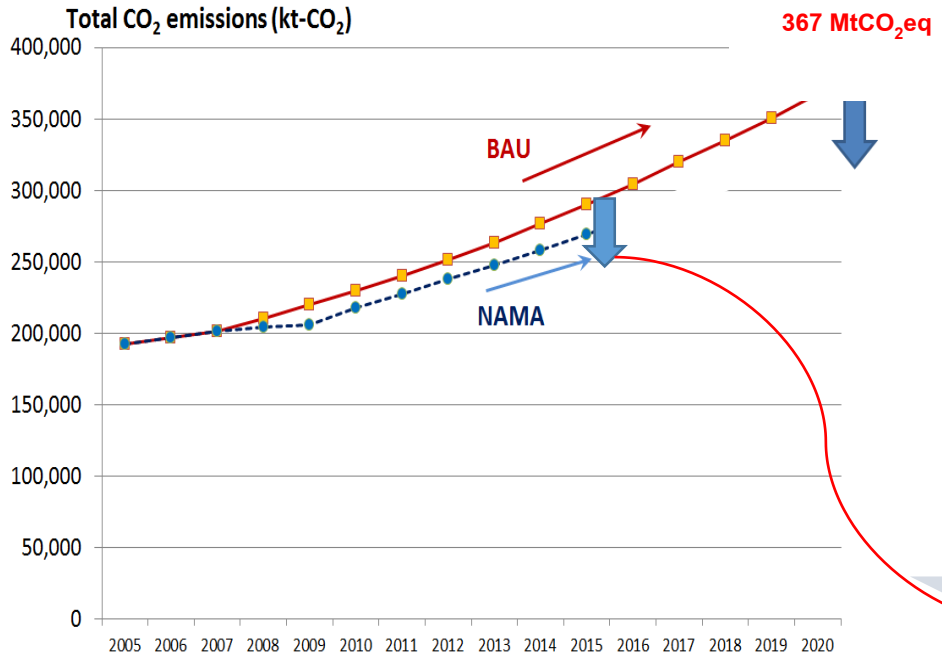
Part I: GHG Inventory : Inventory profile in 2013



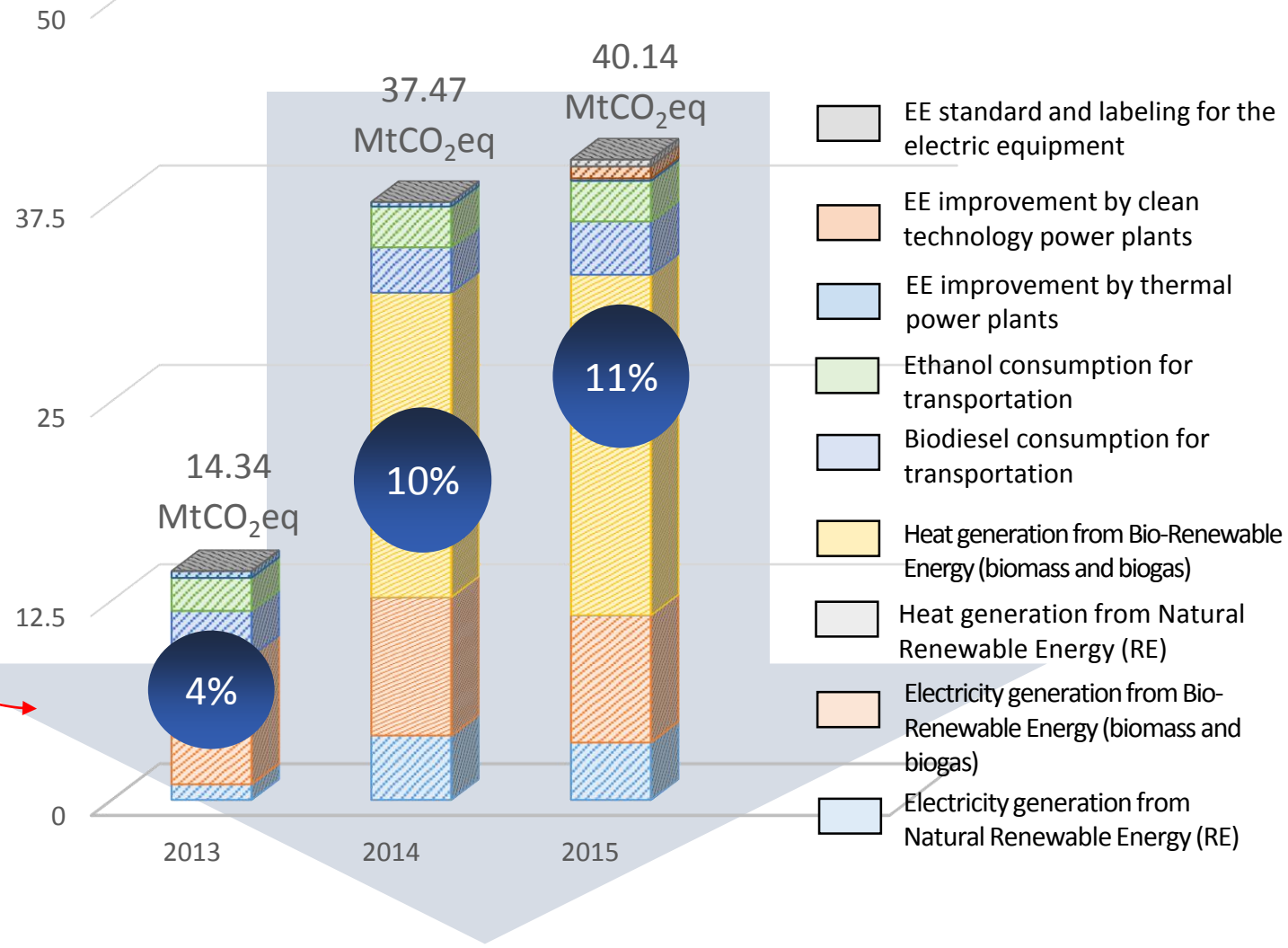
Part I: Mitigation actions and effects

Mitigation Targets: NAMA

- Reduce emission 7-20% in energy sector compared to the BAU scenario (by 2020)



Emission reduction: 40.14 $MtCO_2eq$ in 2015



Part I: Mitigation actions and effects

Thailand's MRV System

National Level

NCCC

Approve and verified GHG emission reduction results as included in NC and BUR.

Subcommittee on Climate Change Knowledge and Database

verified GHG Estimation methodology and amount GHG Emission Reduction.

Working group on GHG inventory and mitigation measures

Develop the GHG emission reduction report according to the mitigation action

Determine evaluation criteria for GHG emission reduction including:
1. Selection GHG emission reduction policies and measures to be monitored
2. Appropriate GHG reduction methodology
3. MRV process and structure
4. GHG reduction by measures

Approved

Disapproved /Edited

Ministerial Level

Ministerial level
Climate change coordination working group at ministerial level

Ministerial level
(measures/ policies)

Verify GHG emission reduction results by
1. GHG emission reduction measures
2. Appropriate GHG reduction methodology
3. MRV process and activity data
4. GHG reduction by measures

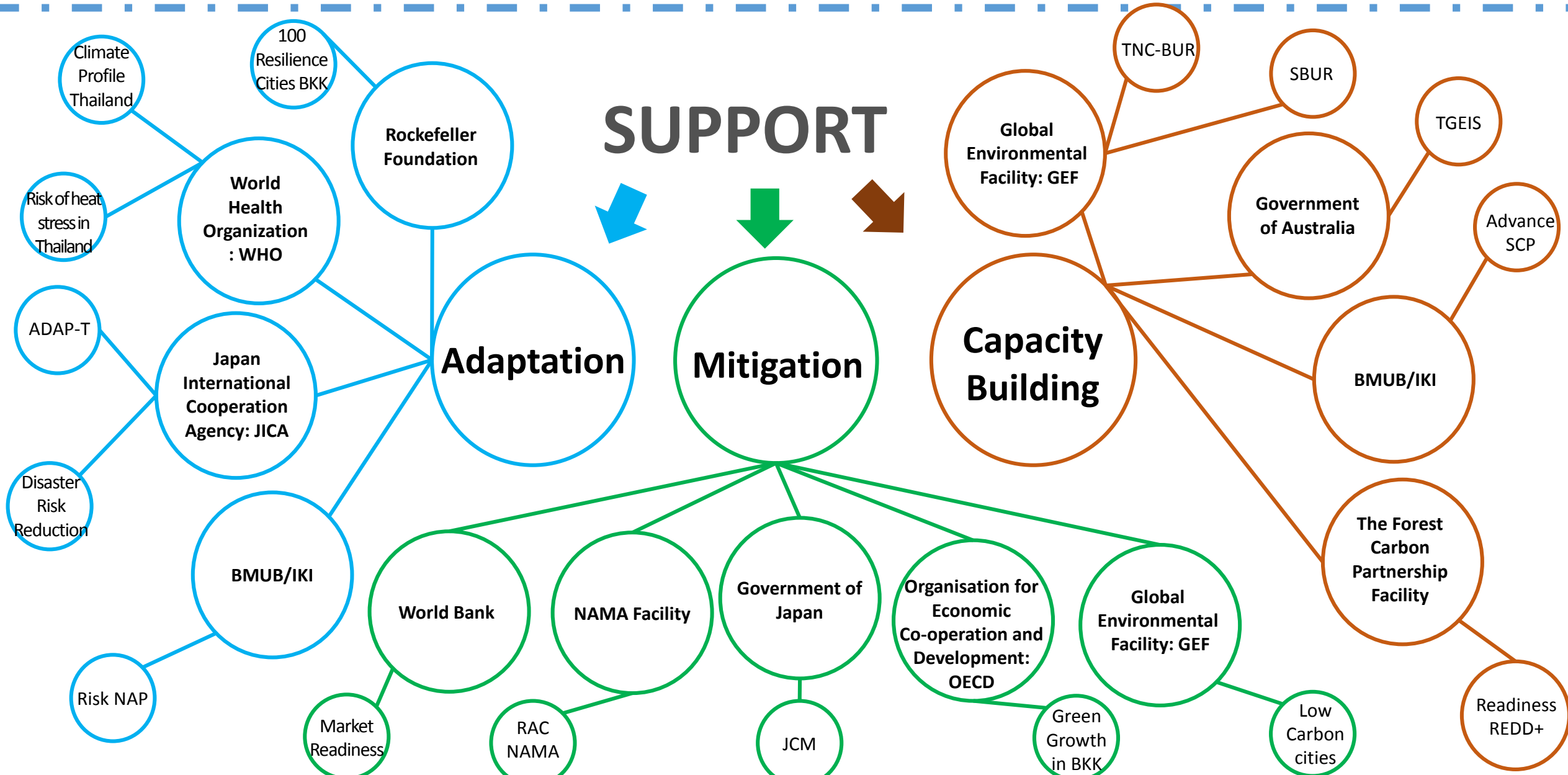
Lead agencies

Energy and transport	Energy Policy and Planning Office
	Office of Transport and Traffic Policy and Planning
Industrial processes	Department of Industrial Works
Agriculture	Office of Agricultural Economics
LULUCF	Department of national Parks, Wildlife and Plant Conservation
Waste	Pollution Control Department

Part I: Obstacles and barriers

- Transition to the 2006 IPCC Guidelines for National GHG Inventories for all sectors, including enhancing the capacities of national staff involved in the inventory process.
- Moving to higher tiers, particularly for key categories sub-sectors.
- Collecting data from private sector, currently there are no regulations.
- Reducing uncertainty in GHG emission estimation from LULUCF sector.
- Tracking progress of GHG emission reduction in energy efficiency implementation.

Part I: Support received



Part I: Support needed

Inventory

Needs for data quality improvement:
(i) **capacity building and enhancement of local experts** in GHG inventory;
(ii) **researches to obtain country-specific emission factors** in many sub-sectors;
(iii) **strengthening existing institutional arrangements** to improve data collection of national statistics from relevant agencies and the private sector.

Mitigation

Needs for mitigation capacity improvement:
(i) **carrying out climate science studies, research and assessments**, for all related industries and energy sectors;
(ii) **enhancing the capacity to report information** on the status of actions and tracking funds for mitigation measures.

Capacity Building

Operation and maintenance of the observation stations on
- Meteorological, atmospheric, and oceanic parameters.

New issues under the Paris Agreement
- Enhancing transparency framework, Mitigation tracking under the PA.

Part I: Support needed

Adaptation

Needs for adaptation in the agricultural sector :

(i) **forecasting and early warning systems**;
(ii) **crop improvement** for climate–resilience;
(iii) **precision farming technologies**.

Needs for water resource management include:

(i) **networking** and management of infrastructures;
(ii) **seasonal climate predictions** as a part of weather and hydrological modeling;
(iii) **sensor web using** and modeling data as a part of an early warning

Technology Transfer

Needs for technology transfer on

Energy Supply - Smart Grid, Waste-to-Energy, Advanced Biofuels
Energy Efficiency Improvements - High efficiency instruments and boilers
Others - Carbon Capture and Storage (CCS), etc.

Technologies as high priority for the modeling:

(i) national data center for climate technologies;
(ii) national data collection, transfer, and management process;
(iii) integrated modeling i.e., Weather Research and Forecasting (WRF).

Part II: Experience and lessons learned in participating in the ICA process

Preparing for the ICA process

❖ **Has participation in the ICA process raised the profile of climate actions at the domestic level?**

Answer : Yes, Thailand has strengthened the institutional capacity for data collection and developed IT system for GHG emission estimation by using methodology from IPCC 2006 Guidelines.

❖ **Has the BUR preparation enhanced domestic coordination/ domestic MRV in providing climate related information? If so, how?**

Answer : Yes, BUR preparation enhanced domestic coordination and domestic MRV in providing climate related information as mentioned in the institutional arrangement section.

Part II: Experience and lessons learned in participating in the ICA process

Enhancing transparency of reporting and areas for improvement

❖ **What's the value addition of the technical analysis of BURs by the team of technical experts?**

Answer: Identify gaps and needs and also the capacity building needed for local experts in order to improve technical issues of the report.

❖ **Has the ICA process supported the country to identify capacity building needs?**

Answer: Yes, ICA process supported Thailand to identify capacity building needs for enhancing the transparency of the report.

❖ **Did the technical analysis supported the country to facilitate its reporting?**

Answer: Yes, the technical analysis supported Thailand to improve our reporting for the next BUR.

Part III: Response to questions received

Institutional arrangements

Question by Germany on Friday, 17 May 2019

❖**Thailand submitted its first BUR in Dec 2015 and its second BUR in December 2017, thus complying with the two-year cycle for BUR submission. Is there are process under development that allows Thailand to report regularly and could Thailand share some experience in this regard as well as how this process is continued, i.e. for the preparation of the third BUR?**

Response: Since the GHG inventory is a difficult and time consuming section in preparing BUR. Thus, the Thailand has established a GHG inventory system since 2015 in order to have a permanent process for compiling activity data, estimating GHG emission, verifying the result of estimation, and reporting under the UNFCCC. (expected to be complete in 2019).

Regarding the mitigation section, Thailand also established the procedure to track the progress of the NAMAs implementation by developing a domestic MRV system for sub-sectors identified in NAMA Roadmap.

For the other sections of BUR, Thailand has established the modality and procedure for preparing, reviewing, and approving the information needed to report in BUR.

Part III: Response to questions received

Institutional arrangements

❖ **Section 1.6, Institutional arrangements: Given that Thailand has shown excellent progress in the timely submission of BURs, could Thailand provide some additional information on its institutional arrangements? What are the lessons learned from Thailand in ensuring that processes and capacities are maintained? What agencies and ministries are involved in the process of monitoring and reporting on the implementation of mitigation actions?**

Response: In ensuring that processes and capacities for BUR preparation will be sustained, the institutional arrangement of Thailand has started from

- Design the structure of work in each step.
- Identify tasks relating to the responsibility of each agency.
- Establish the IT system to support quick and successful GHG emission estimation.
- Prepare the guideline for the related agencies
- Build capacity for the related agencies
- Submit the modality and procedure of BUR preparation to National Climate Change Committee and Cabinet for endorsement. Therefore, the responsibility of BUR preparation becomes the mandate of related agencies.

The implementation of mitigation actions, the agencies and ministries who are involved in the process of monitoring and reporting on the implementation of mitigation actions are shown in slide no.9.

Part III: Response to questions received

National GHG Inventory

Question by Germany on Friday, 17 May 2019

❖**Section 2: National GHG Inventory was prepared by using the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories. Is Thailand aiming to shift to the 2006 IPCC Guidelines in the near future? Is Thailand experiencing any challenge in shifting to the 2006 IPCC Guidelines?**

Response: Thailand has planned to shift the methodology of estimating national GHG emissions from revised 1996 to 2006 Guidelines in the next BUR report. Like other developing countries, Thailand has been confronting with the challenge in transition processes such as lacking activity data aligned with the methodology of 2006 IPCC guideline because these data have never been collected before. In addition, Thailand will face a difficulty in finding the historical data for time series analysis back to 2000 as well.

❖**Section 2: Time series 2000-2003. Is Thailand planning to extend their time series back to 1994, as per the inventory year reported in the 1st National Communication?**

Response: For the 1st NC, Thailand had little knowledge on how to preparing the GHG inventories. Therefore, Thailand was preparing a report by hiring a consultant. After this task had been completed, all the data were gone. Due to the limitation of data, Thailand could not extend the time series back until 1994.

Part III: Response to questions received

National GHG Inventory

Question by Germany on Friday, 17 May 2019

❖ **Section 2: Emissions of f-gases are not provided in the GHG inventory. Given that Thailand's NDC also targets emissions from SF_6, HFCs and PFCs, is Thailand planning to incorporate emissions estimates for all these three gases in forthcoming national GHG inventories/BURs? What are the challenges for estimating these emissions for the second BUR?**

Response: Thailand has a strong intention to collect data to estimate F-gases to be added to the BUR but we still have limitation on available data and it is not segregated according to IPCC Guidelines. Up to now, Thailand did not include F-gases estimation in the 2nd BUR due to lack of available and/or reliable data. The data are not segregated according to methodology of IPCC 2006 guideline.

However, Thailand has received supports for "Refrigeration and Air Conditioning NAMA (RAC NAMA)" project from NAMA Facility. This project will assist Thailand to develop GHG inventory and MRV of some type of F-gases emission and will also provide capacity building for related agencies involved with these industries.

Moreover, Thailand is being supported by The Australian Government on the setup of the structure of F-gas activity data flow and collection under the Thailand Greenhouse Gas Emission Inventory System or TGEIS. Therefore, Thailand intends to include F-Gas emissions in our inventory in the near future.

Part III: Response to questions received

Question by Germany on Friday, 17 May 2019

- **Section 2.1.2, uncertainty analysis. Thailand does provide aggregated uncertainty numbers. The tables show that overall uncertainty including LULUCF has increased considerably from 2005 onwards. What are the reasons for the increase? How uncertainty is estimated for single source categories and especially for those were tier 2 methods and country-specific emission factors have been applied?**

Response: The overall uncertainty has increased considerably after including LULUCF from 2005 onwards because of the inclusion of para-rubber plantations in the estimation. Thailand has very huge area of para-rubber plantations. The area was increased from 2.2 million hectares in 2005 to 3.6 million hectares in 2013. The uncertainty due to area estimation was 20% and biomass estimation was 50% as a consequence of site, environment, and management. The estimation from para-rubber plantation was not included before 2005 due to lack of data.

- **Section 2.1.3, key category analysis: Given that some source categories in the energy and IPPU sectors are among the 15 key categories, is Thailand planning to move to higher tiers for some of these categories in forthcoming BURs?**

Response: Thailand plans to move to higher tiers for some of the key categories in the future BURs. However, the higher-tier methods usually incorporate country-specific conditions, data, and emission factors in which different countries have different capacities to produce inventories.

Especially tier2 method requires the use of country-specific emission factors whereas tier3 is more complex and/ or resource intensive than lower tiers because tier3 method uses emission factors that are not only country-specific, but also differentiated by technology and operating conditions. Therefore, Thailand could move to higher tier if Thailand receives some support to enhance our ability.

Part III: Response to questions received

National GHG Inventory

Question by Germany on Friday, 17 May 2019

- **Section 2.1.6 completeness assessment: emissions from international transport have not been estimated and the notation key NA has been used. Can Thailand provide more information on the use of this notation key for these memo items of the GHG inventory?**

Response: Thailand reported the emission for international transport as a notation key NA because there was no organization responsible for collecting the fuel consumption data from international transport during that period of time due to restructuring. Nevertheless, Thailand expects to report the emission by disaggregating fuel consumption data for domestic and international transport in the future BUR.

- **Section 2.3.5 Waste: Thailand reports that only 31% of its solid waste is appropriately disposed. About 76% of it was reused through waste recycling, and 21% was derived for utilization of organic waste, and 3% for electricity generation. Given that Thailand only reports on GHG emissions from wastewater treatment, solid waste disposal on land, and waste incineration it would be interesting to understand how Thailand plans to enhance reporting on waste GHG emissions, i.e. when moving to the 2006 IPCC guidelines, and considering the biological treatment of waste/composting given that a considerable amount of the organic fraction in MSW is re-utilized.**

Response: Thailand has planned to use the inventory system (TGEIS) to prepare GHG Inventory on some sectors for reporting in the 3rd BUR and FNC. The TGEIS is developed based on IPCC 2006 guidelines. For waste sector, especially solid waste, Thailand has planed to collect and report the amount of solid waste delivered to disposal sites by individual site, dividing into treatment methods, i.e. landfill (managed), open dump (unmanaged), composting, MBT, AD, incineration. Therefore, it is ready for Thailand to move to the 2006 IPCC guidelines in reporting on waste GHG emissions.

Part III: Response to questions received

Question by European Union at Monday, 20 of May 2019

- **According to the second BUR the LULUCF sector in Thailand shows a trend of increased net removals. In particular since rubber plantations were included in the calculation in 2005, in resulted in a tremendous increase of CO_2 removals. "In 2013, the LULUCF sector contributed to net removal of 86,101.84 GgCO2eq, a six fold increase compared with that in 2000."**
- **Can Thailand elaborate more in details on the development of rubber plantations and the corresponding increase in removals? Does Thailand see further potential in increasing the carbon sink in the LULUCF sector?**

Response: Thailand has a vast area of para-rubber plantations. The area was increased from 2.2 million hectares in 2005 to 3.6 million hectares in 2013. This estimation was not included before 2005 due to lack of data. Thailand expects the potential to enhance land carbon sink from LULUCF sector through reforestation, forest plantation replacing deforestation, and increasing urban green area of municipality.

Part III: Response to questions received

Mitigation actions and their effects

Question by Turkey on Thursday, 16 May 2019

❖**The challenges of the implementation specifically on the use of biodiesel and ethanol in the transport sector within its Alternative Energy development Plan?**

Response: The challenges of the implementation on the use of biodiesel and ethanol under the Alternative Energy Development Plan consist of two factors, as following

1) Internal factor: Currently, the main raw materials of biodiesel and ethanol production are sugarcane, cassava and palm, which are economic crops in Thailand. We will use the remaining agricultural products after domestic consumption for producing biodiesel and ethanol. When the price of sugarcane and palm increases, it affects the amount of raw material that can be supplied to the production process and, of course, the price of biofuel. Moreover, the cost of producing biofuels is higher than petroleum price. Therefore, it is necessary to have policies or incentives to promote the consumption of biofuels from the government.

2) External factor: Crude oil price fluctuate due to global economy and politics. If the price of commercial oil decreases, it will affect the decision of people in using biofuels.

Part III: Response to questions received

Mitigation actions and their effects

Question by Germany on Friday, 17 May 2019

- **Section 3: Information on Mitigation Actions: GHG emission mitigation measures: Thailand achieved early its short-term target of the National Climate Change Master Plan: a 7% reduction in GHG emissions from the BAU level by 2020. Can Thailand provide an estimate of how much of the target was achieved using national means and how much was achieved thanks to international support? What are the success factors to achieve its goals that Thailand can share?**
- **What are further steps to be taken by Thailand for enhancing the clarity and completeness of information reported on mitigation actions? Is Thailand aiming to include information on GHG emissions projections in future BURs?**

Response: All of the emission reduction results are from only domestic mitigation actions. Thailand did not include the emission reduction results from international support in the 2nd BURs. Thailand has already achieved the emission reduction target at 11% in 2015 by domestic efforts mainly by using adder cost and feed in tariff for renewable energy subsidy. Moreover, Thailand has various factors to support our achievement such a strong climate policy, willingness of public and private sectors to implement the mitigation actions.

Thailand is on the process of developing the MRV methodology for tracking mitigation measures under NDC Roadmap based on principle of the TACCC and MPGs for transparency framework under PA. In the next BURs, Thailand will seek for new measures including a cooperation with private sectors in order to improve the mitigation data and align with the transparency framework.

Thailand will not be able to include the GHG emission projections in the next BUR, however Thailand will try to include this information in the 4th BUR.

Part III: Response to questions received

Mitigation actions and their effects

Question by United States of America at Sunday, 19 of May 2019

❖ **Thailand's NAMA target for 2020 and NDC target for 2030 involve a percentage reduction in GHG emissions relative to projected business-as-usual (BAU) emissions. Are there any lessons learned in projecting BAU emissions that Thailand could share with other developing country nations based on its experience? This might also be addressed in your FSV presentation.**

Response: Thailand can share our experience in using the Asia-Pacific Integrated Assessment Model (AIM) for estimation of BAU emission, which is developed by the collaboration between the National Institute for Environmental Studies (NIES) Japan and other Asian researchers, including Thailand. Thailand's NAMA and NDC targets were projected by using a bottom-up simulation model approach contained a very detailed technology selection module to evaluate the effect of introducing advanced technologies. The technology selections were based on cost optimization framework, which will minimize the cost of the whole system, subject to national constraints such as the availability and sustainability of biomass for power generation and the end-use energy demand for the economic sectors. This leads to a result of expected economy-wide emission reduction target of 7-20% by 2020 (NAMA) and 20-25% (NDC) by 2030 below the BAU level which is projected to be 555 $MtCO_{2eq}$.

Part III: Response to questions received

Mitigation actions and their effects

Question by European Union at Monday, 20 of May 2019

- **Thailand has indicated BAU emissions for 2030 at a level of approximately 555 MtCO2e, which represents nearly doubling the emissions from 2000 (226,086 GgCO2e).**
- **The NDC commitment to 20% reductions compared to BAU corresponds to approximately 444 MtCO2e which represents nearly 40% increase compared to the 2013 emissions reported in the second BUR.**
- **Given the progress reported in its second BUR in achieving its NAMA commitments and in implementing mitigation measures, does Thailand see any opportunity to aim for steeper restrains in the growth of its greenhouse gas emissions?**

Response: The climate change master plan has identified several policies which support the GHG emission reduction such as energy efficiency improvement in manufacturing processes, substitution of renewable energy in industries, energy efficiency improvement in building sector, biofuels in transportation and Transport Infrastructure Development Plan. These measures will contribute to GHG emission reduction after 2022, especially when some parts of public transport network has been completed, for example, urban rail transit system, double track railway, and Thailand High-speed Rail Project. Therefore, Thailand expects that GHG emissions will be increasing slowly in the near future.

Thank you

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