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Outline

1. Cambodia Vulnerability to climate change
2. Cambodia Climate Change Policy and Strategy
3. Cambodia's Updated NDC
4. The Collaboration between the Ministry of Environment and UN-Habitat
5. Proposed areas for potential collaboration

概要

カンボジアの気候変動に対する脆弱性

カンボジアの気候変動政策と戦略

カンボジアの削減も苦情

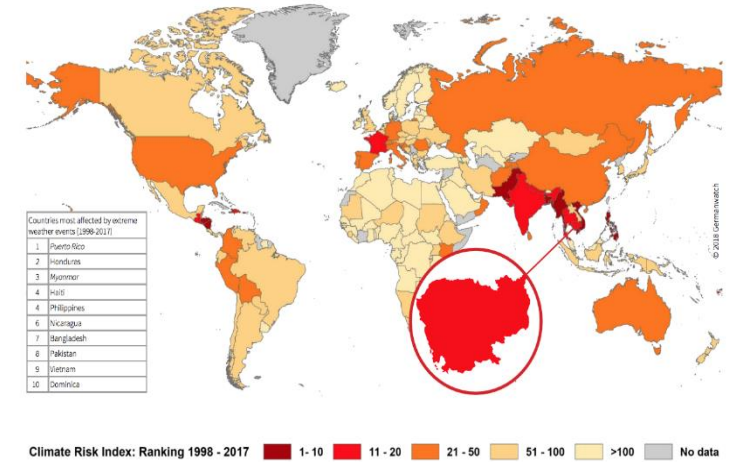
カンボジア環境省と国連ハビタットの連携

今後連携したい分野

1. Cambodia Vulnerability to Climate Change

気候変動に対する脆弱性

- Cambodia is a Least Developed Country (LDC) that is regularly ranked among the countries most vulnerable to climate change impacts, ranked 14th in the Global Climate Risk Index (2000–2019), 12th (1999-2018), and 8th in the World Risk Index in 2016
- Cambodia is particularly vulnerable to floods, droughts, windstorms, and seawater intrusion
- 2019, about 75% of the population live in rural areas (*NSDP, 2019-2023*) and relatively high reliance on agriculture, forestry and fisheries and low adaptive capacity resulting from the limited technically skilled human resources, institutional capacities, and finance.



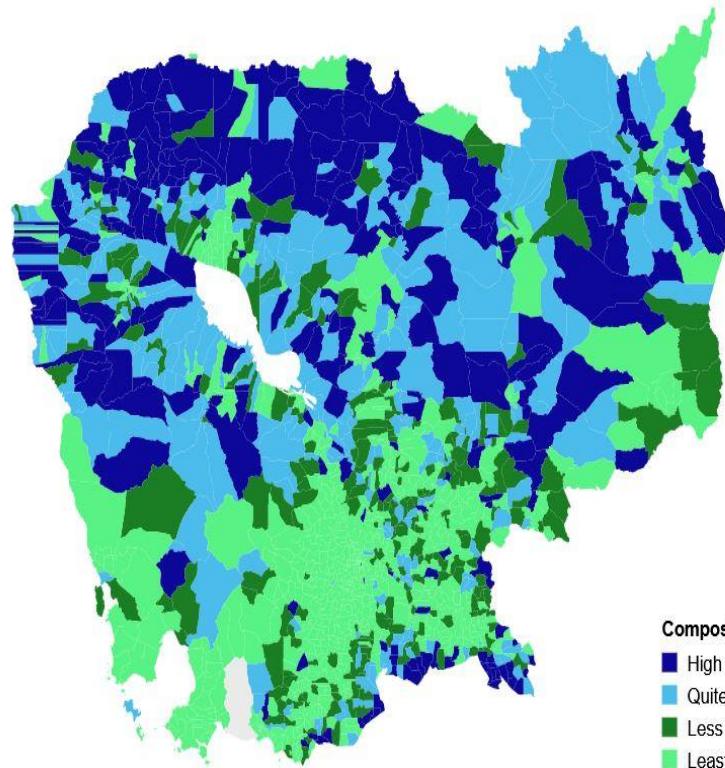
カンボジアは世界的にも気候変動に脆弱な低開発途上国。特に洪水、干ばつ、暴風、海面上昇の脅威にさらされる。人口の約75%が農業・林業・漁業に従事し人材・技術・財政の不足から気候変動への適応に遅れている。

1. Cambodia Vulnerability to Climate Change (cont.)

気候変動に対する脆弱性

Commune level vulnerability index

2021 Composite

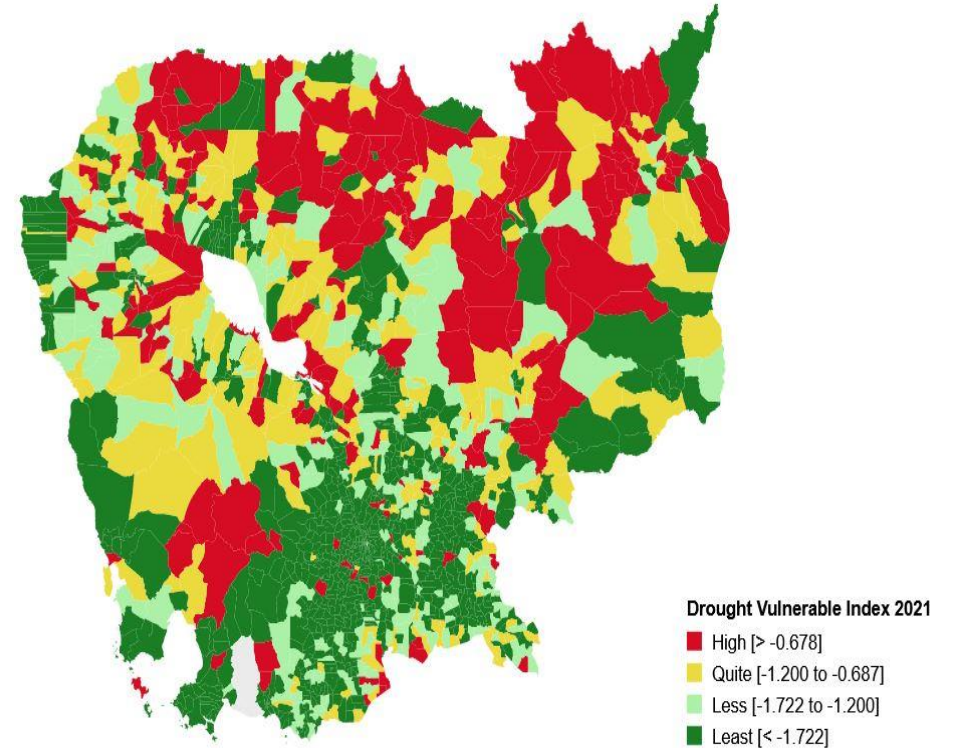


Commune level Vulnerability index Composite 2021

コミューンレベルでの脆弱性指数（全体）

Commune level vulnerability index

2021 Drought



Commune level Vulnerability index Drought 2021

コミューンレベルでの干ばつへの脆弱性指数

2. Cambodia Climate Change Policy and Strategy

カンボジアの気候変動政策と戦略

- National Adaptation Programme of Action to Climate Change (NAPA)(2006)
- Cambodia Climate Change Strategic Plan 2014-2023, the first comprehensive national policy document responding to climate change.
- Updated NDC (2020), 41.7% of GHG reduction by 2030 compared to BAU, including 58 prioritized adaptation actions.
- The Long-Term Strategy for Carbon Neutrality with a 2050 carbon-neutral target with analysis of adaptation benefit.
- Rectangular Strategy
- National Sustainable Development Plan 2024-2028
- National Adaptation Plan Process in Cambodia (2017)
- Cambodia National Adaptation Financing Framework and Implementation Plan 2017
- Cambodia's National Adaptation Plan Communication Strategy (2018)
- National Action Plan for Disaster Risk Reduction NAP-DRR 2014-2018
- Cambodia's National Environment Strategy and Action Plan, 2016–2023
- Environmental and Natural Resources Code (2023)
- Etc.

気候変動に対する国家適応行動プログラム、カンボジア気候変動戦略計画、カーボンゼロへの長期戦略、国家持続可能な開発計画、国家適応計画など多数の政策と戦略を制定

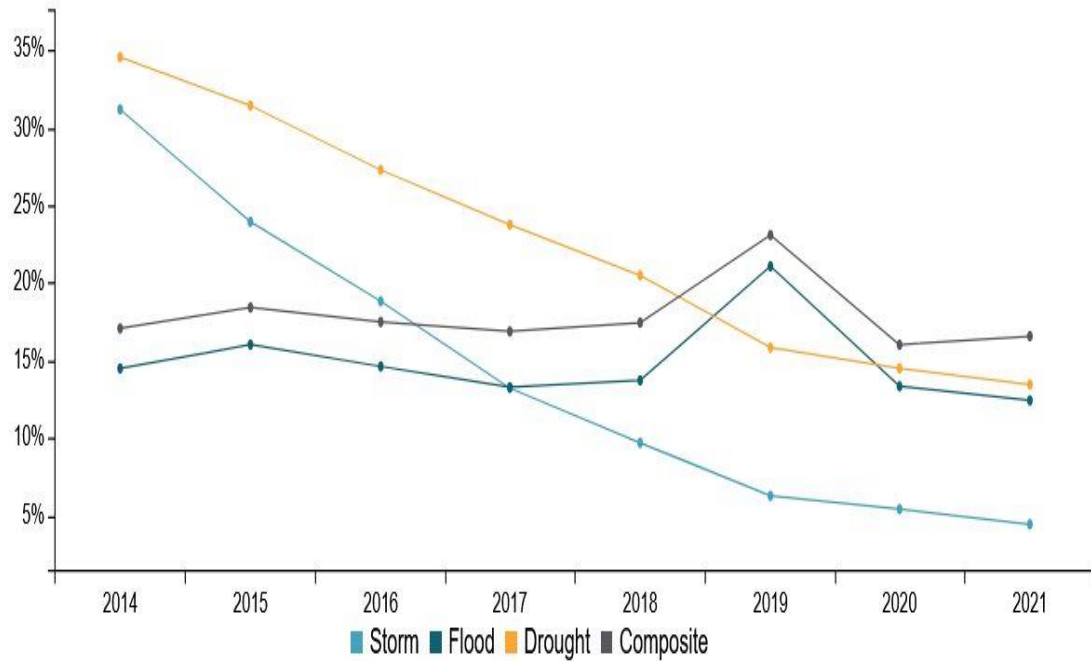


1. Cambodia Vulnerability to Climate Change (cont.)

気候変動に対する脆弱性

Percentage of vulnerable communes per province National v

Highly vulnerable

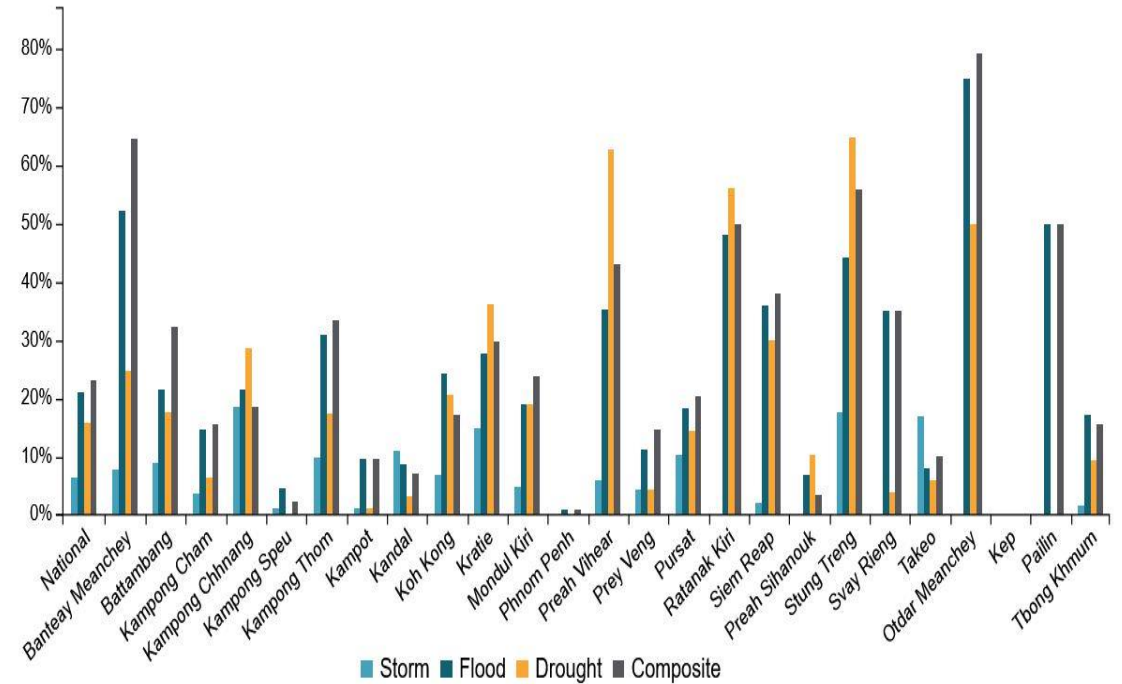


台風・洪水・干ばつ・合計 の脆弱性 (%)

Percentage of Vulnerability Communes per province

Percentage of vulnerable communes per year 2019 v

Highly vulnerable



台風・洪水・干ばつ・合計 の脆弱性 (%)

Percentage of Vulnerability Communes per year 2019

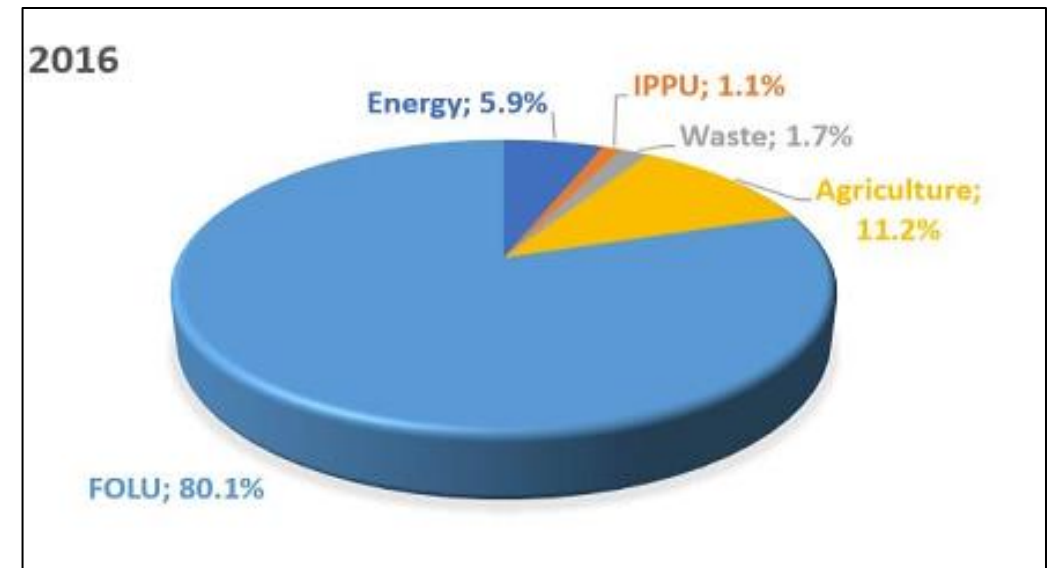
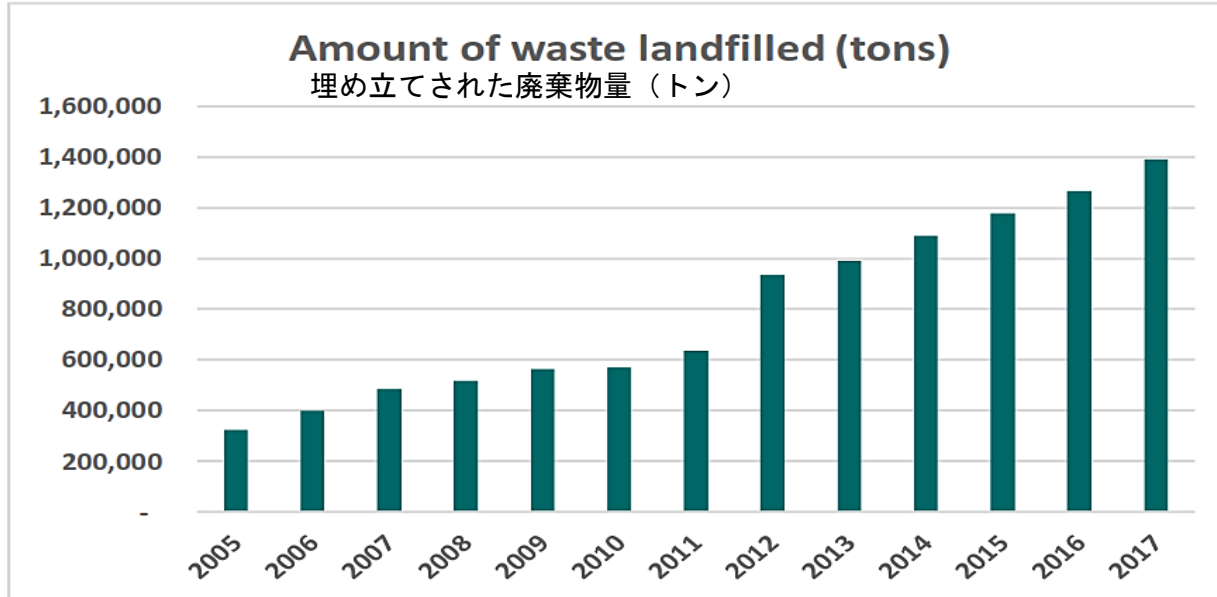


2.2. Current Status of Waste Management

廃棄物管理の現状

- Waste disposal in Cambodia has notably improved over the past decade, with a more than doubling of waste disposed in landfills between 2005 and 2017 (MoE, 2018).
- Organic waste is the largest component of waste with an estimated national average of 51.9% (GSSD/MoE, 2020).

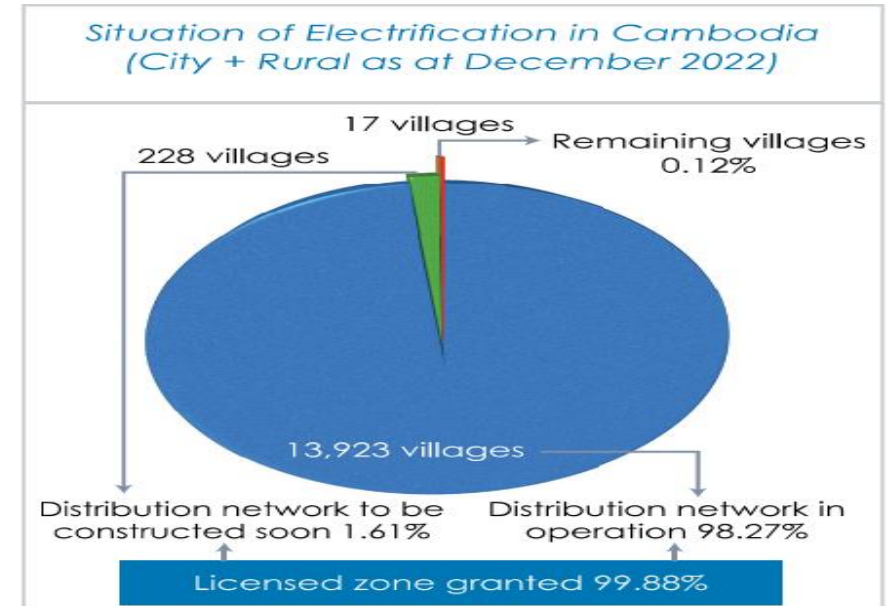
- Waste sector is one of the major sources of GHG emissions, representing 1.7% of total GHG emissions in 2016.
- However, the technology of waste to energy and waste management are still insufficient.
- In rapid urban growth, Cambodia faces an urban wastewater technologies and management.



2.3. Current Status of Electricity Supply

電気供給の現状

- In total, 245 villages have no access to electricity as of 2022 and these villages are mostly located on islands, flooded areas during the rainy season, areas without road access, floating areas, and remote areas with scattered populations (Electricity Authority of Cambodia, 2022).
- It could be promoted alternatives for energy efficiency to reduce economic burden and the carbon footprint of the households in rural and urban areas, especially urban poor communities.
- Improving the public lighting at the night in urban areas by installing the Solar energy saves the expenses on electricity.
- The alternative energy sources for cooking or the alternative cooking stove is recommended as this is one of the major expenses in the households and potentially produce bad air quality.



カンボジアではまだ245の村が電気へのアクセスがなく、うち多くが離島あるいは雨季に浸水し道路インフラが整備されていない地域。経済負荷・環境負荷の小さい代替エネルギーが地方や都市の低所得コミュニティに求められている。都市部の街灯に太陽光、また薪ストーブに代わるクリーンなエネルギーが求められている。

2.1. Current Status of Rain/flood Issues

雨と洪水の現状

- Rain/flood is happening more frequently and intensely. In July 2023, heavy rain caused flooding in many provinces in Cambodia and affected thousands of families and households, roads, and crops.



- Cambodia has limited financial resources and capacity to build houses, infrastructure, and irrigation systems that are resilient to climate change and extreme weather events.
- During the dry season, there is a shortage of water supply that could promote a technology for rain harvesting.



The current flooding in Kep Province of Cambodia in July 2023



カンボジアでは大雨とそれに伴う洪水の頻度と規模が増加しており多くの市民やインフラが被害を受けているが、気候変動に強い住宅・インフラ・灌漑などをつくる能力が不足している。乾季には水不足となり雨水利用の技術が求められている。

3. Cambodia's Updated NDC

カンボジアの削減目標

Sector	Sectoral share (%)	GHG emission reduction (MtCO _{2e})
FOLU	59.1	38.1
Energy	21.3	13.7
Agriculture	9.6	6.2
Industry (IPPU)	9.1	5.9
Waste	0.9	0.6
Total	100%	64.6

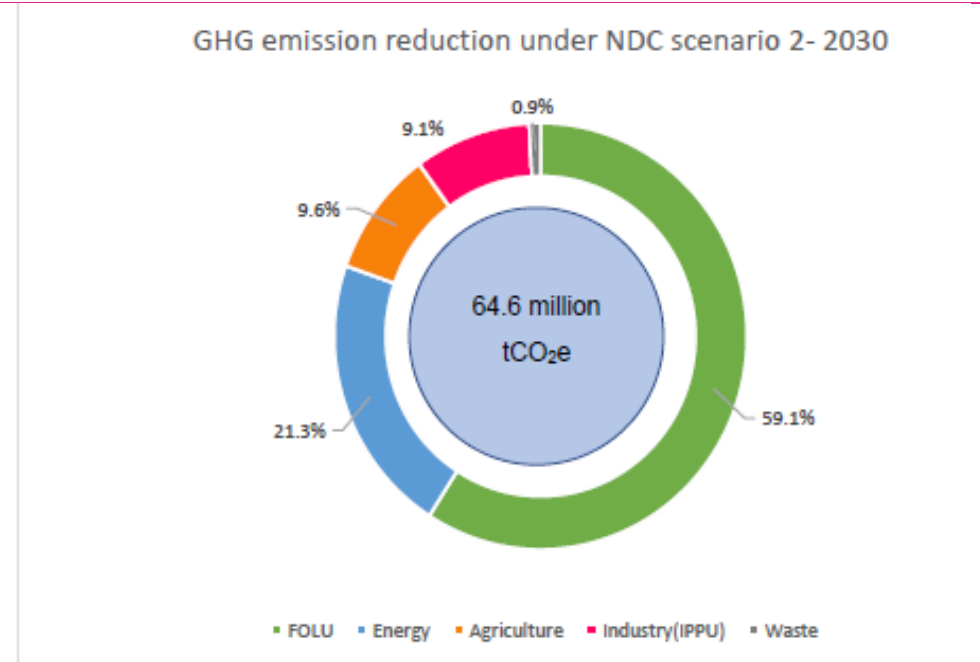


Figure 17 GHG emission reduction under the NDC scenario 2 in 2030
Source: NCSD (2020)

The emissions reduction of 64.6 million tCO_{2e}/year is expected by 2030. This is a 41.7 % reduction compared with the BAU case.

2030年までに「41.7%の温室効果ガス削減を目指している。

3. Cambodia's NDC updated (cont.)

カンボジアの削減目標

58 prioritized adaptation actions in NDC Updated

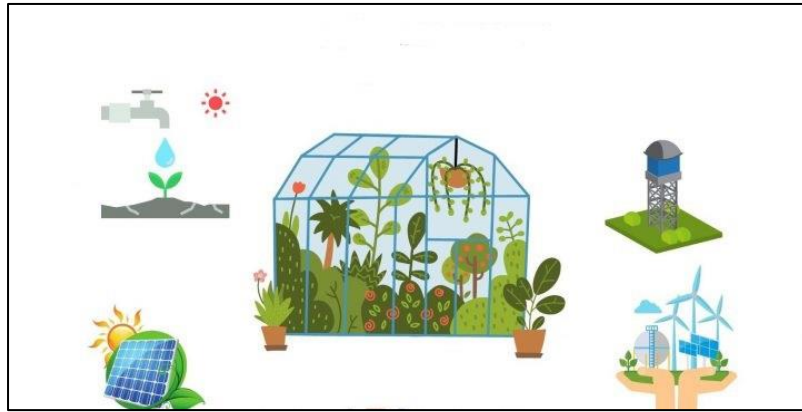
- Agriculture, including agribusiness, animal health, and production/ agriculture energy, and agriculture/gender (17 actions)
- Coastal zones (2 actions)
- Energy (2 actions)
- Human health (5 actions) including Industry (1 action)
- Infrastructure – including roads, buildings, and urban land use planning (15 actions)
- Livelihoods, poverty, and biodiversity (7 actions)
- Tourism (3 actions)
- Water resources (6 actions).

農業（アグリビジネス・畜産・加工を含む）、沿岸、エネルギー、健康、インフラ、貧困、生物多様性、観光、水資源などの分野で計58の優先的な気候変動適応行動を選定

3. Cambodia's Updated NDC (cont.):

Adaptation Technology Needs

カンボジアの削減目標と適応分野に求められる技術



Climate Smart Practice



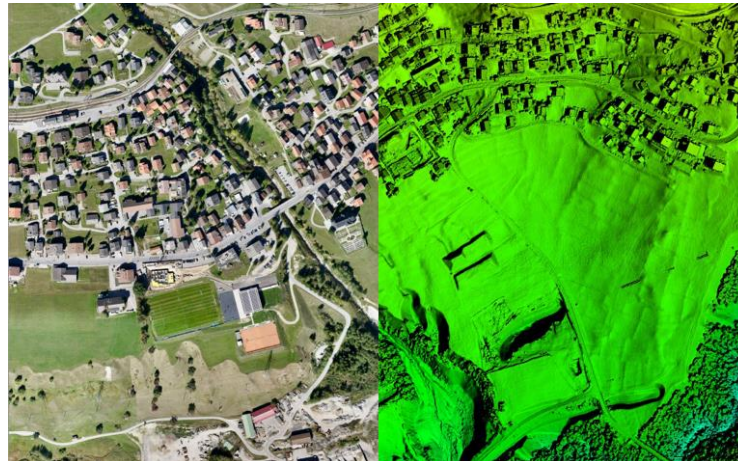
Real-time weather forecasting system



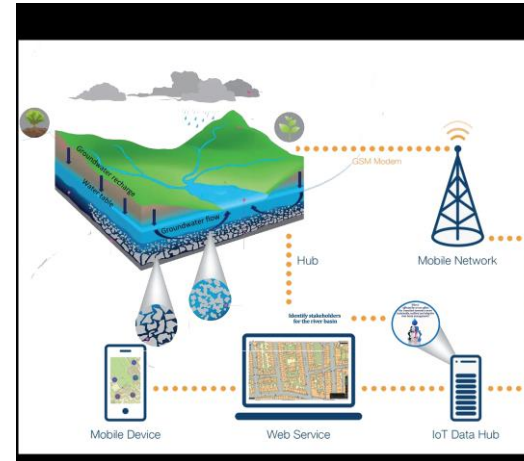
Renewable Energy and Energy Efficiency



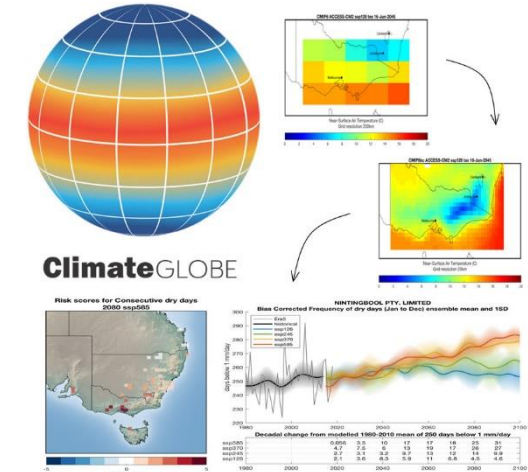
Climate Proof Infrastructure



Land Survey Technology



Groundwater analysis and monitoring technology



Climate hazard/ risk modelling

3. Cambodia's Updated NDC (cont.)

Financial Requirements for Implementing proposed Actions

カンボジアの削減目標と実施に必要な費用

- Mitigation Actions 削減行動

Sector	Estimated finance necessary (million US \$)
Agriculture	49.4
Energy	672.1
Forestry	3,466.4
Industry	78.7
Waste	1490.3
Transport	10.6
General ²⁵	3.1
TOTAL	5,770.6

Source: Ministries' submissions

- Adaptation Actions 適応行動

Sector	Estimated finance necessary (US \$)
Agriculture	306,268,600
Coastal zones	72,000,000
Enabling actions	21,050,000
Energy	322,000
Human health	467,685
Industry	Not reported
Infrastructure	957,990,000
Livelihoods, poverty and biodiversity	211,125,000
Tourism	2,500,000 (as minimum)
Water resources	468,798,900
TOTAL	2,040,522,185

4. The Collaboration between the Ministry of Environment and UN-Habitat

カンボジア環境省と国連ハビタットの連携事業

- **Project: Urban Ecosystems-based Adaptation** 都市のエコシステムに基づく適応プロジェクト
 - 4 years (2019-2022), US\$6m regional project, extended to June 2024
 - **Component 1:** Institutional strengthening and capacity building of city management authorities in pilot cities to plan and implement urban EbA
 - **Component 2:** Demonstration of urban EbA interventions in pilot cities
 - **Component 3:** Disseminating knowledge and raising public awareness on urban EbA in pilot cities.
- **Project: Enhanced Actions to Respond to Climate Change through Sustainable Waste Management (2022-2023)** 持続可能な廃棄物管理を通じた気候変動対策プロジェクト
 - ❖ **Overall objective:** Supporting the Government efforts towards improving the management of wastewater treatment systems and solid waste, through a series of actions that will also contribute to the protection the coastal environment.

5. Proposed areas for potential collaboration in climate change adaptation by Japanese technology under collaboration between the Ministry of Environment and UN-Habitat

求められる日本の技術と連携の可能性

- Continue cooperate with UN-Habitat:
 - Climate change adaptation related human settlements and small-scale infrastructure in the coastal areas of Cambodia,
 - Urban Ecosystem-based Adaptation,
 - Climate smart waste and water resources management,
 - People participation in conservation/protection areas and livelihood improvement.

- Utilize Japanese robust technologies in clean energy and ICT, to improve energy efficiency in communities and public facilities as part of the green building development;

- Promote public participation and private sector engagement for climate adaptation and resilient urban future in Cambodia.

国連ハビタットとの連携の継続、日本の革新的な技術の活用、市民参加と官民連携による気候変動適応とカンボジアの強靱な都市の未来を目指す取り組み



Thank You



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