Adaptation initiative in Indonesia and impact assessment on agriculture

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Background

• Mr. Abe, the prime minister of Japan, promised to support adaptation planning and actions in developing countries in his speech of the UN Climate Summit 2014 — “Japan’s Adaptation Initiative”

• Indonesia was selected as the first country where the initiative is implemented.

• A research team was organized and a research project, funded by MOEJ, has started in Jun 2015.
  — 3 years project (until Mar. 2018)
National Adaptation Plan (NAP) in Indonesia

- The Indonesia Climate Change Adaptation Strategy and Action Plan (RAN-API) has been developed and launched in February 2014.
  - Identifies climate change and its impacts
  - Provides policy direction
  - Explains implementation mechanism
    - coordination and funding
    - monitoring, evaluation, review, and report
  - Pilot sites selection
    - to develop local adaptation strategy and plan

The next step is to develop Regional Adaptation Plan (RAP)

<table>
<thead>
<tr>
<th>Risks</th>
<th>Sumatra</th>
<th>Java-Bali</th>
<th>Kalimantan</th>
<th>Sulawesi</th>
<th>Nusa Tenggara</th>
<th>Maluku</th>
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<tr>
<td>Decrease in water availability</td>
<td>M, H, VH</td>
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<td>Decrease in rice production</td>
<td>H, VH</td>
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<td>Forest fires</td>
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*Note: L: Low; M: Moderate; H: High; VH: Very High*
Objective and process

• Give **scientific evidence** on regional future CC impacts and to develop effective adaptation scenarios
  – in North Sumatra, East Java, and Bali

• **Capacity building** for sustainable planning and actions on adaptation

• Develop a **guideline** for developing regional CC adaptation strategy
  – to apply the strategy to other countries and regions
Team members

• The University of Tokyo:
  ✓ Coordination of the and communication with MOEJ
  ✓ Impacts assessment on health impact

• National Institute for Environmental Studies (NIES):
  ✓ Future climate projections based on climate models

• Ibaraki University:
  ✓ Impact assessments on agriculture

• Nippon Koei:
  ✓ Overall coordination and guideline development
  ✓ Impact assessments on water resources

• Local consultants (Profs. Pasaribu and Osawa):
  ✓ Support and coordination of field survey etc.
Agricultural Impact Assessment by Ibaraki Univ.
Abstract of our activity

1. Purpose
   I. Regional assessments of climate change impacts and adaptation effects on agriculture in Indonesia

2. Target provinces
   I. Bali, North Sumatra, East Java.
      a. over Indonesia, if possible.

3. Target crops
   I. Rice
   II. Other crops
Today’s topics

① Analyze climate-rice production relationship at Bali islands
② Develop a statistical model based on the relationship on Bali islands
③ Correlation of ENSO and IOD with monthly precipitation over Indonesia
Climate and crop data

① Climate data
- A global-scale climate data: WFEDI provided by ISI-MIP project.
  - We are trying to get down-scaled climate data from BMKG.

② Rice production data
- We collected rice production data at a district level from AIAT and DINAS.

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Climate in Bali

Monthly precipitation

Yearly precipitation

Monthly temperature

Yearly temperature
Rice production in Bali
Analysis of climate-rice production

- We found that
  1. positive correlation between precipitation and rice production
  2. negative correlation between temperature and rice production
Model development

- **Multivariable Linear Model**
  
  \[ \text{Pro} = a \times \text{Pre} + b \times \text{Tmp} + c \]

The model can accurately predict rice production using precipitation and temperature.

![Production anomaly at Bali](image-url)

- **R** = 0.600 **

The model can accurately predict rice production using precipitation and temperature.
Correlation of ENSO and IOD with monthly precipitation

1. Information at a district level is useful for local policy making and adaptation
2. Using ENSO and IOD prediction, we can easily predict precipitation
Nest steps

① Climate data
  – We are trying to get down-scaled climate data
  – We will re-develop the model

② Impact assessment
  – Using the model and future climate projections
  – You will see it soon!
Thank you for your attention