



Launch of the Forest Ecosystem Valuation Study **National Report**

8th July 2015

Ballroom
Le Meridien Hotel
Jakarta

Pavan Sukhdev

CEO GIST Advisory
Study Leader TEEB
UNEP Goodwill Ambassador



Today's Topics

- I. Introduction to the Forest Ecosystem Valuation (FEV) study**
- II. Indonesia's development context**
- III. Key Findings: Role of forests in Indonesia's National and Provincial economies**
 - i. Contributions to poverty alleviation**
 - ii. Contributions for food security**
 - iii. Supporting green economy transition**
- IV. Key Findings: Kenya, Tanzania, Panama & Gabon studies**



What is the “Forest Ecosystem Valuation Study”?

- An economic assessment of the services that Indonesia’s forests provide**
- Coordinated by UNORCID; Financed by UNEP; Carried out by GIST Advisory & collaborators; in consultation with all relevant ministries, provincial & regional govts, and other stakeholders**
- Economic Valuations with purpose: at Local (Jambi, Central Kalimantan, Nusa Tenggara Timur, Central Sulawesi, Papua) & National levels**
- Economic Valuations also undertaken in Kenya, Tanzania, Panama and Gabon**

Based on TEEB Approach



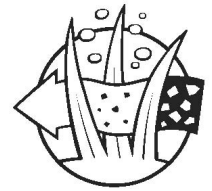
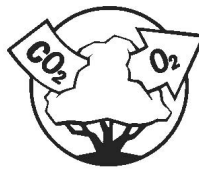
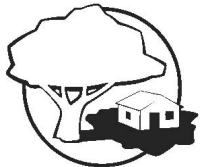
1. Recognizing value: a feature of all human societies and communities



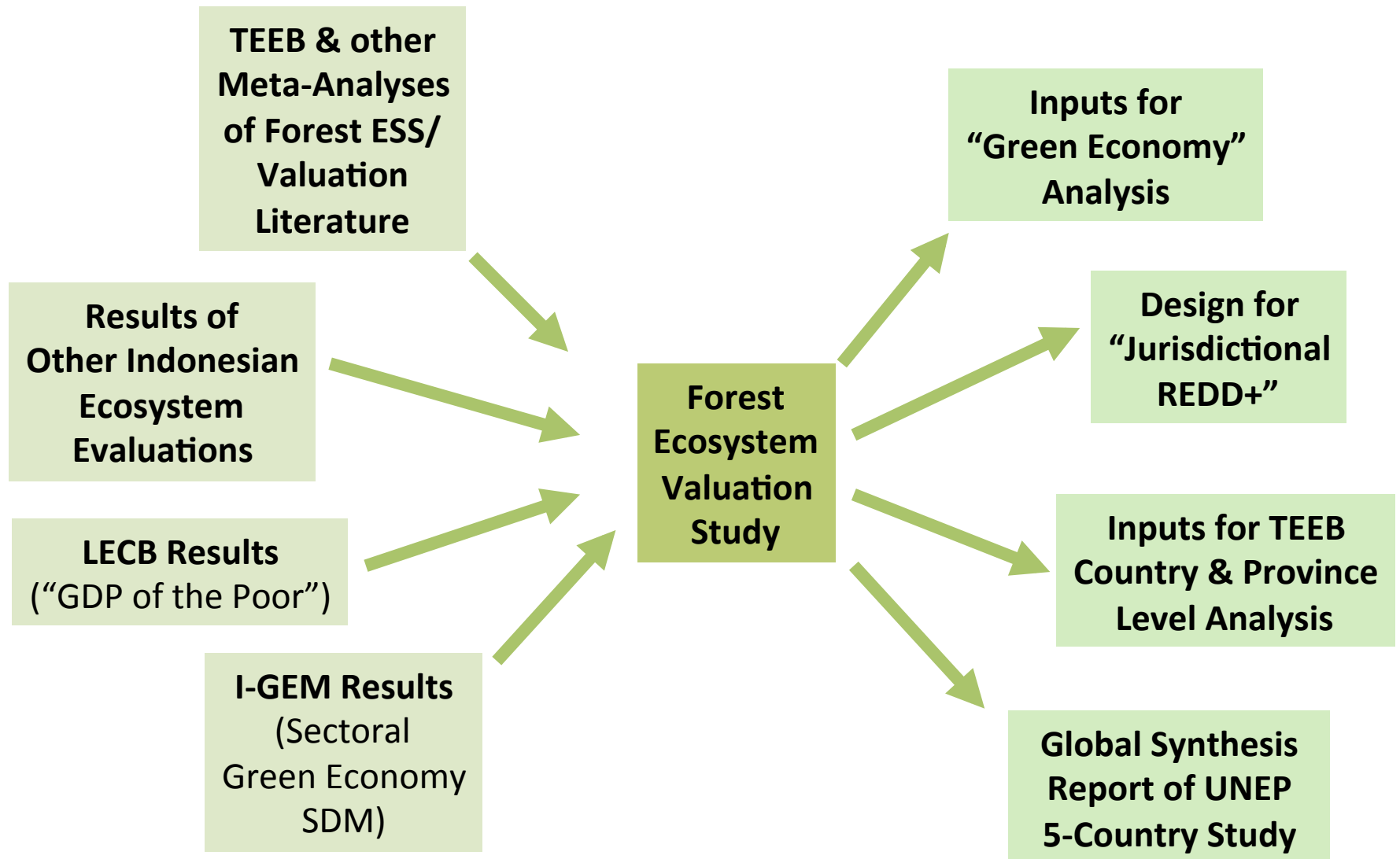
2. Demonstrating value: in economic terms, to support decision making



3. Capturing value: introduce mechanisms that incorporate the values of ecosystems into decision-making



Forest Ecosystem Valuation Study : Linkages





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Indonesia: Development Context

Key Opportunities

- **Dynamic economy: 5.39% annualized growth for 2000-2015**
- **Bright growth outlook supported by buoyant commodity markets, investor interest and improving macro parameters**
- **Favourable demographics: Half the population is below 30, growing middle class with rising incomes and consumption**

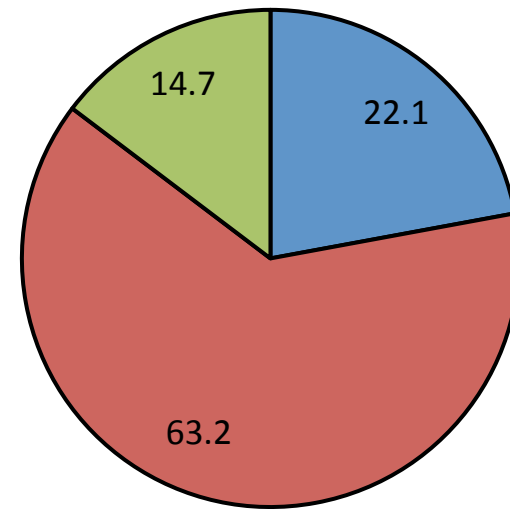
Key Challenges

- **Development in Provinces: need for employment opportunities and competitive growth that contributes to national goals**
- **Poverty reduction: 1/5th of population still in poverty**
- **Global positioning: recognition and compensation for climate mitigation and rainfall benefits provided by forestry sector to the global economy**

Domestic Investments - 2012

Economic Sector	Sector*	Value of investments (million USD)
Primary Sector	Agriculture	9,729
	Forestry	145
	Fishery	15
	Mining and excavation	10,481
Primary total		20,369
Secondary Sector	Industry	49,889
	Electricity, Gas and Water	3,797
	Construction	4,587
Secondary total		58,273
Tertiary Sector	Trading	1,030
	Restaurant and Hotel	1,015
	Transportation, Warehousing and Communications	8,612
	Real Estate and Business Services	58
	Public Services, Social and Individual	2,825
	Tertiary total	
Grand Total		92,182

Percentage Share of Domestic Investment



■ Primary Sector ■ Secondary Sector
■ Tertiary Sector

Economic development is aimed at achieving:

- “The establishment of a solid structure in which the **agricultural economy** (in the broad sense) and mining form the basis of an economy that produces products in both an efficient and modern manner, in which the manufacturing industry contains global competitiveness and becomes the motor of the economy, and services become the glue of **economic resilience**.
- Income per capita in 2025 should reach approximately USD \$6000 in combination with a relatively good level of **equity** while the amount of poor people should not be over five percent of the total population.
- Reach **food self-sufficiency** and maintain it at safe levels. It should contain enough nutritional quality and be available for every household.”



Scope for Indonesia's Natural Capital to support stable growth and equitable development

RPJMN (2015 – 2019) :

“...emphasizing attainment of economic competitiveness on the basis of competitiveness of natural resources and the quality of human resources and by the increasing capability to master science and technology.”



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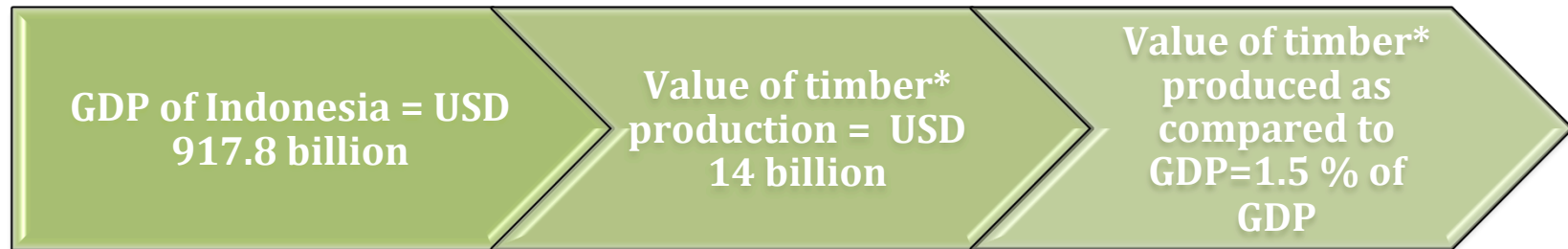
Role in National & Provincial Economies

Nature is at the heart of our economics

- Ecosystems ensure food security
- Ecosystems ensure livelihoods
- Ecosystems help adapt to Climate Change
- Ecosystems ensure water provision
- Ecosystems ensure employment
- Ecosystems secure our health

Revenues from Timber

- **The upstream timber industry added more than USD 14 billion to the Indonesian economy (2012)**



*upstream

- **Unsustainable forest depletion would directly decrease this revenue, and involve a loss of taxes and employment. In 2010, total forestry taxes amounted to IDR 2.7 trillion**

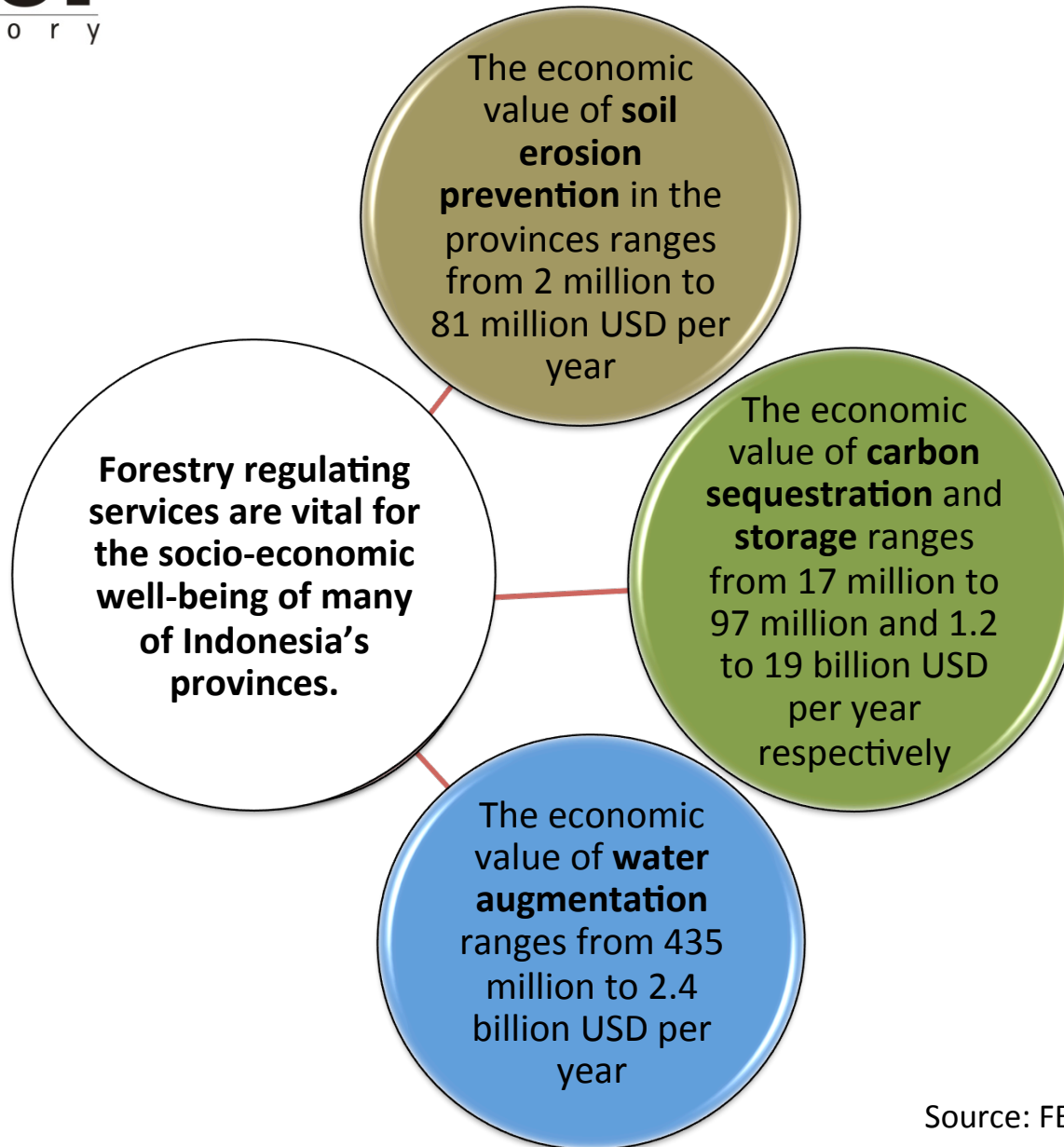
Revenues from NTFPs

Indonesia is now the world's biggest producer of 8 types of essential oils (TRECIDA, 2011)

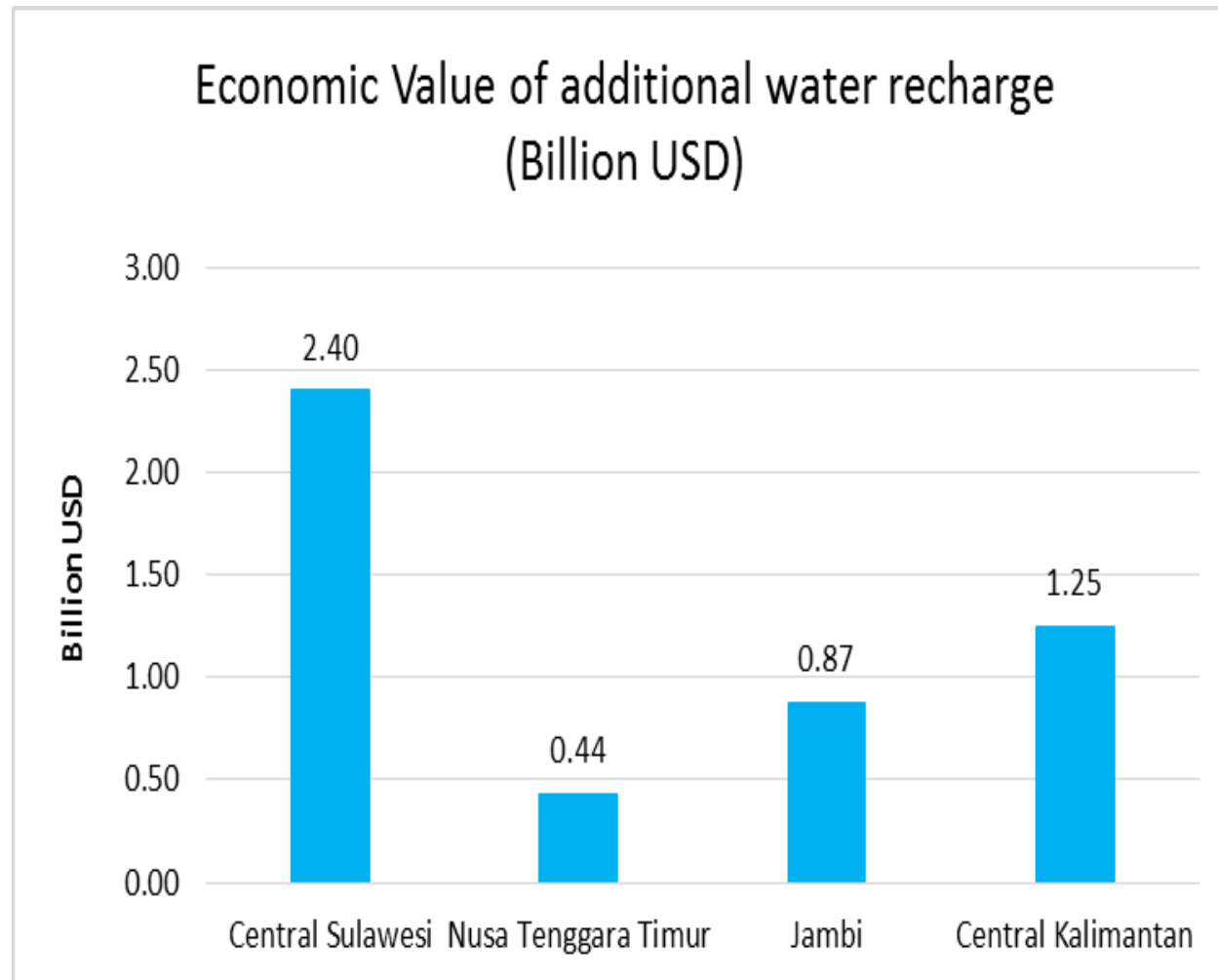
In 2011, the medicinal plants industry produced more than USD 1 billion worth of products

NTFPs have a large economic potential for Indonesia as their production has significantly increased over the past decade

Contributions at the Provincial Levels



Economic value of additional water recharge in 2012





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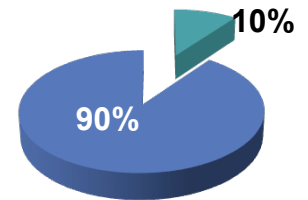
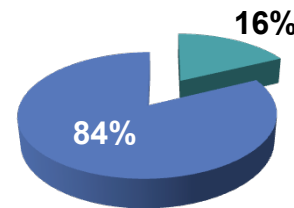
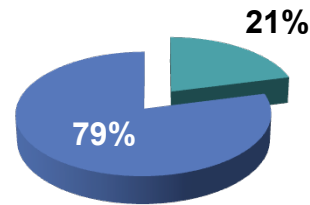
The Economics of Ecosystems & Biodiversity (TEEB, 2010) provided an economic case for Conserving, not destroying ecosystems to solve Poverty...

Indonesia

India

Brazil

Ecosystem services as a % of classical GDP :



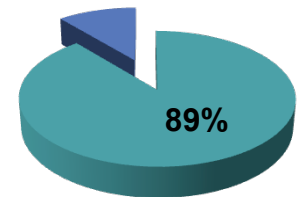
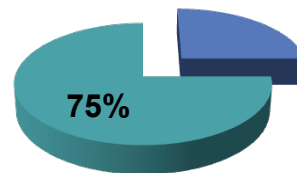
Ecosystem service-dependent poor people :

99 million

352 million

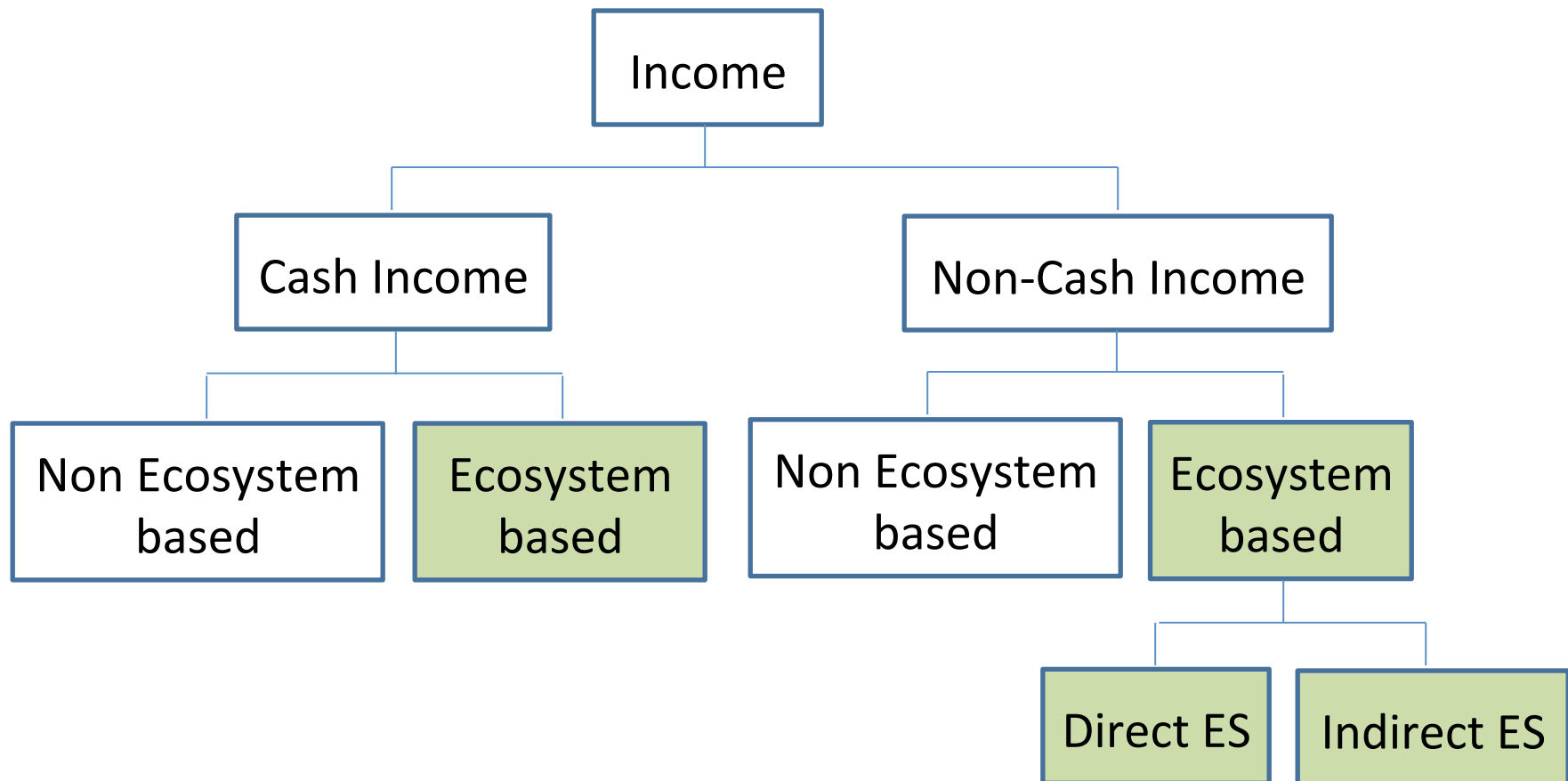
20 million

Ecosystem services consumed by the poor as a % of “GDP of the poor” :



 **Ecosystem services**

GDP of the Poor: Income Typology



Indirect Ecosystem-based Incomes: Example





Non-timber forest products

Kalimantan Tengah Survey: Villages and Typology by District

No	District	Village	Village Typology
1	Murung Raya	<ul style="list-style-type: none"> a. Osom Tompok b. Olung Olu c. Konut d. Saripoi 	<ul style="list-style-type: none"> ▪ Type 1: Within Forest area ▪ Type 1: Within Forest area ▪ Type 1: Within Forest area ▪ Type 1: Within Forest area
2	Barito Utara	<ul style="list-style-type: none"> a. Malawaken b. Hajak 	<ul style="list-style-type: none"> ▪ Type 4: Rural with Coal Mining ▪ Type 2: Riverside– Barito ▪ Type 4: Rural with Coal Mining ▪ Type 2: Riverside– Barito
3	Barito Selatan	<ul style="list-style-type: none"> a. Kalaheian b. Penda Asam 	<ul style="list-style-type: none"> ▪ Type 2: Riverside– Barito ▪ Type 2: Riverside Barito
4	Kapuas	<ul style="list-style-type: none"> a. Sei Pitung b. Sakamangkahai 	<ul style="list-style-type: none"> ▪ Type 2: Riverside – Kapuas ▪ Type 2: Riverside– Kapuas
5	Katingan	<ul style="list-style-type: none"> a. Tewang Tampang b. Betung (Tumbang Liting) c. Danum Matei 	<ul style="list-style-type: none"> ▪ Type 3: Rural with Rattan Production ▪ Type 3: Rural with Rattan Production ▪ Type 3: Rural with Rattan Production
6	Pulang Pisau	<ul style="list-style-type: none"> a. Bukit Rawi/Bukit Liti b. Tumbang Nusa c. Henda 	<ul style="list-style-type: none"> ▪ Type 2: Riverside – Kahayan ▪ Type 2: Riverside – Kahayan ▪ Type 2: Riverside – Kahayan

Household Income and Dependence on Ecosystem Services: Kalimantan Tengah

Type of Village	Average ecosystem based Non Cash Income (% of total income)	Average ecosystem based Cash and Non Cash Income (% of total income)
Forest N=31 households (Murung Raya)	51.43%	77.41%
Riverside N=51 households (North Barito, South Barito, Pulang Pisau and Kapuas)	43.55%	86.38%
Rural mixed with rattan N=27 households (Katingan)	44.63%	74.99%
Rural mixed with coal N=12 households (North Barito and South Barito)	21.79%	34.14%
All villages, all types N=119 (16 villages in 6 districts)	43.63%	76.38%



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Towards a **GREEN** economy

The Significance of Smallholder Farms ...

- Approximately 2.6 billion people rely on agricultural production systems for their livelihood (FAO, 2009)
- Of 525 million farms world wide, 404 million are less than two hectares (Nagayets, 2005)
- Small farms cultivate 60 % of arable land (Herren et al. 2010)



- 10 % increase in farm yields => 7 % reduction in poverty in Africa & => 5 % poverty reduction in Asia (UNEP, 2011)

- Across a very large sample, 'green' farming practices have increased yields an average 79 % (Pretty et al, 2006)

... for hunger, poverty, employment, ecosystems

Ecosystem Services and Food Security in Nusa Tenggara Timur

13,000 children under 5 years old malnourished because of drought (NTT health agency, 2009)

Water scarcity in NTT

40,000 people are affected by drought (BPBD, 2014)

NTT has the highest proportion of food insecure households (26%) compared to Kalimantan, South Sulawesi, East Java

30% of the population living under the poverty line. Rural households are the most food insecure (Government of NTT, 2008)



Ecosystem Services and Food Security in NTT

The RPJMD gives major importance to the agricultural sector, **as approximately 80 percent of the population is engaged in the agricultural sector** (BPS)

A possible solution is further preservation of forests as they indirectly make an essential contribution to food security maintaining the environmental conditions needed for agricultural production.

Economic value of additional water recharge provided by forests in 2012 in NTT is **USD 435 million** (FEVS)



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Costs of Transitioning to a Green Economy



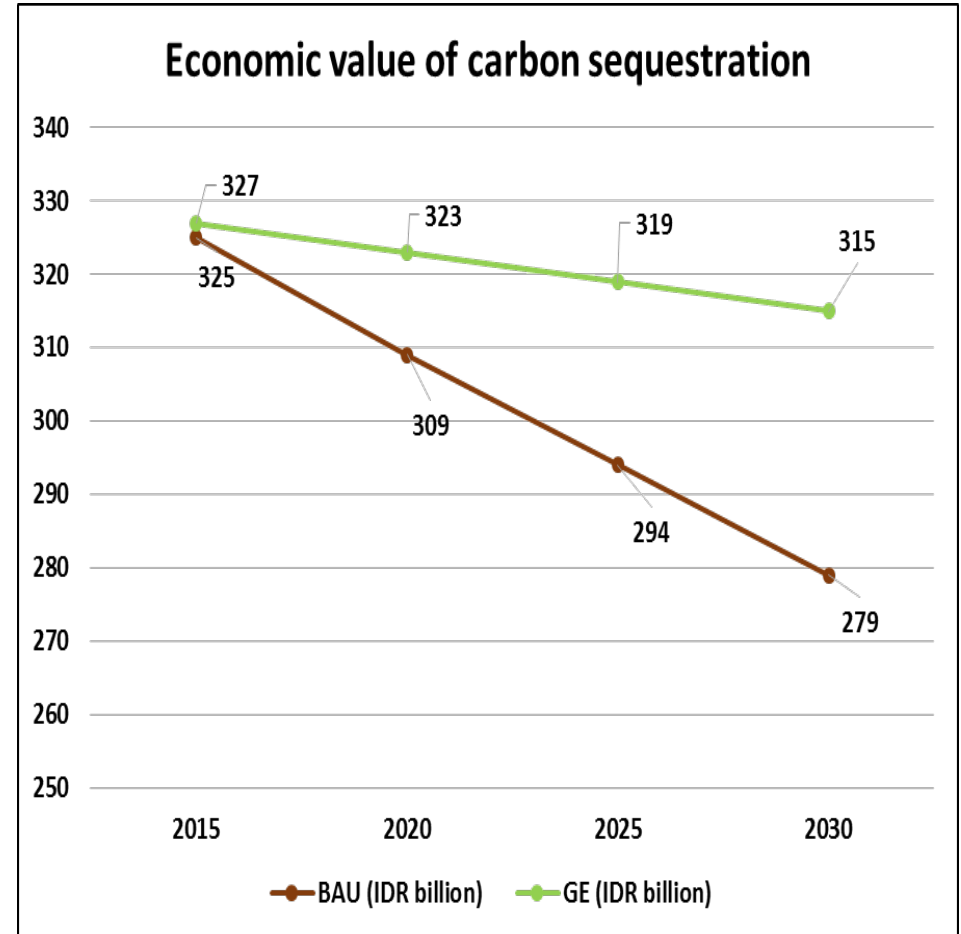
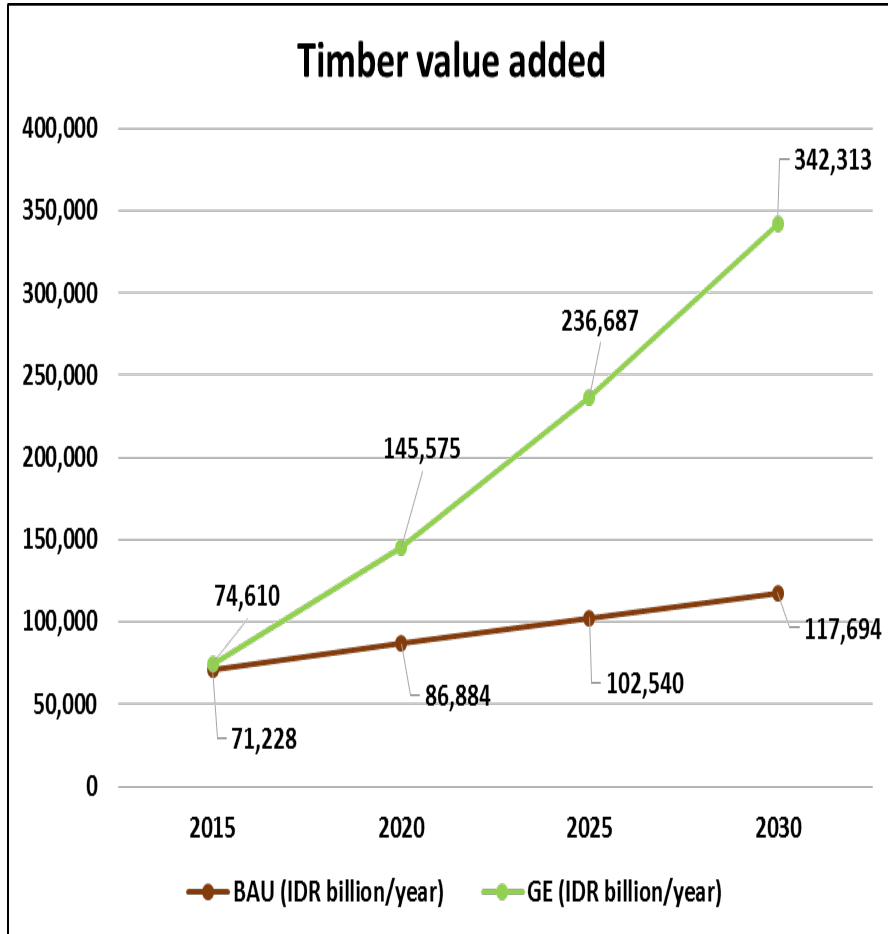
An annual investment of USD 600 million (or IDR 7,280 billion) would improve the conservation of forest and ecosystem services, and promote community forest management



The total cumulative investment in these services would amount to approximately USD 10 billion (or IDR 121,360 billion) between 2015 and 2030 to support a transition towards a **green economy**

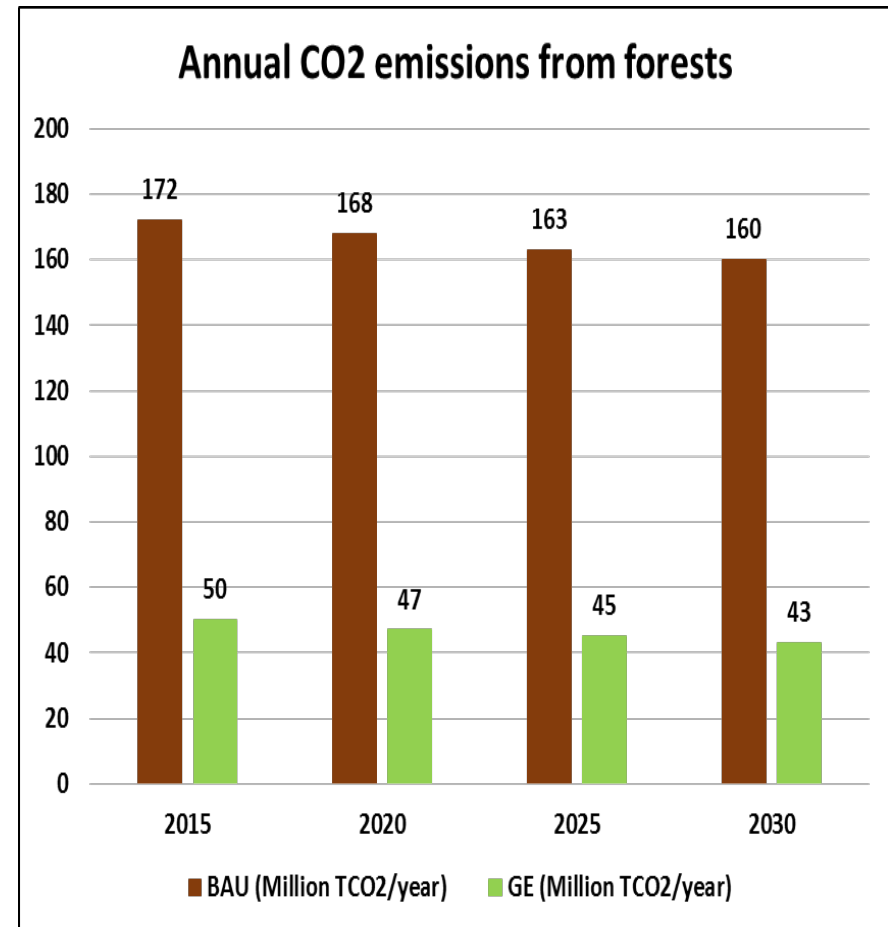
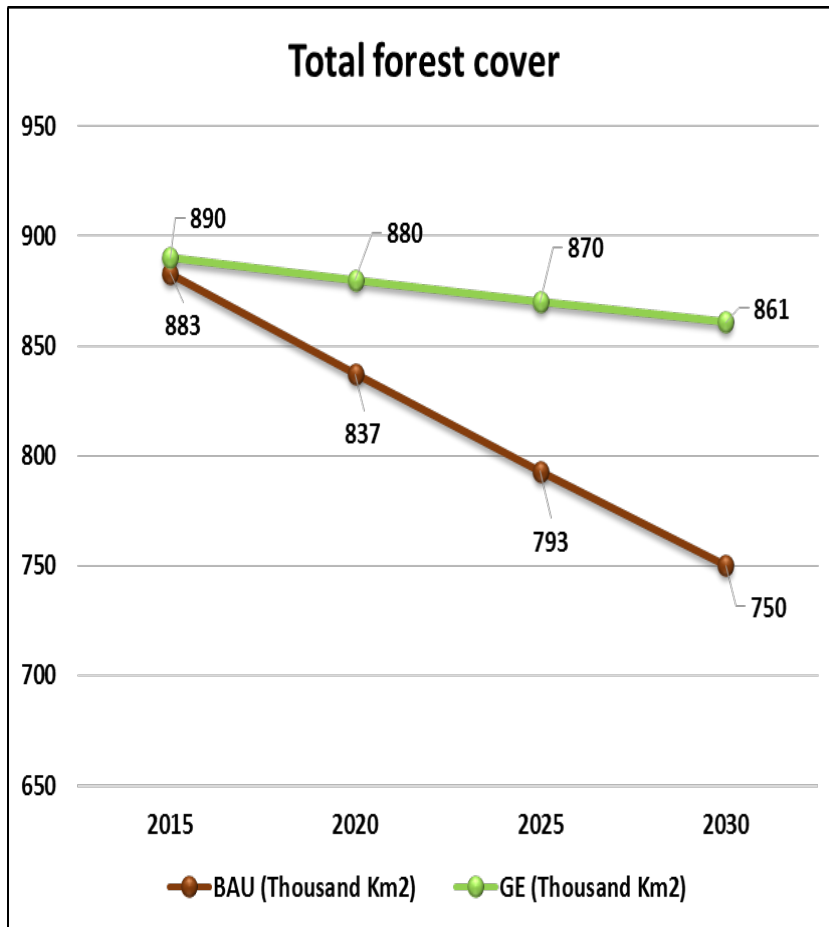
Benefits of GE Interventions vs. BAU

Economic



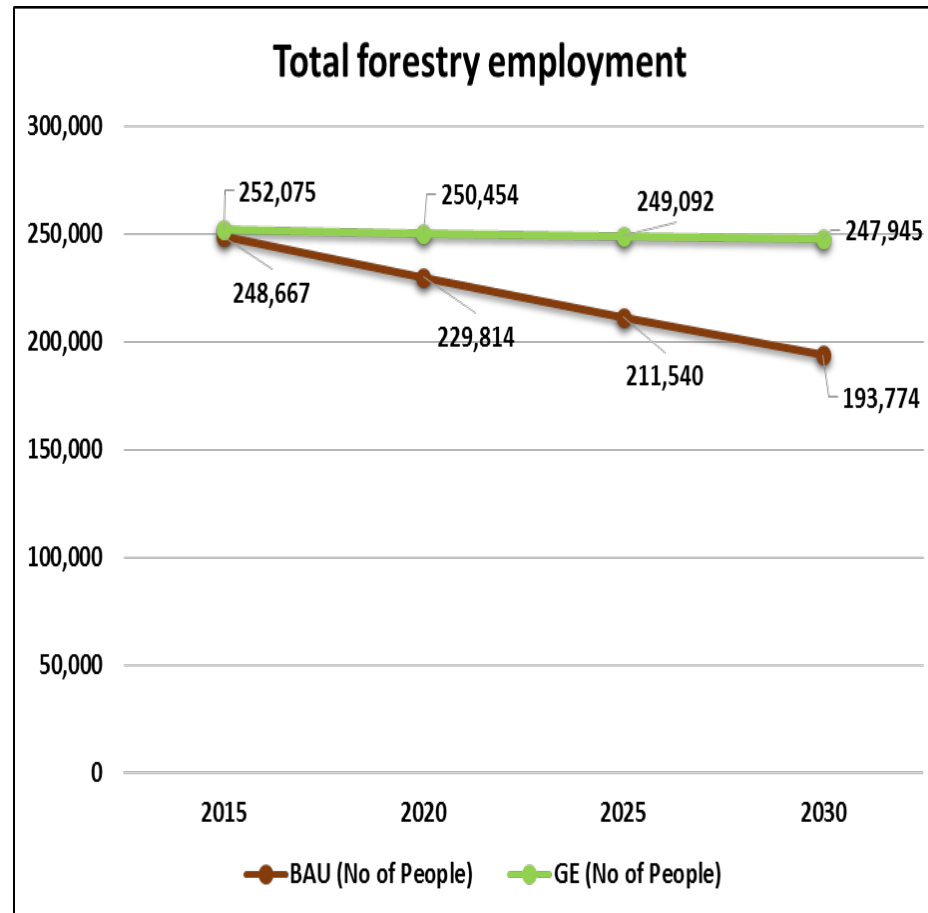
Benefits of GE Interventions vs. BAU

Environment



Benefits of GE Interventions vs. BAU

Social





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Country	Costs	Benefits
Kenya	<p>In 2010 deforestation of 5000 ha of montane forests of resulted in revenue of KSh 1.3 billion (USD 16 million) from sale of timber and fuel wood.</p>	<p>During the same period, deforestation of 5000 ha of montane forest resulted in a loss due to decrease in regulating services of 5.8 billion KSh (USD 73.2 million). The largest loss was due to decrease in water supply, which resulted in loss of agricultural output and lowered hydropower generation capacity, reduced fish catches and increased cost of water treatment. Other losses included increases in health costs.</p>
Tanzania	<p>The present value of benefit for next 20 years (2014-2034), captured by SNA, showed that at a current rate of deforestation, cumulative benefit of USD 27 million will be realised.</p>	<p>The present value of loss for next 20 years (2014-2034), captured by SNA, will result in loss due to degradation of ecosystem services of USD 72 million.</p>
	<p>The present value of benefit for the same period, not captured by SNA, based on Tanzania's catchment forest showed that at a current rate of deforestation, leads to net benefits of USD 4.8 billion, realized from the sale of timber related products and NTFP's.</p>	<p>The present value of loss for the same period, not captured by SNA, amounted to USD 747 billion. The loss has been computed as lost timber and NTFPs, as well as regulating and supporting services.</p>
Panama	<p>In the year 2012, gains from deforestation amounted to USD 246.3 million.</p>	<p>In 2012, economic losses due to deforestation were estimated at USD 606.4 million (lost of benefits of ecosystem services).</p>
	<p>From 1992-2012, gains from deforestation were at USD 3.2 billion.</p>	<p>Losses from lost benefits of ecosystem services amounted to USD 6.6 billion.</p>

Key Findings: Gabon

CARBON CREDIT

Scope for carbon credits valued at USD 600 million with benefits seen in:

- increase in GDP of 4.52%
- increased employment of 9.6%
- increase in tax benefits of 7.9%



ECO Tourism

- increase in 20% occupancy rate of hotels
- GDP will increase by 3%
- Employment will increase by 8.8%
- tax revenue increase of 5.3%

Sources : The Role and Contribution of Montane Forest and Related Ecosystem Services to the Kenyan Economy
The Value of Panamanian Forests and their Contribution to the Economy of Panama
Gabon Ecosystem Services and Macro-economic Accounts. The Importance of Linking Ecosystem Services to the Macro Economy
Forest Ecosystem in the Tanzanian Economy and the Role of REDD+ in a Green Economy Transformation



Recommendations and Next Steps

- **Application of context specific valuation methodologies for Indonesia's provinces that account for beneficiaries of the ecosystem services and their willingness to pay to maintain these services**
- **Integration of ecosystem services valuations into public policy, through a holistic analysis that leads to a systems dynamic model**
- **Prioritization of ecosystem services that support the incomes of Indonesia's rural poor in annual investments**
- **Review of development strategies based on the scope for green economy interventions to provide additional jobs, economic revenues and reductions in emissions**



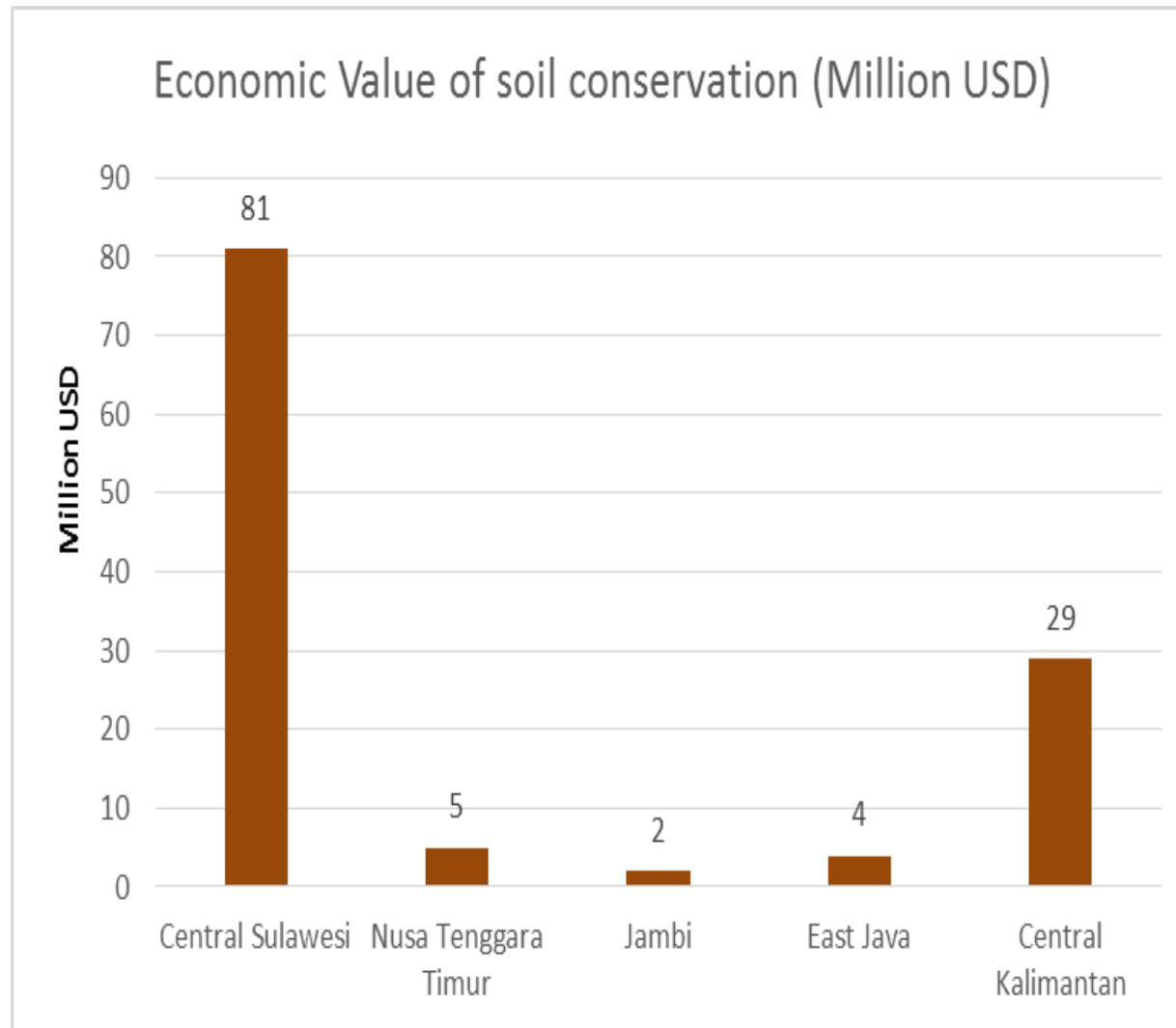
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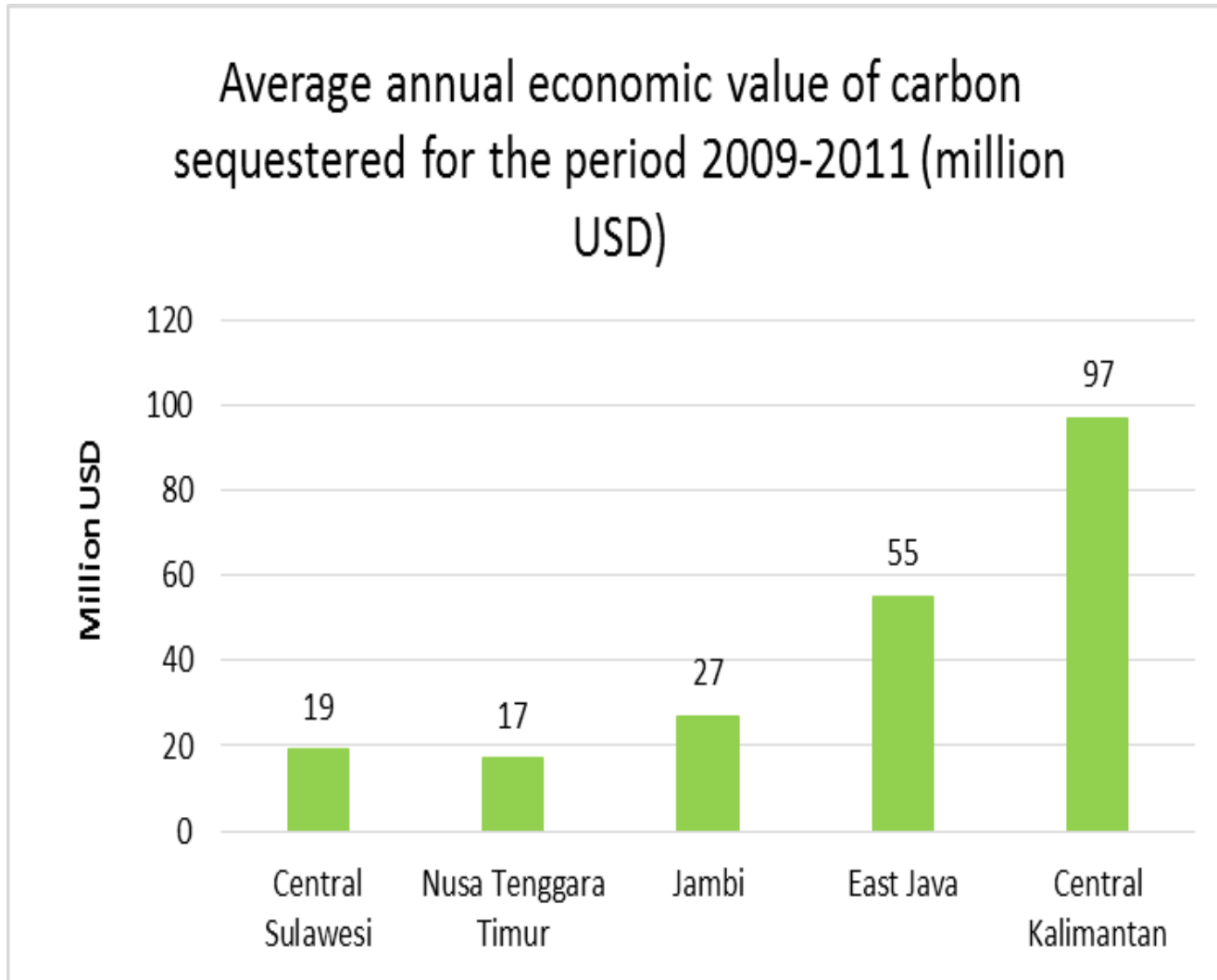
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Economic value of soil conservation in 2012

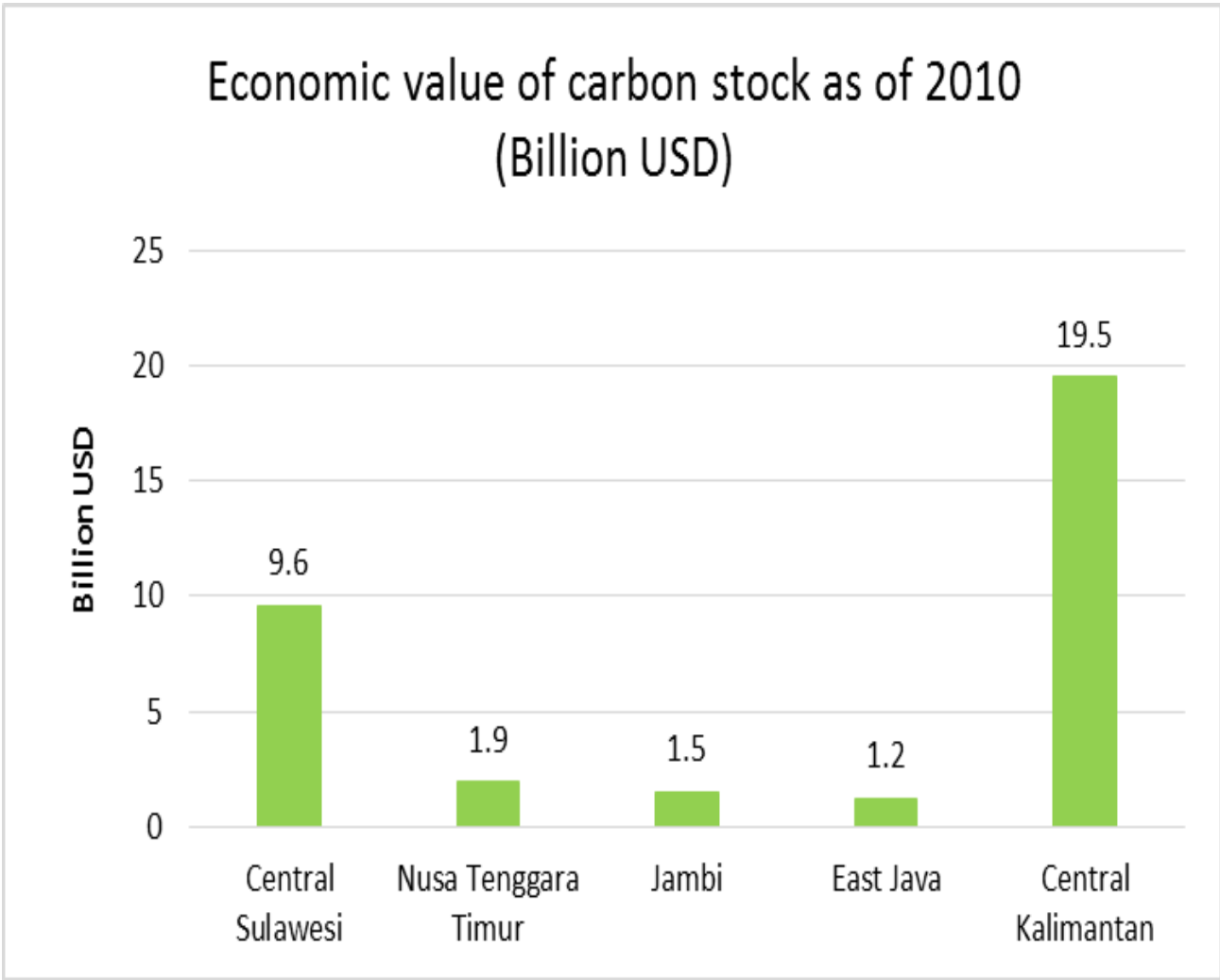


Average annual economic value of carbon sequestered for the period 2009-2011

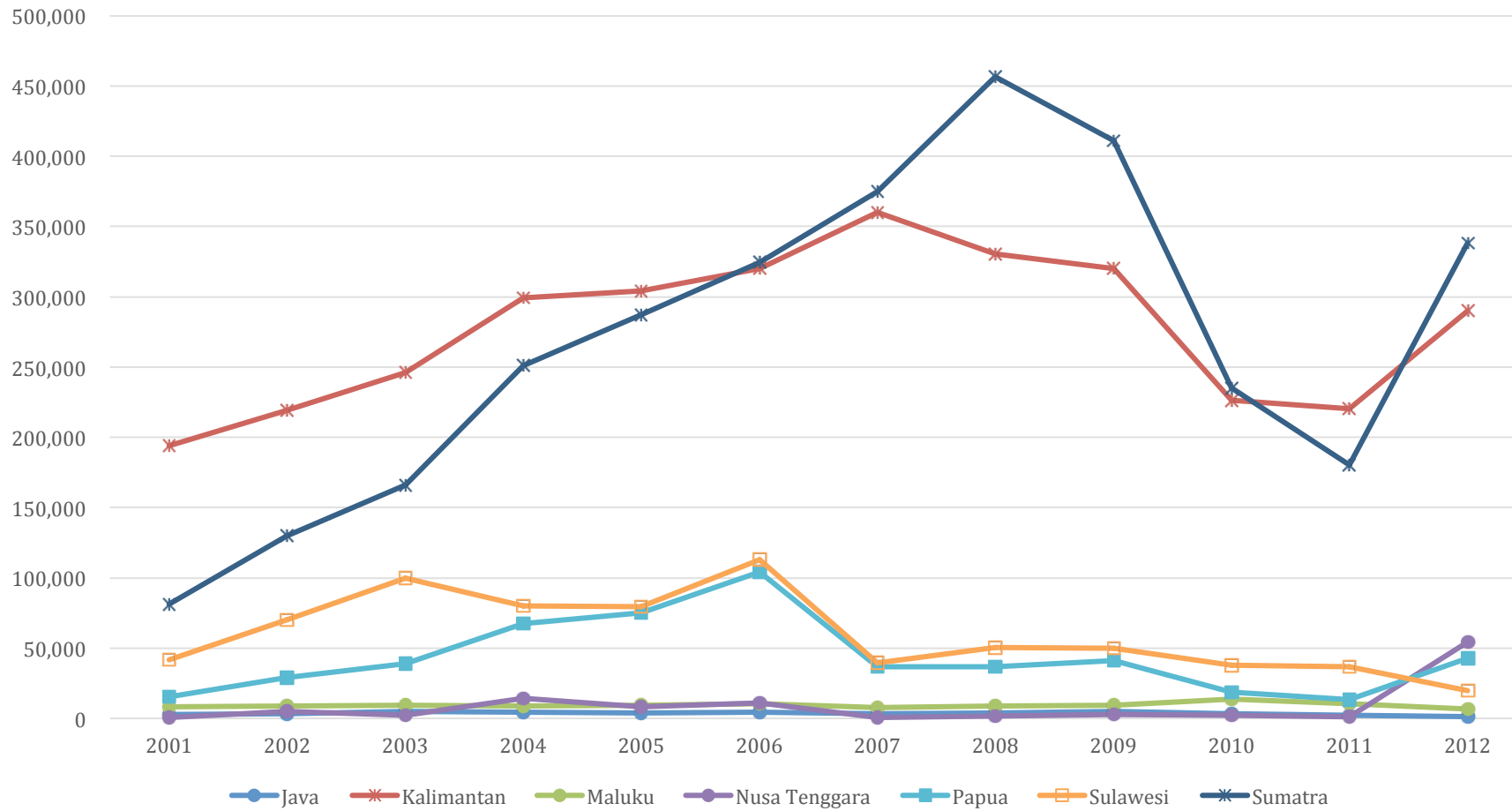
2009-2011



Economic value of carbon stock as of 2010



Annual deforestation by major islands



Source: FEV Study, Provincial Report, 2015