

# Cambodia's Third National Communication and GHG Emissions Target

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# National Circumstances

- The Royal Government of Cambodia (RGC) established her constitution in 1993 as a liberal democracy;
- Situated in mainland Southeast Asia, which comprises a total area of 181,035 Km<sup>2</sup>;
- The country's topography consists of the central plains surrounded by mountainous highland regions and a coastline to the south;
- Cambodia's climate is governed by monsoons and characterized by two major wet and dry seasons;
- Cambodia's population was 14.68 million in 2013;



# National Circumstances (1)

- About 80% of Cambodian live in rural areas, while 20% live in urban areas, including the capital.
- Cambodia's economy relies on four main sectors: agriculture, industry, tourism, and construction;
- Beside theses, other sub-sectors also included such as: energy sector, water resource and irrigation system, quality of education, and solid waste generation...



# National Greenhouse Gas Inventory

- This report covers the Greenhouse Gas (GHG) emissions estimated for the years 2005 and 2010. Emissions of CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, HFC, SF<sub>6</sub>, and NF<sub>3</sub> in the sectors of Energy; Industrial Processes and Product Use (IPPU); Agriculture, Forestry, and Other Land Use (AFOLU); and Waste
- were estimated following 2006 IPCC Guidelines for National GHG Inventories and Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories.
- The latest version of the IPCC inventory software (Ver. 2.691) was used to compile the inventories. CO<sub>2</sub> equivalent (CO<sub>2</sub>e) emissions were calculated based on the 100-year time-horizon Global Warming Potential (GWP) values from the IPCC's Fourth Assessment Report (AR4).



# National Greenhouse Gas Inventory (1)

- The total GHG emissions of the inventory years 2005 and 2010, including the FOLU sector, are 39,148.29, and 43,643.99 Gg of CO<sub>2</sub>e, respectively. Total emissions (with FOLU) have increased by 2% in 2010 compared to 1994.
- The FOLU sector is the highest contributor accounting for 51% and 46% of the total emissions in 2005 and 2010, respectively. The agriculture sector is the second highest contributor accounting for 37% for 2005 and 2010. The IPPU sector has the least contribution to the total emissions due to the lack of carbon-intensive industries in the country.



# National Greenhouse Gas Inventory (2)

- Prioritized mitigation actions introduced to reduce GHG emissions by 24% in 2050 compared with the BAU scenario. The emissions reductions of 21.6 million tCO<sub>2</sub>e/year is expected by 2030, while 44.2 million tCO<sub>2</sub>e by 2050. The agriculture sector is expected to provide the major share of 34.4% emissions reductions by 2050.
- The country's population has increased by 39% compared to 1994, and the GDP has also increased over the considered period. Per capita emissions (including the FOLU sector) has decreased from 0.4tCO<sub>2</sub>e/person in 1994 to 0.3tCO<sub>2</sub>e/person in 2010. Similarly, emissions per GDP also have decreased from 1994 to 2010. These declines are resulted from the reduction of the FOLU sector emissions and increment of the GDP of the country.



# Vulnerability and Adaptation Assessment

- The vulnerability and Adaptation (V&A) assessment in Cambodia concerned both geographical coverage and sectors that are perceived to be vulnerable to the effects of climate change;
- The assessment is conducted with good coverage of the national territory;
- Six sectors are identified as vulnerable to climate change, namely agriculture, water resources, forestry, human health, coastal areas, and gender.

## *Observed and Projected Climate Change*

| Parameter                      | Observed 1985 – 2017 | Projected 2050                      | Projected 2099                                     |
|--------------------------------|----------------------|-------------------------------------|--|
| Average Annual Temperature     | 26.5°C - 27.3°C      | Expected increase 1.0°C (both RCPs) | Expected increase 2.5°C (RCP4.5)<br>4.5°C (RCP8.5) |
| Average Annual Rainfall Trends | plus/minus 10%       | plus/minus 10%                      |  |





# Measures to Mitigate Climate Change

- The proposed GHG emissions measures provide a summary update of the national priorities, strategies, and programs in place to drive the mitigation agenda of the country.
- In order to provide a better understanding of the best possible combination of mitigation options based on available priorities, strategies, and programs to achieve the NDC mitigation targets to the Paris Agreement, a mitigation assessment through GHG projection modelling has been carried out, covering all five main sectors: energy, IPPU, waste, agriculture, and FOLU.
- The GHG Inventory data for 2010 is used as the base year.
- The assessment was carried out with reference to the business-as-usual (BAU) baseline projections from 2010 through to 2050 that focus on historical development trends in each of the five sectors.



# Measures to Mitigate Climate Change (1)

- The BAU and Mitigation scenarios for Energy, IPPU, Waste, and Agriculture sectors were assessed from Long-Range Energy Alternatives Planning System (LEAP) simulation software, while the FOLU sector is assessed by EX- Ante Carbon – Balance Tool (Ex-ACT).
- The total of thirty-four (34) mitigation actions are reported, including eleven (11) actions from the energy sector, five (5) actions from the IPPU sector, seven (7) actions from the waste sector, eight (8) actions from the agriculture sector, and three (3) actions from the FOLU sector.



# Measures to Mitigate Climate Change (2)

## *Projected GHG Emissions and Reduction Potentials*

| Sector      | (Million tCO <sub>2e</sub> ) |                     |      |                     |       |                     |
|-------------|------------------------------|---------------------|------|---------------------|-------|---------------------|
|             | 2030                         |                     | 2040 |                     | 2050  |                     |
|             | BAU                          | Mitigation Scenario | BAU  | Mitigation Scenario | BAU   | Mitigation Scenario |
| Energy      | 33.0                         | 2.0                 | 61.4 | 3.1                 | 114.2 | 6.4                 |
| IPPU        | 8.2                          | 3.3                 | 9.4  | 6.3                 | 11.6  | 8.8                 |
| Waste       | 3.7                          | 1.9                 | 4.2  | 2.8                 | 4.9   | 3.8                 |
| Agriculture | 22.0                         | 4.41                | 26.2 | 12.38               | 30.2  | 15.2                |
| FOLU        | 19.9                         | 10.0                | 19.9 | 10.0                | 19.9  | 10.0                |



# Constraints, Gaps, and Support Needs

- Cambodia has been facing many constraints and gaps in implementing climate change-related conventions, protocol, and international instruments due to limited financial support, technology transfer, and institutional and human capacity.
- Furthermore, the lack of systematic coordination among respective agencies was also identified as a barrier to the successful implementation of the Convention and protocol. Substantial gaps are seen in technology transfer, especially in the transport and energy sectors.
- Limited activity data, national emission factors, and sustainable GHG inventory system were found as the constraints to developing GHG inventory. Additionally, the main constraints in developing the Nationally Appropriate Mitigation Action (NAMA) were a lack of expertise and policies.
- Cambodia needs to mobilize around 92% of the funds that they have received from development partners and donor countries in order to complement proposals raised by the line ministries and to translate all those actions into concrete implementation.



# Constraints, Gaps, and Support Needs (1)

- But the increasing public expenditure spent on climate change impacts has reduced the Cambodia's capacity to adapt and mitigate climate change impacts.
- Therefore, in order to address climate change-related concerns, Cambodia needs further financial and financial support from the development partners, donor countries, funding institutions, and national budget allocations and capacity building programs to extend research institutes and academia on climate change impact assessments, and mitigation.





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# Thank you



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