PBL Netherlands Environmental Assessment Agency

New ecosystem and biodiversity information from existing environmental data

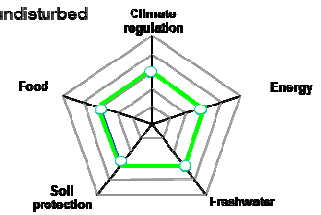
By Tonnie Tekelenburg

Global Implementation Programme for the SEEA; UNHQ, New York, June 19th 2013

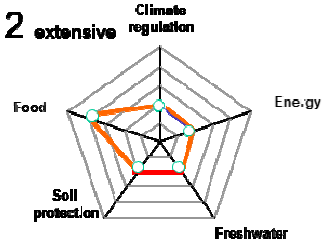
3. Current state of affairs

Function change & degradation

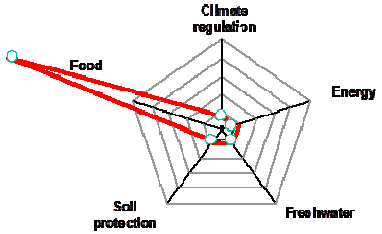
1 undisturbed



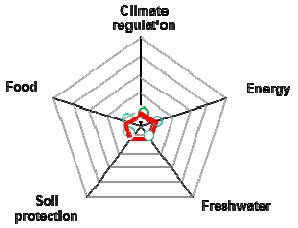
2 extensive



3 intensive



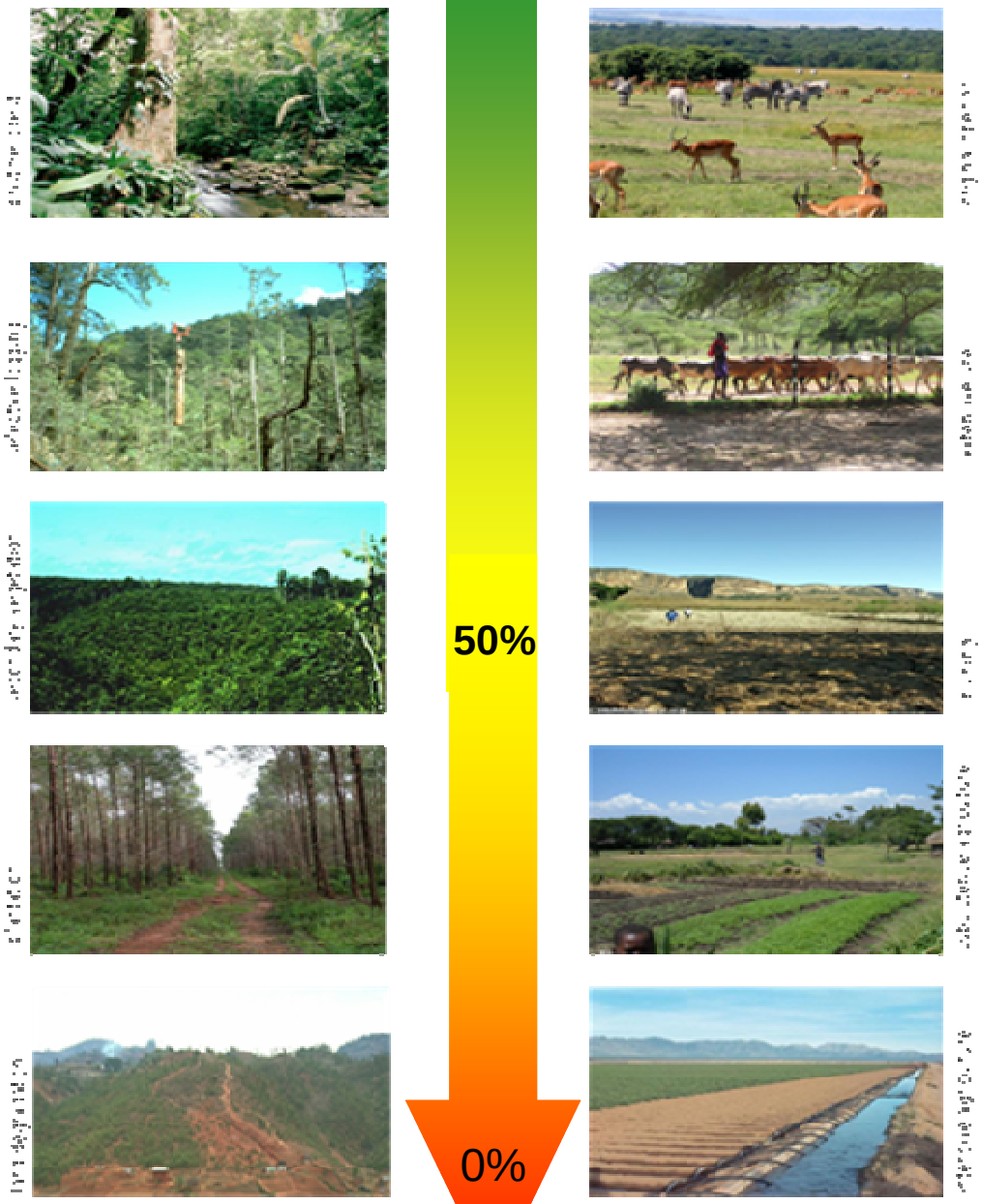
4 degraded



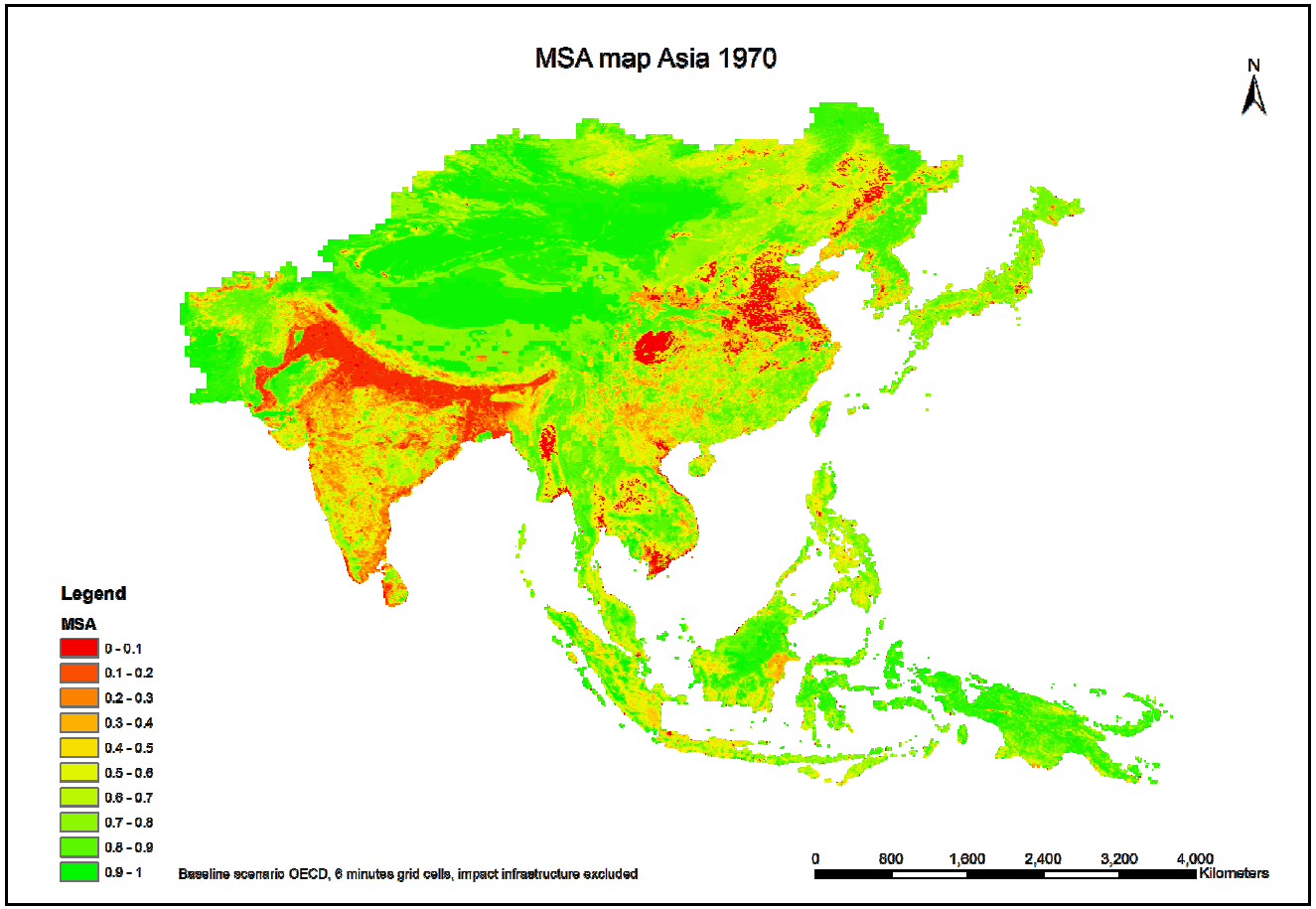
Forest

100%

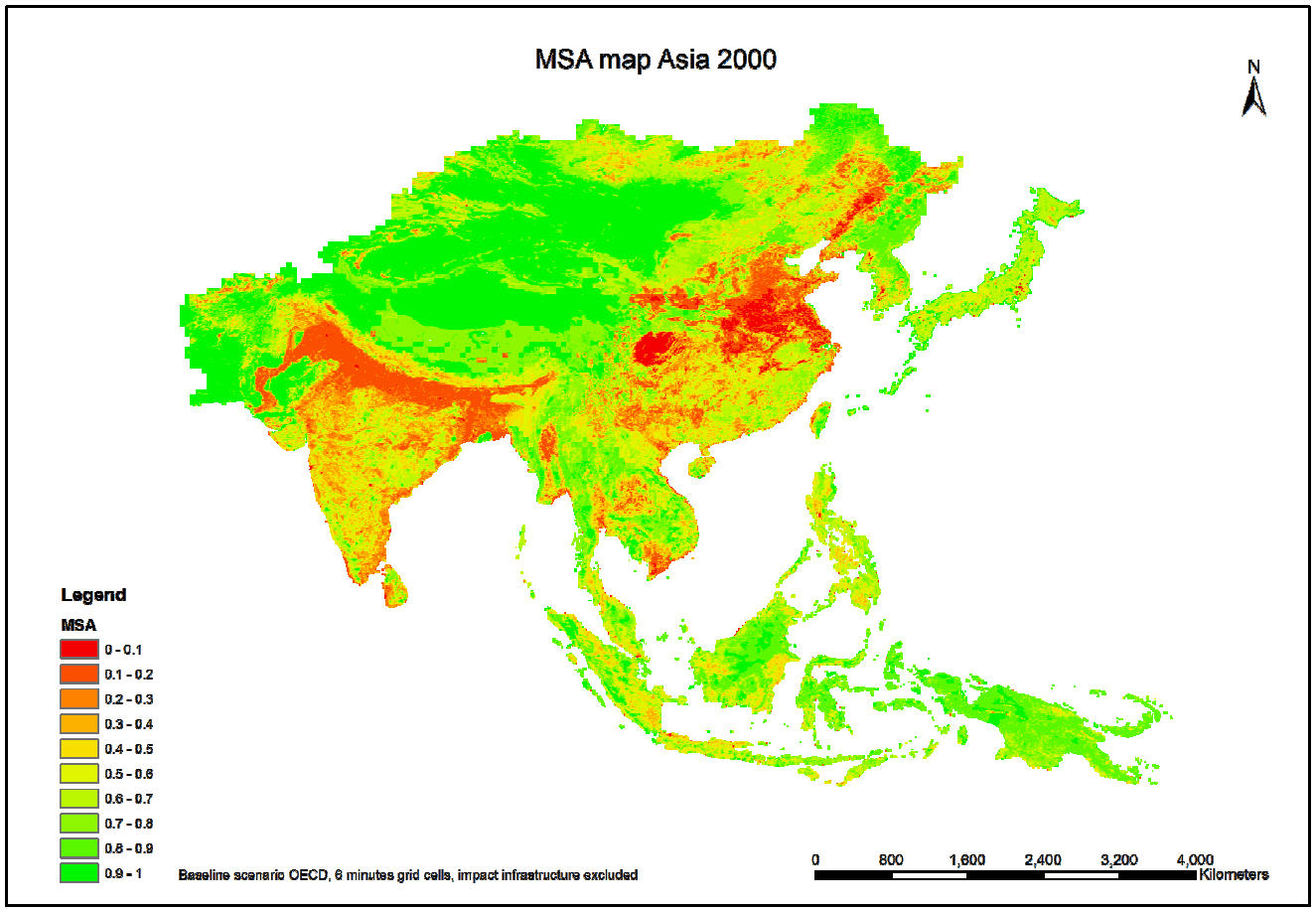
Grassland



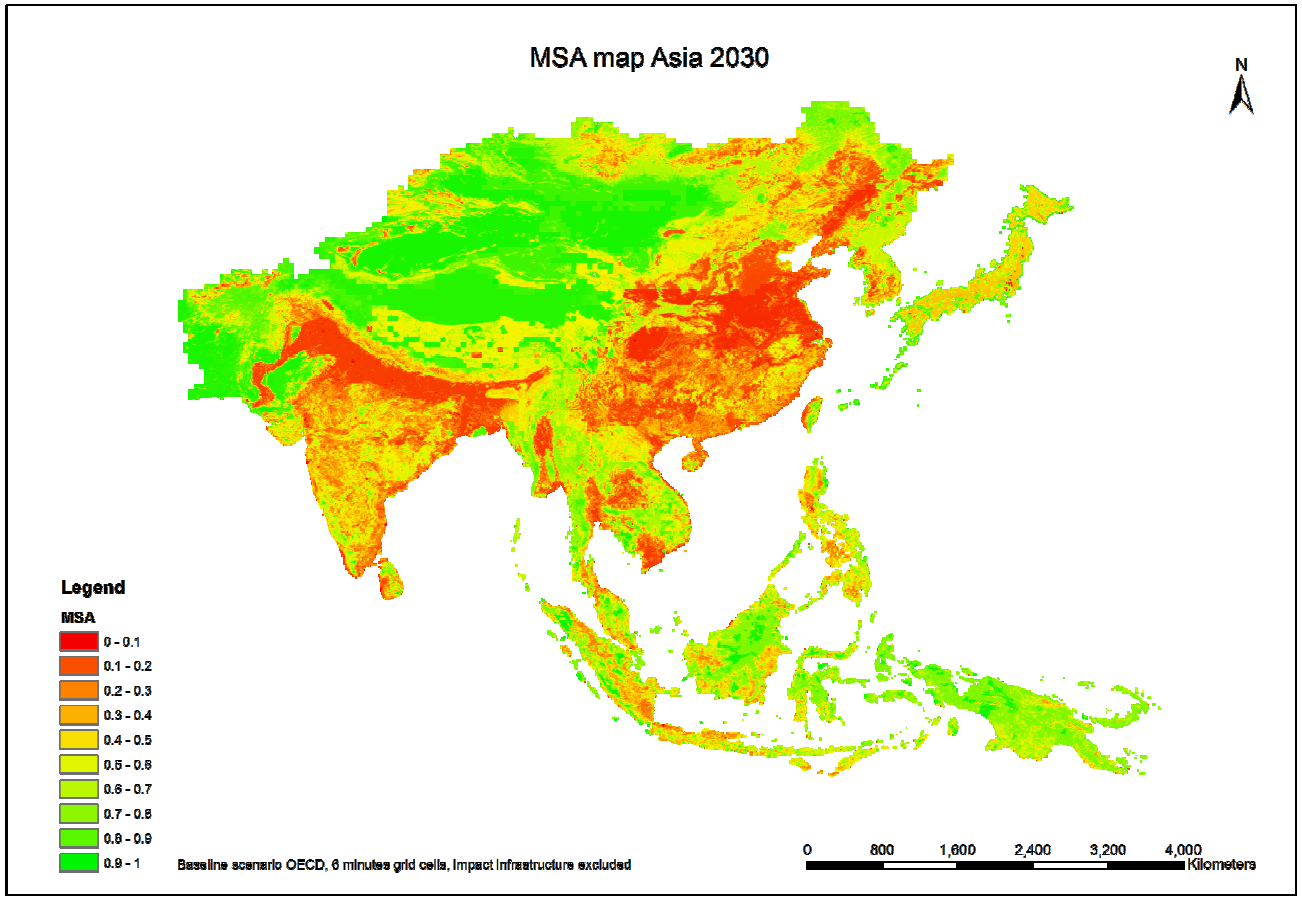
Baseline scenario 1970



Baseline scenario 2000



Baseline scenario 2030



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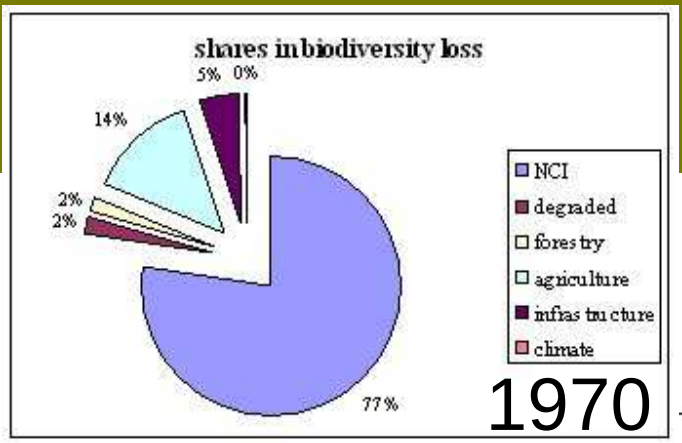
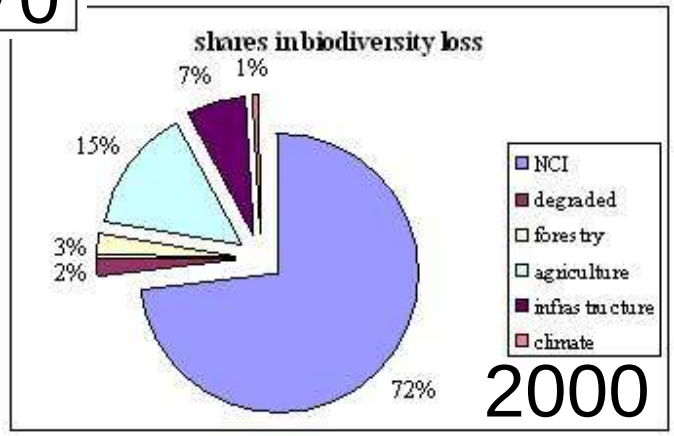
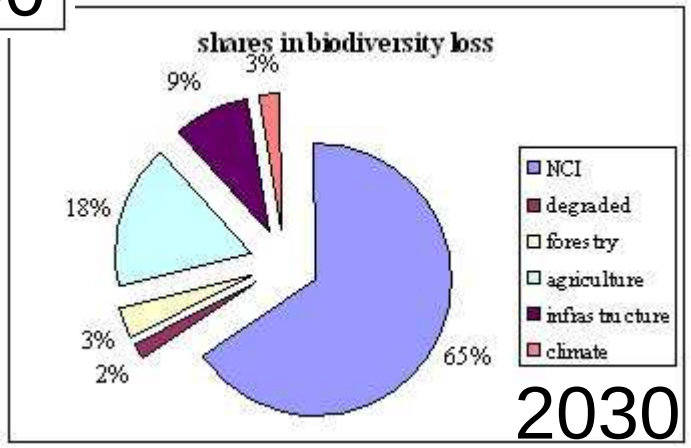
Increasing rate of biodiversity loss in 30 years periods

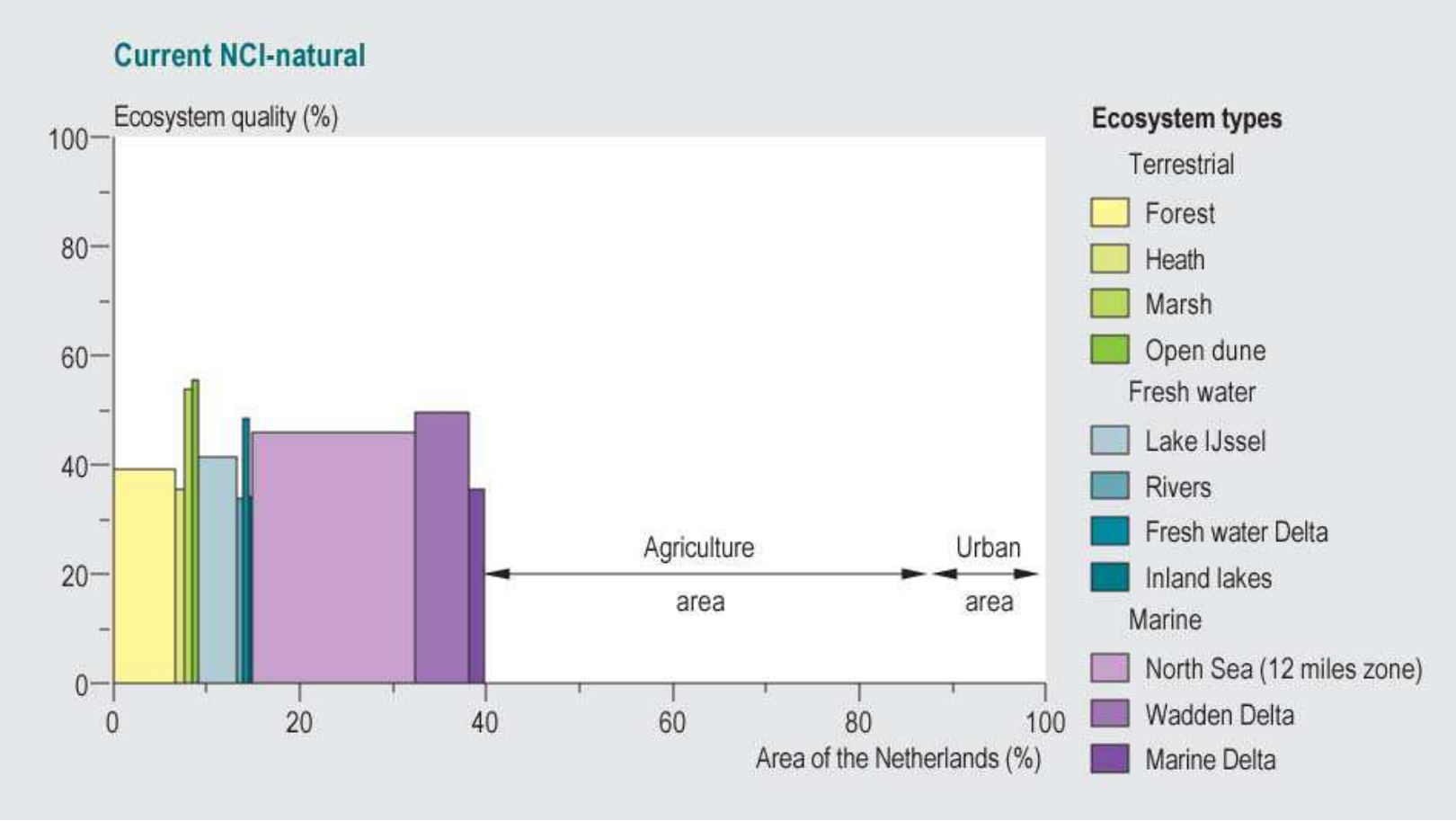




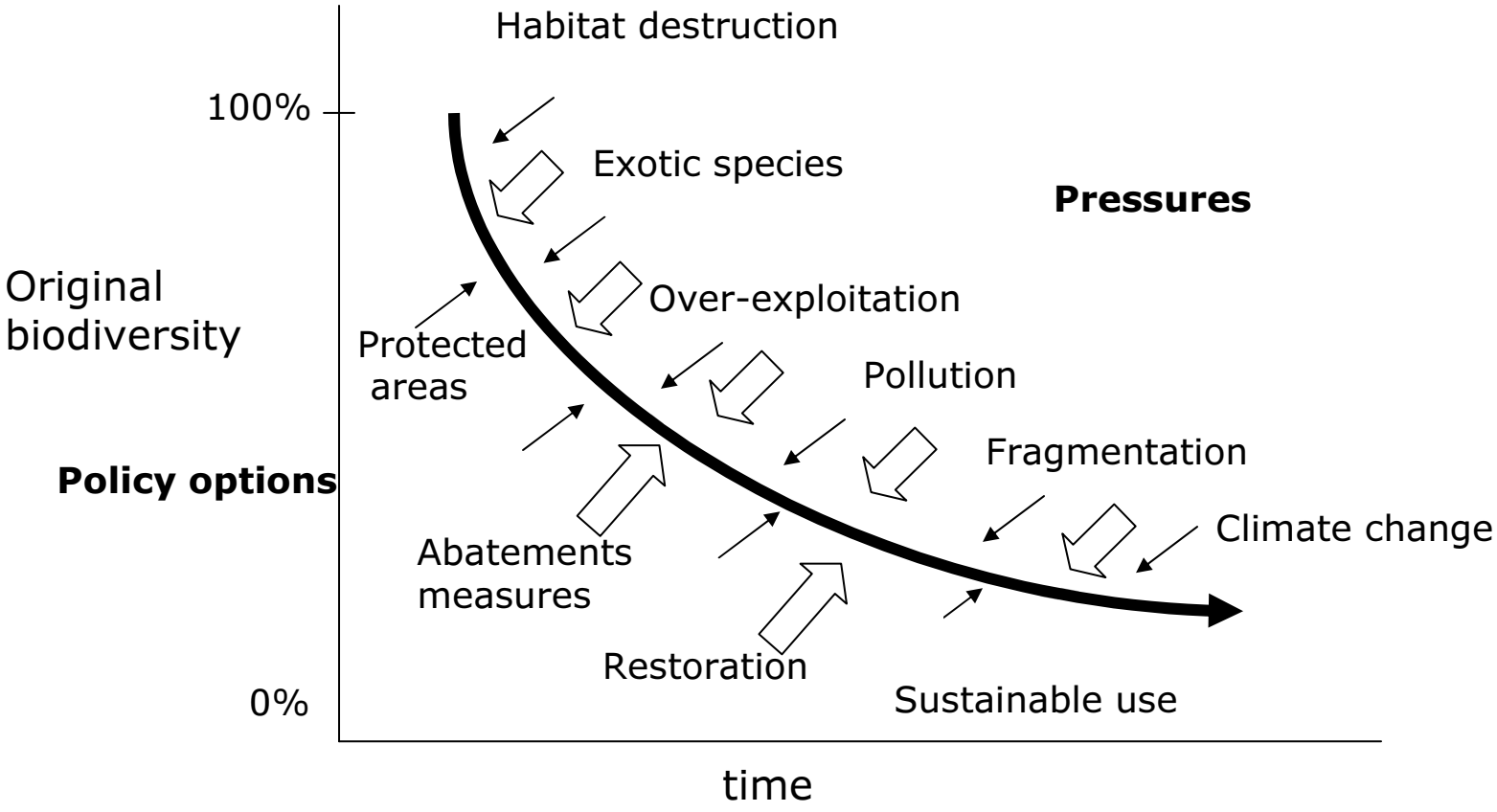


NCI:
Global: 77 -> 72 -> 65%
South-East Asia
70 -> 60 -> 40%

Natural Capital Index (species monitoring based)

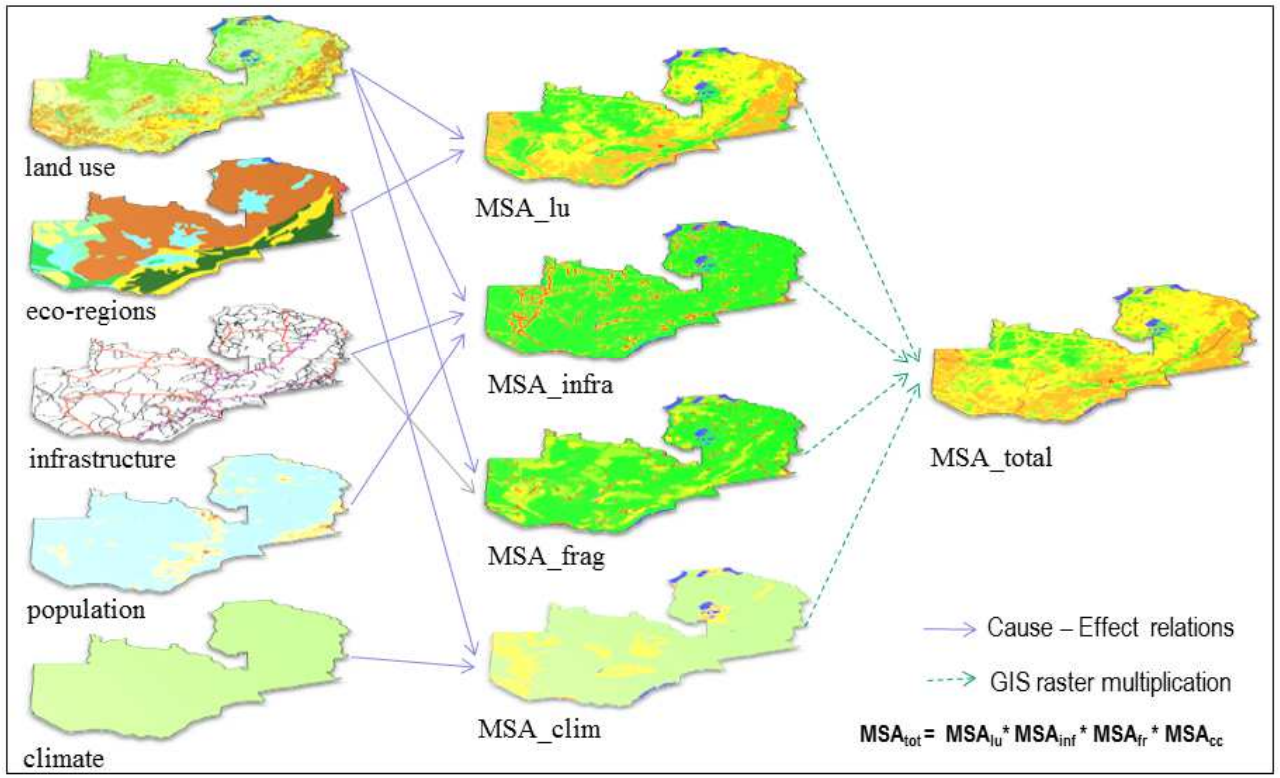


Pressures and policy options



How to calculate the biodiversity status?

Example GIS part calculation current biodiversity Zambia



Input layers
(drivers / pressures)

Intermediate output
Pressure impact

Output
Overall impact pressures

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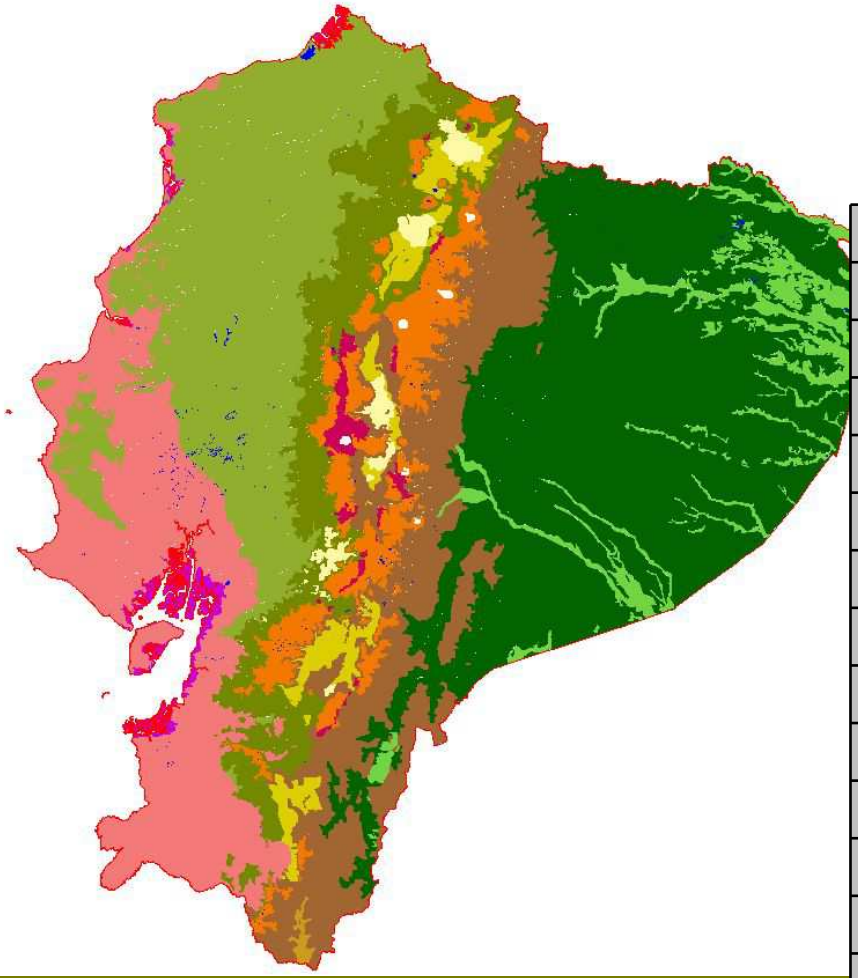
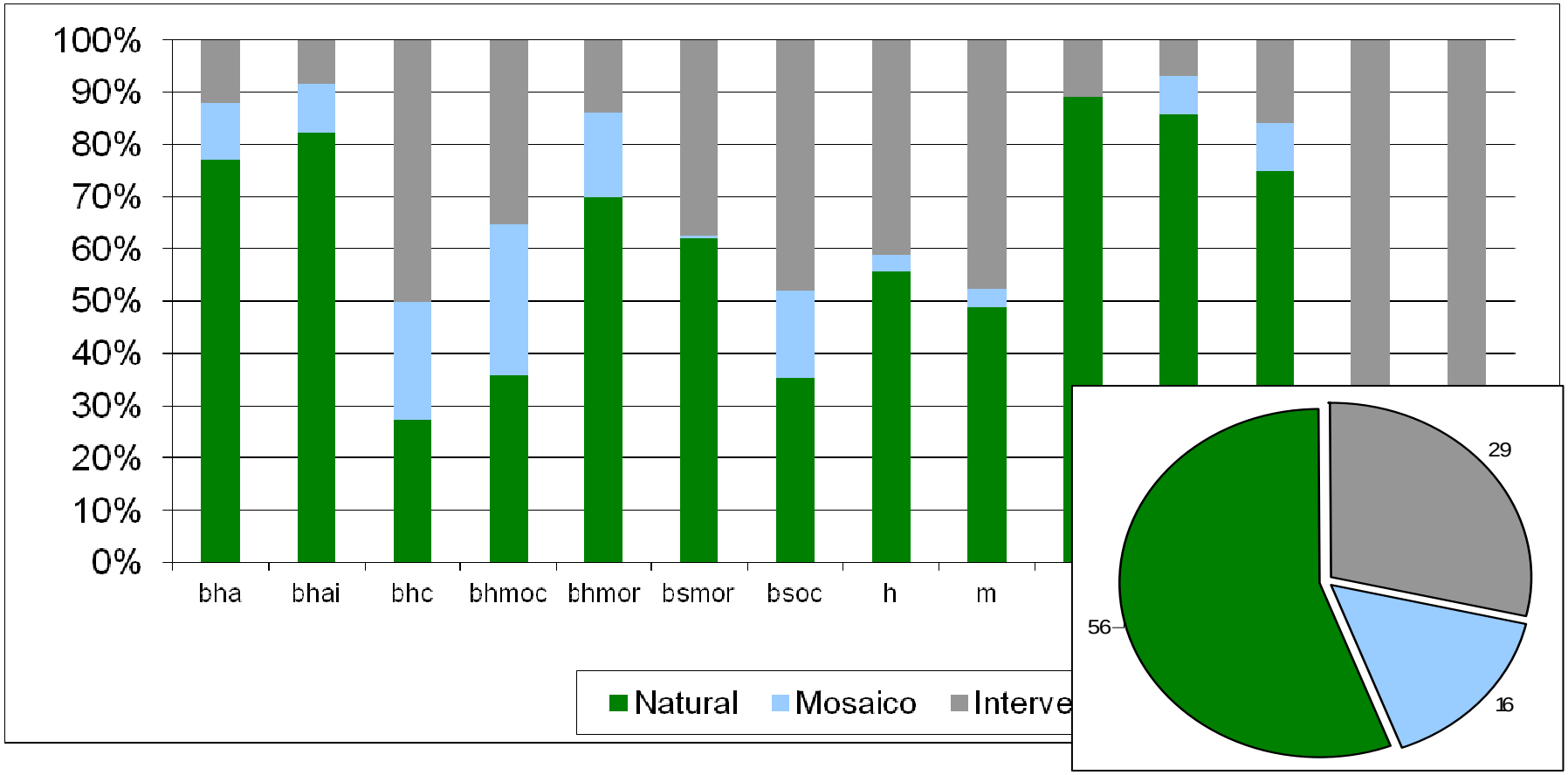
Potential ecosystems

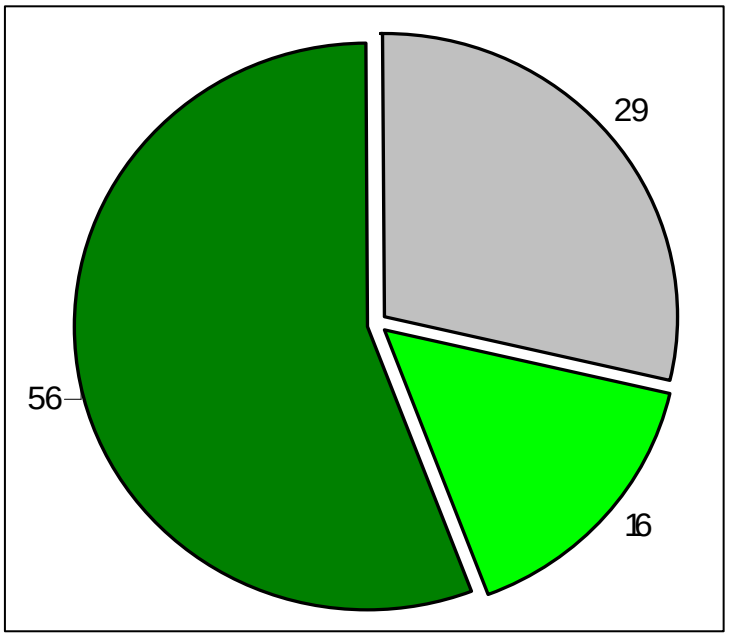


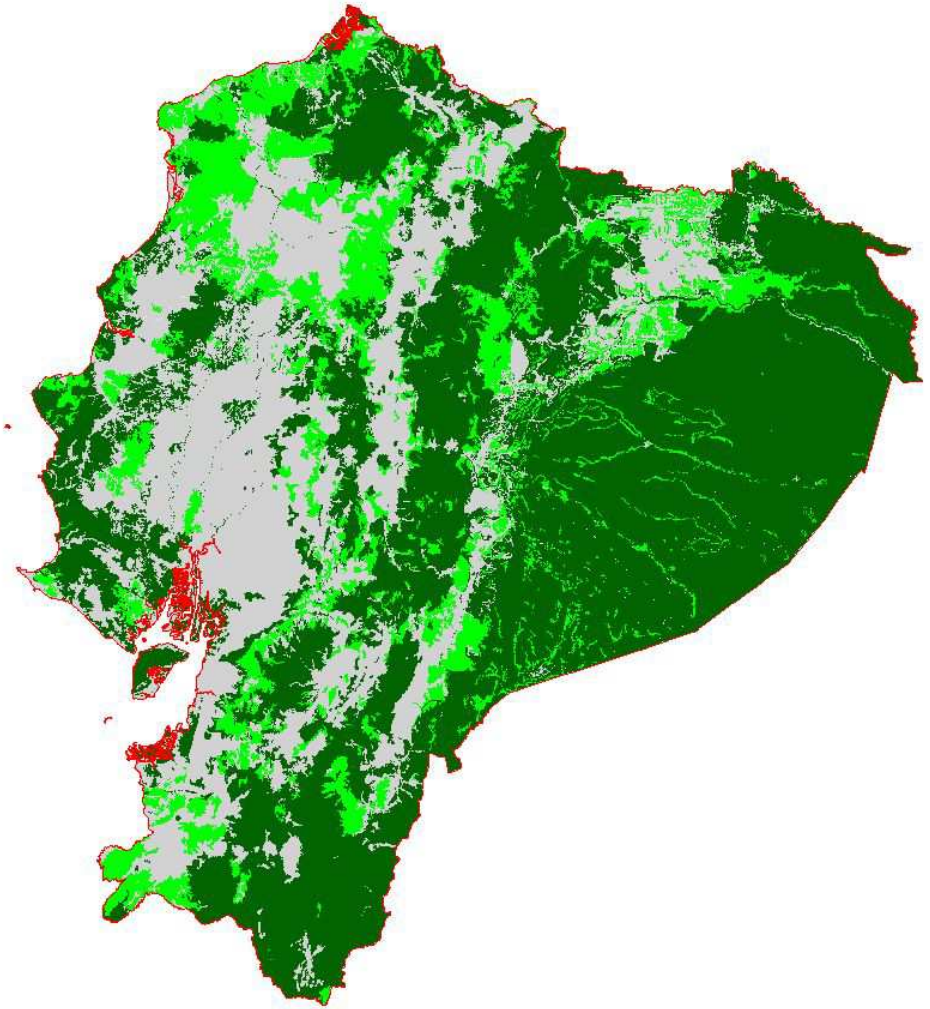
Siglas	Ecosistema	Km2	% Nac
bha	Bosque húmedo amazónico	74919,87	30,12
bhai	Bosque húmedo amazónico inundable	11913,33	4,79
bhc	Bosque húmedo de la costa	47405,15	19,06
bhmoc	Bosque húmedo montano occidental	21201,09	8,52
bhmor	Bosque húmedo montano oriental	31827,93	12,79
bsmor	Bosque seco montano oriental	368,97	0,15
bsoc	Bosque seco occidental	33863,97	13,61
h	Humedal	448,03	0,18
m	Manglar	2819,91	1,13
n	Nieve	212,05	0,09
ph	Páramo húmedo	13680,72	5,50
ps	Páramo seco	1804,4	0,73
vhi	Vegetación húmeda interandina	5943,22	2,39
vsi	Vegetación seca interandina	2369,56	0,95

Remnants of natural ecosystems

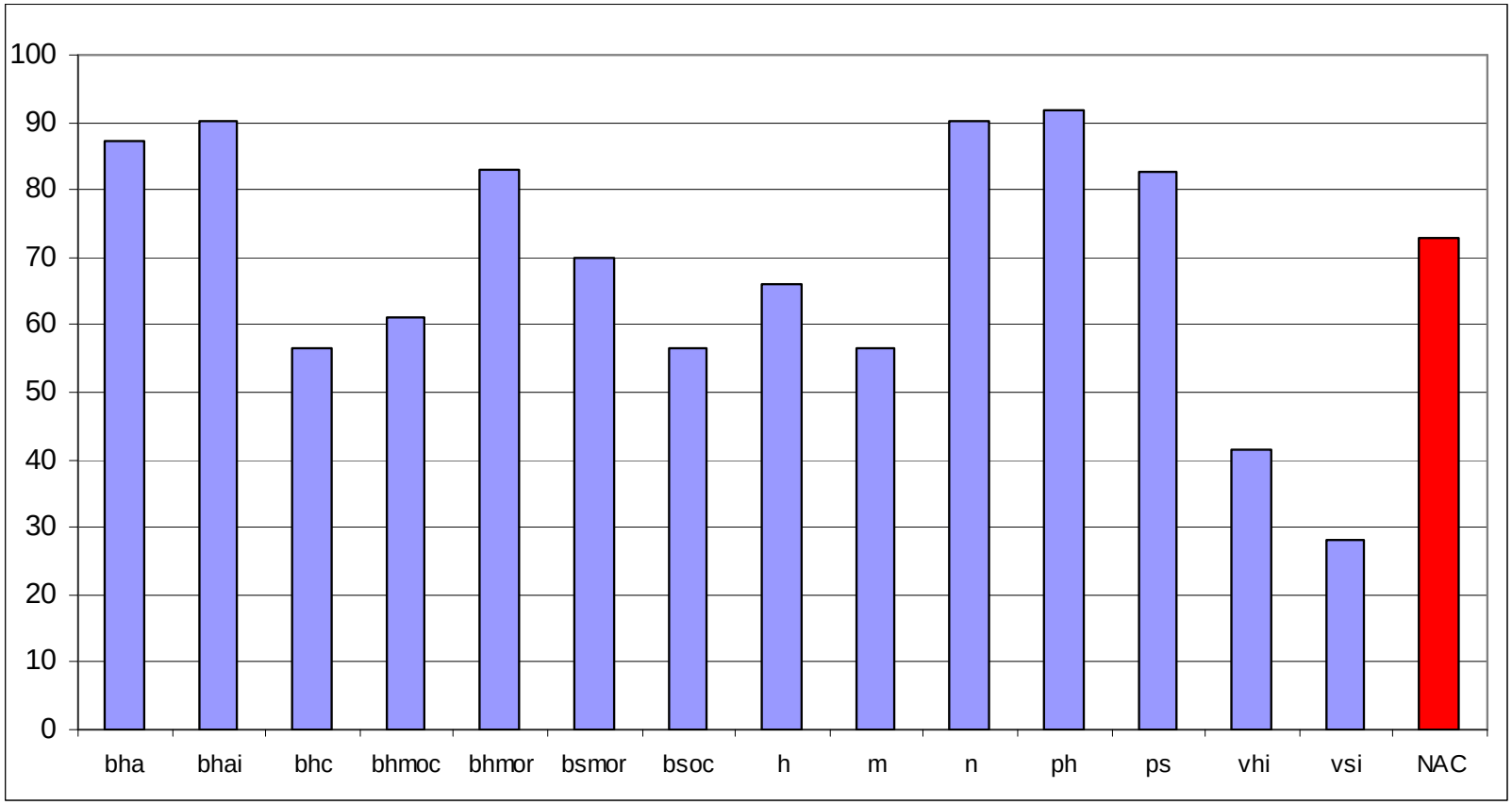


Distribution of nature, mosaics and intervention areas

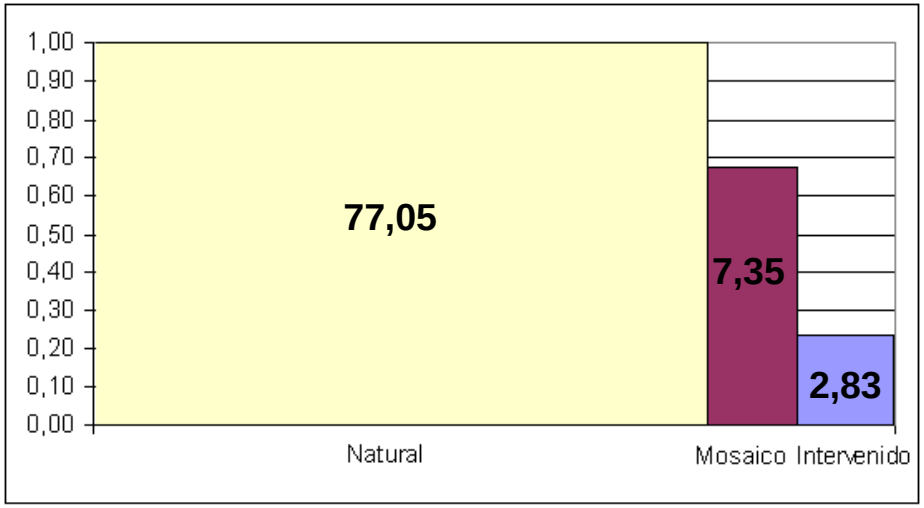




Average naturalness/intactness of ecosystems (MSA)



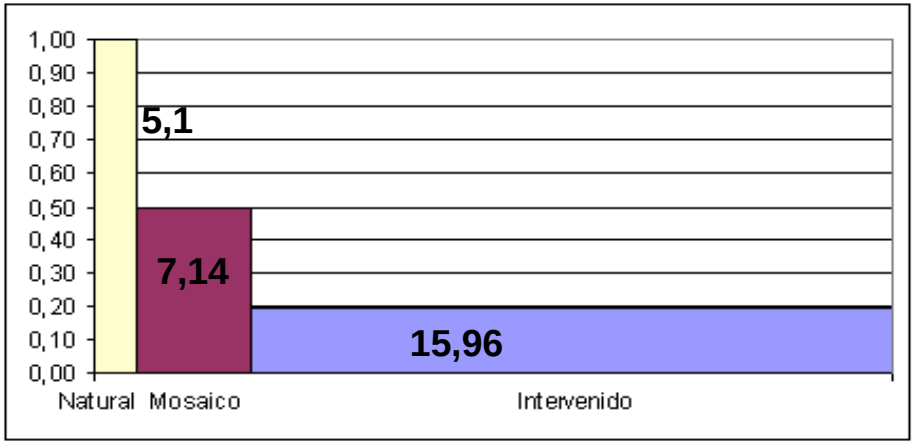
Comparison between ecosystems



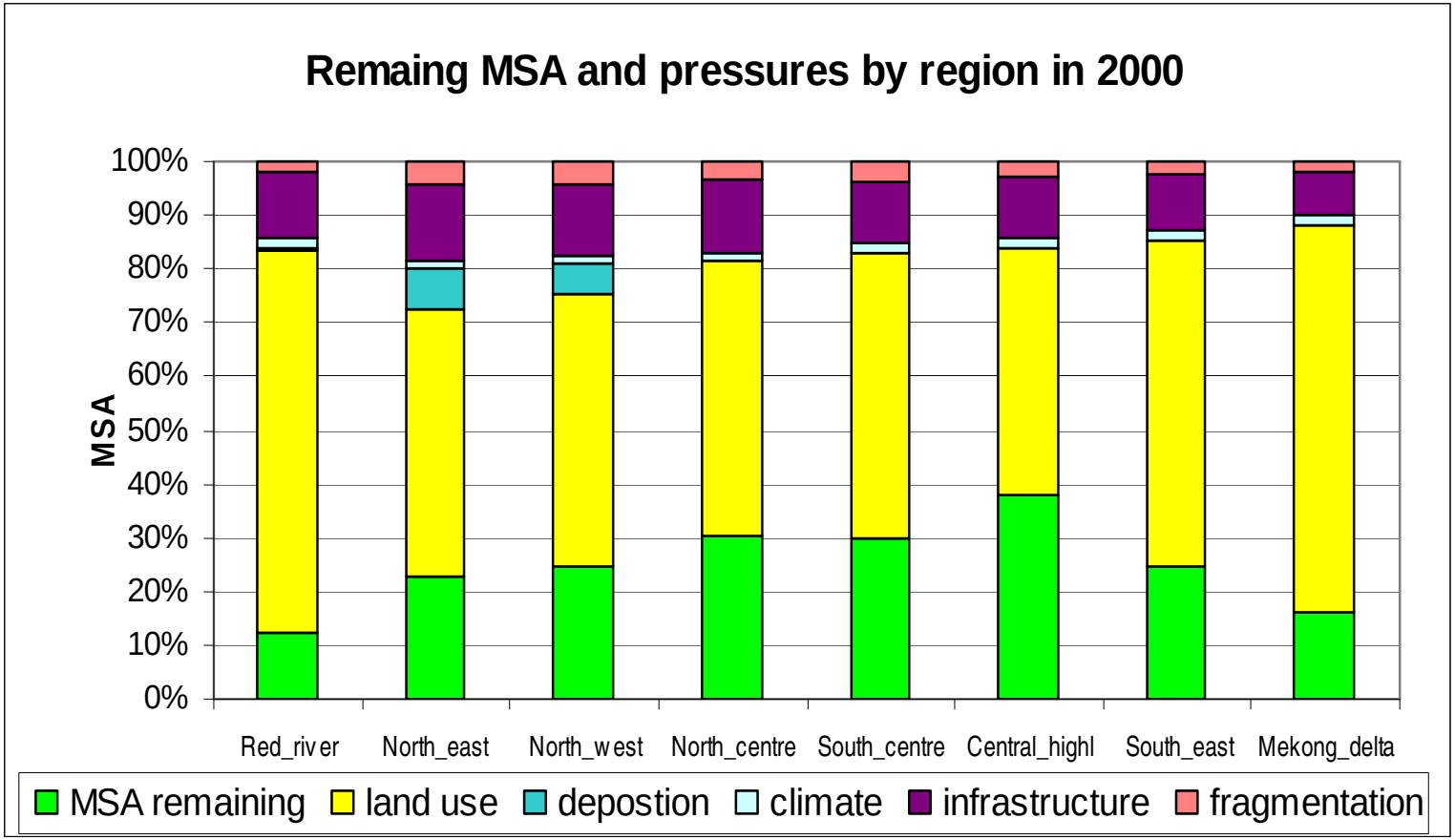
bha = 87,23

High versus low integrity/intactness

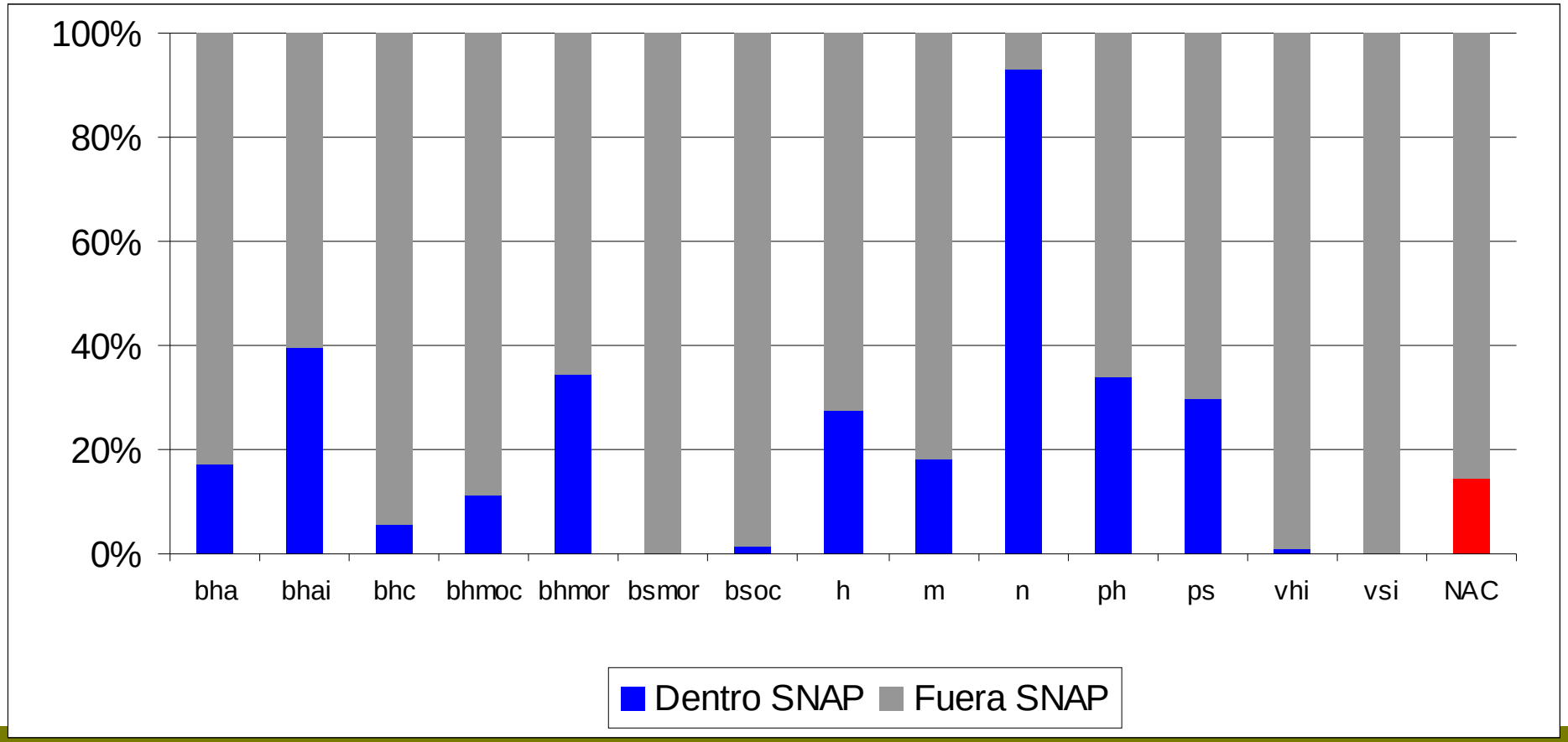
vsi = 28,20



MSA and loss form pressures per administrative region



Share of ecosystem in and outside the national protected area system



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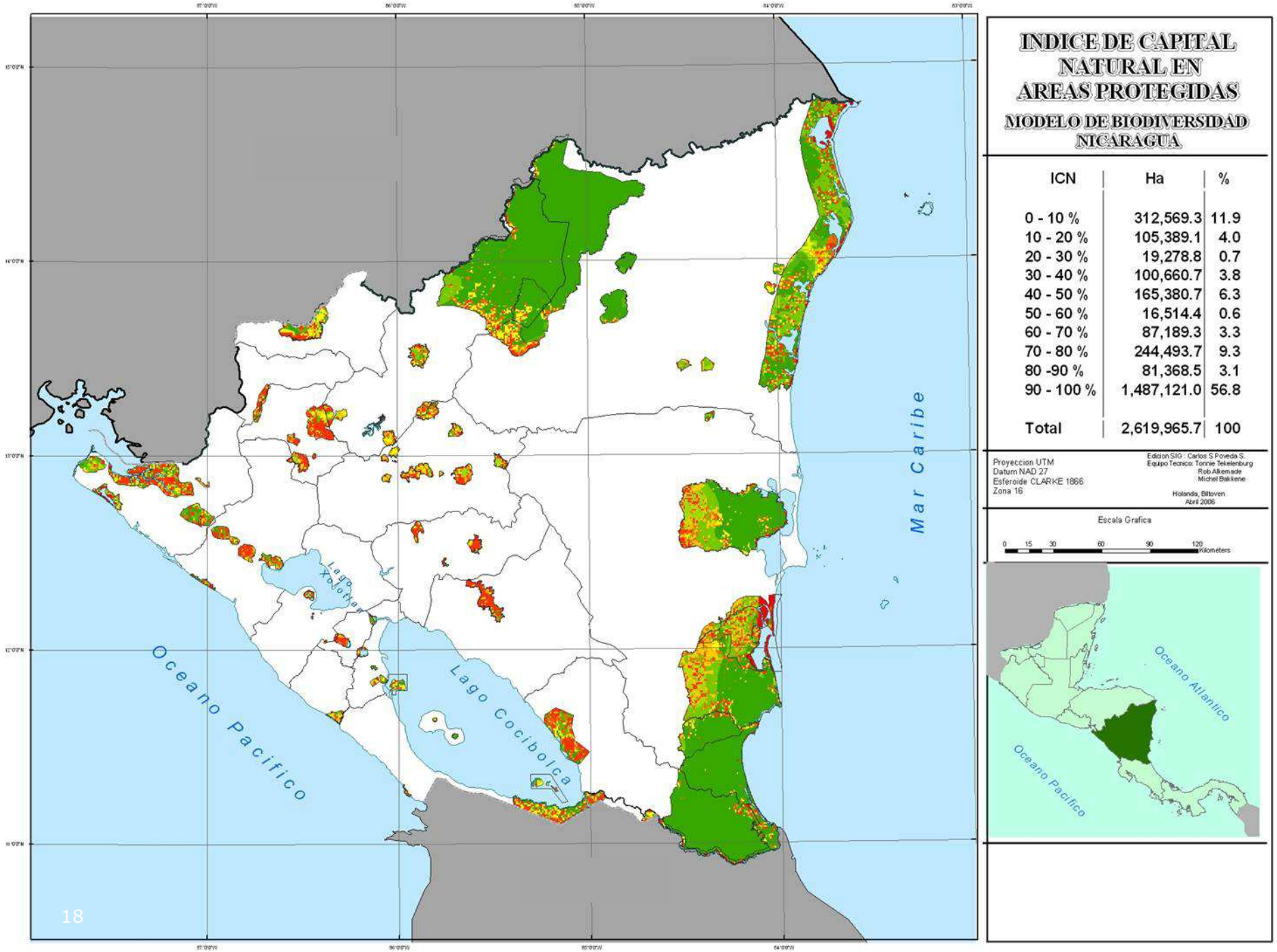
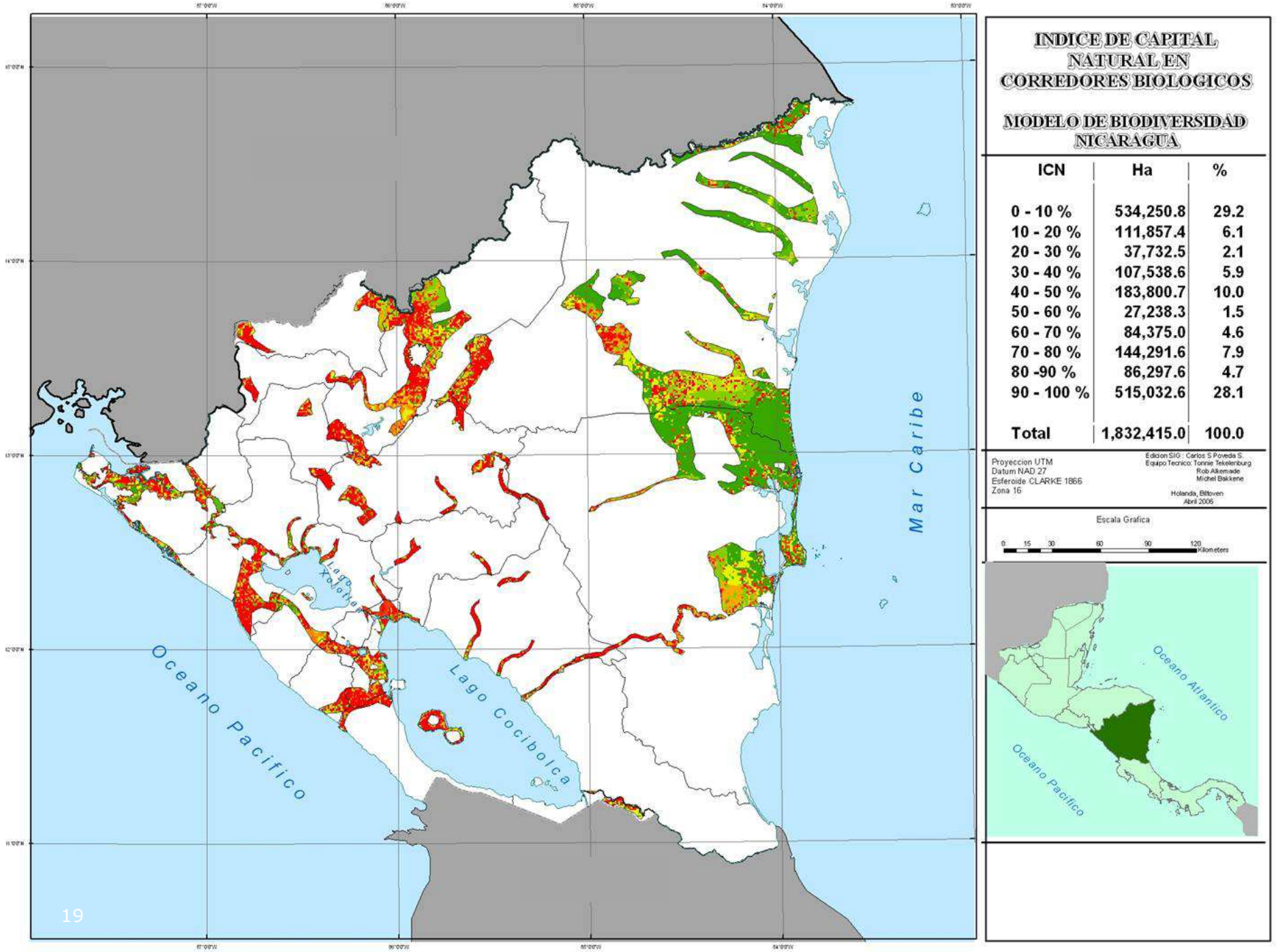
Average ec… integrity (MSA) of pr…

Área protegida	Biovalor
Refugio de Vida Silvestre Islas Corazón y Fragatas	0,05
Ecosistema de Manglar del Esturio del Río Muisne	0,28
Refugio de Vida Silvestre Isla Sta.Clara	0,40
Reserva de Producción Faunística Chimborazo	0,76
Reserva Ecológica Mache Chindul	0,76
Reserva Ecológica Los ILinizas	0,77
Reserva Ecológica Manglares Churute	0,84
Parque Nacional Cotopaxi	0,87
Reserva Ecológica Manglares Cayapas Mataje	0,87
Parque Nacional Machalilla	0,90
Parque Nacional Sangay	0,91
Reserva Ecológica Cayambe Coca	0,93
Parque Nacional LLanganates	0,97
Reserva de Vida Silvestre Pasochoa	0,98
Reserva de Producción Faunística Cuyabeno	0,98
Reserva Ecológica Cotacachi Cayapas	0,99
Parque Nacional Yasuní	0,99
Parque Nacional Cajas	0,99
Reserva Ecológica Cofán Bermejo	1,00
Parque Nacional Podocarpus	1,00


INDICE DE CAPITAL NATURAL EN AREAS PROTEGIDAS
MODELO DE BIODIVERSIDAD NICARAGUA
ICN | Ha | %
0 - 10 % | 312,569.3 | 11.9
10 - 20 % | 105,389.1 | 4.0
20 - 30 % | 19,278.8 | 0.7
30 - 40 % | 100,660.7 | 3.8
40 - 50 % | 165,380.7 | 6.3
50 - 60 % | 16,514.4 | 0.6
60 - 70 % | 87,189.3 | 3.3
70 - 80 % | 244,493.7 | 9.3
80 -90 % | 81,368.5 | 3.1
90 - 100 % | 1,487,121.0 | 56.8
Total | 2,619,965.7 | 100
Proyeccion UTM
Datum NAD 27
Esferoide CLARKE 1866
Zona 16
Edicion SIG : Carlos S Poveda S.
Equipo Tecnico: Tonnie Tekelenburg
Rob Alkemade
Michel Bakkene
Holanda, Biltoven
Abril 2006
Escala Grafica
0 15 30 60 90 120 Kilometers
Mar Caribe
Oceano Pacifico
Lago Cocibolca
Lago Xolotlan
Oceano Atlantico
Oceano Pacifico


INDICE DE CAPITAL NATURAL EN CORREDORES BIOLOGICOS
MODELO DE BIODIVERSIDAD NICARAGUA
ICN | Ha | %
0 - 10 % | 534,250.8 | 29.2
10 - 20 % | 111,857.4 | 6.1
20 - 30 % | 37,732.5 | 2.1
30 - 40 % | 107,538.6 | 5.9
40 - 50 % | 183,800.7 | 10.0
50 - 60 % | 27,238.3 | 1.5
60 - 70 % | 84,375.0 | 4.6
70 - 80 % | 144,291.6 | 7.9
80 -90 % | 86,297.6 | 4.7
90 - 100 % | 515,032.6 | 28.1
Total | 1,832,415.0 | 100.0
Proyeccion UTM
Datum NAD 27
Esferoide CLARKE 1866
Zona 16
Edicion SIG : Carlos S Poveda S.
Equipo Tecnico: Tonnie Tekelenburg
Rob Alkemade
Michel Bakkene
Holanda, Biltoven
Abril 2006
Escala Grafica
0 15 30 60 90 120 Kilometers
Mar Caribe
Oceano Pacifico
Lago Cocibolca
Lago Xolotlan
Oceano Atlantico
Oceano Pacifico

PBL proposal to SEEA

- National (remote sensing based) landuse, ecosystem and MSA biodiversity accounting baseline 2010-2015 (in line with CBD)
- Support planning and implementation of Experimental Ecosystem accounting
  - Meeting in Norway in september: international project formulation
  - Expert meeting on data, tools and procedures
- One country case study with national Statistic office and Biodiversity focal point (2013)
- One country accounting (Costa Rica?) to be discussed in Waves program
- Compare for The Netherlands species based and pressure based national MSA ecosystem accounting

Who is PBL?

Governmental institute:

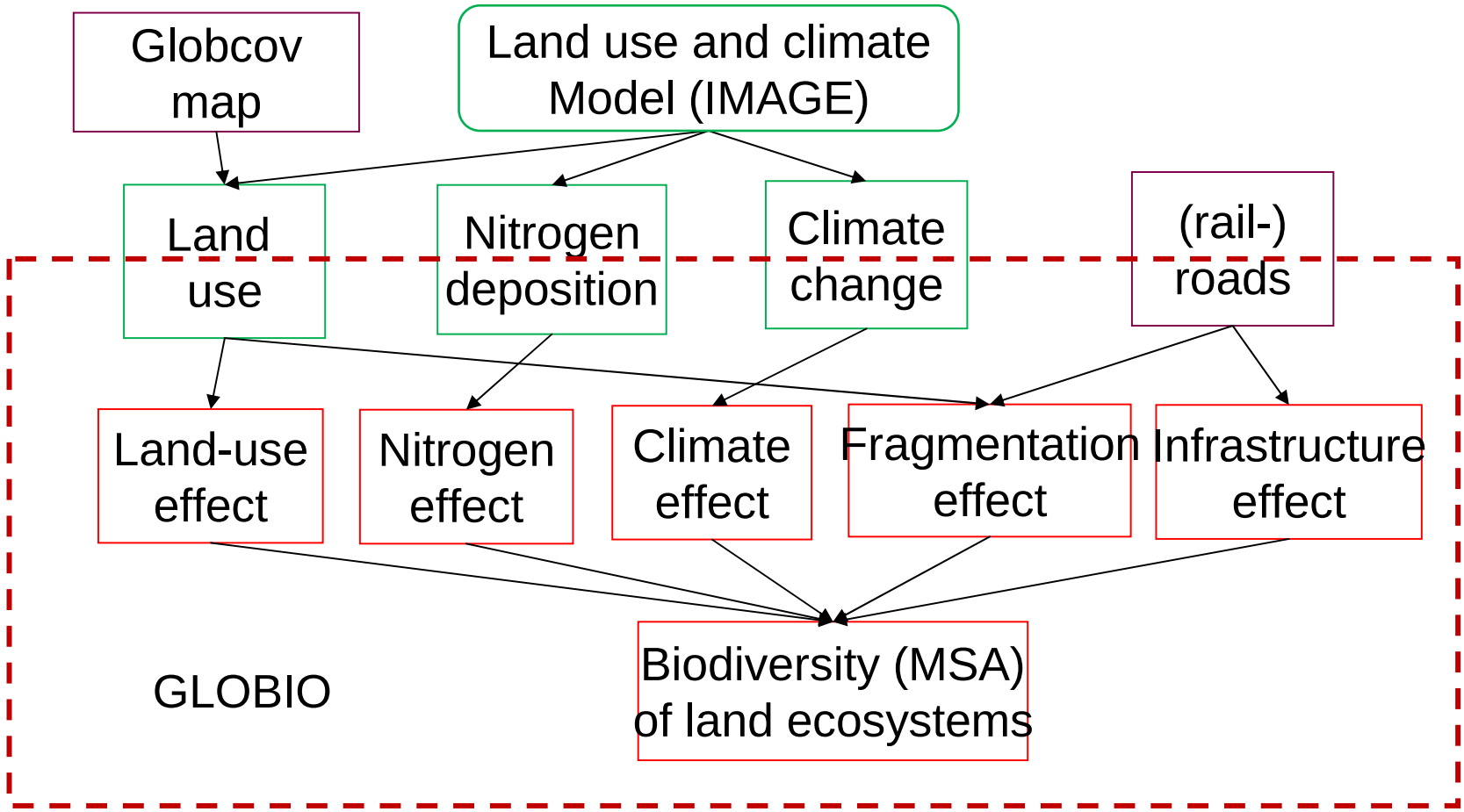
- Netherlands Environmental Assessment Agency (PBL)
- Support policy for ministries:
  - Nature protection,
  - Environment,
  - Economy and innovation and
  - Foreign Affairs
- 3 geographical levels: national, regional and global
- Interface between policy makers and research
- We work close together with CBS (Statistics office)

What is our work?

- Understanding biodiversity loss & its implications
- Developing indicators
- Developing models
- Relating biodiversity to human well-being
- Capacity building
- Scientific publication

- Assessment reports:
  - UNEP's Global Environment Outlook
  - CBD's Global Biodiversity Outlook
  - EU Outstanding Environment Issues
  - OECD Environmental Outlook and Strategy
  - Rethinking
  - 25 countries trained

Underlying data for GLOBIO3



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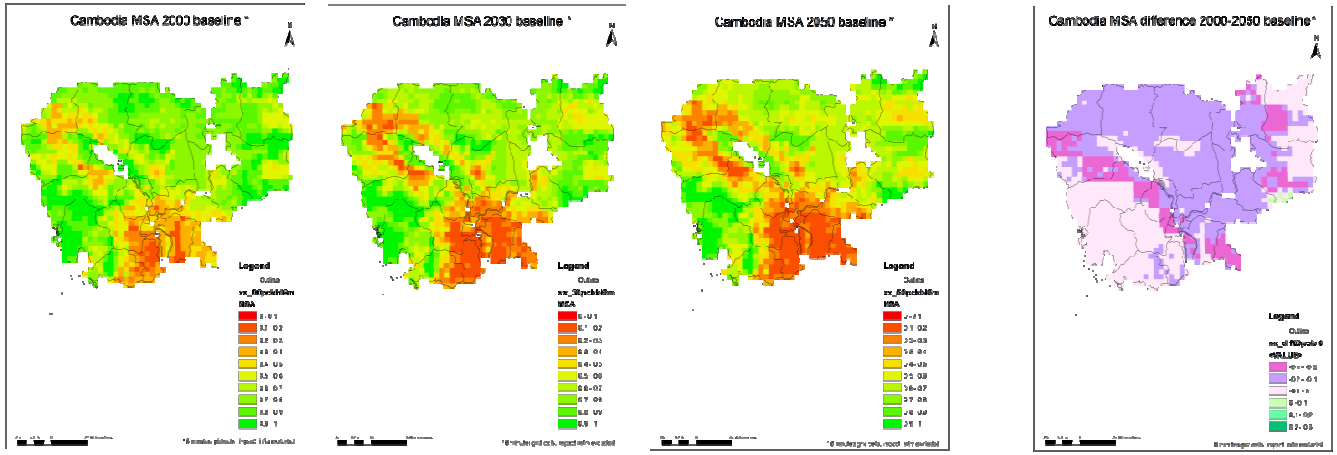
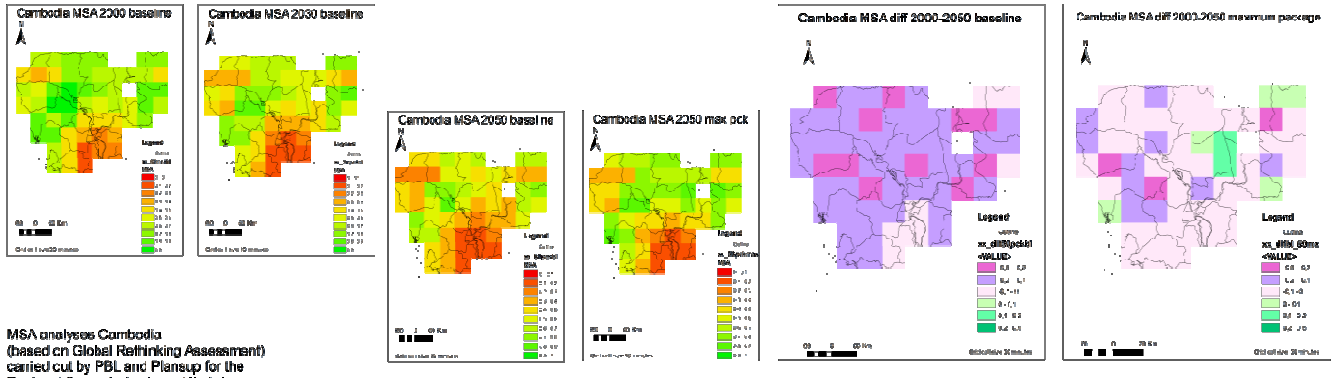
Future assessment in Cambodia





MSA analyses Cambodia
(based on Global Rethinking Assessment)
carried out by PBL and Plansup for the
Regional Scenario Analyses Workshop
in collaboration with the SCBD in Incheon City,
Republic of Korea, 20-24 May 2013

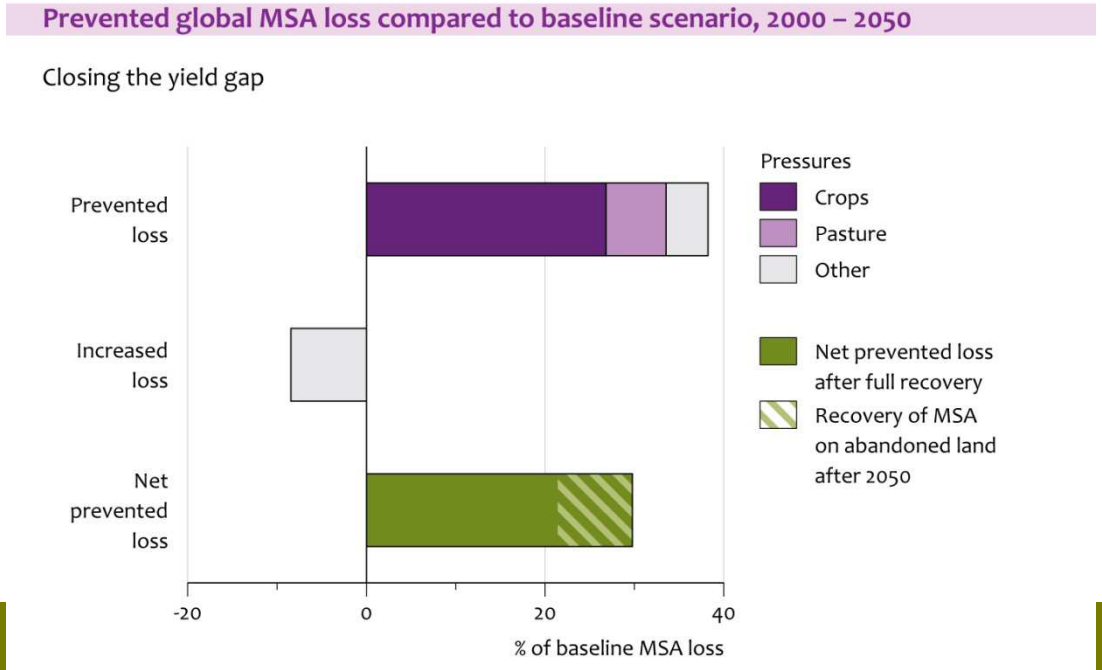
Plansup

PBL Netherlands Environmental Assessment Agency

Option 1a: Closing the yield gap

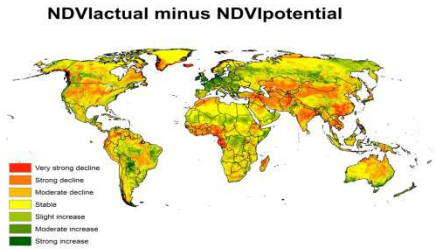
2 x current productivity in 2050, less expansion agriculture?
->(0 mln km^2)

Effect on MSA: 30% prevented loss

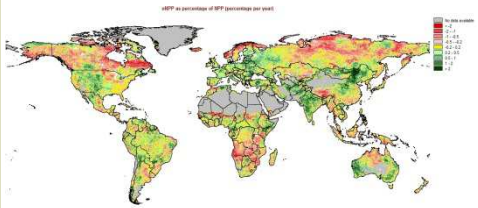


PBL workplan on Ecosystem services

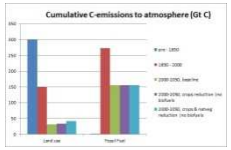
Degraded

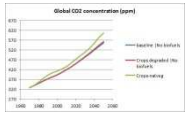


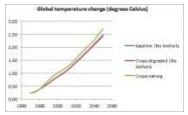
Degrading



Cstorage & climate







Water retention & floods

- Km3 soil water prist, LU, degra, to 2050
- Change in waterstress days
- Figure: Nr days/km2 flooded
- Map all year / seasonal rivers

Agri area & food

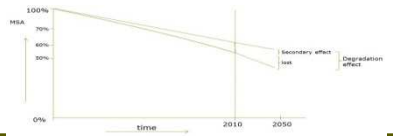
- Mln km2 arable / grazing
  good condition & degraded & abandoned & reserve, tot 2050 Stapel diagram
- Lost food production former & current agri land in Kcal & kg proteins tov potential, tot 2050

Forestry area & fiber

- Mln km2 forestry
  good condition & degraded & lost & reserve, tot 2050 Stapeldiagram
- Lost timber & fiber production
  former & current forestry land in m3 & tons per Y tov potential, tot 2050

Biodiversity

- Remaining MSA & loss due to agri, forestry, climate, infra/urban, Ndep, degradation from former LU & indirect from degradation from current LU



Environm dependency

- Map % prim sector/GDP
- Lost GDP due to degradation Map
- Figure: x-as 100- 0% env income
  y-as Nr people
- Nr of high env dependent people in degrading areas tot 205