Mitigating Climate Change through Avoiding Deforestation for the Benefit of Biodiversity and People

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Workshop on Biodiversity – Climate Interactions:
Adaptation, mitigation and human livelihoods
The Royal Society, London 12-13 June 2007

Outline

- Introduction
- Climate change and Deforestation
  - Global processes
  - Political context
  - Who is going to pay?
- Risks and Opportunities
  - Policy responses
  - Biodiversity and PES
  - Human livelihoods
- Concluding Remarks

Some numbers

- Total emissions p.a.: 7.2 GtC (27 Gt CO_2)
  - Fossil fuels: 5.6 GtC (21 Gt CO_2)
  - LUCF: 1.6 GtC (6 Gt CO_2)
- LUCF contributes: 20%
- Forest area: 1.3 Bha
- Deforestation rate: 11 Mha/y (1%/y)
- Deforestation contributes: 0.25%/y to Soy beans
  6%/y to Oil-palm

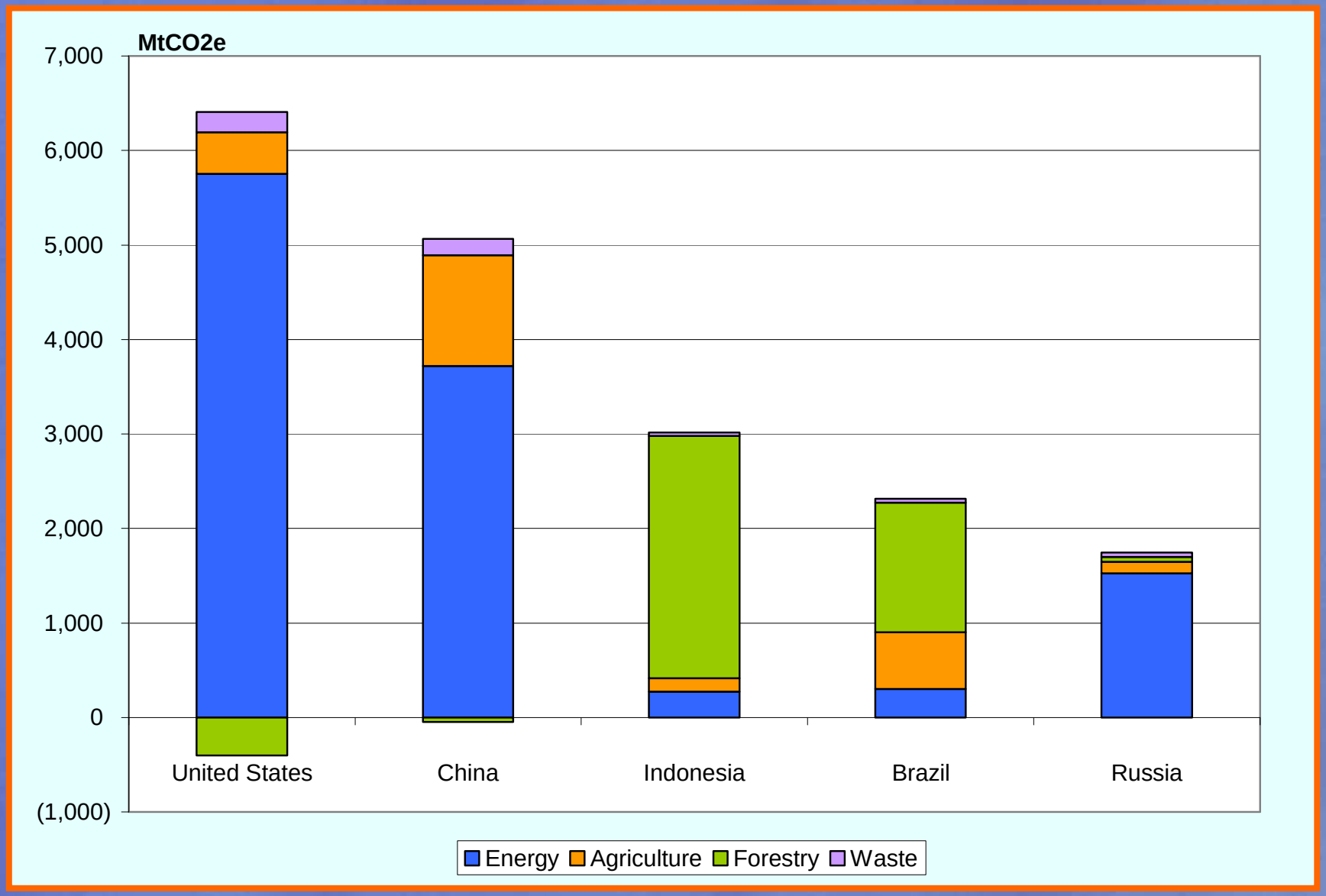
RED in UNFCCC/SBSTA: Initiation and processes

- Submissions of the Governments of PNG and Costa Rica
- COP11 (Montreal, 2005) initiated a 2-year process of reducing emission from deforestation (RED) in developing countries
- Invited submissions to stimulate action (31 Mar 2006)
  - Scientific, technical and methodological issues
  - Policy approaches and positive incentives
- Considered by SB-24 (May 2006)
- Organized workshops (Rome,Sep 06; Cairns, Mar 07)
- To be recommended at COP13 (Bali, Dec 07)

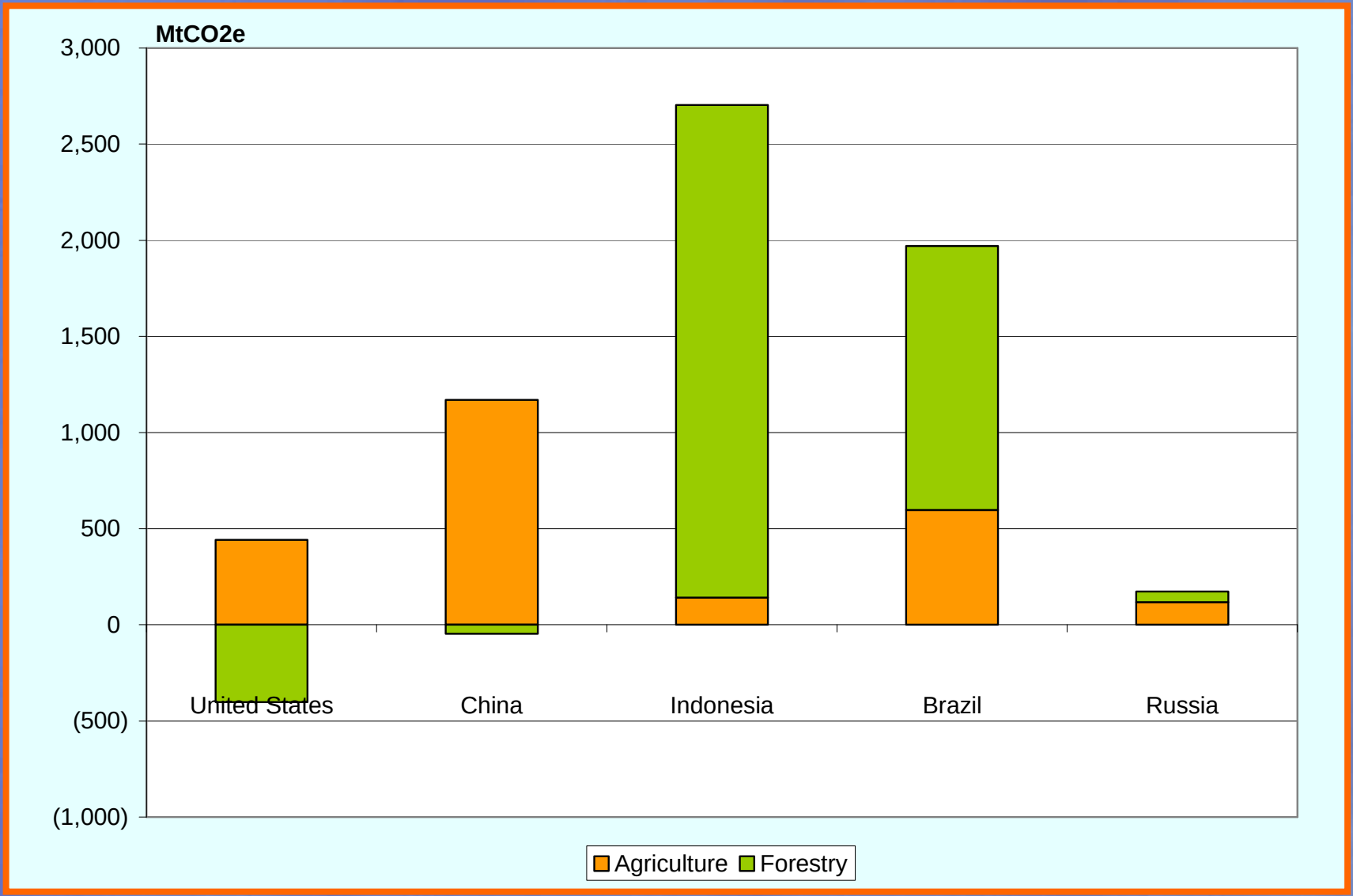
Deforestation and degradation

More than just changes in forest cover

Top five emitters



Land-based emissions



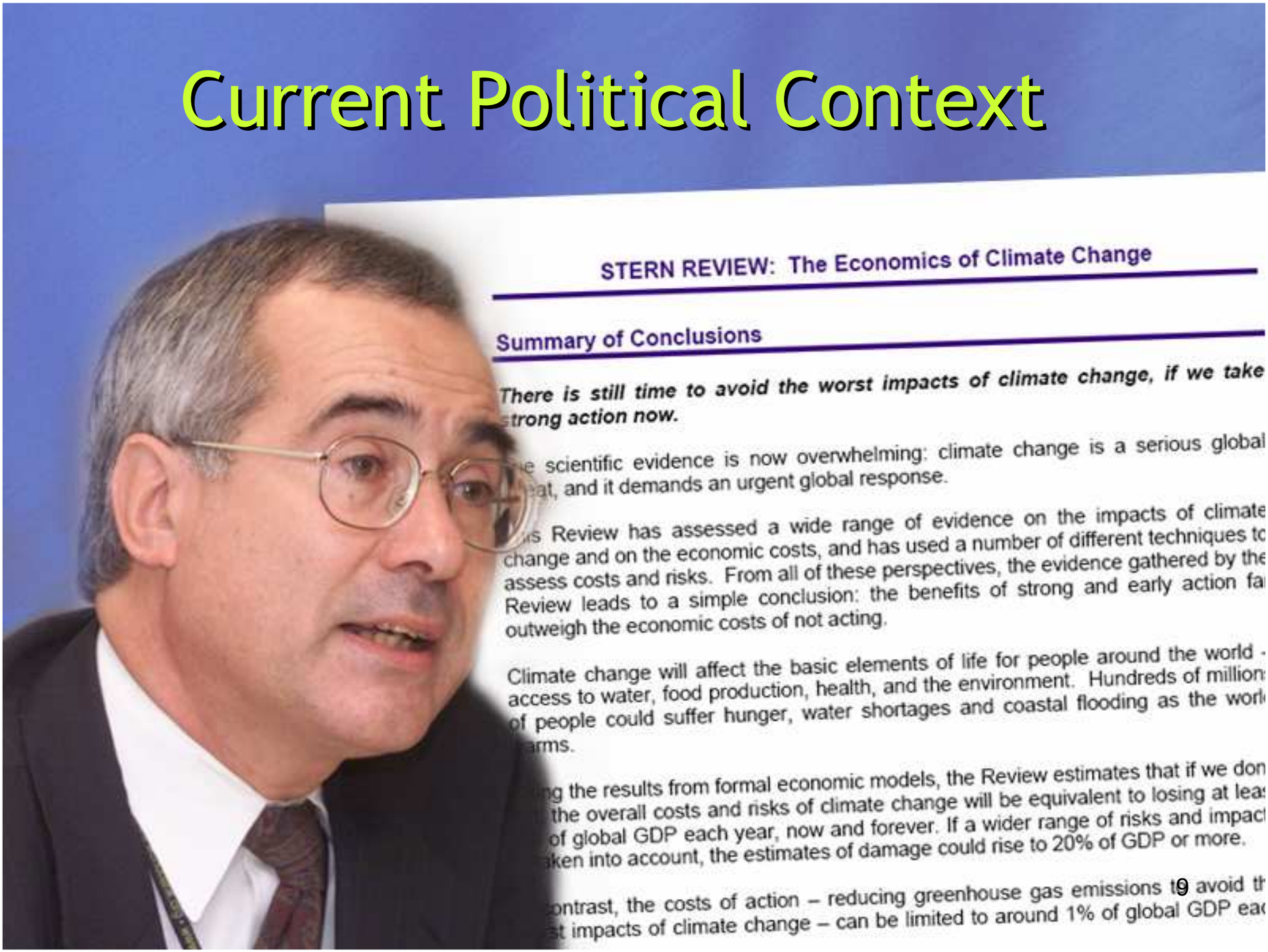
G8 Summit 2007
Heiligendamm

Current Political Context

Reducing Emissions by Curbing Deforestation

- Encourage the establishment of a pilot project dedicated to building capacity, creating and testing performance-based instruments to reduce emissions from deforestation in developing countries
- Continue to support existing processes to combat illegal logging. Illegal logging is one of the most difficult obstacles to further progress in realising sustainable forest management.
- Remain engaged in supporting developing countries to achieve their self-commitments for halting forest loss and to implement sustainable forest management, as stated in various regional initiatives, i.e. the Congo Basin and the Asia Forest Partnerships

Current Political Context



STERN REVIEW: The Economics of Climate Change

Summary of Conclusions

There is still time to avoid the worst impacts of climate change, if we take strong action now.

e scientific evidence is now overwhelming: climate change is a serious global at, and it demands an urgent global response.

is Review has assessed a wide range of evidence on the impacts of climate change and on the economic costs, and has used a number of different techniques to assess costs and risks. From all of these perspectives, the evidence gathered by the Review leads to a simple conclusion: the benefits of strong and early action fa outweigh the economic costs of not acting.

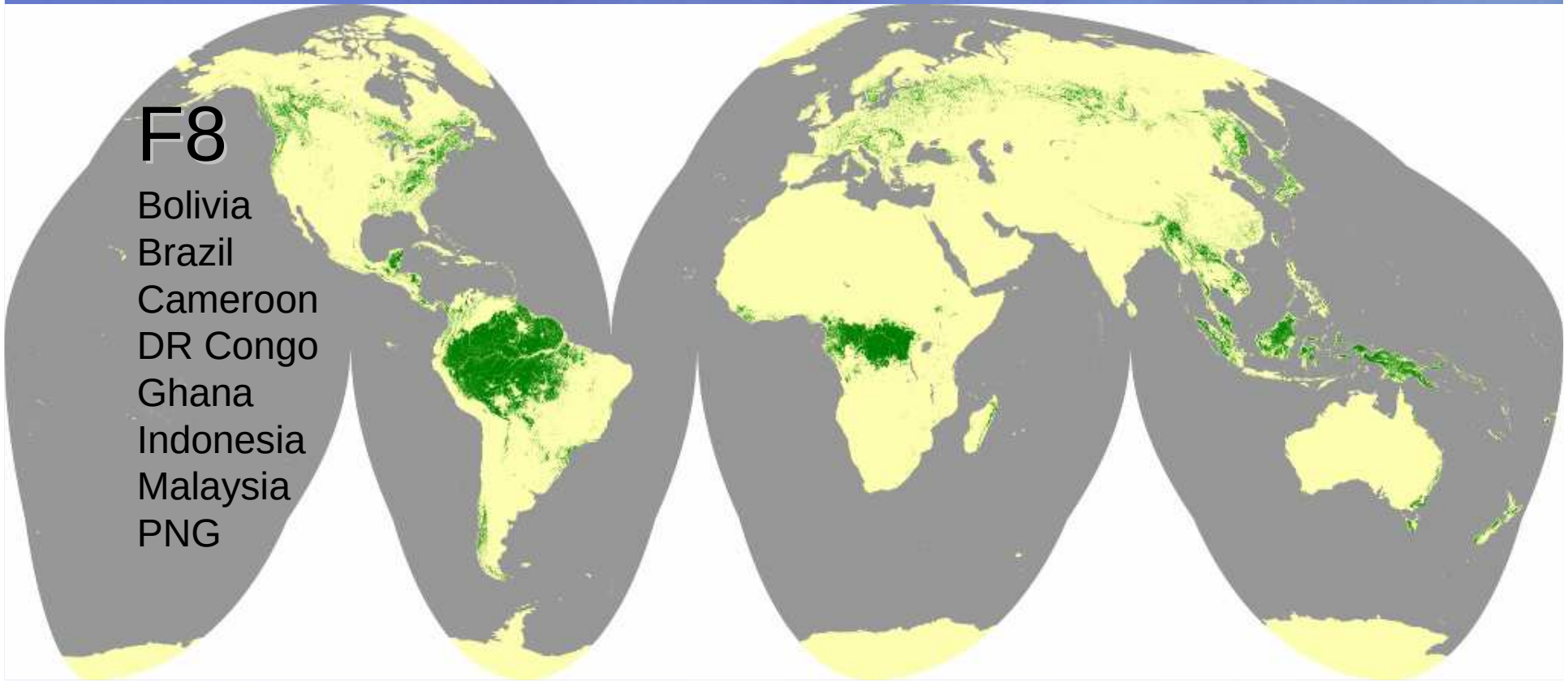
Climate change will affect the basic elements of life for people around the world - access to water, food production, health, and the environment. Hundreds of million of people could suffer hunger, water shortages and coastal flooding as the worl arms.

ng the results from formal economic models, the Review estimates that if we don the overall costs and risks of climate change will be equivalent to losing at leas of global GDP each year, now and forever. If a wider range of risks and impact ken into account, the estimates of damage could rise to 20% of GDP or more.

ontrast, the costs of action – reducing greenhouse gas emissions to avoid th st impacts of climate change – can be limited to around 1% of global GDP eac

Can it be done?

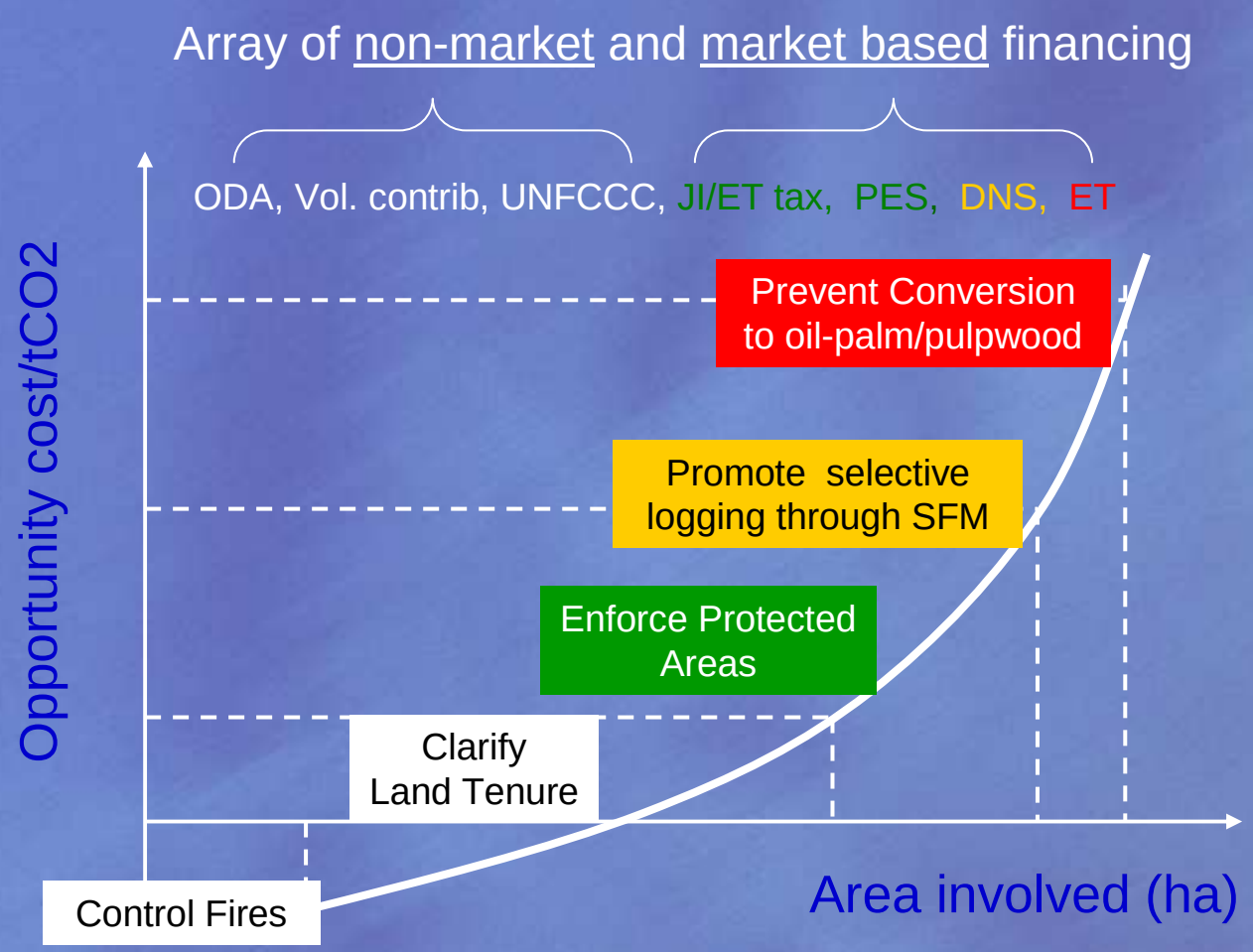
Assumes critical areas can be identified within countries so that payments or incentives can be focused on those 'about to deforest' and no international leakage



Stern's Report

- The opportunity cost of forest protection in 8 countries responsible for 70% of emissions from land use could be around $5 B/y initially, although over time marginal costs would rise
- Direct yields from land converted to farming, including proceeds from the sale of timber, are equivalent to less than $1/tCO$_2$ in many areas currently losing forest, and usually well below $5/tCO$_2$
- Other estimates suggest that costs would rise as the portion of deforestation to be avoided rose – to $30/tCO$_2$
- Land-based emissions responsible for about 20% of total (1.6 Gt C @ $50/tC is $80 B/y)
- Mitigation of land-based emissions much cheaper than mitigation of other types of emissions

Pick low-hanging fruit first



Who is going to pay?

Possible buyers/donors

- Development agencies/Banks ($40 B/y)
- Bilateral donors ($80 B/y)
- Kyoto market (low B/y)
- Voluntary markets (lower B/y)
- NGOs ($100s M/y)

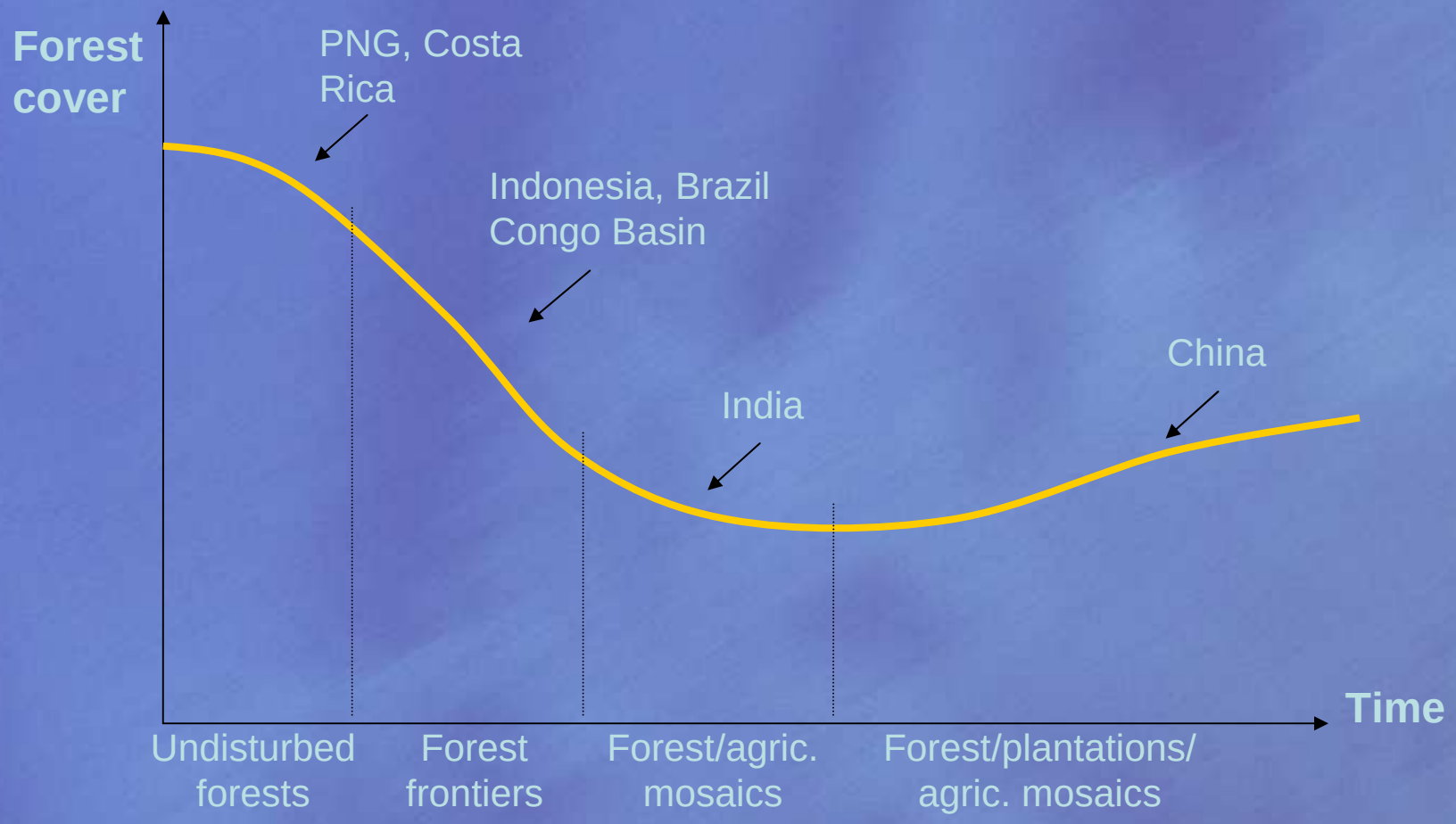
Buyer/Donor's view

- Price/impact per $
- Quality of product
- Social equity
- Permanence
- Sovereign risk
- Fungibility in markets
- Credit for early action
- Political feasibility

REDD challenges

- Appropriate baseline
  - National/sectoral or project-based?
  - Is it fair across countries in different transition?
- Monitoring and measurement issues
  - Capacity, accountability?
  - Reduced transaction costs?
- Ensuring equity of impacts
  - Linked to PES/co-benefits?
  - Improve livelihoods of the rural poor?
- Credibility of policy commitments

The forest transitions



Causes of Deforestation

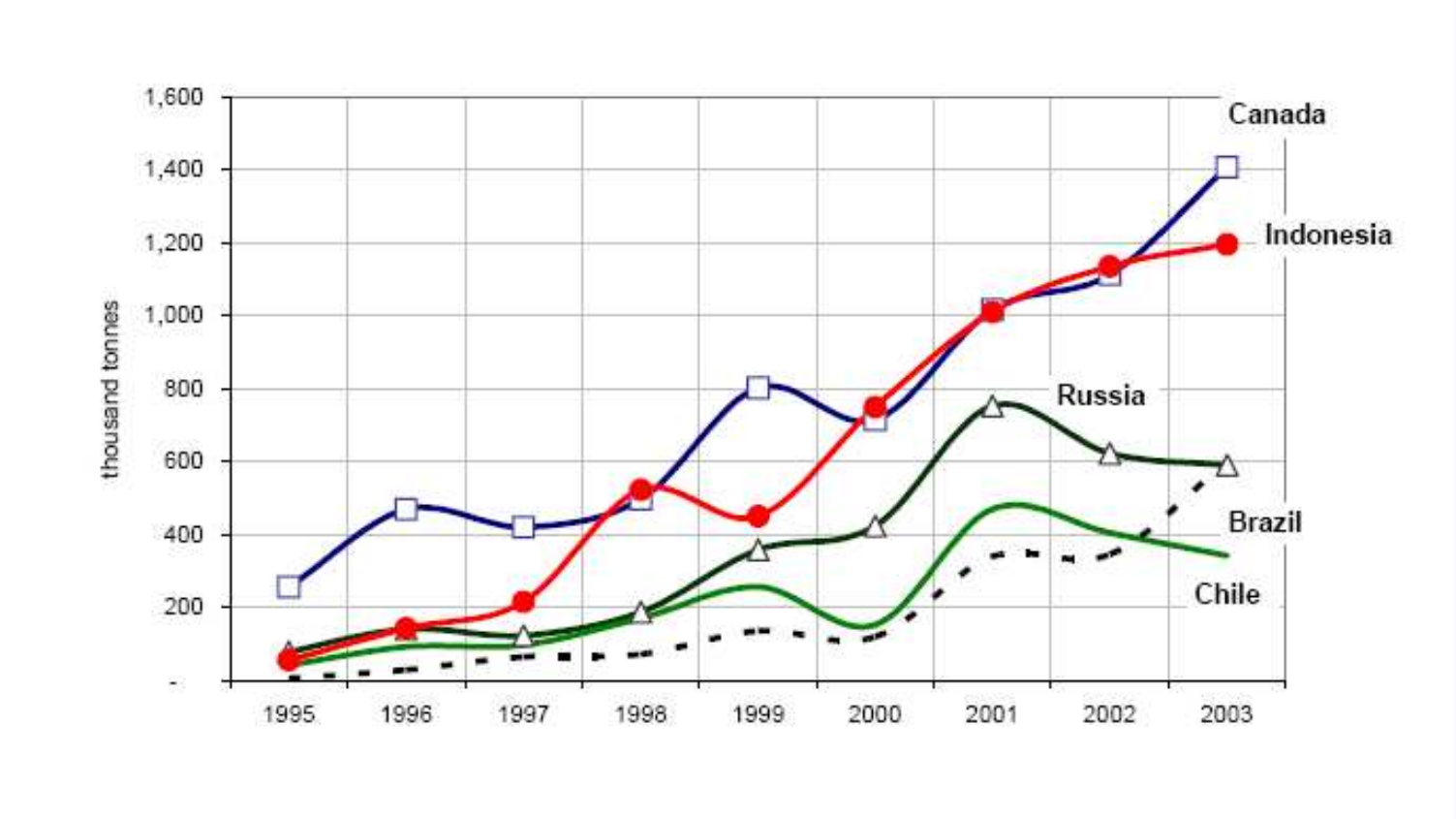
- Smallholder agriculture
- Legal and illegal logging
- Wood processing industry overcapacity
- Conversion to plantation crops

Industrial Logging

Pulp mills

- Industry supplied by illegally-sourced wood from natural forests
- Plantations increase vulnerability to burning

Pulp supplies to China's mills



- End of 2002, China paper mill capacity was about 13.5 Mt y^{-1}
- In 2003-2005, additional 11.6 Mt y^{-1}
- A further 10.5 Mt y^{-1} is awaiting financial approval

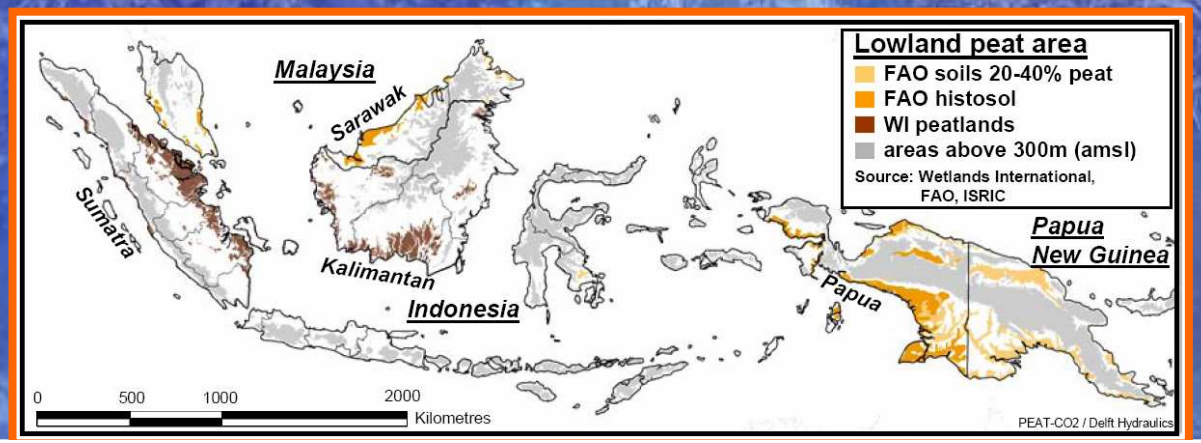
Source: Wright, 2004

Biofuels development

- Is it really green or climate neutral?
- Can we avoid deforestation while promoting biofuels?
- Oil palm plantations often result in forest conversions (including peatlands) and thus increase emissions

Tropical peatlands in SE Asia

- Covers 3o Mha, formed over a period > 5,000 years
- Peat dome, reach a depth of 10 meters
- Store 5,800 t C/ha (> 10x tropical forests)
- Sequester 0.1-0.3 Gt C/year (Sorensen, 1993)
- In the past 10 years about 3 Mha of peatland in SE Asia have been burnt releasing 3-5 Gt C (Page et al., 2002)
- The drainage of peat for oil palm and timber and pulpwood plantations have affected more than 6 Mha and released an additional 2 Gt C (Hoojer et al., 2007)
- These stocks cannot be replaced

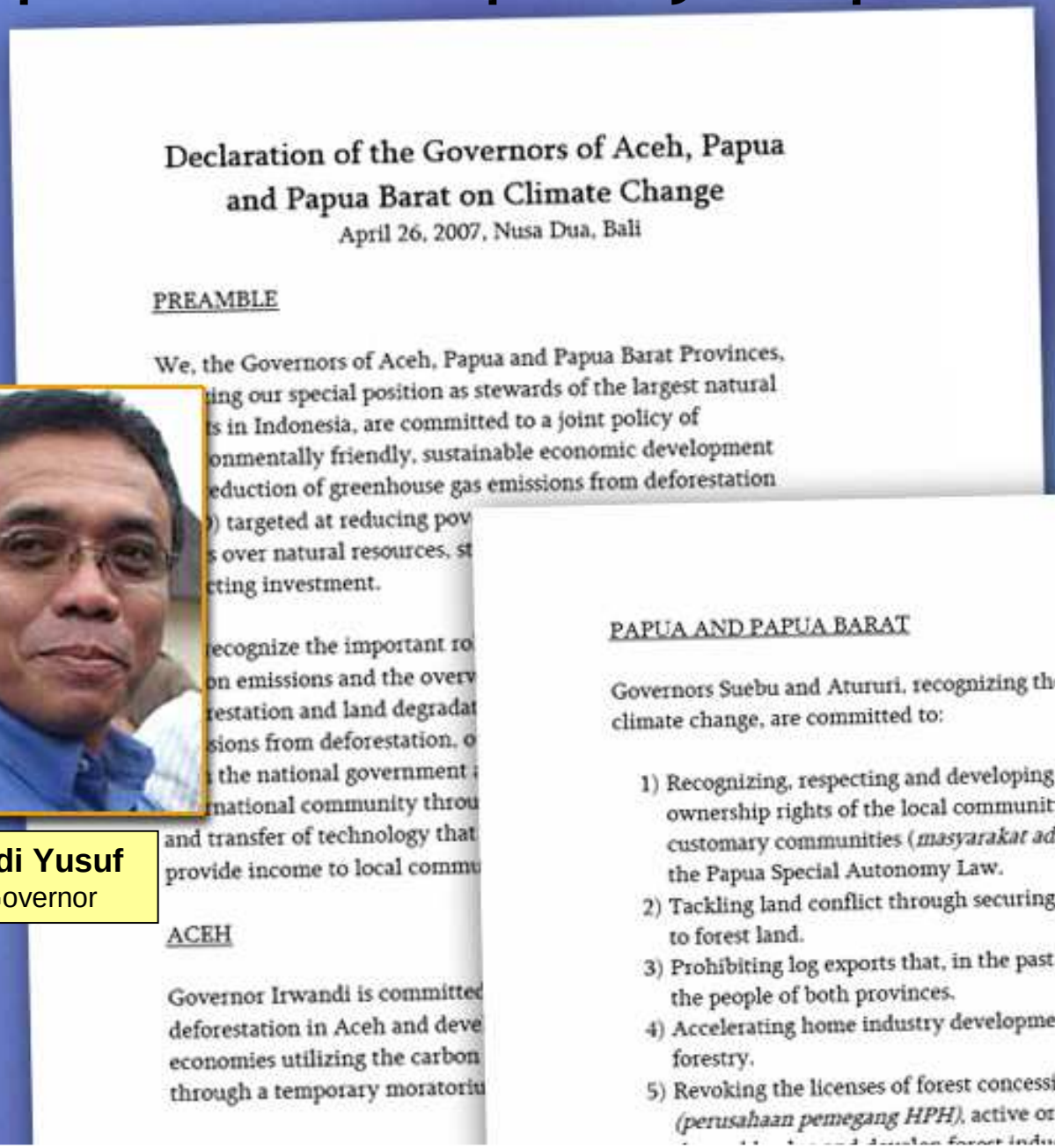


The development of oil-palm plantations in Indonesia
(x 1000 ha)

Island	1985	1998	New	Outstanding
Kalimantan	0	563	563	4,760
Sumatra	806	2,240	1,435	9,395
Sulawesi	12	101	89	665
Papua	23	31	8	590
Maluku	0	0	0	236
Others	2	22	20	1,777
Total	**843**	**2,957**	**2,115**	**17,423**

Source: The World Bank, 1999

Opportunities: policy responses



Declaration of the Governors of Aceh, Papua and Papua Barat on Climate Change

April 26, 2007, Nusa Dua, Bali

PREAMBLE

We, the Governors of Aceh, Papua and Papua Barat Provinces,
ting our special position as stewards of the largest natural
s in Indonesia, are committed to a joint policy of
onmentally friendly, sustainable economic development
eduction of greenhouse gas emissions from deforestation
) targeted at reducing pov
s over natural resources, st
cting investment.

ecognize the important ro
on emissions and the overv
restation and land degradat
sions from deforestation, o
the national government
national community throu
and transfer of technology that
provide income to local commu

ACEH

Governor Irwandi is committed
deforestation in Aceh and deve
economies utilizing the carbon
through a temporary moratoriu

PAPUA AND PAPUA BARAT

Governors Suebu and Atururi, recognizing the importance o
climate change, are committed to:

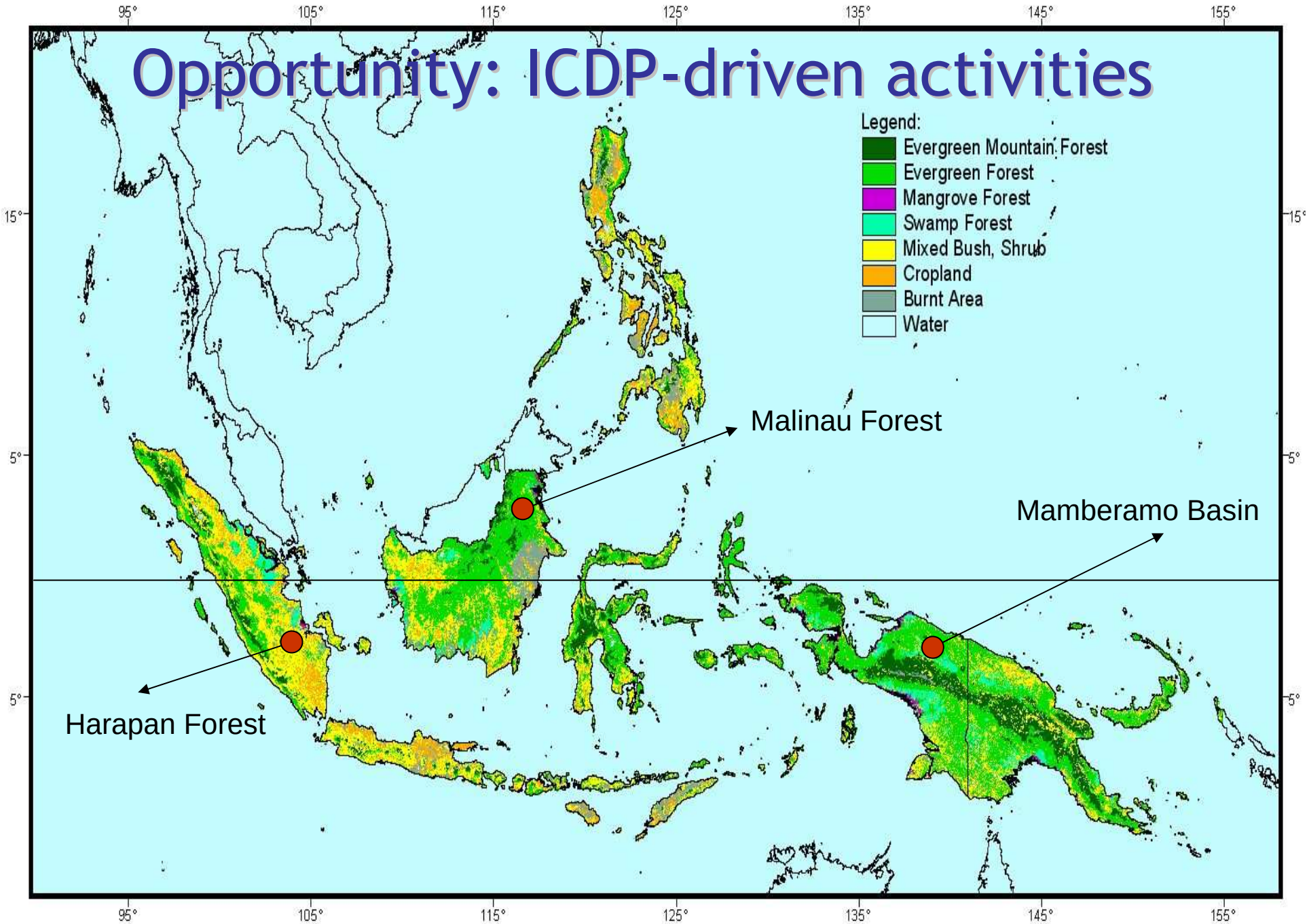
1) Recognizing, respecting and developing the forest ownership rights of the local community, especially customary communities (*masyarakat adat*), as stipulate the Papua Special Autonomy Law.
2) Tackling land conflict through securing community ac to forest land.
3) Prohibiting log exports that, in the past, has not benef the people of both provinces.
4) Accelerating home industry development and commu forestry.
5) Revoking the licenses of forest concession holders (*perusahaan pemegang HPH*), active or non-active, u

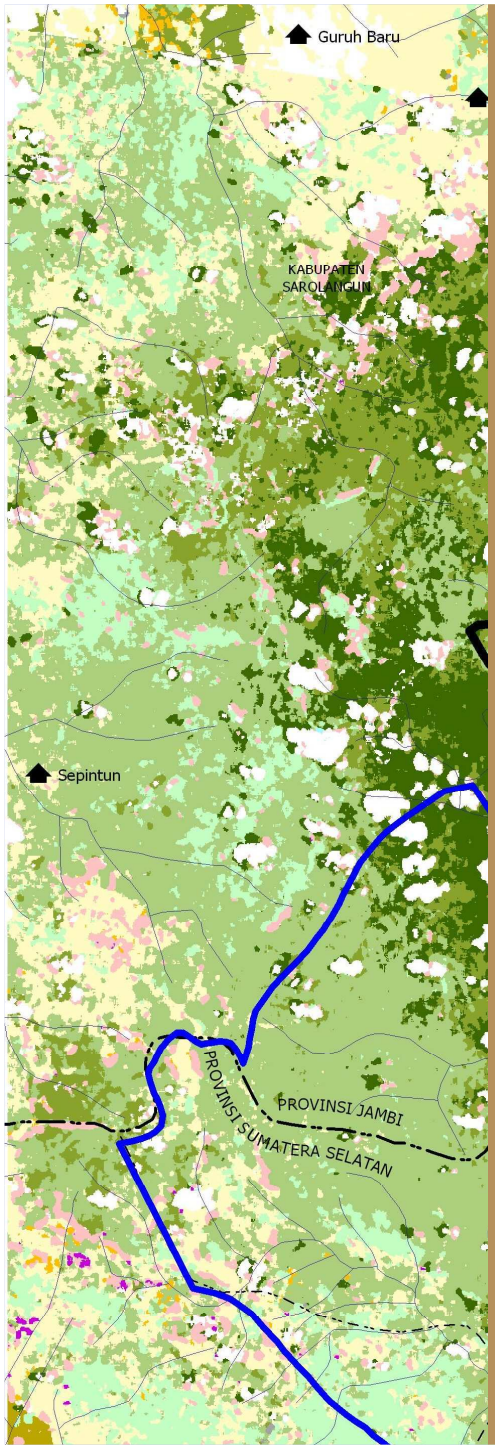
Irwandi Yusuf
Aceh Governor

Barnabas Suebu
Papua Governor

Abraham Atururi
West Papua Governor

Opportunity: ICDP-driven activities





Bringing New Hope

A Global Partnership

Saving over 100,000 ha of lowland rainforest

20 year logging moratorium

Maintaining biodiversity and landscape

Promoting accelerated natural regeneration

Supporting local community livelihoods and promoting non-timber forest products

Reducing emissions from deforestation

Photo credit: D. Chan Ah Lak, Marco Lambertini

Project Partners:

Burung Indonesia

RSPB

BirdLife International

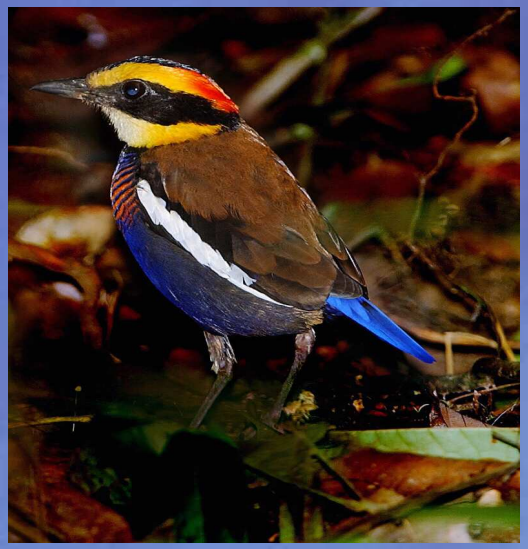
Implementing Agencies:

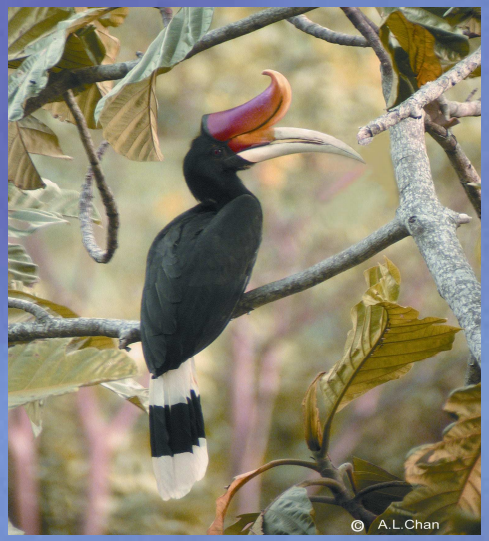
Restorasi Ekosistem Indonesia

Yayasan Konservasi Ekosistem Hutan Indonesia

Supported by:

Biodiversity conservation (1)



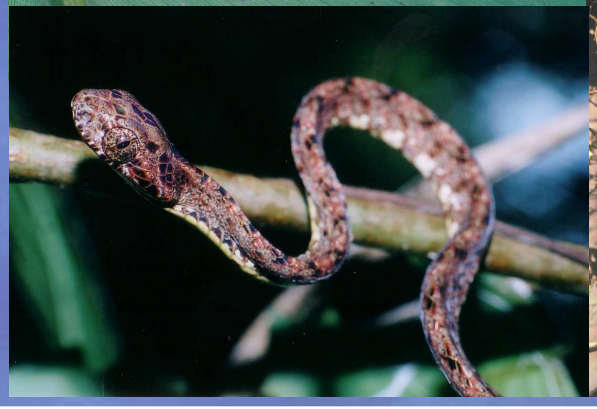


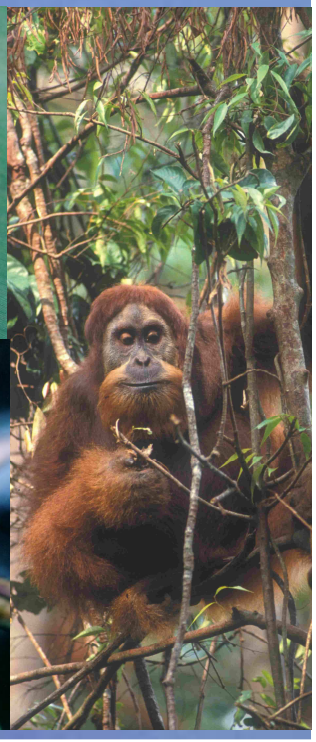
BIRDS	
Total species number: **267**	
IUCN category:	Endangered: 2 species
	Vulnerable: 6 species
	Near Threatened: 64 species
Included in CITES appendix:	Appendix I: 1 species
	Appendix II: 25 species
Protected by Indonesian Government : 45 species	

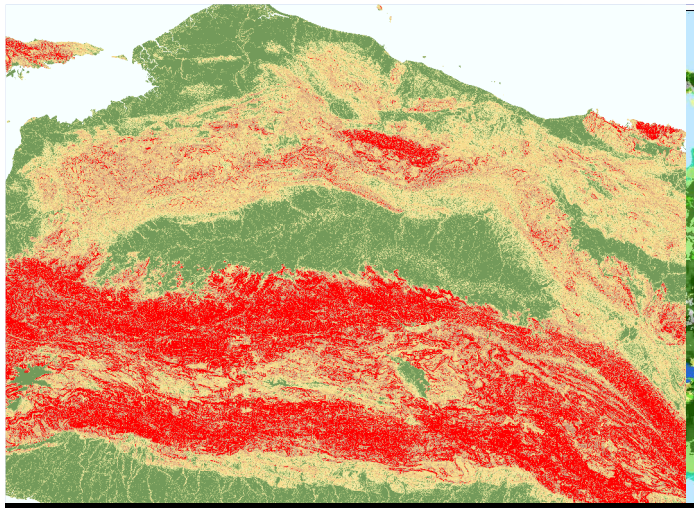
Biodiversity conservation (2)

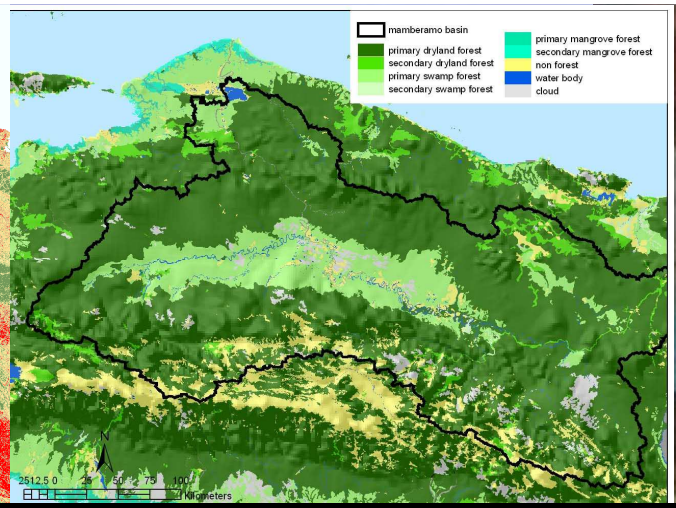
MAMALIA	
Total species number: **49**	
IUCN category:	Critically endangered: 2 species
	Endangered: 5 species
	Vulnerable: 4 species
	Near Threatened: 6 species
Included in CITES appendix:	Appendix I: 5 species
	Appendix II: 12 species
	Appendix III: 1 species
Protected by Indonesian Government: 20 species	

AMFIBIA	
Total species number: **25**	
IUCN category:	Near Threatened: 3 species
REPTILIA	
Total species number: **33**	
IUCN category:	Endangered: 1 species
	Vulnerable: 1 species

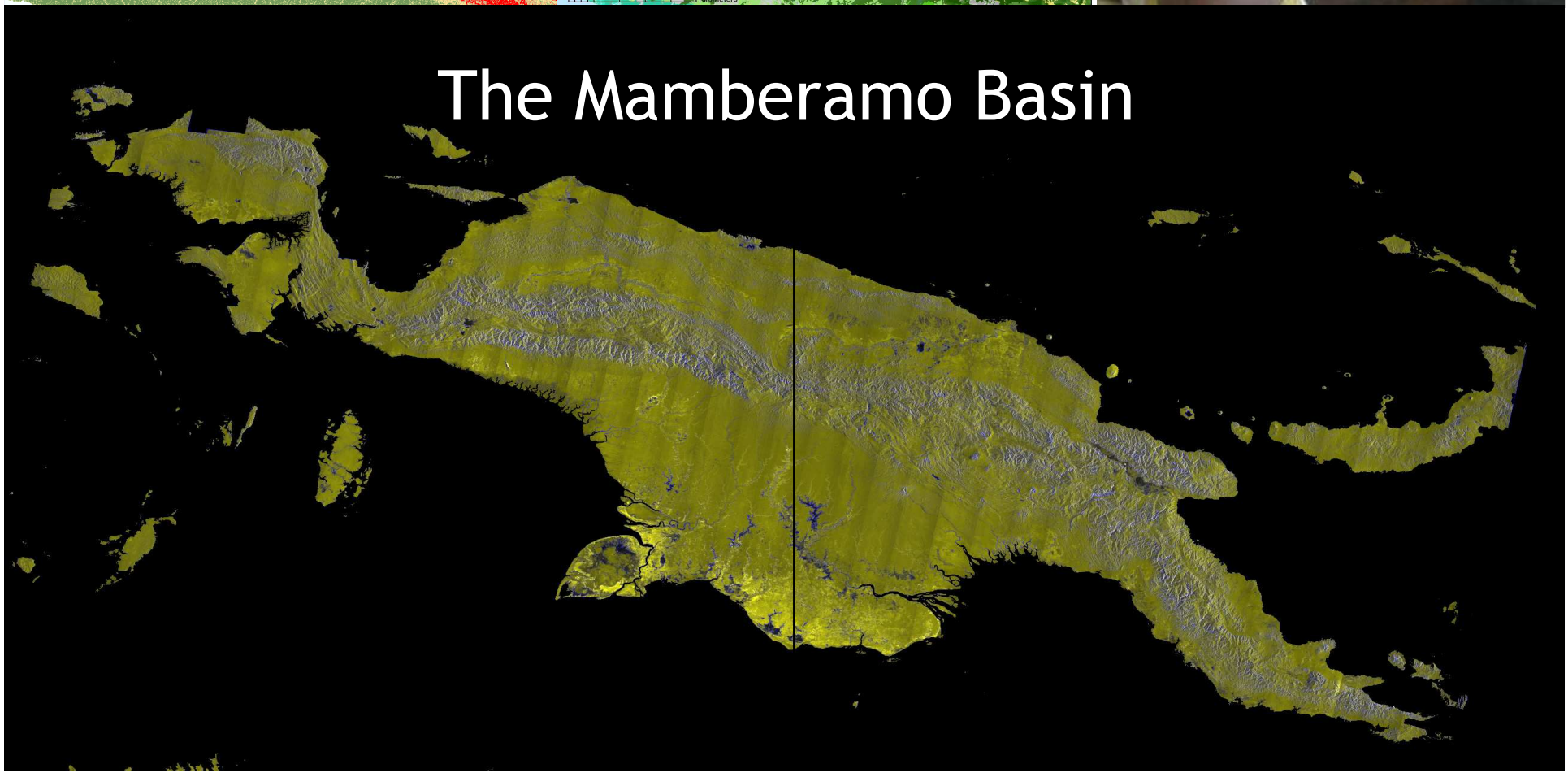






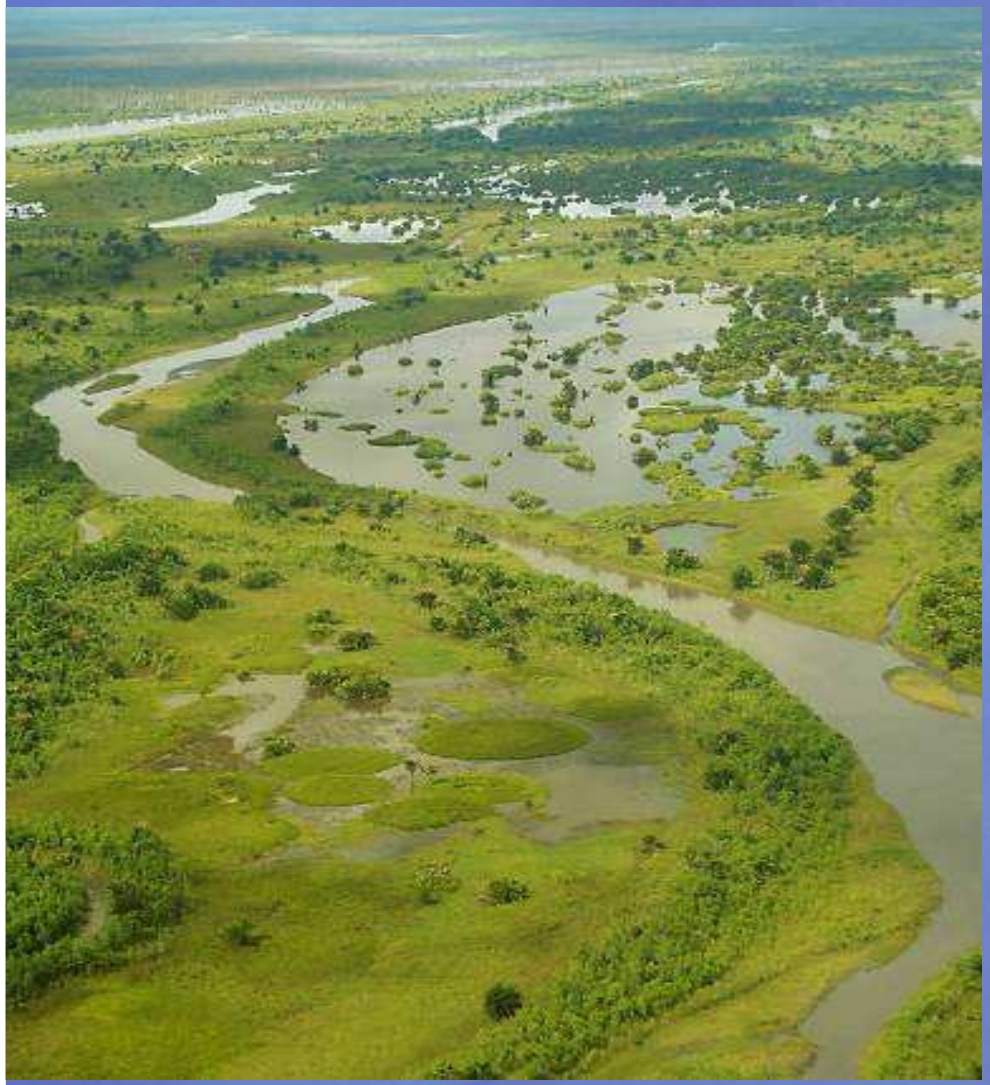


The Mamberamo Basin



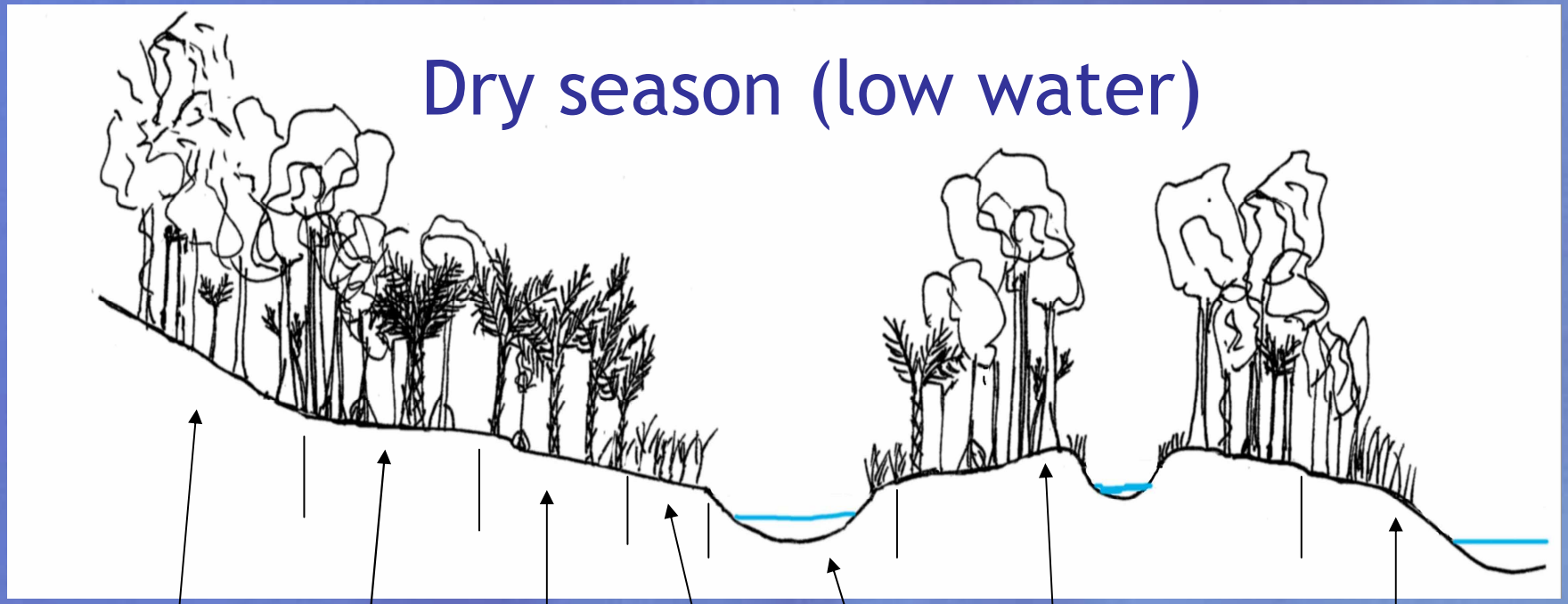
Forest-dependent human livelihoods should not be undermined by the new regimes

CC and LUC impacts on hydrology and habitats



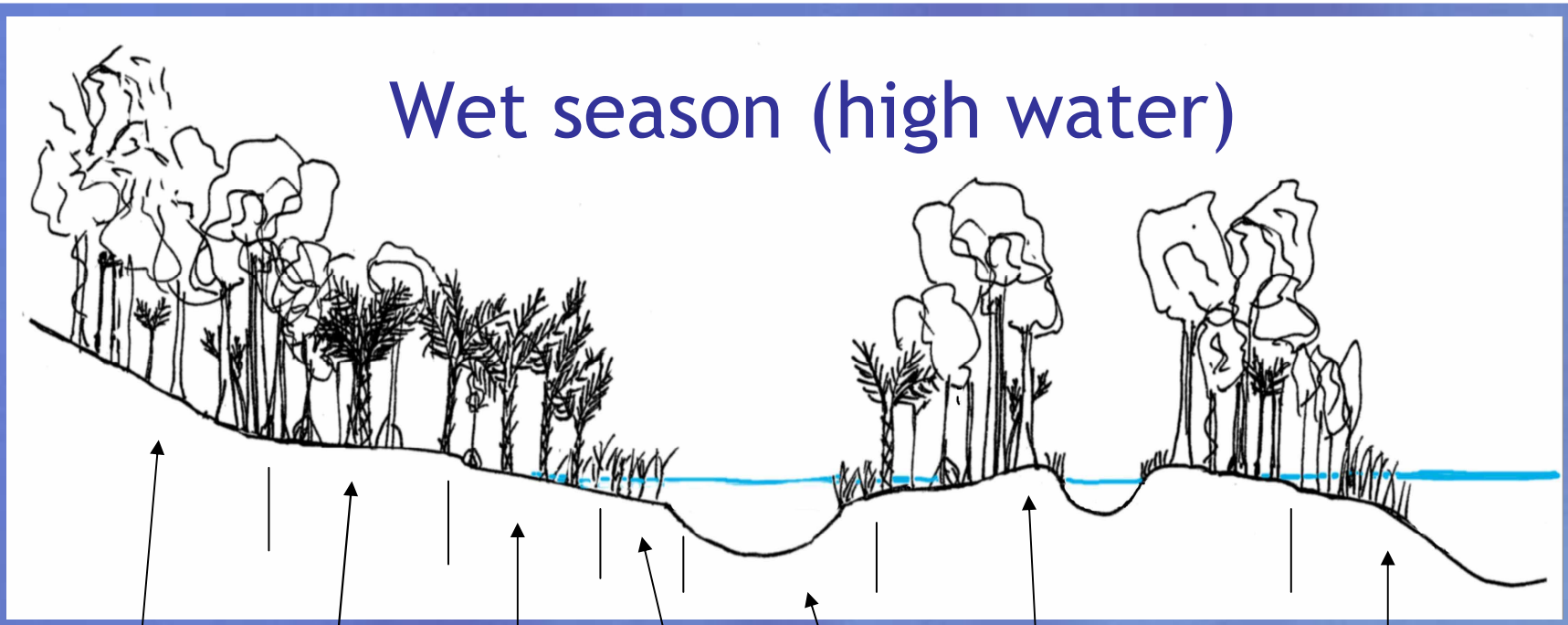
- Increased delivery rates could potentially cause extreme flooding and inundation times
- This would alter the vegetation patterns especially of alluvial forest
- Increased sedimentation could increase flooding, and coupled with higher frequency and amplitude of flooding could creating more marshes and swamp scrub and forest die-back - large impact on communities

Dry season (low water)



Habitat	Lowland rainforest	Alluvial Swamp Forest	Sago Swamp	Swamp Scrub	Lake Formations	Alluvial Swamp Forest along Smaller rivers	Pioneer Formations	Rivers
Species	Wild pig, Cassoari, G. victoria, Cus-cus,	Crocodile, Wild pig, Cassoari, G. victoria, Cus-cus,	Crocodile, Wild pig, Cassoari, G. victoria, Cus-cus	Crocodile	Crocodile, Fresh water fish species	Crocodile, Wild pig, Cassoari, G. victoria, Cus-cus	Crocodile	Crocodile, Fresh water fish species

Wet season (high water)



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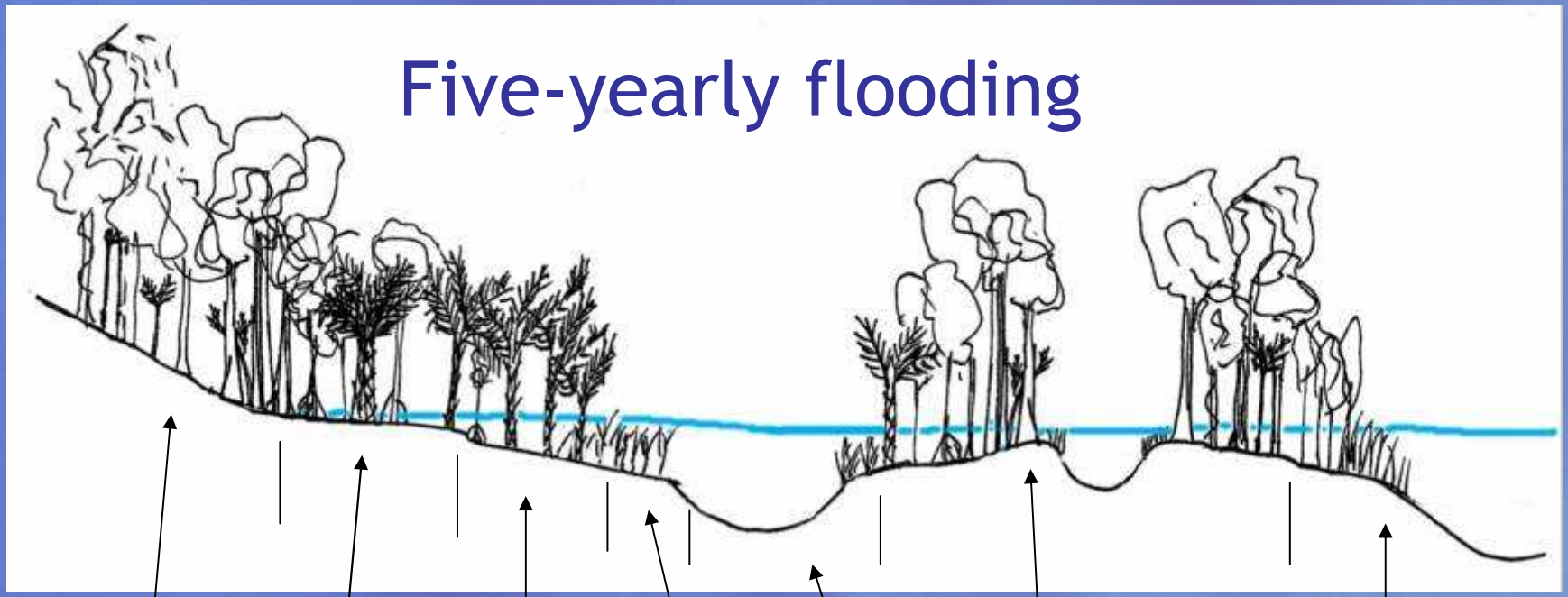
Five-yearly flooding



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Concluding Remarks

- Reduced land-based emissions is a key component of future global climate regime
- Ecosystem restoration mitigates climate change, benefits biodiversity and human livelihoods
- Both non market and market-based financing are options for REDD incentives
- Biofuels development can be a threat to forests and climate
- Property rights and benefit sharing must be secured

Next stop: Bali COP

Thank You
http://www.cifor.cgiar.org
http://www.cifor.cgiar.org/carbofor

Research questions (1)

- What are the advantages and disadvantages of integrating REDD into the Kyoto framework?
- What are the advantages and disadvantages of financing REDD from the carbon market, versus relying on bilateral donor commitments?
- Which current national policies, such as perverse subsidies, are actually imposing net domestic economic costs? How can policies to promote REDD be linked to PES?
- How can policies to promote REDD maximize opportunities to improve livelihoods for the rural poor?
- How can policies to promote REDD minimize the tendency of forest law enforcement efforts to be biased against smaller and poorer forest resource users?
- How large are the transaction costs of putting into place compensation mechanisms? How can rules and procedures be made simple to avoid the high transaction costs?

Research questions (2)

- What kinds of measuring, monitoring, and accountability mechanisms are technically feasible?
- How can baselines be set to ensure fairness across countries at different points in the forest transition, avoid punishing early action, and make participation attractive? What is the role of predictive models in setting national baselines?
- What would be the implications of including forest degradation in the accounting system to address sustainable forest management and changes in carbon stocks rather than forest cover?