TRAINING ON

Planning and Design of Smart Infrastructure for Biodiversity Protection

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Rhino Lodge, Sauraha, Nepal

ECONOMIC ANALYSIS TOOLS TO SUPPORT DECISION MAKING FOR RURAL ROAD DEVELOPMENT

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AGENDA

- A few key considerations
- Identifying and measuring: valuation
  - Example: Forestry sector in Myanmar
- Road project evaluation: cost-benefit analysis (CBA)
  - Example: Ecotourism road in Uganda
- Regional road planning: multi-criteria analysis
  - Example: Regional road planning in Amazon
- Final thoughts

ACKNOWLEDGEMENTS

- USAID Biodiversity Understanding in Landscape Development (BUILD) Project 2011-2015
- USAID Linear Infrastructure Safeguards in Asia (LISA) Project 2020-2021
- Gordon and Betty Moore Foundation

SOME KEY CONSIDERATIONS

Tradeoffs and indirect impacts


World Bank https://www.worldbank.org/en/topic/poverty

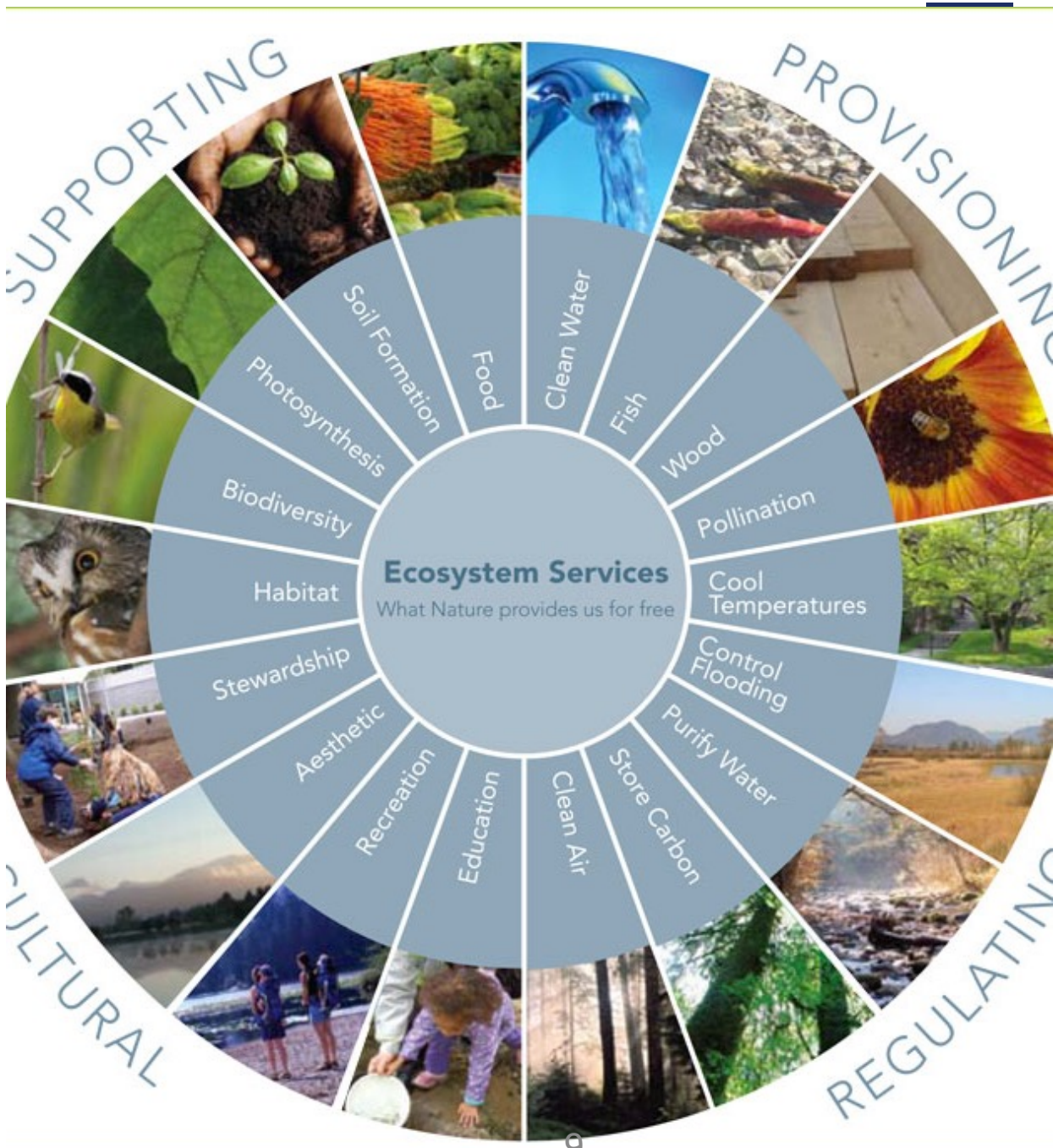
Net economic benefits

The Conversation April 2020 / David Tipling/Universal Images Group/Getty Images

Avoidance before mitigation

ECONOMIC VALUATION

- Placing a value or price on goods and services that are left out of market transactions
- Price does not equal value for most environmental goods and services due to market failures such as public goods and externalities



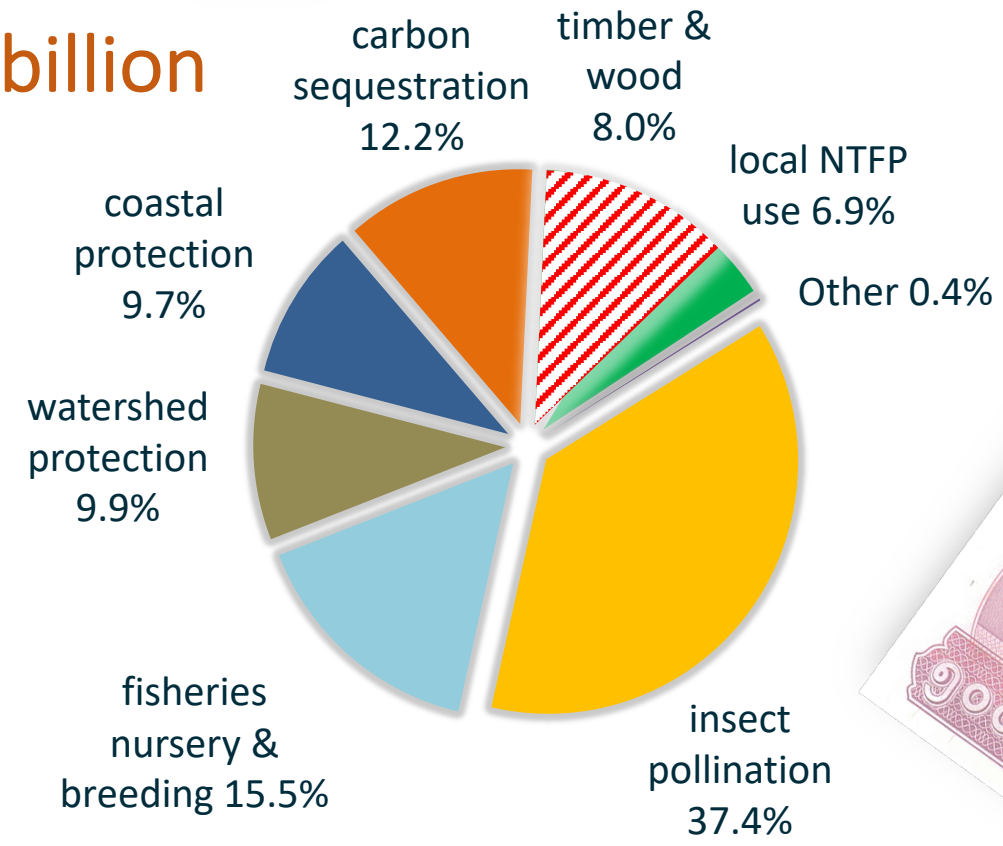
Myanmar

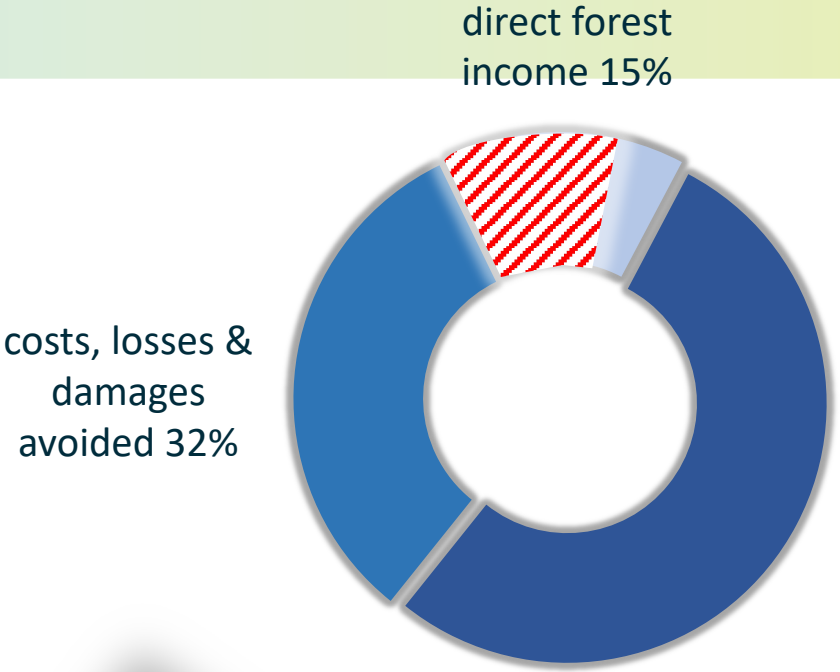
Forestry sector:

- Official statistics: forests contribute <0.5% (US$ 160M) to the economy
- Almost all from commercial timber

Emerton, L. and Yan Min Aung (2013) The Economic Value of Forest Ecosystem Services in Myanmar and Options for Sustainable Financing. IMG, Yangon and Ministry of Environmental Conservation and Forests, Nay Pyi Daw.

Real total value: US$ 7.3 billion

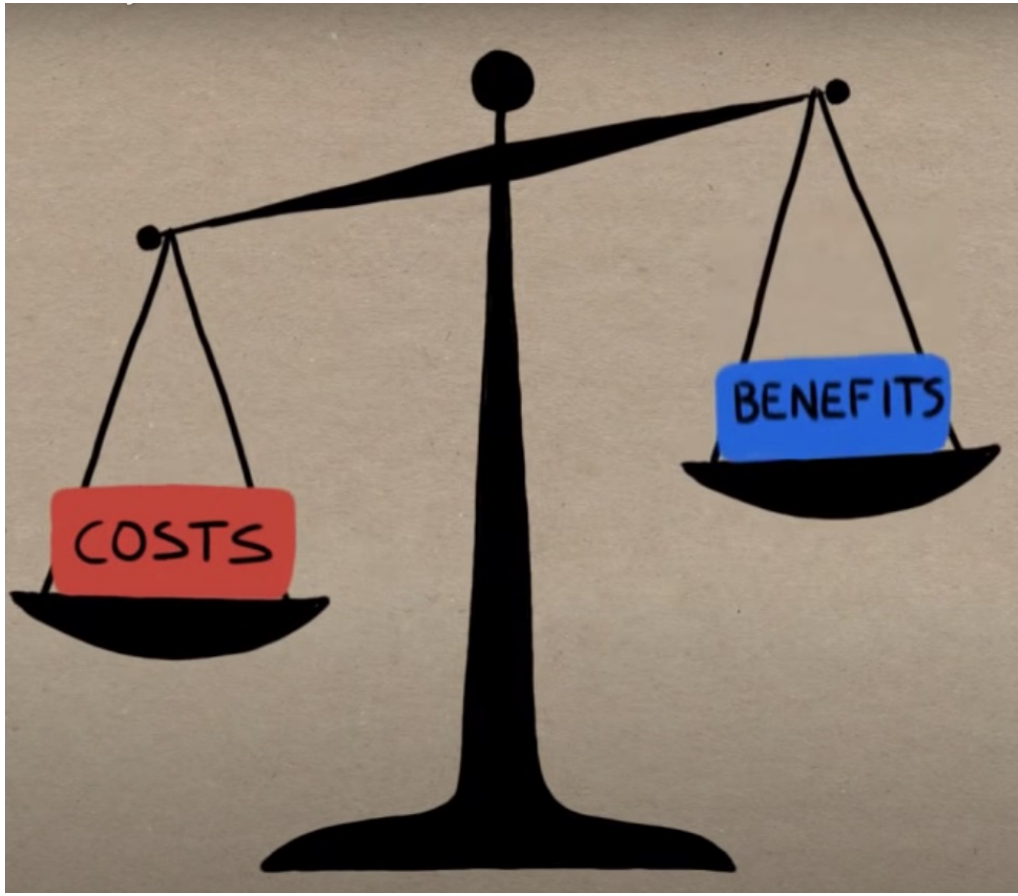




Emerton, L. and Yan Min Aung (2013) The Economic Value of Forest Ecosystem Services in Myanmar and Options for Sustainable Financing. IMG, Yangon and Ministry of Environmental Conservation and Forests, Nay Pyi Daw.

COST-BENEFIT ANALYSIS

- Framework to evaluate a project, policy or investment
- A process of identifying, measuring, and comparing the benefits and costs of a project or investment
- Determines whether a project or investment is worthwhile
- It is a decision support tool



THE ECONOMIC CASE TO AVOID ENVIRONMENTAL AND SOCIAL DAMAGE IN ROAD DEVELOPMENT

Source: Barr et al., 2015

STUDY CONTEXT

- Should Uganda pave the road through Bwindi Impenetrable National Park?
- Goals of Ikumba-Ruhija road (through Bwindi):
  - improve performance of the tourism sector
  - improve access to goods/passengers
  - reduce transport costs
  - improve access to development opportunities
  - ensure no roadside communities worse off

RESULTS

CBA:

- Costs > Benefits for all road options
- Alternative that costs $3-$5 million more could avoid a potential loss of 10s of millions of dollars in lost tourism income

People served:

- Through the park: 13,000
- Alternatives: 19,000
- Additional paving: 25,000

Source: Barr et al., 2015

CONCLUSIONS

Any tourism investment should focus on:

- Protection of current gorilla population
- Potential to grow gorilla population

Road alternatives outside Bwindi NP should be further explored:

- Minimal cost increase
- Lower risk to tourism
- Lower risk to gorillas
- Greater local benefit

MULTI-CRITERIA ANALYSIS

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https://www.pnas.org/content/117/13/7095

A BETTER AMAZON ROAD NETWORK FOR PEOPLE AND THE ENVIRONMMENT


Dr. Morley Read / Shutterstock

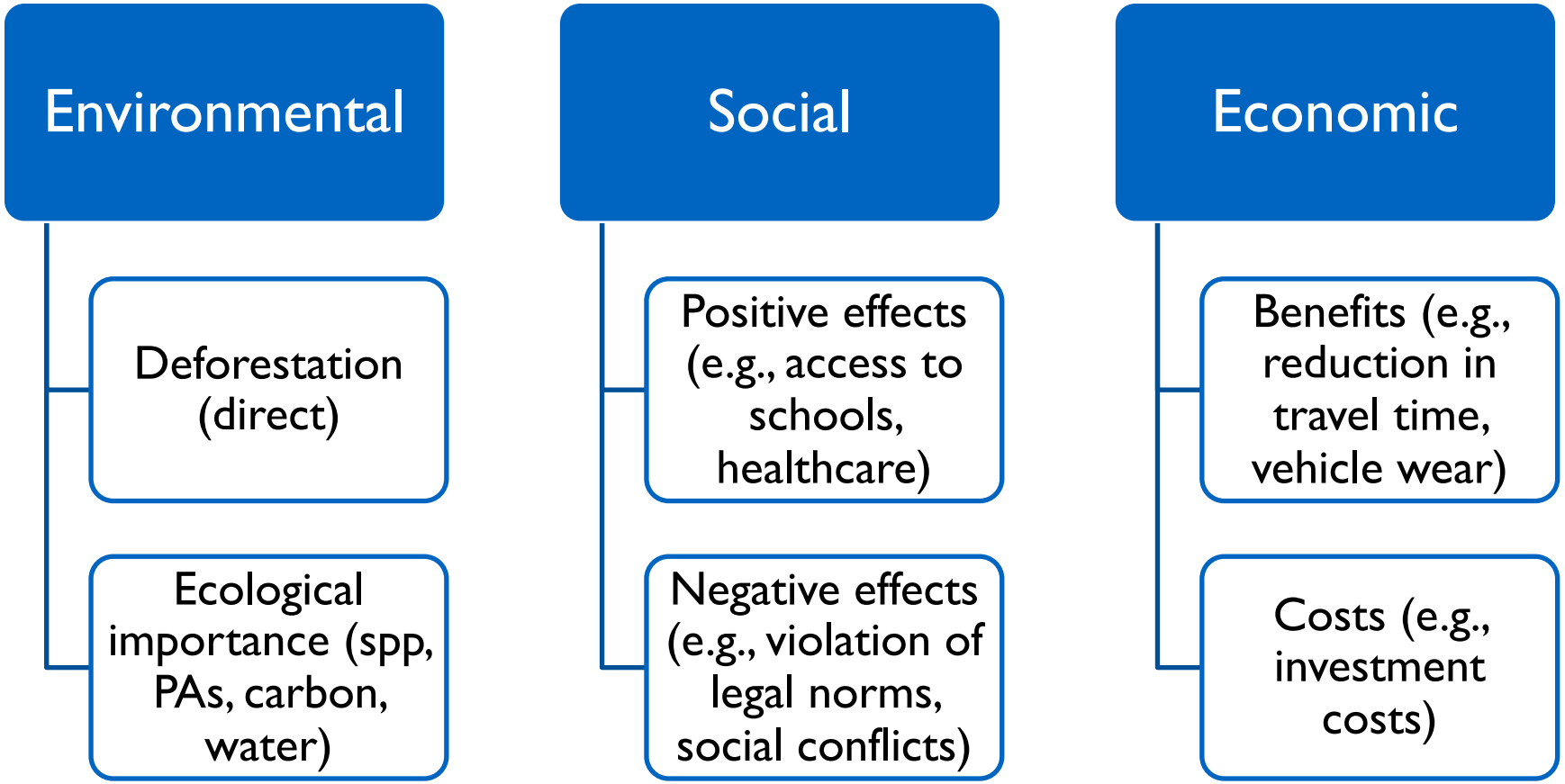
Conservation Strategy Fund

FCDS
Fundación para la Conservación y el Desarrollo Sostenible

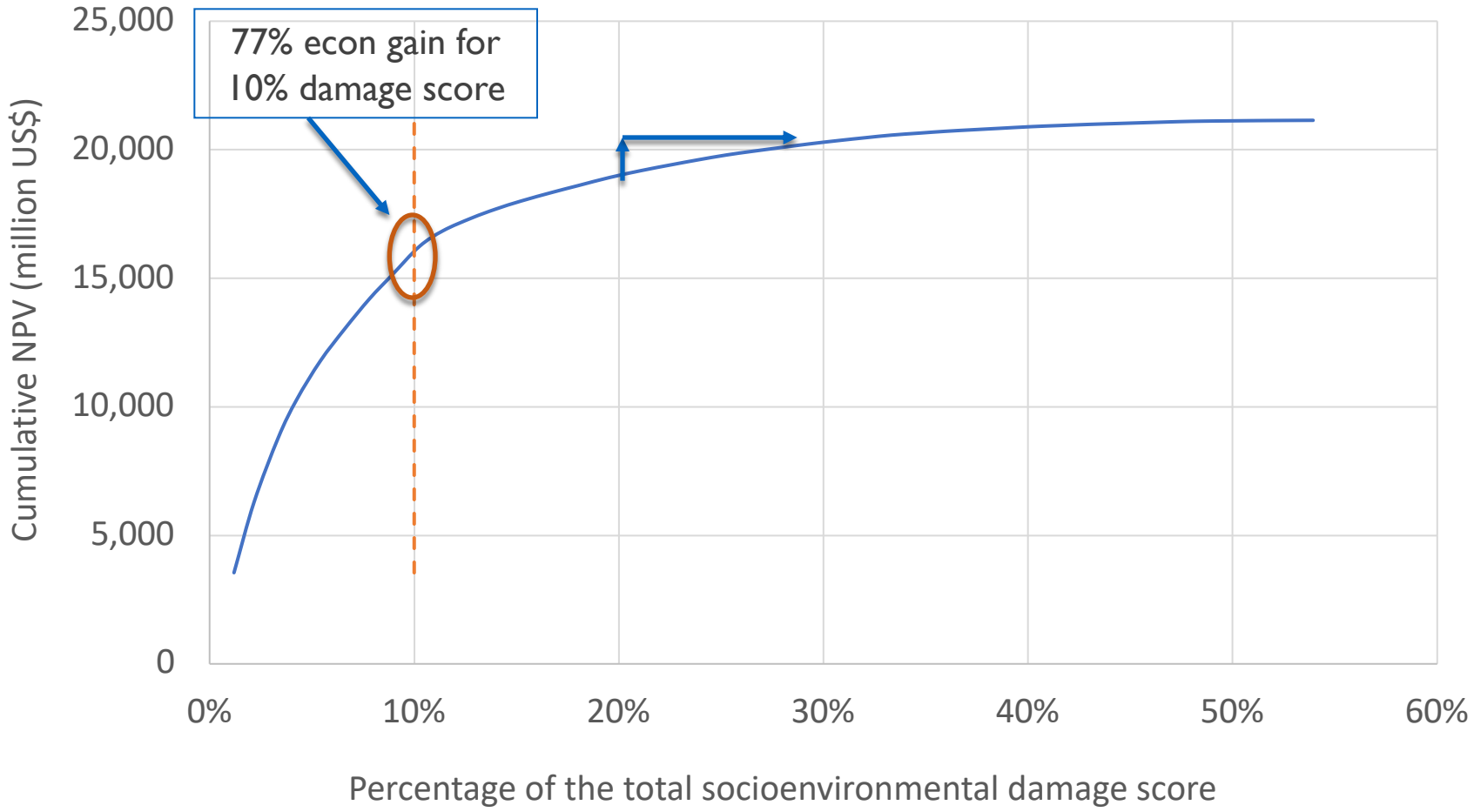
IPAM
Amazônia

GORDON AND BETTY MOORE FOUNDATION

CRITERIA


Environmental
Deforestation (direct)
Ecological importance (spp, PAs, carbon, water)
Social
Positive effects (e.g., access to schools, healthcare)
Negative effects (e.g., violation of legal norms, social conflicts)
Economic
Benefits (e.g., reduction in travel time, vehicle wear)
Costs (e.g., investment costs)

RESULTS: BETTER CHOICES



AMAZON ROADS: CONCLUSIONS AND OPPORTUNITY

1. All road projects generate negative social and environmental impacts.
2. “Trade offs”: Choose between economic efficiency and low impact projects.
3. “Win-win”: cancel projects with NPV<0 (~50%). Are there more efficient investments?
4. Study roads with both high economic efficiency and low social/environmental impact in greater detail.
5. Invest in rigorous analyses and use the information to inform better regional planning and decision making in relation to roads.
6. By focusing resources on the least risky roads, governments in the Amazon region could avoid net economic losses of more than US $7.6 billion and deforestation of more than 1 million hectares.

FINAL THOUGHTS

1. Roads in rural areas, especially in protected areas, often bring a wave of illegal activity, resource extraction, immigration and local community disruption.
2. Environmental and social costs should be incorporated from the beginning of the planning process to help prioritize road infrastructure investments, and road projects that generate more costs than benefits for society should be avoided.
3. Alternatives are often less costly from both a financial and economic point of view, and investing in avoidance can be less expensive than investing in mitigation.
4. The benefits (not just the financial costs) of safeguard mitigation measures, such as wildlife crossings, should be incorporated into the feasibility analysis. Benefits are often the reduction of financial, social and environmental costs.

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THANK YOU