



Sustainable intensification and landscape approach: Silver bullets for REDD+ implementation?

Forest Sciences and Forestry in a challenging global context
Göttingen, 29. January 2014

By Timm Tennigkeit



1. Introduction

- Introduction UNIQUE
- REDD+ results from Warsaw COP 19 and steady state of REDD+ finance
- Context and key questions
- Intensification and landscape approach: Definitions and concepts

2. Case studies

- Enrichment planting in Argentine
- Commercial silvopastoral systems in Paraguay
- Smallholder agroforestry in Araku Valley, India
- Sustainable Land Management Program (SLMP II), Ethiopia

3. Conclusions

■ Forest sector consulting and forest management company

- Focus on:
 - a) forest and timber sector
 - b) climate change response measures in land use systems
- Balanced portfolio between domestic & international projects

■ 40 permanent employees

- 38 forestry and land use experts,
2 administrative staff, financial controller
- 31 employees in Germany,
2 in Kampala (Uganda) with UNIQUE East Africa Ltd and
7 in Asunción with UNIQUE Wood Paraguay S.A.



Management and Administration



Forestry Consulting

Forest enterprise analysis, Benchmarking & Controlling, Management planning, Certification preparation, IT-advisory services, Forest conservation



Timber Economics

Branch and sector analysis, Logistics, Feedstock supply chain management, Marketing and sales studies



Climate

Climate response measures, Monitoring systems, Climate Finance, Project planning, Feasibility studies, Climate audits



International Cooperation

Technical advice and expert reports, Project progress reviews, Capacity Building, Project implementation



Forest Investments

Feasibility studies, Due diligence, Forest valuation, Project development and implementation



Regional Office Uganda



Regional office Paraguay



Six years after the Bali Action Plan was established in Bali in 2007 the REDD+ architecture for readiness support and result-based finance is in place.

The 5 decisions related to REDD+ methodologies:

- **Monitoring** based on existing systems using transparent remote sensing and terrestrial inventory methods
- **Importance of tackling the driver of deforestation** recognized, requires close partnerships between all forestry stakeholders and across sectors. **Sustainable intensification** and **landscape approach** are important elements of this discussion.
- **Safeguards** as agreed in Cancun are a pre-condition for results-based payments
- **Reference levels** will be developed by countries and assessed by independent experts
- **MRV** should improve gradually in terms of approach, coverage, comparability and uncertainty. The need for capacity building was highlighted. Like reference levels there will be an assessment by two independent experts. Market-based REDD+ payments require additional modalities.

Decisions related to support and finance

- Countries will nominate **national institution in charge of REDD+ and int. coordination**
- For REDD+ **finance** the Green Climate Fund (GCF) will have an important role. An information hub will provide the basis for reporting on reference levels, safeguards, result-based payments.

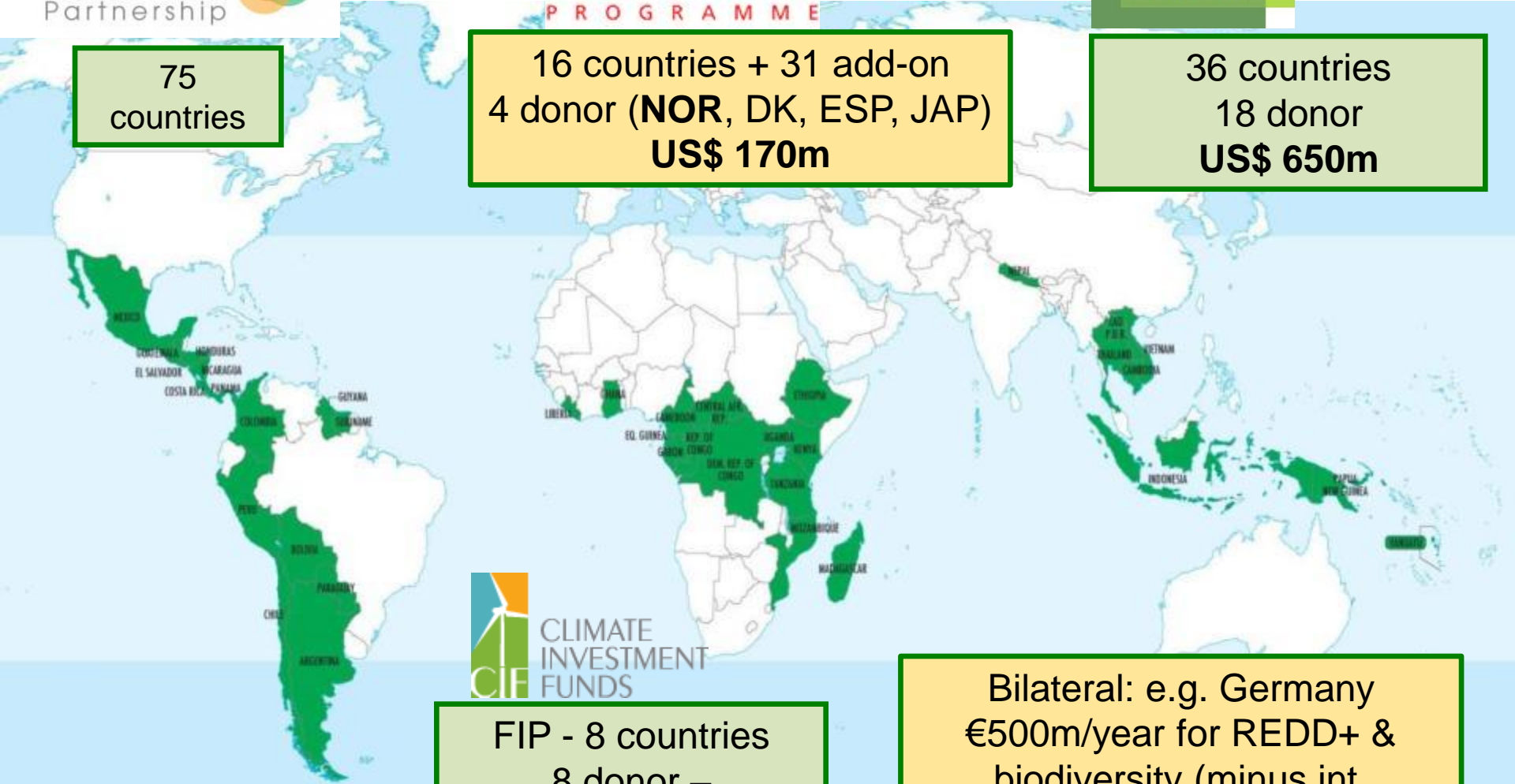
REDD+ financial implementation support



75 countries

16 countries + 31 add-on
4 donor (**NOR, DK, ESP, JAP**)
US\$ 170m

36 countries
18 donor
US\$ 650m



FIP - 8 countries
8 donor –
US\$ 680m

Bilateral: e.g. Germany
€500m/year for REDD+ & biodiversity (minus int. commitment >US\$183m)

Green=FCPF countries



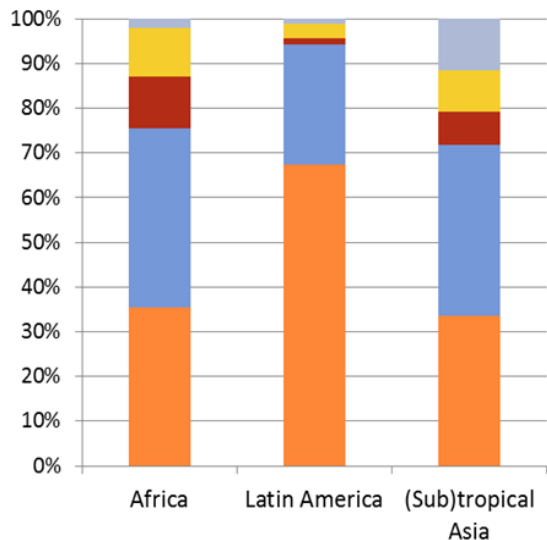
Context

- Food production has to increase by 70% until 2050 to achieve food security for 9bn people by 2050
- Timber demand will increase by 40% until 2030
- Agriculture is using already 70% of fresh water resources and in many regions groundwater level are decreasing
- Food security depends on a few major crops, maize e.g. is highly sensible to temperature increase beyond 30°C (1 day > 30°C = 1% yield deduction)
- Global deforestation of 14m ha per year should be reduced by 50% until 2020 (EU target)
- Until 2020 agriculture and forestry should manage natural resources sustainably and maintain biodiversity (Aichi Target 7)

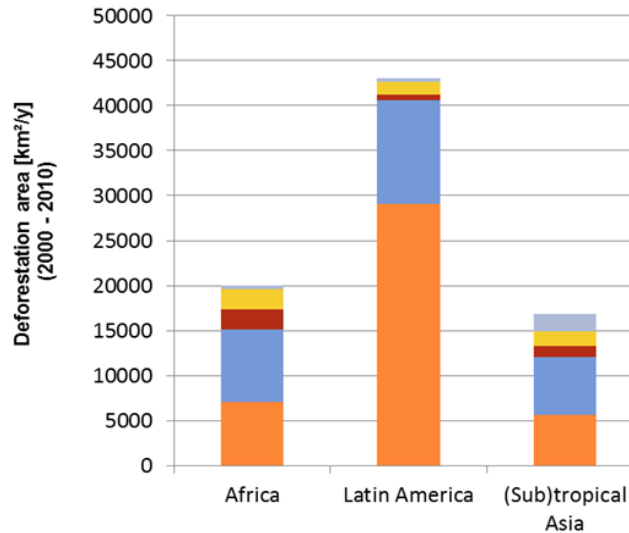
Key questions

- Is it possible to achieve the above objectives and policy targets simultaneously through improved and integrated land use and considering climate change?
- What instruments at the interface between rural development, food security and REDD+ are available to achieve this considering incentive and regulatory mechanisms?

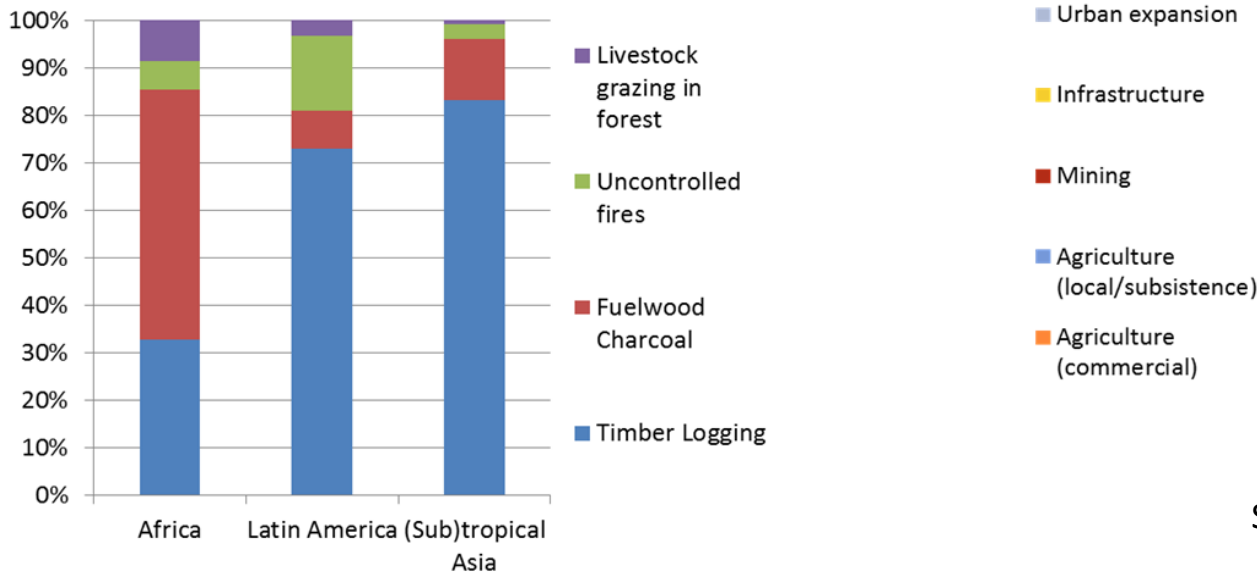
a) Proportion of deforestation drivers



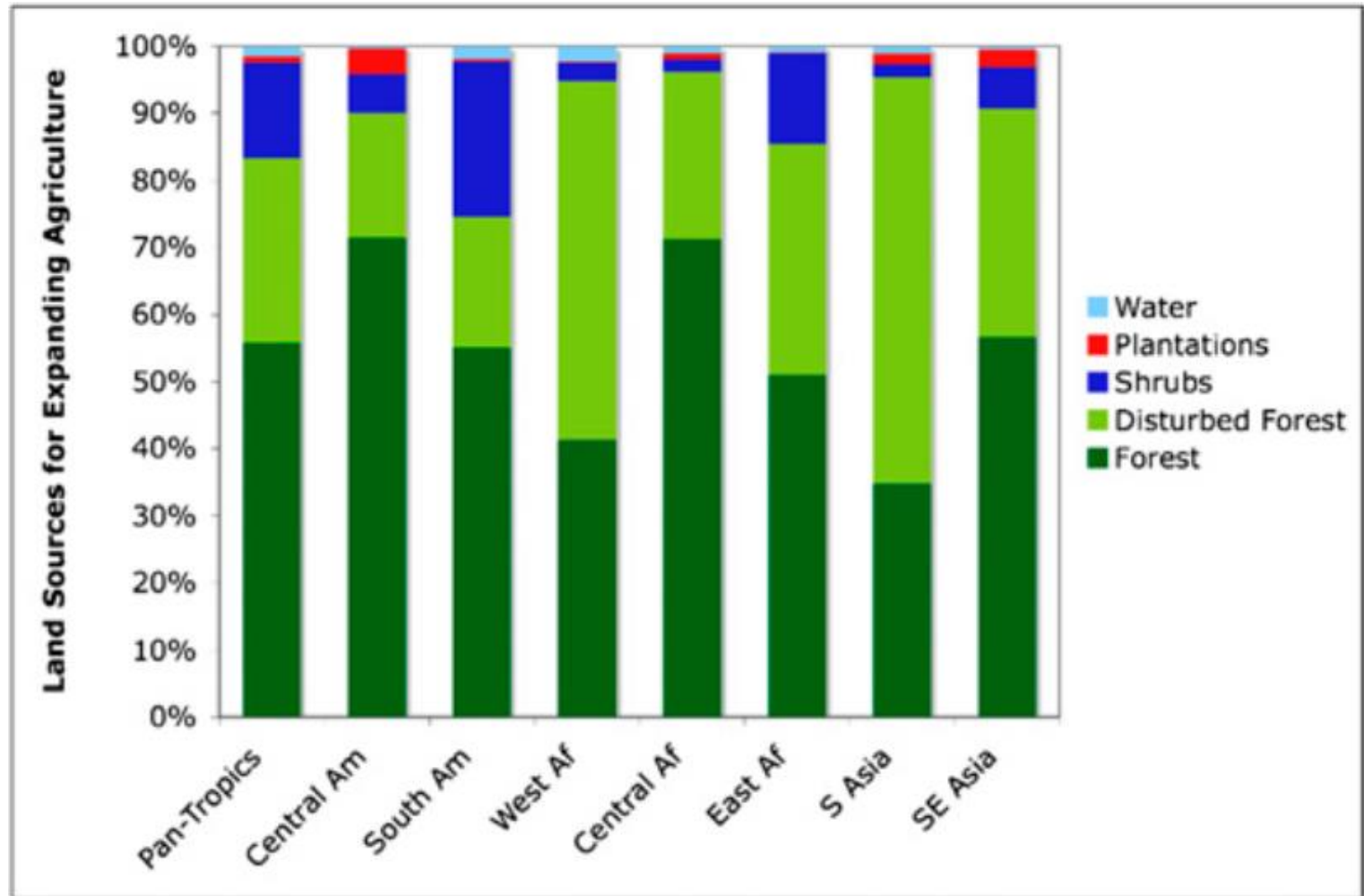
b) Area proportion of deforestation drivers



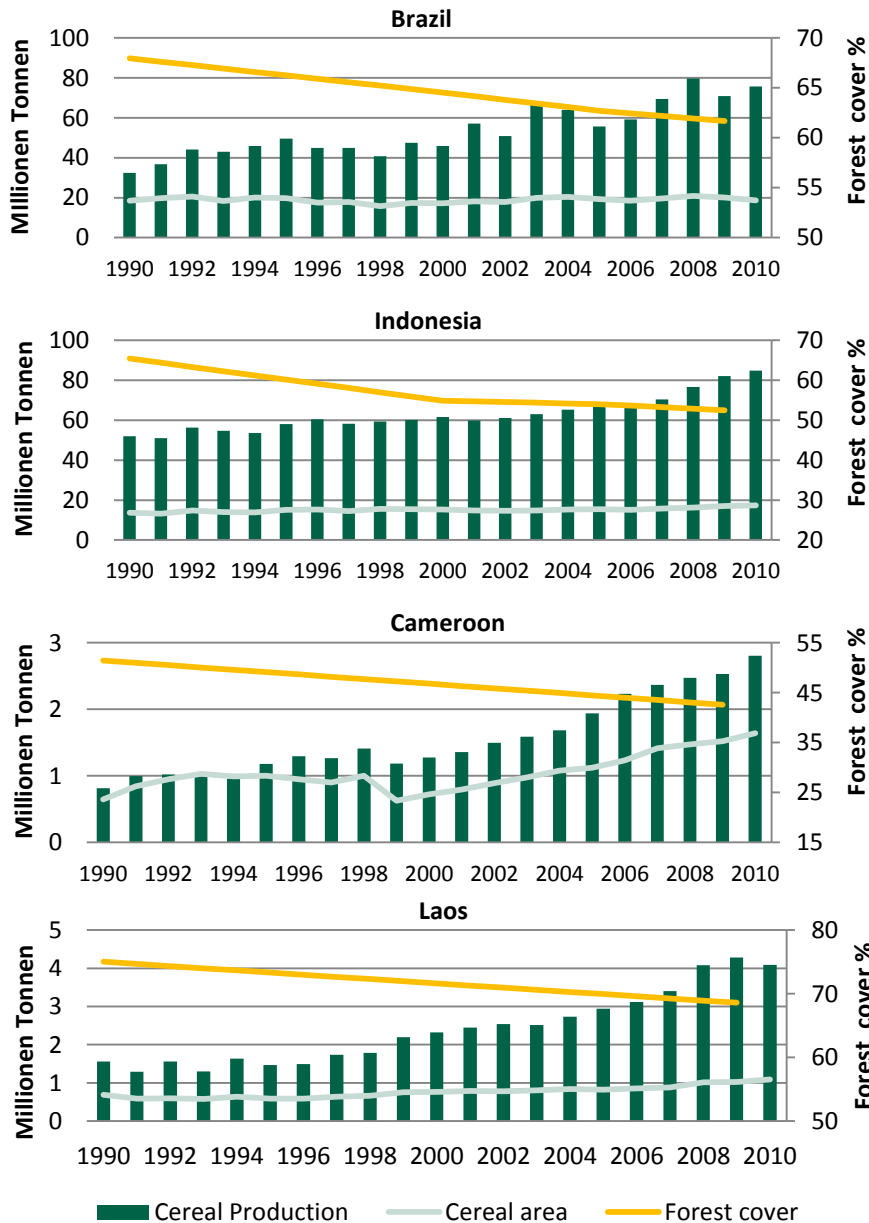
c) Proportion of forest degradation drivers



Source: Hosonuma et al. 2012



Source: Gibbs et al. 2010



- Relative deforestation rates are declining, but absolute deforestation still high
- Food, feed and fuel production increasing in all selected countries
- Diet shifting towards more meat and vegetable oil consumption
- The good news: Food production and deforestation can be de-linked

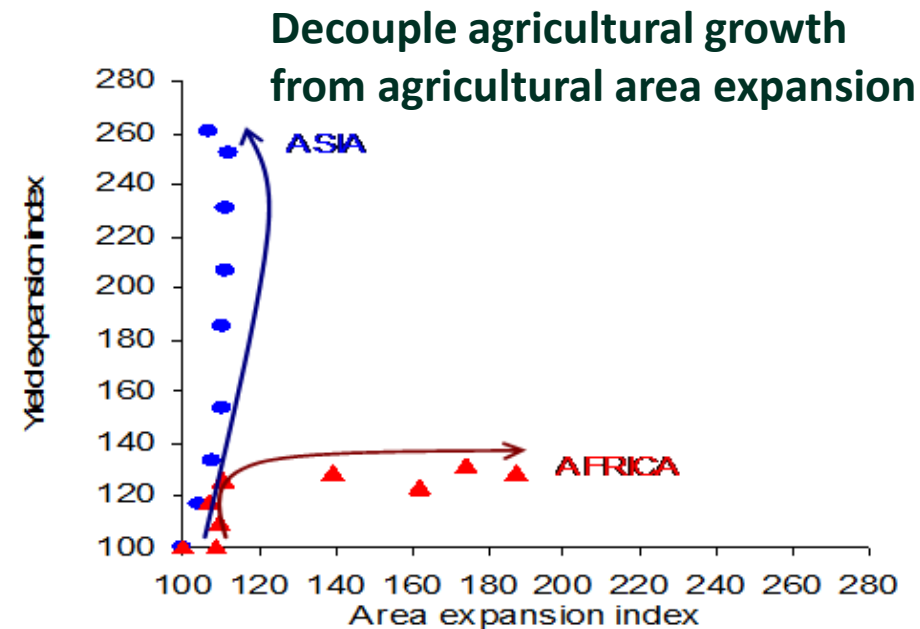
Definition: Producing **more units of output per units of all inputs** through **new combinations of inputs and related innovations**

Outputs:

- Production – Total amount of products per unit input
- Income – Amount of net income generated per unit input
- Nutrition – Human consumption of nutrients per unit input
- Environmental services – Biodiversity, water, carbon

Inputs:

- Direct inputs – Labour, water, land, seed, fertilizer, biodiversity
- Indirect inputs – Capital, knowledge, infrastructure, technology, markets



Source: World Bank 2008

Definition: Landscapes are geographical constructs that include not only the biophysical features but also cultural and institutional attributes of an area.

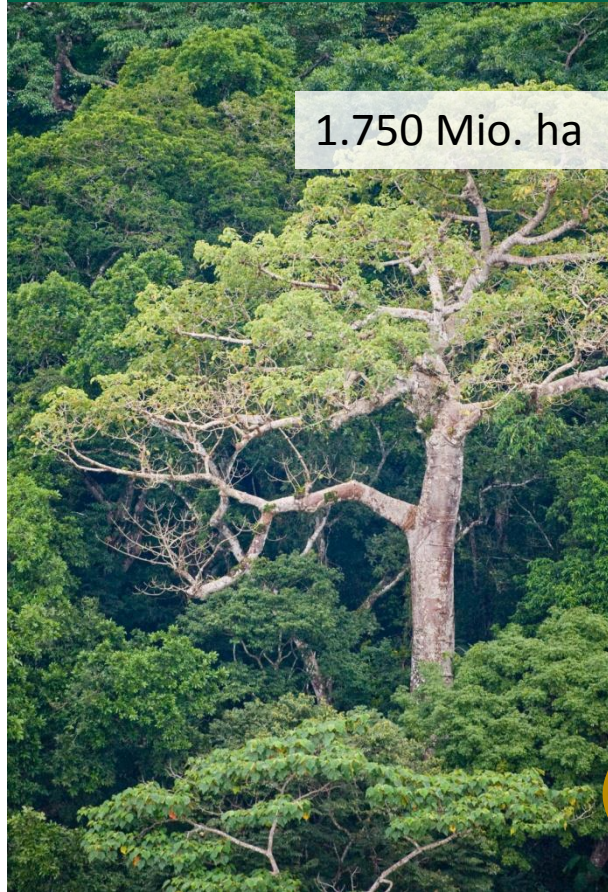
Dimension	Environmental landscape	Land use business landscape
Development objectives	Conservation, land rehabilitation	Rural development, income generation, profit maximisation
Management objectives	Minimizing production related footprint and max. environmental services	Max. sustainable production and support infrastructure (market, transport, water, communication, energy, education)
Connectivity	Ecosystems & land use forms	Business partners along value chain
Synergies within different systems	Creating diverse habitats for fauna and flora	Circular economy, value adding
Perceived synergies between environment & business	Bio-based products with minimised inputs, environmental impacts and with enhanced ecosystem services, zero waste and adequate societal value.	
Challenge	Land user have limited capacity to engage beyond the farm gate or forest boundary unless there are clear benefits	

Today



In the future (estimate)

Tropical forest land



1.750 Mio. ha



Agricultural land
400 - 500 Mio. ha



Conservation area
150 - 200 Mio. ha

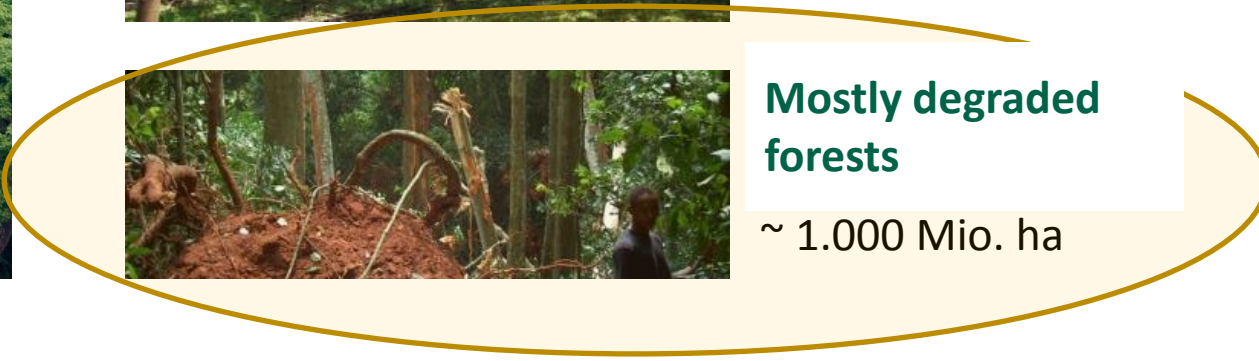


Forest plantations
100 – 150 Mio. ha



Mostly degraded forests

~ 1.000 Mio. ha

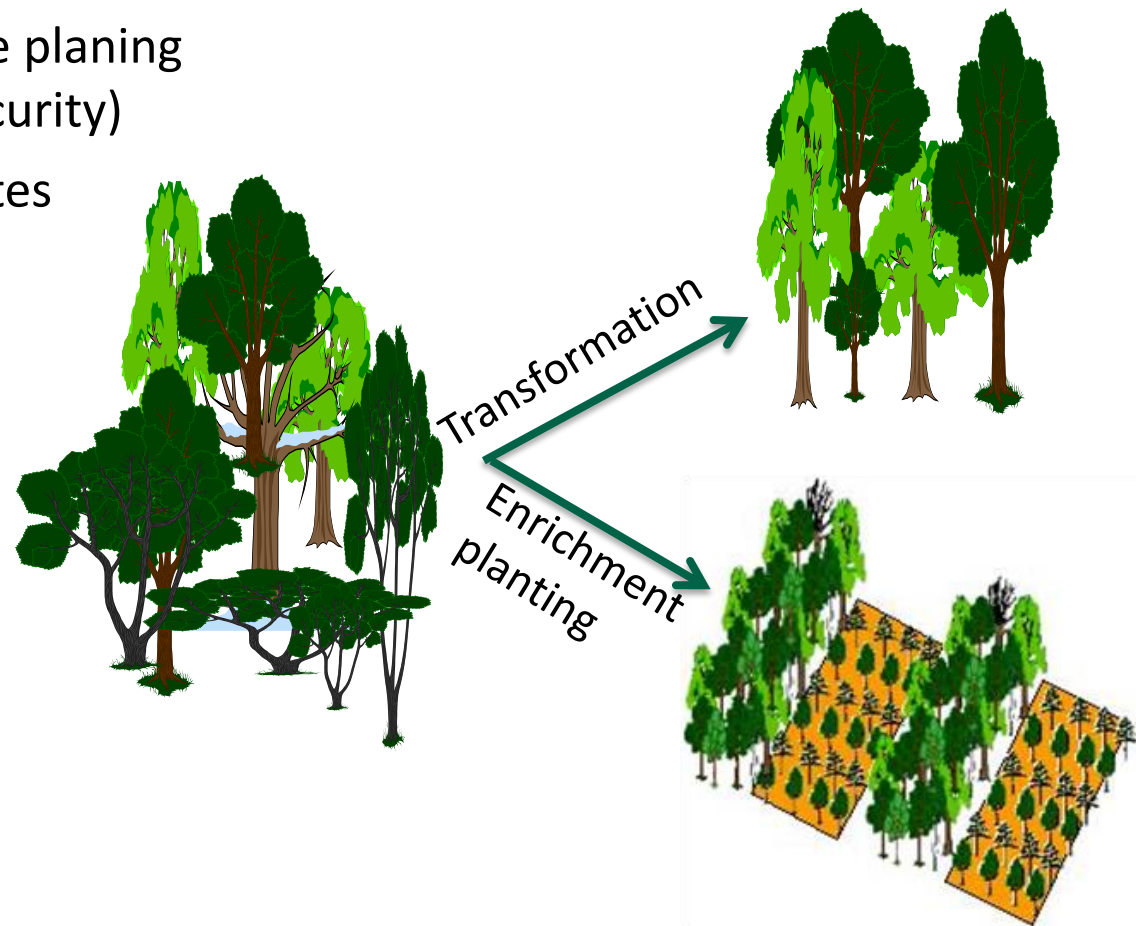


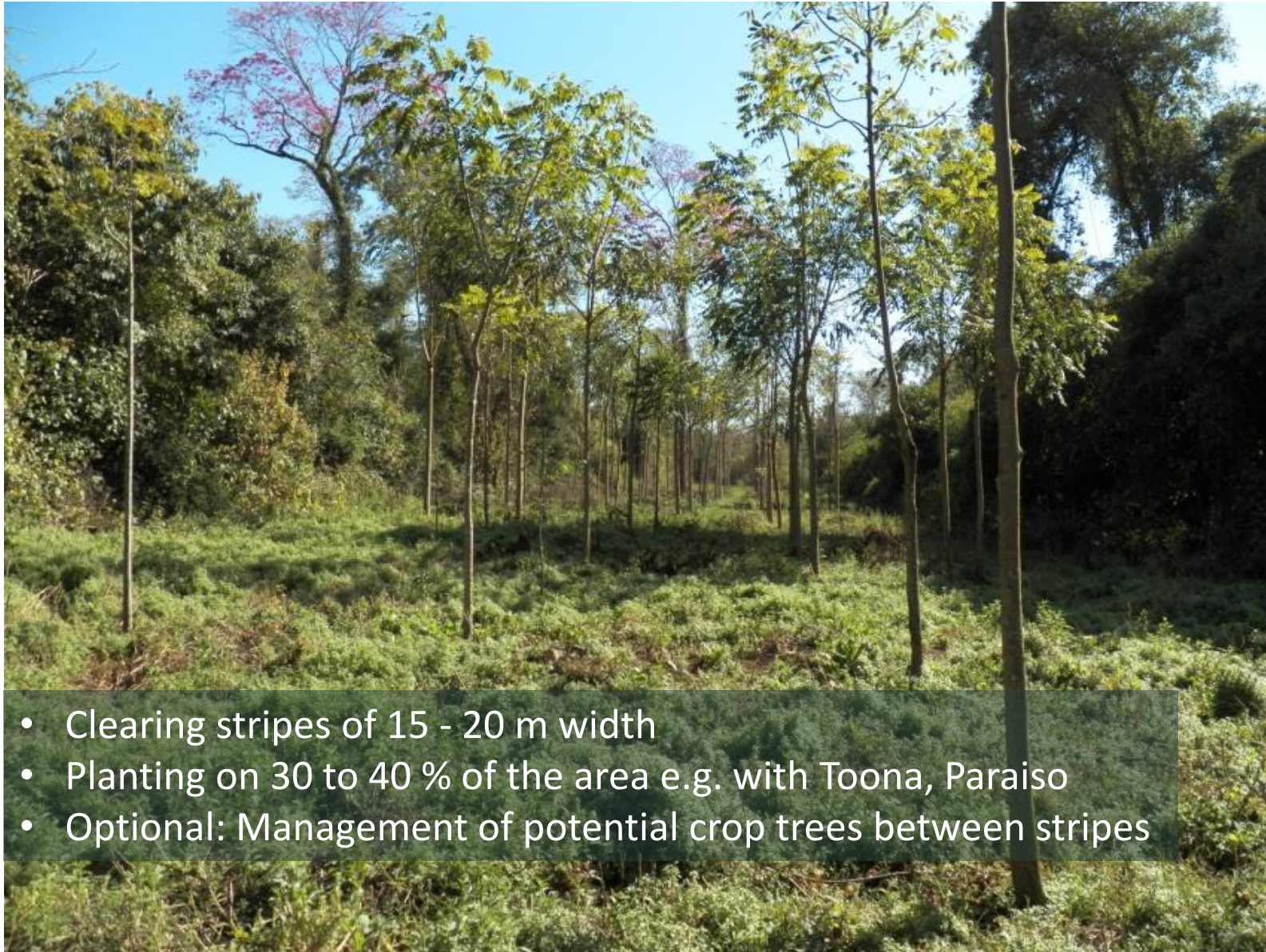
Why should restoration of degraded forests prioritized?

- Large areas available
- Vicinity to markets, road infrastructure often exists already
- Classified as forest in land use planning (limited conflict with food security)
- Often on highly productive sites
- Low opportunity costs

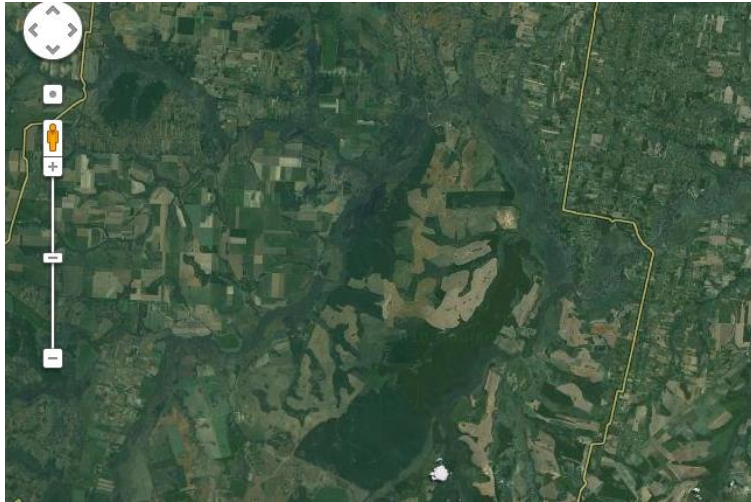
Management options

- a) Transformation
- b) Enrichment planting





- Clearing stripes of 15 - 20 m width
- Planting on 30 to 40 % of the area e.g. with Toona, Paraiso
- Optional: Management of potential crop trees between stripes



Commercial agriculture:

- Rice, Soja, cotton, livestock

Lessons learned:

- Many large-scale farmer have the right to convert forest land for agriculture, e.g. in Pantanal. Without alternative REDD+ business models where forestry and agriculture can co-exist remaining forests will disappear.
- Incentives to de-link production growth from area expansion are increasing as well as pressure to maintain forest and is biodiversity.
- Governance und market-based incentives urgently have to tackle remaining deforestation hotspots.
- Respective business models depend on deforestation driver and opportunity costs.

Integrated forest mgmt:

- Semi-natural forest mgmt



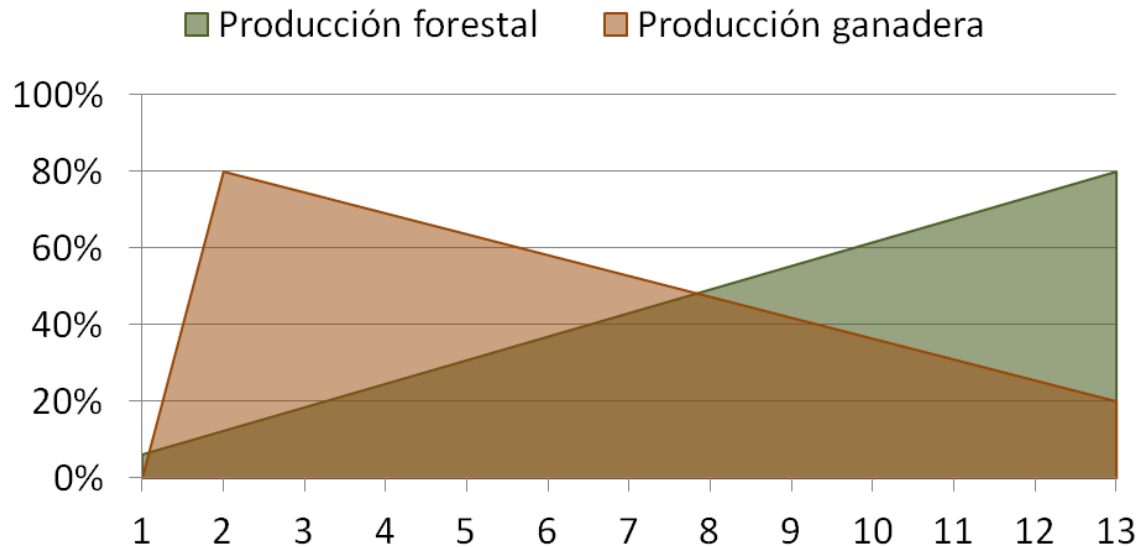
- Plantation forestry



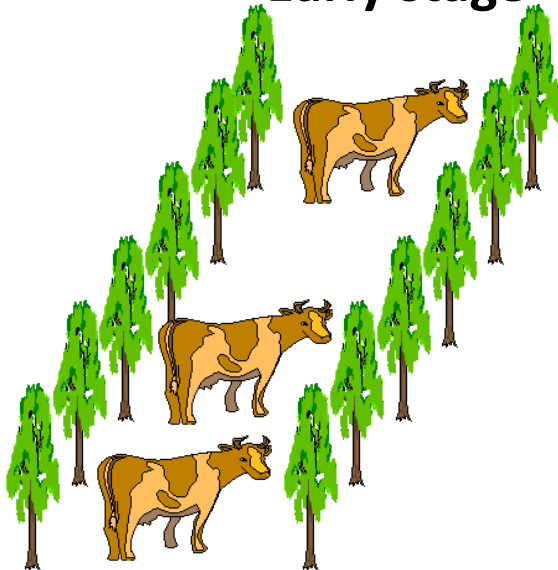
- Silvo-pastoral systems



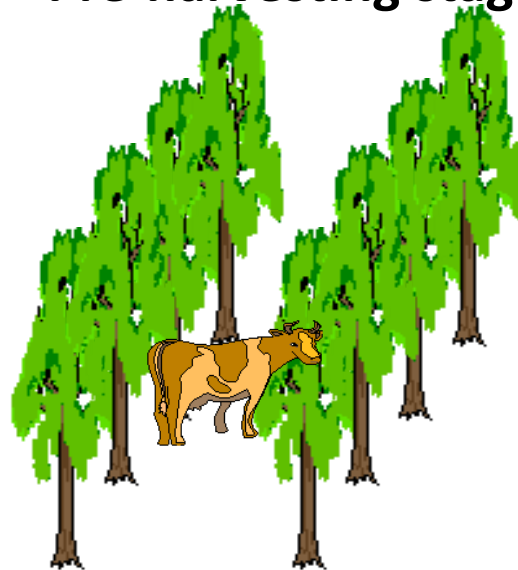




Early stage



Pre-harvesting stage



Forest production

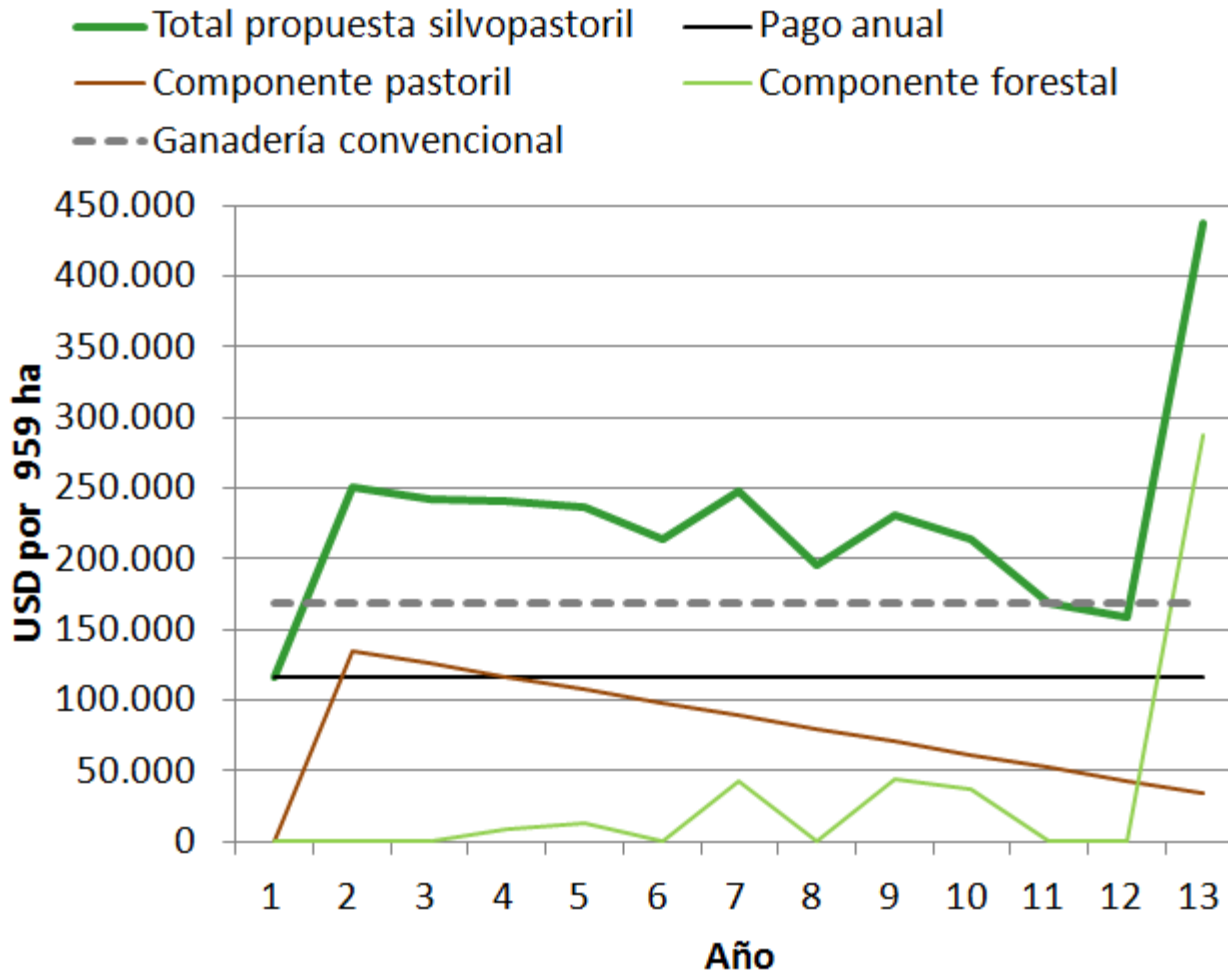
based on site quality
between 30 and 38 m³/ha/yr
Spacing: 6 x 2 m
(833/ha) or
4x2x4x2x12 (500/ha)
Rotation: 12-14 years

Beef production

On average 50 % of
conventional production
without trees; during timber
production cycle beef
production declining
from 80 % auf 20 %

Open questions: Soil nutrient
interactions, impact of wide
spacing on timber quality

Annual cashflow in USD for 959 ha of degraded grasslands



Profits can increase by 35% when switching from conventional beef production to commercial silvo-pastoral systems.

Return conventional beef production is calculated as follows: Beef production 220 kg /ha/yr; net return USD 0.8/kg. Total net returns USD 168.000/yr

Return silvopastoral Systems based on:

- (1) Rent for forestry production: 959 ha x USD 120 per ha and for 12 yr = USD 115.080/yr
- (2) Profit share of 3 % from forestry production; variable between 0 and USD 287.000
- (3) Beef production decreasing from USD 135.000 to USD 33.000 per year

- Naandi Foundation is supporting ethnic minorities since 2005 in the Araku Valley:
 - 10 girl education centres
 - 5,000 ha coffee management in 600 villages and marketing of 340t certified coffee per year.
 - Since 2010 establishment of 6,000 ha Agroforestry systems financed through carbon market, i.e. Livelihoods Fund
- Lessons learned:
 - Land use systems at landscape level have to be integrated in regional development concepts and markets
 - Partnerships between governments, NGOs and the private sector can be effective
 - Few NGOs – with Naandi as a rare exception – are recognised by local governments as implementation partners for sustainable land use



- SLMP II is supporting sustainable land use on 600,000 ha to enhance income of 1m people
 - In 10 watersheds result-based payments for increasing forest cover and biomass/soil carbon on farm are currently developed
 - Norway and UK provided US\$ 70m for performance based payments in the framework of the Climate-Resilient Green Economy (CRGE)
- Lessons learned:
 - Climate change protection measures (adaptation & mitigation) are increasingly integrated in rural development and land rehabilitation programmes
 - Climate change adaptation is the priority, mitigation options are utilized when there are synergies with food security and rural development

February 2005



March 2010



- REDD+ implementation: When if not now?
- REDD+ is evolving in many countries as a brought forest or even land-use sector development programme
- Global sustainable sourcing initiatives are starting to put effective pressure on agriculture to engage in REDD+ but still agriculture is more or less absent in the REDD+ discussion
- Environmental protection, including climate change adaptation and mitigation measures are most effectively implemented at the landscape level, but the land user and business interests are not yet aligned. Landscape approaches have to focus more on the development of cross-sectoral structures, value chains and markets.

- Promising strategies to align food security, biodiversity protection and REDD+ are:
 - Tackling food security through sustainable intensification, reducing waste and focussing on effective nutrition
 - Integrating agriculture and forestry in production systems while enforcing land use plans to prevent further loss of forests and grasslands with high biodiversity
 - Supporting rehabilitation and sustainable management of degraded land and forests through targeted research, understanding the benefits and attracting finance
 - Reducing land degradation by reducing related economic incentives
- Sustainable intensification and the landscape approach are important elements for REDD+ implementation and related research
- The package for successful integrated rural development requires additional elements including participatory land use planning and implementation structures and good governance

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