Integrating CCA into Project Appraisal & Program Budgeting

The Case of Chao Phraya River Basin Flood Management Infrastructure Program

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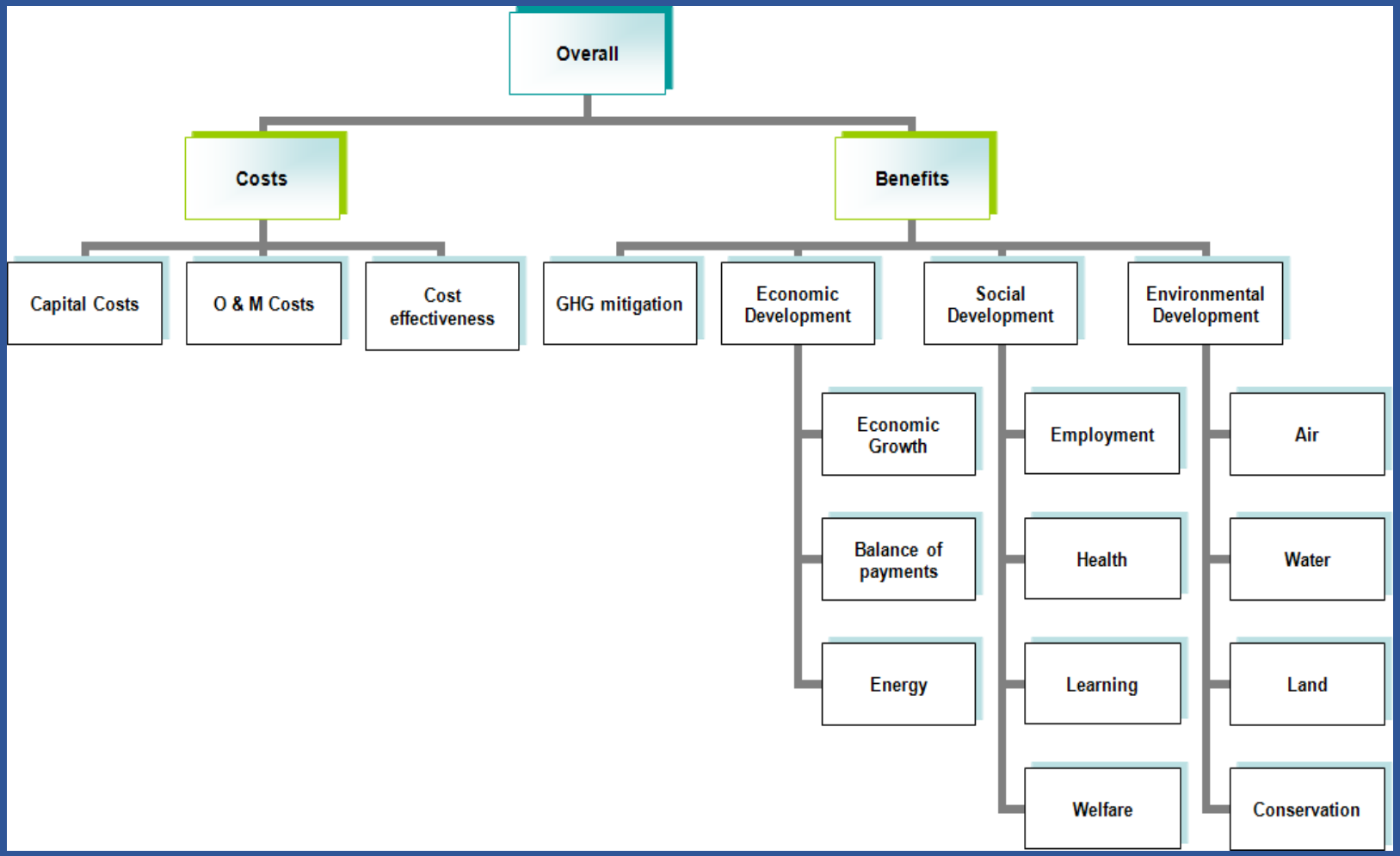
Menu of Appraisal Tools & Methods

Tool/Method	General thrust
Cost Effectiveness Analysis (CEA)	Measures cost in relation to an isolated outcome. Defines least-cost way to get result. More suitable to CC mitigation.
Cost Benefit Analysis (CBA)	Overall economic rationale, weighing both costs and benefit streams and effects on all outcomes.
Climate Change Benefit Analysis (CCBA)	Help identify and appraise public investment projects having positive climate change benefits.
Financial Analysis	"Bankability" in financial viability terms, i.e., investment return, debt-serviceability, pay-back time
General Equilibrium Analysis (CGE, IAM …)	Macro-economic effects
Multi Criteria Analysis (MCA)	Supports decision-making with broad view of impacts, often participatory application
Real Options Analysis	CBA with assessment of future flexibility
Robust Decision Making	Least likely to fail

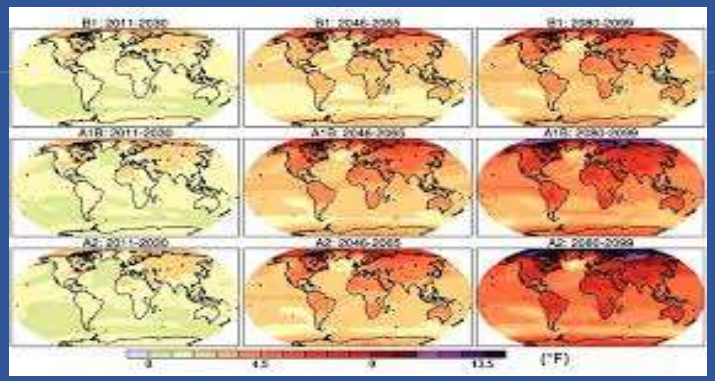
Model CBA & Multi Criteria Analysis

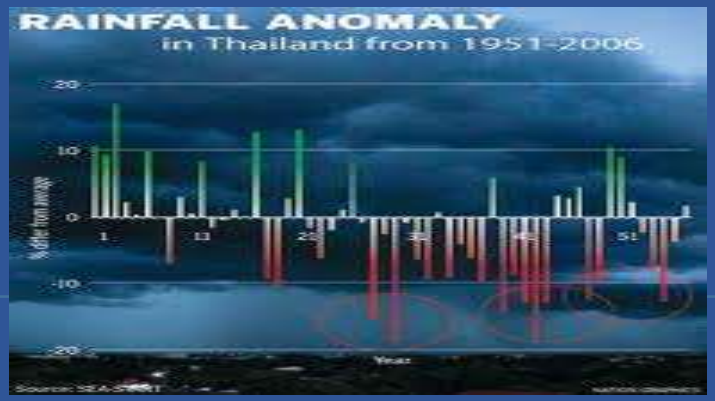


Examples from UNEP TNA Project

MoAC Projects for Pilot Analysis

Climate Change Risks



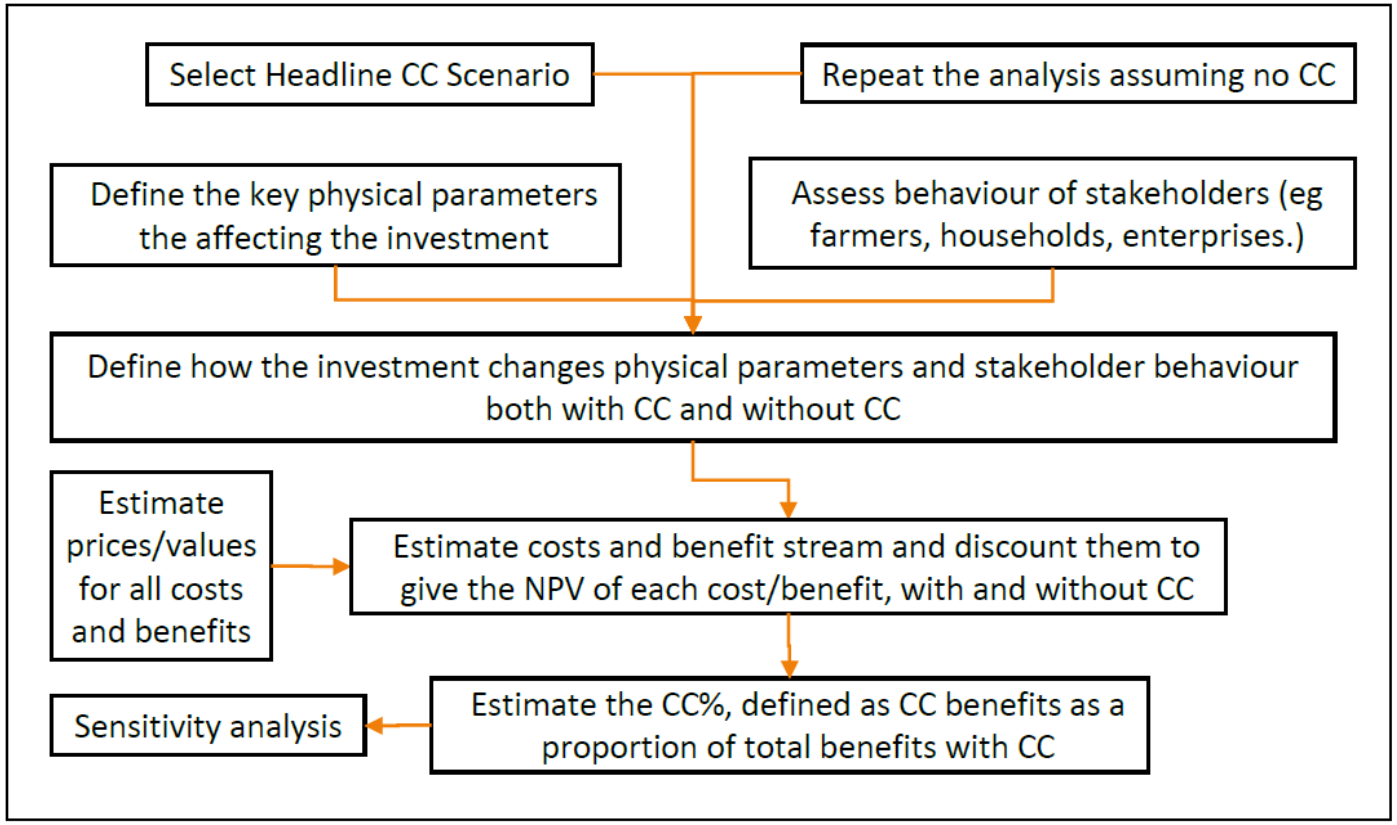


Benefit-Cost Ratio without Climate Change

Benefit-Cost Ratio with climate change

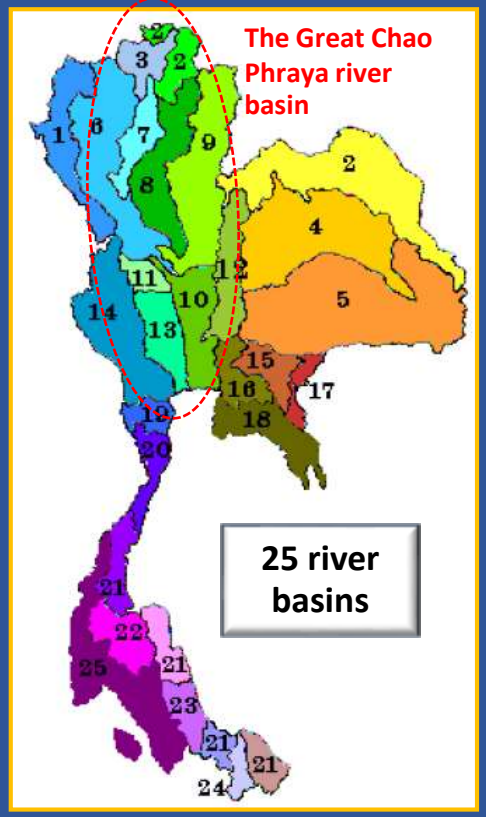
CBA for Climate Appraisal: Key Steps

Figure 4 Outline of Cost Benefit Analysis used for Climate Related Appraisal



© UNDP, 2015. "Climate Change Benefit Analysis Guidelines for Thailand"

Context

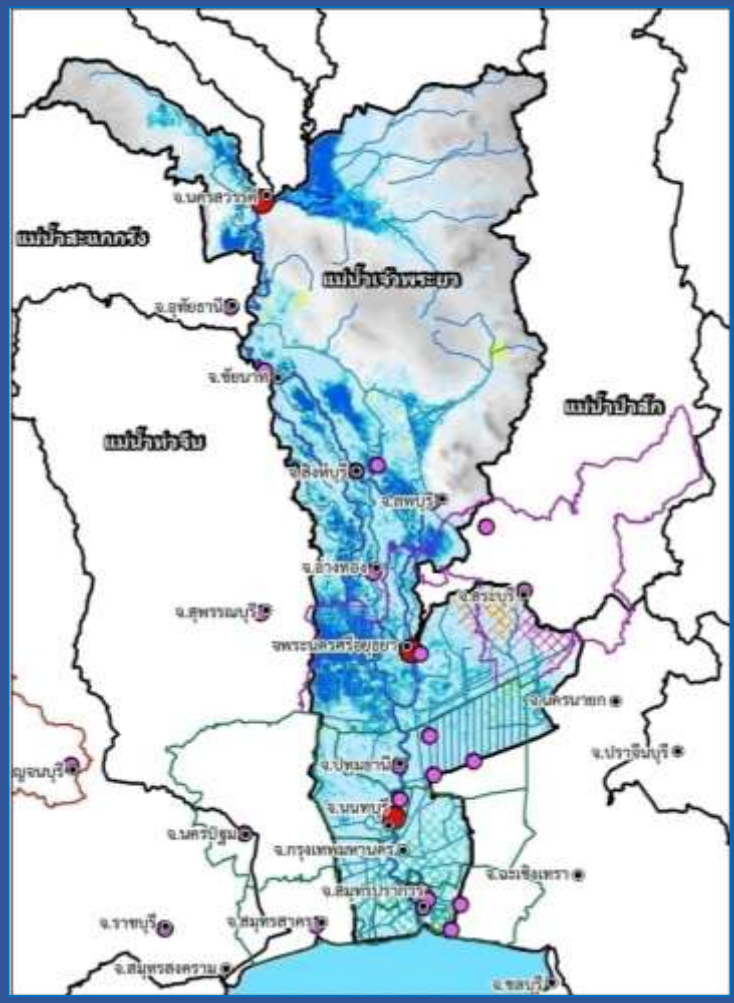


Total area: 2.03 Mha

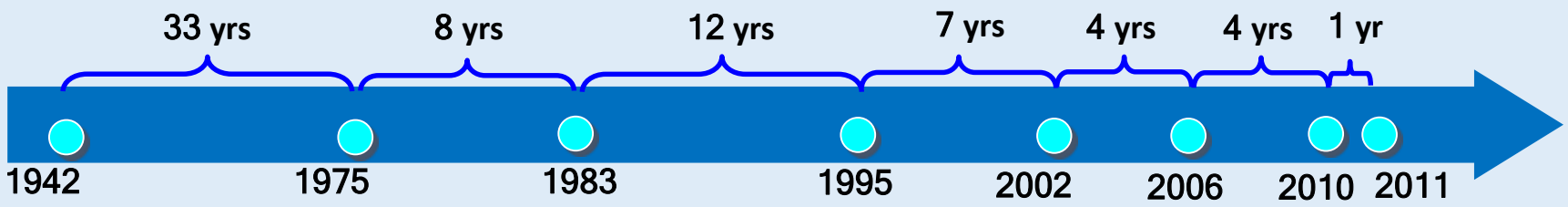
Flood risk:

-**Moderate [4-5 times/9yrs]**
0.16 Mha (8% of total area)

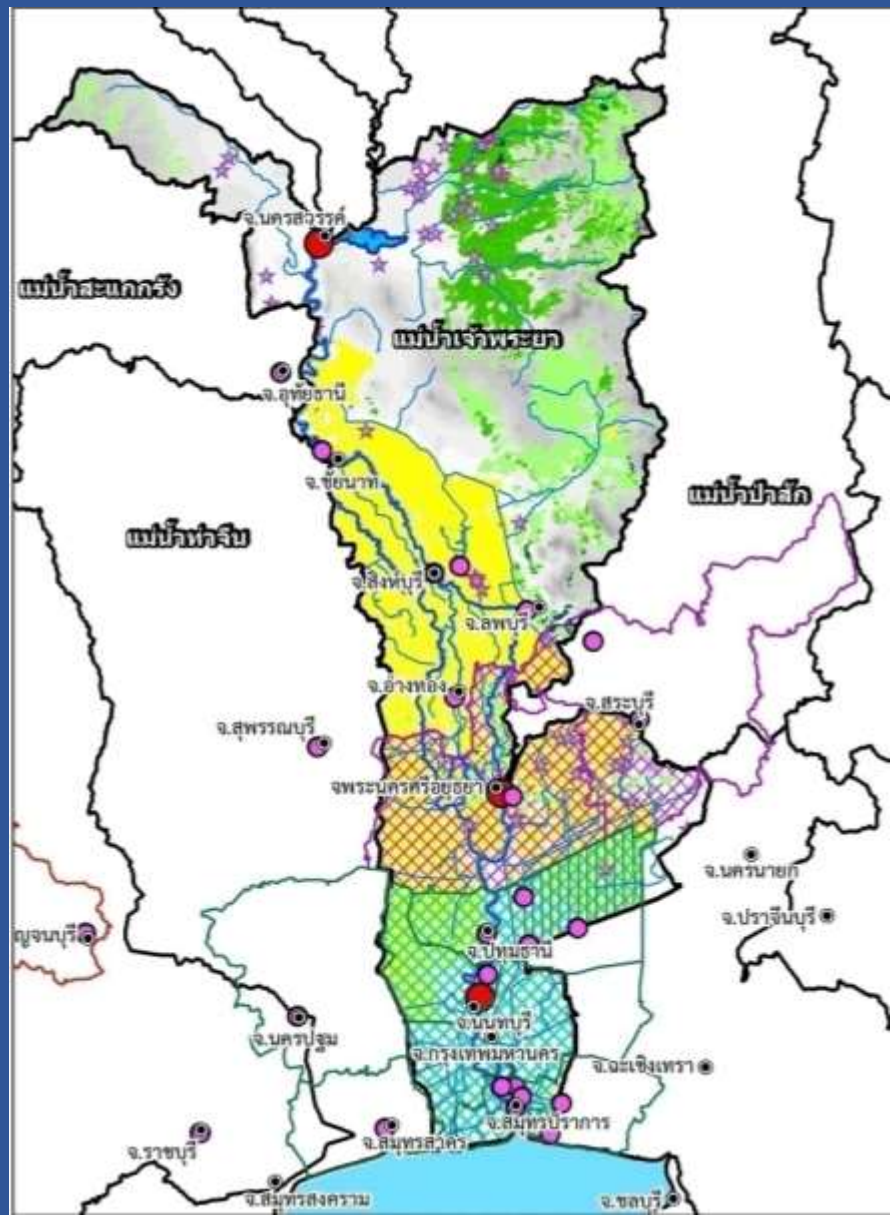
- **High [> 5times/9yrs]**
0.13 Mha (6.6% of total area)



Flood events in Chao Phraya river basin



Land use



Urban areas:
Bangkok, Nonthaburi, Pathumtani, Samut Prakarn

Economic areas:
Industrial estates mainly in Ayutthaya, Saraburi

Town:
Nakornsawan, Ayutthaya, Nonthaburi

Township

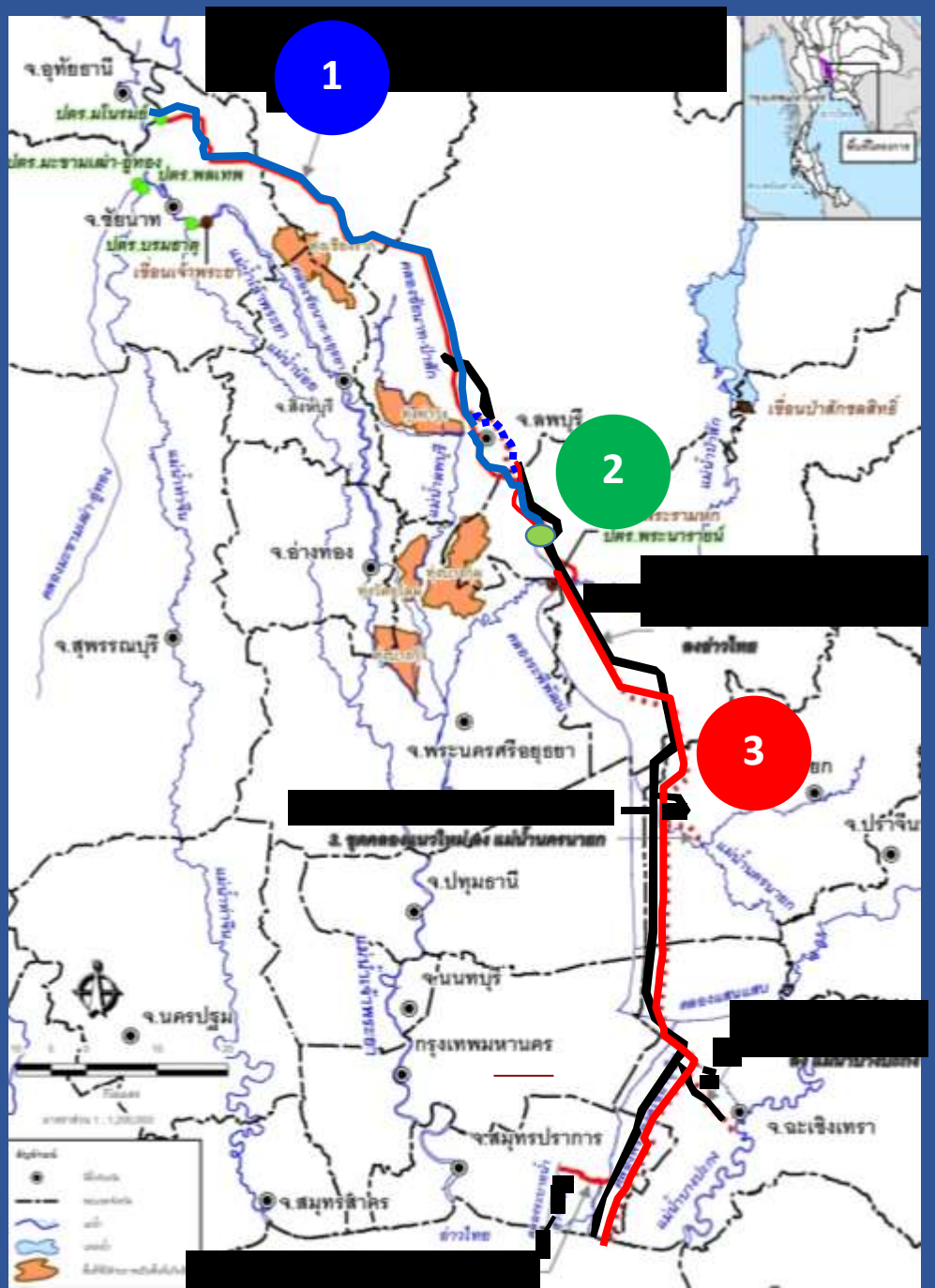
Flood Diversion Scheme

Expansion of existing Chainat - Pasak Canals **1**

Construction of new Rama VI diversion dams **2**

Construction of new flood drainage canal **3**

Installation of SCADA and telemetery



CBA – Baseline Situation

Metric	Figure
Cost	$ 3,257 Million
Benefit	$ 410 Million / yr (*from reduced/avoided loss and/or damage*)
EIRR	14.52 %
NPV	$ 404 Million
Benefit-to-Cost Ration	1.22

Climate Change Benefit Analysis

Adaptation/mitigation benefits

CBA – With CC

Existing FS → **Baseline**

Climate Change Data

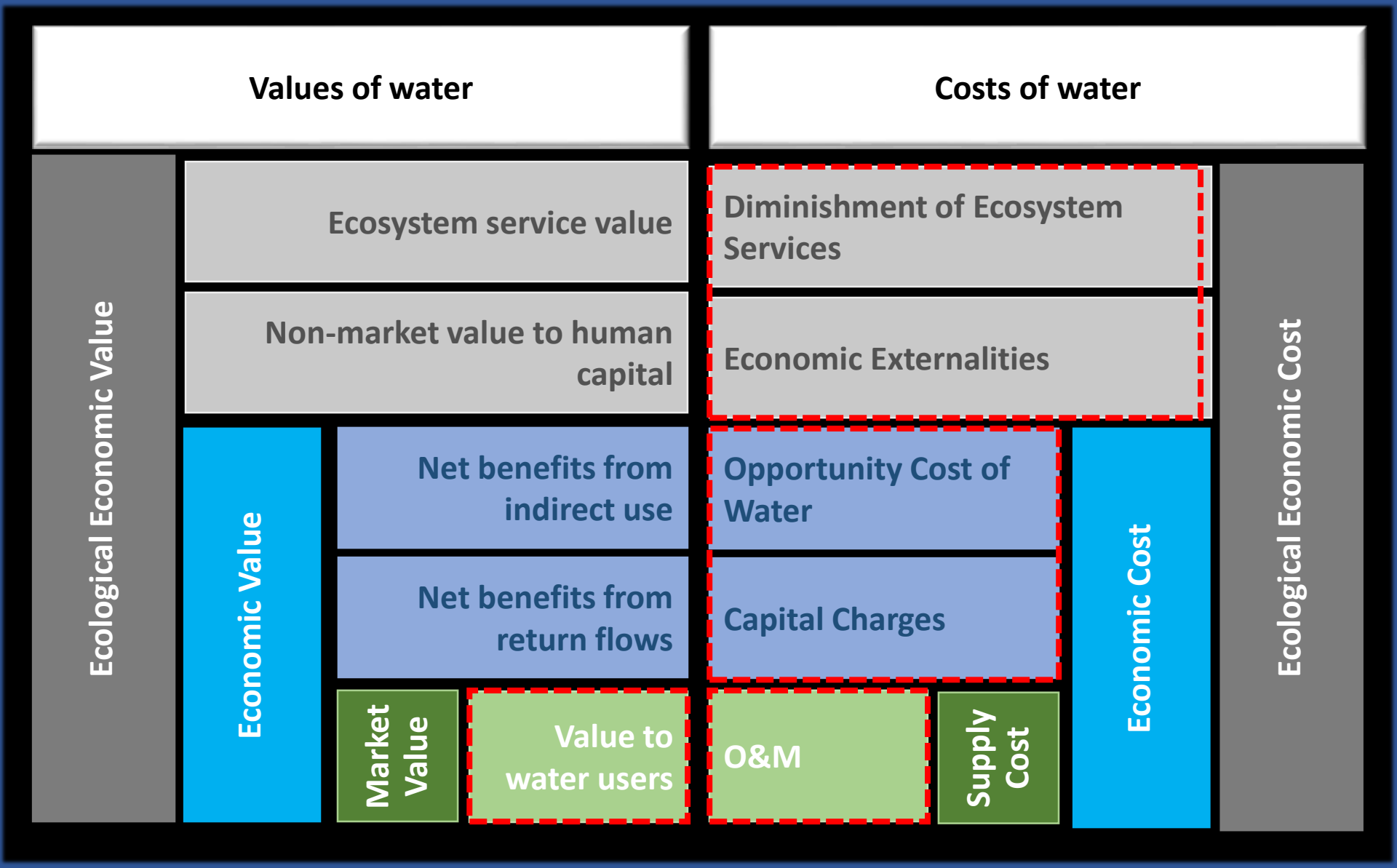
- Is there any relationship between previous floods and CC?
- What is the probability of a major flood occurrence? What is its frequency?

FS

- What will be CBA when CC is incorporated into existing FS?

Indirect benefit assessment

- What are indirect benefits?
- Why do we need to consider these?


Values of water
Costs of water
Ecological Economic Value
Ecosystem service value
Non-market value to human capital
Economic Value
Net benefits from indirect use
Net benefits from return flows
Market Value
Value to water users
Diminishment of Ecosystem Services
Economic Externalities
Opportunity Cost of Water
Capital Charges
O&M
Supply Cost
Economic Cost
Ecological Economic Cost

Quantifying Other Benefit Streams

1. Direct benefits from avoided a loss and damage as a result of the drainage canal/flood diversion in East.
   - Property damage, accidents, road blockages, etc.
   - FS uses data from consulting firm.

2. Indirect health benefits
   - Reduced stress/trauma from psychological effects
   - Contingent Valuation Method (CVM) used, not the actual market value. Surveys used to indicate WTP.

CBA – With CC

Modeling: Flood Risk Analysis

Streamflow simulation (IMPACT-T data)

Near Future (2040-2059) vs. Far Future (2080 – 2099)
at station C.2, Nakhon Sawan

Representative Concentration Pathways
RCP 4.5 and RCP 8.5

Flood risk: Result (base year = 1995)
- considered Return Period as index

Return Period without CC	**43 years**
Return Period with CC	**3-7 years**

Direct Benefits: Damages and Losses

43 years

3-7 years

Damage

	Flood Damage and Loss (M USD)	Flood Area (Ha)
Without Climate Change	734	265,774
With Climate Change (Changes of Return Period)	1,826	341,938

Indirect Benefits: Anxiety & Stress reduction

Contingent Valuation Method (CVM)

Before & After

Shorter Investment Return Period

→ **Damages & Losses**

→ **Anxiety & Stress**

Baseline

Metric	Figure
Cost	63,180 Million Baht
Benefit	77,307 Million Baht
EIRR	14.52%
NPV	14,126 Million Baht
B/C ratio	1.22

With CC

Metric	Figure
Cost	63,180 Million Baht
Benefit	294,973 Million Baht
EIRR	43.91%
NPV	231,793 Million Baht
BCA	4.67

Institutional Implications?

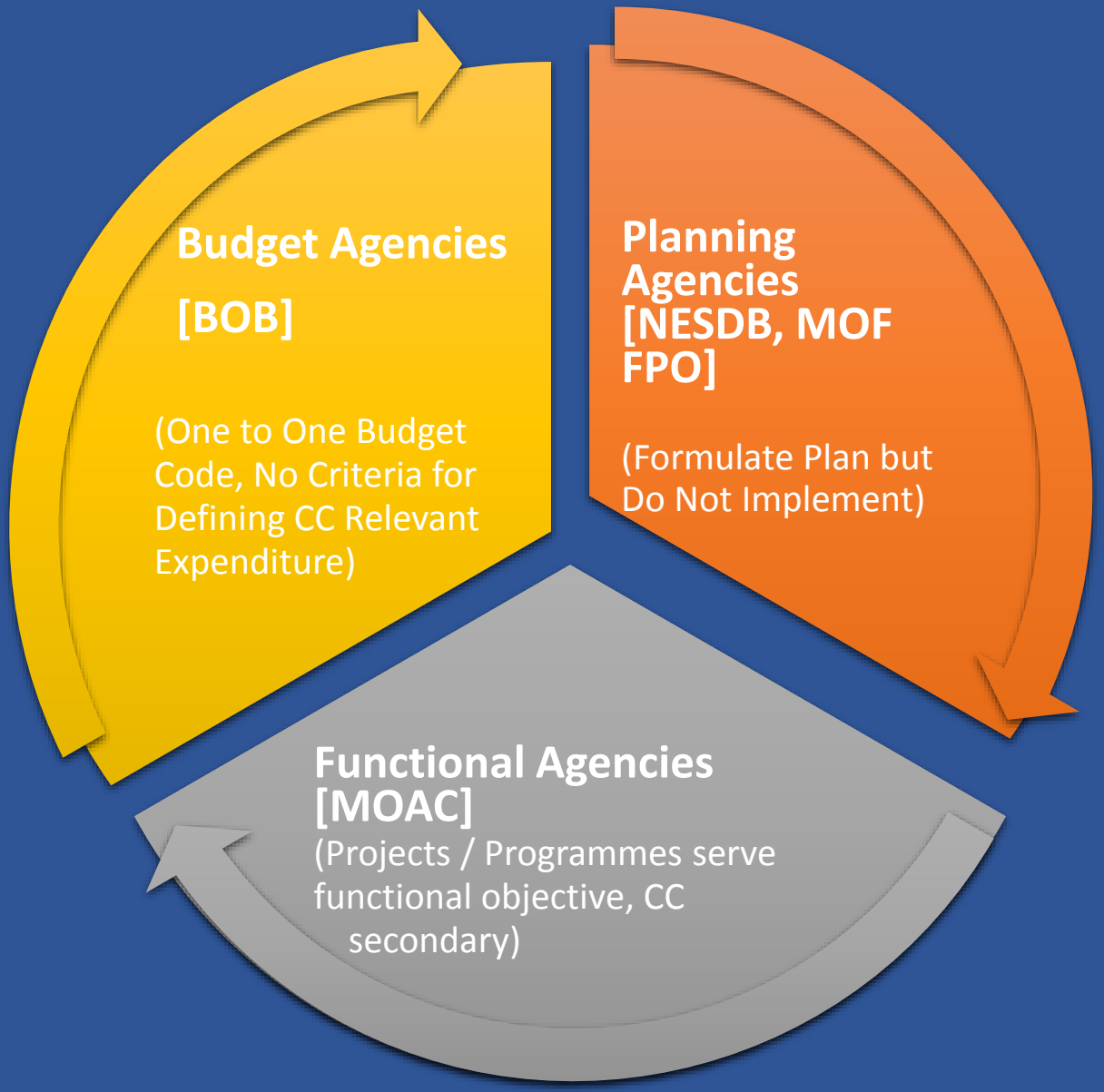
This has important institutional implications. CC policy plans are usually prepared by Ministries of Environment.

1. Be aligned and feed into national development strategy processes and vice versa: Involve also the Ministries of Planning.
2. Inform and be integrated into sector policies and vice versa. Involve all sector ministries (e.g. agriculture, public works, water, health, forestry, fisheries etc.).
3. Inform and feed into other cross-cutting issues and vice versa. Involve ministries such as women and children affairs, disaster risk management, social protection agencies etc.
4. Inform and be integrated into sub-national policies and vice versa. Involve Ministries of Home Affairs/Local Government and Sub-national Governments (provinces, districts etc.)
5. Be costed and appraised and integrated into a country's medium and long term fiscal and expenditure framework. Involve Ministries of Planning, Ministry of Environment , Line Ministries and Ministry of Finance.
6. Translated into concrete allocations in national and sub-national allocations. Involve Ministries of Finance, Ministries of Planning, Ministry of Environment, Ministries of Home Affaires, Sub-national governments and line ministries.
7. Monitored and Evaluated: Involve Ministries of Finance, Ministries of Home Affaires, Sub-national governments and line ministries.
8. Audited and Overseen: Auditor General, Parliament and CSOs.

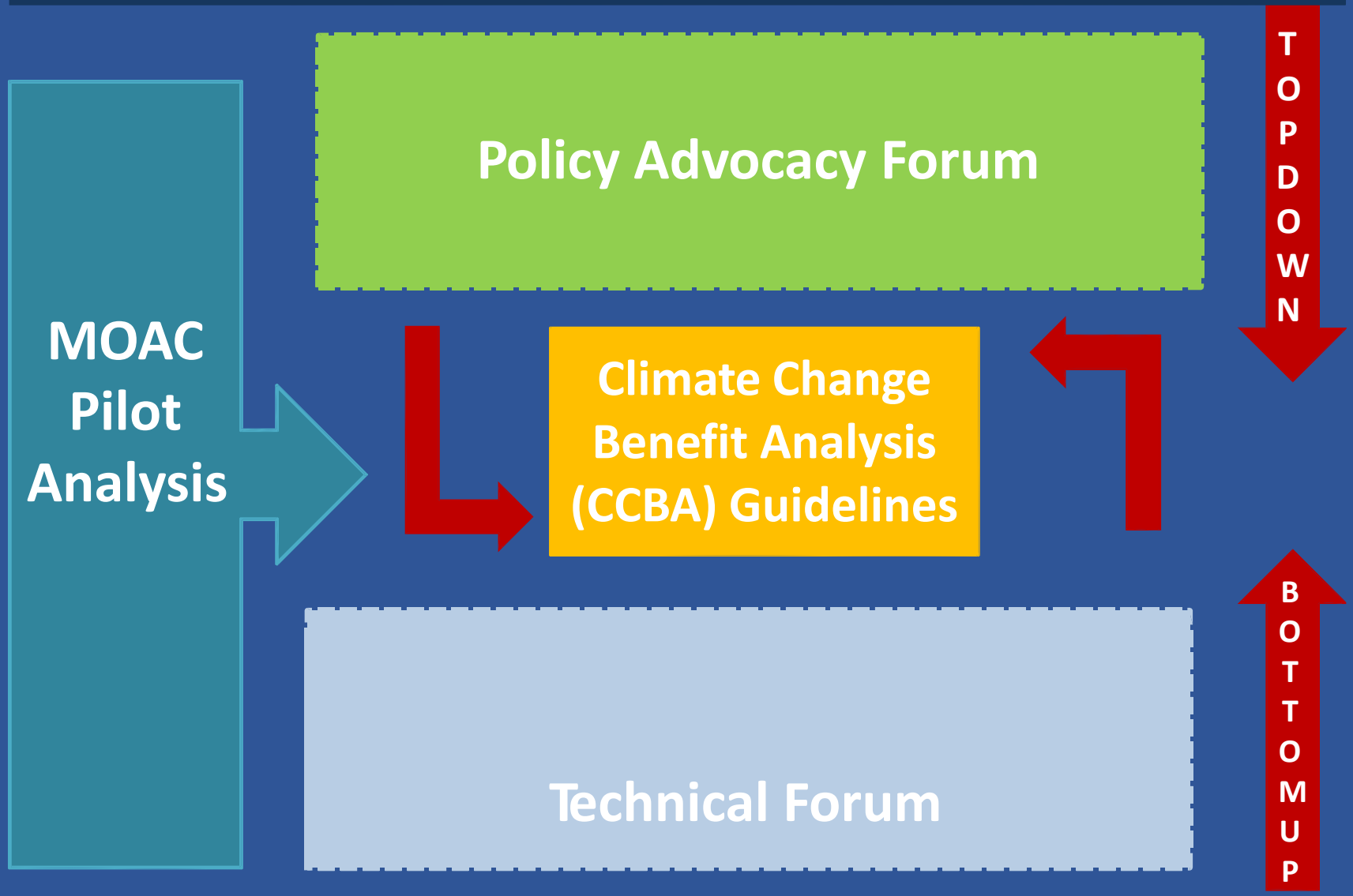
Key Barriers to Points #5,6,7

- **Limited understanding** of the nature of CC impacts and how sectoral plans and programs are affected.
- **Limited capacity** of functional/line ministries to undertake investment appraisal and program preparation for budget access that integrates CC.
- **Weak internal systems** and institutional arrangements for integrated climate finance reporting and expenditure tracking.

Landscape


Budget Agencies
[BOB]
(One to One Budget Code, No Criteria for Defining CC Relevant Expenditure)
Planning Agencies [NESDB, MOF FPO]
(Formulate Plan but Do Not Implement)
Functional Agencies [MOAC]
(Projects / Programmes serve functional objective, CC secondary)

MOAC Pilot Analysis for CCBA



Climate Budget Tagging (CBT)

- Is a budget tool for monitoring and tracking of climate-related expenditures in the national budget system.
- It provides comprehensive data on climate relevant spending, enabling government to make informed decisions and prioritize climate investments.
- Also encourages planning officers and policy managers to incorporate climate considerations in project design from early stages.
- Assesses whether we are on track to reach our climate change spending targets.
- Further, with the information on climate related expenditure, this tool enables public scrutiny on government and donor spending towards addressing climate change issues.

Conclusions

1. Climate-related appraisal methods and budget proposal guidelines are evolving in Thailand. (Workshop 30/Oct – Amari Watergate)

2. CCA/GHG mitigation co-benefits can be addressed in budgeting processas part of routine appraisal of projects and programs. MTEF could be a better lens vs. annual budgets as climate risks long-term.

3. Mainstreaming CCA in appraisals will lead to better policy choices, institutional co-ordination and a qualitatively strengthened NAP process. Piloting work that UNDP and MOAC have done provide a model way forward.

4. Mainstreaming CCA and green growth plans needs champions and pilot programs at functional/line ministry level. Good practice to engage Bureau of Budget early on in the formulation processes.

Thank you / ขอขอบคุณ

Supporting Thailand to Integrate Agricultural Sectors into National Adaptation Plans (NAPs)

28 September 2015

Supported by:

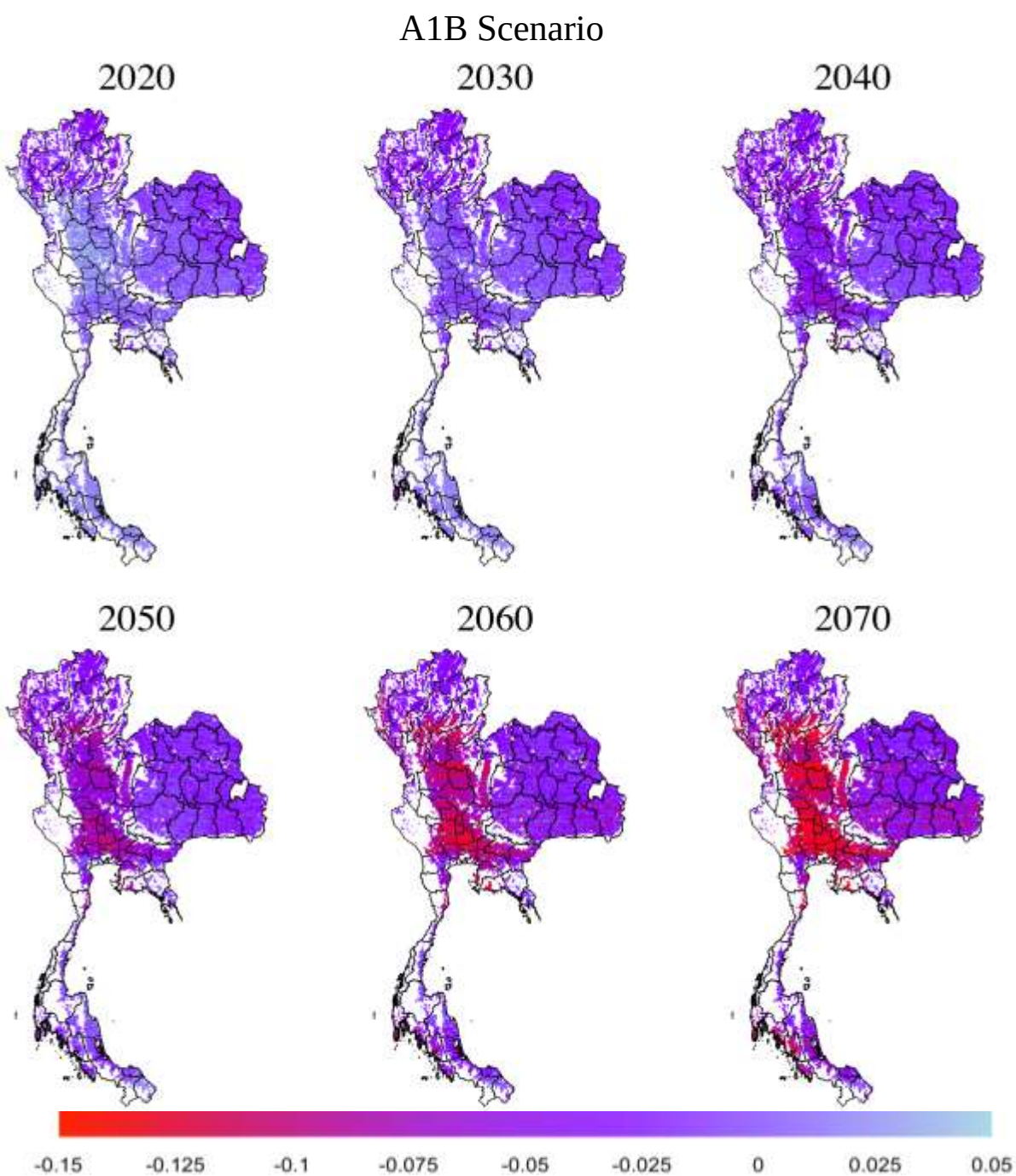
Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

Food and Agriculture Organization of the United Nations

UNDP

Empowered lives. Resilient nations.

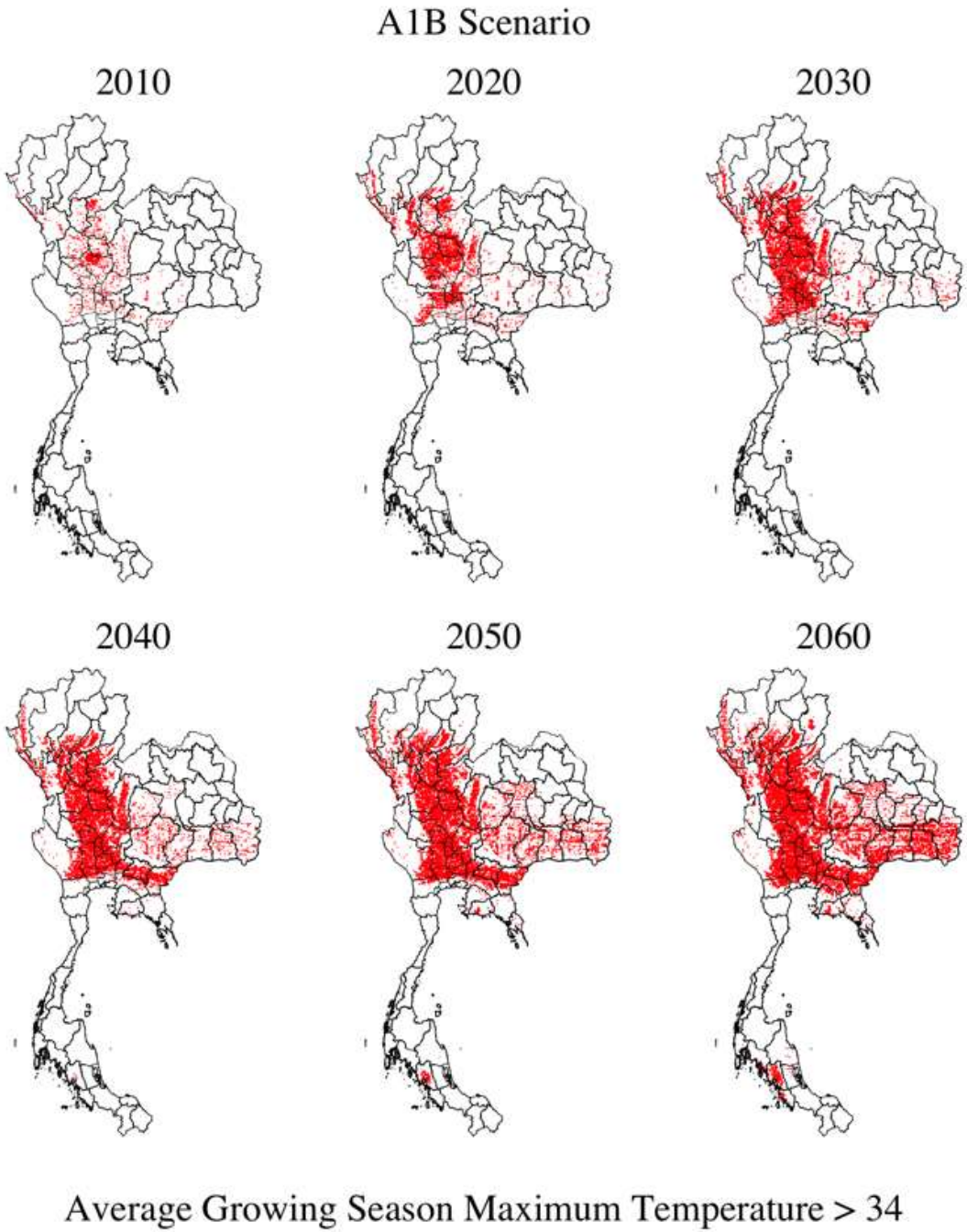
Evidence-base for adaptation



Thailand Example:

- Rice yields projected to decline in most locations between 5% and 15%
- Yield decline will worsen over long-term

* Colour indicates percentage change in yield – blue positive & purple & red negative



Evidence-base for adaptation

Thailand Example:

- Some areas already at a maximum temperature threshold for growing rice (34°C)

Presentation Outline

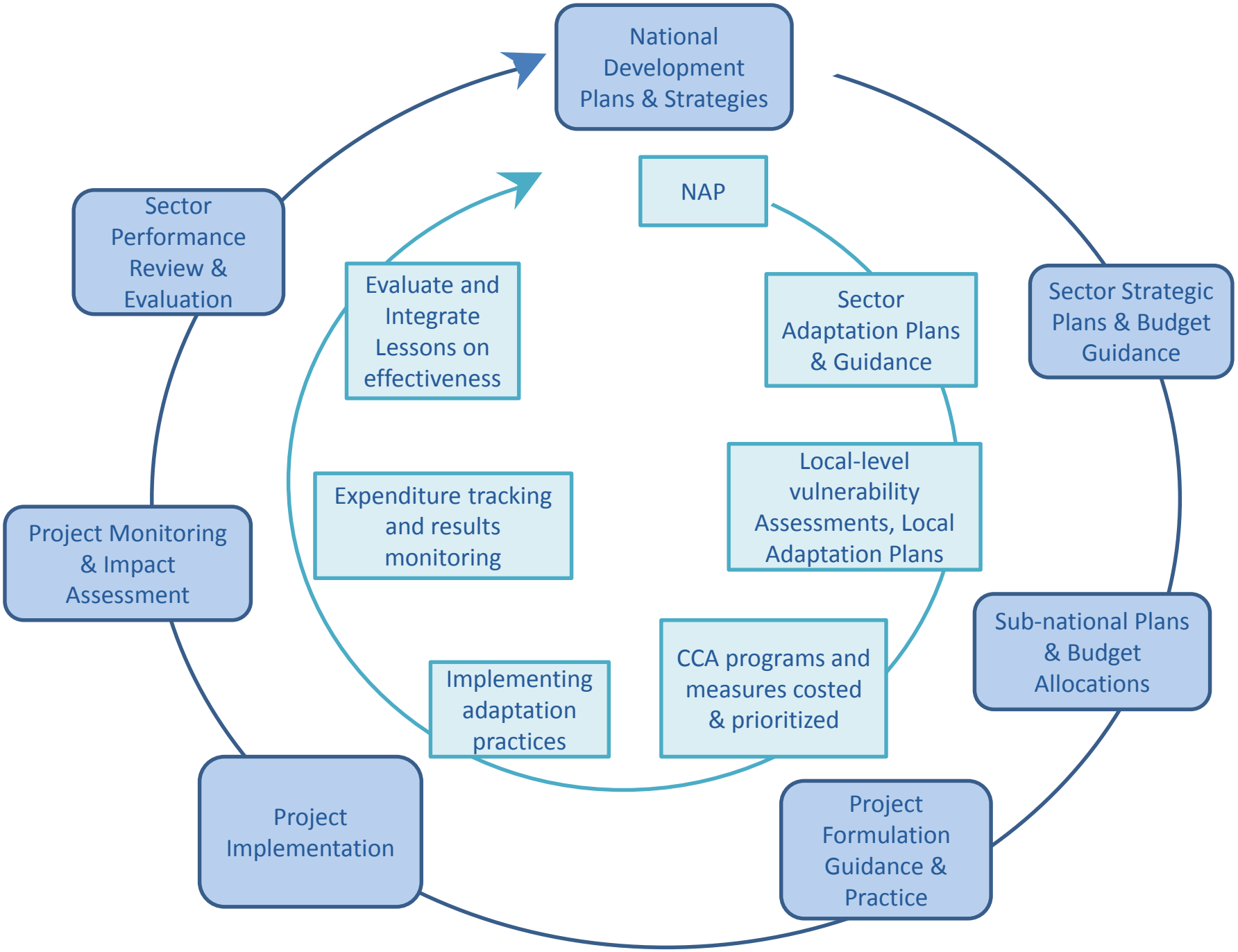
1. NAP from sectoral perspective
2. NAPs-Agriculture: Global Programme Overview
3. Towards a Thai work-plan
4. Synergies with ongoing initiatives
5. Next steps

International experiences with CCA and agriculture

	UK	Australia	Cam	Indonesia	India
Risk/Impact Study					
NAP					
Economic Analysis					
Evidence Plan					
New Policy Guidelines					
Investment Guidelines					
Capacity Building					

National Planning & Budgeting Processes:

Injecting Climate Change Adaptation (CCA) Entry Points


National Development Plans & Strategies
Sector Strategic Plans & Budget Guidance
Sub-national Plans & Budget Allocations
Project Formulation Guidance & Practice
Project Implementation
Project Monitoring & Impact Assessment
Sector Performance Review & Evaluation
NAP
Sector Adaptation Plans & Guidance
Local-level vulnerability Assessments, Local Adaptation Plans
CCA programs and measures costed & prioritized
Implementing adaptation practices
Expenditure tracking and results monitoring
Evaluate and Integrate Lessons on effectiveness

BMUB/UNDP/FAO Project
Global Programme Overview

Objective

To **integrate** climate change **risks and opportunities** as they relate to **agriculture sector**-related livelihood options within **existing** national **planning** and **budgeting processes**

Key Features

- 8 countries: **Thailand**, Nepal, Philippines, Vietnam, Kenya, Uganda, Zambia, Uruguay
- Duration: 4 years (2015 to 2018)
- Global Programme Budget: US$12 million
- Total budget per country: US$700,000

Global Programme Overview

Programme Objective

To **integrate** climate change **risks and opportunities** as they relate to **agriculture sector**-related livelihood options within **existing** national **planning** and **budgeting processes**

Programme Outcomes

Outcome 1:
Technical capacity and institutions on NAPs strengthened

Outcome 2:
Integrated roadmaps for NAPs developed

Outcome 3:
Evidence-based results for NAPs improved

Outcome 4:
Advocacy and knowledge-sharing on NAPs promoted

Towards a work plan for Thailand

Policy Context

- Thailand Climate Change Master Plan
  - Adaptation pillar Medium-Term Goals (now to 2020)
- Thailand INDC
  - Adaptation as “top priority”
  - Priority efforts to focus on food security, good agricultural practices, and IWRM
- Sector Development Plan for Agriculture and Cooperatives (2017-2021)
- Inter-agency Task Force on Climate Change and Budget/Planning – emerging guidelines

Supporting Thai priorities for agricultural sector CCA

- Strategic Plan on Climate Change in Agriculture (2013-16)
  - Strategy 1 - Adaptation
    - Early warning systems
    - Basic infrastructure for agriculture
    - Conservation of agricultural resources
    - Build capacity of farmers
  - For 2017-2020: Review priorities for CCA and align to SDP for Agriculture

Translating Global Outcomes to Thai Country-Level Objectives

GLOBAL

Outcome 1: Technical capacity and institutions on NAPs strengthened

Outcome 2: Integrated roadmaps for NAPs developed

Outcome 3: Evidence-based results for NAPs improved

Outcome 4: Advocacy and knowledge-sharing on NAPs promoted

National Level

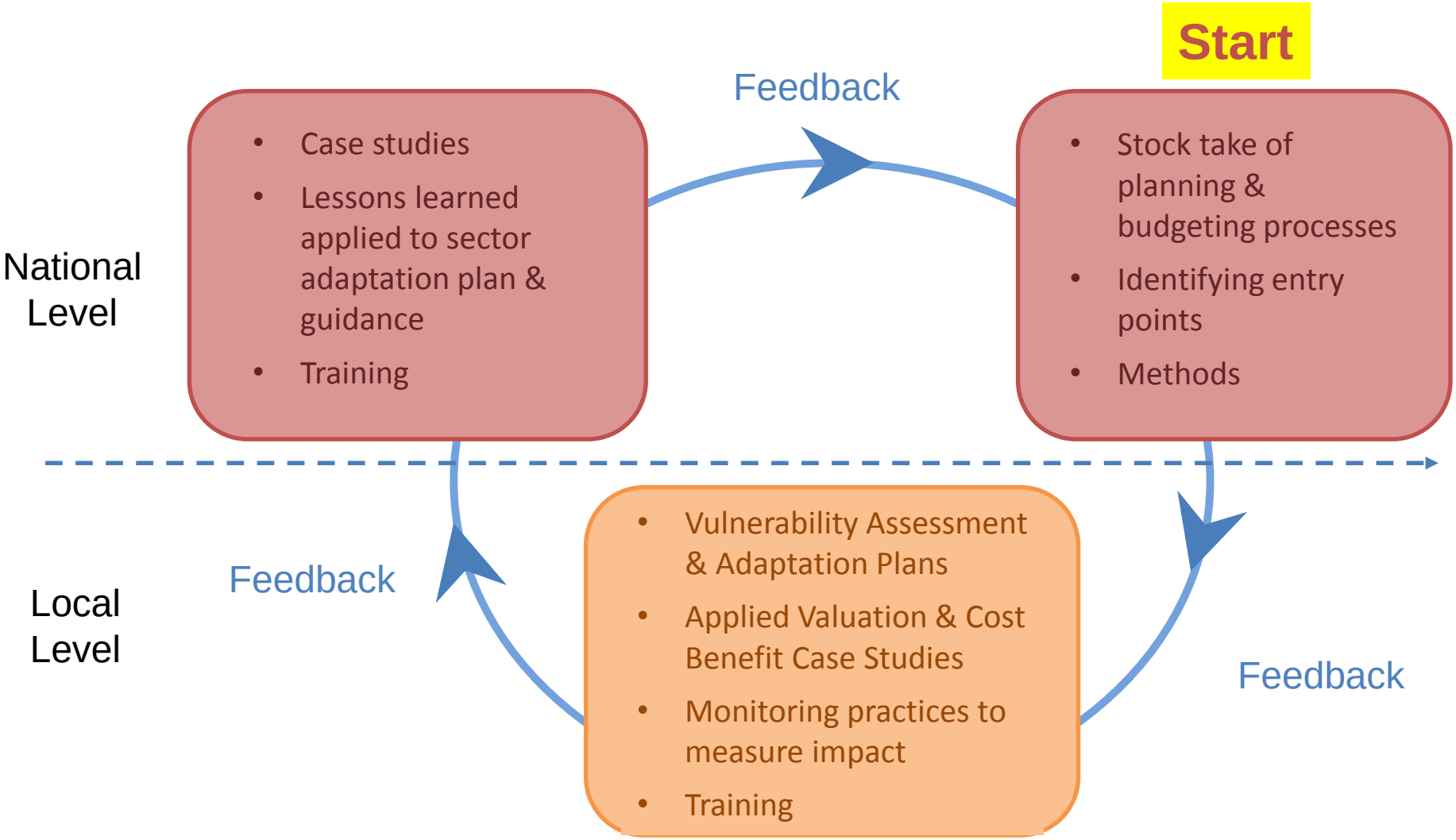
Strengthening the Capacity & Knowledge of Agricultural Sector Staff on CCA

Integration of CCA into the SDP-A & Annual, Medium-Term Budgeting Cycle

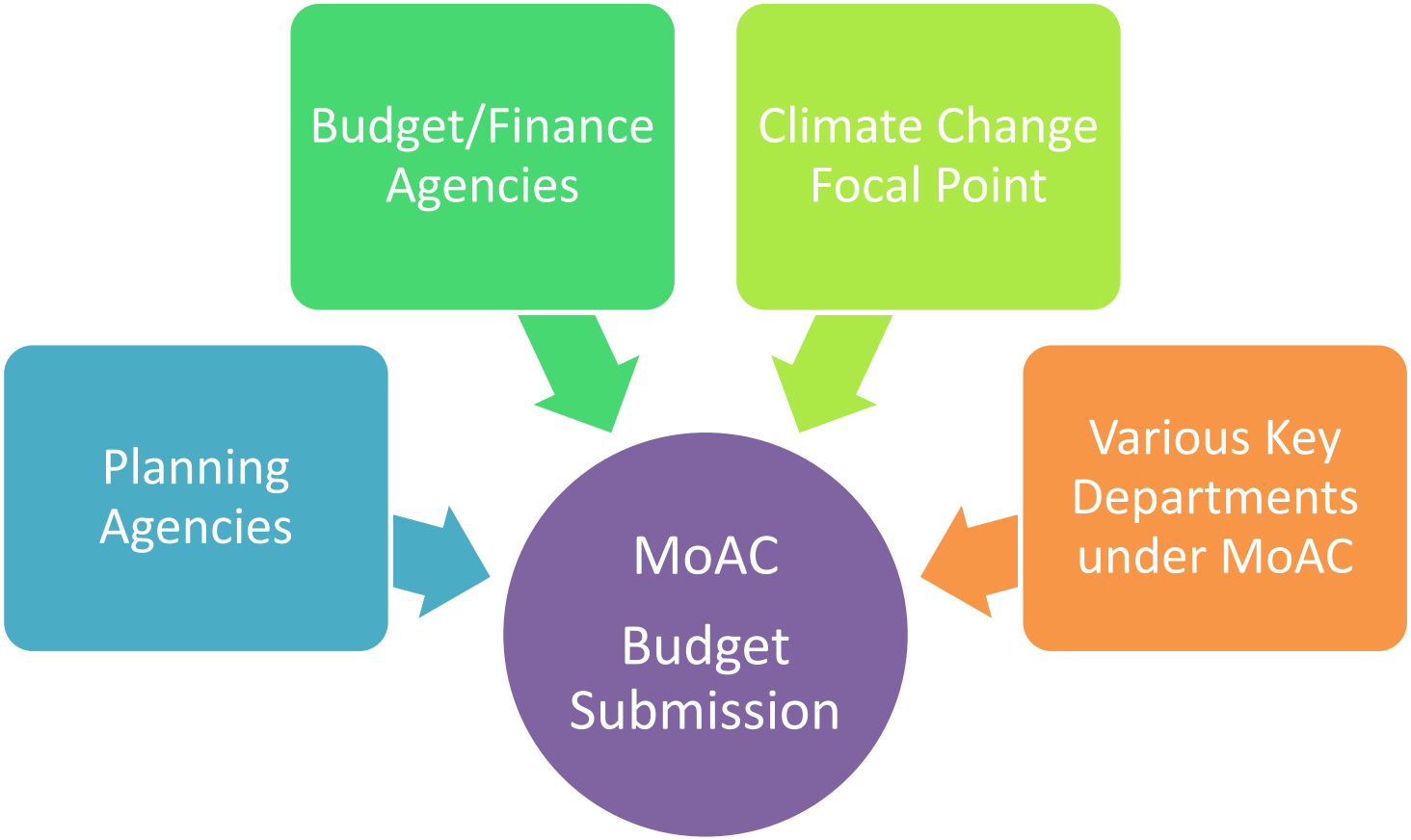
Evidence-Base for CCA Improved through Enhanced M&E Frameworks

Lessons learned feed into Thai NAP development process

Implementation Logic - Example



Bottom Up Approach



Where can the NAP program help?

- Integrating CCA methods, plans and measures into broader agriculture development strategy
- Prioritizing options based on available evidence
- Improving capacity to measure the impact of adaptation measures
- Building the capacity to repeat the process again

Draft work plan outline - Thailand

Outcome 1:
Technical capacity and institutions on NAPs strengthened

Output 1.1

Enhanced MOAC capacity to undertake assessments of priority CCA measures and programs

Key Activities

- Training staff on methods and tools (e.g., forecasting, valuation, cost-benefit analyses) to assess economics of priority measures
- Climate-responsive planning & budgeting training packages and tools
- Increased performance-based monitoring and evaluation capacity of the Performance Monitoring Unit (s) in MOAC

Outcome 2:
Integrated roadmaps for NAPs developed

Output 2.1

Climate risk management frameworks integrated into SDP-A and further elaborated in the Strategic Plan for CC in Agriculture (2017-2021)

Key Activities

- Undertake macro-analysis of climate change vulnerabilities and losses
- Develop and incorporate mechanism to integrate CCA options in SDP-A
- Undertake consultations and ensure coordination with working group for the 4-year agriculture development plan
- Policy evaluation
- Model sensitivity of climate loss and damage for flagship programs
- CCA platform established for interdepartmental coordination in MOA

Outcome 2:
Integrated roadmaps for NAPs developed

Output 2.2

Climate responsive planning and budgeting applied to ministerial/ departmental level action plans and budget proposals by 2018

Key Activities

- Include bankable project proposals into annual budgeting process
- Develop more bankable program proposals using integrated CCA analyses and guidelines

Outcome 3:
Evidence-based results for NAPs improved

Output 3.1

CCA options for selected agriculture-based livelihood projects assessed for impact and effectiveness.

Key Activities

- Update ex-ante and ex-post evaluation frameworks to include CCA

Output 3.2

Programmes/tools designed to increase farmers' adaptive capacities

Key Activities

- Field demonstrations and case studies with CSOs using combination of identified options, local practices, innovations

Outcome 3:
Evidence-based results for NAPs improved

Output 3.2

Performance-based monitoring and budgeting system developed

Key Activities

- Collect lessons learned from field level activities to inform system

Outcome 4:
Advocacy and knowledge-sharing on NAPs promoted

Output 4.1

Convened exchanges to support the integration of CCA options into national investment plans and policies

Key Activities

- Conduct consultations on agriculture sector role in NAP process
- Develop policy briefs on topics including finance gaps in the agriculture sector and the importance of performance based budgeting

Output 4.2

Inputs from Outcome 2 integrated into overall NAP process,

Key Activities

- Prepare contributions from agriculture sector as input to NAP as one of 6 priority sectors identified in CC master plan
- Sharing CCA case studies in ONEP-led NAP workshop

Synergies with ongoing initiatives

- NAP Process (ONEP-led)
- Risk-NAP, ONEP/GiZ
- 4-year Agriculture Development Plan (iterative process)
- Governance of Climate Change Finance (UNDP)
- GCF pipeline development
- Climate Policy Strengthening (GiZ)

Thank you