« ENCA Gabon »
Natural capital accounts for action
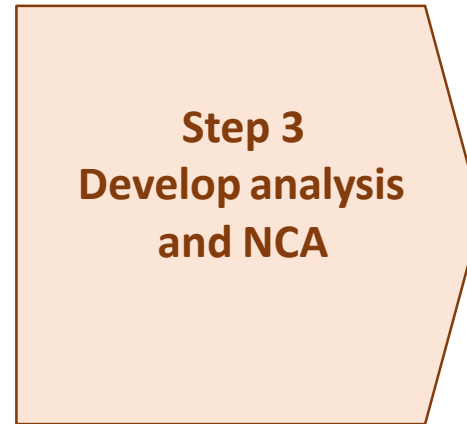
Timeline

Oct 2019   Nov 2019 – Feb 2020   Mar 2020 – Jul 2020   Jun 2020 – Jul 2022

**Step 1
Understand the needs**

**Step 2
Build Partnerships**

**Step 3
Develop analysis and NCA**

**Step 4
Adjustments & many communication of the results**

- Libreville Workshop – 6 October 2019
- Interviews with officials

UNIL | Université de Lausanne

École des Ponts
ParisTech

ONF International

1. Prospective analysis and post COVID19 Scenarios
2. Social media analysis
3. ENCA: Accounts and web-mapping platform

Restitution WWF Gabon – 07 October 2020

African Forum on Green Economy
Investing in Natural Capital for a Resilient Africa   17 June 2020

Forum on accounting and economic valuation of natural capital – Madagascar - 18 March 2021

NATURAL CAPITAL WORKSHOP
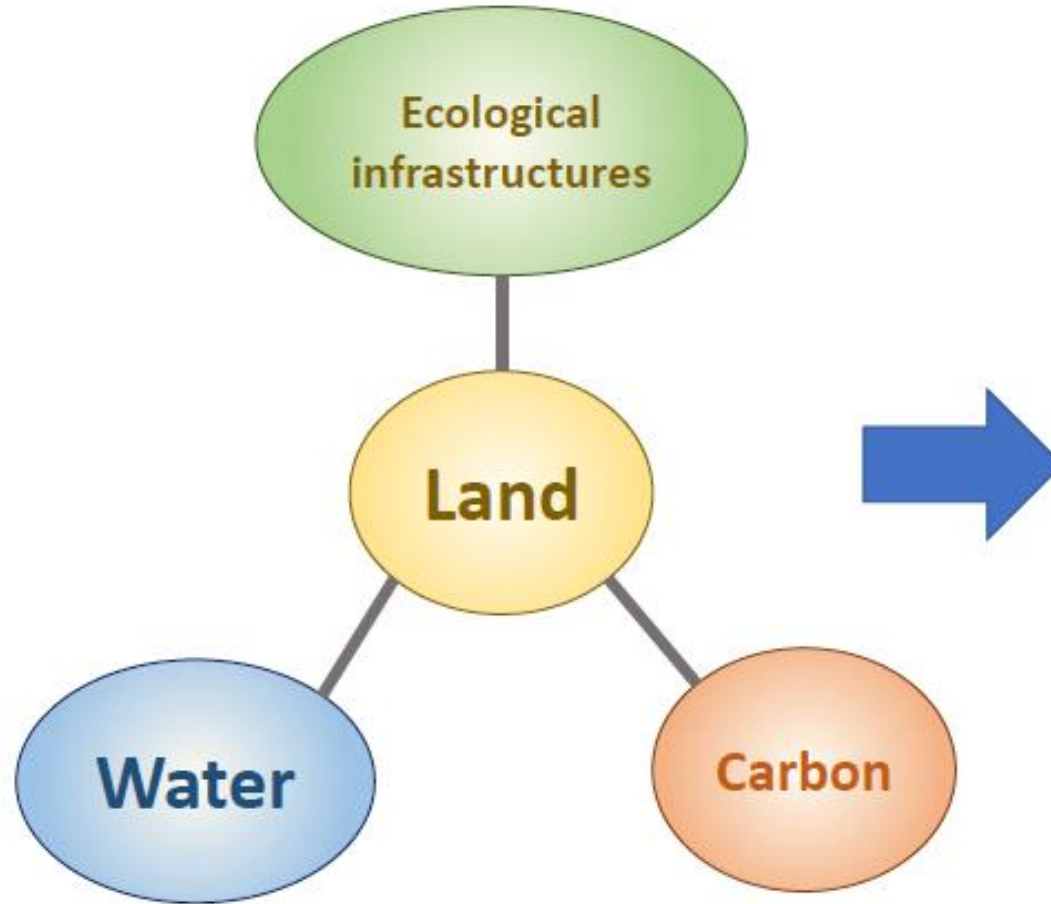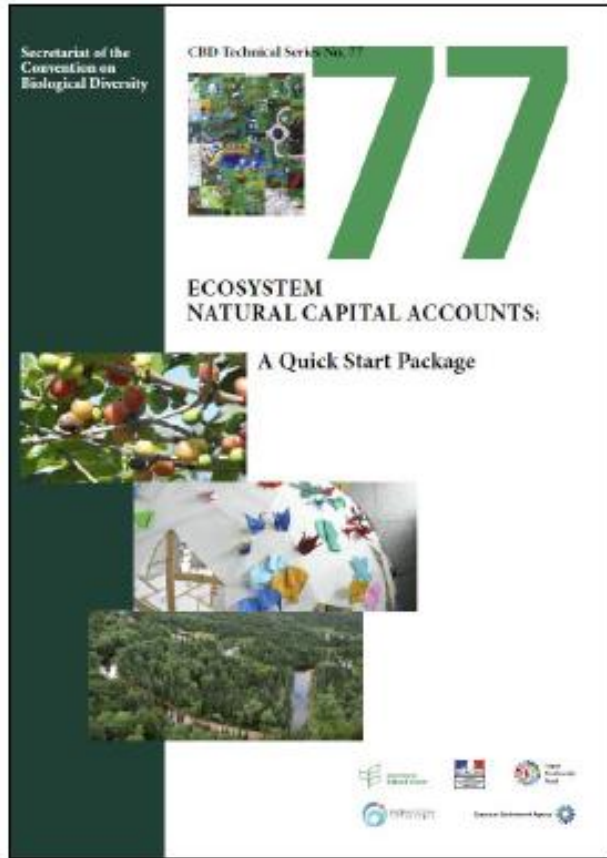CONCEPTS, TOOLS AND USES FOR PUBLIC SECTOR ACTION   Marseille, 07 September 2021

Natural Capital accounts workshop, Libreville, 2-4 May 2022

Natural Capital accounts session, APAC, Kigali, July 2022

Methodology of ENCA tool
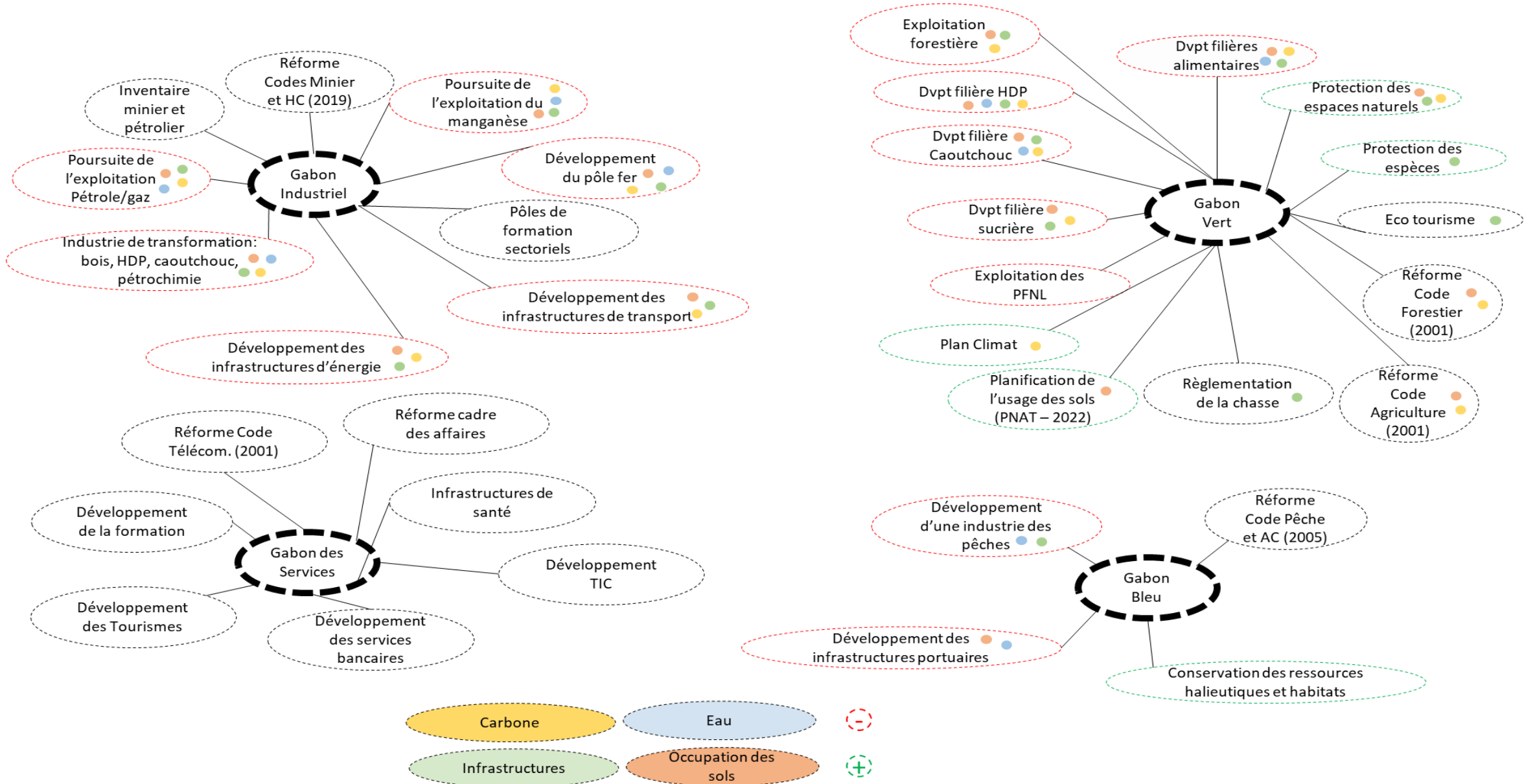
4 Accounts

Changes between two dates

Tables

+

Maps
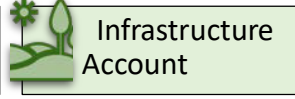
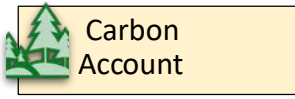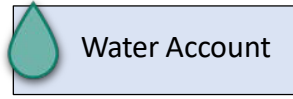http://www.ecosystemaccounting.net/

Challenges of the Emerging Gabon Strategic Plan (2011-2025)
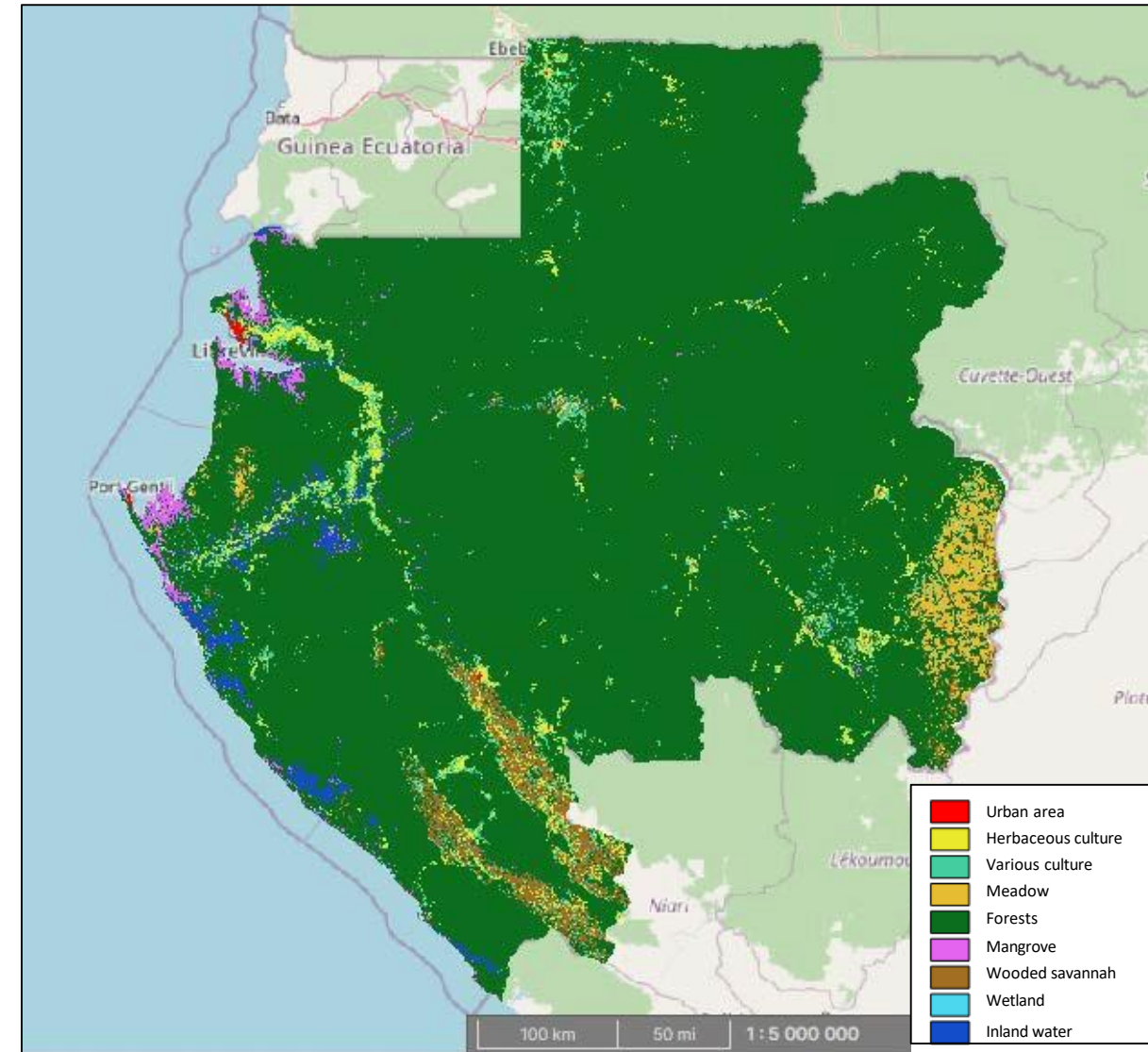
Types of questions ENCA can discuss

- *Is it possible to quickly and robustly build natural capital accounts at national scale?*

- In Gabon:
  - What is the dynamic of land cover?
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  - Is water used in a sustainable way?
  - Is biocarbon used in a sustainable way? Where should avoidance measures be adopted?
  - How are ecological infrastructures evolving?
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  - Are protected areas less fragmented than other areas?
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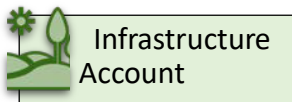
Gabon ENCA : Land Account

Land Account | Water Account | Carbon Account | Infrastructure Account

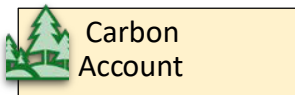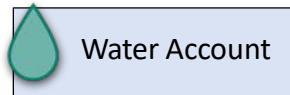## 9 Land-cover types in Gabon (2010)

Method

- Data: *European Space Agency Land Cover global maps (2000 and 2010)*

- *Resolution: 300 m*

- *Land- cover types: ESA*

- *Aggregation using ENCA typology*

Legend:
- Urban area
- Herbaceous culture
- Various culture
- Meadow
- Forests
- Mangrove
- Wooded savannah
- Wetland
- Inland water

100 km | 50 mi | 1 : 5 000 000

Gabon ENCA : Land Account

Land Account | Water Account | Carbon Account | Infrastructure Account

Key results on Land-use changes (ha)

Urban spread: **+ 7,812 ha** (+67%) ; Forests : **- 2,709 ha** (-0%) ; Mangroves: +1%; Wooded Savannahs: +2,1% ; Agriculture : Herbaceous crops: +5% and Various crops: -6%

Account line		Urban area	Herbaceous culture	Various culture	Meadow	Forest	Mangroves	Wooded Savannah	Wetland	Inland water	Total
Land cover 2000 (ha)		**11 610**	**611 919**	**728 244**	**379 557**	**23 514 921**	**242 343**	**598 401**	**20 016**	**331 326**	**26 438 337**
F_LF1	Artificialization	7 812	-	-	-	-	-	-	-	711	8 523
F_LF2	Extension of agriculture	-	40 752	53 010	-	-	-	-	-	-	93 762
F_LF3	Internal conversions and rotations	-	27	-	-	45	-	-	144	72	288
F_LF4	Management and modification of forest areas	-	-	-	-	-	-	16 371	-	-	16 371
F_LF5	Restoration and creation of habitats	-	-	-	675	108 333	189	108	-	-	109 305
F_LF6	Changes due to natural and multiple causes	-	-	-	495	-	-	18	-	-	513
F_LF7	Other land changes n.e.c. and revaluation	-	-	-	-	2 493	3 159	-	117	468	6 237
Total Formation		7 812	40 779	53 010	1 170	110 871	3 348	16 497	261	1 251	
C_LF1	Artificialization	-	1 944	801	567	3 069	585	1 494	-	63	8 523
C_LF2	Extension of agriculture	-	-	-	81	93 573	-	-	-	108	93 762
C_LF3	Internal conversions and rotations	-	-	27	-	-	45	-	72	144	288
C_LF4	Management and modification of forest areas	-	-	-	-	16 371	-	-	-	-	16 371
C_LF5	Restoration and creation of habitats	-	10 809	95 544	612	-	-	2 340	-	-	109 305
C_LF6	Changes due to natural and multiple causes	-	-	-	-	450	45	-	-	18	513
C_LF7	Other land changes n.e.c. and revaluation	-	-	-	-	117	468	-	972	4 680	6 237
Total Consumption		-	12 753	96 372	1 260	113 580	1 143	3 834	1 044	5 013	
	No change	11 610	599 166	631 872	378 297	23 401 341	241 200	594 567	18 972	326 313	26 203 338
	Balance : Formation - Consumption	7 812	28 026	-43 362	-90	-2709	2 205	12 663	-783	-3762	
Land cover 2010		**19 422**	**639 945**	**684 882**	**379 467**	**23 512 212**	**244 548**	**611 064**	**19 233**	**327 564**	**26 438 337**
Evolution 2000-2010 (%)		**67,3 %**	**4,6 %**	**-6,0 %**	**-0,02 %**	**-0,01 %**	**0,9 %**	**2,1 %**	**-3,9 %**	**-1,14 %**	

Gabon ENCA : Water Account

| Land Account	**Water Account**	Carbon Account	Infrastructure Account

Method

- **Inflows :** Rainfall, upstream watersheds inflows, etc.

- **Outflows :** Agriculture, Evaporation, Urban water, …

- SUI: the closer to 1 the more sustainable

Key results

- Use of water is globally sustainable in terms of quantity.

- Between 2000 and 2010, use is table except in some urban areas.

Sustainability use index (SUI) (2010)

■	0,1 - 0,236
■	0,236 - 0,58
■	0,58 - 0,874
■	0,874 - 0,974
■	0,974 - 1
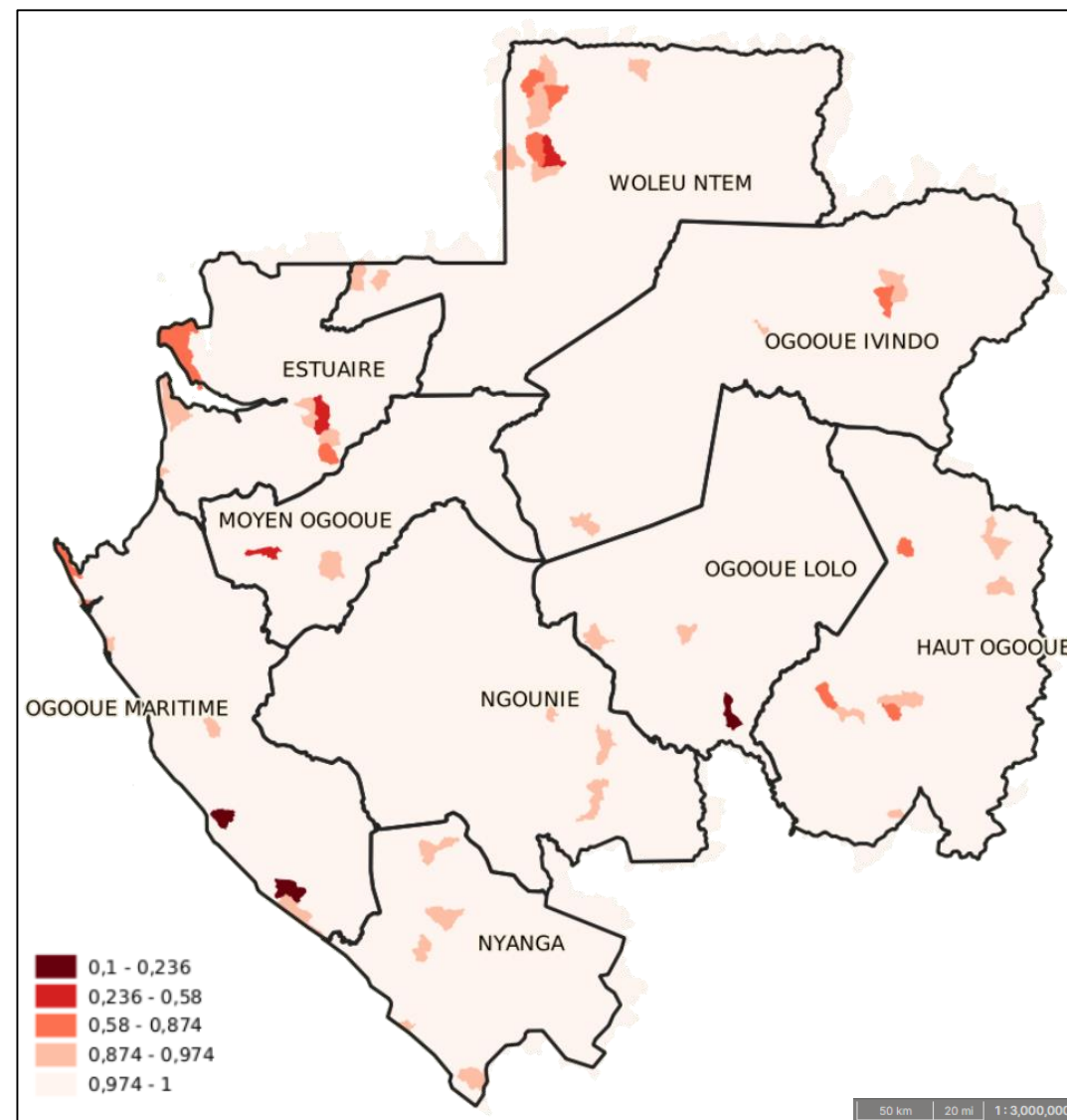
Gabon ENCA : Carbon Account

Land Account | Water Account | **Carbon Account** | Infrastructure Account

Method

- **Inputs** *(carbon inflows):* Net Primary Production, *etc.*

- **Outputs** *(carbon extraction): logging, agriculture (FAO datasets)*
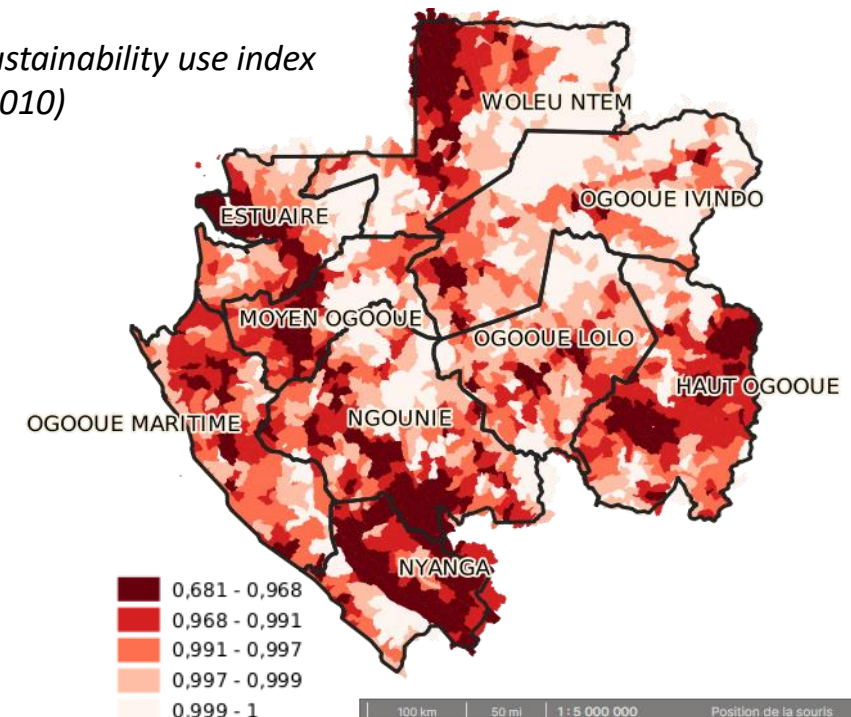
- SUI: the closer to 1 the more sustainable

Key learnings

- In certain areas: high carbon outputs.

- Wood extraction and agriculture (incl. plantations) are responsible for unsustainable but localized hotspots of biocarbon extraction

Carbon outputs by watershed in tonnes (2010)
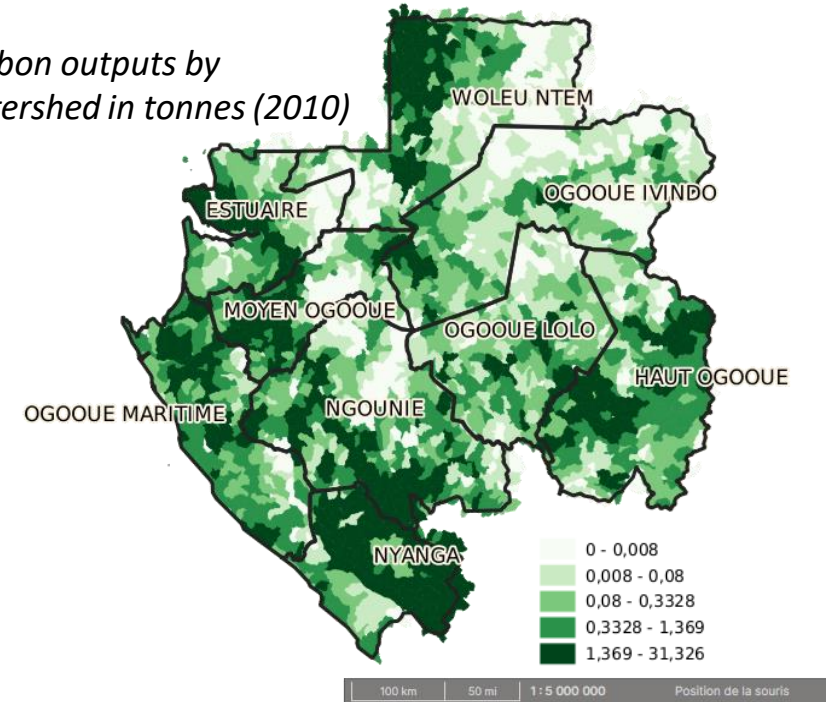
0 - 0,008
0,008 - 0,08
0,08 - 0,3328
0,3328 - 1,369
1,369 - 31,326

100 km | 50 mi | 1 : 5 000 000 | Position de la souris

Sustainability use index (2010)

0,681 - 0,968
0,968 - 0,991
0,991 - 0,997
0,997 - 0,999
0,999 - 1

100 km | 50 mi | 1 : 5 000 000 | Position de la souris

ENCA Gabon – Ecological Infrastructures Account

Fragmentation index

"Self-regenerating" capacity

High Nature Value Index

2000

Potential of terrestrial ecological infrastructures.

Fragmentation index

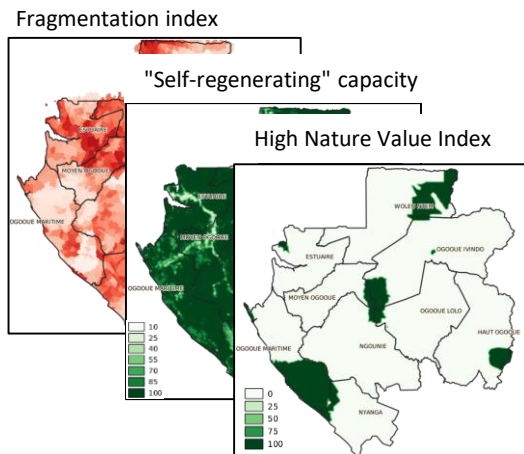"Self-regenerating" capacity

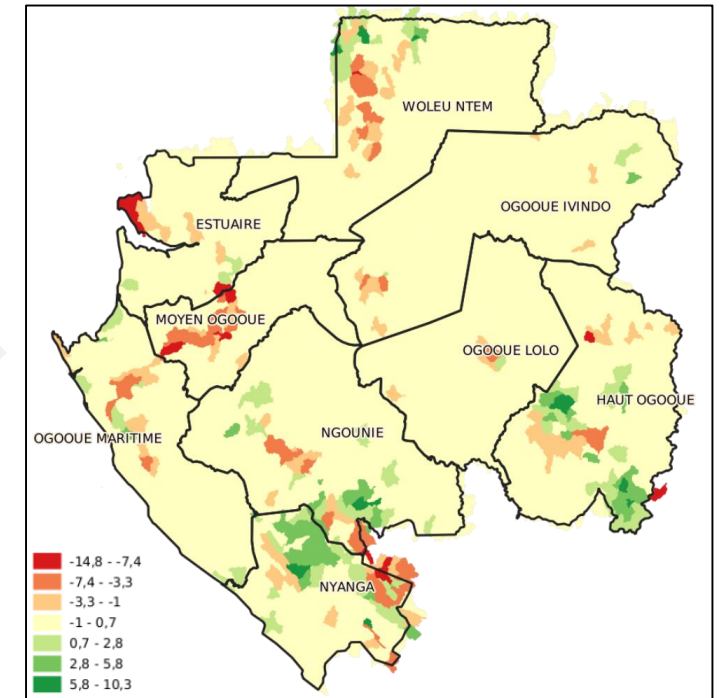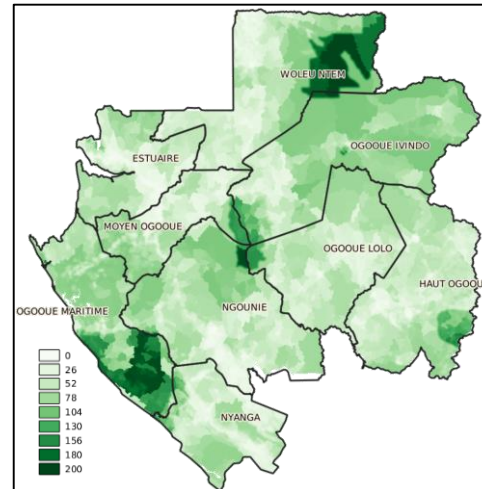High Nature Value Index
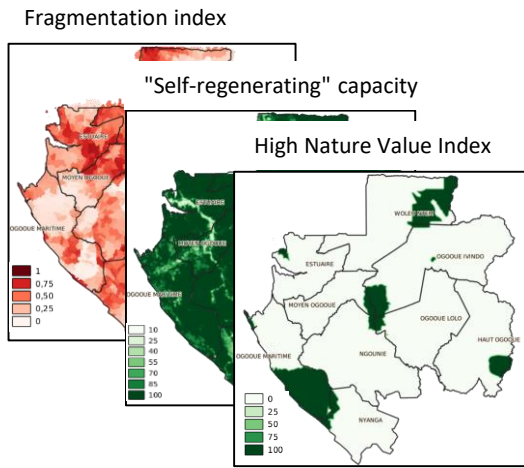
2010

Potential of terrestrial ecological infrastructures.
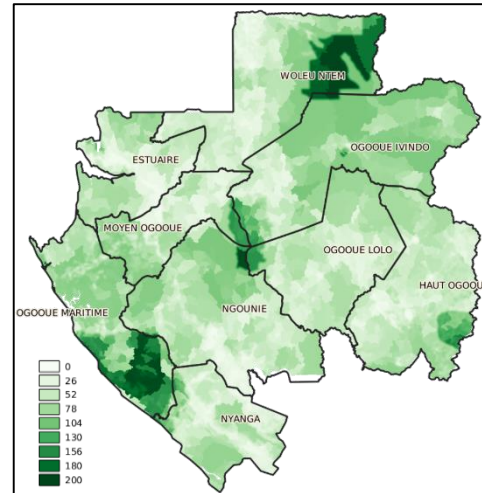
Change between 2000 and 2010 (in %)
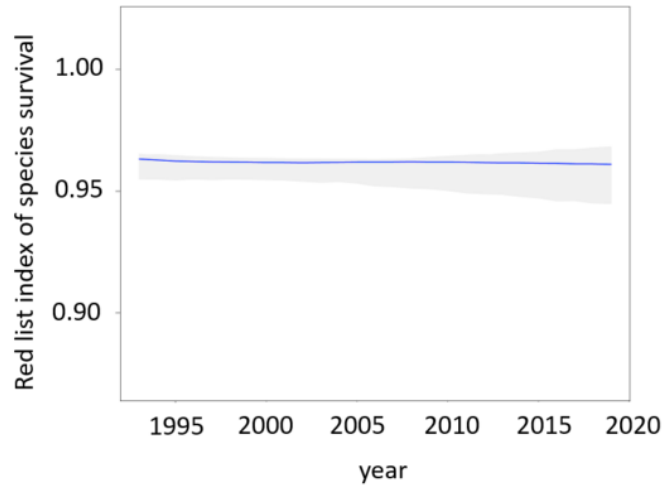Red: Degradation
Green: Improvement
Yellow: Stable

ENCA Gabon – Ecological Infrastructures Account
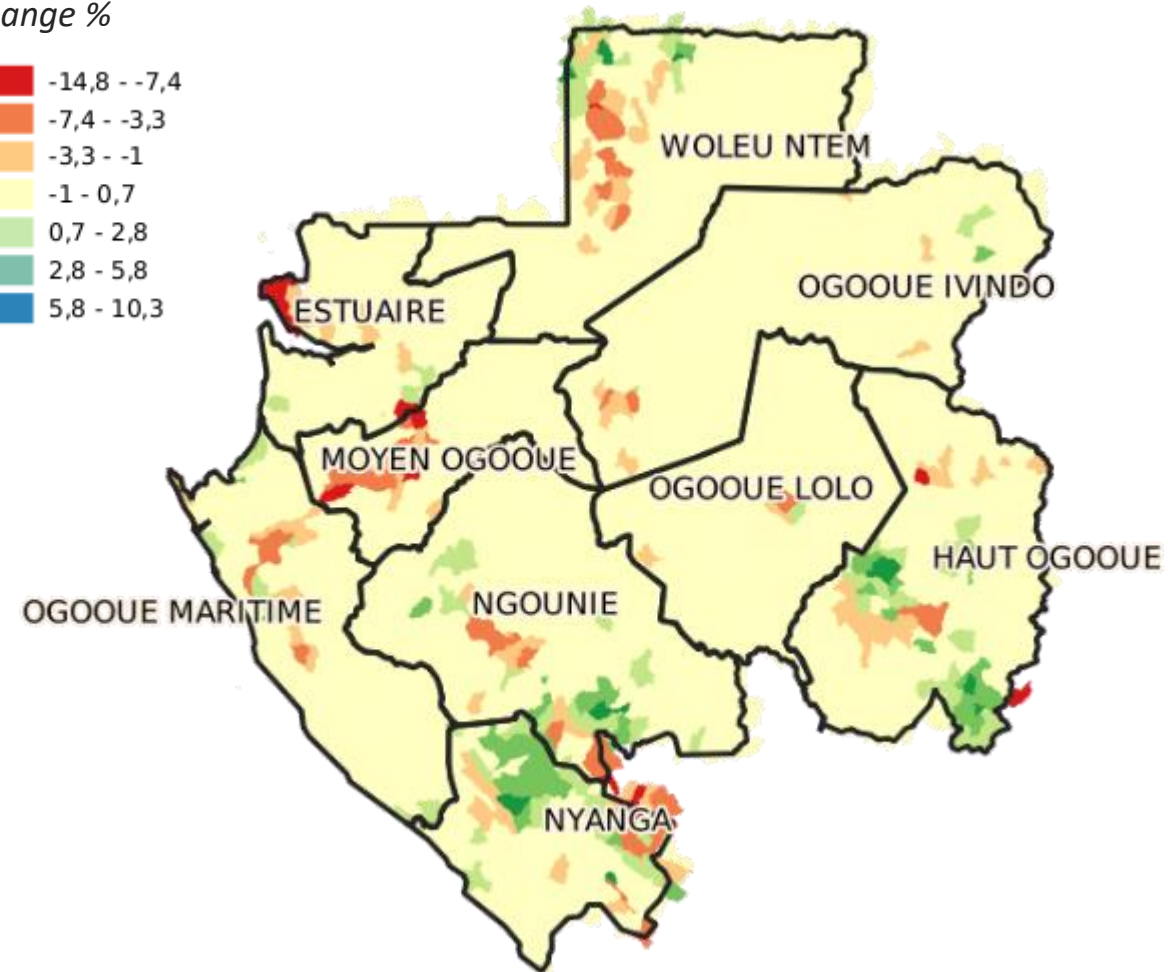
Red List Index for Gabon - IUCN

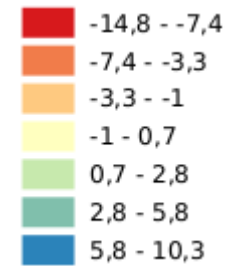## STAR index for restauration - Gabon

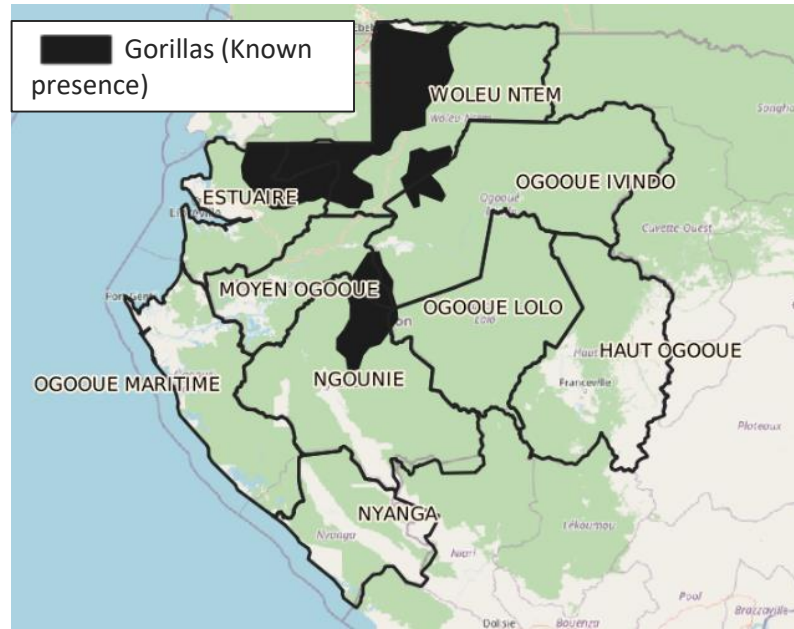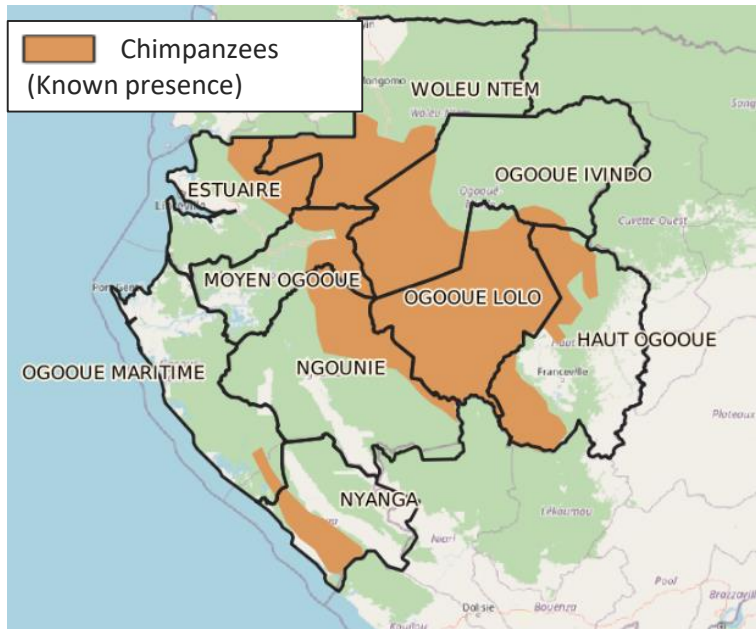*Change in value of the ecological infrastructure ENCA (period 2000-2010)*

Change %

	Change %
■	-14,8 - -7,4
■	-7,4 - -3,3
■	-3,3 - -1
■	-1 - 0,7
■	0,7 - 2,8
■	2,8 - 5,8
■	5,8 - 10,3

ENCA Gabon – Ecological Infrastructures Account

Focus on the habitats of 3 iconic threatened species: Gorillas, Chimpanzees, and Elephants
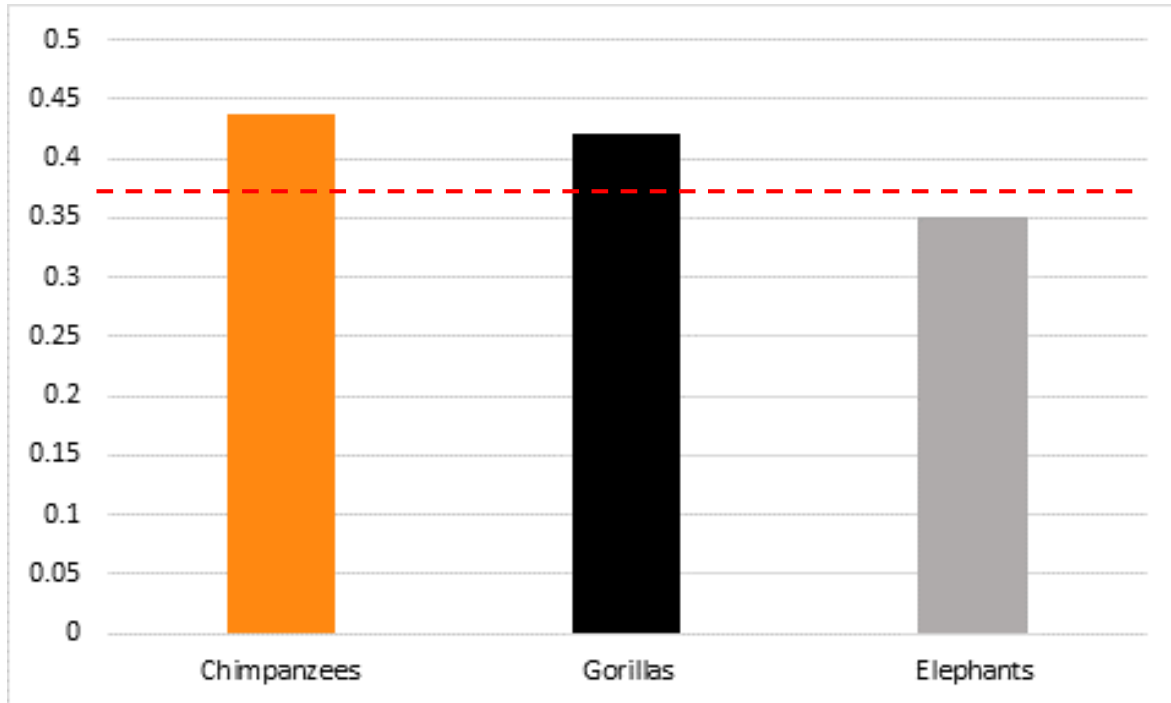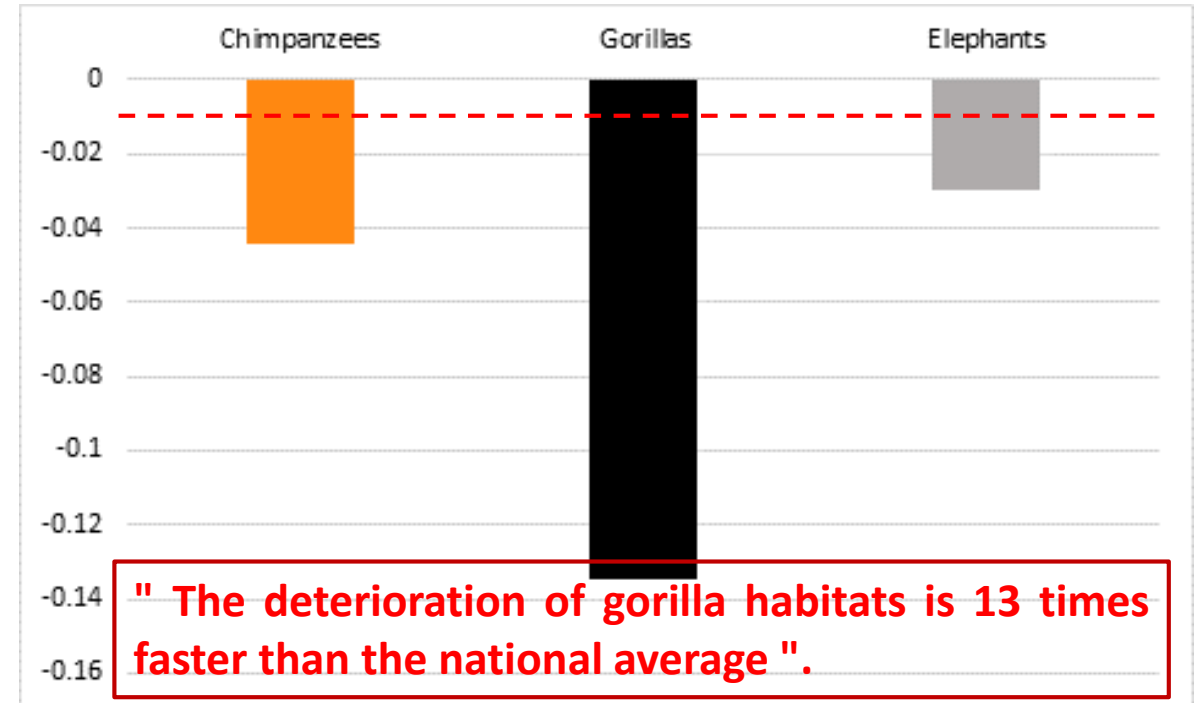
ENCA Gabon – Ecological Infrastructures Account

Focus on the habitats of 3 iconic threatened species: Gorillas, Chimpanzees, and Elephants

Fragmentation (2010)

**Ecological infrastructures:
change between 2000 and 2010 (%)**

" **The deterioration of gorilla habitats is 13 times faster than the national average ".**

National average (red dotted line): 0.37

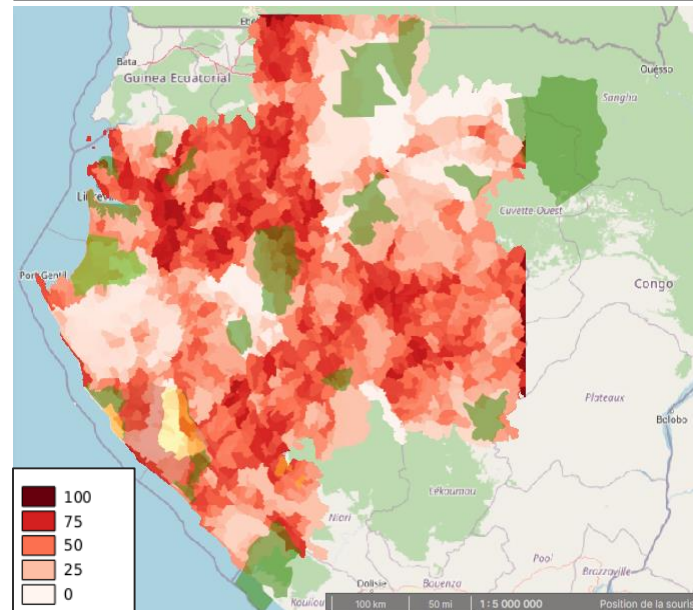National average (red dotted line) : -0.01

ENCA Gabon – Ecological Infrastructures Account

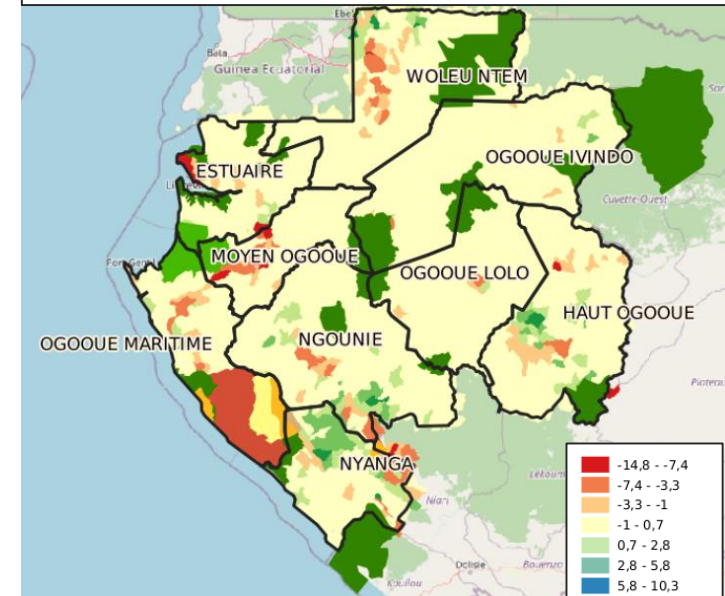## Focus on Protected Areas

How do protected areas contribute to the conservation of natural capital?
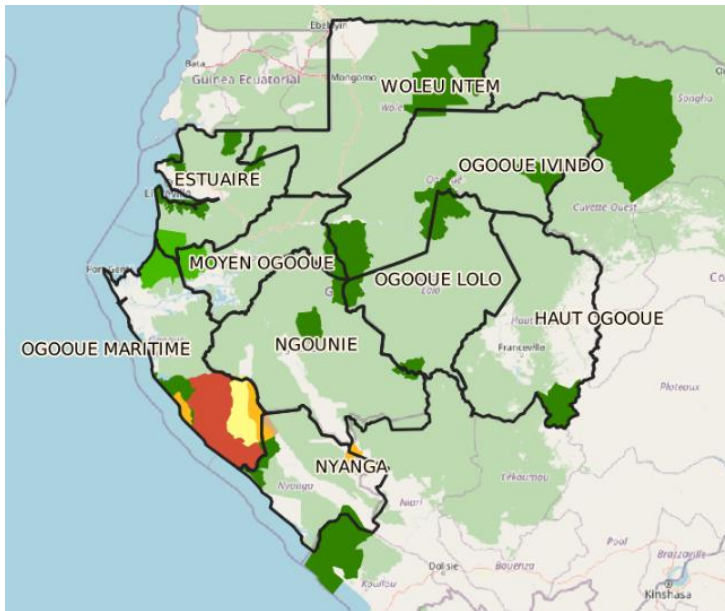
Watershed fragmentation in 2010 [%].

Change in the quality of the ecological infrastructure (2000-2010) [%].

Legend:
- Parc National
- Réserve Presidentielle
- Réserve de Faune
- Zone de Gestion de la Faune
- Réserve de Chasse
- Zone de Chasse

Watershed fragmentation scale:
- 100
- 75
- 50
- 25
- 0

Change in quality scale:
- -14,8 - -7,4
- -7,4 - -3,3
- -3,3 - -1
- -1 - 0,7
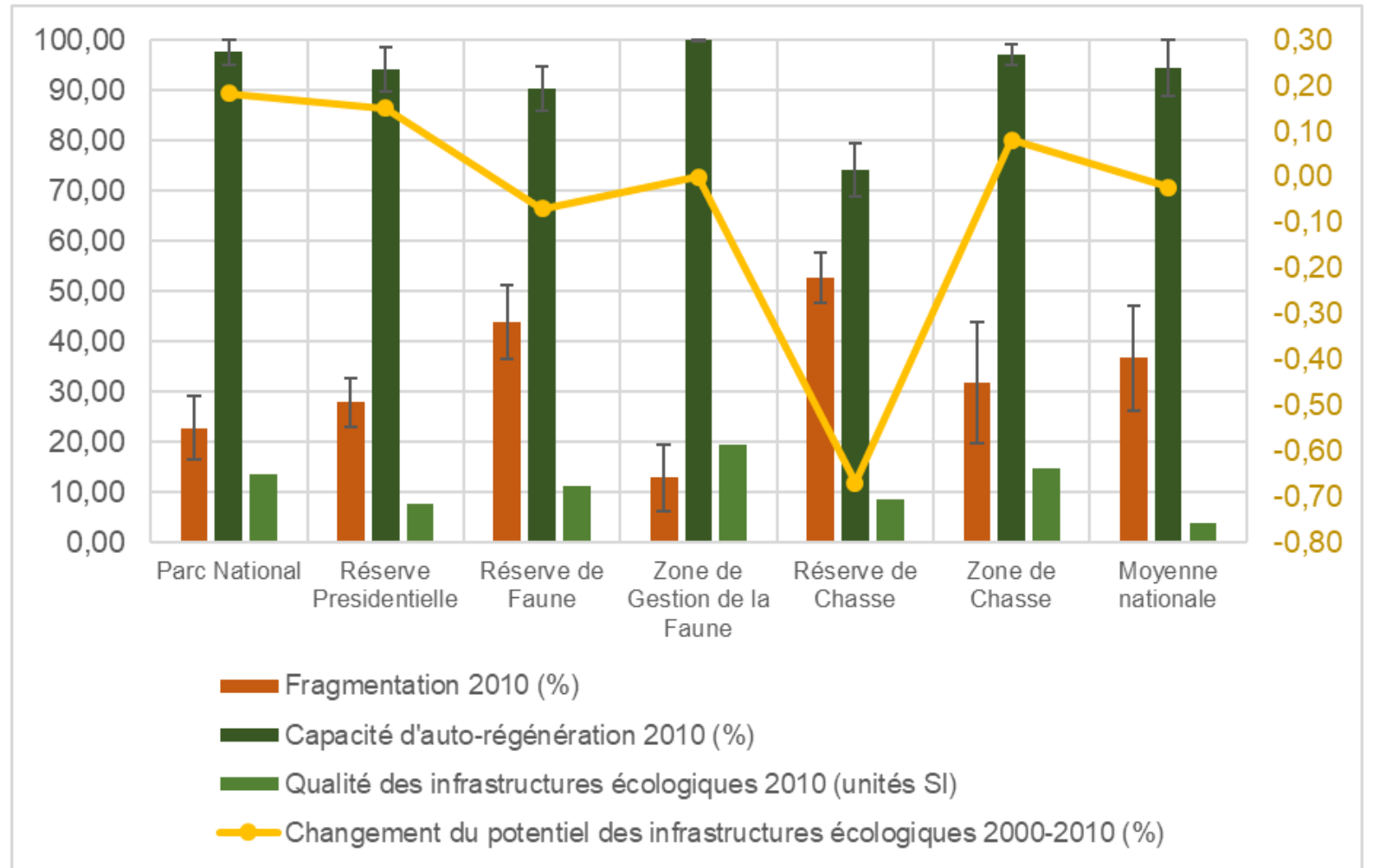- 0,7 - 2,8
- 2,8 - 5,8
- 5,8 - 10,3

ENCA Gabon – Ecological Infrastructure Account

Focus on Protected Areas

National parks
"Fragmentation is twice as low as in a wildlife reserve

"The potential of natural habitats is 3 times higher than the national average".

Legend:
- Fragmentation 2010 (%)
- Capacité d'auto-régénération 2010 (%)
- Qualité des infrastructures écologiques 2010 (unités SI)
- Changement du potentiel des infrastructures écologiques 2000-2010 (%)

Categories: Parc National, Réserve Presidentielle, Réserve de Faune, Zone de Gestion de la Faune, Réserve de Chasse, Zone de Chasse, Moyenne nationale

ENCA Gabon – Assessing the impact of development projects: the Belinga mining project case

~ 500 km² urbanised or artificialised (mines)
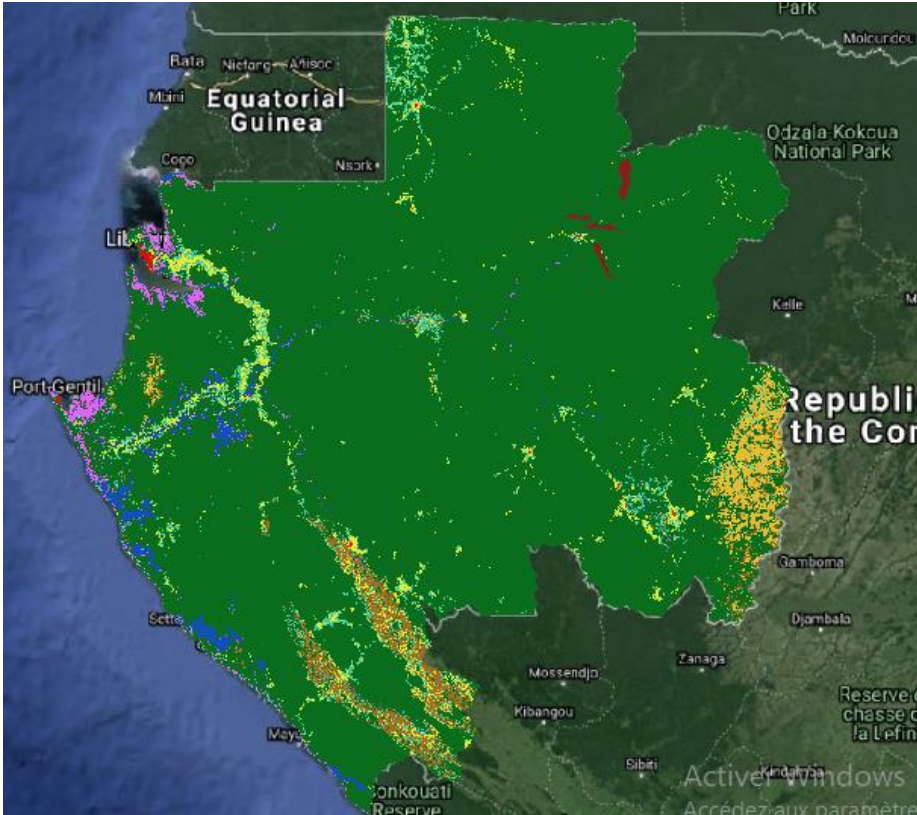Extension of the railway and road creation

Land-use change

Fig. 1: Modelling of the Belinga mining project area
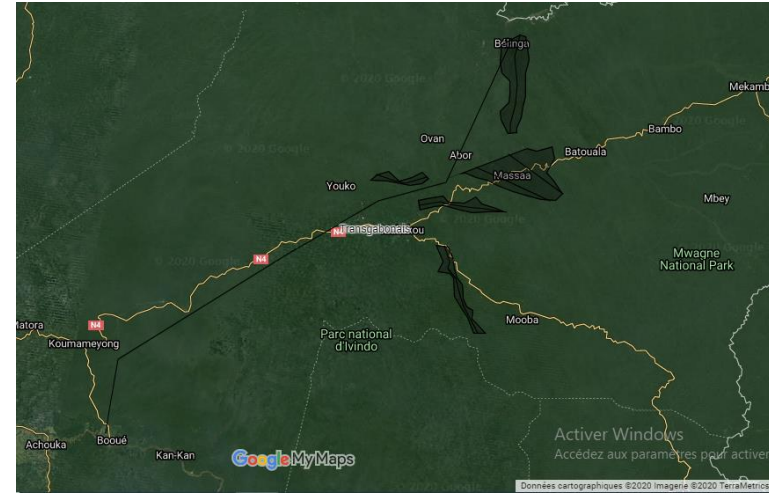

Fig. 2: Simulated land cover changes resulting from the Belinga mining project

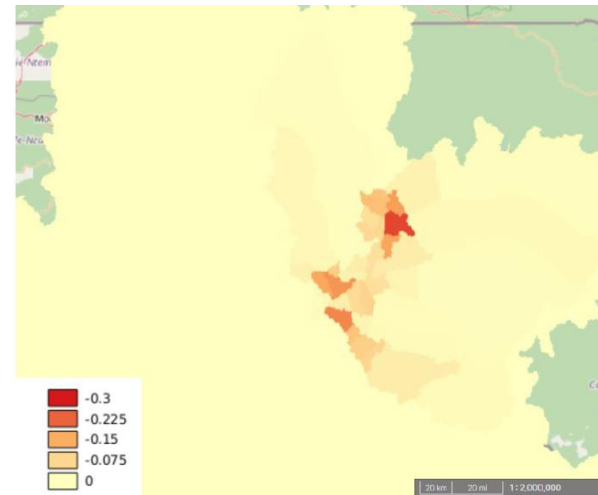## Impacts of the Belinga mining project
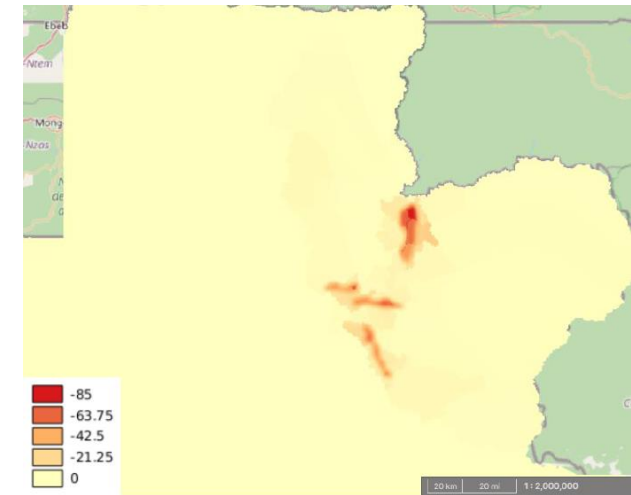

Fig. 3: Increase of Fragmentation

Fig. 4: Loss of value of ecological infrastructures

Types of questions ENCA can discuss

- *Is it possible to quickly and robustly build natural capital accounts at national scale?*

- In Gabon:
  - What is the dynamic of land cover?
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→ **ENCA as a tool to :**
- **support decision-making by the State,**
- **help designing voluntary commitments by private economic actors**
- **monitor the implementation of the Emerging Gabon Strategic Plan.**

Thank you for your attention

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Centre for Economics and Finance
Chief Economist and Economics Team