



REDD-Alert Dynamic GTAP simulations

28-9-2011 WP leaders meeting,

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A dynamic general equilibrium analysis



What Can You Do with GDyn?

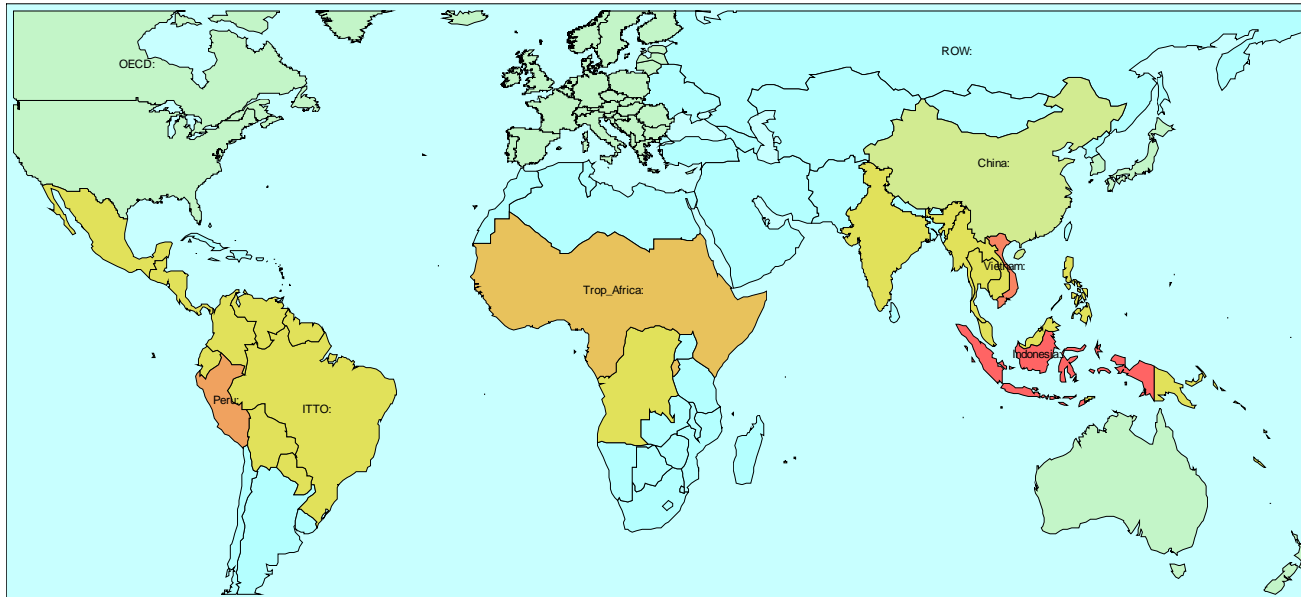
The GDyn Model can be used to determine how changes in policy, technology, population and factor endowments can affect the path of economies over time.

- Equilibrium forces:
 - Supply meets demand
 - Savings meet investments
 - No excess profits

- Endogenous supply of land (= endogenous rate of deforestation)

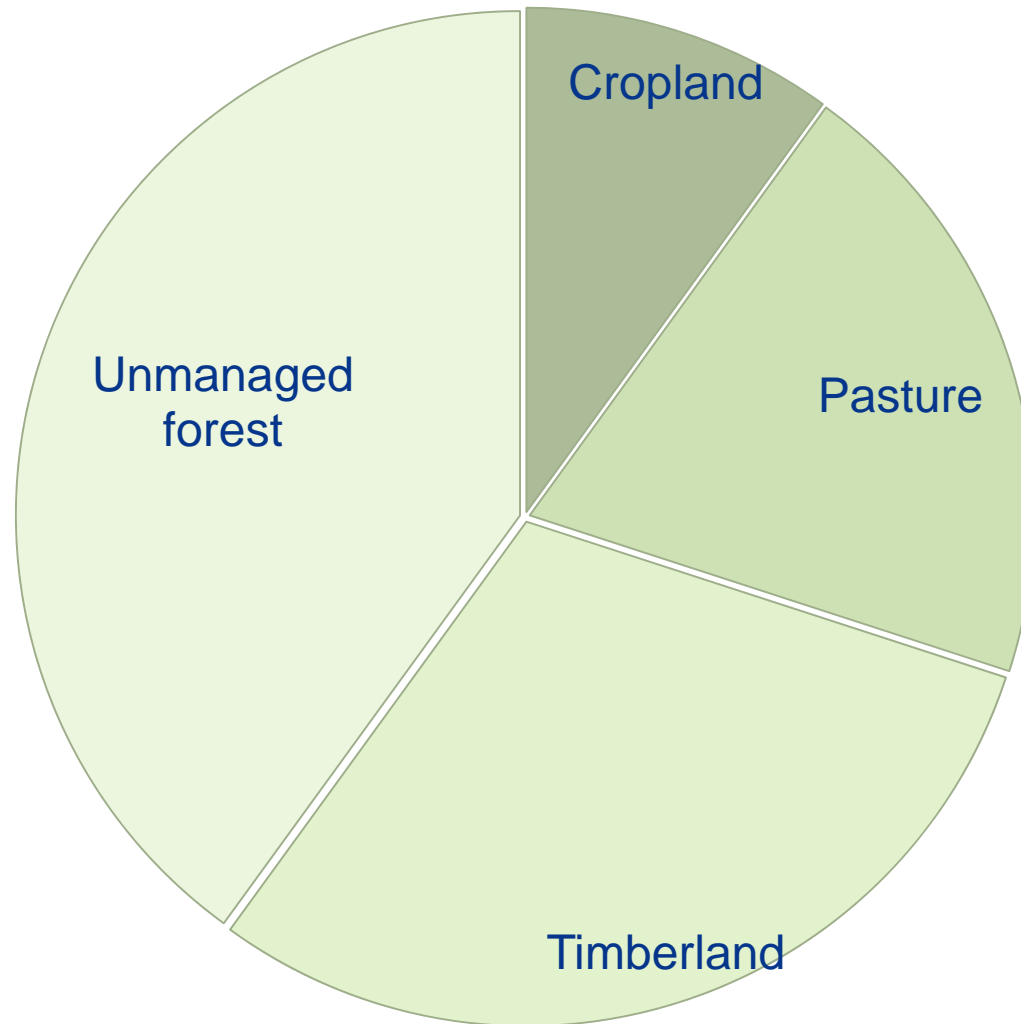
- Calibration period: 2001-10
- Simulation period: 2010-30

Regions/ commodities

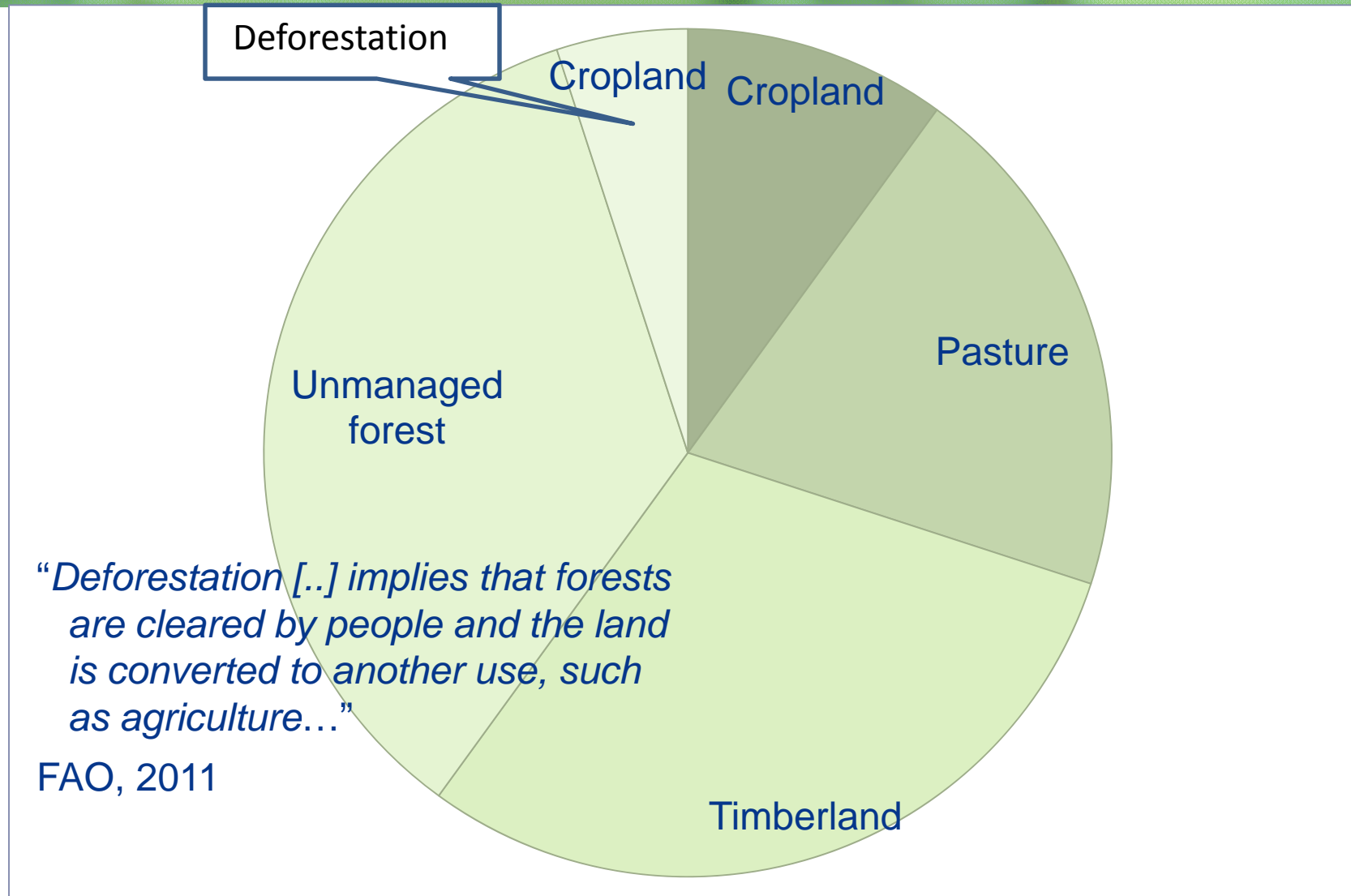


Regions	Commodities
Indonesia	Crops
Vietnam	Livestock
Peru	Forestry
Tropical Africa	Mining
Other tropical timber producing countries (ITTO)	Processed food and fibre (incl. fish)
China	Wood products and paper
Industrialized countries (INC)	Manufactures
Rest of World (ROW)	Services

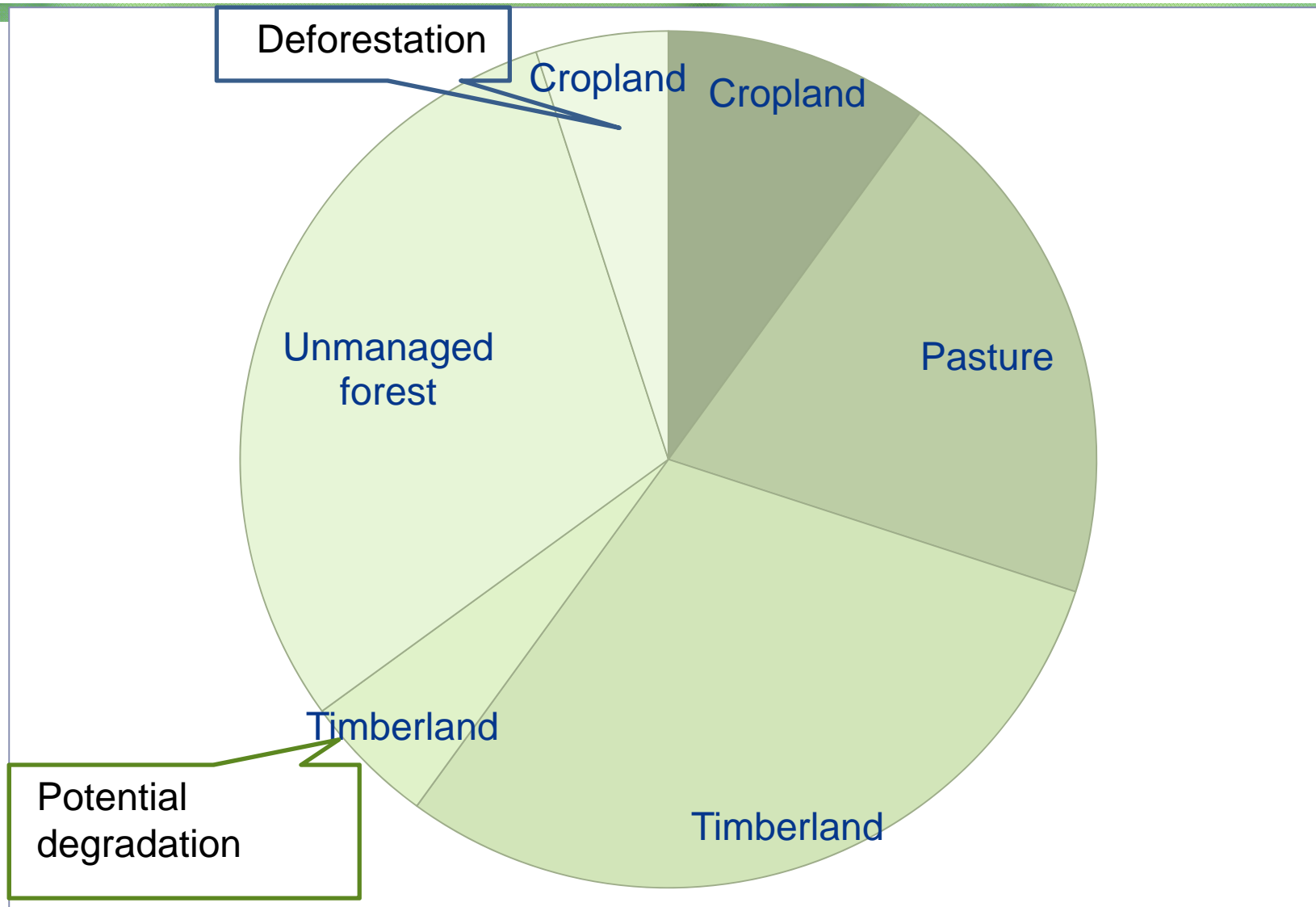
Land use, land use change and deforestation



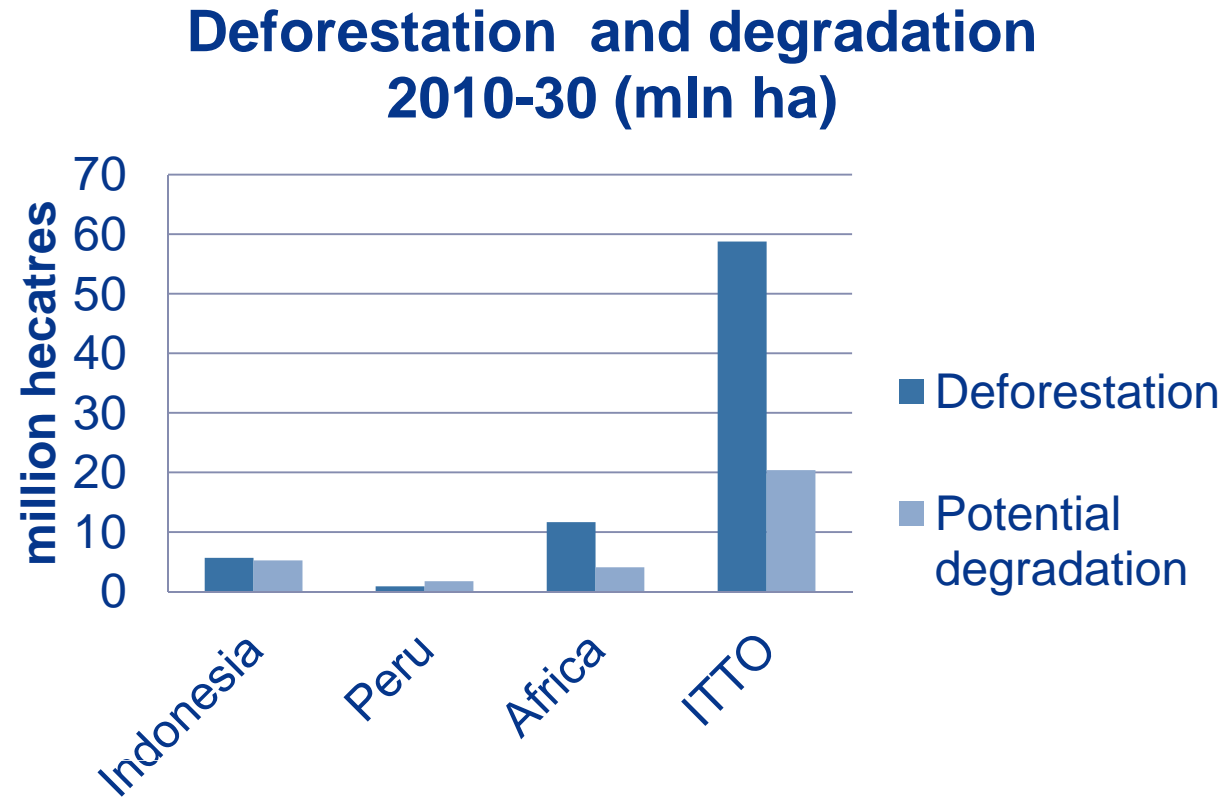
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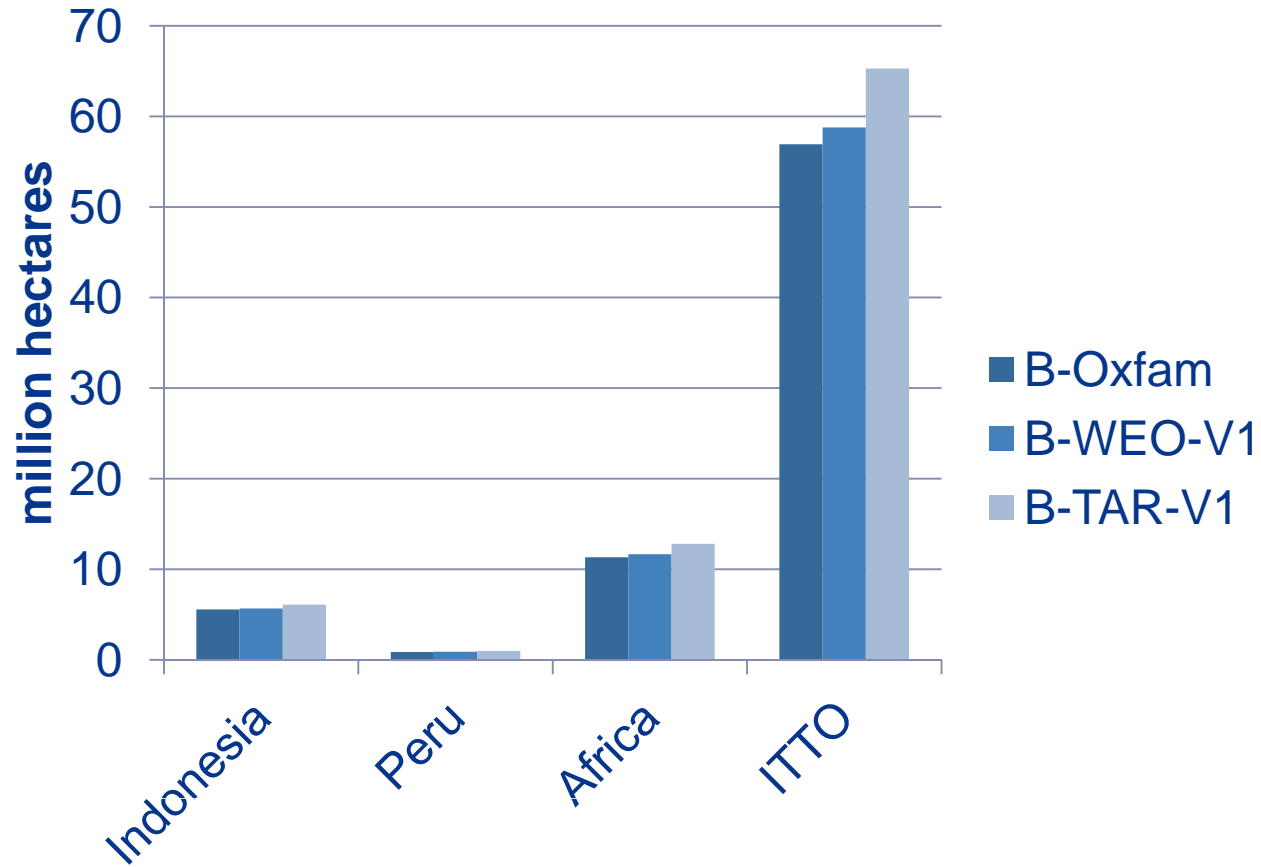


Baseline deforestation and potential degradation 2010-30



- Deforestation: 77 mln ha
- Degradation: 31 mln ha

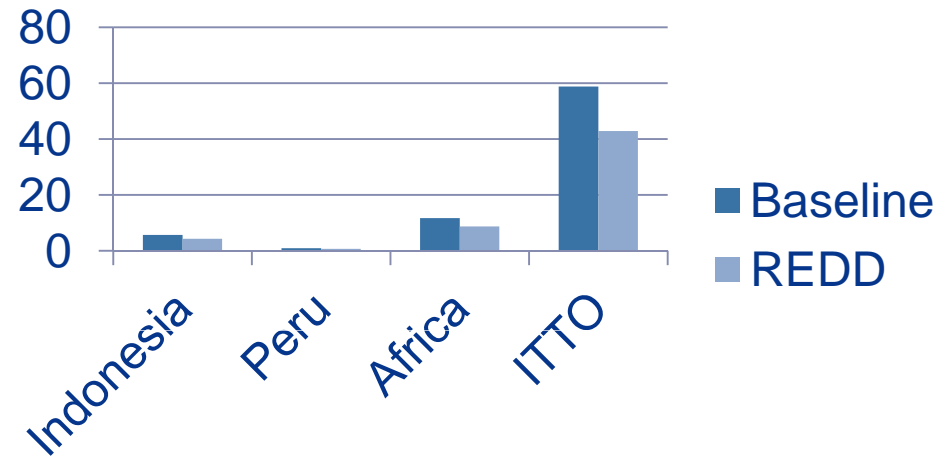
Baseline deforestation 2010-30: effect of biofuel policies



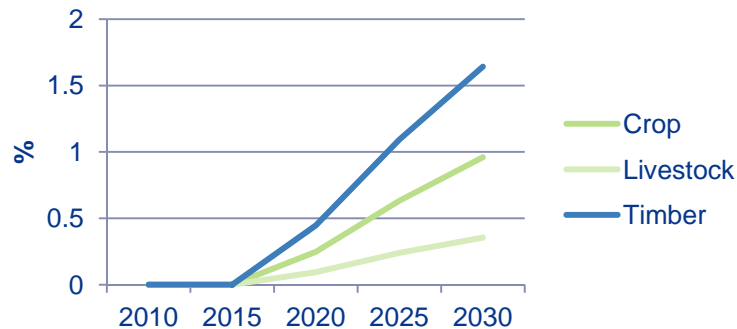
Possible impact of REDD on deforestation

Period	% reduction of baseline deforestation
2010-2015	0
2015-2020	25
2020-2030	50

Deforestation 2010-30 (mln ha)

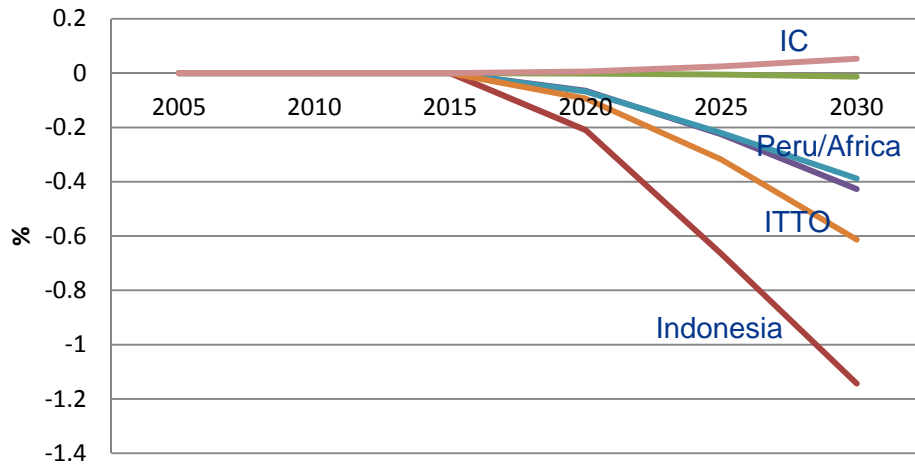


Change in world market prices with respect to baseline (%)



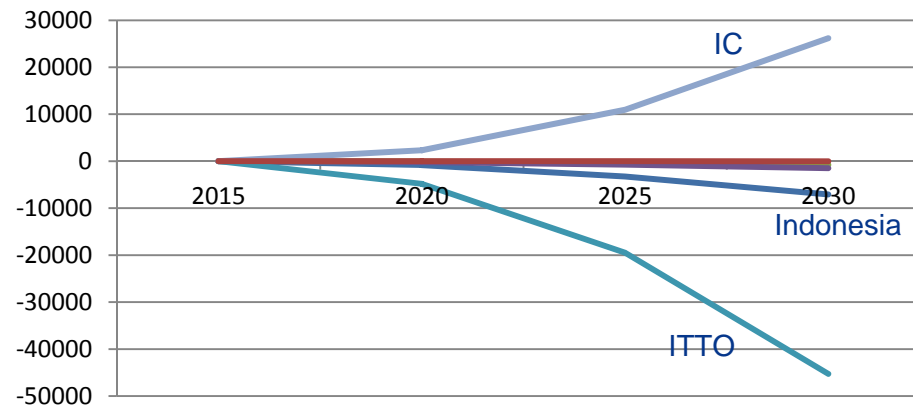
Impacts of REDD scenario on GDP

Relative change in GDP (%)



- Industrialized countries benefit economically from REDD policies through (agricultural) terms of trade

Change of GDP from baseline (mln USD)



Displacement (% of avoided deforestation)

- If region x (row) would unilaterally implement REDD, how would deforestation be affected in region y (column) (as % of avoided deforestation in region x) ?

	Indonesia	Peru	Africa	ITTO	ROW	Total
Indonesia		0.02	0.58	2.28	0.62	3.18
Peru	0.04		0.18	0.84	0.24	1.31
Africa	0.02	0.00		0.27	0.08	0.37
ITTO	0.10	0.02	0.36		0.44	0.91

- Displacement effect is very small – from 0.4 to 3.2% !

Conclusions

- REDD may increase food and timber prices, amplifying the driving forces of deforestation
- The relative price increase is limited however. Industrialized countries, being net agricultural exporters, benefit from these price increases and can pay more for REDD
- Demand for first generation biofuels increases deforestation (3%~14%)
- Displacement/leakage seems quite limited (contrary to studies that consider forestry as the primary cause of deforestation).