Initiative 20x20

UNEP DTU PARTNERSHIP
CENTRE ON ENERGY, CLIMATE AND SUSTAINABLE DEVELOPMENT

Land Use in Latin America: From a carbon source to a carbon sink

NASA Carbon Research Program (CRP) Policy Speaker Series

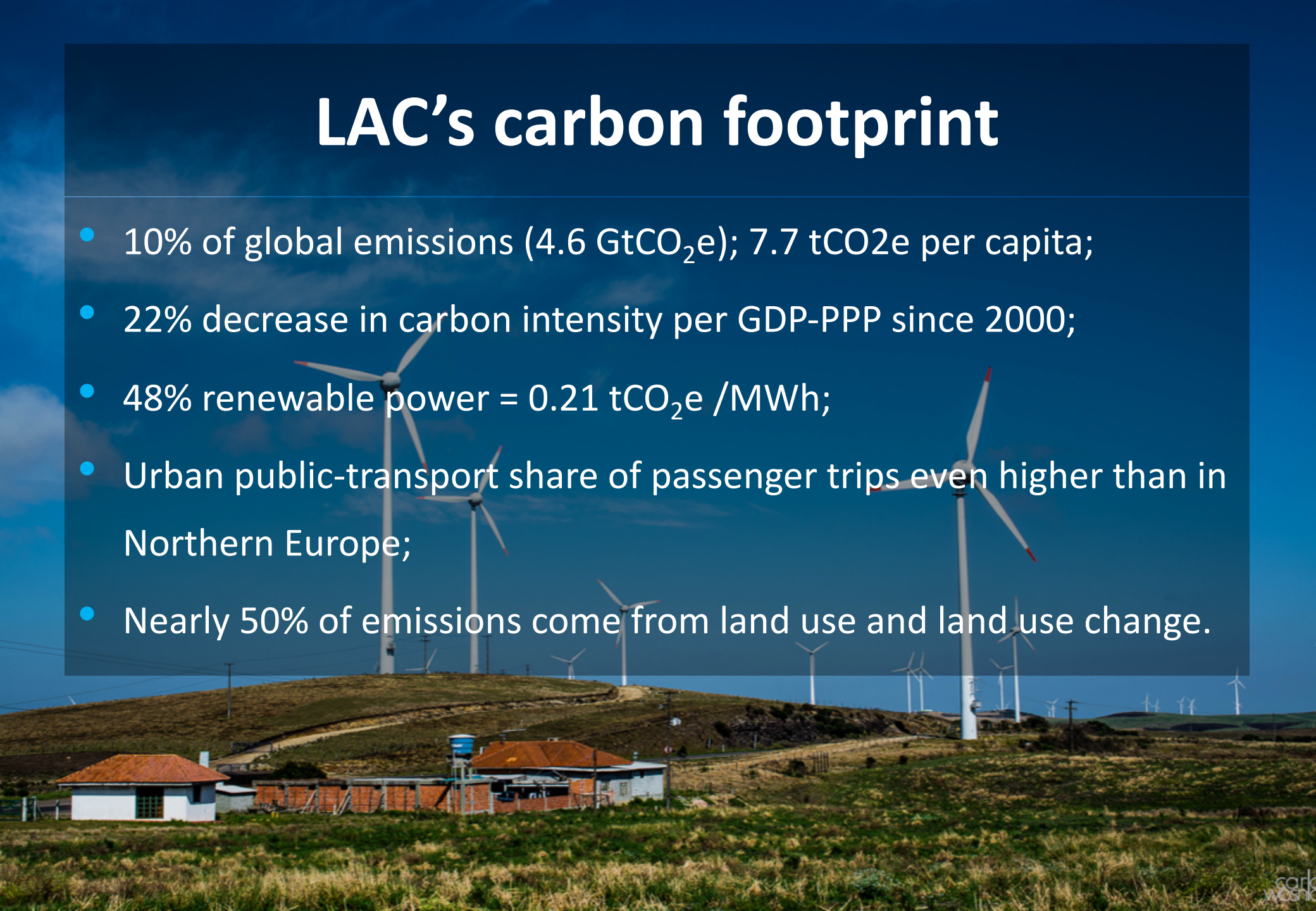
Walter Vergara, WRI, February 7, 2018

Initiative 20x20

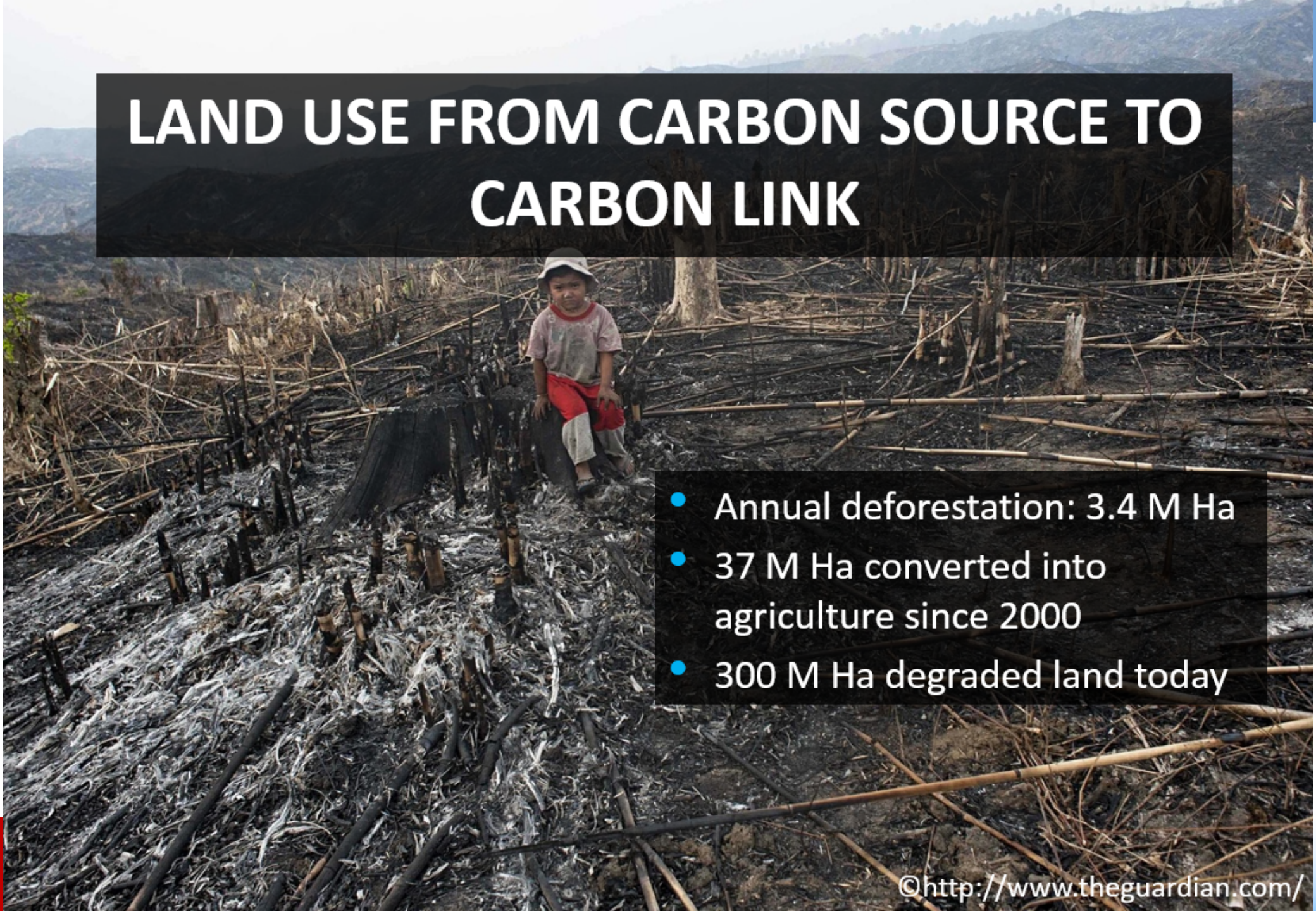
A country-led effort to change the dynamics of land degradation in Latin America
Short term goal to initiate restoration of 20 M ha by 2020

LAC's carbon footprint

- 10% of global emissions (4.6 $GtCO_2e$); 7.7 tCO2e per capita;
- 22% decrease in carbon intensity per GDP-PPP since 2000;
- 48% renewable power = 0.21 tCO_2e /MWh;
- Urban public-transport share of passenger trips even higher than in Northern Europe;
- Nearly 50% of emissions come from land use and land use change.



LAND USE FROM CARBON SOURCE TO CARBON LINK



- Annual deforestation: 3.4 M Ha
- 37 M Ha converted into agriculture since 2000
- 300 M Ha degraded land today

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Potential for land restoration

Forest Condition [Mha]			Restoration Opportunity in degraded and deforested land [Mha]		% of Total
Intact	449		Wide-scale Restoration	91	14
Fragmented	559		Mosaic Restoration	456	70
Degraded	299		Natural Restoration	2	-
Deforested	349		Agricultural Lands	99	15
Total	**1,656**			**648**	

- Major inefficiency in the use of natural resources, land

Source: WRI, 2015, Potapov, 2015

PRACTICES OF SUSTAINABLE LAND USE

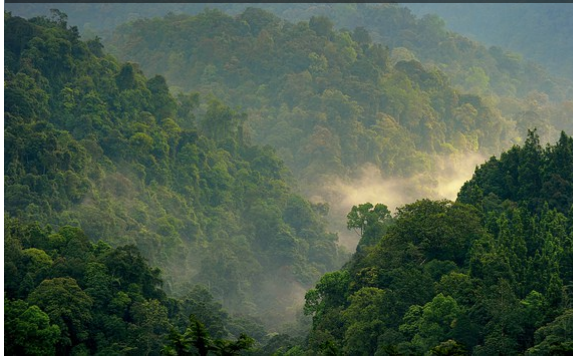
Silvopasture

Restoring & maintaining landscape functionality for:

carbon
topsoil
water
livelihoods
food
biodiversity

Agroforestry & low-carbon agriculture

Avoided deforestation



Sustainable grasslands

Reforestation

Key barriers facing accumulation of carbon sinks in land use

- Weak governance, education and lack of fiscal/financial incentives to eliminate deforestation.
- Lack of fiscal and financial incentives for reforestation.
- Fiscal incentives are needed to promote restoration as an alternative to expanding the agricultural frontier.
- Absence of a robust carbon market prevents faster adoption of abatement measures. Fiscal incentives are needed for widespread application.

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Bringing **20 million** hectares of degraded land in Latin American & the Caribbean into restoration by **2020**.

Notes:
*Goals to be accomplished by 2030
**Commitment to define a national restoration strategy

PARTNERSHIP STRUCTURE

Global Challenges

BONN CHALLENGE

New York Declaration on Forests

Technical Partners

Financial Partners

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Country Partners

- Argentina
- Belize
- Brazil
- Chile
- Colombia
- Costa Rica
- Dominican Republic
- Ecuador
- El Salvador
- Guatemala
- Honduras
- Mexico
- Nicaragua
- Panama
- Paraguay (Itaipu ity)
- Peru
- Uruguay

Regional programs:

- ABC
- Bosques Modelo
- Conservación Patagónica

Norway's International Climate and Forest Initiative (NICFI)

Initiative 20x20's secretariat is generously supported by

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POLITICAL DIALOGUE

- Support development of national land restoration plans
- Create an inter-institutional space to dialogue on policies/regulations
- Link public and private efforts on land restoration
- Support enabling environment for implementation of restoration (example: exchange information with other countries)

ANALYTICAL EFFORTS

- Economic Argument for Landscape Restoration (completed)
- Incentives for land restoration (in progress)
- Seed supply systems (in progress)
- Monitoring systems for land restoration (in progress)
- Carbon markets for restoration (in progress)
- The business of biodiversity in restoration (planned)

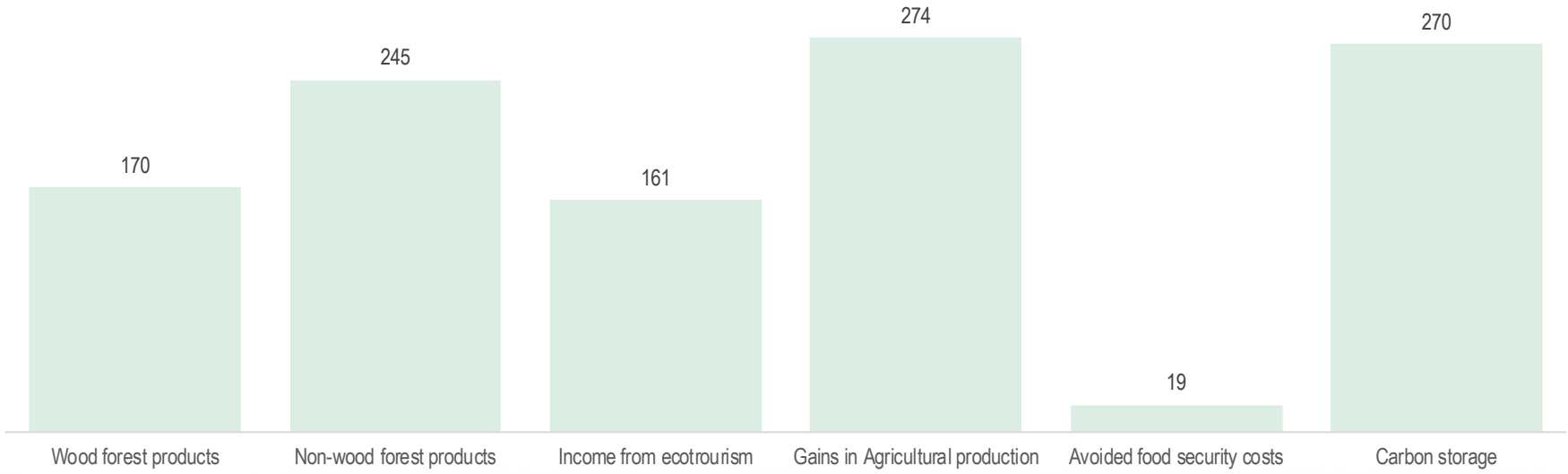
ECONOMIC ARGUMENT FOR RESTORATION (OCT 2016)

- Large restoration potential in the region
- Often a really good business (IRR and NPV positive from monetizable revenue)
- Substantial, but often difficult to monetize co-benefits (biodiversity, hydrology, soil)
- Key climate action for the region

Net gain in Economic benefits for landscape restoration activities

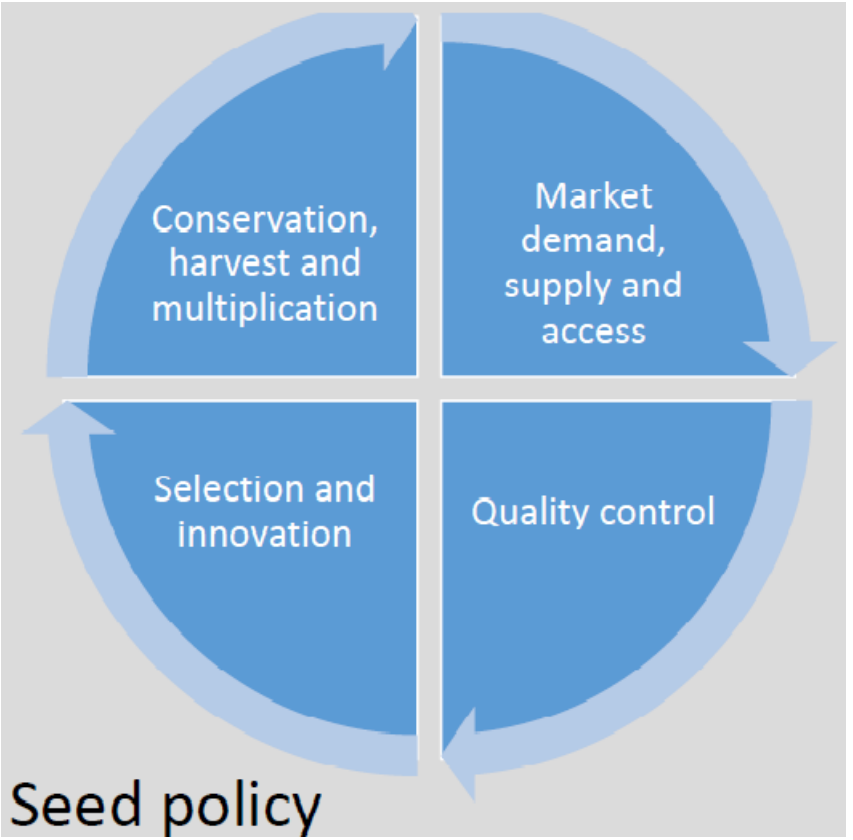
LATIN AMERICA AND CARIBBEAN AVERAGE ECONOMIC BENEFITS						
Wood forest products	Non-wood forest products	Income from ecotourism	Gains in agricultural production	Avoided food security costs	Carbon storage	Total
170	245	161	274	19	270	1,140[a]

Sources: Results based on annual benefit flow values from Chiabai et al. (2011) (for WFPs and NWFPs); and Inman (1997), Rodriguez (2014), FAO (2010) (for ecotourism, agriculture, food security, and carbon sequestration), and costs from World Bank (2011), World Bank (2014).



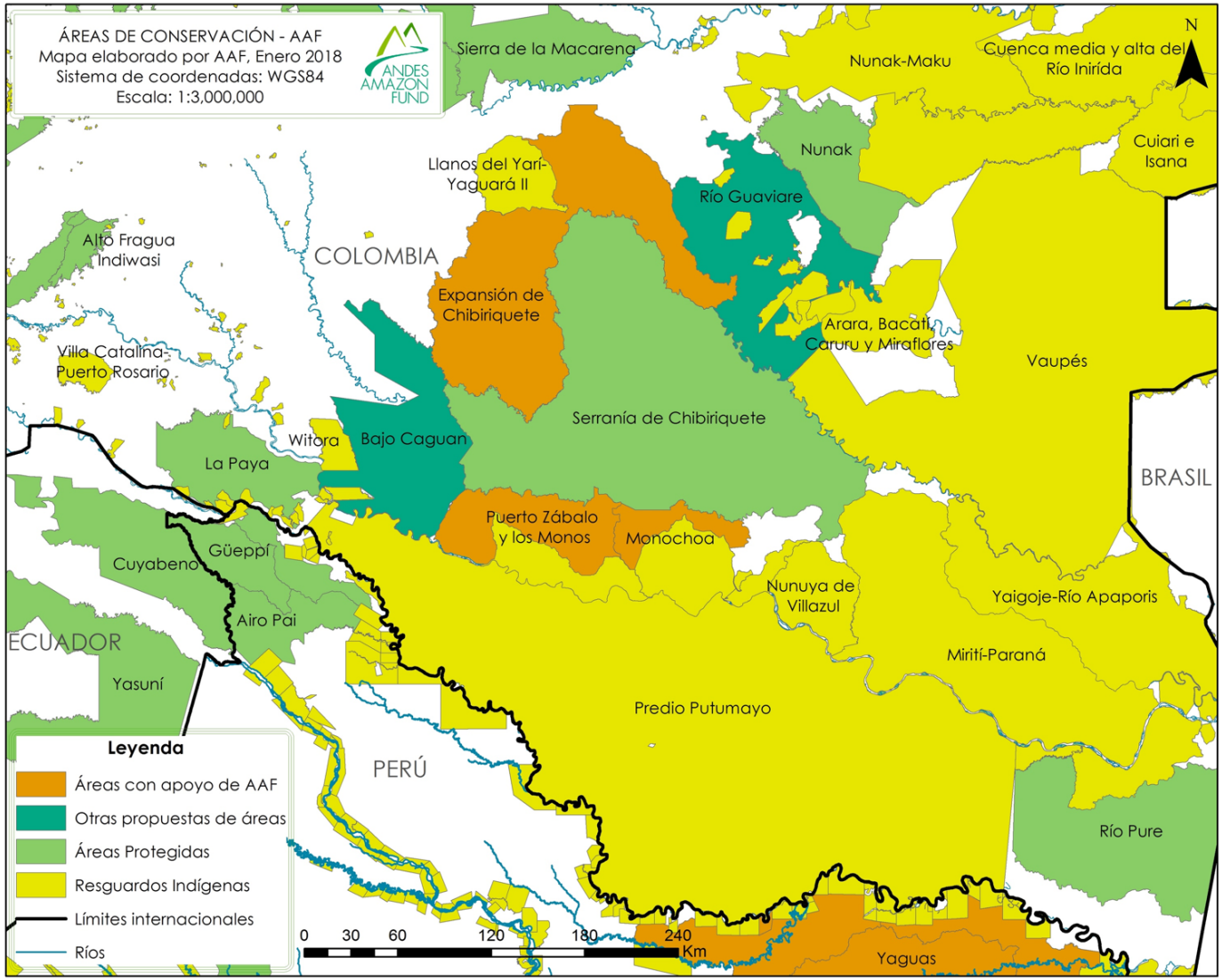
GERM-PLASM STUDY

- Obj: Status of seed and germplasm supply for restoration with native species. Identify gaps and priority needs.
- Key partner: Bioversity International and ICRAF
- Draft completed. Release by April 2018.



MONITORING STUDY

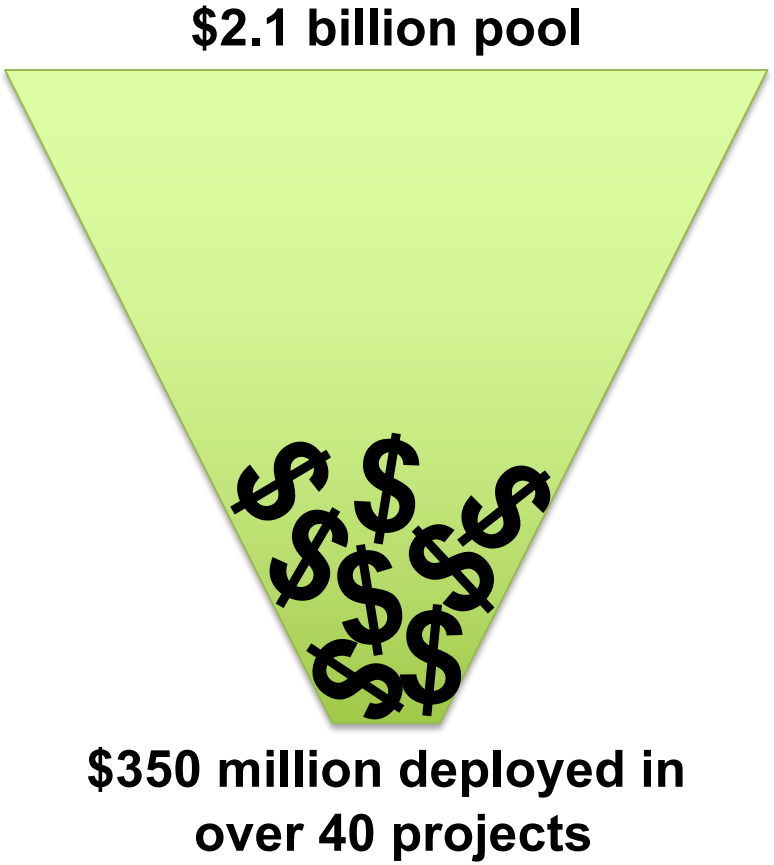
- Objective: Identify common denominators of monitoring efforts. Suggest systems that are simple (easy to use), accurate and cost effective.
- System to combine remote sensing with modelling and ground measurements
- Key partner: FAO
- Webinar with countries July 2017
- Release June 2018


ÁREAS DE CONSERVACIÓN - AAF
Mapa elaborado por AAF, Enero 2018
Sistema de coordenadas: WGS84
Escala: 1:3,000,000
ANDES AMAZON FUND
N
Sierra de la Macarena
Nunak-Maku
Cuenca media y alta del Río Inírida
Nunak
Cuiari e Isana
Llanos del Yarí-Yaguará II
Río Guaviare
Alto Fragua Indiwasi
COLOMBIA
Expansión de Chibiriquete
Arara, Bacati, Caruru y Miraflores
Vaupés
Villa Catalina-Puerto Rosario
Serranía de Chibiriquete
Witora
Bajo Caguan
La Paya
BRASIL
Puerto Zábalo y los Monos
Monochoa
Güeppí
Cuyabeno
Nunuya de Villazul
Yaigoje-Río Apaporis
Airo Pai
ECUADOR
Miritĺ-Paraná
Yasuní
Predio Putumayo
PERÚ
Río Pure
Yaguas
Leyenda
Áreas con apoyo de AAF
Otras propuestas de áreas
Áreas Protegidas
Resguardos Indígenas
Límites internacionales
Ríos
0 30 60 120 180 240
Km

CARBON MARKETS AND RESTORATION

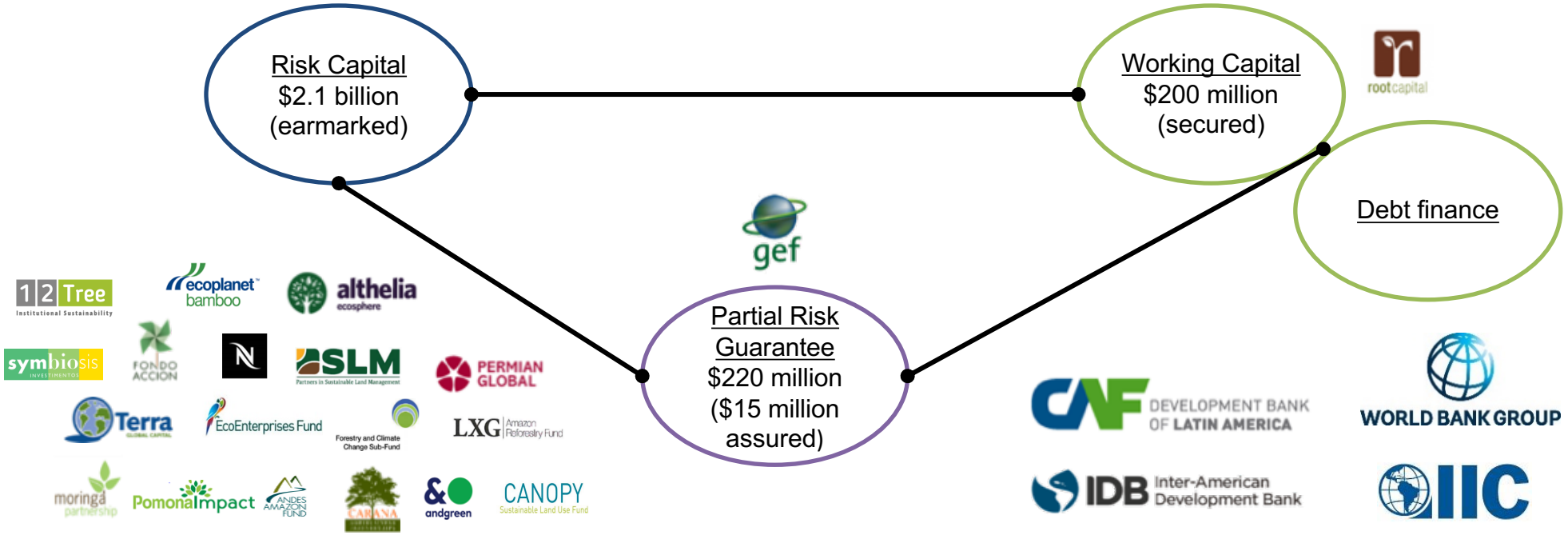
- Assess the impacts of a carbon market in the economics of restoration. Identify MRV requirements and costs
- Key partner: Climate Institute
- Status. Background studies undergoing (Survey of carbon markets, carbon as monitoring indicator)
- Study to be completed by December 2018

RESTRICTIONS TO FASTER DEPLOYMENT OF CAPITAL



- Insufficient portfolio of investable opportunities
- High risk perception for investments in rural areas
- Lack of, or poorly targeted, incentives, policies, regulations

FINANCIAL ARCHITECTURE OF 20X20



+ local banks

Investment Roundtables

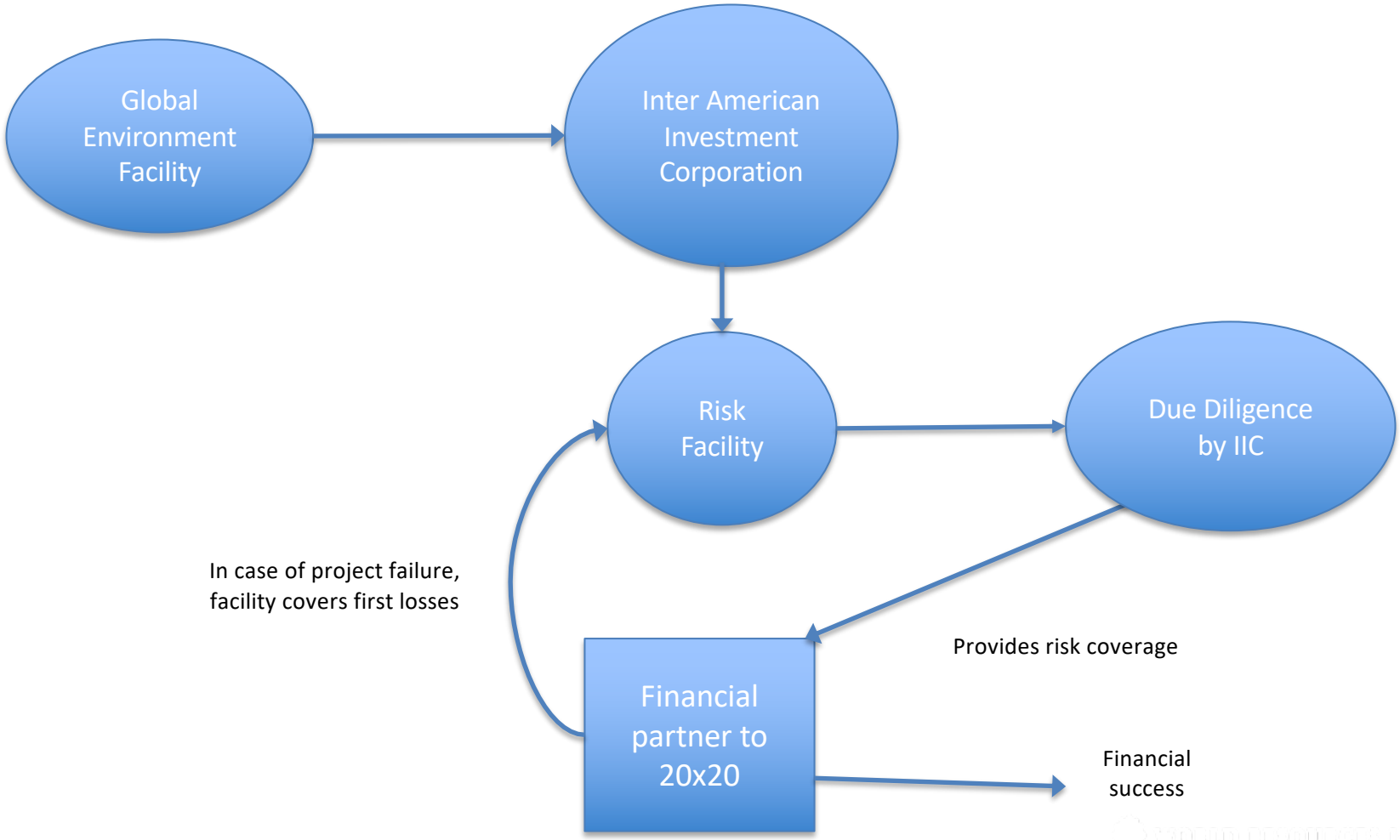
Project Preparation Facility

Initiative 20x20 is generously supported by:

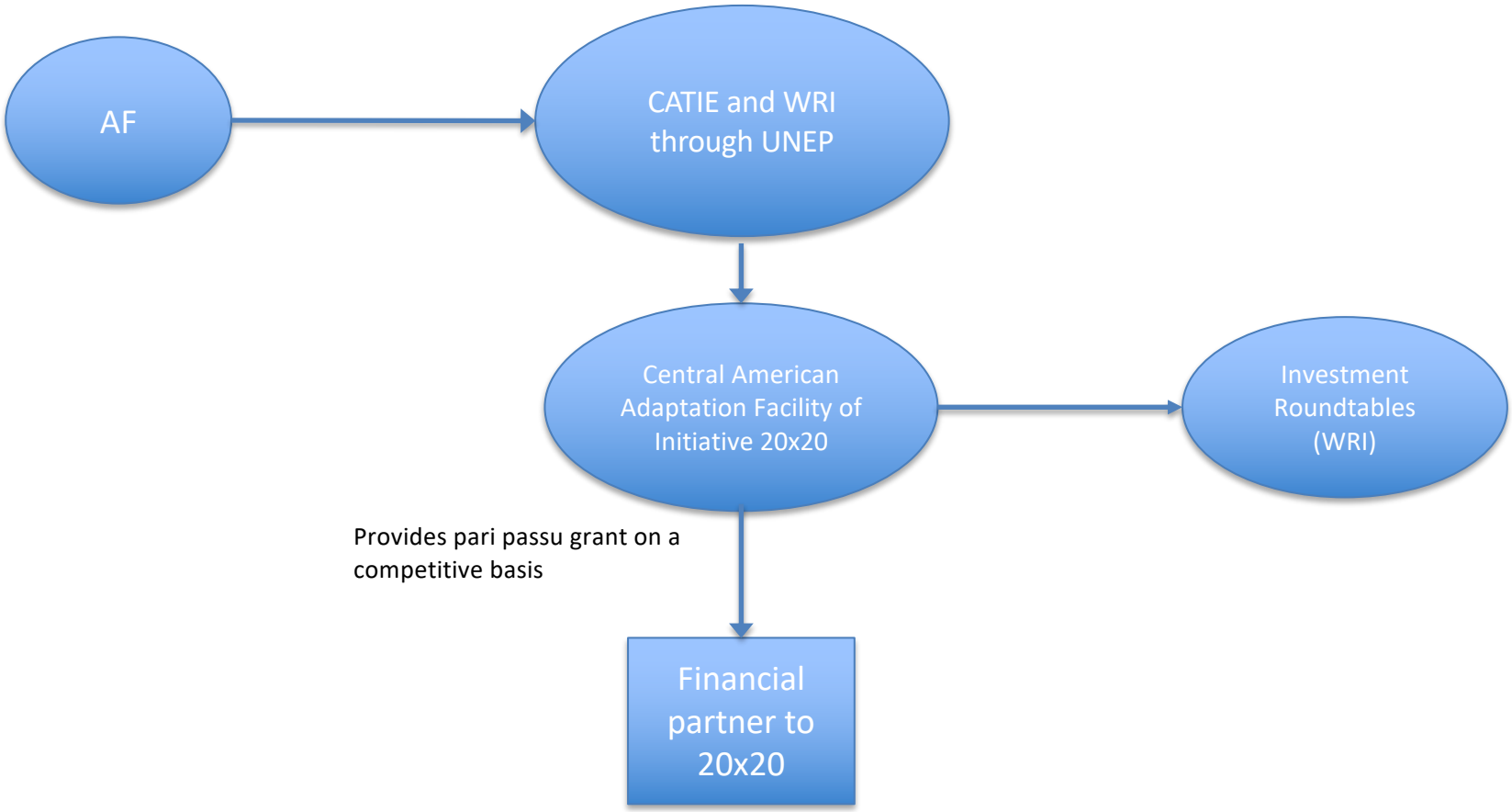
Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

Norway's International Climate and Forest Initiative (NICFI)

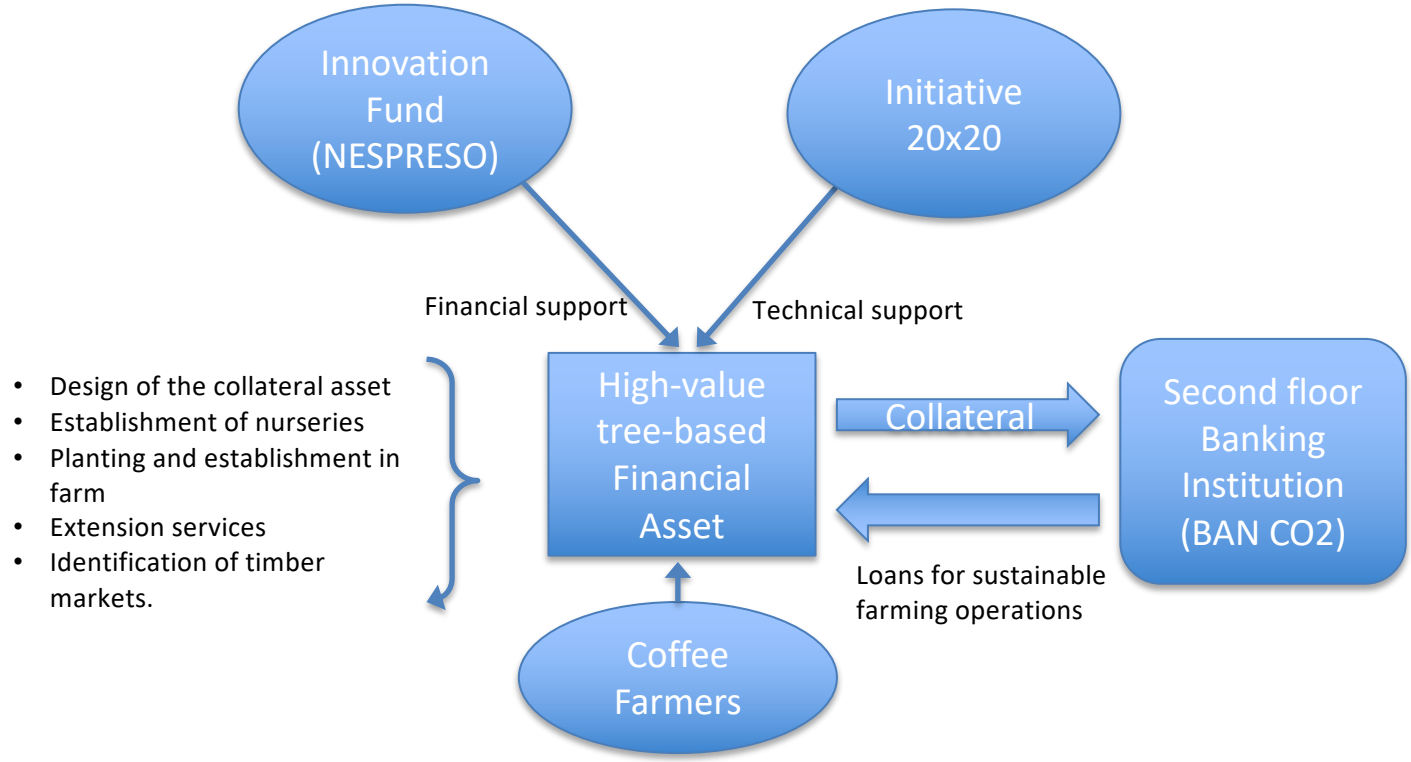
RISK COVERAGE FOR RESTORATION PROJECTS



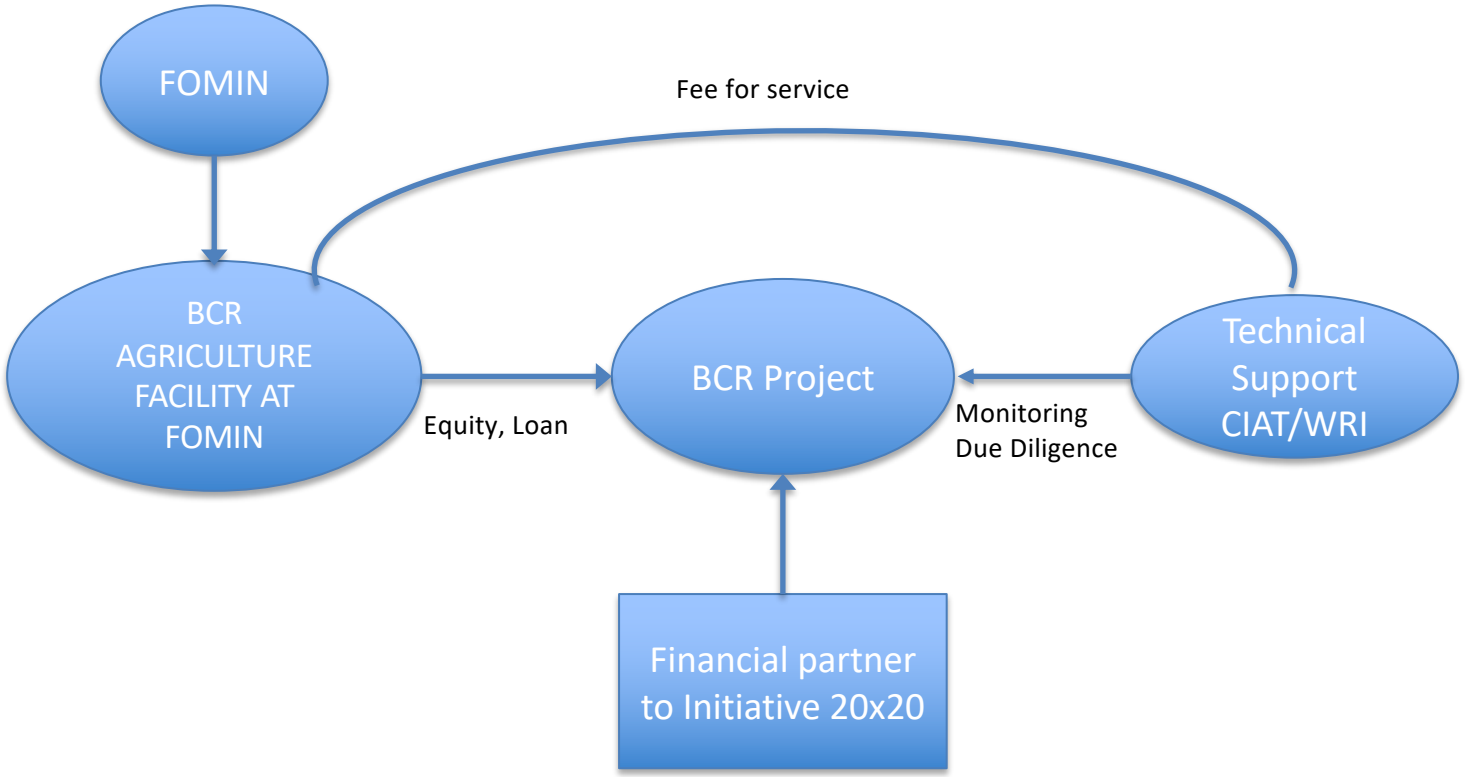
CENTRAL AMERICAN ADAPTATION-THROUGH-RESTORATION FACILITY (SUBMITTED TO AF)



USE OF HIGH VALUE ARBOREAL SPECIES AS A FINANCIAL ASSET IN THE NORTHERN ANDES

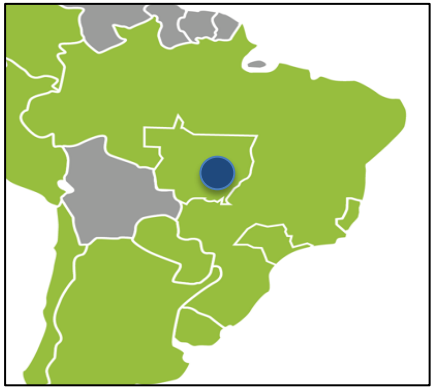


BIODIVERSITY AND CARBON RICH AGRICULTURE (IN DISCUSSIONS WITH FOMIN)



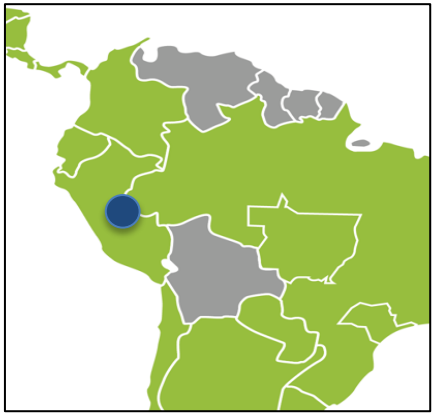
PROFILE #1: NOVO CAMPO

Investor	Althelia Climate
Location	Mato Grosso, Brazil
Type of restoration	Silvopasture, grassland restoration
# of hectares	100,000 ha + 10,000 ha eq. reforestation
Amount invested	$111.5 million risk capital
Estimated IRR	15%+; revenues: net increase in productivity (400%); quality premium; claims 60,000 avoided deforestation
Project partners	PECSA, ICV
Impacts	0.13 MM t CO2 e/year



PROFILE #2: COCOA ZERO DEFORESTATION

Investor	Carana
Location	Ucayali, San Martin, Huanuco, Peru
Type of restoration	Agroforestry (Cacao and fine lumber)
# of hectares	28,000 hectares across 3 regions
Amount invested	$58 million in risk capital and structured finance
Estimated IRR	12% +; revenues: fine cocoa and lumber
Project partners	Buyers, USAID
Impacts	0.04 MM t CO2 e/year; 18,000 jobs; farmer income up to $4,000/ha; protection of biodiversity

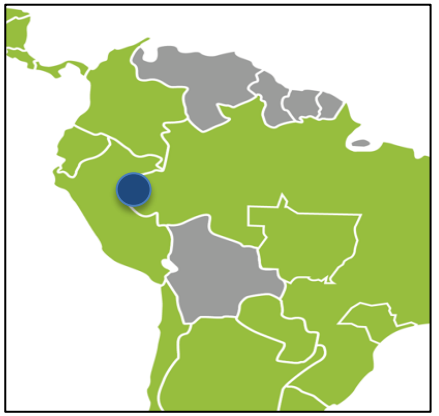


PROFILE #3: LA CUMPLIDA

Investor	Morgina
Location	Matagalpa, Nicaragua
Type of restoration	Agroforestry (shade coffee and native forestry)
# of hectares	6,000 hectares
Amount invested	$24 million
Estimated IRR	15% +; revenues: shade coffee and fine lumber
Project partners	ONF, Nicafrance, CIRAD
Impacts	0.01 MM t CO2 e / year; 6,000 permanent and seasonal jobs

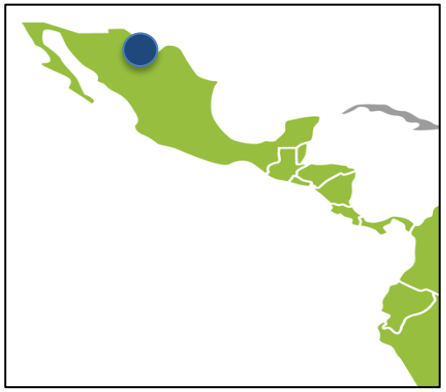
PROFILE #4: SIERRA DEL DIVISOR

Investor	Andes Amazon Fund
Location	Parque Nacional Sierra Del Divisor, Peru
Type of restoration	Conservation
# of hectares	2,100,000 hectares
Amount invested	$4 million
Estimated IRR	No return expected
Project partners	Government of Peru
Impacts	550 MM t CO2 e; protection of biodiversity and Indigenous livelihoods



PROFILE #5: DESERT GRASSLANDS FOR BIRD MIGRATION

Investor	American Bird Conservancy
Location	Chihuahuan Desert, Mexico
Type of restoration	Recovery of natural grasslands
# of hectares	28,000 hectares
Amount invested	$1 million
Estimated IRR	5%+
Project partners	Local cattle-ranchers
Impacts	0.04 MM t CO2 e/year. Recovery of migratory bird species; biodiversity-premium of livestock products



REASONS BEHIND MOMENTUM

- Initiative is driven by countries and they design the agenda and activities.
- Key driver for cooperation is potential learning from other countries in the region.
- Private capital sees rationale for investment but is also motivated by environmental concerns.
- Technical partners see benefits from aligning activities with government and private needs.

Land use can become a major carbon sink, again if…

CARBON SINKS	Size of effort (million ha by 2050)	Potential carbon storage rates (tC/ha-year)	Accumulated Carbon sinks ($GtCO_2$ e/year)
Reforestation	50	3.5	0.6
Restoration through agroforestry and silvopastures	200	2	1.3
Avoided deforestation	0.8	260	0.7
Management of fertilizers in cropland for abatement of N_2O	n.a.	0.15 - 0.4	0.2
Management of nutrients for livestock for abatement of CH_4	n.a.	n.a.	0.2
Total	250		3.0


Thank you
walter.vergara@wri.org
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Reforestation

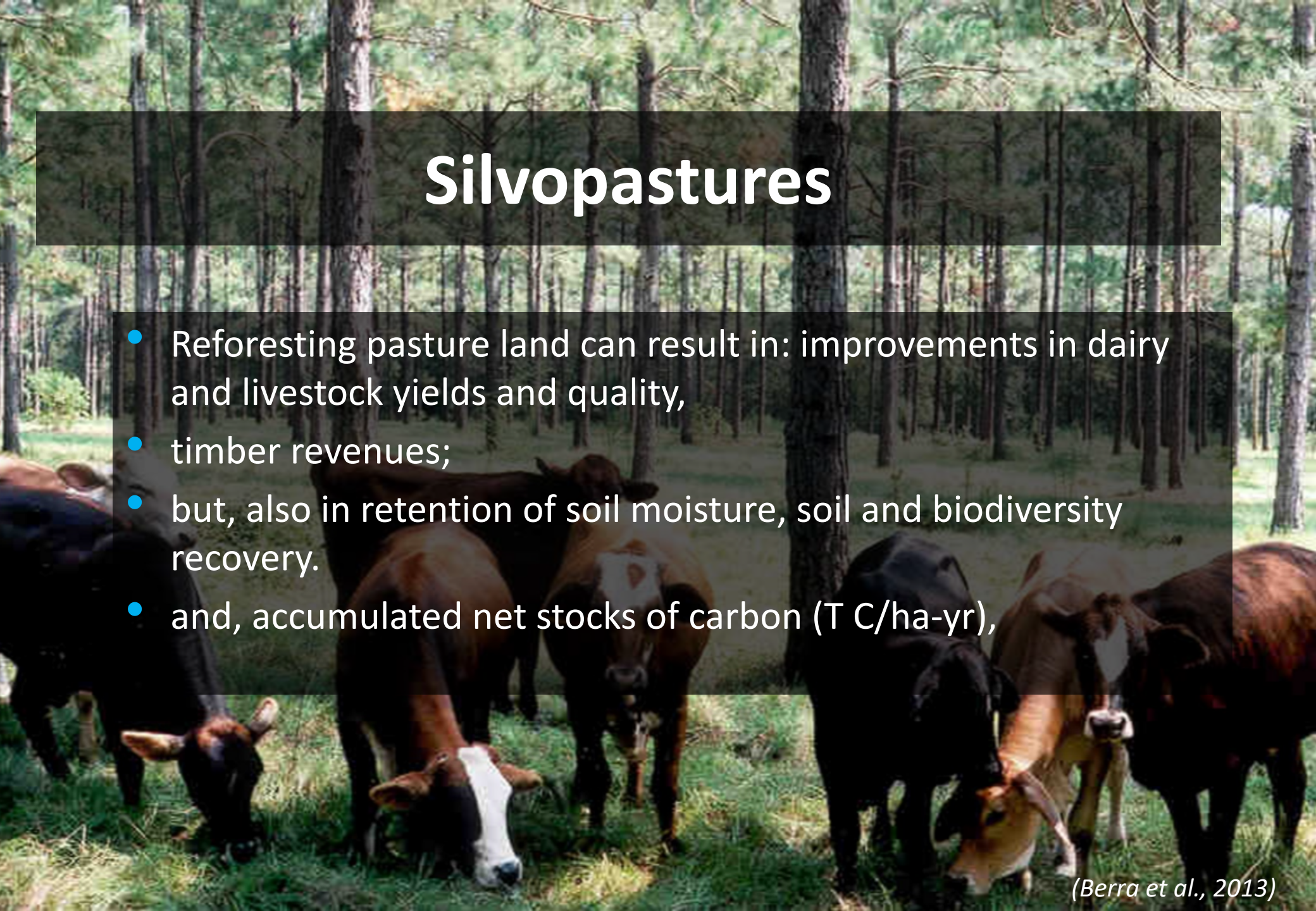
- Wood and non wood forest products
- Restored soil and hydrology
- Gains in biodiversity
- Carbon storage (T C/ha)

Managed/logged	140.5	85.1	95.9	(Callo-Concha et al., 2002)
		105.8±23.7		(Fearnside et al., 2007)
		116.7	43.6	(Lapeyre et al., 2004)
		126.3 (6y)		(Yquise et al., 2009)
		150 (123-185)		(Palm et al., 2004)

Agroforestry systems

- Combination of forests and crops can improve crop yields,
- conserve soil, retain moisture,
- recover biodiversity
- store carbon (T C/ha-yr),

Multi-strata agroforestry (Cacao) in Costa Rica		4.2	As reported in Lorenz & Lal (2014)
Multi-strata agroforestry (Cacao) in Ghana		0.1	As reported in Lorenz & Lal (2014)
Alley cropping system in Costa Rica		1.8-2.3	(Oelbermann et al., 2006)
Tropical alley cropping in Western Nigeria	13.6		(Lal, 2005)
Tree intercropping in Africa	0.5-4.0	1.5-3.5	(Nair, 2012)
Silvopastures in Africa	0.5-4.0		As reported in Nair & Garrity (2012)
Silvopasture in India	6.5		(Kumar et al., 1998)

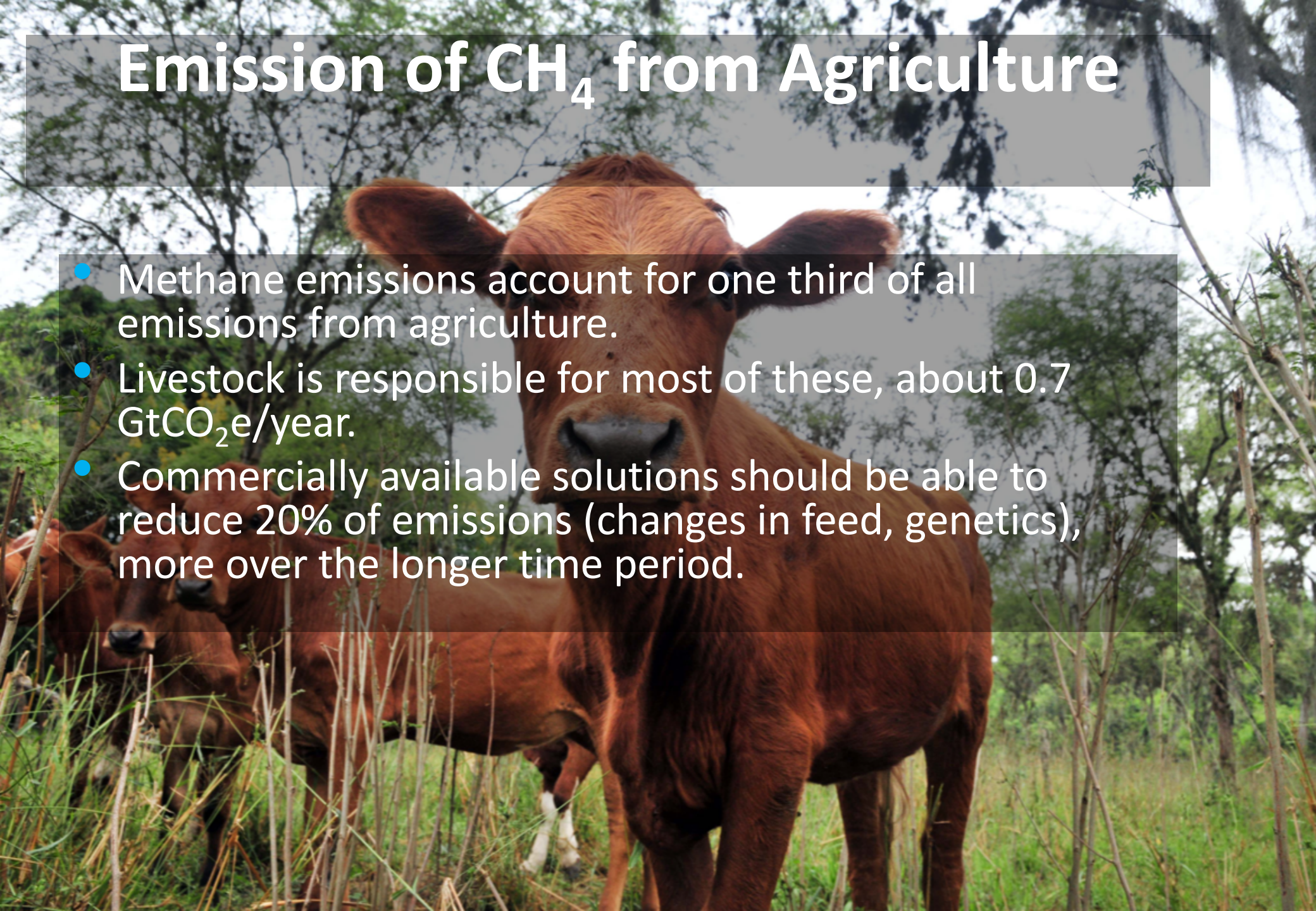


Silvopastures

- Reforesting pasture land can result in: improvements in dairy and livestock yields and quality,
- timber revenues;
- but, also in retention of soil moisture, soil and biodiversity recovery.
- and, accumulated net stocks of carbon (T C/ha-yr),

(Berra et al., 2013)

Emission of CH_4 from Agriculture



- Methane emissions account for one third of all emissions from agriculture.
- Livestock is responsible for most of these, about 0.7 $GtCO_2e$/year.
- Commercially available solutions should be able to reduce 20% of emissions (changes in feed, genetics), more over the longer time period.

Emission of N_2O from Agriculture

- N_2O emissions from agriculture are generated through improper fertilizer application, tillage and runoffs.
- These account for 0.4 M T CO2 e
- LAC already world leader on no tillage. Replacement of NH4 fertilizers and slow release fertilizers can greatly reduce emissions