

# **BENEFIT SHARING AND THE SUSTAINABILITY OF HYDROPOWER**

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# Outline

- Sustainable hydropower?
- Benefit sharing models
- Study design
  - Case study
  - Data sources
  - Analytical framework
- Findings
- Significance



**Agriculture in lower watershed, Tha Faek, Uttaradit Province** (Source: Ministry of Labour)

# Rationale



**Tha Pla, downstream of Sirikit Dam,  
Uttaradit province**  
(Source: Uttaradit Provincial Office)

- Hydropower dams are built to produce electricity to meet projected energy demands and for sale to make a profit – they produce benefits for their developers.
- At the same time large dams have various negative environmental and social consequences, in particular, upon those who must be resettled or whose livelihoods are disrupted

# Sustainable hydropower?

A ladder of technical processes which *may* help improve the sustainability of hydropower development



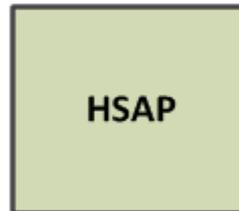
## **Demand-side management (integrated resource planning)**

How much energy do we really need if use it more sustainably?



## **Strategic Environmental Assessment**

Are there plausible, alternative, ways of more sustainably meeting energy needs?



## **Hydropower sustainability assessment protocol**

Could this proposed project be plausibly made sustainable if done right?



## **Environmental and Social Impact assessment**

What will be the impacts of this project and can they be sustainably managed?



## **Benefit sharing**

This project has or will likely be built: will adversely affected people receive adequate stream of benefits?

# Benefit sharing

“The anticipated and actual revenue earned by hydropower plants from the production and sale of electricity could be shared with residents of hydropower watersheds to help offset the adverse impacts of construction and operation as well as help alleviate poverty.”

# Four 'benefit sharing' models

Model	Rationale	Design		
		Governance mode	Watershed Beneficiaries	Period
<b>Resettlement Compensation</b>	Compensate for loss of livelihoods and assets and direct costs of resettlement	Regulatory or private industry standards	Resettled	During construction
<b>Corporate Social Responsibility</b>	Maintain reputation by demonstrating care for environment and human welfare	Private and voluntary	Residents	Once are perceived threats to reputation
<b>Community Development Fund</b>	Benefits derived from making electricity should be shared with dam-affected people	Regulatory	Residents	Once electricity is produced
<b>Payments for Ecosystem Services</b>	Reward for foregoing particular land-uses or changing practices so valued service downstream is maintained or enhanced	Market-based but often with state support	Those in watershed who provide service (and buy it)	Once electricity is produced and conservation threats are recognized

# Objectives

## Purpose

- The purpose of this study is to examine the different ways in which the benefits from hydropower watersheds have been shared in Sirikit Dam, northern Thailand.

## Questions

- How was the program justified and designed?
- What benefits did the program provide and were they adequate?
- What are the opportunities and barriers for implementing effective programs?



# Interviews



**Interviews with local leaders in watershed and official at dam.** (Source: USER)

Stakeholder type	n
Resident farmers	49
Local leaders	19
EGAT Officials	5
NGOs	5
Ministry of Environment	4
Other experts	3

- 30-60 minutes @
- All taped, transcribed and coded in NVIVO

# The rationale for the project

*“The project is an essential and integral part of the overall plan of agricultural development for the Central Plain of Thailand. It would assist in controlling the floodwaters, provide a dependable water supply during the dry season and permit more intensive cultivation of the land in the Chao Phaya area, as well as in the future irrigation development in the Nan River Valley. The additional water supplies impounded by the Phasom Dam would permit second cropping of the areas, enable greater crop yields to be obtained and substantially increase the value of Thailand's agricultural production and volume of export... The project's primary justification is for increased crop production but it will be possible without detracting from agricultural benefits to install significant power facilities at the dam. This will be done by EGAT”*

**The rationale for Sirikit Dam and hydropower station is all about benefits.** Phasom Dam later renamed to Sirikit. EGAT is the Electricity Generating Authority of Thailand.  
(Source: World Bank 1967, 1969)

# Compensation for resettlement

- Each household received 2.4 ha of land and some cash for tree assets
- Land allocation in the resettlement site was determined by a pooled lottery so relatives and former neighbours scattered
- Cash payments made to compensate for loss of income during early stages when conditions were difficult (e.g.no water)
- Many families abandoned the site to go and find work in other provinces; some returned to cultivate swidden fields in areas above the reservoir
- study published in 1999 found that quality of life of residents resettled following construction of dam did not meet the basic minimum requirements but that residents were largely satisfied with their living conditions and life

# Dissatisfaction persisted

*“...it had been forty years since we lost our good lands to the irrigation department for the construction of Sirikit Dam for irrigation and hydropower generation. The Tha Plah community did not receive the proper treatment it should have. The problems and difficulties of the villagers were left to the local government administration. But the allocated budgets were insufficient so there was little improvement.”*

**Village headmen**

(Source: Manager On-line)

- The initial compensation - based resettlement program was insufficient to rebuild livelihoods and reduce poverty.
- Additional assistance was needed and sometimes forthcoming.
- These follow-up activities eventually evolved into CSR programs

# Corporate social responsibility



**Building check dams in watershed**  
(Source: EGAT, Sirikit Dam)

**An officials view**  
(Source: USER)

*“...check dams help reduce fast flows and soil erosion. Reducing soil erosion creates a benefit as it reduces the sediments delivered to Sirikit dam. This is one direct benefit. Another benefit of check dams apart from reducing sediments is it slows flows. When flows are slow water has an opportunity to penetrate into soils around the stream. This helps make the vegetation grow well which improves the ecosystem. Trees grow well, forest animals come, and the ecosystem improves. Another benefit is that it makes the water clear.”*

# Alternative livelihoods

## Fish for trees



**Distributing fish fingerlings**  
(Source: EGAT, Sirikit Dam)



## Weaving everything

*“There is no market. They made everything: Brooms, baskets, and woven mats. But there was no place to send things; there was no market to take them.”*

*“When villagers make their things under supplementary livelihood projects they need help to find buyers, to sell their products. The project should take some responsibility to help find markets as well.”*

**Farmer and headmen perspectives**  
(Source: USER)

# Power Development Fund

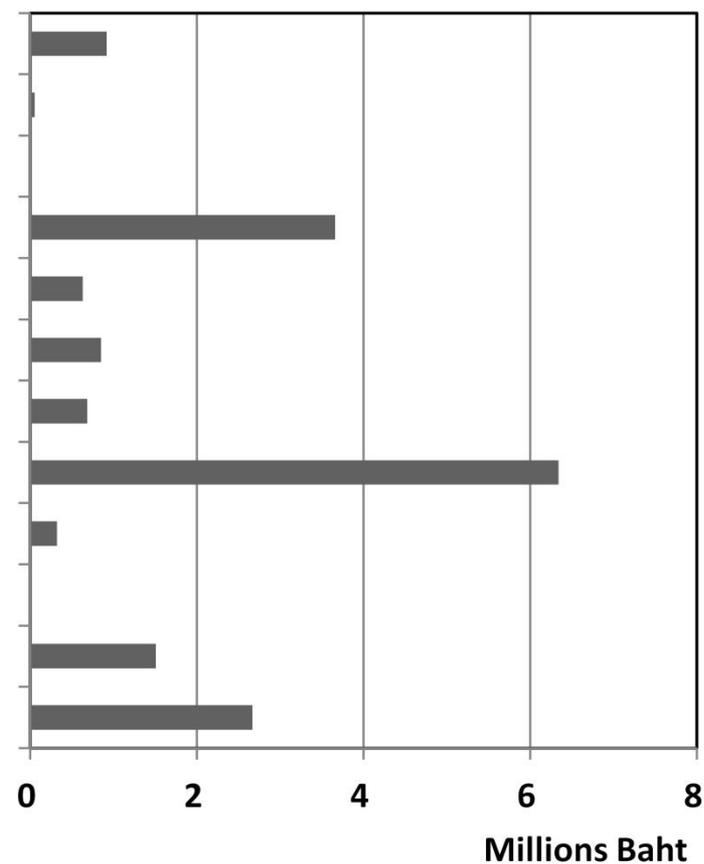
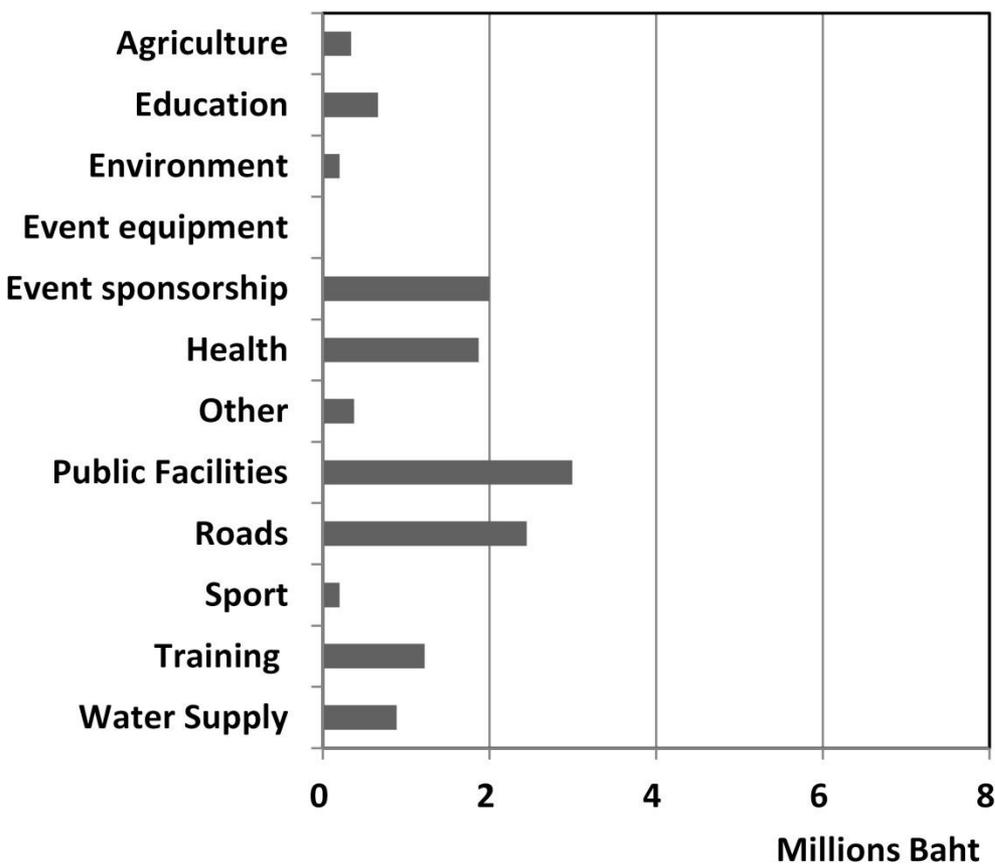
- development or rehabilitation of localities affected by power plant operation
  - funds come from levied contributions on electricity power plants (0.2%)
  - In Sirikit case governed by a community development committee (1/3 state)
- enhancement of health and well-being;
  - livelihood development;
  - agricultural development;
  - community economic development;
  - quality of life improvement;
  - development of the local education, religion, culture and tradition;
  - community development;
  - environmental conservation and rehabilitation;
  - expenditures on an emergency and a relief for those in trouble;
  - development of fund personnel

Criteria for evaluating proposals  
(Source: ERC)

# PDF Budget allocation

## State Agencies

## Communities



# Payments for ecosystem services

*“If we do anything it impacts everything. People cut trees and the city of Nan floods. If it has negative impacts on the people of Nan it has impacts on water users as well. If we help them not destroy natural resources and the environment too much they can help themselves as well through the funds we support them with. When there are people ready to provide funds I want people with genuine intentions. Some people just want the money. The natures of people who just do it for the money don’t do it for real. But, there are many people who are really interested”*

**A farmers perspective on idea of watershed fund**  
(Source: USER)



**Biodiversity-based Economy Development Office (BEDO) and UNDP have promoted the PES concept strongly**  
(Source: USER)

# Nan watershed fund

*“there was no mention of where the funding would come from – if the funds were to come from the dam, from other water users, whether it was Coca-Cola or Singha, or the irrigation department. The idea, a simple idea, was to help restore degraded forest and adjust production practices of the villagers. At the time we understood that if the water was red, if there were landslides, the primary effect would be on Sirikit Dam. When there is little water the dam could not produce electricity; if the water was high in sediments then they would have to dredge and it would cost millions.”*

**A senior official explain original logic of Nan watershed fund**  
(Source: USER)



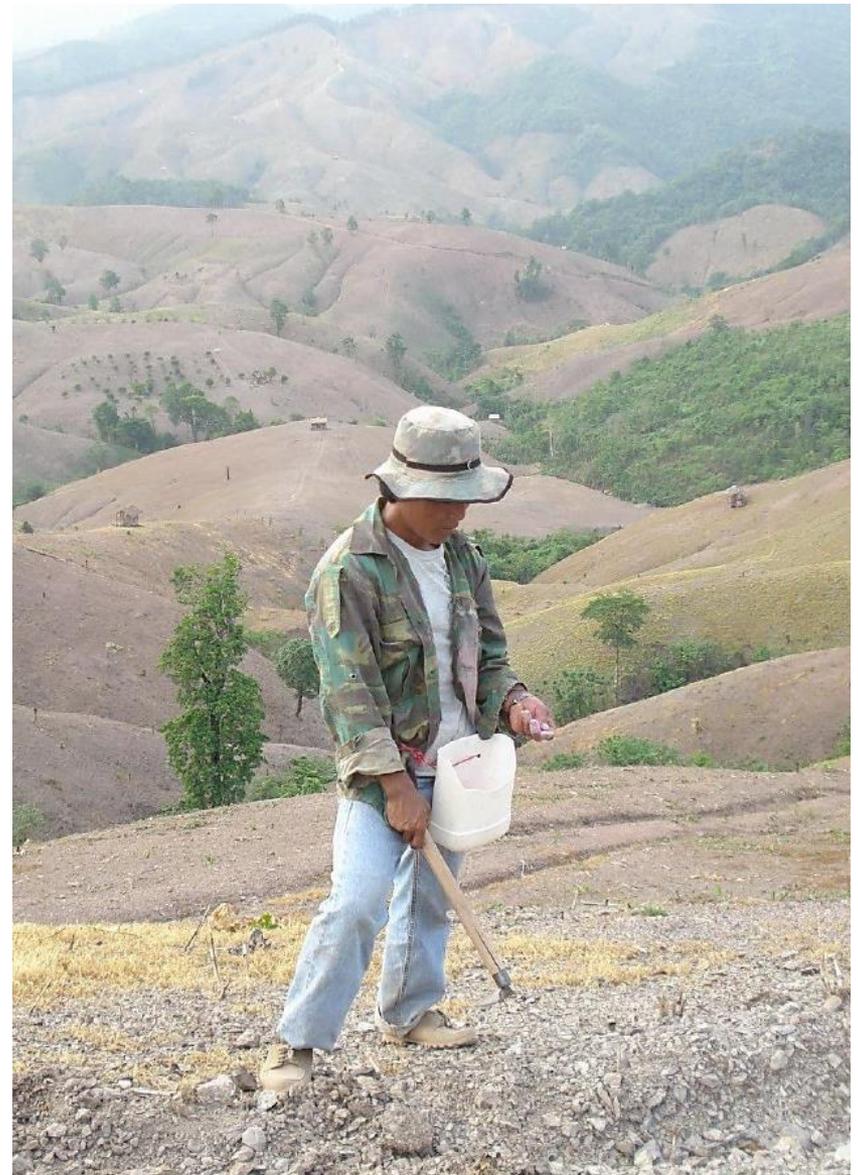
รายงานการประเมินระบบนิเวศ  
และกำหนดทางเลือกการพัฒนา  
สู่การอยู่ดีมีสุข  
ในจังหวัดน่าน

Report on the Sub-global Assessment (SGA) for Nan, Thailand

**The Thailand Environment Institute  
conducted on ecosystem service assessment  
in the upper watershed**(Source: TEI)

# Challenges

- lack of information and transparency
- legal and institutional issues (land tenure)
- Fragmentation
- Poor understanding of PES
- Inadequate motivation and incentives
- Lack of clear indicators
- Dam not convinced that sedimentation from land-use a key issue



**Planting maize in upper watershed, Nan Province**  
(Source: TEI)

# Main findings from case study

- The earliest program on resettlement was of limited effectiveness because it placed a narrow emphasis on compensation.
- The corporate social responsibility program has been ad hoc, modest in level and not always geared towards priority needs.
- The recently launched Power Development Fund is a much more promising framework as it involves true sharing of benefits and project selection is significantly driven by community needs.
- A pilot exploration of watershed fund based on payments for ecosystem services concepts looked likely to falter from lack of interests among potential buyers and other institutional barriers.

# Cambodian case studies

## Kamchay

- Kompot province
- Built in 2007
- USD280 million, Sinohydro
- 44y build-operate-transfer
- 194 MW
  
- Community and environment plans only
- No preferential rates

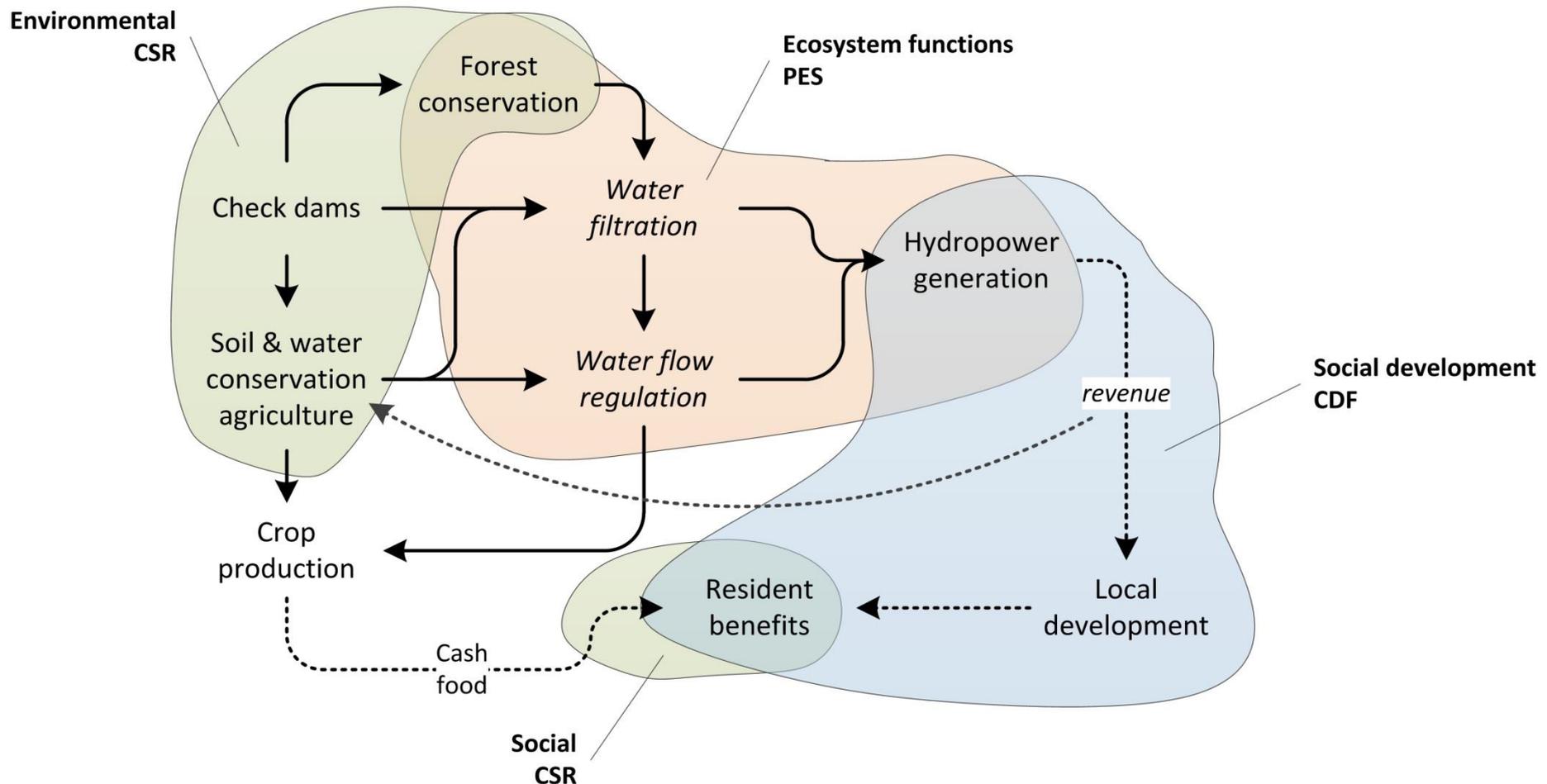
## Lower Sesan 2

- Stung Treng province
- Under Construction
- USD816 million, multiple
- 45y build-operate-transfer
- 400 MW
  
- General revenue promise
- No preferential rates
- No common framework

# Significance

- well designed and managed benefit sharing scheme could have significant social and environmental benefits
- Community development fund approach looks promising, but...
- in large and complex hydropower watersheds, it may make sense to allow multiple benefit sharing schemes to operate, or for hybrid models to be considered

# Mixed or hybrid approaches?



# Conclusion

- Some hydropower projects have already been built, others are likely to: careful consideration of benefit sharing arrangements is important for socio-economic, and perhaps also, ecological sustainability
- Different benefit sharing models are driven by distinct motivations and create different incentives and challenges: institutional design and the political-economy surrounding projects both matter.
- We can learn from the past and other locations within the Mekong Region, *some* lessons, but not all – there are many ways for plans and policies to be de-railed

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