

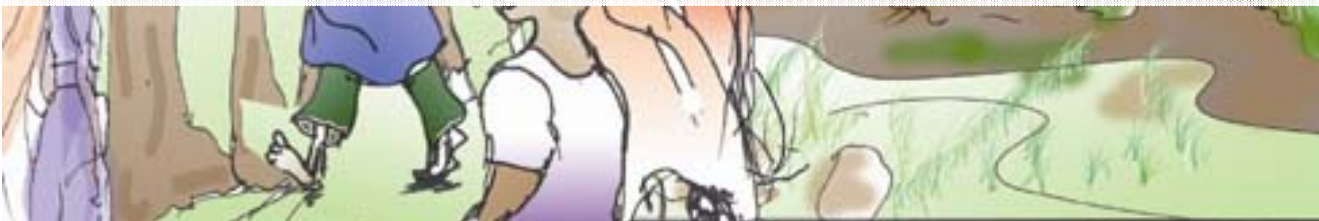
Opportunities for avoided deforestation with sustainable benefits in the forest margins of Central Africa



ASB-team Central Africa

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***International Institute of Tropical Agriculture **World Agroforestry Centre
in collaboration with Cameroonian research**





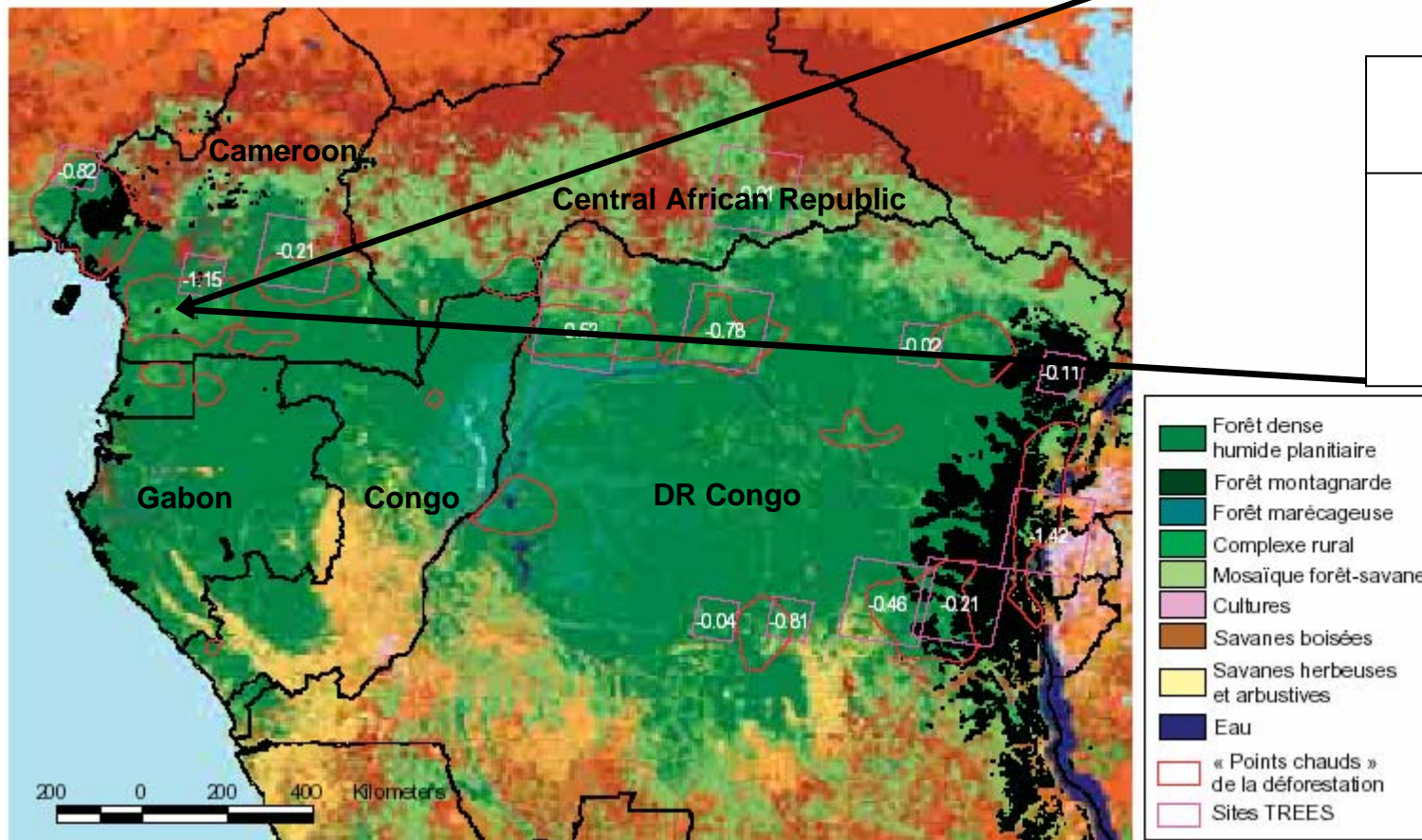
The Central African Forest

- Second largest contiguous ecosystem of moist forest after the Amazon basin.
- 236 million ha of forest land with 250 t of carbon/ha
- Conservation area of 30 million ha
- Population of 29 million
- Deforestation rate of 0.6%





Deforestation Hotspots:



Study
area:
Benchmark
southern
Cameroon

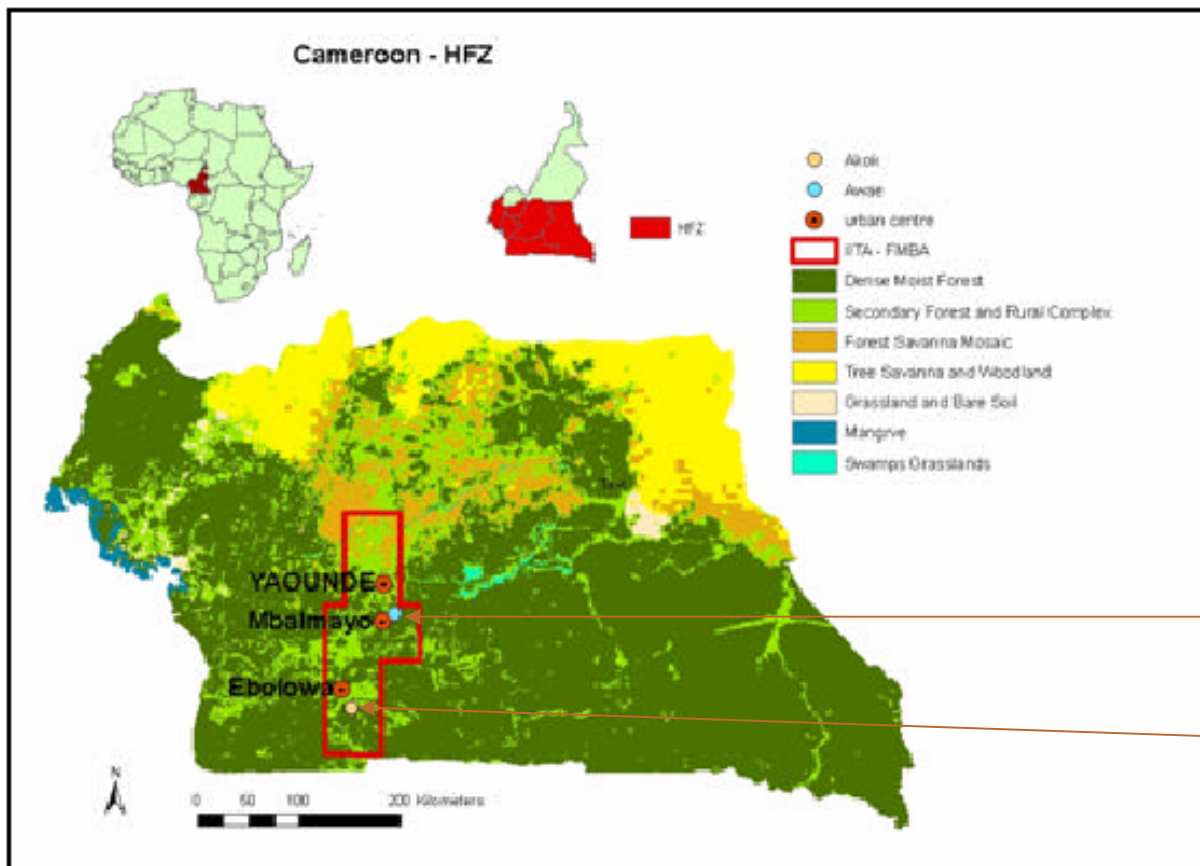
Source: PFBC





Benchmark of southern Cameroon

→ strong north-south population and resource use gradient



Two study sites:

- Awae

- Akok



Land use systems

- Two forest systems
 - ➔ high forest,
 - ➔ secondary forest
- Three agroforestry / tree crop systems
 - ➔ extensive cocoa
 - ➔ extensive cocoa with fruit
 - ➔ intensive cocoa with fruit
- Two fallow / mixed landscape mosaics
 - ➔ mixed food crop / short fallow
 - ➔ melon-seed / plantain / long fallow



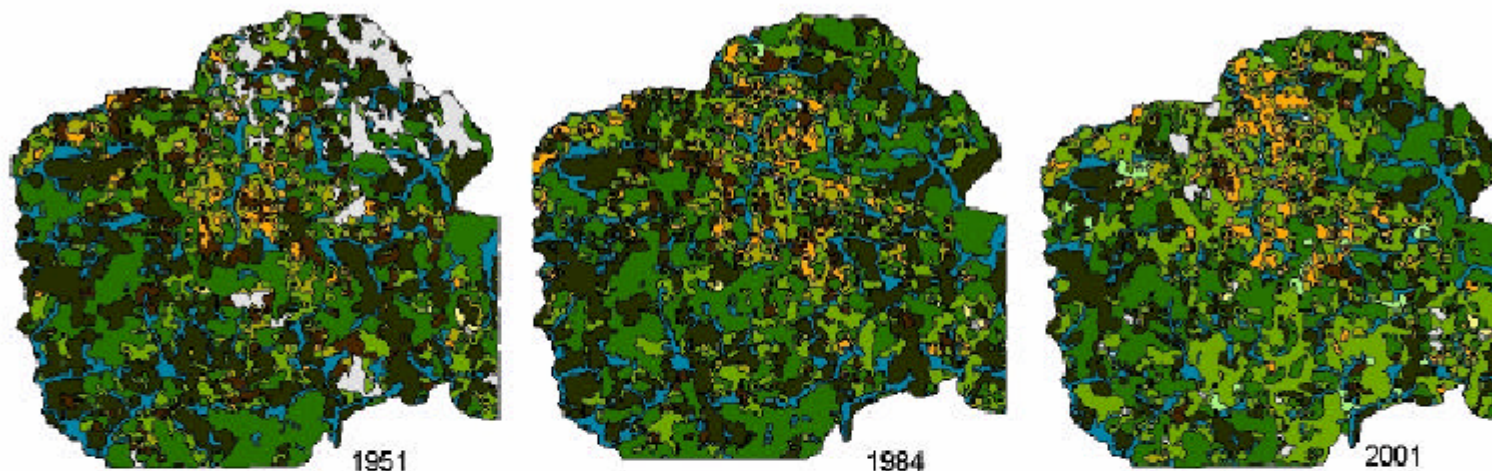


C-stock & NPV_priv of land uses

	Time-averaged	
	C-stock	NPV_priv
Land Uses:	Mg/ha	\$/ha
high forest	250	309
secondary forest	200	128
extensive cocoa (only Akok)	141	7,096
extensive cocoa w/fruit (only Awae)	141	21,192
intensive cocoa w/fruit (only Awae)	141	28,489
mixed food crop field/short fallow rotation	5	7,203
melon-seed/plantain/long fallow rotation	63	10,879



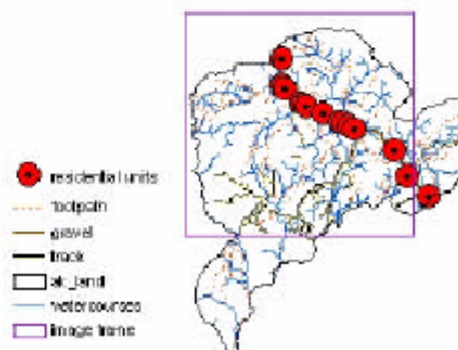
AKOK, land cover maps



Land Cover Classes

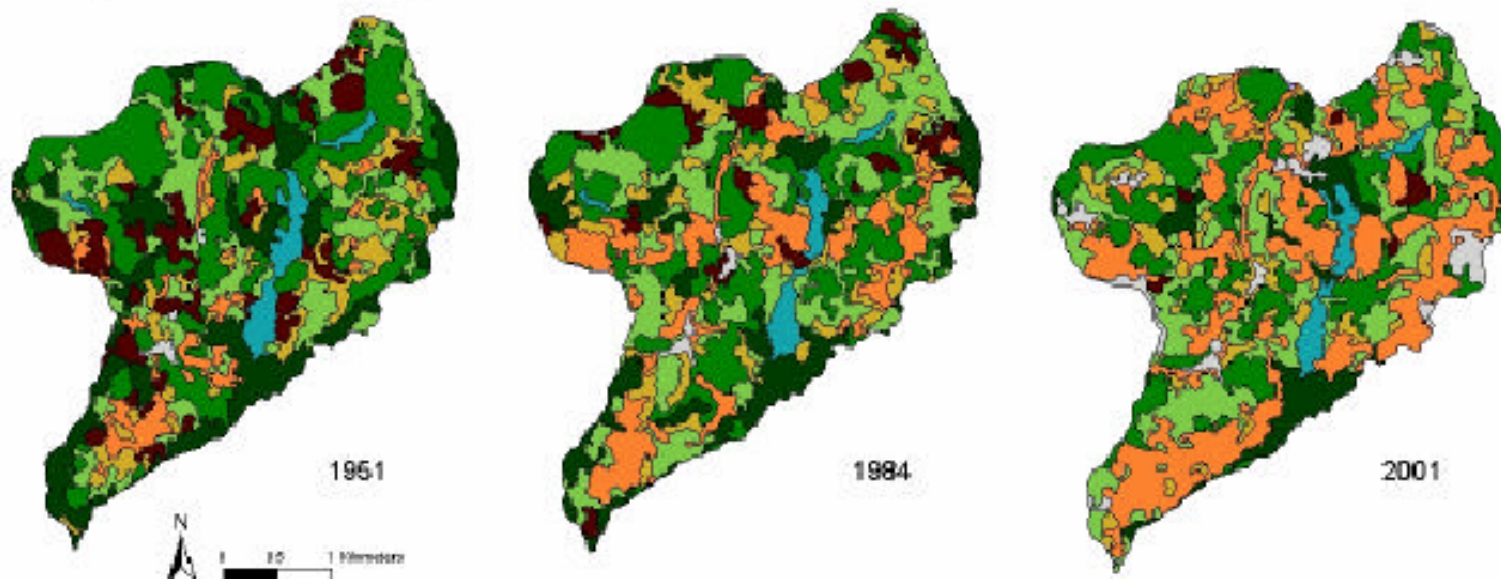
- | | |
|---|--------------------------|
| shrubland / herbaceous patches | grassland |
| short shrubland / herbaceous plots - cultivated plots | flood-adapted forest |
| fragmented forest / herbaceous patches | waterlogged soil |
| bare surface | dense medium high forest |
| houses | |
| clouds | |
| dense high forest | |
| fragmented forest / shrubland - woody patches | |
| multi-layered forest | |

village infrastructures and natural features





AWAE, land cover maps



Land Cover Classes

- bare surface
- clouds
- dense high forest
- flooded swamp forest
- fragmented forest / herbaceous patches
- fragmented forest / shrubland - woody patches
- grassland
- herbaceous vegetation on waterlogged soil

- houses
- multi-layered forest
- short shrubland / herbaceous plots - cultivated plots
- shrubland / herbaceous patches

Village infrastructures and natural features

- wooded area
- footpath
- gravel
- track
- watercourse





Changes 1984-2001 in Akok

	Akok				
	Land use in 1984 (proport. of total)	Land use in 2001 (proport. of total)	Net land use change	Net change in carbon stock	Net change in NPV
high forest	0.2573	0.1836	-0.0737	(211,977)	(56,449)
secondary forest	0.5739	0.6682	0.0944	217,228	28,630
extensive cocoa	0.0153	0.0186	0.0033	6,766	60,010
extensive cocoa w/fruit	0.0000	0.0000	0.0000	-	-
intensive cocoa w/fruit	0.0000	0.0000	0.0000	-	-
mixed food crop field/short fallow rotation	0.0857	0.0754	-0.0103	(539)	(213,375)
melon-seed/plantain/long fallow rotation	0.0678	0.0541	-0.0136	(9,926)	(213,495)
Total for landscape				1,553	(394,679)
				0.072%	-11.3%

Source: Derived from Robiglio (2007).



Changes 1984-2001 in Awae

	Awae				
	Land use in 1984 (proport. of total)	Land use in 2001 (proport. of total)	Net land use change	net change in carbon stock	Net change in NPV
high forest	0.1422	0.0736	-0.0687	(18,279)	(4,868)
secondary forest	0.4247	0.4147	-0.0100	(2,135)	(281)
extensive cocoa				-	-
extensive cocoa w/fruit	0.0679	0.0529	-0.0150	(2,885)	(47,021)
intensive cocoa w/fruit	0.0226	0.0353	0.0126	2,418	78,785
mixed food crop field/short fallow rotation	0.2157	0.3358	0.1201	579	203,270
melon-seed/plantain/long fallow rotation	0.1267	0.0878	-0.0390	(2,624)	(42,591)
Total for landscape				(22,926)	187,294
				-14.8%	21.3%

Source: Derived from Robiglio (2007).



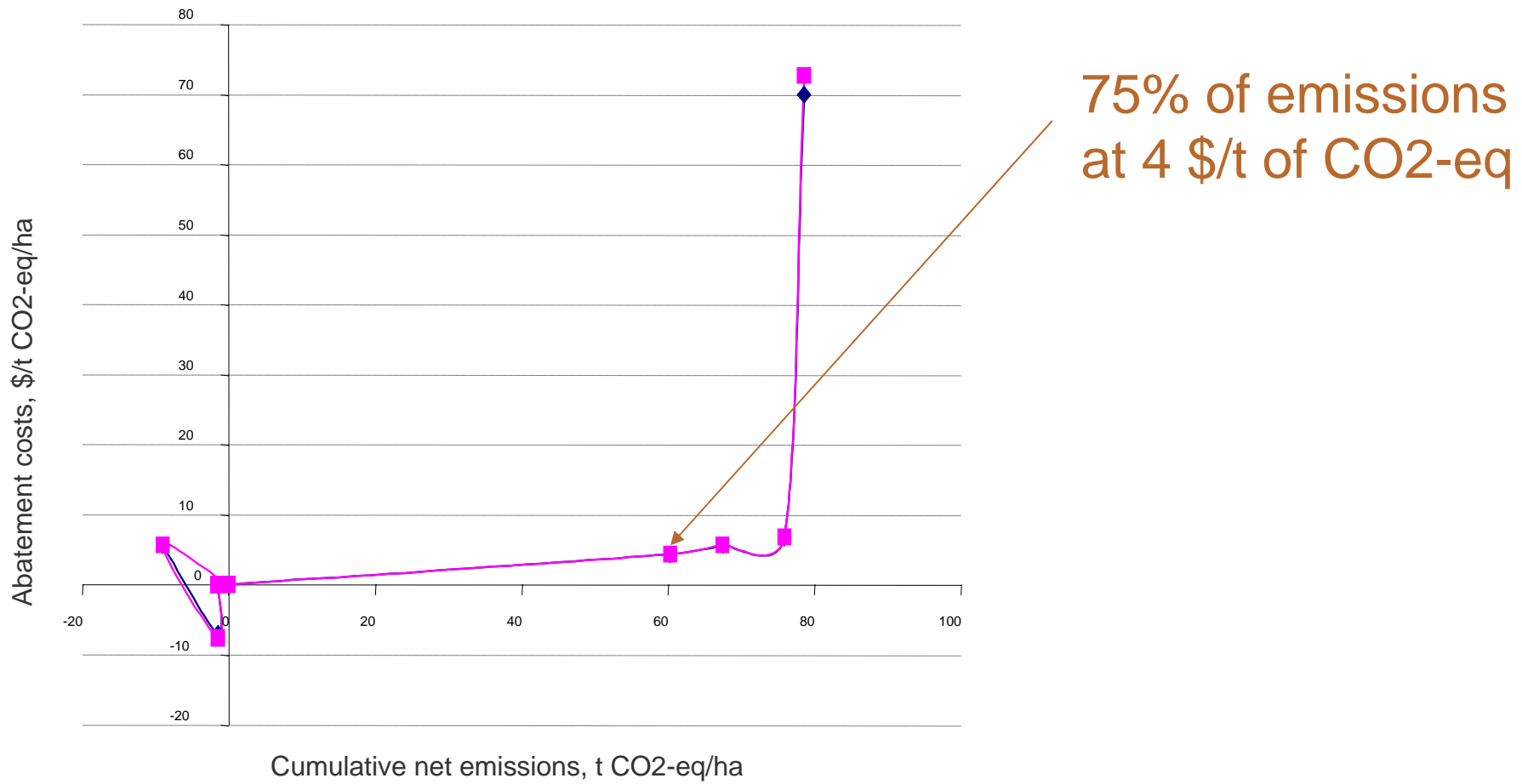
Findings

- Rate of change of high forest is -0.4% per annum in both sites
- Rate of change of secondary forest is +0.5% in Akok and -0.1% in Awae
- The dynamics at Akok probably linked to logging and out migration
- The dynamics at Awae is linked to greater agricultural pressure
- For Awae, the 23,000 t draw down in carbon stocks, generated approximately \$243,000 in NPV evaluated at private prices.





Carbon emissions abatement supply curve for Awae - a carbon emitting site





Challenges for the Central African Forest

- Largely smallholder and subsistence systems are involved in land use changes
- Scale of change is 28 t carbon/household/year in a CO₂ emitting site
- How does one monitor in a smallholder setting?
- What institutional mechanisms are required to make this work at scale?
- Necessary that such a REDD mechanism is linked to intensification of agriculture and functioning markets as part of a rural transformational process.





ASB
ICRAF
IITA/STCP
IRAD

Thank you

Merci

