Challenge of climate change in public health: Southeast Asia perspectives

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Outline of my talk

❖ Global Climate Change
❖ Climate Change situation in Southeast Asia countries
❖ Climate Change and Health Impacts
❖ How to respond?
Global Situation of Climate Change

Climate change is already affecting every inhabited region across the globe with human influence contributing to many observed changes in weather and climate extremes.

Source: IPCC AR6 report
Heavy precipitation

Source: IPCC AR6 report
Agricultural and ecological drought

(c) Synthesis of assessment of observed change in **agricultural and ecological drought** and confidence in human contribution to the observed changes in the world’s regions

Type of observed change in agricultural and ecological drought
- Increase (12)
- Decrease (1)
- Low agreement in the type of change (28)
- Limited data and/or literature (4)

Confidence in human contribution to the observed change
- High
- Medium
- Low due to limited agreement
- Low due to limited evidence

South East Asia
IPCC’s report found that human activity was “unequivocally” to blame for increasingly harsh climate events. Indonesia plans to achieve net-zero by 2060 and Thailand set a goal to be net-zero by 2065.

- Southeast Asia facing calamitous weather extremes as 1.5°C global warming to hit by 2030s: IPCC report

**Heatwaves**

**Floods**

**Drought**

Net zero GHG (Green House Gas) emission
How is the situation of SEA country?

https://www.nci.noaa.gov/access/monitoring/monthly-report/global-regions/202113
Code red for humanity

- It warns of a future of increasingly extreme heatwaves, droughts, fires and flooding.
- But it also shows how the worst impacts can be avoided if the world acts fast to cut greenhouse gas emissions.

Source: AR6 (IPCC), 2022
Temperature change

MAY 2009

MAY 2020

Maximum temperature
Temperature change

JAN 2009

JAN 2020

Feb

Mar

Minimum temperature
Temperature change in Thailand
Cooperative Research Project:

**Climate Change and Human Health in Asia:**
Current Impacts, Future Risks, and Health Benefits of Mitigation Policies

Research Team:

Our team members (Australia, Japan, Thailand, and Philippines) have already established a solid foundation for collaboration to assess the impacts of climate change on human health.

- **Australia**
  - Well-known for development of large international collaboration, advanced statistical modelling, future projection for extreme climate events, assessing the health co-benefits of climate mitigation policies, and research translation

- **Japan**
  - Recognized for climate change and human health

- **Thailand**
  - Good at environmental health risk assessment

e-ASIA Joint Research Program (e-ASIA JR)
**Emission scenarios**

**SSP126**: represents a strong mitigation pathway for achieving the warming target of the Paris Agreement.

**SSP245**, **SSP370** and **SSP585**

**Current situation** (2015-2020)

If it is worst scenario (SSP585)

**ISIMIP3**

**ISIMIP3b** (GCM-based quantification of impacts at different levels of climate change)

**GCM downscale**
A case of Cambodia

SSP126: represents a strong mitigation pathway for achieving the warming target of the Paris Agreement.

SSP245, SSP370 and SSP585

ISIMIP3

ISIMIP3b (GCM-based quantification of impacts at different levels of climate change)
SSP126: represents a strong mitigation pathway for achieving the warming target of the Paris Agreement. SSP245, SSP370 and SSP585
State of Climate Change

Exposure

- Impacts

Health Outcomes

Source: Haines, 2019
Global heating: an urgent call for action to protect health

This century is a special one, where we as humans destroy ourselves.” The Countdown is our best chance of putting health at the center of a response to protect human wellbeing.
The **reliable data has impeded** the evaluation of the health impacts of climate change. Greater **international and multidisciplinary collaborations** are necessary to inspire more studies on the **assessment of health impacts** and the development of adaptation strategies in low- and middle-income countries.
Heat-related mortality: an urgent need to recognise and record

National mortality records in Australia suggest substantial under-reporting of heat-related mortality. Less than 0.1% of 1.7 million deaths between 2006 and 2017 were attributed directly or indirectly to excessive natural heat (table). However, recent research indicates that official records underestimate the association at least 50-fold.

http://www.thelancet.com/planetary-health

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Mortality risk attributable to high and low ambient temperature: a multicountry observational study

Antonio Gasparrini, Yuming Guo, Masahiro Hashizume, Eric Lavigne, Antonella Zanobetti, Joel Schwartz, Aurelio Tobias, Shilu Tong, Joacim Rocklov, Bertil Fosberg, Michela Leone, Manuela De Sario, Michelle L Bell, Yue-Liang Leong Guo, Chang-fu Wu, Haidong Kan, Seung-Muk Yi, Micheline de Sousa Zanotti Stagliorio Coelho, Paulo Hilario Nascimento Saldiva, Yasushi Honda, Ho Kim, Ben Armstrong

Interpretation

We report that non-optimum ambient temperature is responsible for substantial excess in mortality, with important differences between countries. Although most previous research has focused on heat-related effects, most of the attributable deaths were caused by cold temperatures. Despite the attention given to extreme weather events, most of the effect happened on moderately hot and moderately cold days, especially moderately cold days. This evidence is important for improvements to public health policies aimed at prevention of temperature-related health consequences, and provides a platform to extend predictions on future effects in climate-change scenarios.
This study provides a comprehensive characterization of future heatwave-related excess mortality across various regions and under alternative scenarios of greenhouse gas emissions, different assumptions of adaptation, and different scenarios of population change. The projections can help decision makers in planning adaptation and mitigation strategies for climate change.
The accelerated action on adaptation and mitigation are essential to prevent the worst health impacts from climate change. Importantly, mitigation could also deliver significant health co-benefits from cleaner air, more plant-based diets, more active lifestyles, and healthier and more livable cities, representing the “biggest global health opportunity of the century”
Thailand Climate Change Master Plan

Climate Change Master Plan
2015-2050

Source: ONEP
Climate Change Master Plan 2015-2050

CCMP 3-Key Approaches

- Adaptation
- GHG Mitigation
- Capacity Building

fac.org/in-action/naps | adaptation-undp.org/naps-agriculture | international-climate-initiative.com
Climate Change Master Plan 2015-2050

Climate Change Adaptation Approach

- Flood, Drought, and Water Management
- Agriculture and Food Security
- Tourism
- Public Health
- Natural Resource Management
- Human Settlement and Security

Source: ONEP
Required research

• Develop methods to apply possible **global-scale changes** in air temperature and precipitation patterns to **local-scale** conditions that affect air quality

• Understand the influence of **climate change on fine particulate matter and other air pollutions**.

• Identify **co-benefits of reducing air pollutants** that also reduce the **impacts of climate change**.

• Understand **how mitigation options** to reduce carbon dioxide, a greenhouse gas, can affect emissions of particulate matter, ozone, precursors, and other air pollutants.
Thank you
Thank you