PES Implementation in Thailand and GMS

Watershed degradation

Water quan * qual

Human well-being & PES

Local policy design & implementation:
**Thadee watershed**
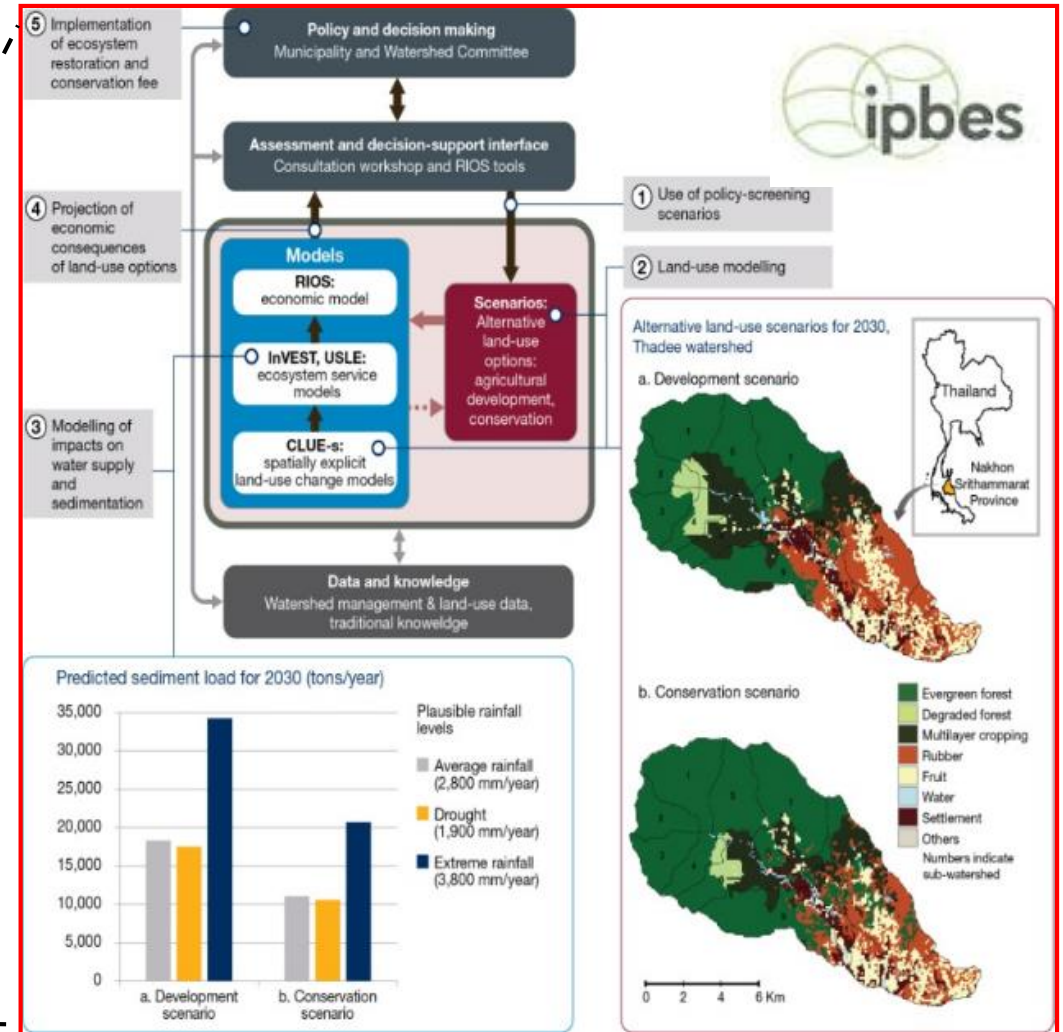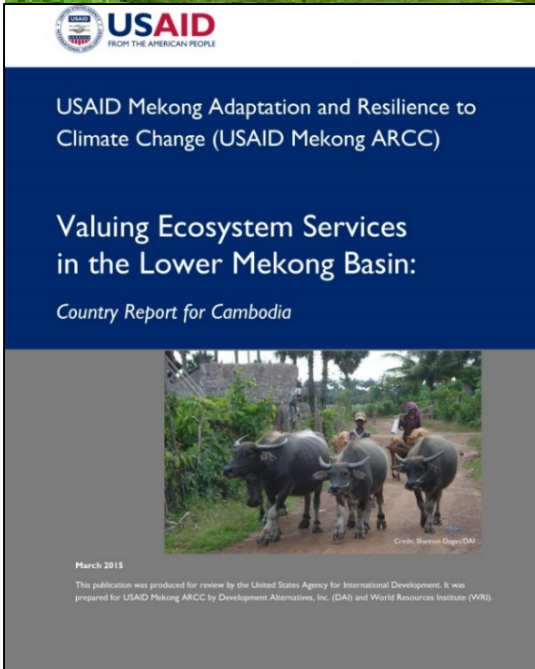
Thadee WSH, 120 m²

What would be **future LU/LC?**

To **what extent** future LU/LC will cause **consequences** on watershed services?: Where an *optimize* **investment** to yield **highest ecosystem services?**

Water source for tap-water in the city

01/04/2011

Direct/indirect drivers

- Fruit prices?
- Rubber plantations
- Restriction and local awareness
- Climate (extreme rainfall)
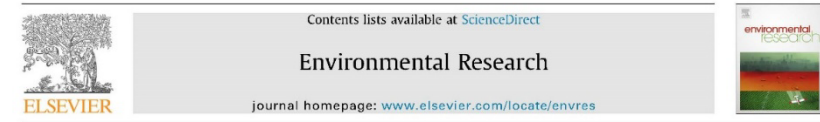
Integrating land use and climate change scenarios and models into assessment of forested watershed services in Southern Thailand

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A B S T R A C T

The Thadee watershed, covering 112 km², is the main source of water for agriculture and household consumption in the Nakhon Srithammarat Province in Southern Thailand. As the natural forests upstream have been largely degraded and transformed to fruit tree and rubber plantations, problems with landslides and flooding have resulted. This research attempts to predict how further land-use/land-cover changes during 2009–2020 and conceivable changes in rainfall may influence the future levels of water yield and sediment load in the Thadee River. Three different land use scenarios (trend, development and conservation) were defined in collaboration with the local stakeholders, and three different rainfall scenarios (average rainfall, climate change and extreme wet) were determined on the basis of literature sources. Spatially explicit empirical modelling was employed to allocate future land demands and to assess the contributions of land use and rainfall changes, considering both their separate and combined effects. The results suggest that substantial land use changes may occur from a large expansion of rubber plantations in the upper sub-watersheds, especially under the development land use scenario. The reduction of the current annual rainfall by approximately 30% would decrease the predicted water yields by 38% from 2009. According to the extreme rainfall scenario (an increase of 36% with respect to current rainfall), an amplification of 50% of the current runoff could result. Sensitivity analyses showed that the predicted soil loss is more responsive to changes in rainfall than to the compared land use scenarios alone. However, very high sediment load and runoff levels were predicted on the basis of combined intensified land use and extreme rainfall scenarios. Three conservation activities—protection, reforestation and a mixed-cropping system—are proposed to maintain the functional watershed services of the Thadee watershed region.
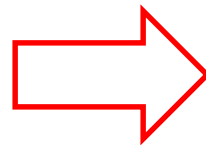
Opportunities

1. International & regional engagement and support (e.g., UN-MEA, IPBES, SDG 2030, CBD Aichi target, MRC, etc)
2. National policy (e.g, bio-economy)
3. Available tools and pilot projects/research
4. Awareness and interests (e.g., business, CSR, NGOs, individuals)

Significant remaining challenges

National scale implementation? (Vietnam)

- **Institutional perception** (extra work)

- **Recognition**, tangible **incentive** (public properties, voluntary vs compulsory, CSR & tax?)

- **Capacity building – ** resource economics, scenarios & models

- **Data availability** and accessibility

- **Implementation mechanism** (facilitators, seller & buyer, participatory approaches)

- **Sustainability** (donor-funded project, fancy CSR)

TEEP steps
Recognition
Demonstrating
Capturing