

REDD+ policies and land use

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Costs of REDD+

1. Opportunity costs
 2. Implementation costs
 3. Transaction costs
- Costs to the society (nation or country)
 - Costs to individual actors
 - Costs to government agencies



Transaction costs and the price of carbon

- Purchase or rent
 - In the case of the purchase market, carbon offsets are measured as the amount of carbon sequestered in biomass and soils during year t
 - In the case of the rental market, carbon offsets are measured as the stock of carbon present in biomass and soils at the end of year t
- The presence of ex-ante costs to develop baselines and predict outcomes of alternative land uses, as well as the fixed and annual costs of certifying carbon offsets, means that landholders, particularly smallholders, are unlikely to participate in the carbon market directly as individuals. Their participation needs to be mediated by aggregators that pool a number of individual farmer contracts into a “carbon project”. Pooling a large number of contracts allows aggregators to gain economies of scale and manage risk.
- Farm gate price of carbon

Tanzanian case studies

- Mgeta
 - afro-montane evergreen forest
 - permanent upland cultivation
 - goats, pigs, poultry
- Kitulangalo
 - deciduous miombo woodland
 - permanent cultivation on rain-fed land in combination with pastoralism
 - cattle, goats, poultry
- Mtibwa
 - Miombo woodland (as above)
 - sugar cane and teak plantations combined with permanent cultivation on rain-fed land (including paddy), also pastoralism
 - cattle, goats, poultry

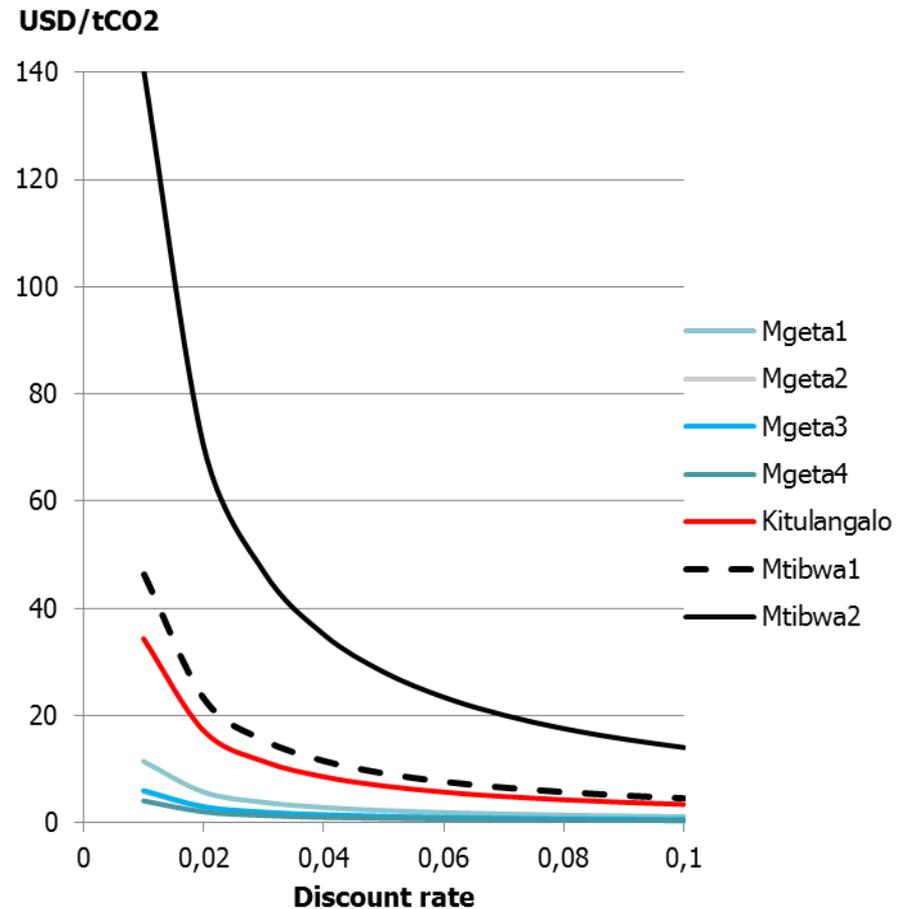
Meley Mekonen Rannestad

Araya & Hofstad (2014)

Opportunity costs

1. Value of deforested land use
 - a) Cropping
 - b) Animal husbandry
2. Value of forest use (if this is allowed and sustainable)
 - a) Wood harvest
 - b) Grazing

Opportunity cost = 1 - 2



Montane forest (Eastern Arc of Mountains)

- Values of cropland: 1500-4000 USD/ha
- High biomass density in trees (≈ 600 t/ha)
- Low opportunity cost per tCO₂ (1-4 USD/t)
- Remaining Forest Reserves should be protected
- Biomass inventory and vegetation cover monitoring is important



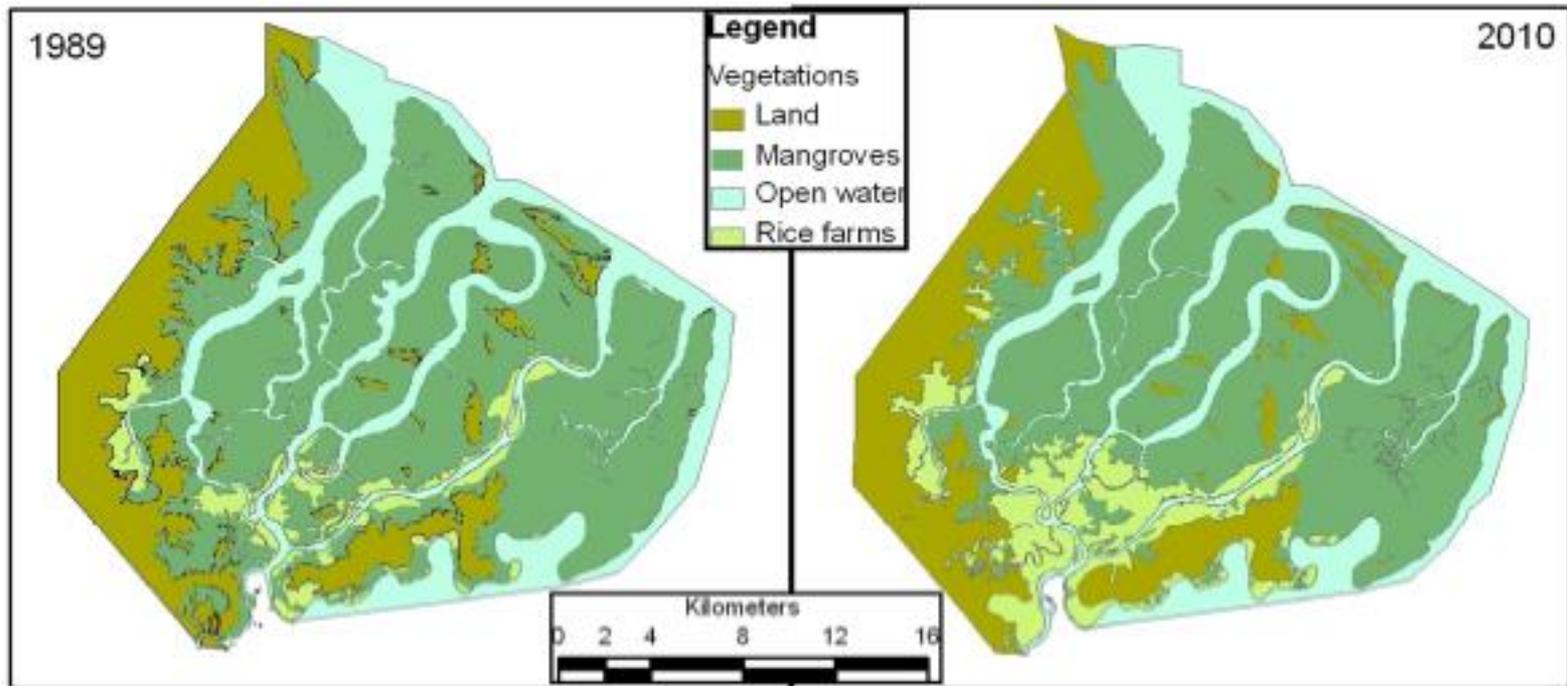
Lowland (Miombo woodland)

- Values of cropland: 1500-4000 USD/ha
- Low biomass density in trees (≈ 50 t/ha)
- High opportunity cost per tCO₂ (7-43 USD/t)
- Productive cropland (rice, sugarcane) should be expanded (deforestation)
- Biomass inventory and land-use monitoring is important, degradation of hills should be avoided



Rice or mangroves?

Climate colonialism or traditional land-use in the Rufiji Delta?



20 year change in mangrove cover and land-use in northern Rufiji Delta, Tanzania

Stephen Nindi (SUA) and Haji Machani (WWF)

Based on Landsat (1989) and WorldView-1 (2010) imagery.

From deforestation to afforestation, from REDD to REDD+

- When forest ownership is collective, and user rights are diffuse, paying individuals or cooperatives to stop deforestation or forest degradation is not viable.
- Most REDD+ schemes and projects in Africa are now directed towards tree planting or protection of degraded lands.
 - You can pay people for planting trees (the risk of failure is with the buyer), or
 - You can punish people who continue degrading protected land

Tenure problems

1. disconnect between customary and statutory land rights,
2. legal pluralism,
3. tree planting as land claim,
4. expansion of treed areas in smallholder land use systems,
5. the difficulty of using the 'abandoned land' category.

The pervasiveness of these tenurial issues mean that the prospects for successfully implementing afforestation and reforestation projects in Africa are in reality quite weak. The current project approach to carbon storage in Africa needs to be significantly realigned with African reality in order for sequestration expectations to be practical.

Unruh (2008)

Cost-Benefit Analysis of exclosures in Tigray, Ethiopia

- Establishing exclosures in degraded marginal lands generate a positive net present value (5620 ETB/ha \approx 268 USD/ha)
- Putting productive agricultural land under exclosure yields a negative NPV even under some scenarios of optimistic price increases and low discount rates.
- Babulo et al. (2012)



“Stealing” firewood in Tigray, Ethiopia

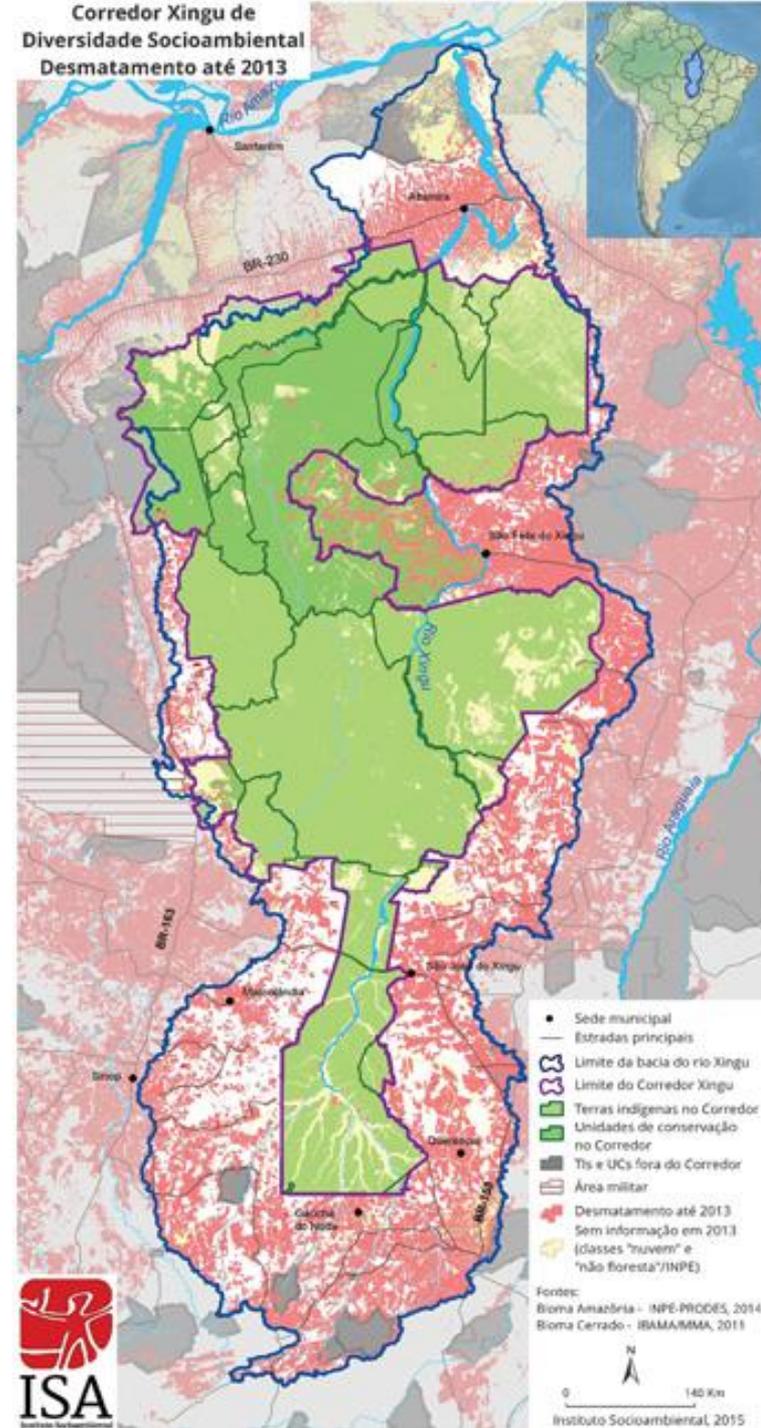


Xingu Basin, Brazil

Map of Xingu Basin in the Brazilian Amazon. Green areas are Indigenous Lands (TI) and officially protected areas. Red areas are deforested, while yellow areas have modified vegetation. The Basin covers 511.149 km², more than the area of Spain, and the deforested area of 109.166 km² is more than the area of Iceland.

Instituto Socioambiental

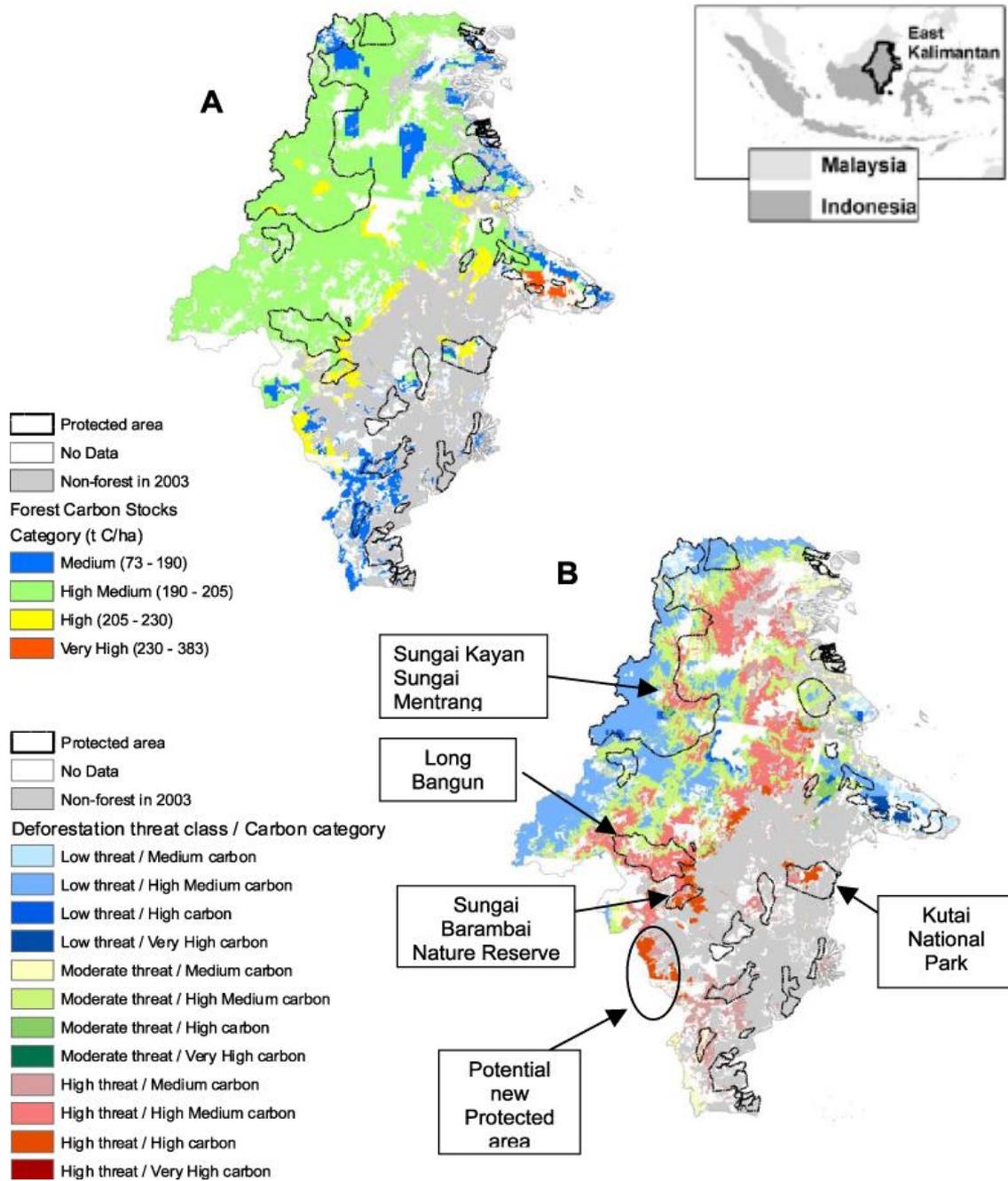
- Climate colonialism or conservation of nature and culture?
- Which development for indigenous people?



East Kalimantan

Combining carbon density and risk of deforestation

Harris et al. (2008)



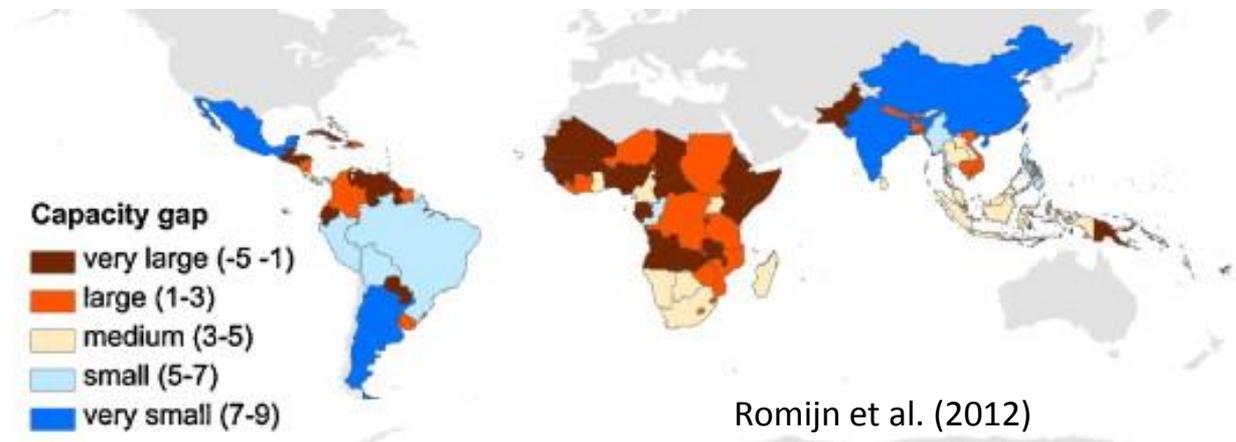
Indonesia

- An effective REDD+ mechanism for Indonesia must address the categorization of conversion forest and production forest. Lack of clarity and transparency in land allocation, particularly over conversion forest, lead to high transaction costs and limited attractiveness of REDD+ projects.
- Land allocation policy and process in Indonesia have been dominated by conflicting policies, lack of institutional clarity and lack of coordination, underpinned by a development paradigm in the forestry sector that is characterized by a focus on large-scale economic development. Finding space for REDD+ in forest land allocation remains a key challenge.
- Thus, the development of incentive structures and a regulatory frame to direct investors into degraded forest areas is required. The classification of degraded forest land must be revised, as perceptions and definitions of degraded forest vary and conflict.

Brockhaus et al. (2012)

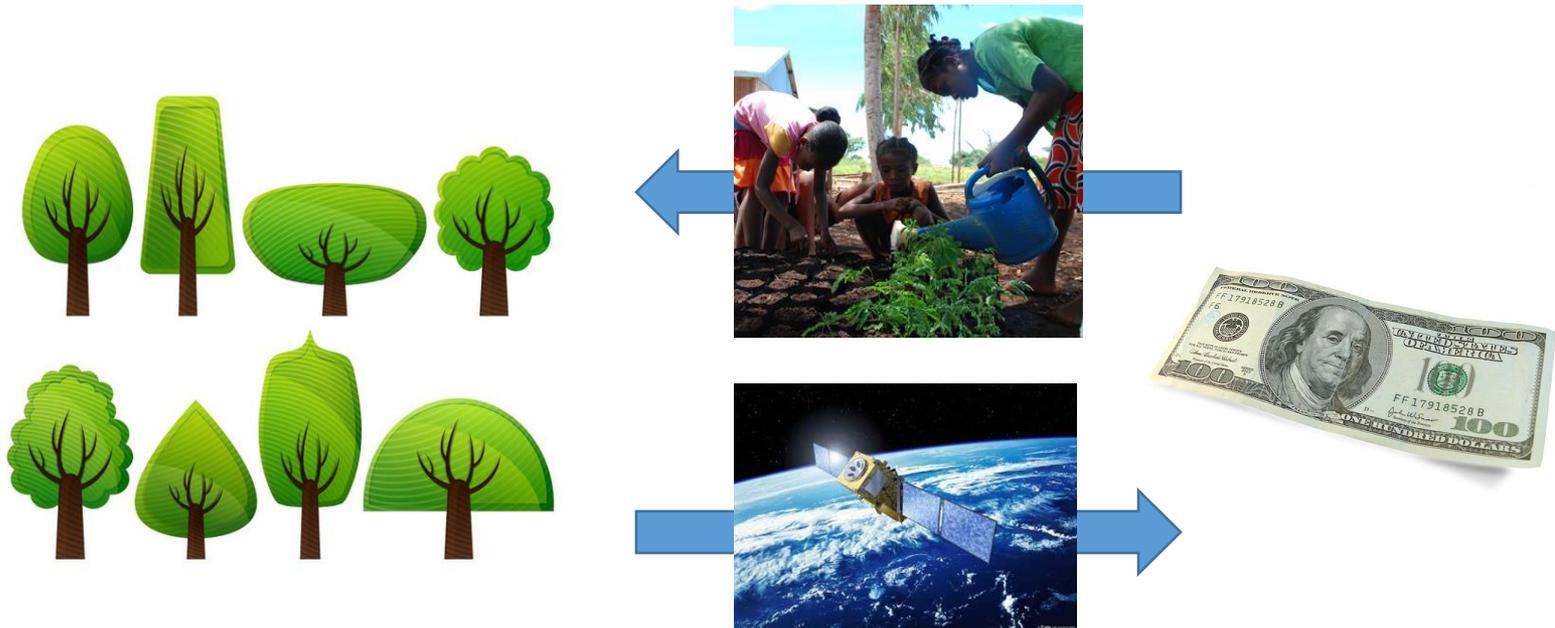
National versus sub-national REDD+ payments

- International market or global fund
- States in the South as recipients
- REDD+ schemes and projects (NGOs)
- Forest owners
- Forest users



Input or output based payment

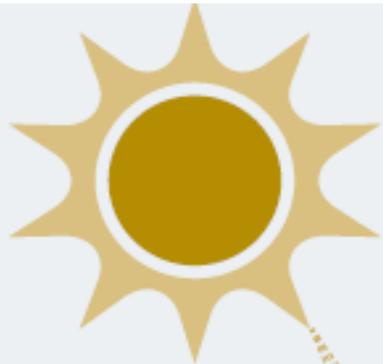
- **Input based:** Pay for activities (e.g. planting, or harvest control) aimed at carbon sequestration or storage in trees
- **Output based:** Pay for verified sequestration of carbon, or reduced emissions of CO₂



Strengths and weaknesses of output- and input-based benefit distribution systems under national REDD+

After: Skutsch et al. (2014)

Criteria			Output based benefit distribution		Input based benefit distribution	
			Strengths	Weaknesses	Strengths	Weaknesses
Technical issues	Baselines		Simple, parcel-based measurement	Individual baseline needed	Baseline not required	
	Economic efficiency		Only pay for added carbon	Costly construction of baselines		All participants receive payment→ Small amount per participant
Political issues	Merit-based equity		Payment based on performance			Would not deliver merit based equity
	Right-based equity	Forest owners	Forest ownership is often collective and confused in many deforesting countries			
		Others		No payments to actors outside forests	Payments can be made to actors outside forests	
Poverty-based equity			May not benefit poor if their rights are not recognised	Easier to favor poor people and communities		
Data requirements	Accuracy			Requires high accuracy and verification	Lower requirements	
	Transaction cost			High	Low	



Økning av CO₂ i atmosfæren fører til økt drivhuseffekt

ATMOSFÆREN

Karbon omdannes til CO₂ og frigjøres til atmosfæren når skog og torvmyr ødelegges eller forringes

Fotosyntesen omdanner CO₂ til karbon i trevirke og blader. Både skog i vekst og urskog binder CO₂. Restaurering av torvmyr er et effektivt tiltak for å forhindre utslipp av CO₂ til atmosfæren

CO₂
↑

CO₂
↓



ØDELEGGELSE AV TORVMYR

AVSKOGING OG SKOGFORRINGELSE



PLANTING AV SKOG

BEVARING AV SKOG

RESTAURERING AV TORVMYR