Protected areas and agriculture. Are biodiversity conservation and food security compatible?

Philippe Mayaux & Alan S. Belward
European Commission
Joint Research Centre
Institute for Environment and Sustainability

With contributions of
L. Willemen, P. Roggeri, E. Pironio, F. Saracco, P. Renier, G. Dubois
Overview of the presentation

Introduction and context

Role of protected areas

Marine protected areas in Senegal

Protected areas and Forests of Central Africa

EU and the African Protected Areas

Conclusions
Role of the Protected Areas (PAs)

- PAs are a key element of biodiversity conservation
- Broad spectrum of protection categories from strict exclusion to moderate human activities
- PAs are a direct source of revenue for surrounding population, individual nations, and even regions
- PAs provide ecosystem services necessary for food production now and in the future
- PAs cover 12.2% of land and 5.6% of territorial seas (compared to ±60% of managed areas)
Ecosystem services

Human well-being depends on ecosystem services

Provisioning
- Food production
- Timber production
- Mining products
- Fire wood

Supporting/regulating
- Carbon stock
- Water regulation
- Habitat provisioning

Cultural
- Cultural heritage
- Recreation

Well-being
Protected areas and agriculture

- **Sanctuary for reproduction of animal species**
  Marine and terrestrial animal species (fishing and hunting = proteins)

- **Material benefits from protected areas**
  Caterpillars, mushrooms, medicines...

- **Indirect Ecosystem services**
  Watershed protection, pollination, soil regeneration, nutrient cycling (Carbon)

- **Reservoirs of genetic resources**

- **Conservation of traditional farming systems**
Marine protected areas in Senegal
Marine protected areas in Senegal: Saloum delta
(from Conchedda PhD)

Pressures
– Increase of industrial fisheries
– Decline of fish resources in quantity and quality between 1986 and 2006

Response
– Intensification of artisanal fisheries: new gears, motorised pirogues, diverse use of species
– Creation of a marine protected area

Result
– Species recovery (barracuda)
– Fish stock increase

Consequence
– Impact of the PAs so positive that local communities are establishing additional PAs
Congo Basin forests

Deforestation drivers in Congo Basin

- Agriculture ★★★
- Firewood ★★★
- Mining ★★
- Logging ★

Ecosystem services provided

- Carbon sequestration, water regulation, biodiversity at global and regional level
- Non Timber Forest Products: medicines, food, fruits… at local level
- 60 million people live from forests
Deforestation map

Deforestation rate = 0.16% / yr  (+/- 0.05%)
Agriculture in Congo Basin

- Rural population and rate of urbanisation increasing
- Small-scale farming
- New demands: biofuels, grabbing…
- Forests are source of proteins (but decreasing due to poaching for cities)

Sustainable Forest Management

- Long-term revenue for countries (new actors)
- Employment of local population
- EU FLEGT policy (Forest Law Enforcement Governance and Trade)
Land management in Congo Basin forests

Protected area
Logging concession
January 2005
1 month before logging
March 2005
1 month after logging
January 2007
23 months after logging
Conflicts wildlife – agriculture: a case in Odzala NP

Elephant Poaching

Subsistence Hunting

Limit
Biodiversity and forests

– Multiple ecosystem services provided by Congo Basin forests
  – Biodiversity conservation is not incompatible with sustainable exploitation of resources, including provision of proteins
  – Need of a land management combining protected and production areas (FLEGT policy + biodiversity projects)
  – Need for continuous presence on the field

– Need for a permanent Observatory for Central Africa Forests
  www.observatoire-comifac.net
  – Economic, social and ecological dimensions
Assessment of African protected areas

- Evaluation of value of 741 Protected Areas combining biodiversity (species, habitat) and Earth Observation data
- Identification of threats by agriculture and population pressure
- Real-time alerts for park managers in case of extreme event (fire, drought…)
- Analysis of EC fund-allocation and recommendations for future activities
EC conservation in DR Congo

– Country with Mega-diversity; EU support to governance, capacity-building and conservation since 7 years

– New EU-funded project of 30 MEUR in 4 conservation sites and 2 universities

– Decision based on JRC scientific support

Extension to ACP countries (EDF)

– Governance and socio-economic data

– Based on ecosystem services (ecological, social and economic)

– In collaboration with IUCN
Conclusions

Protected areas in one of the elements contributing to the long-term food security of huge populations by direct and indirect ecosystem services

The level of protection must be adapted to the local socio-economic and ecological context

Land management should consider specialised areas with:

1. Intensive production of food/fiber with high level of input and technologies
2. Crop production compatible with the other ecosystem services
3. Partial and well-controlled exploitation of natural resources in natural ecosystems (medicines, fruits, timber, proteins, NTFP…)
4. Complete exclusion of human activities for reservoirs of genes and adaptation to climate change
Thank you!

philippe.mayaux@jrc.ec.europa.eu

http://ies.jrc.ec.europa.eu/
http://acpobservatory.jrc.ec.europa.eu