



**Synergies Between Ecosystem and Community Livelihood:
Climate Change Adaptation in Context of Sustainable
Development**

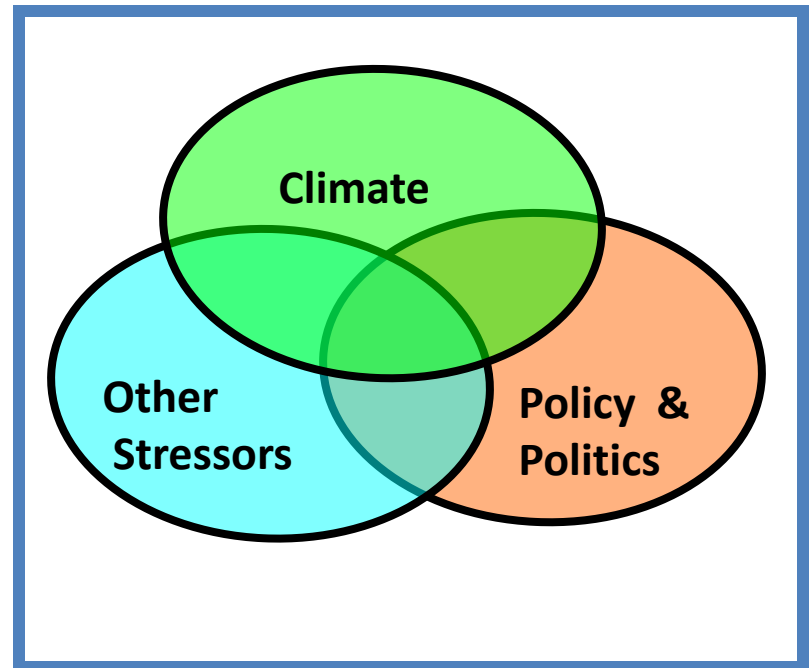
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SEA START RC

Being prepared for climate change : If adaptation is the answer, what is the question?

How should we plan for adaptation?

Issues of concern:

- **Climate is one input among many**
- **Multiple stressors**
- **Multiple Stakeholders**

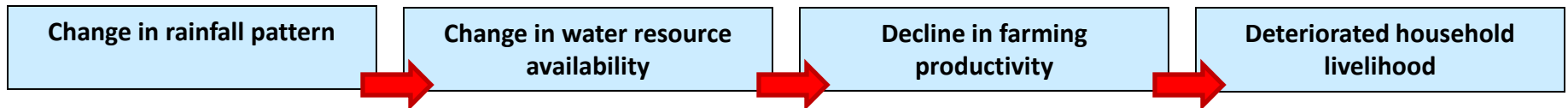


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Climate change adaptation context:

- Holistic view on climate change adaptation crucial to cope with complexity of the linkage between community livelihood and ecosystem
 - Climate change impact causes chain of consequences – from bio-physical to human livelihood

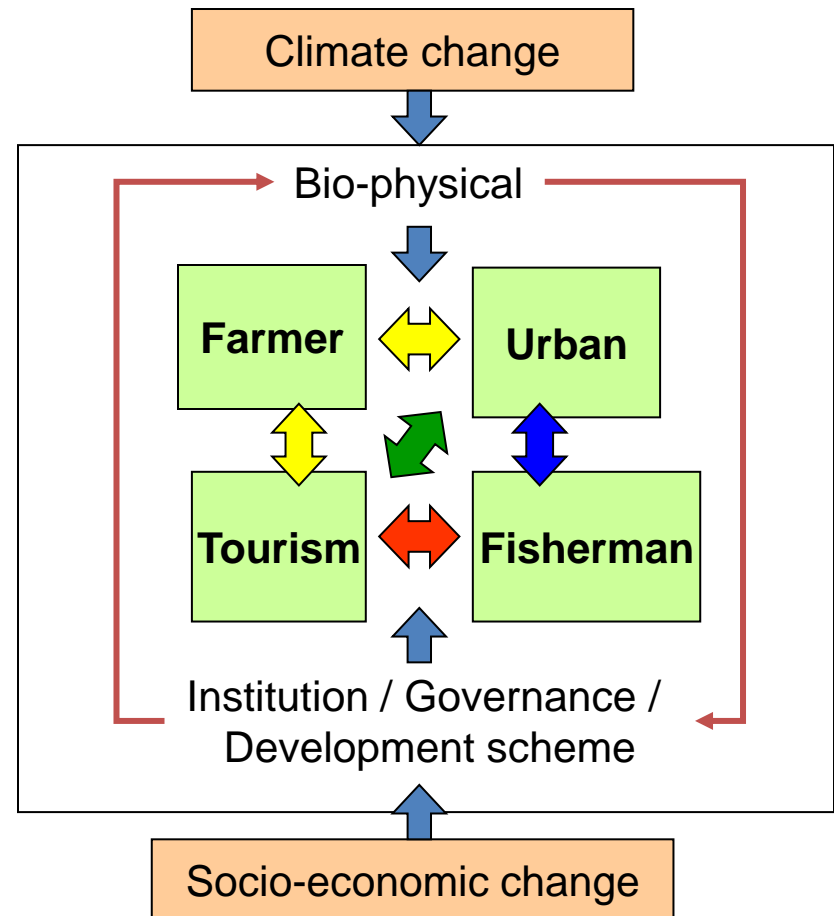
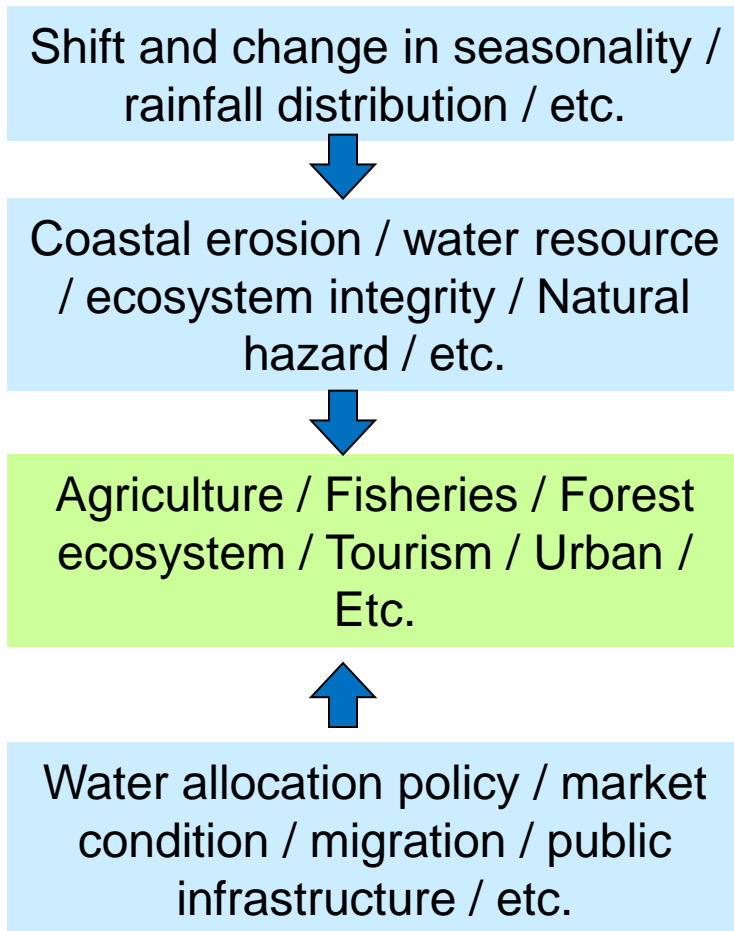


- Dependency of community livelihood on ecosystem integrity
- Response of each sector to change will have consequences on others sectors and systems
- Multiple aspects of adaptation: infrastructure, alternate livelihood, new practice, institutional arrangement, etc. – not necessary action, but long-term strategy.

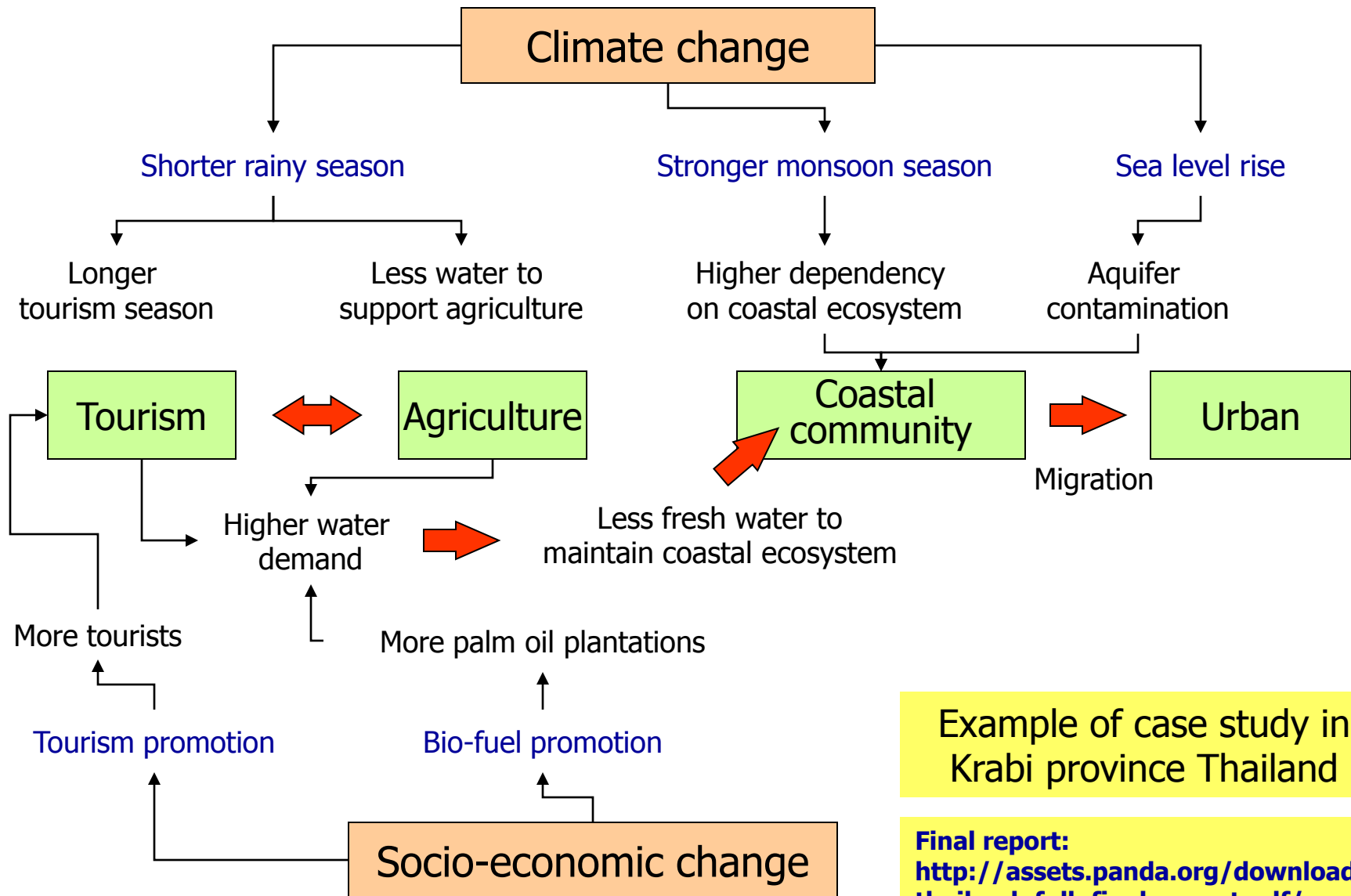
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Holistic view on climate change risk:

We cannot consider single sector nor look at climate change as isolate issue



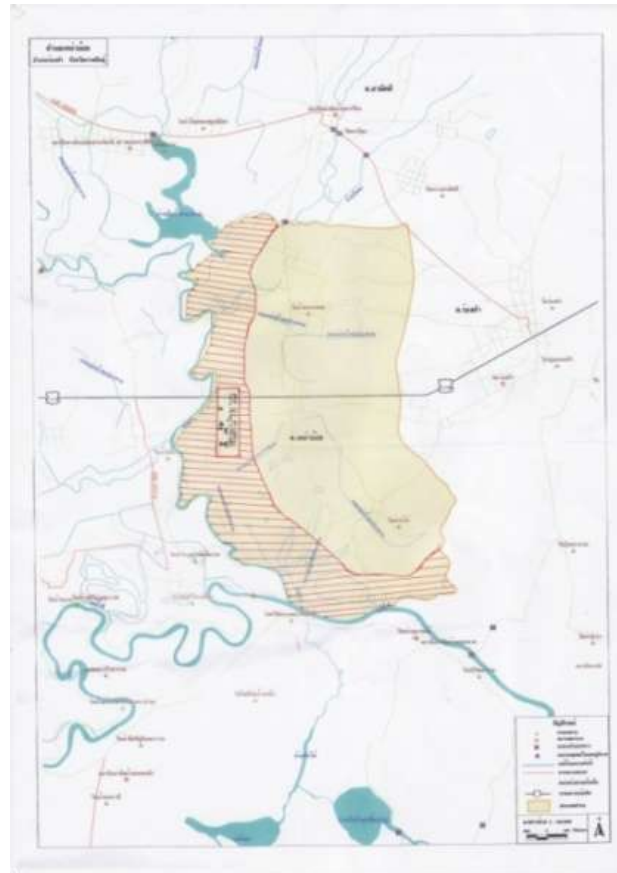
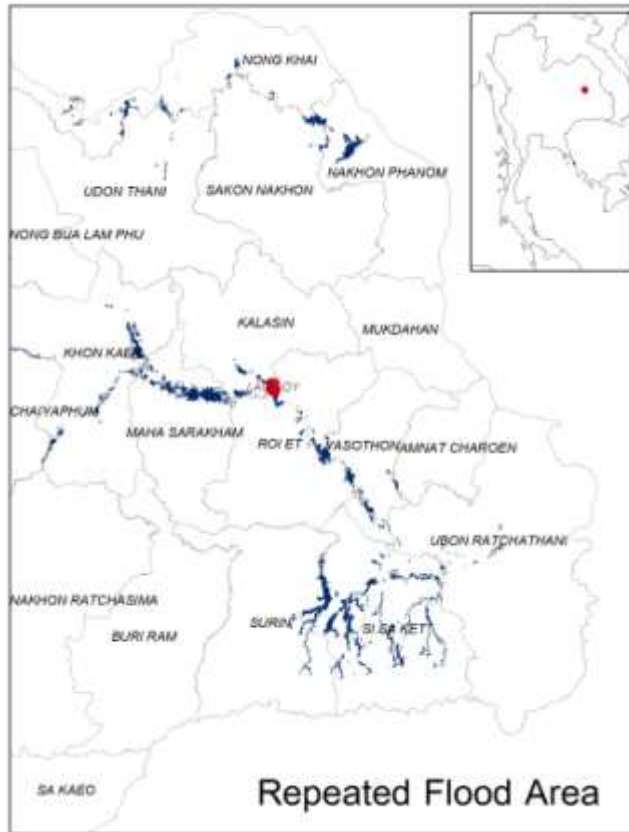
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Example of case study in Krabi province Thailand

Final report:
http://assets.panda.org/downloads/thailand_full_final_report.pdf/

Climate Change Adaptation in Context of Sustainable Development
Case study at Lao-oi, Kalasin province - Thailand



Case study at Lao-oi, Kalasin province - Thailand

Context & issue of concern



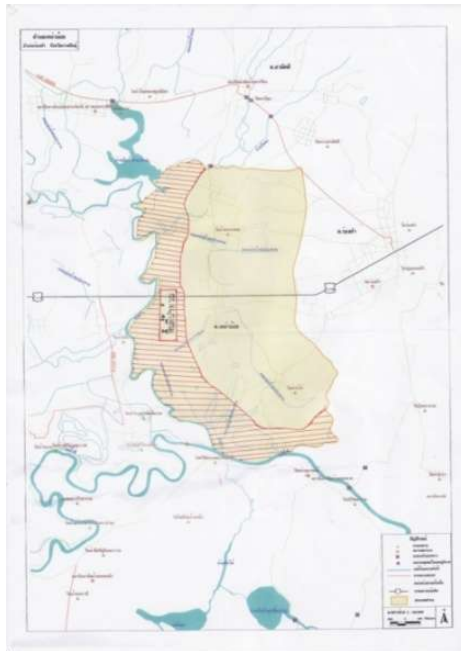
Case study at Lao-oi, Kalasin province - Thailand

Climate risk



Threat to livelihood

Frequent flood – destroy $> 2/3$ of rice production almost every year



Case study at Lao-oi, Kalasin province - Thailand

Response



Effective coping measures

New farming practice - Won't fight with flood – change to dry season rice – use water from main river through pumping station and underground pipe system



Path leads to dead end?

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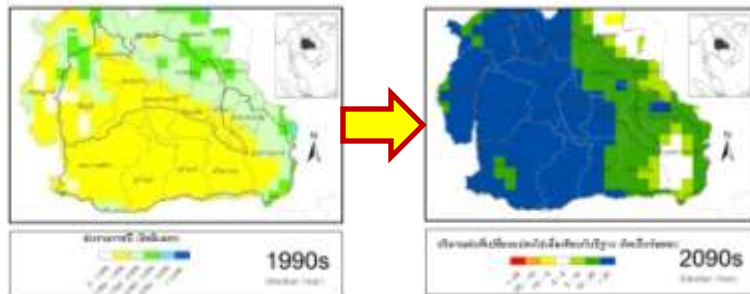
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Climate change – future risk



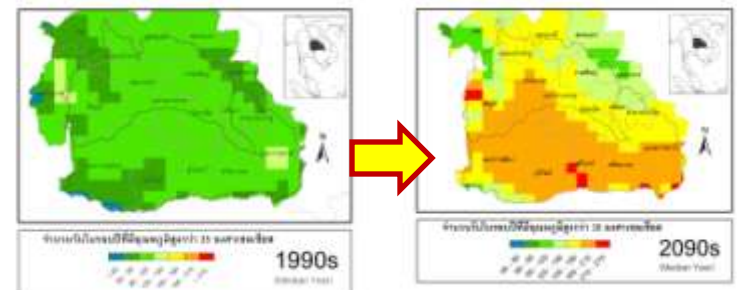
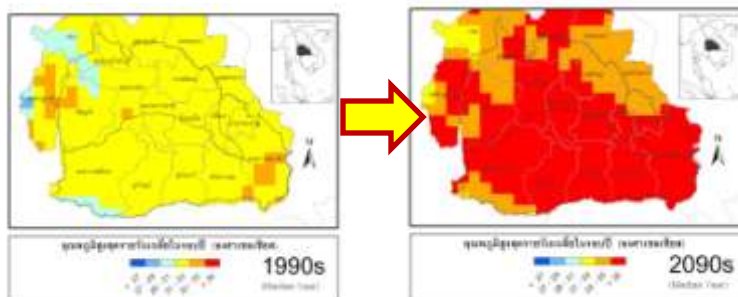
Future sustainability?

Warmer and longer summertime – reduced river flow whilst crop water demand could be higher to compensate higher evapotranspiration



Increase rainfall in rainy season suggests higher flood risk

But current response to climate risk may not sustain under warmer and longer summertime in the future



Case study at Lao-oi, Kalasin province - Thailand

Eco-system concerns



Impact on ecosystem integrity

Divert more water from river stream during dry season in the future – higher pressure to environmental flow and downstream ecosystem integrity



Case study at Lao-oi, Kalasin province - Thailand

Adaptation strategy



Win-Win solution

Alternate source of water resource – harvest water during flood season for dry season agriculture



Conclusion:

- Climate change threaten both ecosystem and human well-being, whose livelihood depends on ecosystem services
- Climate change is not just about environmental problem, but also stress to sustainable development
- Adaptation as risk management strategy toward climate risk which aims at resilience and sustainability in long term timescale
- Climate change adaptation be mainstreamed into sustainable development
- Holistic view of the system is crucial
- Network of scientists and development practitioners need to work together

Thank you



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