Introduction to Natural Capital and Case Study in HOB, Sarawak

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Malaysia TEEB AgriFood Technical Workshop

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What is Natural Capital?

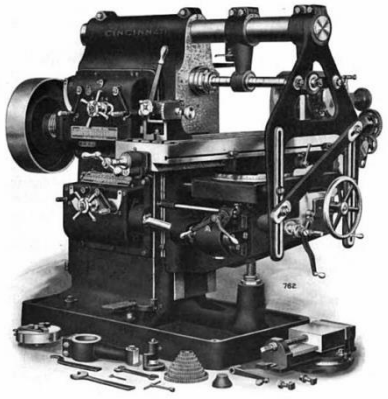
Any stock or flow of energy and material that produces goods and services.

Human capital

Knowledge, skills, health and motivation

Financial capital

Representative of natural, human, social or produced capital



Produced capital

Contribute to the production process

Natural capital

Natural capital is the basis not only of production but of life itself!

Stock:
Biodiversity and ecosystems

Flows:
Ecosystem services, e.g.:

- Water regulation
- Carbon storage
- Medicines
- Food
- Climate regulation
- Inspiration

HERE'S A VALUE WE CAN PUT ON

WOOD

In Thailand, a study shows mangrove forests are worth about **$1,000 per hectare** if exploited for wood. [1]

. . . BUT LOOK WHAT HAPPENS WHEN WE VALUE

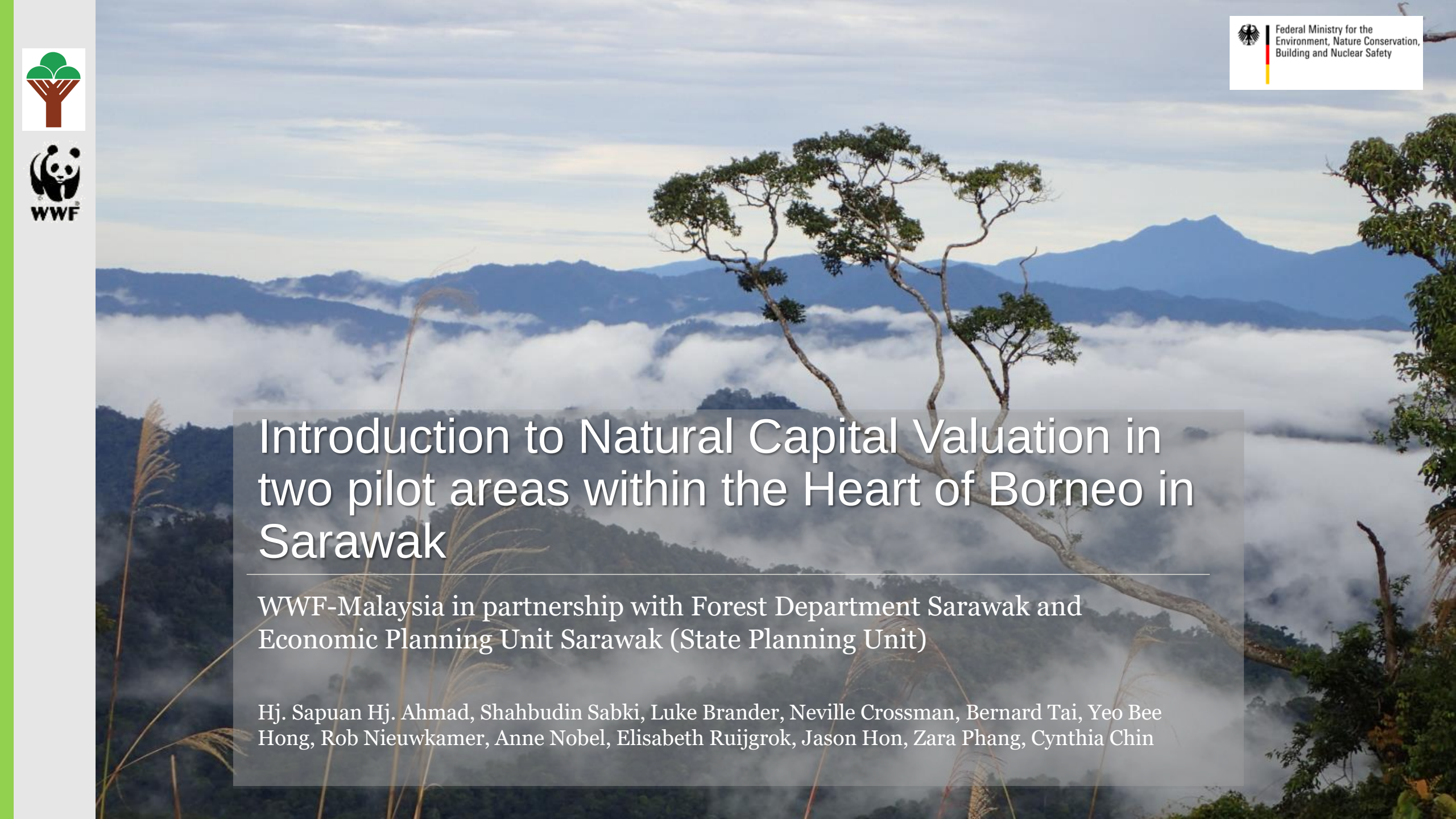
TREES

If left intact, their value for flood protection, carbon capture and as a breeding ground for fish is in excess of **$21,000 a hectare**. [1]

Why value natural capital?

- Environmental externalities are currently not being accounted for
- Results in unexpected losses
- When undertaking a cost-benefit analysis of different options, you might end up choosing a less efficient option

More informed decision-making



Introduction to Natural Capital Valuation in two pilot areas within the Heart of Borneo in Sarawak

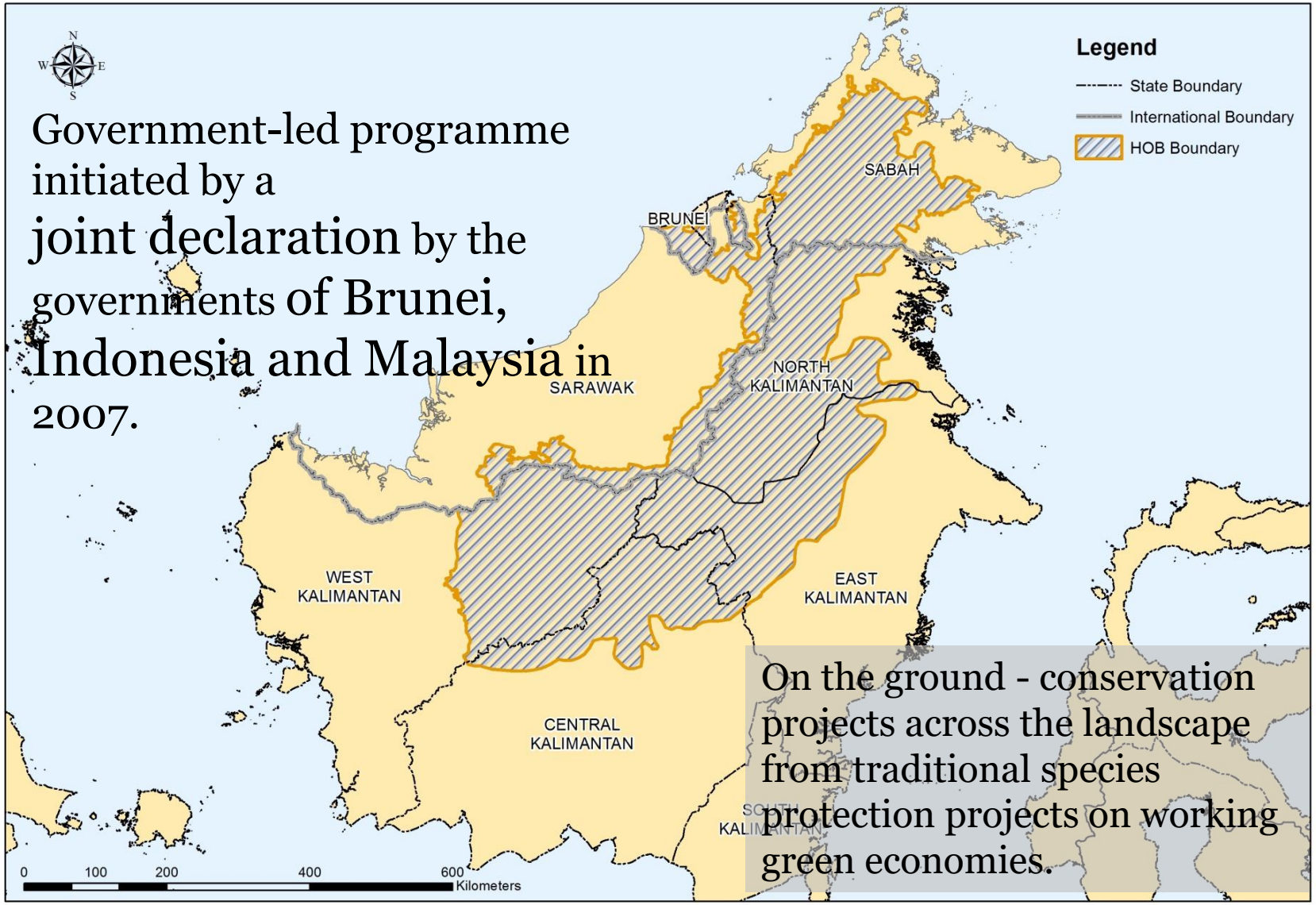
WWF-Malaysia in partnership with Forest Department Sarawak and Economic Planning Unit Sarawak (State Planning Unit)

Hj. Sapuan Hj. Ahmad, Shahbudin Sabki, Luke Brander, Neville Crossman, Bernard Tai, Yeo Bee Hong, Rob Nieuwkamer, Anne Nobel, Elisabeth Ruijgrok, Jason Hon, Zara Phang, Cynthia Chin

Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

The Heart of Borneo

Government-led programme initiated by a joint declaration by the governments of Brunei, Indonesia and Malaysia in 2007.



On the ground - conservation projects across the landscape from traditional species protection projects on working green economies.

Why value Natural Capital in the Heart of Borneo?

- To quantify and value **benefits** provided by the rainforest to *local* communities.
- …and also *national* and *international* communities.

Why value Natural Capital in the Heart of Borneo?

- To quantify and value what we **lose** when we convert or degrade rainforest in the Heart of Borneo.
- Important to understand **Who** loses.

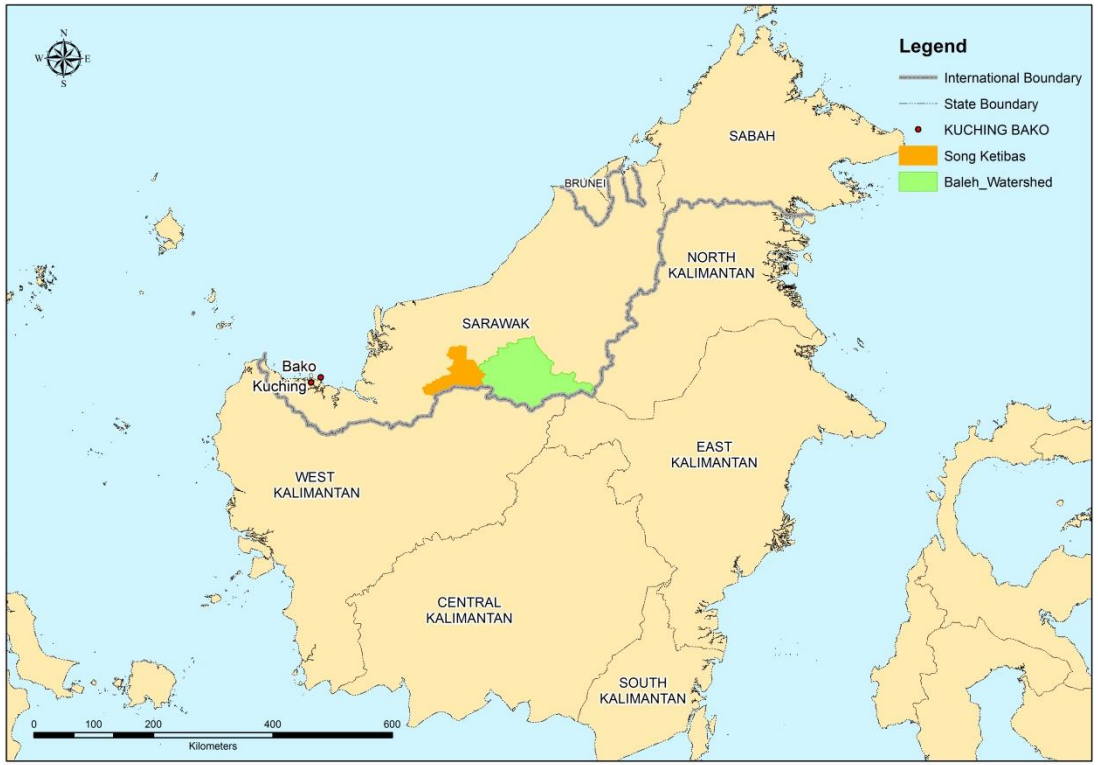
Why value Natural Capital in the Heart of Borneo?

- Undertaking natural capital valuation in the Heart of Borneo helps us **understand** the current **economic** and **livelihood benefits** that are generated by the rainforest to the *local community*, but also to *the state*, *Malaysia*, and the *whole world*.

Once we **understand** these benefits, we can make **more informed decisions** on land-use and land-use change, which:

- Take into account the economic value of our ecosystems, so that we are not **inadvertently losing economic value**; and
- Can result in **greater overall societal gains**

Baleh



One of the key watersheds for the **Rajang River**

- Longest river in Malaysia
- One of the major modes of transport for the interior of Sarawak
- Energy needs
- Water flows

Priority Conservation Area

- Hose's civet
- Bay cat
- Bulwer's pheasant
- Proposed protected area
- Transboundary habitat corridor

Source of livelihood for local communities

Ecosystem services identified for valuation – Both sites

Provisioining	Regulating	Habitat or Supporting	Cultural
• **Food** • **Raw materials** • **Fresh water** • Medicinal resources	• **Carbon sequestration and storage** • Moderation of extreme events • Erosion prevention and maintenance of soil fertility	• Habitats for species	• Recreation and mental and physical health • Tourism • Aesthetic appreciation and inspiration for culture, art and design • Spiritual experience and sense of place

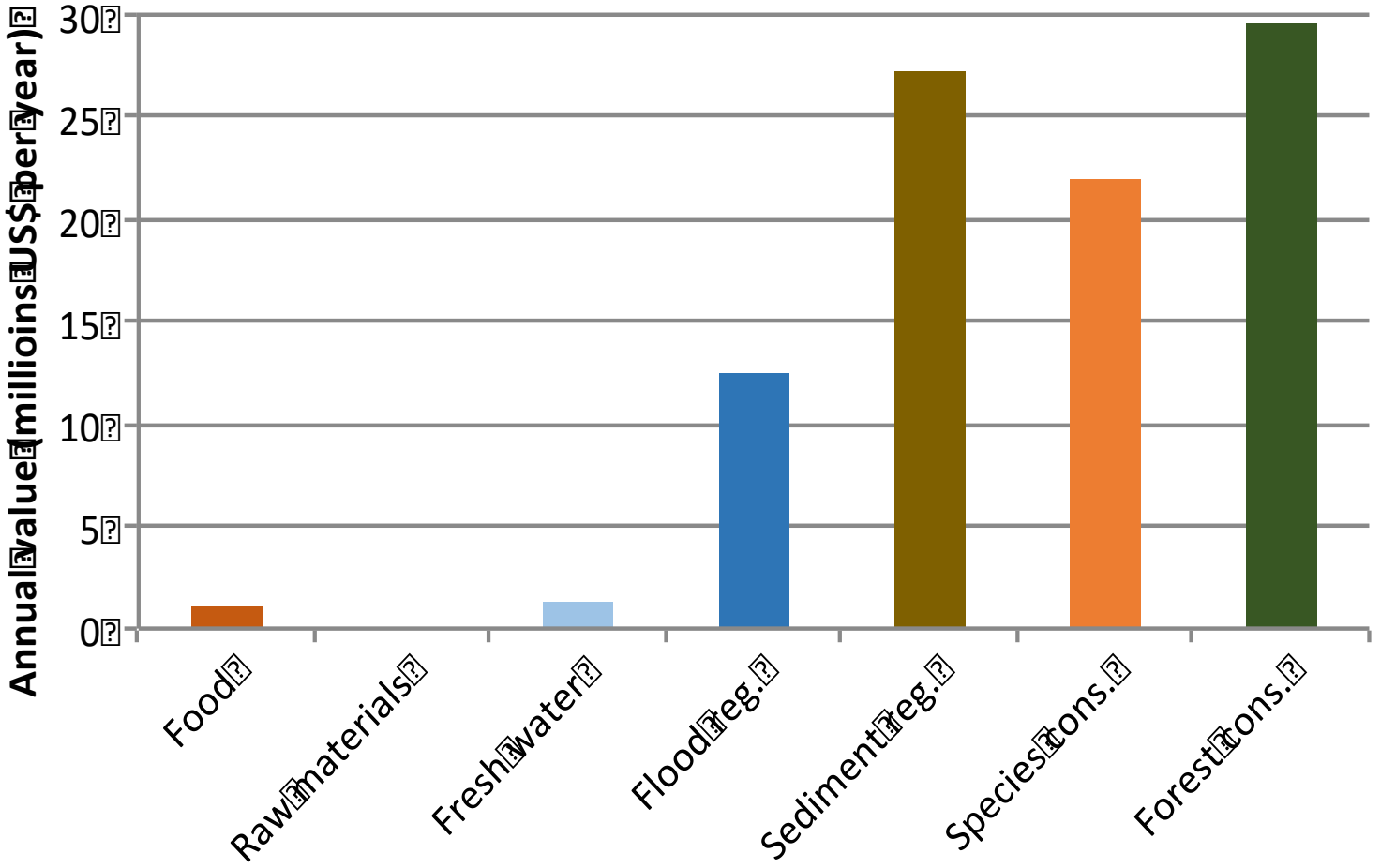

like it's a
JOURNEY


Water
Catchment

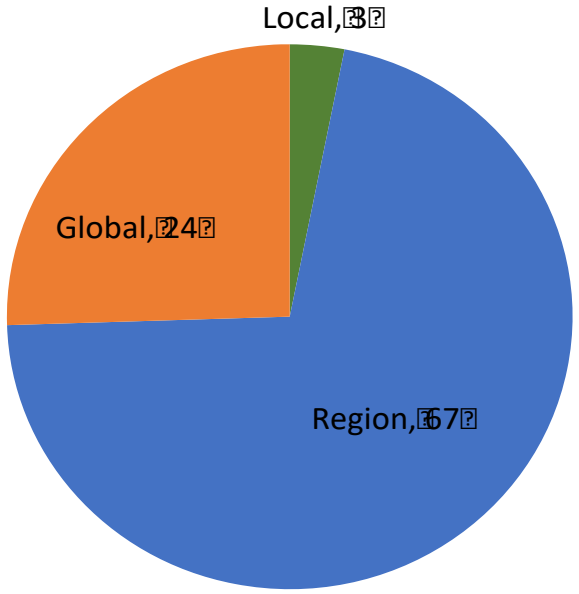

RM15.00

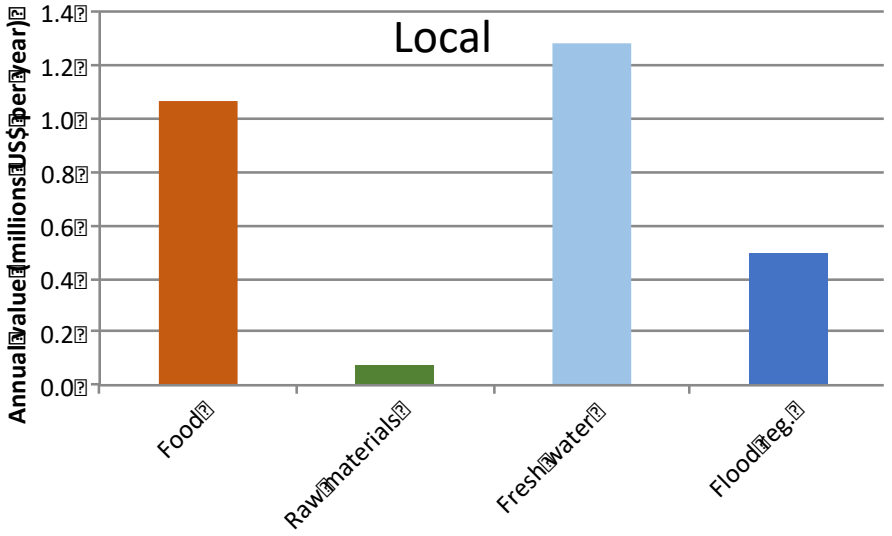
Current value of ecosystem services in Baleh

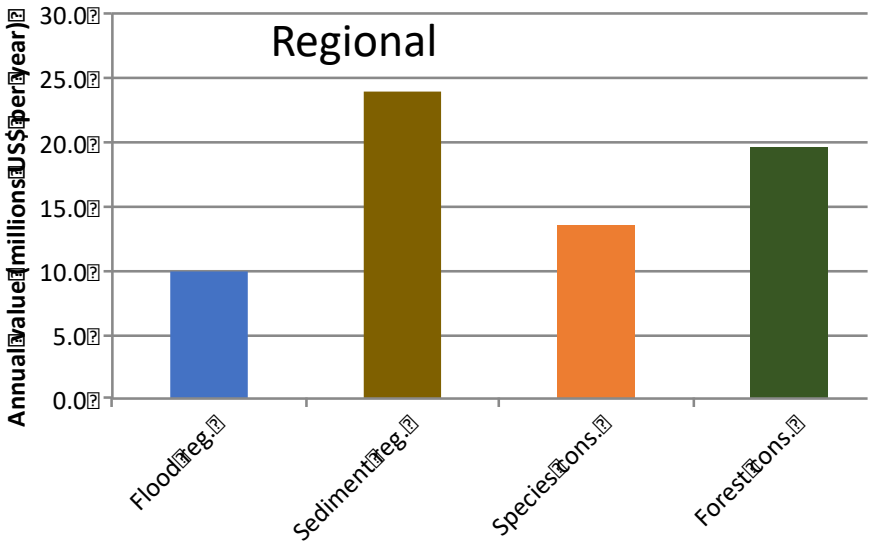
- Carbon value is US$ 243 million per year
- Non-carbon ES value is US$ 94 million per year

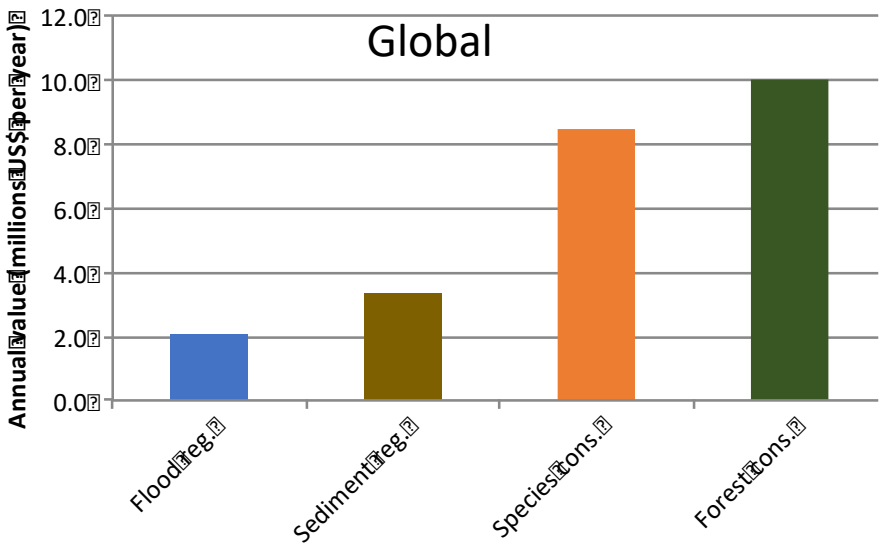


Distribution across beneficiaries









Scenarios

1. **Economic Development**
   - Current Sarawak land-use plan adopted – the SCORE Hinterland master plan (incl. palm oil, National Park)
2. **Green Economy**
   - Same land use as Economic Development plus best practices from adoption of Malaysian Sustainable Palm Oil (MSPO) and the Malaysian Timber Certification Scheme (MTCS) sustainability standards
3. **Conservation**
   - Adds priorities from WWF Systematic Conservation Planning (SCP)
   - Other activities are excluded from protected areas
   - Integrated Watershed Resources Management (IWRM) standards for water intake protection

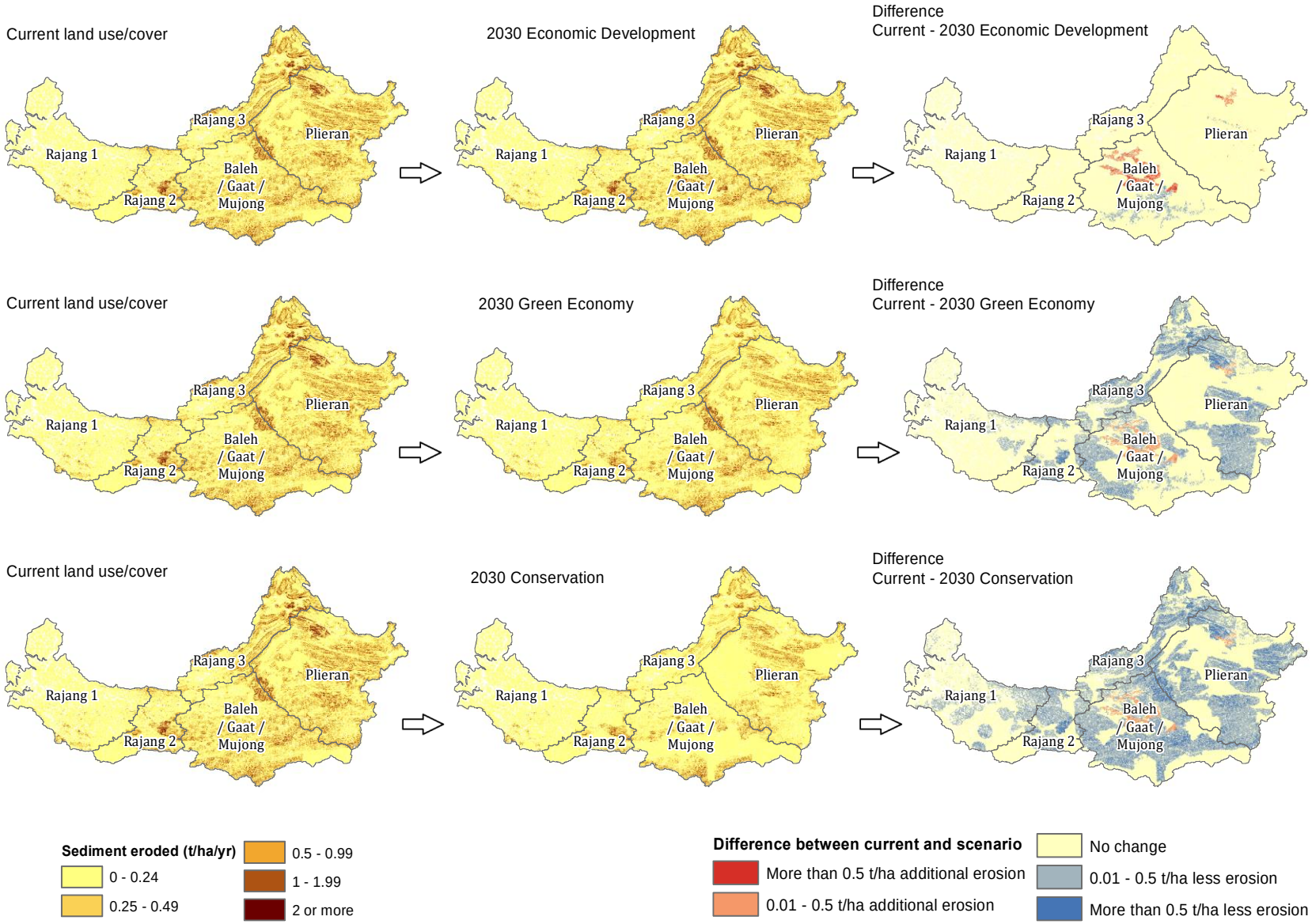
Ecosystem services models in Baleh

i) seasonal water yield
ii) sediment delivery
iii) carbon sequestration
iv) pollination
v) biodiversity and habitat

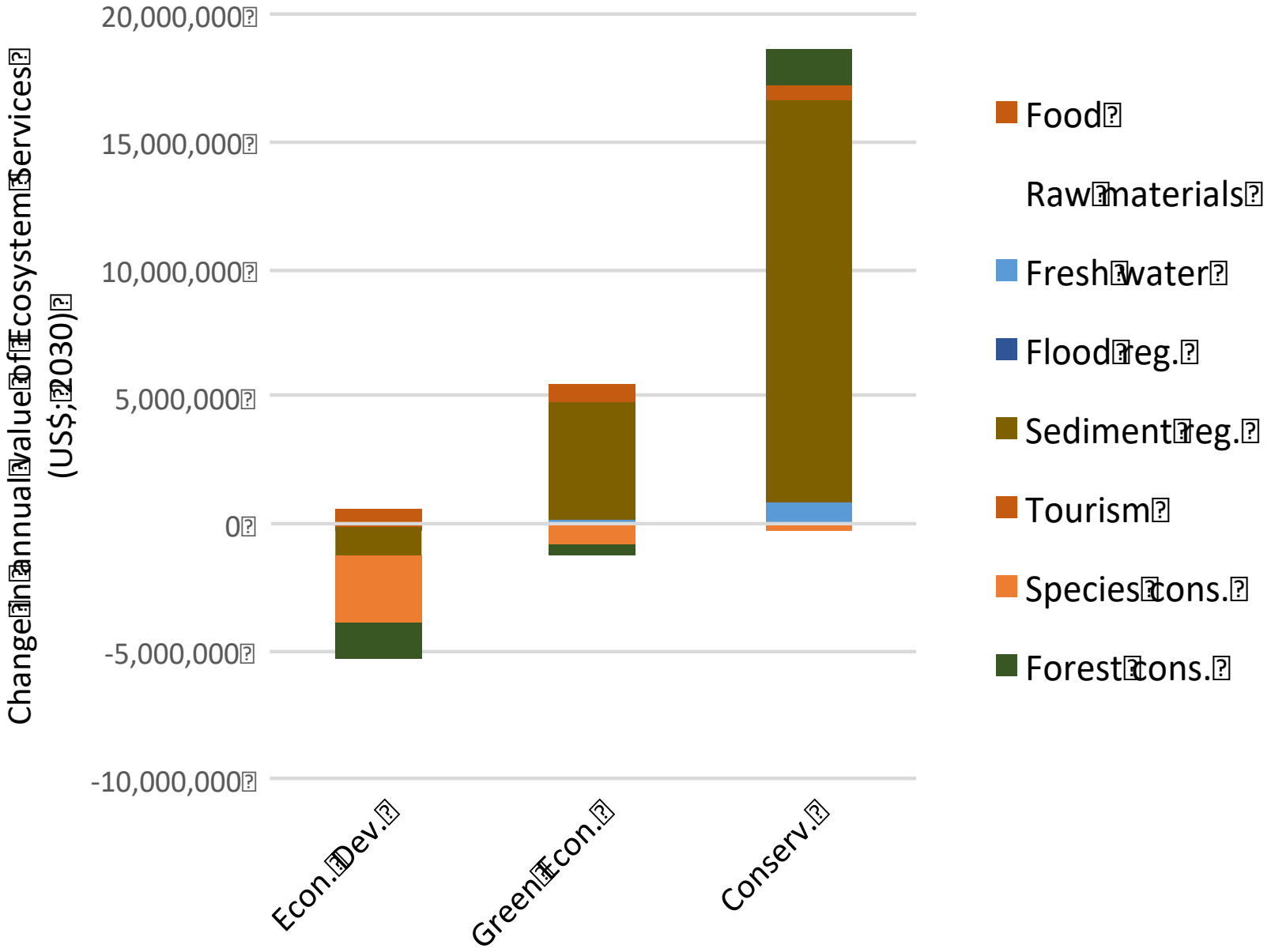
Modelling used InVEST tools.

InVEST is a suite of free, open-source software models used to map and value the goods and services from nature that sustain and fulfill human life. (https://www.naturalcapitalproject.org/invest/)

Example: Sediment scenarios



Ecosystem Service values under future scenarios



Policy recommendations to support Green Economy

- 2030 green economy scenario **supports the State's policy** to make it mandatory for all **timber licenses** to obtain **forest management certification** by 2022.
- **Protect forest resource for use by local communities**. The watershed acts as an important economic safety net for the local community

Thank you

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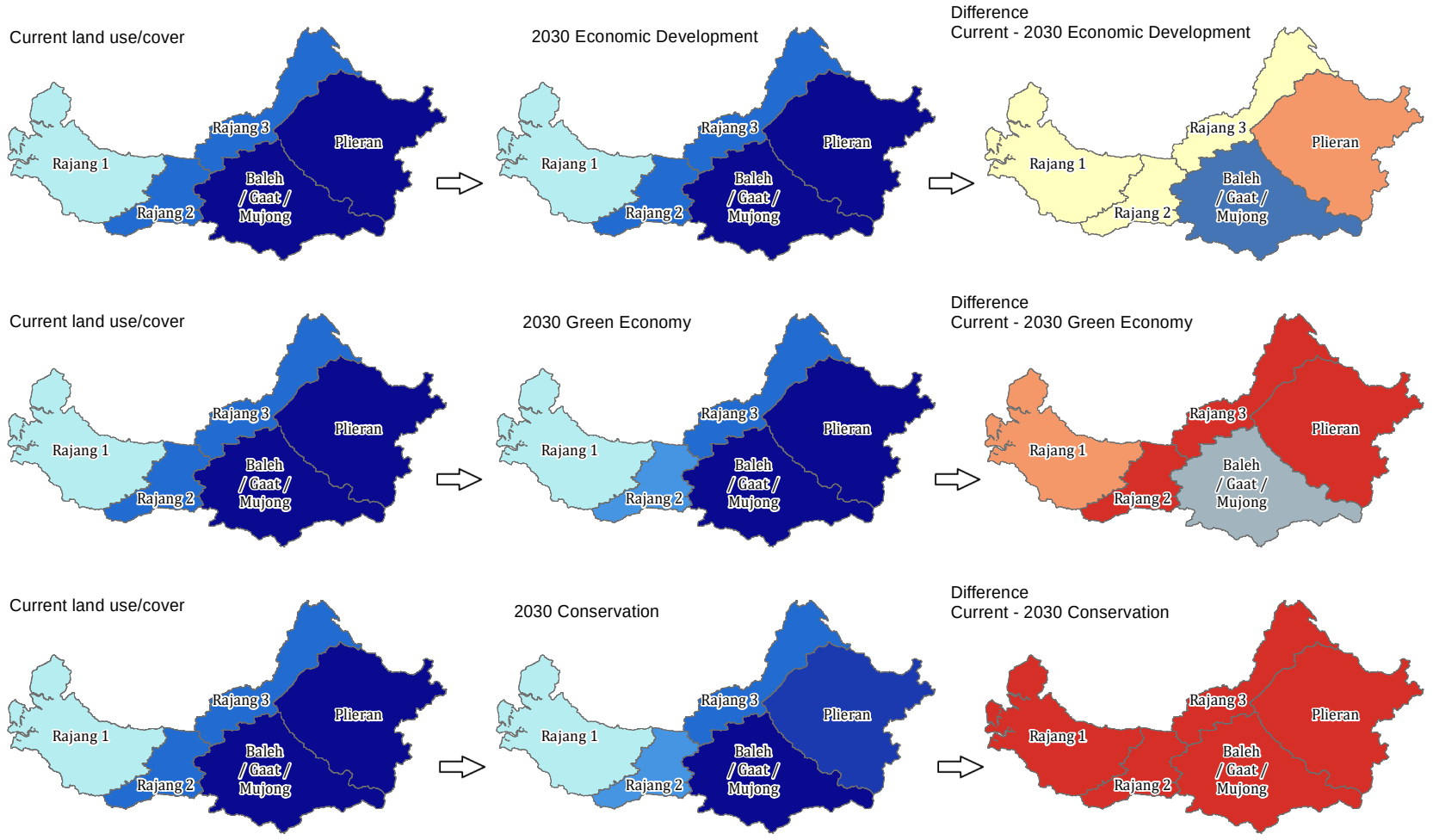
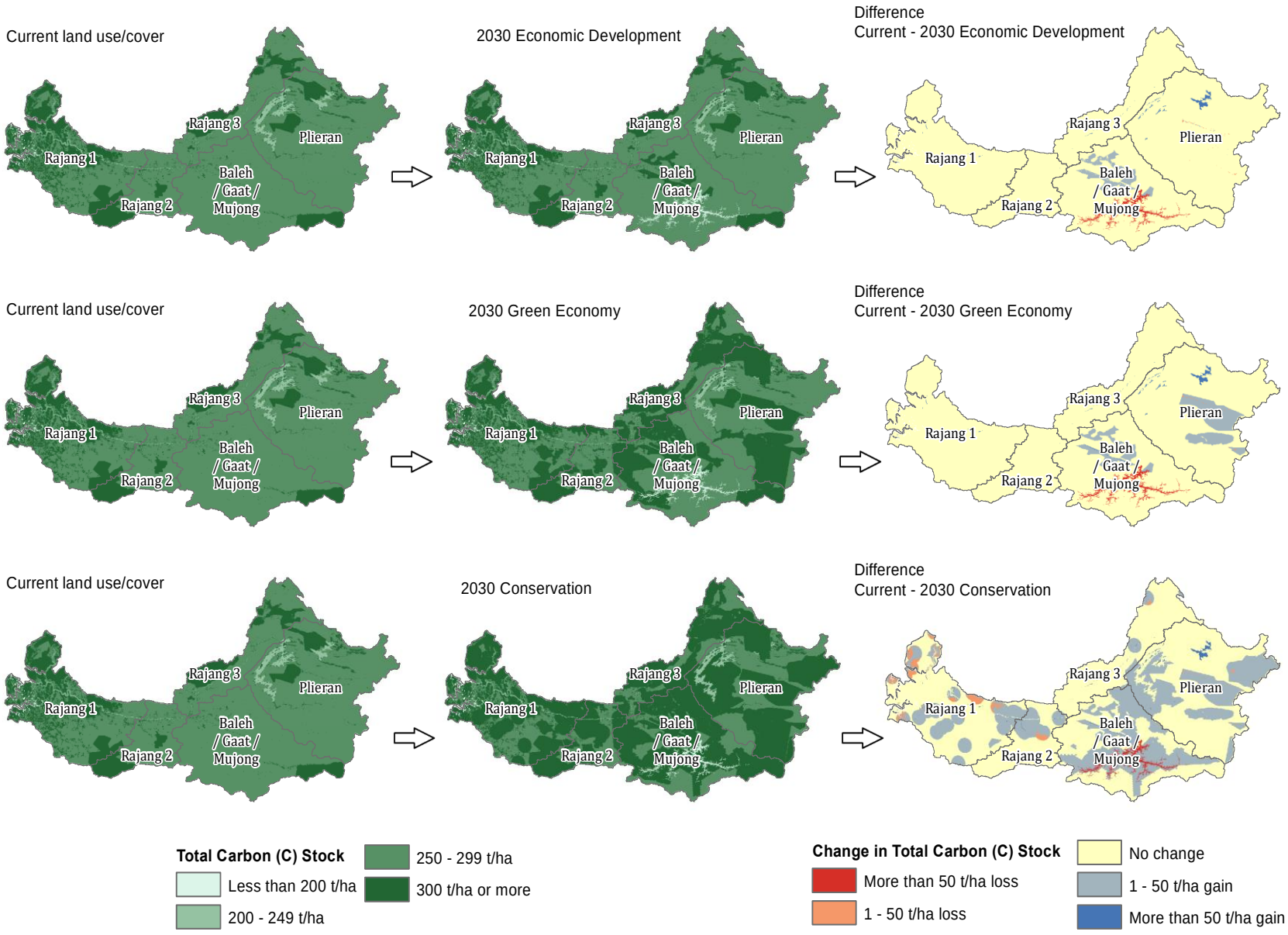
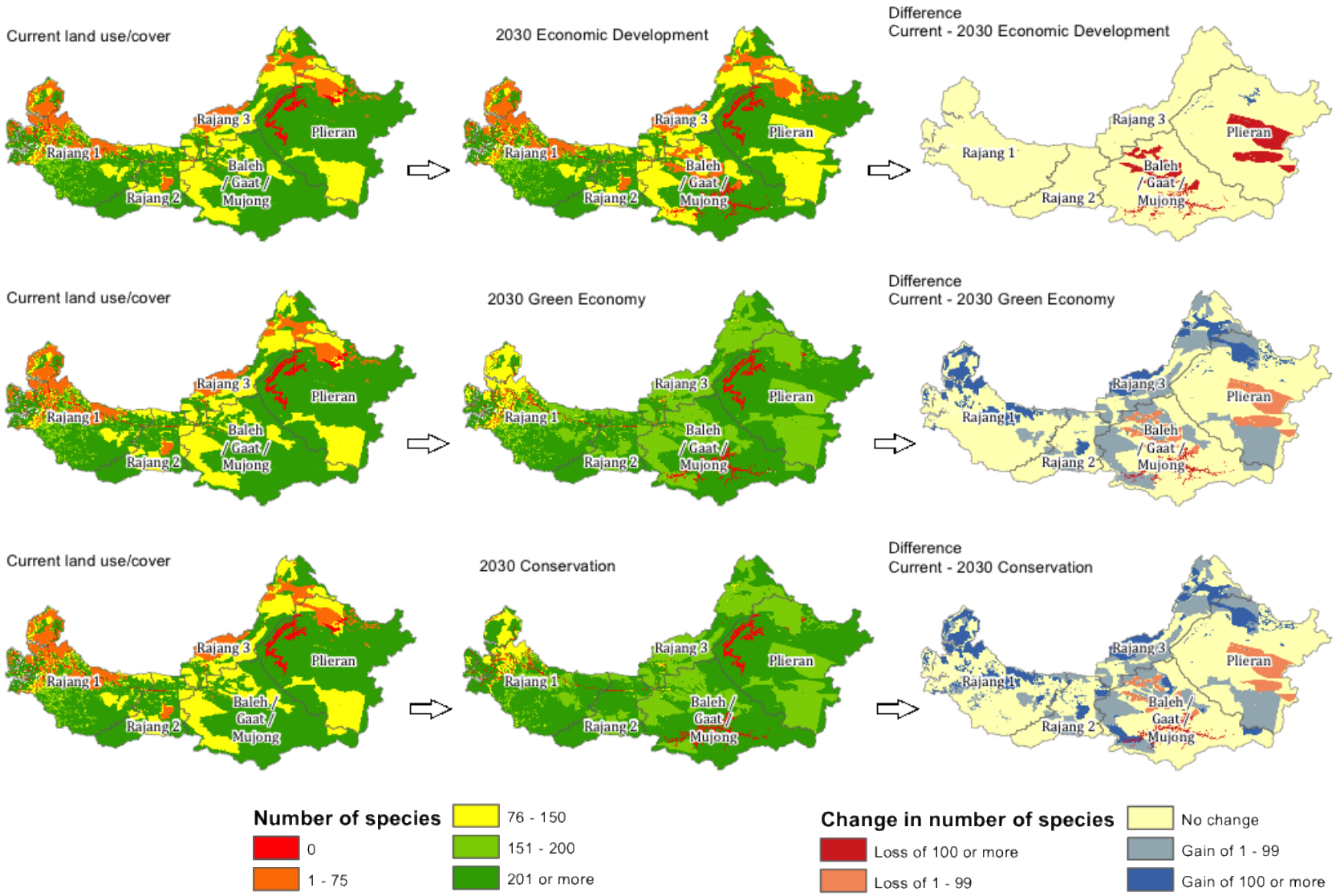
Water flow scenarios



Carbon scenarios



Red list species scenarios



OBJECTIVES (Natural Capital Valuation Study)

- To provide a **baseline** and an **understanding** of the values of the **ecosystem services** and **natural capital**
- To provide a **spatial analysis of the available ecosystem services** in the area. The aim of having a spatial analysis is to provide information which can guide identification of areas within the watershed which should be protected to keep the services intact or reduce impacts to it.
- To collect baseline information on natural capital to **feed into future management plans** for land-use and watershed management decisions in the Balleh watershed area.
- To provide data/information as a basis for a **potential future Payments for Ecosystems Services Programme** in the watershed

Valuation methods - Baleh

	Ecosystem Service	Valuation Method
Provisioning	Food	Market price equivalent
	Raw materials	Market price equivalent
	Fresh water	Choice experiment
Regulating	Carbon storage	Damage cost avoided
	Flood regulation	Damage cost avoided / choice experiment
	Sediment regulation	Choice experiment
Cultural	Tourism	Contingent valuation
	Species conservation	Choice experiment
	Forest conservation	Choice experiment

Marginal value of ecosystem services - Baleh

Ecosystem Service	US$	Unit	Beneficiary
Provisioning			
Food	3.95	USD/kg pig	Local
Raw materials	7.50	USD/bundle rattan	Local
Fresh water	0.014	USD/litre	Local
Regulating			
Carbon	62.00	USD/tCO2-eq	Global
Flood reg.	16.04	USD/1% flood probability/hh/year	Local
Flood reg.	1.52	USD/1% flood probability/hh/year	Regional
Flood reg.	0.32	USD/1% flood probability/hh/visit	Global
Sediment reg.	5.53	USD/million tonnes/hh/year	Regional
Sediment reg.	0.81	USD/million tonnes/hh/visit	Global
Cultural			
Tourism	92.80	USD/visit	Local
Tourism	46.40	USD/visit	Regional
Tourism	58.00	USD/visit	Global
Species conservation	0.48	USD/species/hh/year	Regional
Species conservation	0.32	USD/species/hh/visit	Global
Forest conservation	1.97	USD/% forest cover/hh/year	Regional
Forest conservation	1.06	USD/% forest cover/hh/visit	Global

Baleh ES values under future scenarios

		Economic Development	Green Economy	Conservation
Provisioning	Food	-60,512	-19,969	58,300
	Raw materials	-4,281	-1,413	4,124
	Fresh water	-49,793	216,176	740,986
Regulating	Carbon	-131,600,176	-43,427,855	126,789,218
	Flood regulation	-34,656	-13,902	28,937
	Sediment regulation	-1,059,674	4,600,588	15,769,419
Cultural	Tourism	591,600	591,600	591,600
	Species cons.	-2,703,931	-737,691	-200,987
	Forest cons.	-1,392,109	-459,394	1,341,218
Total		-136,313,531	-39,251,860	145,122,814
Total excluding carbon		-4,713,355	4,175,995	18,333,597