

6th Annual Meeting of Low Carbon Asia Research Network

Nationally Determined Contribution of Cambodia

1-3 November 2017

(Bangkok, Thailand)

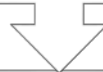
Hak Mao

National Council for Sustainable
Development/Ministry of
Environment, Cambodia

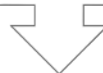


Outline

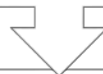
I. Overview of Cambodia



II. Government's policies to address climate change



III. Key considerations for NDCs of Cambodia



IV. GHG Emissions and Reduction by Sectors



V. GHG Emissions Reduction Policies and Strategies



VI. Final Remarks

I. OVERVIEW OF CAMBODIA

COUNTRY STATUS

- Population (2017): 16 mil
- GDP growth: 7% (annually)
- Urban growth rate (annually: 2.6%)
- Upper middle income country by 2030 and a developed level by 2050
- Forest cover: 73% (1960) to 47% (2016)
- Power generation by sources (2016): Hydro (44%); Coal (51%); Diesel/HFO (4%); and Biomass (1%)
- Electricity Consumption by Final Users (2016): Resid (29%); Com (49%); Ind (22%); and other (0.1%)
- Per capita emissions (0.3tCO₂)

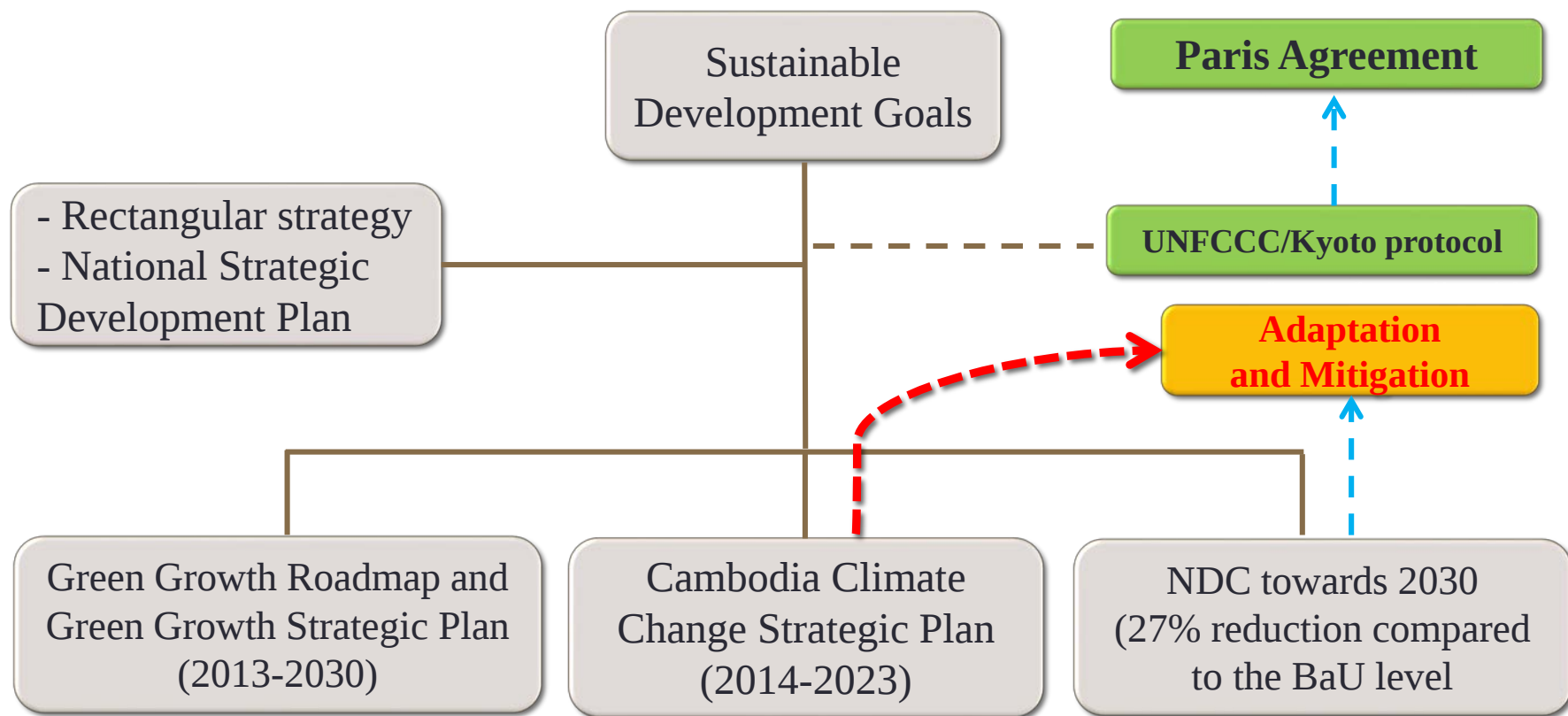
KEY CHALLENGES

- Development pressure
- Environmental degradation
- Climate change
- Sustainable lifestyle
- Human resources
- Governance/Coordination/Planning, etc.

POLICY & LEGAL FRAMEWORK

- SDGs
- Laws: Environmental Protection, Forestry, Fisheries, Land Mgt, PAs, Solid/wastewater, water, etc.
- National Forestry Policy
- Rectangular Strategy (Phase III)
- NSP on GG 2013-2030
- NSDP 2014-2018
- CCCSP 2014-2023, etc.

II. GOVERNMENT'S POLICIES TO ADDRESS CLIMATE CHANGE



III. KEY INDICATORS FOR NDCs

- **Cambodia is not a major contributor to climate change but is the most vulnerable country**
- **Land-use change and forestry is a major source and sink of GHG emissions/removal while the energy sector just gradually increased**
- **Major sources used to prepare the NDC**
 - Second National Communication;
 - Climate Change Strategic Plan 2014-2023, NAPA; and
 - National Policy on Rural Electrification by Renewable Energy, etc.

ADAPTATION

- **Agriculture:** The agricultural production system is dependent either on rainfall or on the annual flooding and recession of the Tonle Sap Great Lake.
- **Infrastructure:** the increasing occurrence and severity of floods exacerbated by climate change are resulting in high costs for the maintenance and upgrading of roads and irrigation infrastructure.
- **Forestry:** Most lowland forest will be exposed to a longer dry period, particularly forest areas located in the northeast and southwest. More than 4 million hectares of lowland forest, which currently has a water deficit period of between 4 and 6 months, will face a greater water deficit period of between 6 to 8 months or more.

- **Human health:** **Direct impacts** include death, injury, psychological disorders and damage to public health infrastructure. **Indirect impacts** include changes in the geographical range and incidence of vector-borne diseases, water-borne and infectious diseases, malnutrition and hunger as a result of ecosystem disturbance
- **Coastal zones:** Coastal zone resources already face a number of pressures, including from over-fishing, over-exploitation of forest resources and mangrove ecosystems leading to increased erosion. Climate change adds to these existing challenges through sea level rise, shrinking arable land and decreasing availability of drinking water.

MITIGATION

Sector	Priority actions	Reduction (Gg. CO ₂ eq.) 2030 compared to BaU
Energy Industries	- Grid connected renewable energy generation (solar energy, hydropower, biomass and biogas). - Off-grid electricity such as solar home systems, hydro (pico, mini and micro). - Promote energy efficiency by end users.	1,800 (16%)
Manufacturing Industries	- Promote use of renewable energy and adopt energy efficiency for garment factory, rice mills, and brick kilns.	727 (7%)
Transport	- Promote mass public transport. - Improve operation and maintenance of vehicles, and the increased use of hybrid cars, electric vehicles and bicycles.	390 (3%)
Other	- Promote energy efficiency for buildings and more efficient cook-stoves. - Reduce emissions from waste through use of bio-digesters and water filters. - Use renewable energy for irrigation and solar lamps.	155 (1%)
Total Savings		3,100 (27%)

Name of activity	Description	Estimated emission reductions
Increase forest cover to 60% by 2030, and maintaining it after 2030	Cambodia is striving to increase the forest cover by 60% from 57% in 2010. This will be achieved in particular through: <u>Reclassification of forest areas to avoid deforestation:</u> - Protected areas: 2.8 million hectares - Protected forest: 3 million hectares - Community forest: 2 million hectares - Forest concessions reclassified to protected and production forest: 0.3 million hectares - Production forest: 2.5 million hectares. <u>Implementation of the FLEGT programme in Cambodia</u> The objective is to improve forest governance and promote international trade in verified legal timber.	4.7 tCO₂eq./ha/year for up to 5 million hectares

FLEGT stands for Forest Law Enforcement, Governance and Trade. It aims to reduce illegal logging by strengthening sustainable and legal forest management, improving governance and promoting trade in legally produced timber.

REDD+ STRATEGY

- **STRATEGIC OBJECTIVE 1:** Improve efficiency of forest resource and land use management and monitoring
- **STRATEGIC OBJECTIVE 2:** Strengthen the implementation of sustainable forest management
- **STRATEGIC OBJECTIVE 3:** Mainstream forest degradation reduction, Capacity building, and Encouragement of stakeholders participation

IV. GHG EMISSIONS AND REDUCTION BY SECTORS

GHG emissions and reductions	2010	2030BaU	2030CM	2050BaU	2050CM
Residential	830	2,414	918	9,889	2,034
Commercial	217	1,433	482	3,663	1,298
Industrial	1,173	7,536	3,926	23,691	11,136
Passenger transport	996	6,374	2,743	22,276	9,431
Freight transport	1,004	5,521	2,383	31,806	15,273
Agricultural sector	26,142	44,062	28,490	66,808	46,259
LULUCF sector*	-27,082	-52,826	-61,715	-52,826	-61,712
Waste sector	1,566	5,731	4,980	15,216	9,341
Total (ktCO₂eq./year)	4,847	20,245	-17,794	120,523	33,067
Per capita GHG emissions (tCO₂eq./person)	0.35	1.10	-0.97	5.49	1.51
* minus means carbon sink					

V. GHG EMISSIONS REDUCTION POLICIES AND STRATEGIES

Four policies and a dozen strategies [ktCO ₂ eq./year]	CODE	Explanation	GHG reductions*	
			2030CM	2050CM
POLICY ON HARMONIZATION OF GREEN ECONOMY, SOCIETY, AND CULTURE	PGH		11,409	47,246
Green good governance and human resource development (indirect)	GGG	Implementation of green institutions and youths' participation for natural resources management/ environmental protection		
Green tourism management (indirect)	GTM	Promotion of waste minimization and use of public transportation by tourists		
Green financial mobilization (indirect)	GFM	Investment in natural resources protection and renewable energy		
Green energy	GEN	Use of smart appliances and renewable energy	4,281	16,559
Green technologies and investment	GTI	Investment in green technologies (e.g. solar)	1,443	4,927
Green transportation	GTR	Introduction of energy efficiency vehicles and public transportation system	5,685	25,761
POLICY ON GREEN ENVIRONMENT	PGE		25,212	35,310
Sustainable forest management	SFM	Effective forest management and plantations	8,889	8,886
Sustainable waste management	SWM	Implementation of 3Rs principle and CH ₄ recovery	751	5,874
Green agriculture management	GAM	Introduction of midseason drainage in paddy rice and off-season incorporation of rice straw	15,572	20,550
POLICY ON ECO-VILLAGE	PEV		1,417	4,907
Low carbon infrastructure	LCI	Designing of walkable city and modal shift	1,084	3,618
Green building	GBD	Introduction of green building design and construction and energy savings behaviors	333	1,289
POLICY ON BLUE ECONOMY (INDIRECT)	PBE			
Green merchant marine and sustainable coastal zone management	CZM	Effective mangrove management, protection and plantations		
Total emissions reduction			38,039	87,462

* These reductions are compared to 20,245 and 120,523 ktCO₂eq./year in 2030BaU and 2050BaU, respectively.

BaU= Business as Usual; CM= Countermeasure

VI. FINAL REMARKS

- Total GHG emissions in Cambodia are projected to increase about **4 times** in 2030 and **32 times** in 2050 from 2010;
- Per capita emissions increase from **0.35tCO₂eq./year** in 2010 to **1.10** and **5.49 tCO₂eq./year** in 2030 and 2050, respectively;
- A number of policies and strategies has been established to address climate change and to ensure sustainable development;
- The country has very high potential for GHG emissions reduction, especially from the forestry sector;
- 27% of GHG emissions are expected to reduce by 2030 compared to the BaU level (NDCs);
- Human resource development is needed to enhance research activity; and
- Mobilization of resources is needed to ensure the implementation of the proposed activities as indicated in the NDCs.