Biodiversity assessment methods in REDD-PAC

Using results of GLOBIOM to assess the biodiversity impacts of polices related to REDD+

UNEP WCMC

International and national objectives

United Nations
Framework Convention on Climate Change

REDD+

Encourages developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities, ...:

(a) Reducing emissions from **deforestation**;
(b) Reducing emissions from **forest degradation**;
(c) Conservation of forest carbon stocks;
(d) Sustainable management of forests;
(e) Enhancement of forest carbon stocks;

United Nations
Convention on Biological Diversity (CBD)

- **The Aichi Biodiversity Targets**

e.g. Target 5 By 2020, the rate of loss of all natural habitats, including forests, is at least halved .....

- **Target 15** By 2020, ... the contribution of biodiversity to carbon stocks has been enhanced, ..., including restoration of at least 15 per cent of degraded ecosystems, ...

UNEP WCMC

National objectives - Brazil

- **Forest Code**
  - PPCDAm
  - PPCerrado

- **National biodiversity targets**
  - Decrease the rate of loss of native habitats by at least 50% in relation to 2009 rates (Goal 5);
  - increasing the coverage of National System of Conservation Units (SNUC) to at least 30% of the Amazon and 17% of each of the other terrestrial biomes (Goal 11);
  - increasing the resilience of ecosystems and the contribution of biodiversity to carbon stocks through conservation and recovery actions, including through the recovery of at least 15% of degraded ecosystems (goal 15).

- **Are there other key policies we should considered?**

UNEP WCMC

REDD+ and biodiversity conservation

REDD+ activities
e.g. reduced deforestation

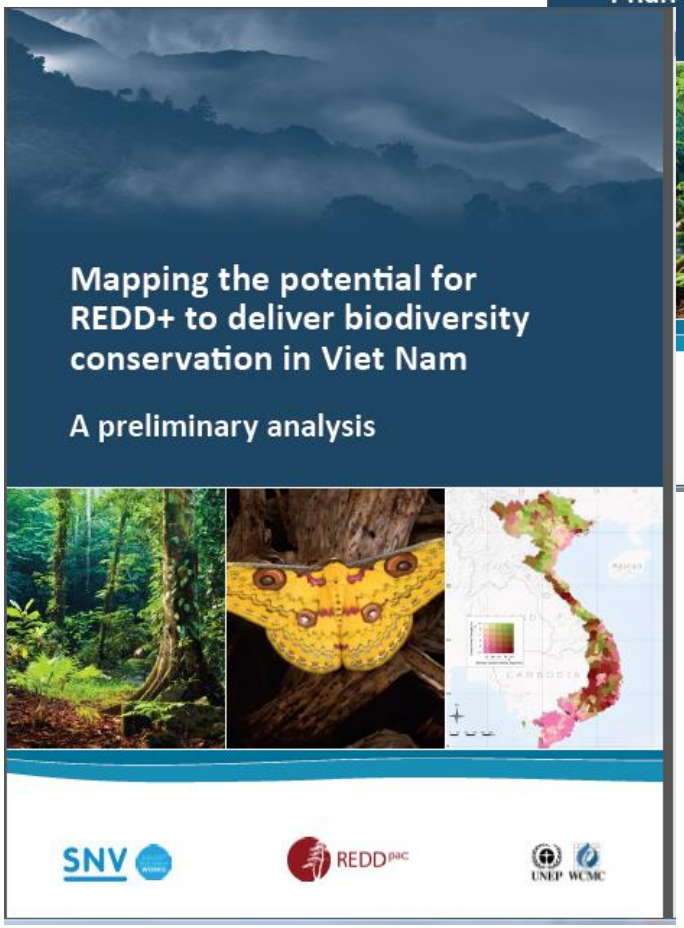
Opportunities
e.g. Slowed loss & fragmentation of habitat

Risks
e.g. Displacement of land-use change to non-forest or lower-carbon ecosystems (Cerrado, Caatinga)

Spatial analysis
- supporting multiple benefits planning

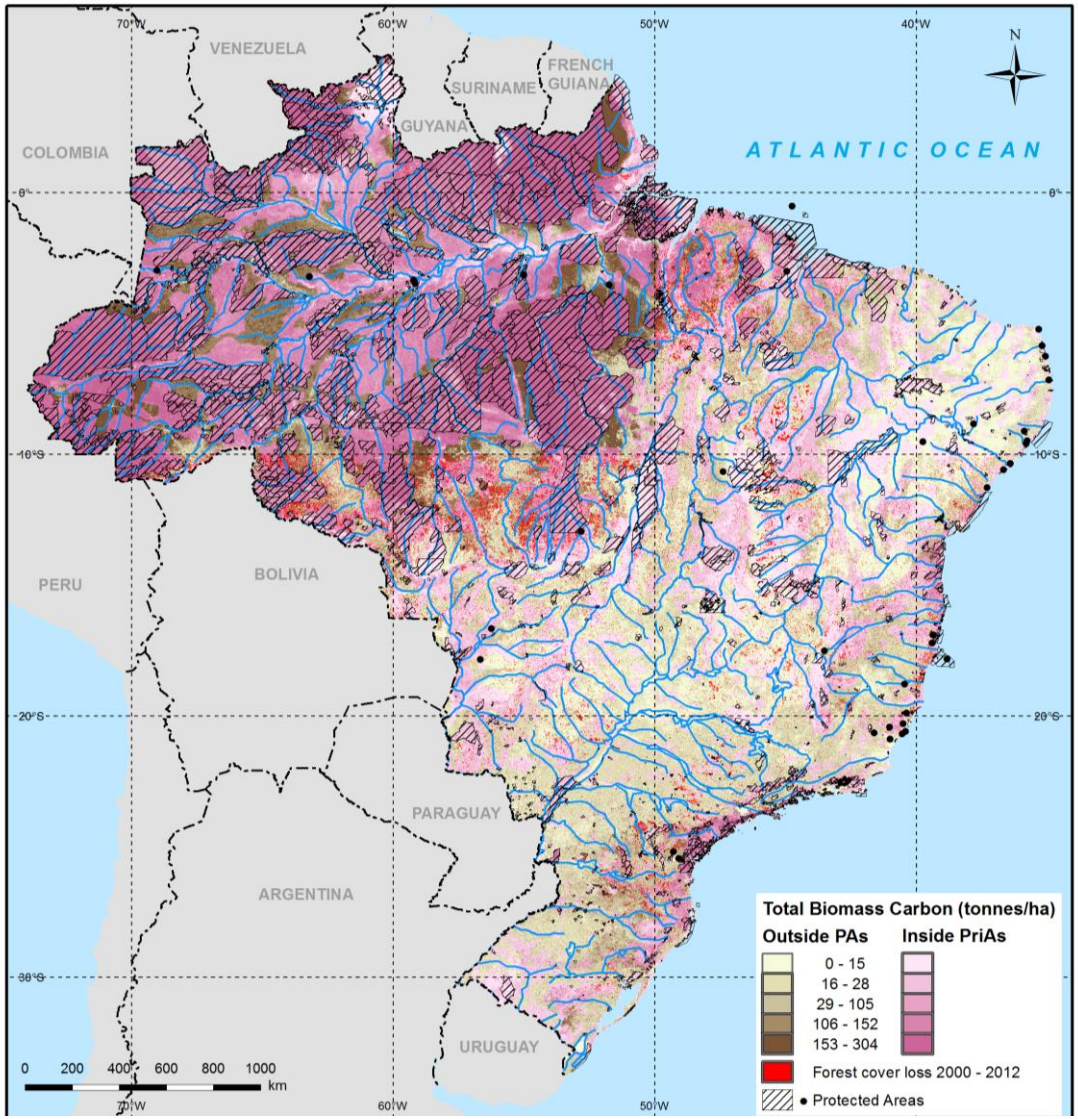
- China
- Peru
- The Philippines
- Uganda
- Viet Nam

- Congo Basin

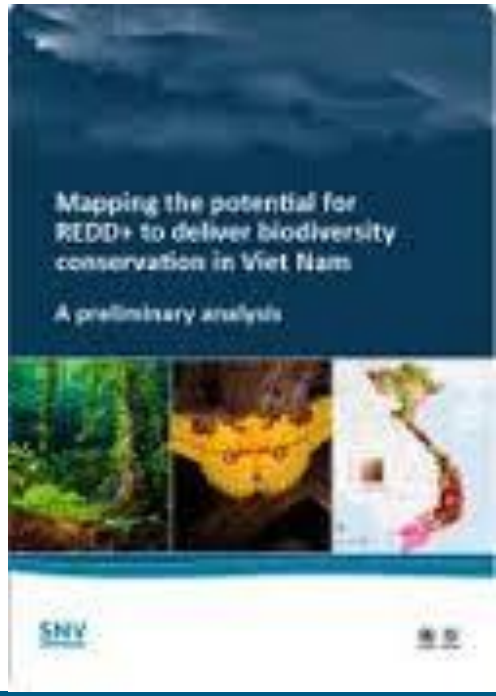


UNEP WCMC

Spatial analysis

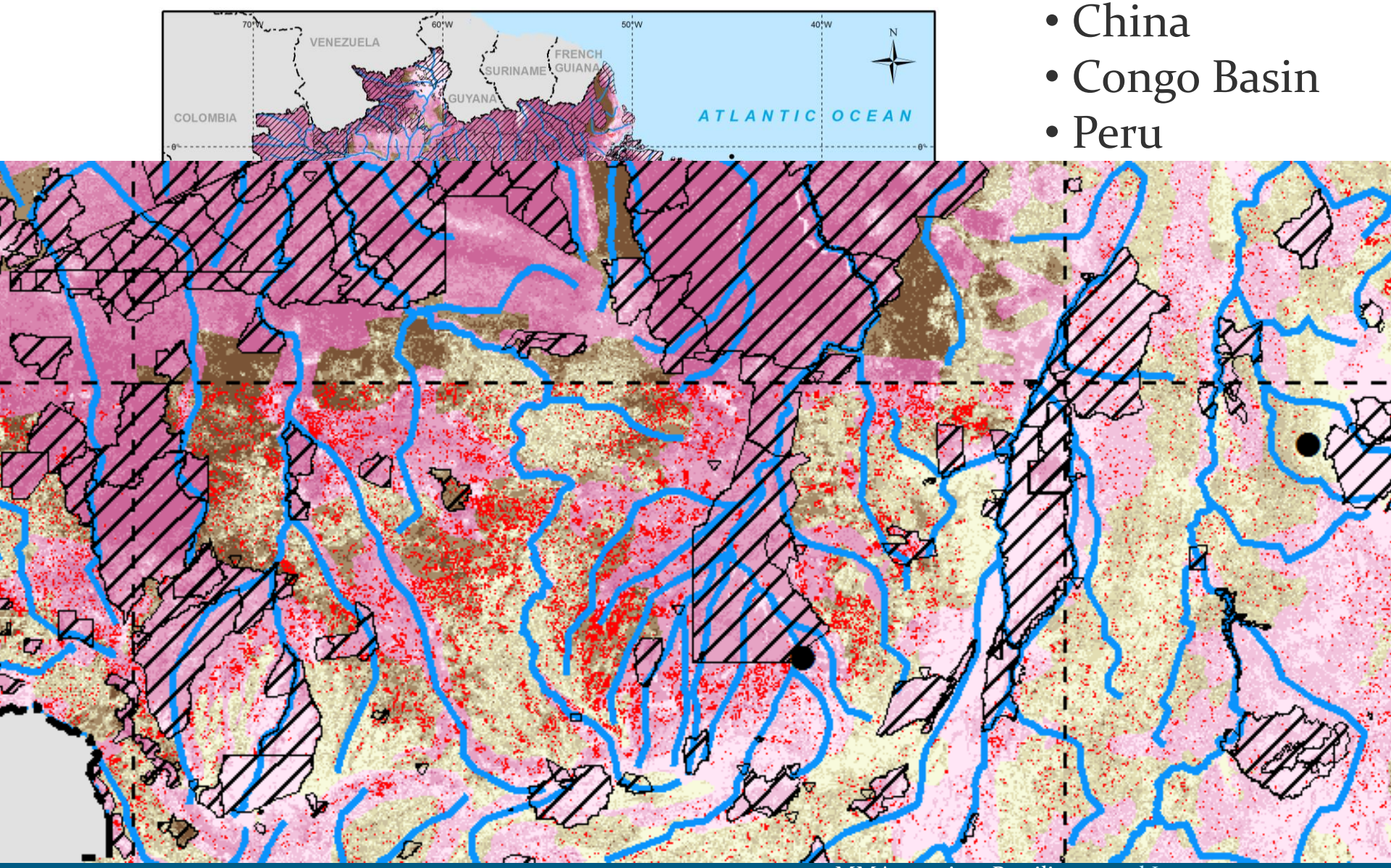


- China
- Congo Basin
- Peru
- The Philippines
- Uganda
- Viet Nam



UNEP WCMC

Spatial analysis



- China
- Congo Basin
- Peru

Linking land use models (GLOBIOM) to biodiversity impacts

Scenarios and policy options (including biodiversity 'friendly' ones)

Assumptions on future demand, technology development and land use rules

GLOBIOM

Projections of future land use under different scenarios and policy options

Biodiversity impacts

UNEP WCMC

REDD pac

Linking land use models (GLOBIOM) to biodiversity impacts

Changes in "important" areas

- areas designated as important for biodiversity
- ecosystems of concern

Changes within species ranges

- Different types of species
- All species combined

Model species responses to impacts

- *Predicts* project

UNEP WCMC

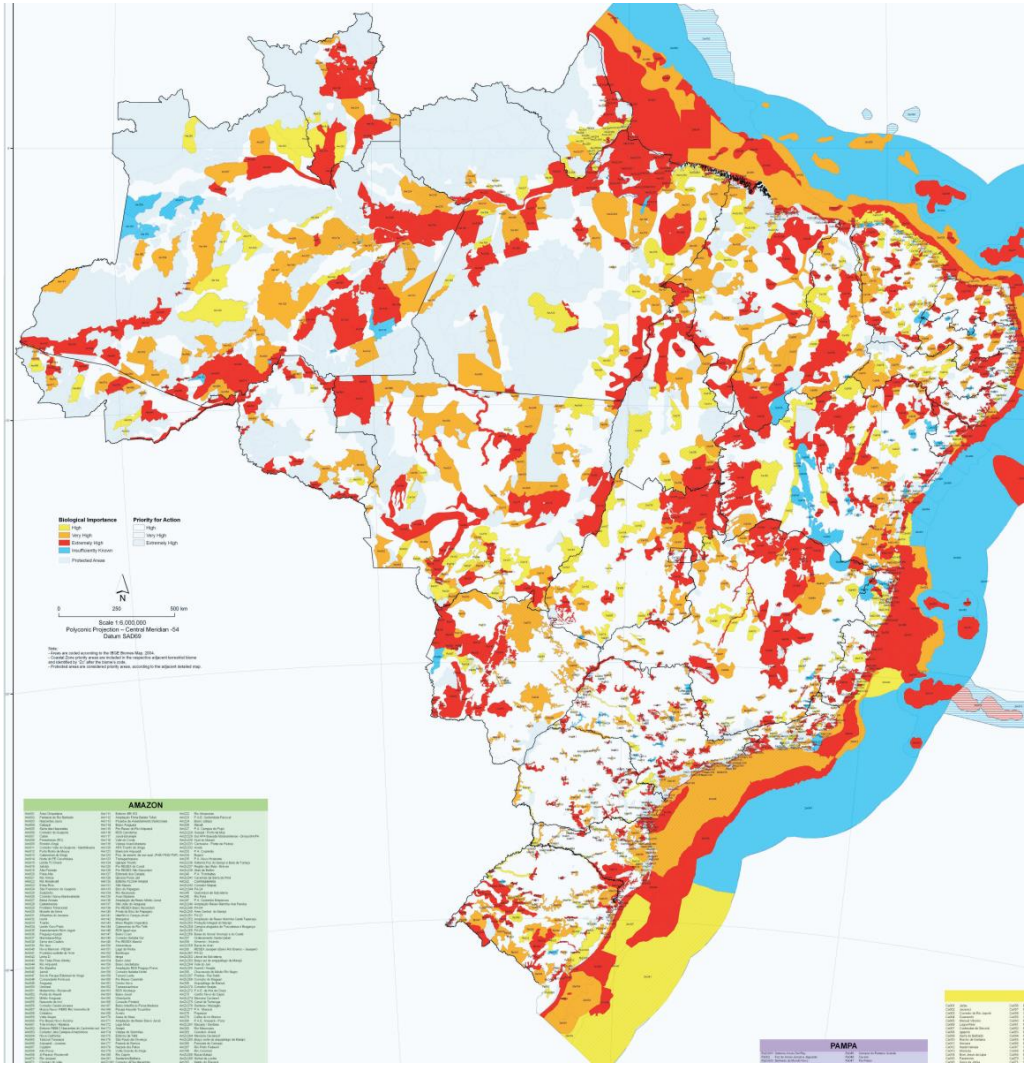
Change in biodiversity priority areas

Where are the biodiversity priority areas?

-Brazil => currently looking at areas identified by MMA in 2007

-Are these still the most relevant?

-Where countries have not identified national priorities can use KBA etc.



UNEP WCMC

Changes within species ranges:

All species
Threatened species
Legally protected species
Iconic species

What are most interesting to MMA?

UNEP WCMC

Changes within species ranges:

All species
Threatened species
Legally protected species
Specific species

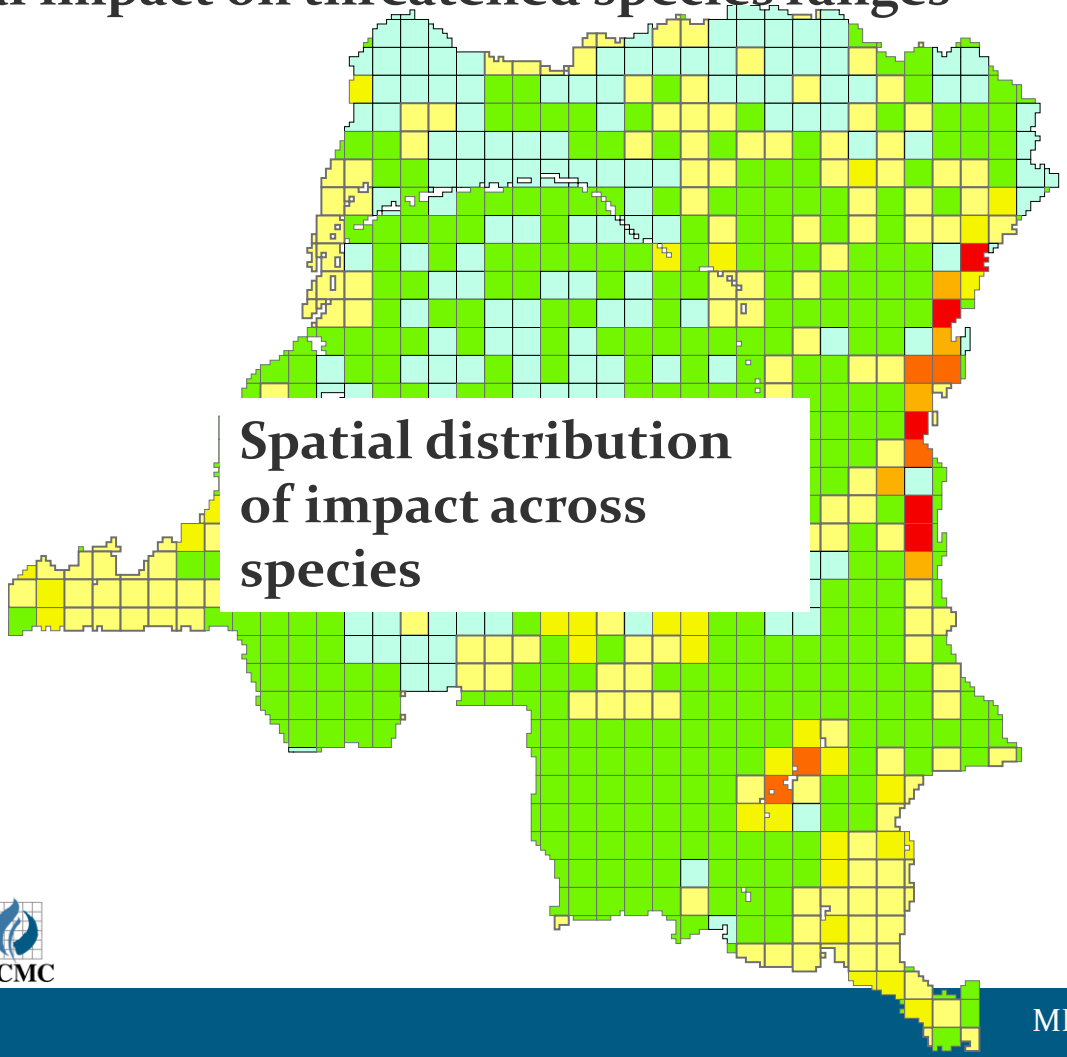
What are most interesting to MMA?

Loss any habitat
Loss high proportion of range
Extinction
Change threat category
Spatial distribution of habitat loss

UNEP WCMC

Change within species ranges e.g. preliminary results from DRC

Total impact on threatened species ranges



IUCN distribution data on mammal, bird, amphibian species (total 1637 in DRC)

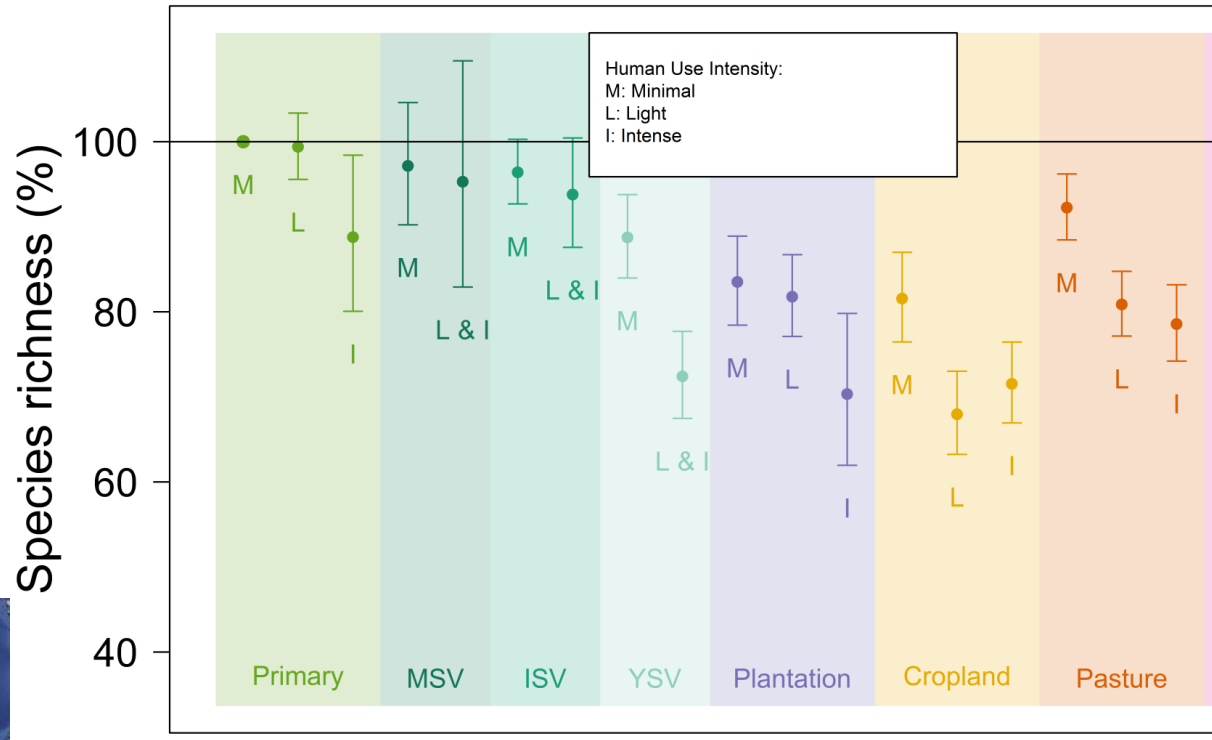
+

Species habitat preferences

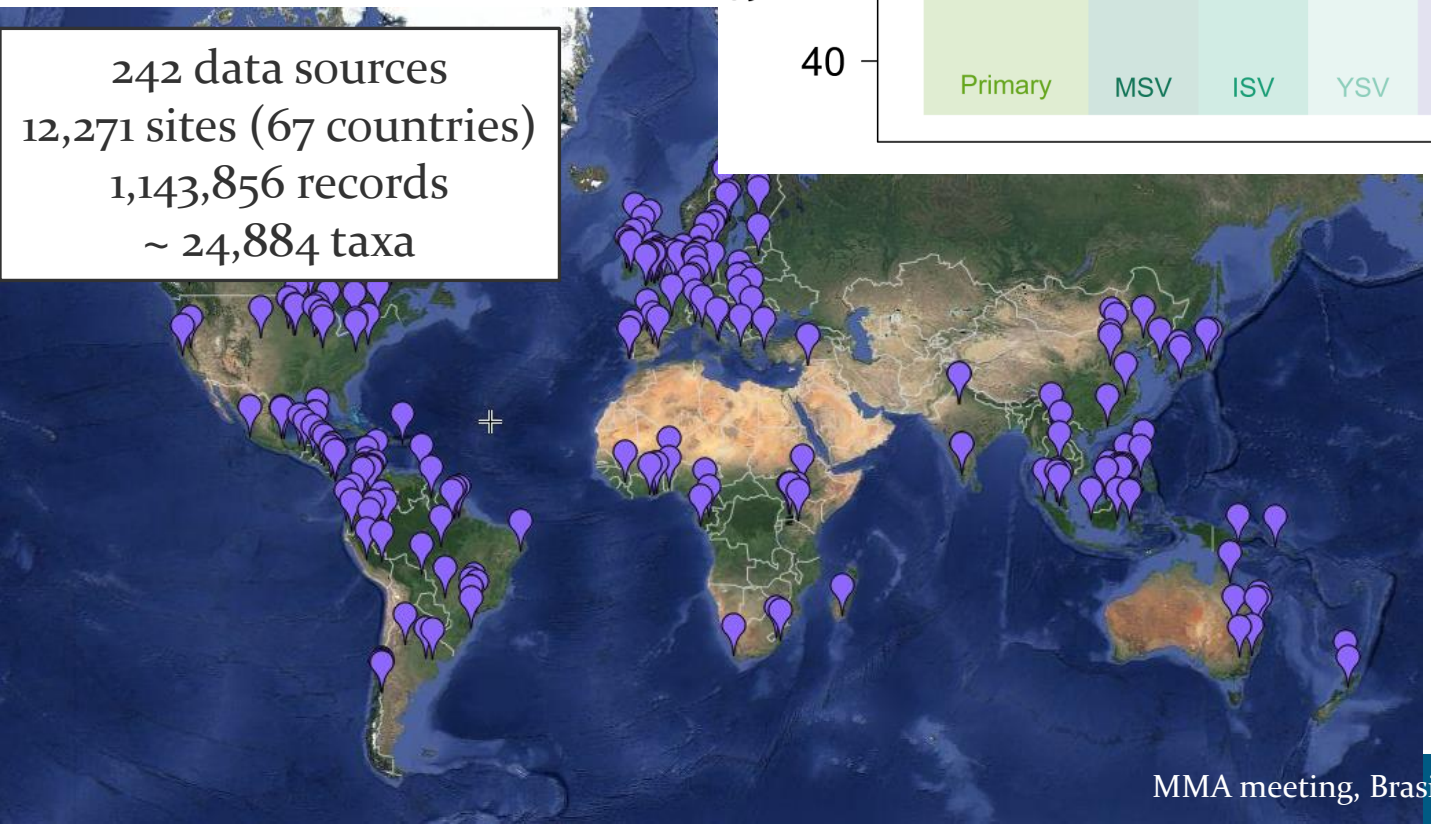
↓

Change in suitable habitat within extent of occurrence of each species

Predicts



242 data sources
12,271 sites (67 countries)
1,143,856 records
~ 24,884 taxa



REDD pac

Thank you for listening,

Any Questions?

Rebecca.mant@unep-wcmc.org

Supported by:

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

based on a decision of the German Bundestag

UNEP WCMC

Key issues for developing the biodiversity assessment

UNEP WCMC

Key issues

- Protected areas

- Land use and land use change
  - What is a forest?
  - What is 'non-productive land'?

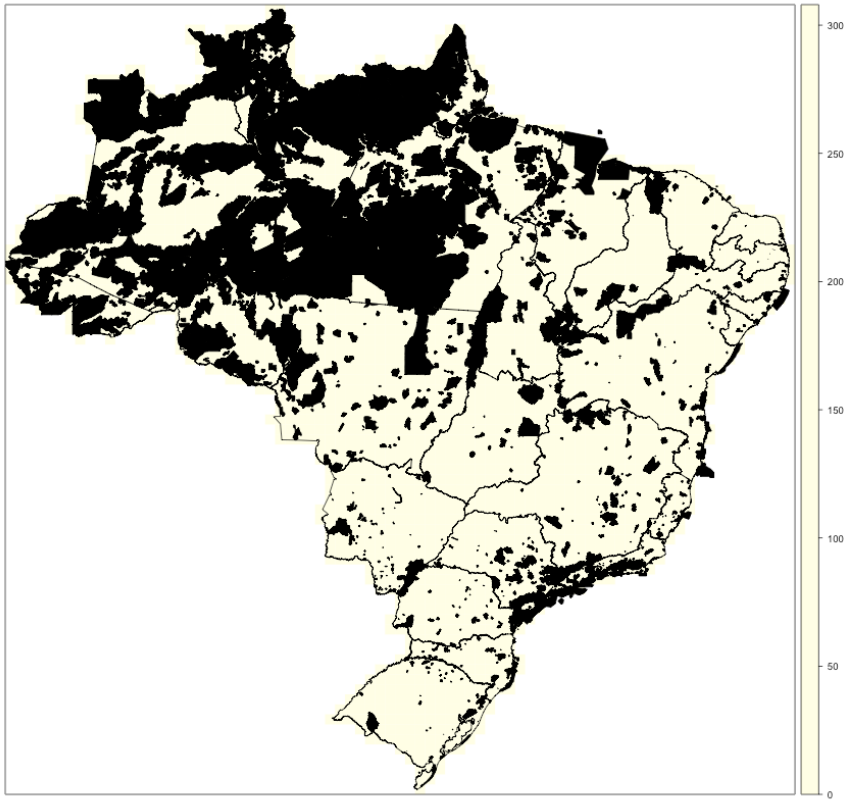
- What happens when agricultural land is abandoned?

UNEP WCMC

Protected areas within the model

Important for stopping the deforestation in Brazil.

Several different types - currently included in GLOBIOM are Conservation Units, Indigenous reserves and Public Forests.



Biome	Protected area coverage * (% of biome)
Amazonia	47%
Caatinga	8%
Cerrado	12%
Mata Atlantica	8%
Pantanal	4%
Pampa	3%

* including public forests, indigenous land and conservation units.

Protected areas within the model

Currently no land use change permitted within them.

Is this realistic?

Possible assessments using the model:

1) Explore impact on land use projections of varying levels of enforcement of protected areas. Would this be of interest to MMA?

2) Include increase in protected areas specified in the national biodiversity targets. Are there already plans for the locations and timing of new protected areas?

UNEP WCMC

Land use and land use change

- Number of categories is limited due to nature of the model

  - Cropland,
  - Pasture,
  - Planted Forests (short rotation)
  - Managed Forest,
  - ‘Pristine’ forest,
  - ‘Non-productive’ land

UNEP WCMC

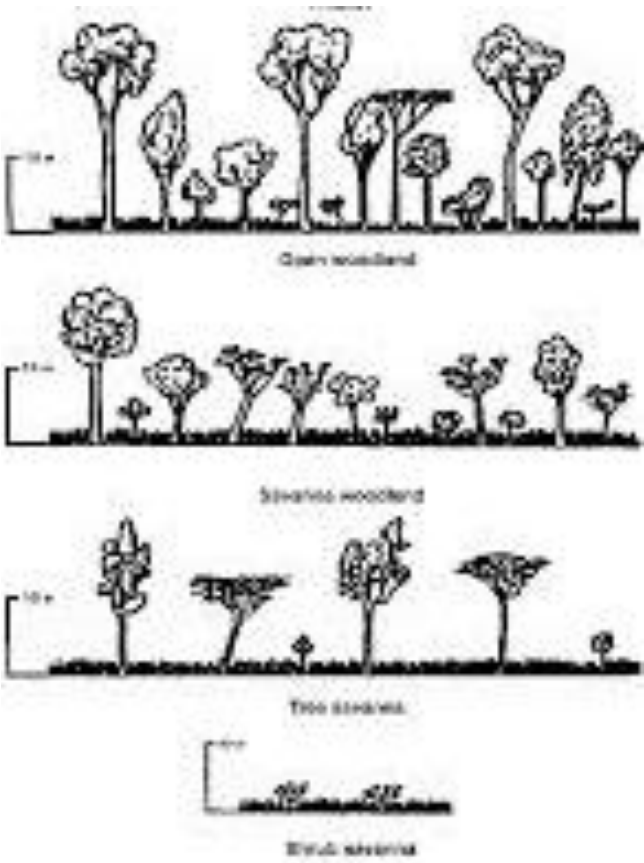
Land use and land use change - What is forest!

- Continuum from dense forest to grasslands, especially within Cerrado and Caatinga

- What categories within the IBGE/MMA vegetation maps are considered as 'forest cover'?
- Is "woody savannah" considered as forest for UNFCCC land use change reporting? (they are in FAO FRA)

- Brazilian national definition?

Minimum area (1 ha), canopy cover (more than 30%), minimum tree height requirement (5m)?



UNEP WCMC

Land use and land use change - What is 'non-productive' land?

- "Non-productive land" => land not under productive use and not forest. Can include abandoned and unused previous agricultural land, secondary vegetation and natural grasslands.

- Very difficult to distinguish pristine natural grass/shrub-lands and secondary vegetation from satellite images.

- Does MMA have a map to help distinguish them?

UNEP WCMC

Land use and land use change

Can only assess impacts of conversions included in the model.

		Land use in second time period						
		'Pristine' forest*	Managed forest	Cropland	Pasture	Planted forest	Non-productive land	Recovering forest
Land Use in first time period	'Pristine' Forest*	-	Y	Y	Y	Y	N	N
	Managed forest	N	-	N	N	N	N	N
	Cropland	N	N	-	Not yet	Y	Y	Y
	Pasture	N	N	Y	-	Y	Y	Y
	Planted forest	N	N	Not yet	Not yet	-	Y	Not yet
	Non-productive land	N	N	Y	Y	Y	-	Y
	Recovering forest	N	N	N	N	N	N	-

Land use and land use change

- Converting secondary vegetation will impact biodiversity but to a far lesser extent than conversion of primary vegetation?

- Addressing this is difficult because input data uneven in distinguishing between "habitat" and "not habitat" within unproductive land – forest easier than grassland

- Therefore are more confident that projected deforestation is loss of biodiversity "habitat" than projected decrease in "non-productive land"

UNEP WCMC

Land use and land use change - forests definition

Inclusive forest definition captures impacts in cerrado and Caatinga as well as Amazonia

Need one definition across model but can report projections separately for different biomes.

- What does MMA count as deforestation?

UNEP WCMC

Land use and land use change - non-productive land

If all “non-productive land” = “habitat” is likely to overestimate biodiversity impact

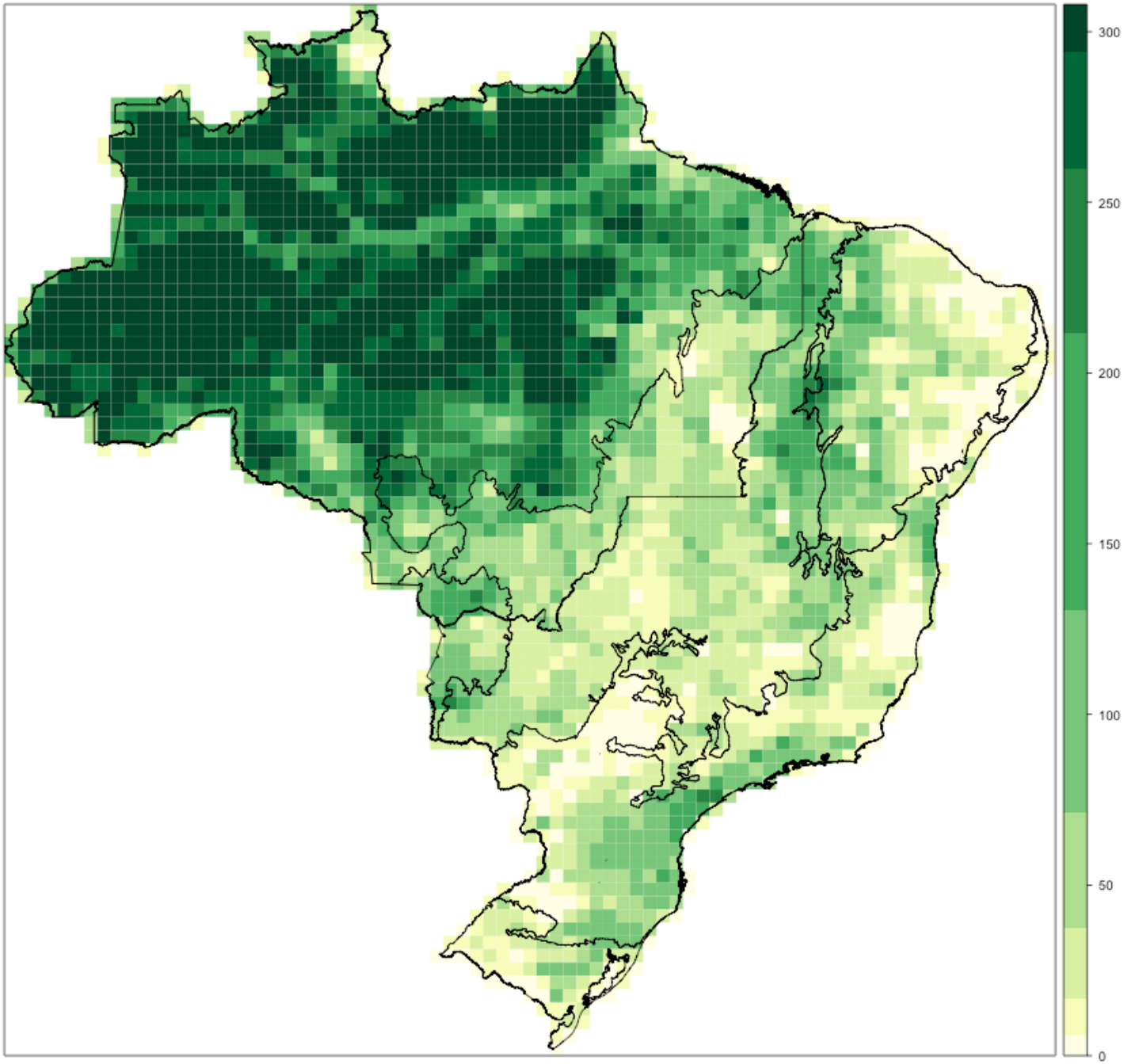
• If all ‘non-productive land’ = ‘not habitat’ is likely to underestimate biodiversity impact.

•What is most relevant to MMA?

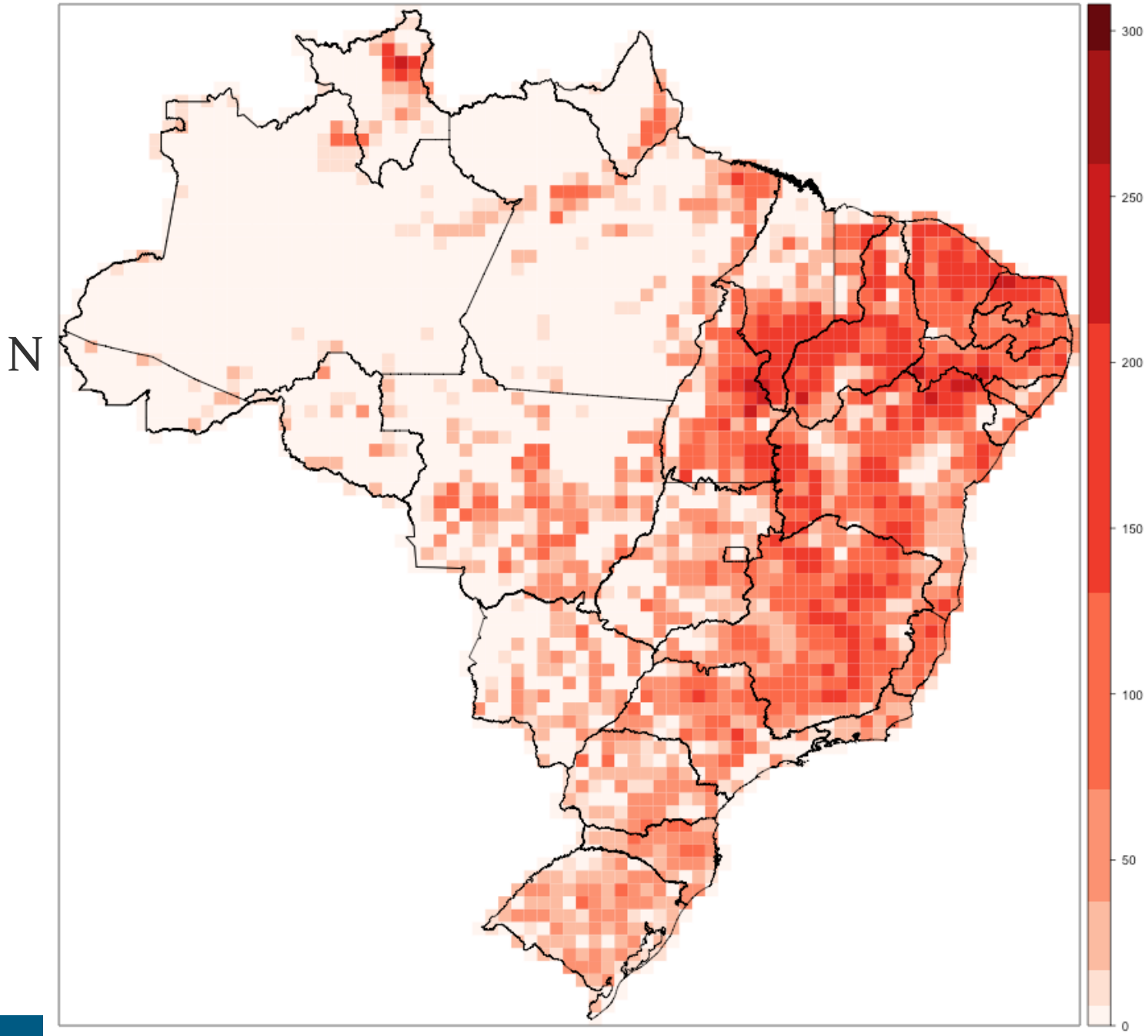
UNEP WCMC

L

-



UNEP WCMC



UNEP WCMC

Land use and land use change - and impacts on species

- Assessing impact of LUC on grassland species -> need to link land use within model and species requirements.

- Current plan – simple assessment of change (increase or decrease) in land under productive use within species ranges.

UNEP WCMC

What happens when agricultural land is abandoned?

- Restoration is an important part of forest code

- But level of natural regeneration depends on previous land history and proximity to remaining fragments, etc.

- In different biomes what proportion of restoration is likely to be through natural regeneration, active restoration and/or commercial plantations?

- The current assumption within the model is that abandoned farmland does not fully restore to forest within 30 years (the timeframe of the modelling in REDD-PAC), how wrong can this be?

UNEP WCMC

Key questions for scenario and policy option development

UNEP WCMC

Initial scenarios within REDD-PAC

		Legal Amazon	Cerrado	Other Biomes
Scenario 1- Only PPCDAM effective	Enforcement of Legal Reserves	Yes	No	No
	Forest Restoration on illegally deforested area	Yes	No	No
Scenario 2- Enforcement at 2000 level (value of effective PPCDAM)	Enforcement of Legal Reserves	No	No	No
	Forest Restoration on illegally deforested area	No	No	No
Scenario 3- PPCDAm and PPCerrado are effective	Enforcement of Legal Reserves	Yes	Yes	No
	Forest Restoration on illegally deforested area	Yes	Yes	No

UNEP WCMC

- Is PPCerrado likely to have the same level of impact as PPCDAm?

Other policy options?

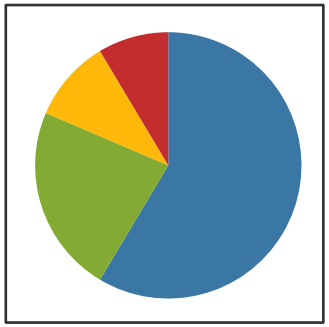
- What is the likely scale of future PSA schemes in Brazil?
- How are the locations for current PSA schemes identified? Is there a chance that these payments being extended to other biomes?
- Are there other key policies which you think will impact on forest cover and biodiversity?
- Using biodiversity priorities as one basis for directing investment in REDD+ implementation?
- Higher penalties for conversion of biodiversity priority areas?

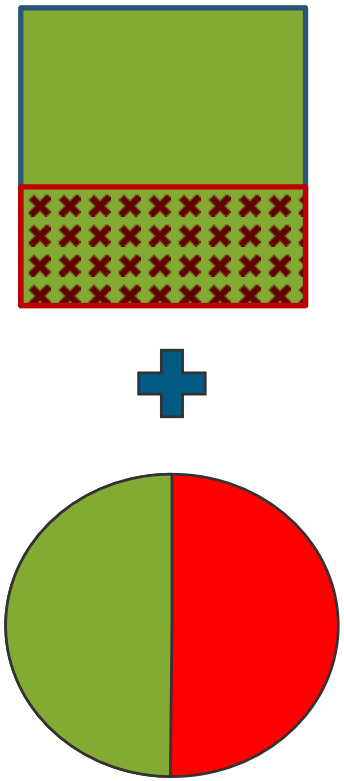
UNEP WCMC

Technical issues

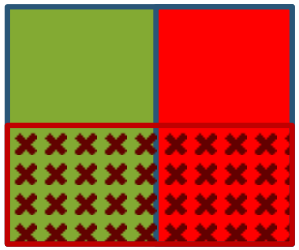
UNEP WCMC

Allocating modelled land use change

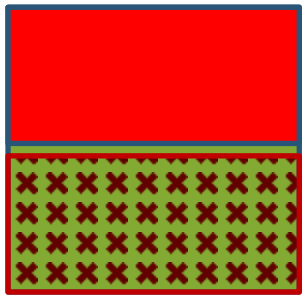
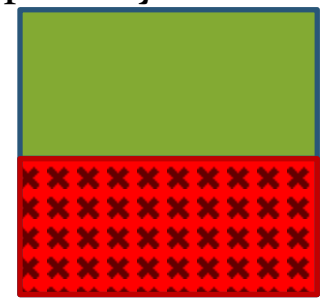




Even distribution



LUC outside priority area first – Min LUC



LUC inside priority area first -Max. LUC