

Scientific research for contributing to sustainable development policies and practices in Mekong Region

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About SEI

- An independent international research & policy institute founded in 1989 by the Swedish Government
- 9 centres spanning in USA, Africa, United Kingdom, Europe and **Asia**
- Over 200 staff members and 50 nationalities
- **Mission:** To support decision-making and induce change towards sustainable development around the world by providing integrative knowledge that bridges science and policy in the field of environment and development



We work to shift policy and practice towards sustainability through evidence-based research for development

BRIDGING SCIENCE TO POLICY

A sustainable future for all

10 SEI Offices



www.sei.org

SEI Asia at Witthayakit Building,
Chulalongkorn University



Theory of Change

SEI's theory of change is based on "Outcome Mapping" approach developed by IDRC.

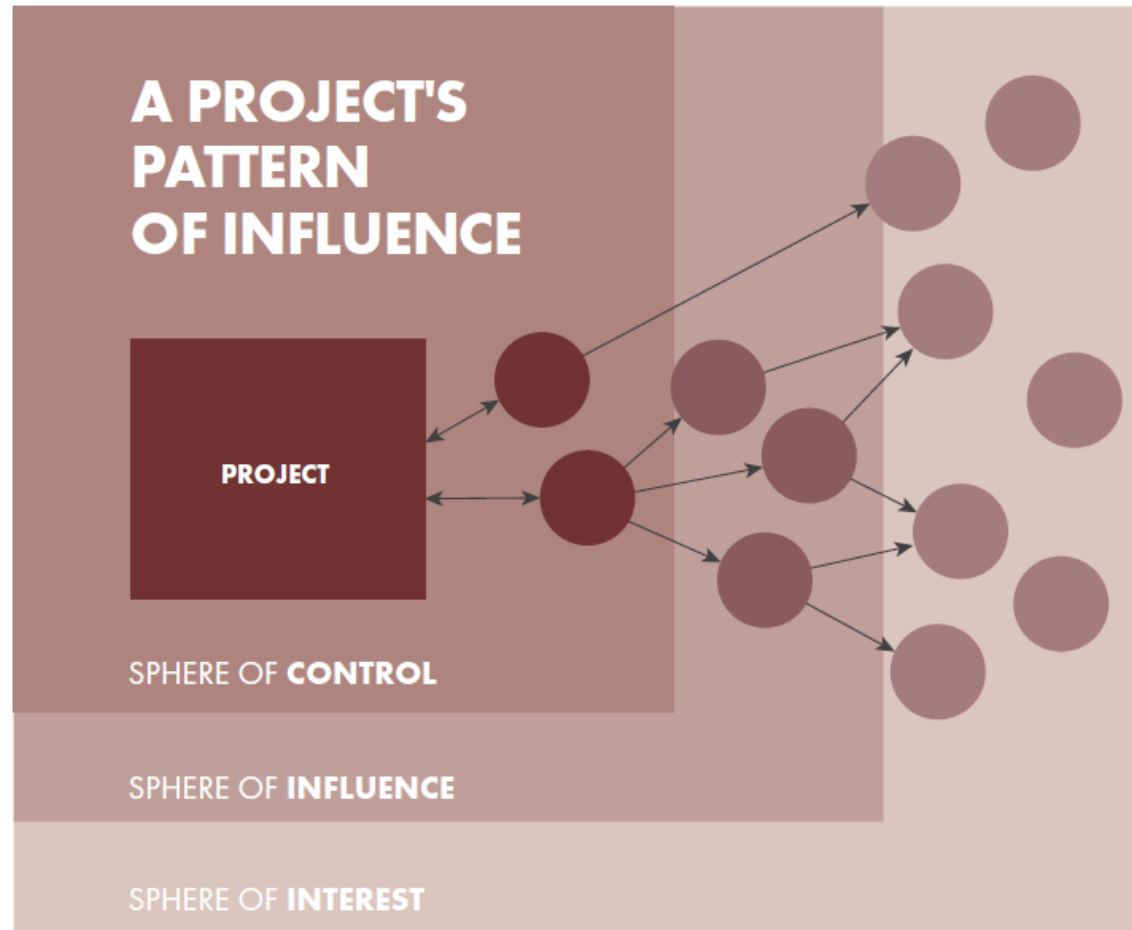


Fig 4: A project's influence: our monitoring and evaluation system allows us to map the outcomes and influence of our work.

● PROJECT PARTNERS

● BOUNDARY PARTNERS

● OTHER STAKEHOLDERS

SEI's policy bridging efforts

Climate and Clean Air Coalition High Level Assembly sets ambitious agenda

Written by Marion Davis Saturday, 07 September 2013 17:55



Asia-Pacific forum focuses on mainstreaming adaptation to climate change

Written by Marion Davis Monday, 18 March 2013 06:10



Call for prop development

At ADB Ministers Meeting, questions about investment in 'natural capital'

Written by Rajesh Daniel

Friday, 13 February 2015 01:00

Written by Rajes



H.E. U Win Tun, Union Minister for Environmental Conservation and

Forestry, Myanmar, delivers the welcoming address. Photo by: B. Daniel

Workshop helps Asian scientists reach policy-makers

Monday, 26 November 2012 00:00



The SEI-led SUMERNET programme sponsored the Bangkok event, which was attended by 16 people working in the Philippines, Laos, Cambodia, Thailand and Vietnam, as well as journalists and policy-makers.

the Greater Mekong Subregion". SEI Asia Centre

Protecting the 'forest commons': A resource challenge in the Mekong Region

Written by Rajesh Daniel Friday, 06 September 2013 00:00



A roundtable discussion

SEI signs agreement to strengthen key partnership in China

Written by Marion Davis Monday, 27 May 2013 23:57



By formalizing their more than 20-year relationship, SEI and the China Council for International Cooperation on Environment and

New agreement links SEI with Korea Environment Institute

Written by Caspar Trimmer Tuesday, 03 September 2013 21:35



The document, signed Monday at World Water Week in Stockholm, aims to promote 'mutually beneficial cooperation in the field

SEI-Asia's project on the "urban metabolism of Bangkok" to assist future water planning

Written

Developing river basin management solutions in Myanmar

Written by Rajesh Daniel

Wednesday, 29 July 2015 06:10



SEI's Initiatives

1. Behaviour and Choice
2. **Climate Finance**
3. Climate Services
4. Fossil Fuels and Climate Change
5. **Gender and Social Equity Programme**
6. Low-Emissions Development Pathways
7. Producer to Consumer Sustainability (P2CS)
8. Sustainable Sanitation
9. **Transforming Development and Disaster Risk**
10. The Water, Energy and Food Nexus
11. **Urbanization**

SEI STRATEGY
2015–2019



**Scientific research and policy
engagement work of SEI's
SUMERNET, SWP and Chindwin
Futures in bridging sciences and
policy**



Sustainable Mekong Research Network

SUMERNET

SUMERNET



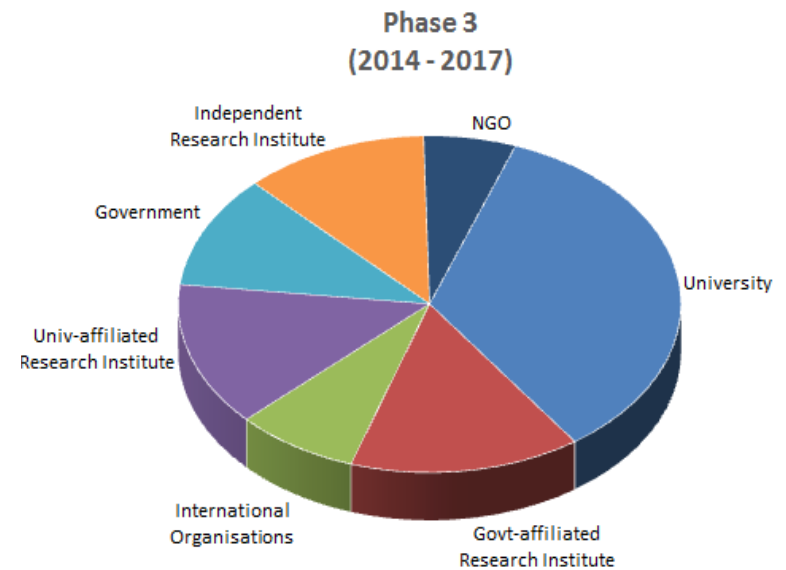
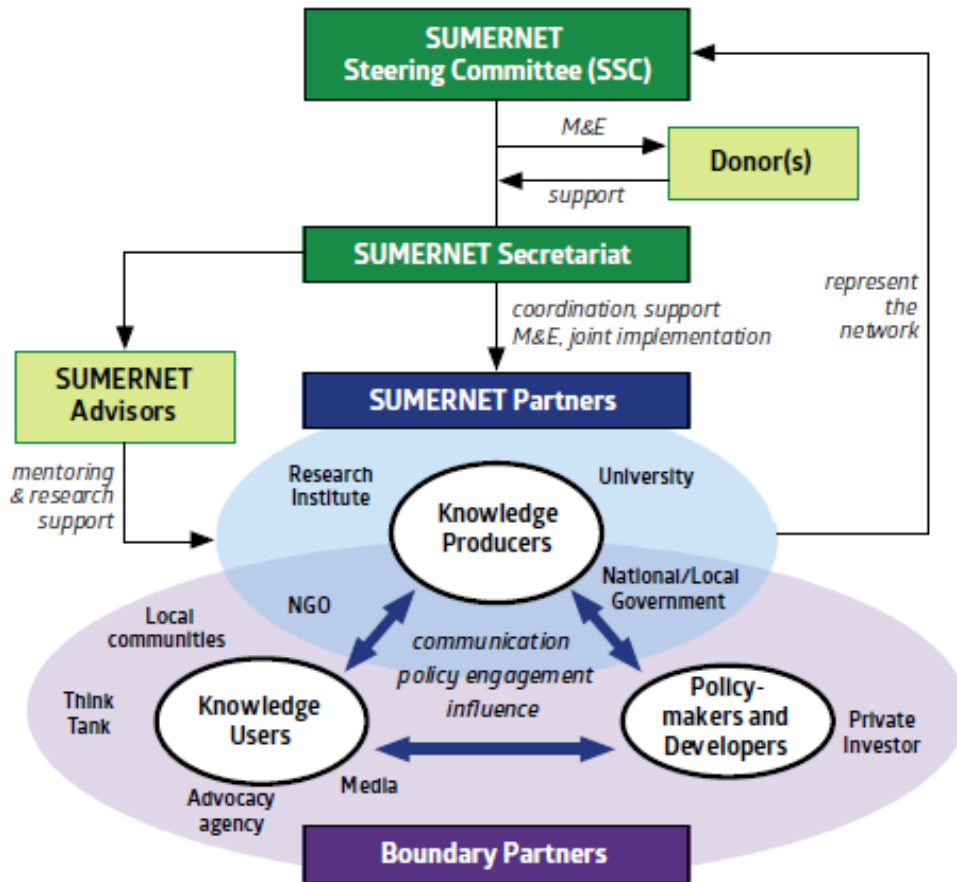
Goal: To achieve sustainable development through strengthening knowledge-based policy processes in the Mekong Region

Objectives:

- Build capacity for and deliver policy-relevant research
- Stimulate collaborative research and actions (e.g. policy engagement, events)
- Support regional assessments and comparative policy analyses
- Engage with policy process



SEI Asia and SUMERNET



Principle approach for knowledge sharing and innovative capacity building



7 Multi-country research projects

Project Name	Short name	Theme	Lead agency	Donor	Country	Mentor
1. Comparative study on national REDD+ strategy in Cambodia, Myanmar and Thailand"	REDD+	Climate compatible development	Royal University of Phnom Penh (RUPP), Cambodia	 SWEDEN	Cambodia Myanmar Thailand	
2. Understanding, Classifying and Mapping Human Use and Natural Resources in Pilot Wetlands of Cambodia and Vietnam to Promote Sustainable Development	Collaboration to Study Small Wetlands	Ecosystem services	Wetland University Network (WUN), Can Tho University, Vietnam	 SWEDEN	Cambodia Vietnam	
3. Gendered impact of cross-border agricultural investment: Case of rubber plantations in Northern Laos, Myanmar, and Cambodia	GIAI rubber	Regional economic integration	Asian Institute of Technology (AIT), Thailand	 SWEDEN	Cambodia Lao PDR Myanmar	
4. Adaptation Pathways for Climate-Resilient Development: Selected Cases in Cambodia, Myanmar, and the Philippines	Adaptation pathway	Climate compatible development	University of the Philippines Los Baños (UPLB), Philippines	 SWEDEN	Cambodia Myanmar Philippines	
5. Turning rice straw into cooking fuel for air quality and climate co-benefit in selected GMS countries"	RS co-benefits	Climate compatible development	Asian Institute of Technology (AIT), Thailand	 SWEDEN	Cambodia Thailand Vietnam	
6. Recovering and valuing wetland agro-ecological systems and local knowledge for water security and community resilience in the Mekong region	RECOVER	Ecosystem services	Chulalongkorn University, Thailand	 SWEDEN	Lao PDR Thailand Vietnam	
7. Impacts of the East-West Economic Corridor on Local Livelihoods and Forest Resource in Mekong River Region: Case Studies of Selected Forest-dependent Villages in Vietnam, Laos and Myanmar	EWEC-FC	Regional economic integration	College of Economics, Hue University, Vietnam	 USAID LMPP SWEDEN	Lao PDR Myanmar Vietnam Thailand	

SUMERNET's Stories of Change

A story from a leader of cross-country collaborative research project

“In Laos, aside from successfully growing rice organically, one of the most significant changes identified by the farmers interviewed was how the project has helped build a constructive relationship between District Agriculture and Forestry Office (DAFO), the Nam Theun 2 Resettlement Management Unit (RMU), and the farmers.”



Dr. Carl Middleton,
Chulalongkorn University, Thailand

A story from research partner

Closer linkages with policymakers makes the research more meaningful.



SUMERNET's concept of boundary partner idea is the driving factor for us to have more frequent or closer linkage with policy makers. In traditional research methods, you do your research and then take your research results to your policymakers to discuss the relevance of the research for policymaking. But with boundary partner, policy makers work closely with us from the beginning of the research. Even initial findings are discussed with them. We have small workshops to discuss findings with the policy makers.

The policy makers get to appreciate our research work. Our boundary partners are city planners at regional level, local government, development planners from the regional level. They do not usually visit field sites and talk to farmers. So our role is really to provide the interface – the bridge - between research and policy making.

(Ms. Dulce D. Elazegui, University of the Philippines Los Baños, Adaptation Pathway Project, 2017)

A story from national policy maker



Change in attitude of policy maker on policy development and co-production of knowledge

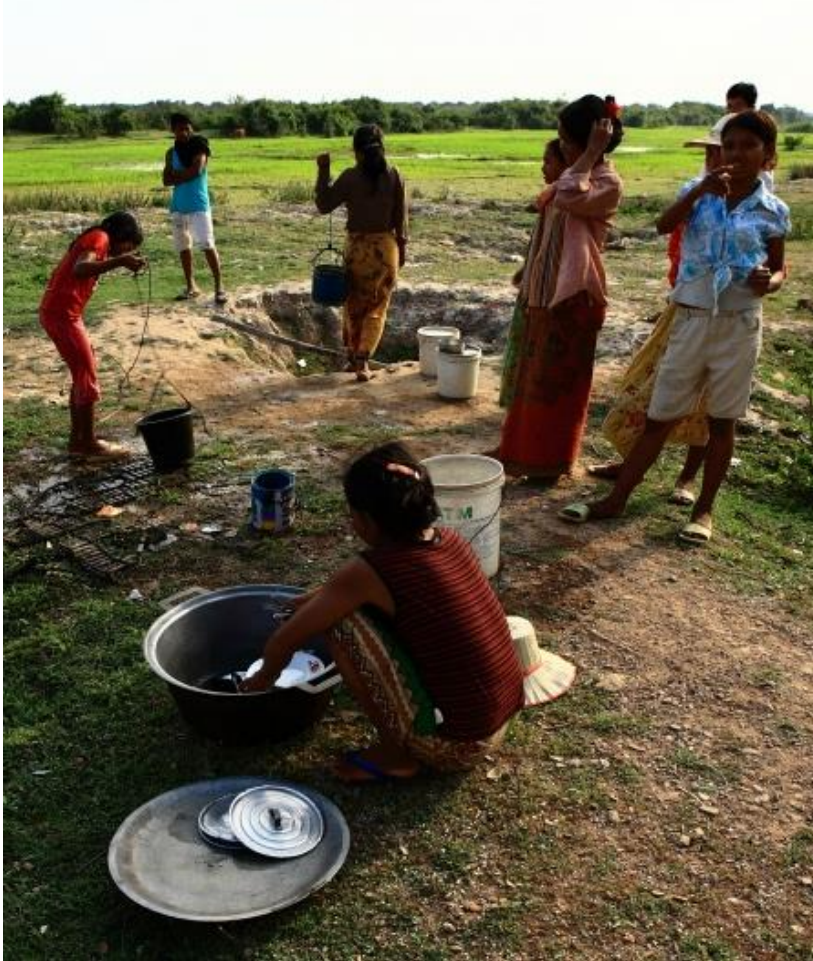
*The findings are relevant for the work that we are doing in Cambodia's REDD+ Taskforce Secretariat, particularly on the criteria to evaluate an effective, efficient and equitable **REDD+ grievance redress mechanism**. We could develop policy with the lead research partner on the roles of gender in the development of **Cambodia's National REDD+ Strategy**, published in Outreach for COP21 in Paris.*

(Mr. Chhun Delux, Boundary Partner, Forestry Administration Cambodia, 2016)

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P1

SUMERNET 4 AII (2018-2023)



To improve the policies and practices in reducing water insecurities for all throughout the Mekong Region



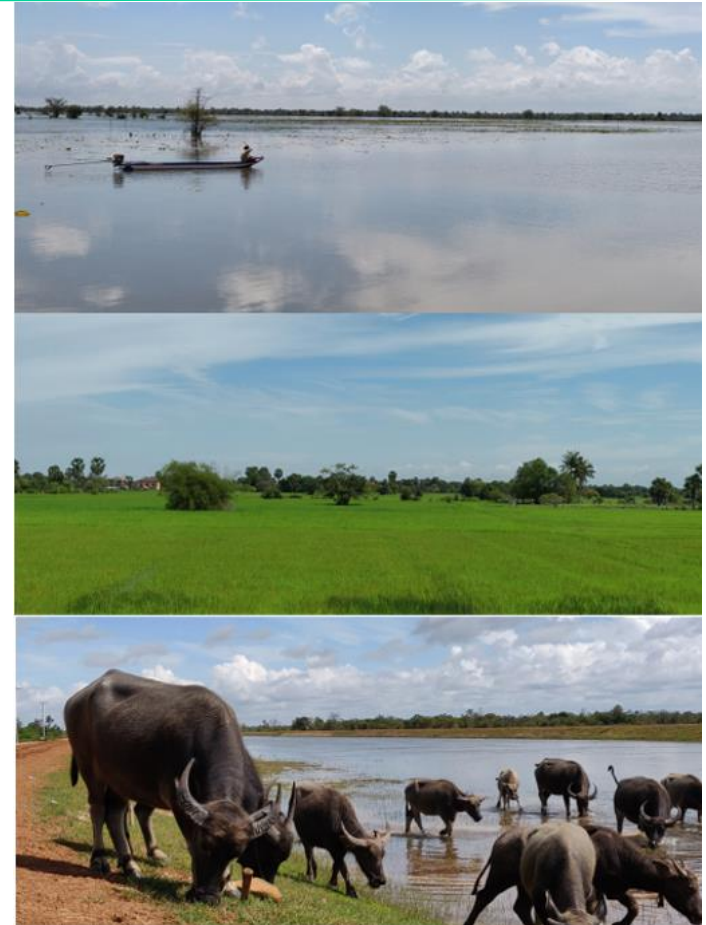
Sustainable Water Partnership

SWP

Goal: To strengthen water security, improve public health and livelihoods, alleviate poverty, encourage economic growth and promote political stability.

Objectives:

- Support and accelerate cross-cutting activities to advance USAID’s global water security through leadership, innovation and action at all levels.
- Identify and design relevant mission-specific initiatives.
- Implement demonstration activities with potential to yield measurable improvements.

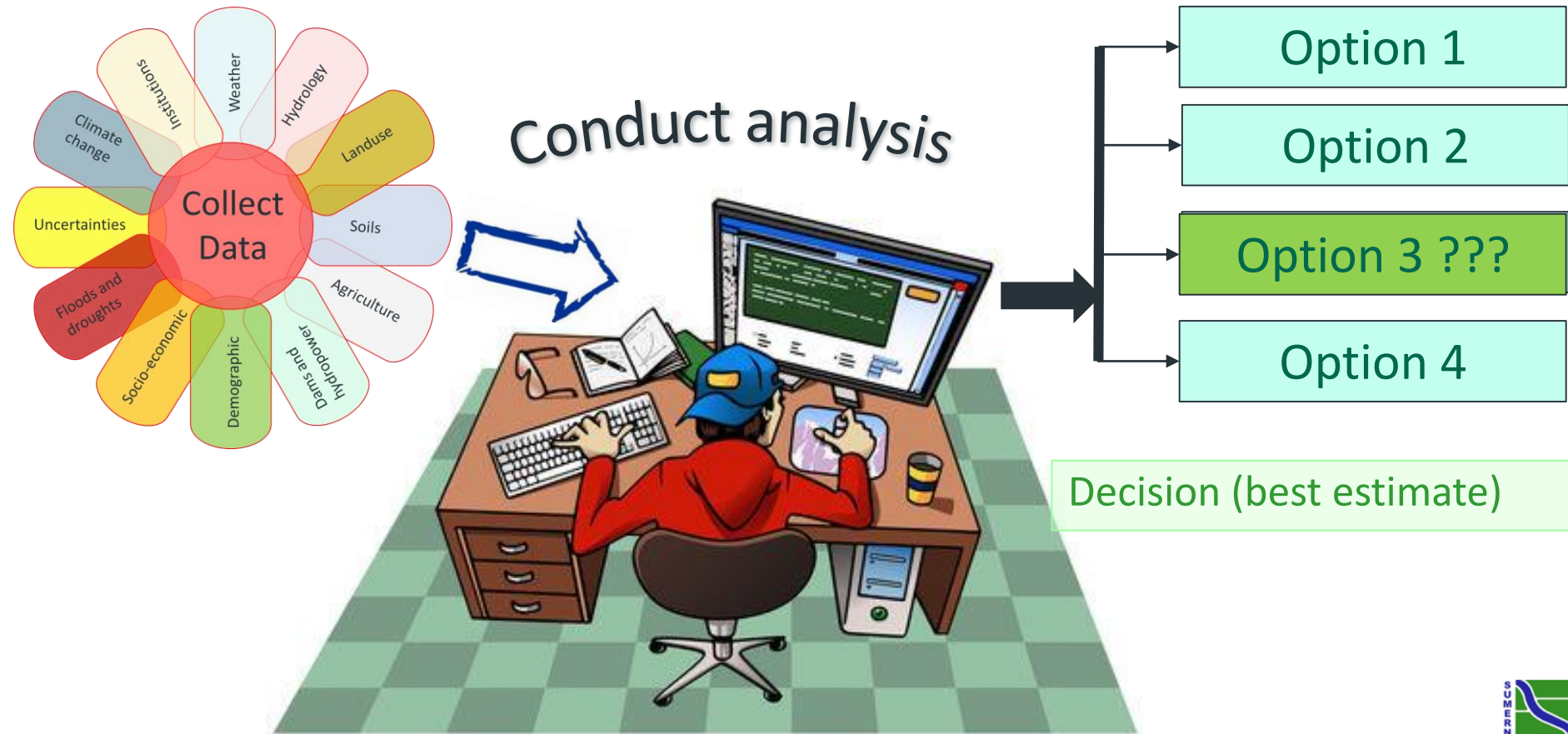


Credit: Manish Shresta’s photograph for SWP Cambodia



Why we need an innovative approach for managing water resources?

Traditional approach that “Predict then act” is no longer sufficient



Water Security Improvement (WSI) Process

The Water Security Improvement (WSI) Process



Builds on Eight WSI guiding practices

1. Pragmatic focus on specific water risks
2. Engagement and mobilization of water users
3. A “systems thinking” approach
4. Robust decision-making to address uncertainties
5. Science-based, negotiated solutions
6. Integrated solutions to produce tangible benefits
7. Adaptive management to improve over time
8. Sustainability through economic efficiency, environmental soundness, and social equity.

The process has an Inception Phase and Five Steps that is being iteratively implemented through a suite of tools: <https://www.swpwater.org/>

Robust Decision Support (RDS)

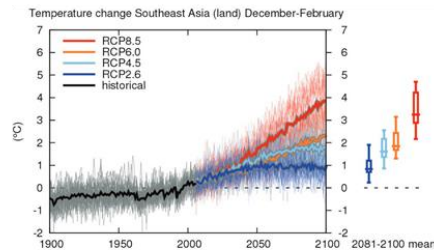
*A framework to identify potential robust strategies, characterize the vulnerabilities of such strategies, and **evaluate trade-offs** for a specific water management issue under uncertain conditions.*

Difference is **Inherently participatory to address the uncertainty** in water resources management

Strategies



Uncertainties



POPULATION



Run model for hundred times



Scenario exploring



Identify water management hotspots

CAMBODIA



PAKISTAN



KENYA/TANZANIA



Working approach



Engage stakeholders and promote their participation in water management



Propose tools and models to assess water issues and plan water actions



Provide a guided process to assist water decision-making at basin-level

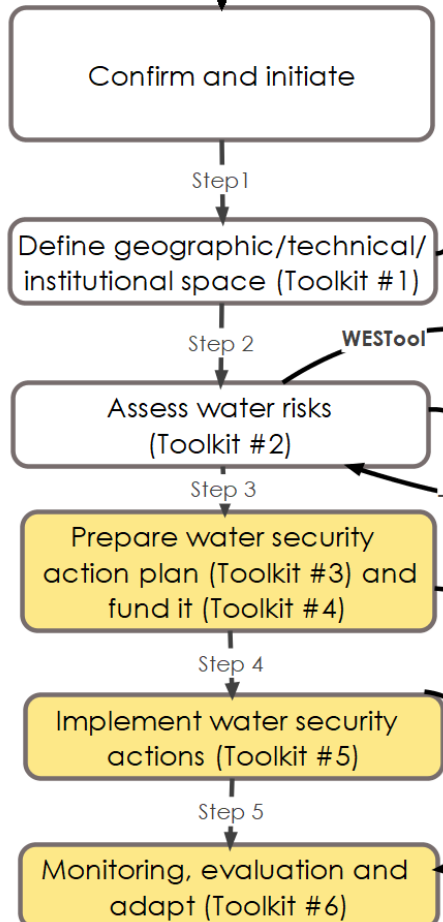


Support the design and implementation of mutually supportive water activities

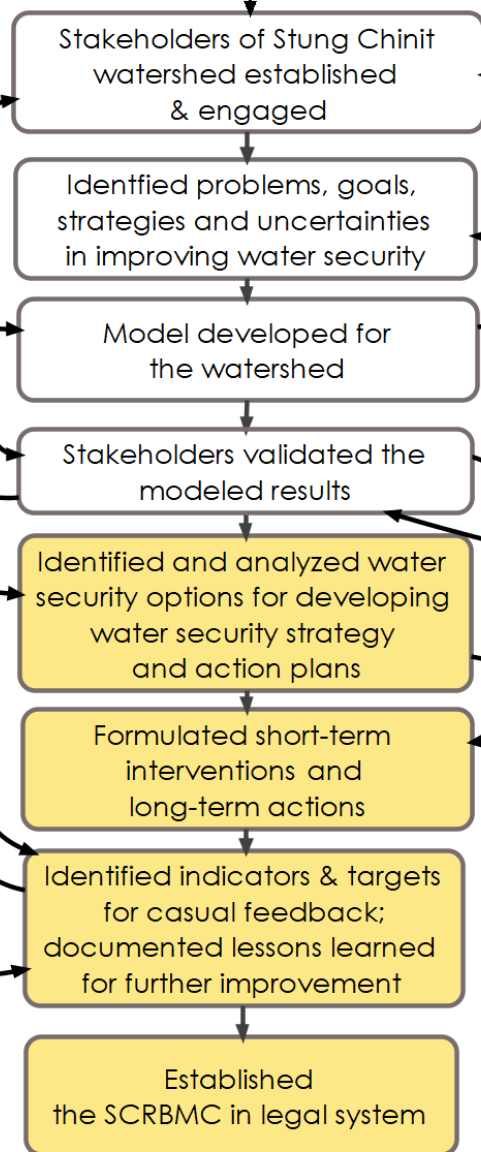


Facilitate collaboration, learning and adaptive management

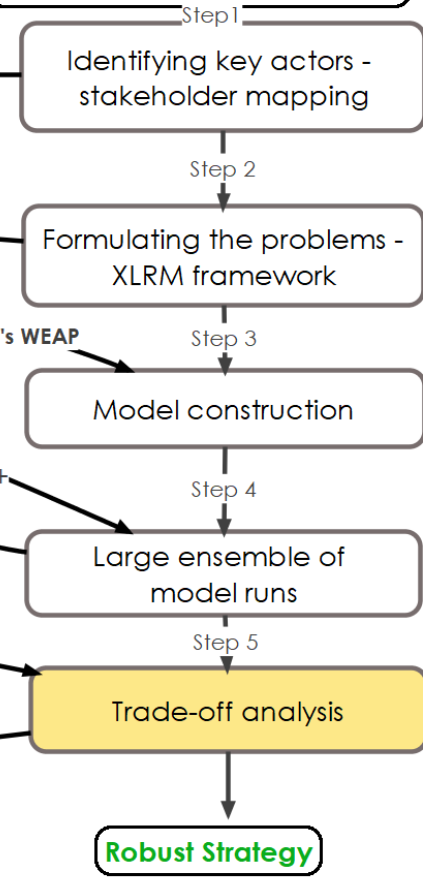
Water Security Improvement (WSI) Process



Outputs



Robust Decision Support (RDS) Process



Work in Progress

Year 1
(Sept-2017 – Oct-2018)

Year 2
(Oct-2018 – Sept-2019)

Completed
In progress





Chindwin Futures

An initiative towards
sustainable development in
Chindwin River Basin

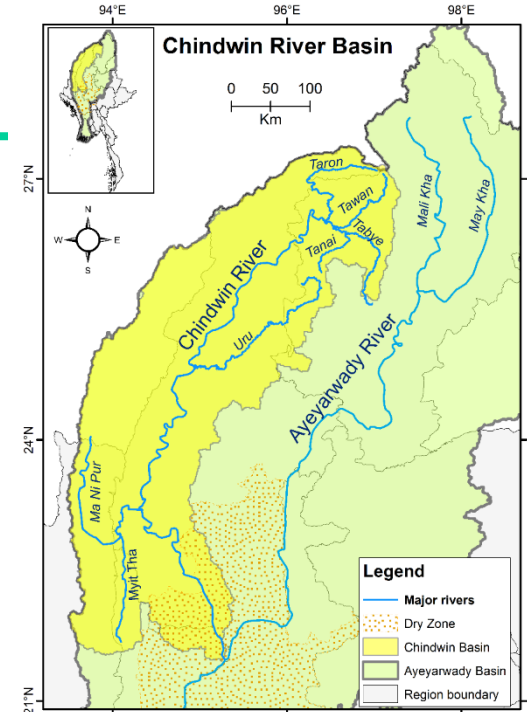
Myanmar

Chindwin Futures

Goal: To support sustainable development through evidence-based & inclusive multi-stakeholder participatory planning processes, Chindwin River Basin.

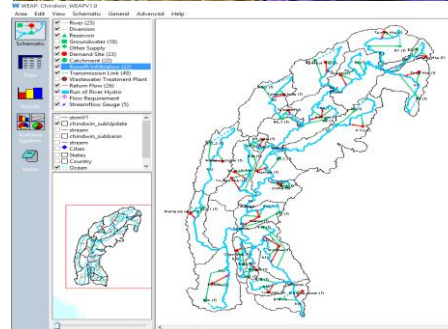
Objectives:

1. Design **Chindwin River Basin Organization (RBO)**
2. Discuss alternative water resources development strategies through **socially- and gender-inclusive multi-stakeholder dialogue process**.
3. Conduct **Chindwin Futures Assessment (CFA)** to improve understanding of 'state of the basin' and support planning and development.
4. **Strengthen the capacity of state and civil society actors** to inform and engage in assessments/discussions on planning development strategies and decisions.



Project activities

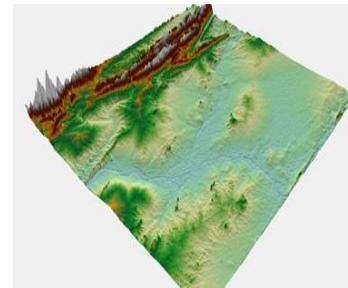
- Literature review & Data collection
- Exploring scenarios
- **Hydraulic models for flood management by HEC-RAS**
- **WEAP Hydrological and water resources models**
- **Water sampling and quality test**
- Household surveys & Semi-structured interviews
- **Multi-stakeholder dialogues**
- **Design of Chindwin RBO**



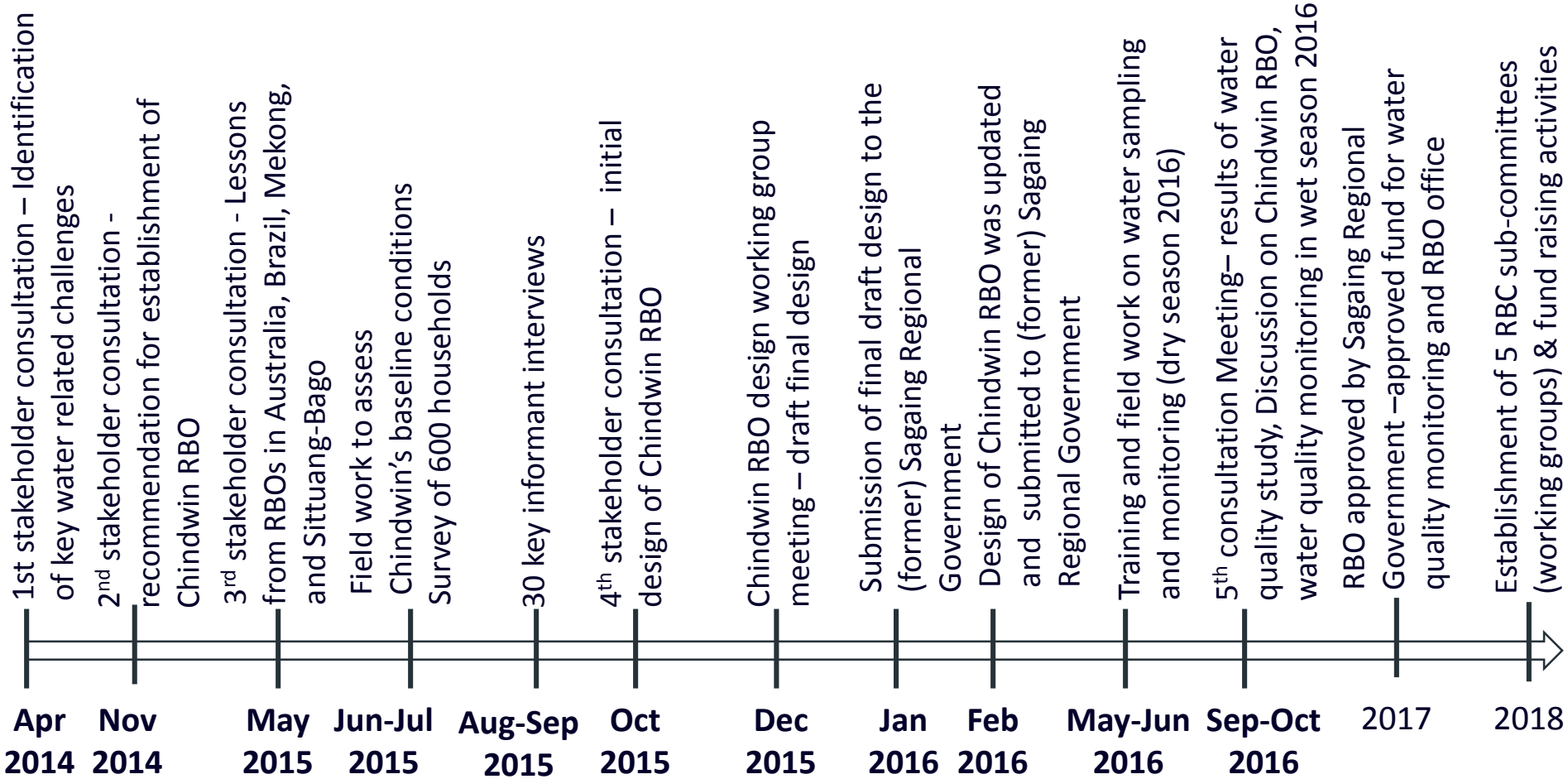
Preliminary selected scenarios in Chindwin

Scenario 1 – Wrong heaven <ul style="list-style-type: none"> • High Mining • Weak Law Enforcement 	Scenario 3 – Developed Chindwin <ul style="list-style-type: none"> • High Mining • Low Deforestation
Scenario 2 – Safe Mining <ul style="list-style-type: none"> • High Mining • Strong Law Enforcement 	Scenario 4 – Challenging Chindwin <ul style="list-style-type: none"> • High Mining • High Deforestation
Scenario 5 – Water Governance and high technology <ul style="list-style-type: none"> • Strong Water Policy • High Technology 	

Key drivers: (1) Mining, (2) Deforestation, (3) Policy and law enforcement, (4) Technology, (5) Agriculture and (6) Climate Change



Multi-stakeholder engagement process



Future research areas in Chindwin

1. **Setting up the RBC membership and Secretariat** to initiate activities
2. **Clarifying with concerned agencies** how the proposed mandates of Chindwin can be compliance with existing governmental system
3. **Understanding existing policy and legislative frameworks** in Myanmar that will support the establishment and operation of Chindwin RBO.
4. **Raising the funds from various sources (government, external donors, private sector)** to support Chindwin RBO's establishment and operation
5. **Strengthening human and institutional capacity** of concerned governmental agencies and civil society involved in the operation of Chindwin RBO.
6. **Raising community's awareness and encouraging their participation**
7. **Using the funds from existing projects to support some of above activities, while continuing the research to understand the situation better.**

Thank you!

Stung Chinit watershed goals, strategies and uncertainties for water security

Stung Chinit watershed goals

Increase crop productivity and profitability of agricultural production	Provide flood protection as well as, drought resilience	Increase the sustainable production of fish via preservation of aquatic ecosystems	Provide clean water for people
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Strategies to achieve watershed goals (L)

<p>Use different cropping patterns</p> <p>Modernize and improve irrigation systems and canals to increase the irrigated area of the basin</p> <p>Increase the reliability of water for irrigation via the construction of a dam/reservoir</p> <p>Educate farmers about improving yields with different crop varieties and soil conservation for soil fertility</p>	<p>Introduce reforestation programs</p> <p>Construct a dam/reservoir to control flood flows</p>	<p>Impose an environmental flow requirement to ensure adequate flows for wetlands that are critical habitats for fish</p> <p>Policies to ensure reduced agricultural pollution, which harm frogs, fish and insects and disrupt ecosystems</p>	<p>Education and legislation to reduce the use of agricultural chemicals and increase the use of natural fertilizers</p> <p>Prevent waste from entering the rivers/streams</p> <p>Provide filters to households</p>
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Uncertainties (X)

Climate change- increase of floods and droughts

Population growth

Degrading soil quality which leads to decreased productivity

Poor water quality

Deforestation

Migration

XLRM elements developing from the group exercises

Stung Chinit Watershed Goals:

G1: increase crop productivity and profitability | G2: increase flood protection

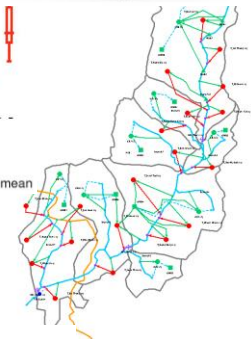
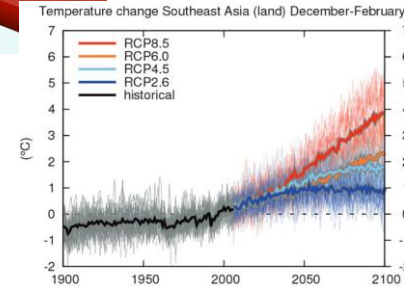
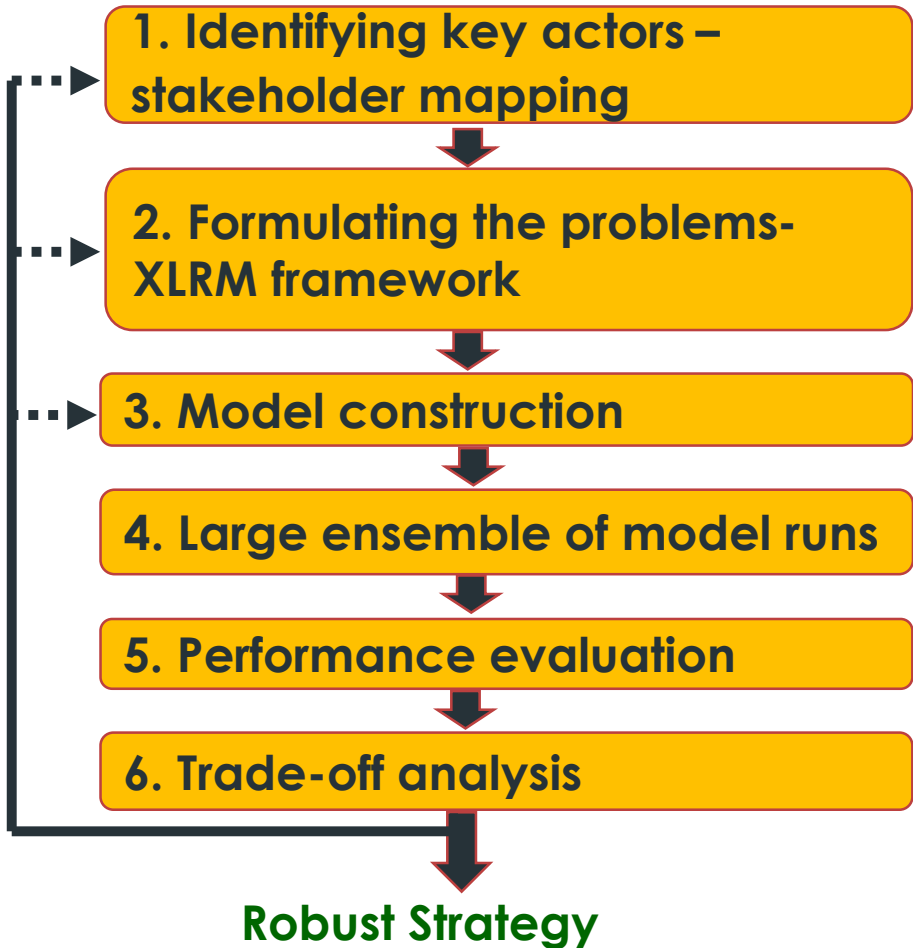
G3: Increase sustainable fish production

Uncertainties	Strategies
1: Climate change 1a: Low global temperature increase scenario 1b: High global temperature increase scenario 2: Out migration (-3%) 3: Population Growth (1.5 X historical growth rate)	1: Business as usual: plant rice 1 time/year 2: Change cropping patterns 2a: Plant rice 2 times/year 2b: Plant rice 3 times/year 3: Increase irrigated area with new canals and 3a: Plant rice 1 time/year 3b: Plant rice 2 times/year 3c: Plant rice 3 times/year 4: Reforestation (replaces forest loss since 2008) 5: Maintain environmental flows for fish
Model Water allocation model: WEAP	Metrics of performance For rice: 1: Water supplied 2: Demand coverage 3: Yield For fish: 1: Streamflow

Exploring scenarios in Stung Chinit WEAP model

Variation	Description
Climate Projections	
Baseline	Historical climate, projected to the future
C1	RCP 4.5
C2	RCP 8.5, first 50 years
C3	RCP 8.5 last 50 years
Rice Crop Schedule	
R1	Wet season rice
R2	Early wet season and wet season Rice
R3	Early wet season, wet season and dry season rice
R4	Four rice crops per year
Increase Irrigated Area	
I1	Maintain irrigated area at max size in 2017 for all irrigation schemes
I2	Increase area of all irrigation schemes by 10%
Prioritize water for different demands	
P1	During shortages, ensure 95 percentile flow downstream of reservoirs as first priority, before delivering irrigation water
P2	During shortages, ensure supply to irrigation as first priority

Iterative processes of RDS



Irrigated Use

Climate Change	Landuse Change	Substrate - Strategy											
		CIS			CIS			CIS			DEF		
		00	01	02	00	01	02	00	01	02	00	01	02
Wet Climate	1. Same Land Use	7%	2%	0%	3%	1%	1%	13%	9%	4%	45%	45%	45%
	2. Sugar to Rubber	2%	2%	0%	3%	1%	1%	13%	9%	4%	45%	45%	45%
	3. Increase Irrigation	1%	2%	0%	3%	1%	1%	13%	9%	4%	45%	45%	45%
	4. Combination 2+3	2%	2%	0%	3%	1%	1%	13%	9%	4%	45%	45%	45%
Dry Climate	1. Same Land Use	7%	2%	0%	12%	12%	7%	18%	13%	4%	47%	47%	47%
	2. Sugar to Rubber	2%	2%	0%	12%	12%	7%	18%	13%	4%	47%	47%	47%
	3. Increase Irrigation	1%	2%	0%	12%	12%	7%	18%	13%	4%	45%	45%	45%
	4. Combination 2+3	2%	2%	0%	12%	12%	7%	18%	13%	4%	45%	45%	45%
Wet Climate	1. Same Land Use	7%	2%	0%	3%	7%	0%	17%	9%	4%	42%	42%	42%
	2. Sugar to Rubber	2%	2%	0%	7%	7%	0%	17%	9%	4%	42%	42%	42%
	3. Increase Irrigation	1%	2%	0%	7%	7%	0%	17%	9%	4%	42%	42%	42%
	4. Combination 2+3	2%	2%	0%	7%	7%	0%	17%	9%	4%	42%	42%	42%

XLRM framework : Problem formulation

- X (Uncertainties) ➤ What are the factors of uncertainty that are outside of the control of those that manage water resources, but that can affect drought management?
- L (Policy) ➤ What are the available (or potential) strategies/policies/projects to improve the drought management
- R (Relationships /Model) ➤ What are the available tools for evaluating strategies under various scenarios?
- M (Measurement) ➤ How to assess the performance of strategies on their services? What indicators?

XLRM framework : Problem formulation

Uncontrolled factors (X)

- Rain, temperature, population and etc.



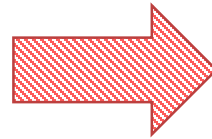
Policy (L)

- Dam construction, change of crop calendar and etc.

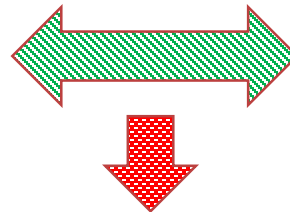
Performance measurement (M)

- Satisfied level of water storage in reservoir (cubic meter)
- Irrigated areas during dry season
- Well being
- Happiness

Input for model

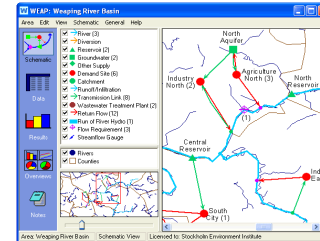


Comparison of indicators and model results



Evaluate the strategies

Model (R)



Model results in terms of water storage in retention, water allocated for irrigated rice and etc.

- Questionnaire
- Interview

Validation points & outputs



Year 1 (Sept 2017-Oct 2018)

Stakeholder mapped
 Focused problems formulated
 Model development and simulation
 Model validated by stakeholders
 Potential water management strategies discussed and identified to be incorporated into action plan for the basin planning

Year 2 (Oct 2018-Sept 2019)

Stakeholder engagement
 Water security assessment
 water security interventions
 Water security options
 Water security action plan
 Implementation of water security actions
 M&E and adaptation
 River Basin Management Committee



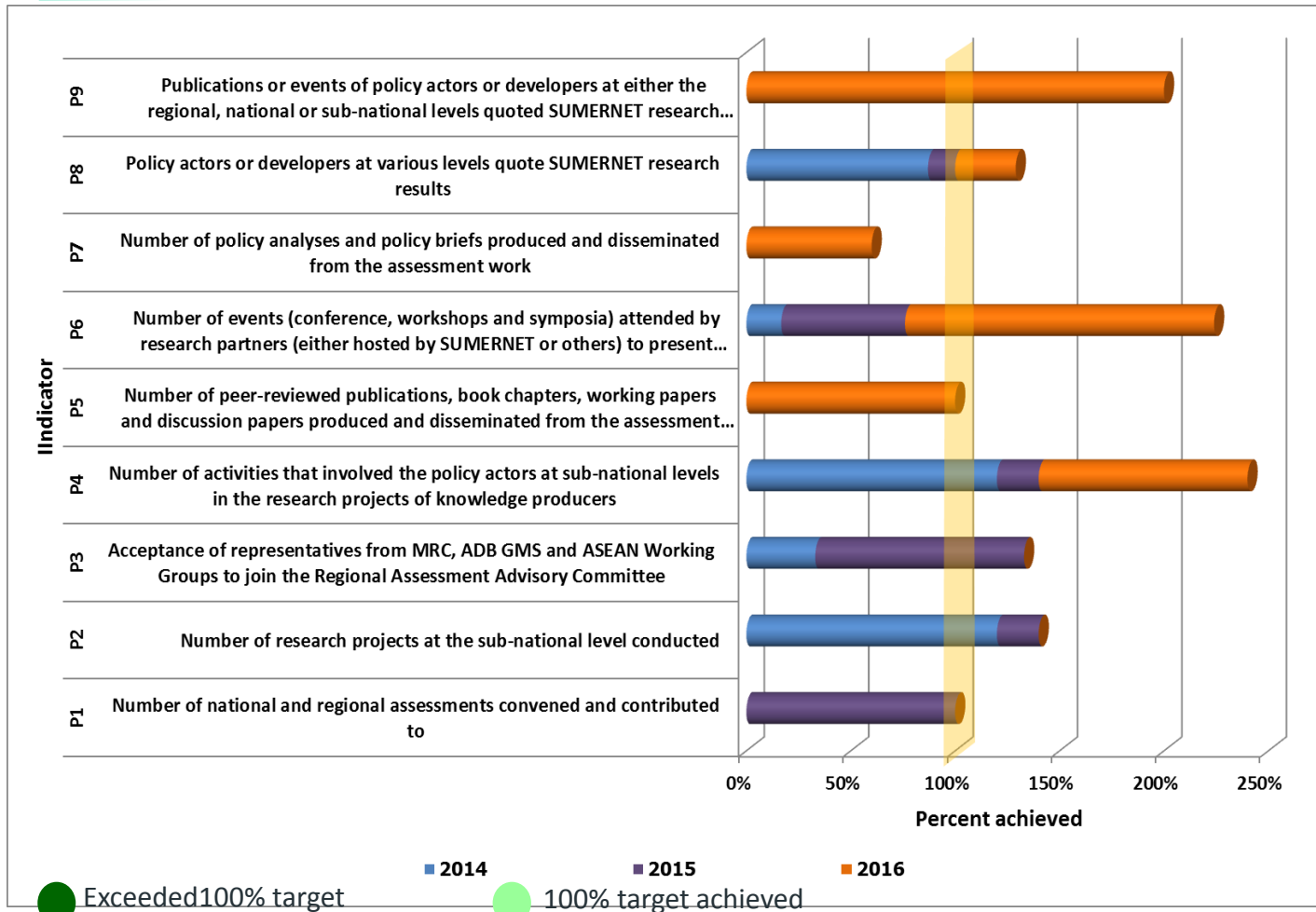
Water Security Improvement (WSI) Outcomes

Satisfying sectoral needs while coping with risks through activities that support and enhance water availability, access, and safe use.

- **Availability:** sufficient quantities of water now and in the future.
- **Access:** natural and man-made water, ranging from water allocation, quality, rights, and pricing to infrastructure management and service delivery.
- **Safe use** for the quality needs of all users, reliability over time; and resilience to water risks.



Monitoring and Evaluation on the Progress of Research Collaboration



	2014	2015	2016
P9	Yellow	Yellow	Dark Green
P8	Yellow	Yellow	Dark Green
P7	Yellow	Dark Green	Dark Green
P6	Yellow	Yellow	Yellow
P5	Yellow	Yellow	Dark Green
P4	Yellow	Yellow	Yellow
P3	Yellow	Yellow	Yellow
P2	Dark Green	Dark Green	Dark Green
P1	Yellow	Dark Green	Dark Green
	Dark Green	Dark Green	Dark Green
	Yellow	Light Green	Light Green

● Exceeded 100% target
● Achieved as expected but not reach 100% target yet
● 100% target achieved
● Achieved the below expectation

Changes in the behavior of the partners

Knowledge-Attitude-Practice (KAP)

Overall Change (139 stories of change)

