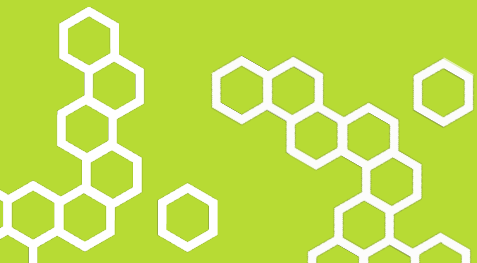


Impact of Climate Change on NTFPs and Effectiveness of REDD+ Implementation in Danau Sentarum National Park

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Non Timber Forest Product –Exchange Programme

- The NTFP-EP is a collaborative network of over 60 non-governmental organizations (NGOs) and community-based organizations (CBOs) working with forest-based communities to strengthen their capacity in the sustainable management of natural resources in the Philippines, India, Indonesia, Malaysia, Vietnam, and Cambodia.



What We Do

- NTFP-EP aims to strengthen the capacity of forest-based communities and their support organizations. Employing a participatory strategy, NTFP-EP empowers its partners through information and knowledge exchange of appropriate resource management techniques and experiences, technical support and training, inputs in strategy discussions, documentation of best practices and success stories, mobilization of resources and contacts, advocacy support for local initiatives, and lobby for enabling policies..



How We Do

At the local, national and regional levels, we work to achieve these objectives by:

- ***Facilitating*** the exchange of expertise, experiences and approaches;
- ***Providing*** technical support/backstopping and enabling training;
- ***Giving*** inputs in strategy discussions;
- ***Documenting best practices*** and success stories and providing information on NTFP related issues;
- ***Mobilizing*** resources and essential contacts; and
- ***Sourcing*** advocacy support for local initiatives and helping articulate needs and aspirations.



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Danau Sentarum National Park

- The ecosystem in Danau Sentarum is unique
- Ecosystem interconnects seasonal lake, peat swamp and inundated swamp forest. This provides benefits for global, regional and local community in regulating carbon sequestration and water flow, preventing the flood and sustaining provisioning services from its forest ecosystems
- The benefits from Danau Sentarum's ecosystem have become the main livelihood of forest dependent people who live in the villages around
- Despite the abundant rich natural resource and biodiversity, the ecosystem of Danau Sentarum has faced environmental problems due climate change. This condition will potentially reduce the ecosystems of Danau Sentarum and subsequently will reduce its benefits.

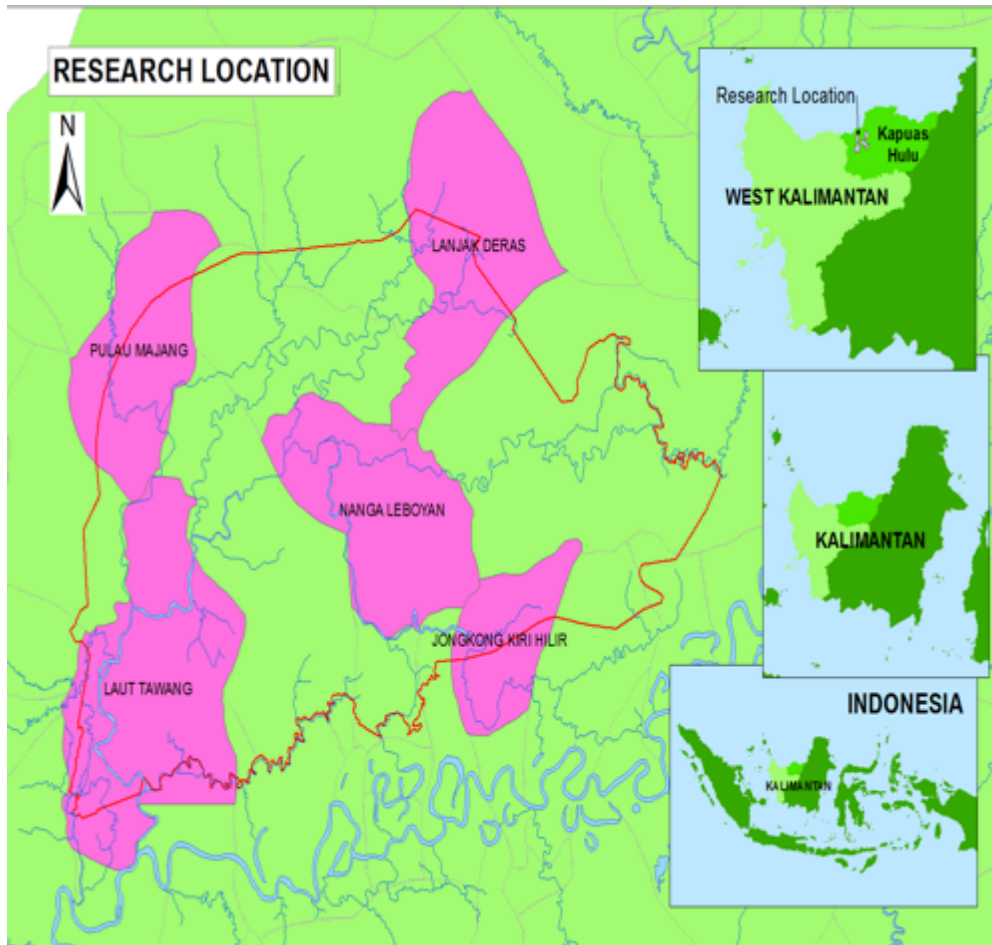


Why Danau Sentarum National Park (Cont)

- DSNP landscape stands out as some of the most successful examples of livelihoods and NTFP-enterprise development in Indonesia.
- DSNP landscape is perceived to be one of still fewer areas in Indonesia, which hosts a resource base and intact forests with viable alternatives to large-scale agro-industries and mining.
- The district government in Kapuas Hulu is in particular need of support to identify the benefits of NTFP-enterprise activities and related ecotourism, including how the district can strategically invite partners in more sustainable land use options (low carbon development strategy) and help push community-based entrepreneurs to the market.



Project Area



The project area located in five villages around Danau Sentarum namely: Lanjak Deras (Batang Lupar sub districts), Leboyan (Selimbau sub districts), Pulau Majang (Badau sub districts), Laut Tawang (Suhaid sub districts) and Jongkong Kiri Hilir (Jongkong sub districts) . These five villages was selected to represent the beneficial value of non-timber forest product for community base on its existing knowledge on: (1) the presence of ecosystem services, (2) the type of its peat and non-peat forest ecosystems and (3) the existence of well-known NTFPs.

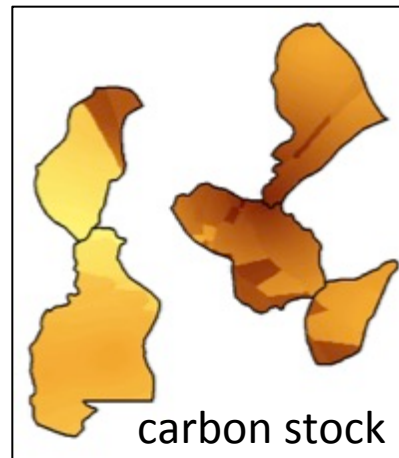
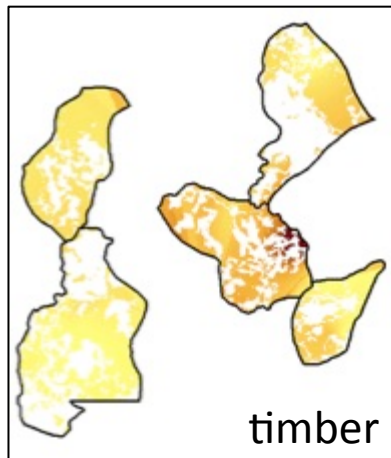
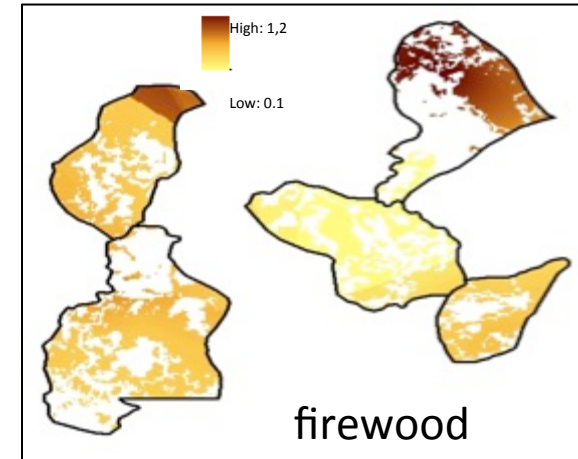
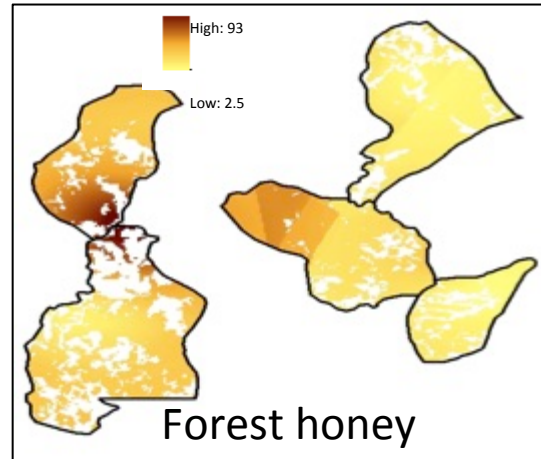
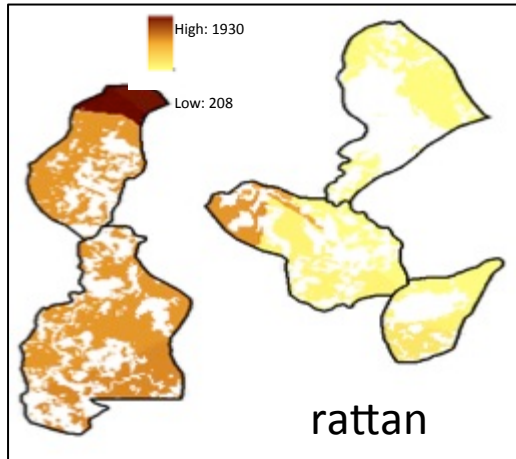
The economic benefits of ntfps in DSNP

	Ecosystem Services	Benefits (IDR/yr)
Provisioning services	Rattan	1.312.962.213
	Honey	1.157.879.979
	Tengkawang	768.698.811
	Kamsiah (firewood)	368.182.453
	Damar	2.161.049
	Fish	16.109.733.132
Regulating service	Clean water	78.458.889.600
Cultural service	Nature recreation	1.043.327.500
		99.221.834.736

Source: Multi benefits assessment, 2015



Ntfps Mapping in DSNP

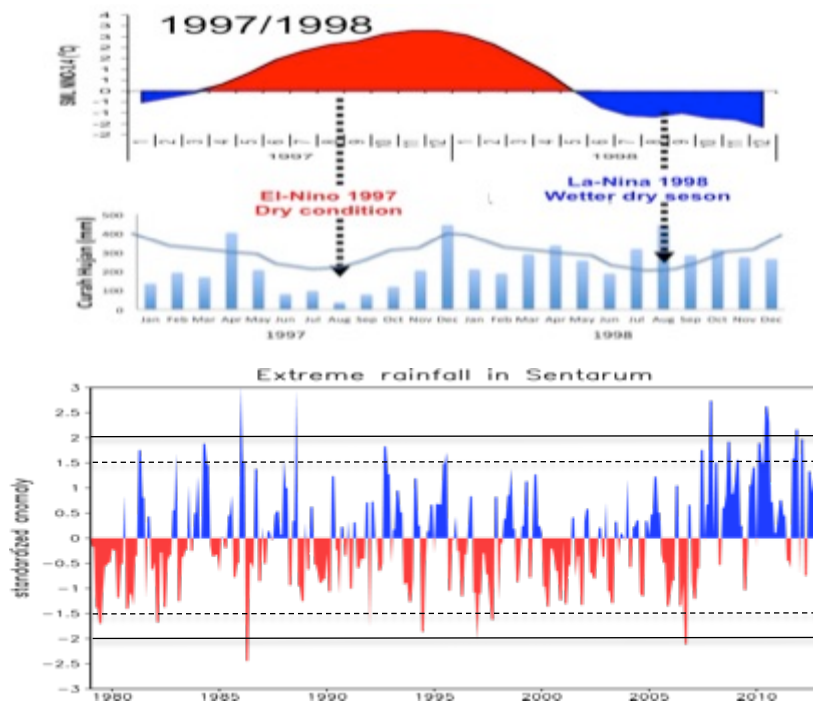


Source: Multi benefits assessment, 2015

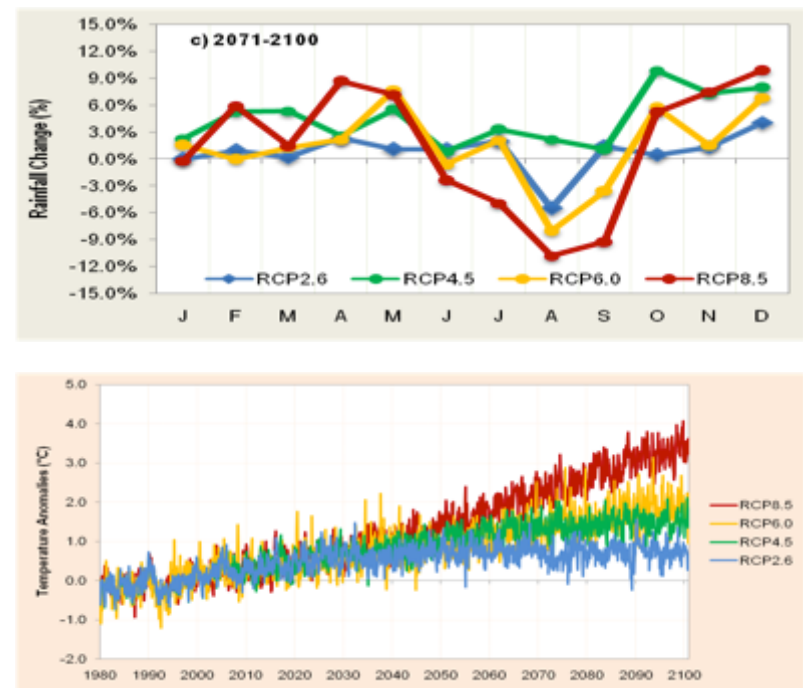
Climate Change in Danau Sentarum

Highlighted Climate Change analysis in Danau Sentarum

Historical Climate



Climate Projection



Source: Boer, et.al., 2013

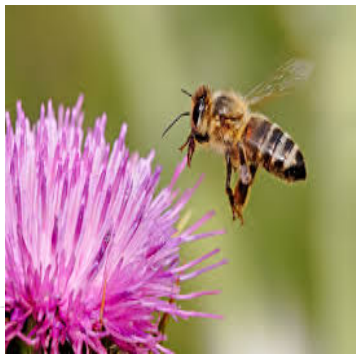
Climate Change Impact in Danau Sentarum

- Changes of flowering time of some trees that influence bees to product honey bee
- Decrease amount of foods of orangutan that causes migration of orangutan to hunt their feed.
- Irregular weather due to climate change are threat to the farmers who are generally poor, such as villagers cannot prepare the land for farming when there is too much rain
- Climate change causes extreme weather condition, such as prolonged drought or continues all year wet months



Potential Impact to livelihood

- Honey bee production
- Bemban production
- Fish production
- Other ntfps products



Climate Attributes Impact for Local Livelihoods

Climate Attributes	Livelihoods Impact (production, yield, etc)		
	Forest Honey	Bemban	Fishing
Temperature Increase	May decrease (fire)	May decrease due to dry	Tends to increase
High Temperature	Same as above		Same as above
Change in Rainfall	Decrease or Increase	Decrease or Increase	
Too much rain	May decrease	May decrease	
Too little rain	May decrease	May decrease	
Extreme event	May decrease		



Mitigation and Adaptation Strategies

Impact	Root Causes	Options	Possibility
Rice failure	Lack of weather information	Mixed crop, rehabilitation forest	Local government provide weather information system
Houses failure		Find new location?	
Bemban failure		Management bemban stock and planting new bemban in new area	
Less income from fishing		Enhancing customary system and diversified product	Combining TK and science on climate prediction



Discussion

- Local people in DNSP are mostly benefited from clear water, collecting NTFPs and fish. These NTFPs and fish are mainly collected in secondary forest, home garden and rivers around the area of DSNP and become the main livelihoods of local people.
- The high dependence of local communities on collecting ntfps shows their vulnerability to climate change impact to the the ecosystems of DSNP.



Implications for Effectiveness REDD+

- Local communities may benefit from NTFPs collection but not from carbon sequestration or storage and only to a limited degree from oil palm establishment (Hein and van der Meer 2012).
- This information allows for a more accurate and comprehensive identification of zones where land use planning/low carbon development could improve local livelihoods and minimise the impact on forest ecosystems.



Thank You

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