

***“National experiences on  
integrating climate risk  
assessment (CRM) and DRR  
into national policies and  
programmes”***



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# Outline of Presentation

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## □ Introduction

- Climate related disasters and their impacts
- Current achievement on CCA and DRM:

□ NAP-CC ; an example of actions on disaster management

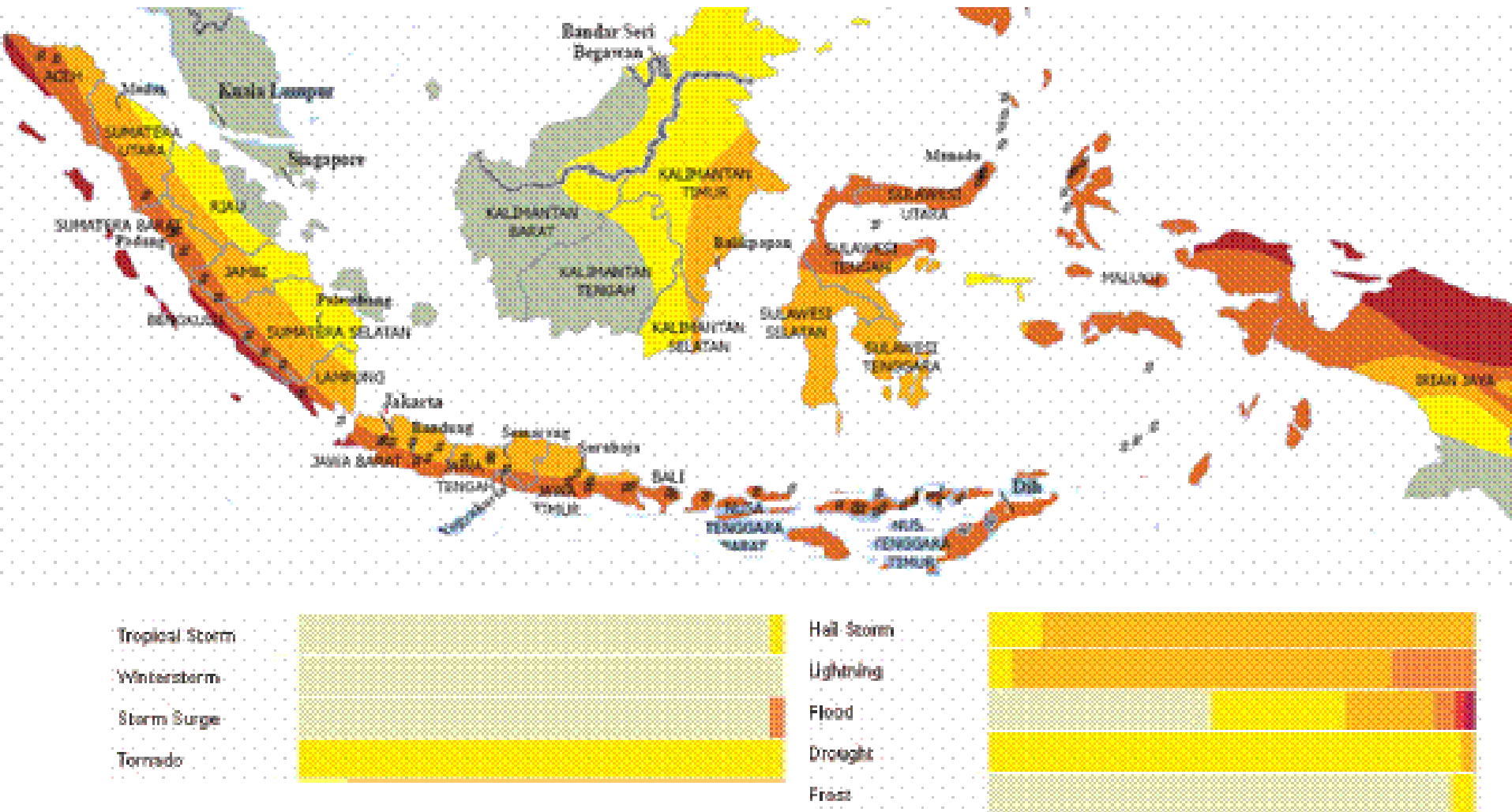
- Experience on technical aspect:

□ pilot activities: VA Assessment at local level and assisting local government on development planning

- Lesson learnt
  - Challenges
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# INTRODUCTION

Source: UN-OCHA (2006)

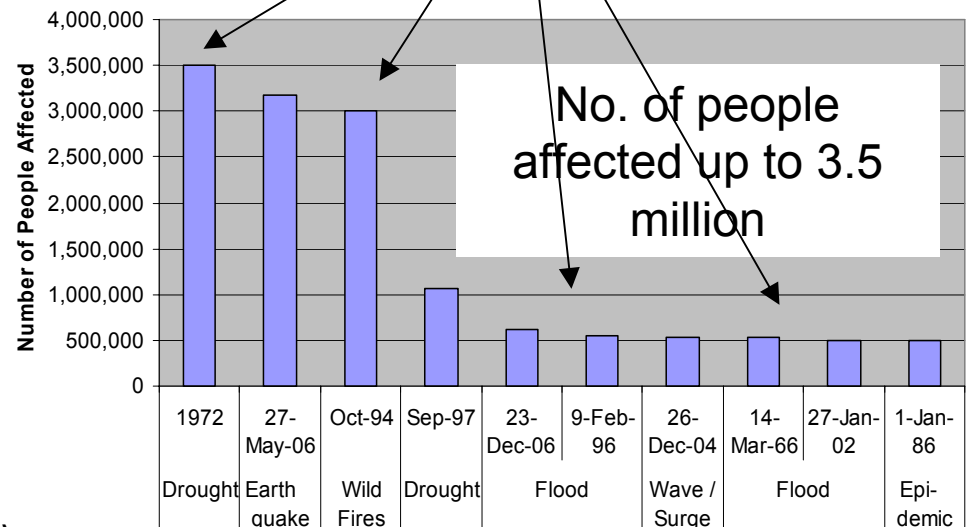
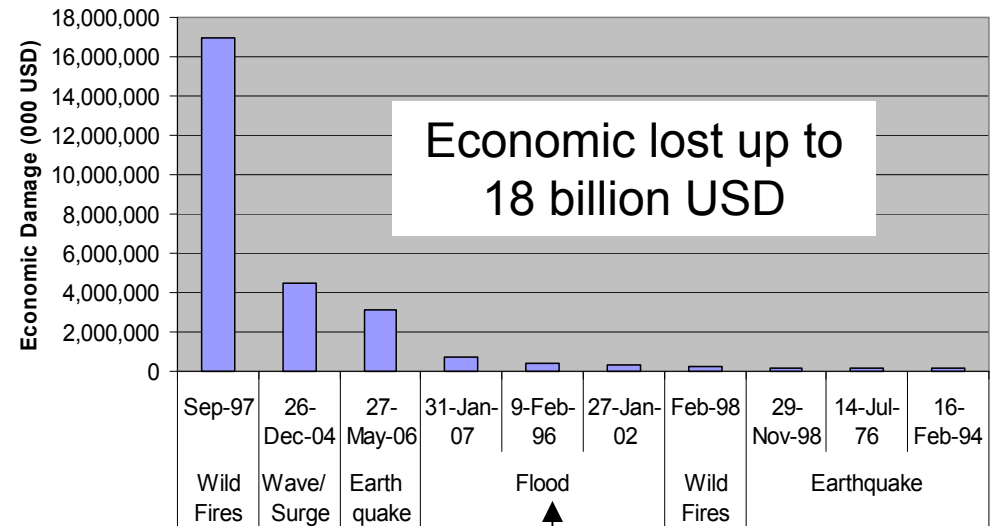


The bar charts show the degree of exposure to natural hazards and the percentage of area affected

none very high

# Natural Disasters in Indonesia (1907-2007)

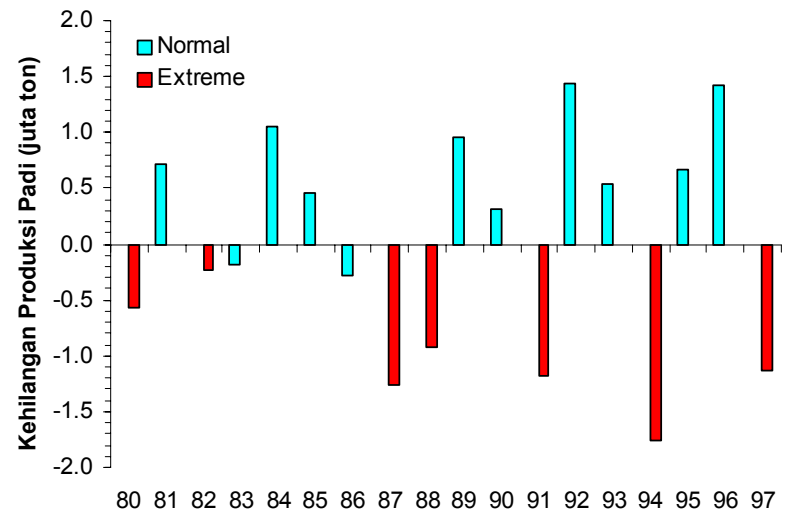
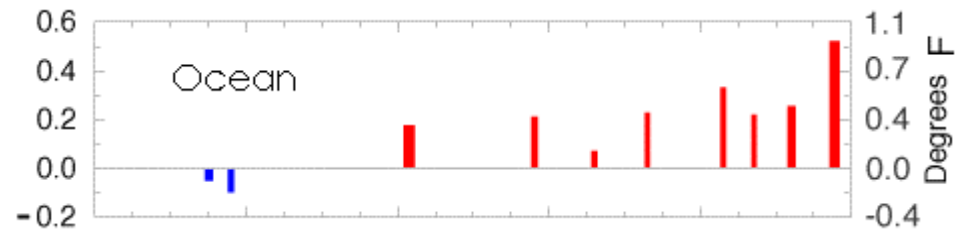
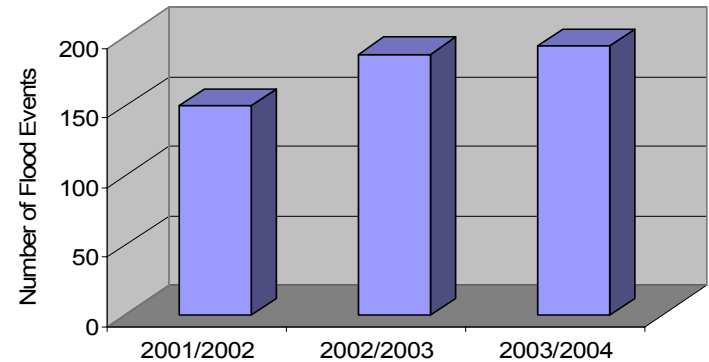
- The Top 10 natural disasters occurred in the period of 1907-2007 were mostly climate related disasters, i.e. flood, drought, fires
- Most of them occurred recently (1990s) indicating that the intensity and frequency of extreme climate events increased in the recent climate



Source: *The OFDA/CRED International Disaster Database (2007)*

# Low Adaptive Capacity to Climate Risks

- Intensity and frequency of climate extreme events increased
  - In the period 2001-2004, about 530 floods events is recorded (Boer et al., 2007)
  - Frequency of strong El-Nino events also increased (NCDC, NOAA)
- Loss due to hazards tended to increase. For example, rice production loss due to drought in the period 1981-1990 about 100 thousand tons per year and in the period of 1991-2000, it increased to 300 thousand ton per year per district (Boer and Las, 2003)



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# **Current achievement DRR and CCA**

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# CCA and DRM

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- ❑ CCA → Ministry of Environment
  - ❑ DRM → BNPB (National Agency for Disaster Management)
  - ❑ Program budgeting → National Development Planning Agency
  - ❑ Integration and coordination → by National Council for Climate Change (NCCC)
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# Action 1 of 5 (example)

To ensure DRR as national and local priority

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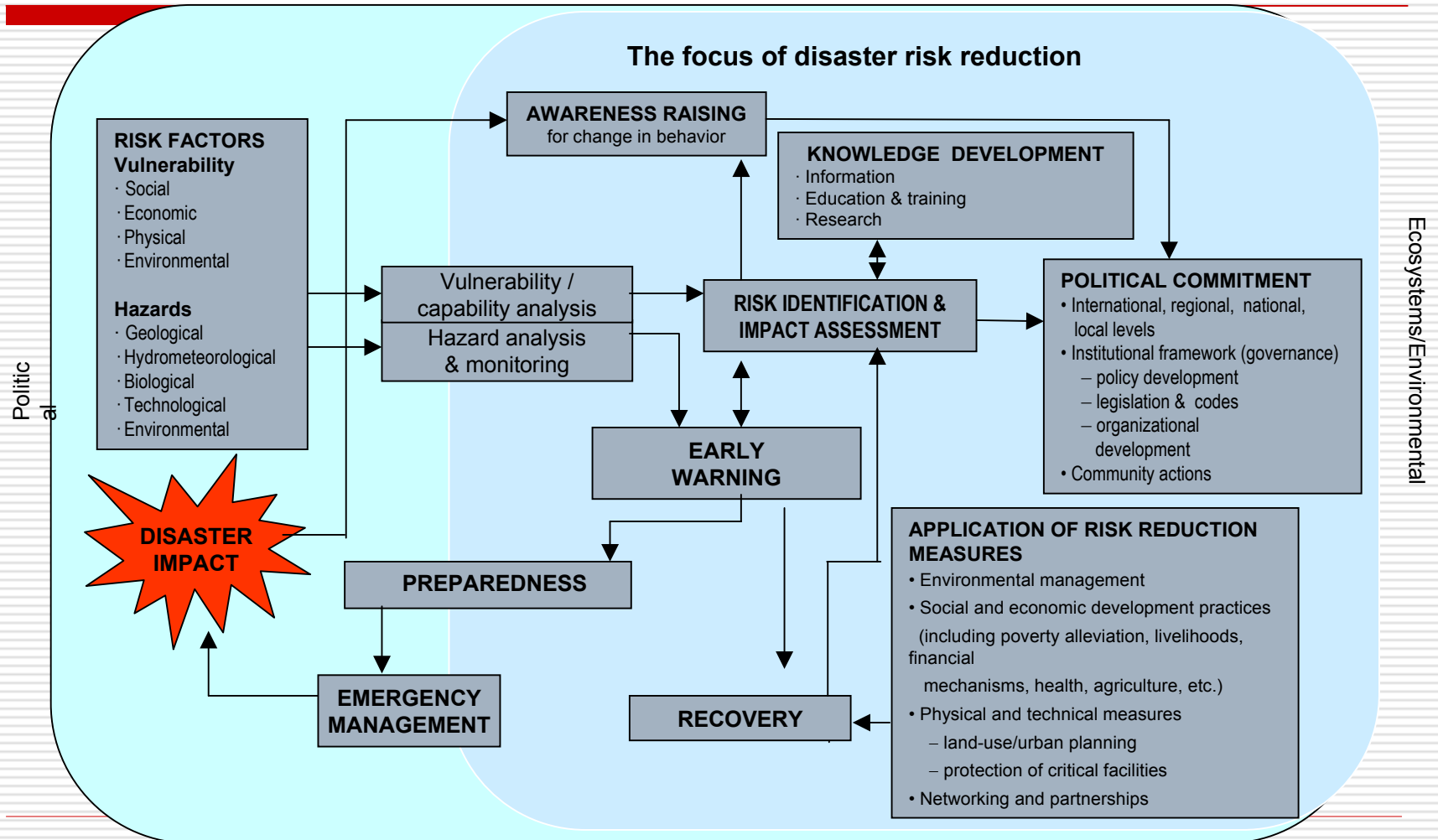
- Enactment of DM Law (No. 24/2007) and ancillary regulations:
    - Govt. Reg. no. 21/2008 (DM implementation)
    - Govt. Reg. no. 22/2008 (Funding & Disaster Relief)
    - Govt. Reg. no. 23/2008 (Role of Int'l Organization)
    - Local Regulation on Disaster Management
  - Establishment of DM Institutions:
    - Nat'l Agency for Disaster Management (BNPb)
    - Local Agency for Disaster Management (BPBD)
  - Formulation National Policy & Strategy for DM
  - Formulation of DM Planning
    - National
    - Local
  - Budget allocation for pre, during and post disaster (Bappenas and Min. of Finance)
  - Establishment of National Platform / Forum for DRR
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# Framework for Disaster Risk Reduction

## Sustainable development context

Socio-cultural



# Summary of DRR

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- ❑ Indonesia has adopted DRR in the DM Law (No. 24/2007)
  - ❑ Indonesia implement the five priorities of HFA, reflected in the National Plan for Action of DRR (2006-2009) and **will be renewed for 2010-2015.**
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# National Action Plan Addressing Climate Change (NAP- CC)

- Aim:
  - To be used as a **guidance for various institutions** in conducting a coordinated and integrated effort to climate change.
- The nature: **Dinamics**;
  - National Action Plan will be continuously evaluated and improved periodically with involvement of various stakeholders (key departments)

# Principle of National Development to Address Climate Change

1. Harmonization of all legal and policy instruments;
2. Integration and harmonization of space and the exploitation of public resources;
3. Harmonization of consumption pattern and sustainable production;
4. **Integration of mitigation and adaptation aspect along with its social-culture aspects.**

# National Development Strategy to Anticipate Climate Change

- *Triple track strategy, pro-poor, pro-job, and pro-growth, with pro-environment principle.*
- **Mitigation** Agenda: Development program should be firmly refer to target on reducing green house gas emmission and energy intensity from economic growth;
- **Adaptation** Agenda: **to achieve development pattern that resilient to the present impact of climate change and weather anomaly and anticipate the future impact.**

# Adaptation Agenda

- Adaptation to climate change is a **key aspect** that should become the **national development agenda** in order to develop development pattern that ***resilient to the impact of climate change and climate anomaly disturbance*** that occur today and anticipating its impact in the future.
- The long term objectives from climate change adaptation agenda is the ***integration of climate change adaptation*** into national development plan.

# Adaptation Agenda in the Strategy Development

## Immediate-Term

1. **Disaster risk reduction related with climate → community involvement**
2. Increase awareness and dissemination of climate change information.
3. **Improve scientific study on climate change and its impact**
4. **Review core policy** impacted by directly and indirectly by climate change
5. Integrate and mainstreaming climate change adaptation into infrastructure plan, conflict management, and groundwater management and water management institution.

# Adaptation Agenda in the Strategy Development

## Immediate-Term

6. **Modification on standard criteria for design and planning**, operating and maintenance water infrastructure and facilities
7. Mainstreaming climate change adaptation into policies and program of various sectors
8. Development of Climate Change Issue in High School and University curriculum
9. Development of monitoring system on weather, climate and hydrology to strengthen the accuracy of weather and climate forecasting throughout Indonesia.



# Adaptation Agenda in the Strategy Development

## Long and Medium Term

1. Development of resilient and perspective infrastructure system and spatial plan
2. **Re-arrange the regional spatial plan**, particularly coastal areas

# DRR relevant activities in MoE

- ❑ **Replication of VA Assessment and integration CCA into local devt planning**
- ❑ **Addressing current climate variability:**
  - **Guidance on disasters** (flood & landslides) **mitigation:**
  - Guidance on **flood preparedness:**
  - Guidance on **forest fires mitigation**
- ❑ **Training for the trainers and local government officials** (incl. Development the modules)

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Experience: technical aspects

**VA ASSESSMENT AND  
INTEGRATION INTO LOCAL  
DEVELOPMENT PLANNING  
PROCESS**

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# Objectives:

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- ❑ Conduct a **vulnerability assessment** on areas which are estimated highly impacted by climate variability and climate change
  - ❑ Obtain experience in CC **issue integration** into local development planning process;
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# Multi-stakeholders involvement

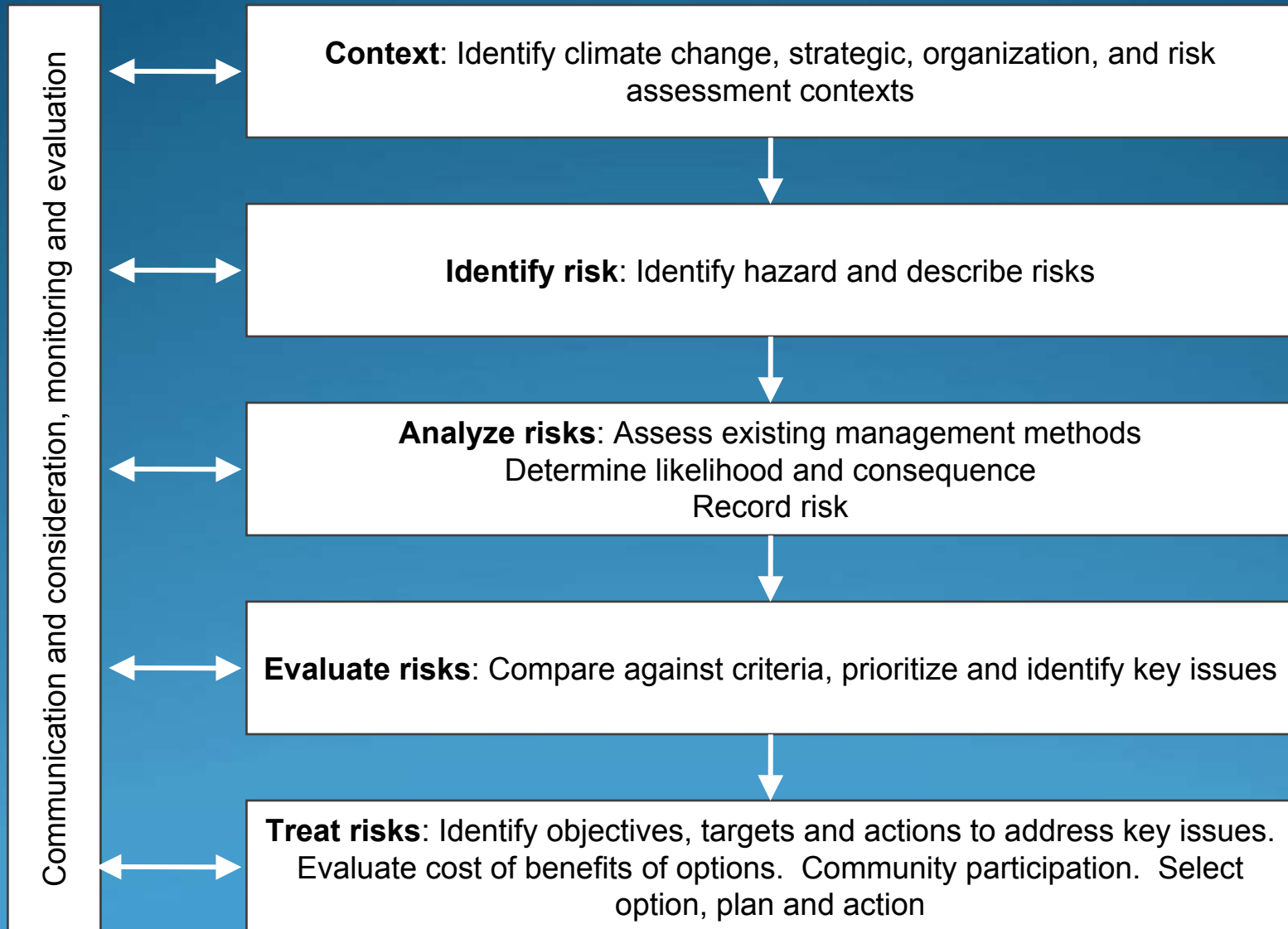
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- ❑ **KLH (Ministry of Environment Indonesia)**: main coordinator and overall management
  - ❑ **GTZ (German Technical Cooperation)**: support finance and management;
  - ❑ **WWF** (World Wide Fund for Nature): coordinate public consultation process;
  - ❑ **Change Climate Task Force of NTB Province** (independent-local multistakeholders): formulating draft CC policy and program;
  - ❑ **Local government**: coordinate CC Task Force and facilitating data collection
  - ❑ **Consultant/technical team**: conduct study and analysis
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# Activities included:

- data processing and analysis for climate projection
- assessment on vulnerable sectors
- Public consultation
- Synchronization/coordination with the Regional Mid-Term Development Planning Team
- analysis and reporting
- Support the drafting of adaptation strategy
- Drafting of Guidelines for Vulnerability Assessment at Province Level

# The Risk Assessment Process



# Proses Kajian Risiko Iklim

Partisipasi, monitoring dan evaluasi

**Identifikasi Sektor-sektor dan Infrastruktur Penting Rentan terhadap Perubahan Iklim**

**Analisa Ancaman/Bahaya Perubahan Iklim:  
Prediksi Kenaikan Suhu, Curah Hujan, Iklim Ekstrim dan Muka Air Laut**

**Analisa Kerentanan Sektor-Sektor Yang Diperkirakan Terkena Dampak**

**Analisa dan Evaluasi Risiko  
(GIS Mapping)**

**Perumusan Strategi Adaptasi Berdasarkan Risiko**

**Integrasi Strategi Adaptasi ke Dalam Kebijakan Pembangunan:  
RPJM, RPJP, RTRW**



# Climate Risk Assessment

Risk notation :

$$\text{Risk (R)} = \text{Hazard (H)} \times \text{Vulnerability (V)}$$

(Affeltranger, et all, 2006)

R = Climate Risk

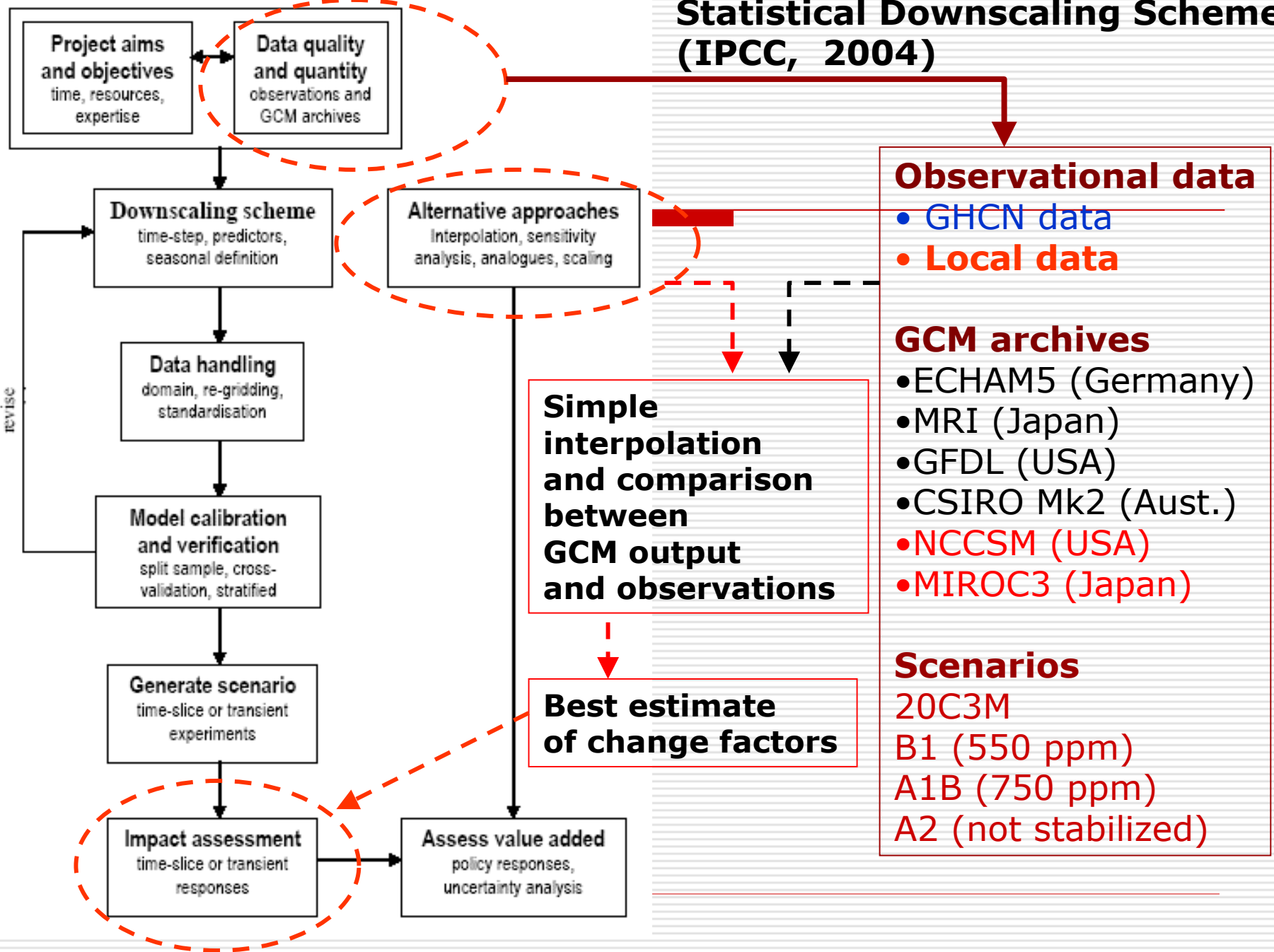
H = Climate Hazard: prediction of future climate and Sea Level Rise (SLR)

V = Vulnerability to main impacted sectors :

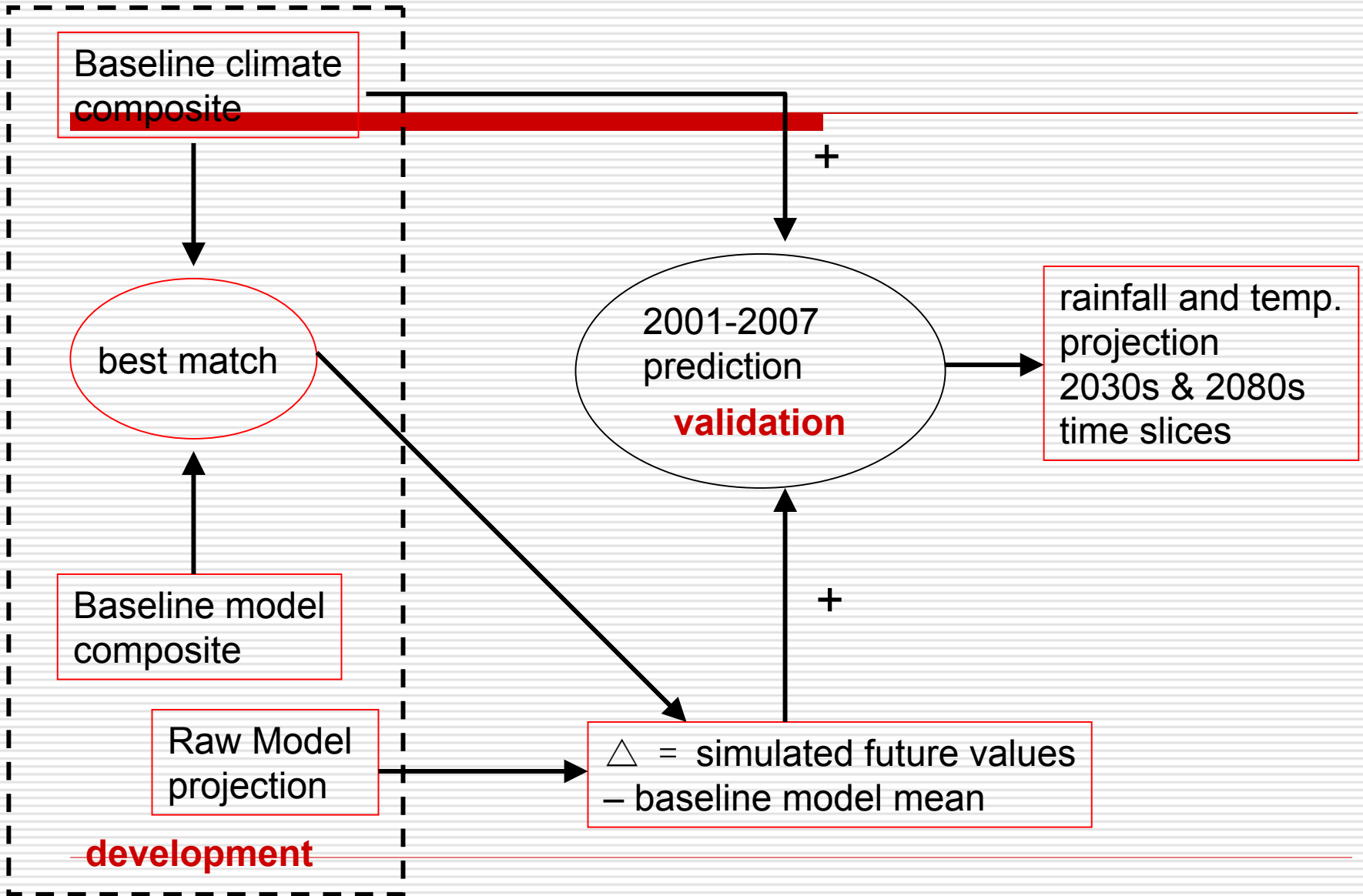
Coastal Zone, Agriculture, Water Resource, Forestry, and Health



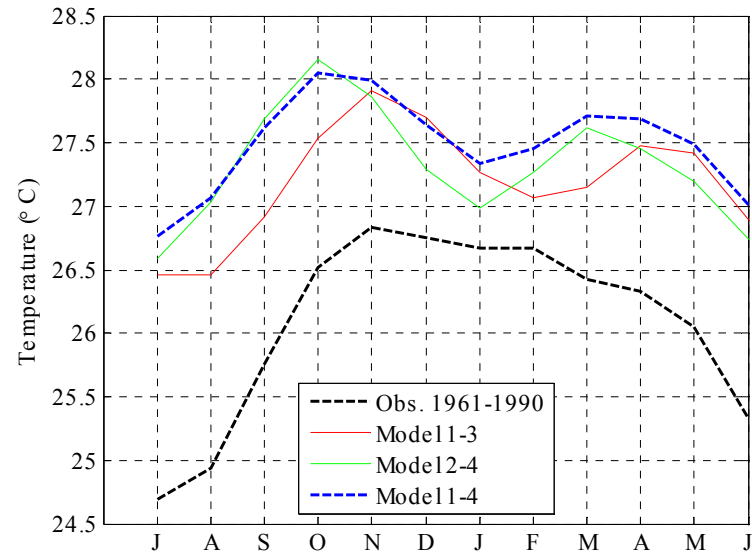
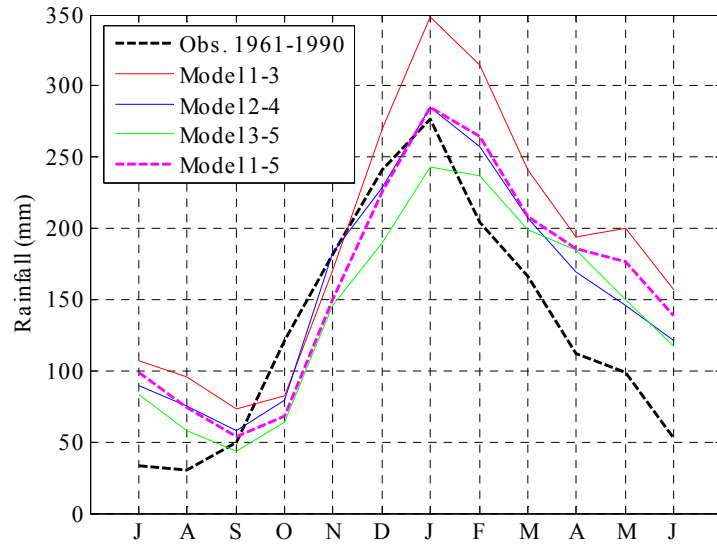
# Statistical Downscaling Scheme (IPCC, 2004)



# TOP-DOWN ANALYSIS : IPCC AR-4 CLIMATE PROJECTION



# TOP-DOWN ANALYSIS : IPCC AR-4 CLIMATE PROJECTION



Development step :

- Selected 5 models : **ECHAM5, GFDL2.0&2.1, MRI, CSIRO Mk.2**
  - Ensemble output from 5 models : rainfall and temperature
  - Composite of five models considered better than fewer models
  - **Exclusion of CSIRO model from temperature composite**
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## Some Results from Climate Analyses

### Bottom up analysis (recent climate change)

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- **Low risk from increase of temperature**
- **No risk from increasing or decreasing annual rainfall**
- **High risk from shifts in annual NDJF rainfall**  
(→ risk for agricultural sector)

### Top down analysis

#### 2030 :

- almost no risk from change in rainfall pattern
- probably low-to-moderate risk from increase of temperature

#### 2080 :

- moderate-to-high risk from change in rainfall pattern
  - moderate-to-high risk from temperature increase
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# Lesson learnt

- **Additional resources are essentially needed**
- **Need long time (30 years) valid climatic data** for downscaling development process in order to improve the level of accuracy for impacts studies at local level.
  - Lack on **Reliable data of climatic parameters**, particularly rainfall data;
  - Lack on **socio-economic data** for understanding detail impact of CC;
- **Integration into development planning process:**
  - **lack of understanding of planning officers** in each ministries;
  - **no special task** assigned to officers within line ministries for integration process
  - **Difficulty in quantification (economic valuation)** in

# Challenges

- **Harmonization programs/activities** of CCA and DRM (example through: South-south Cooperation)
- **Stimulate responsible institutions to generate and maintain data** for better/accuracy of assessments that lead to better decision making and planning process;
- **Practical tools and simple methods** are needed for local government



