

SUB-REGIONAL WORKSHOP FOR SUB-SAHARAN WEST AFRICA ON BIODIVERSITY VALUATION AND INCENTIVE MEASURES IMPACTING BIODIVERSITY

The Contribution of Natural Resources to the National Economy of Burkina Faso

Dr Noël THIOMBIANO

LEESE / CEDRES

PLAN

INTRODUCTION
METHODOLOGICAL APPROACH
RESULTS
CONCLUSION

Environment – Economic perspectives

The quality of life of the population is not only linked to an income increase, but also to the conservation of the natural resources and the environment.

The environment involves some **benefits** and not only some **costs**.

- → Direct : energy, material, assimilation services
- → Indirect : health, protection, relaxation and leisure

The environment preservation/protection is an economic activity

→ Economic growth and poverty alleviation: jobs, technologies

Measurement of the importance of the economic dimension of the environment

- 1. Environmental degradation costs
- 2. Environment contribution to the economy

Based on the monetary valuation of environmental damages

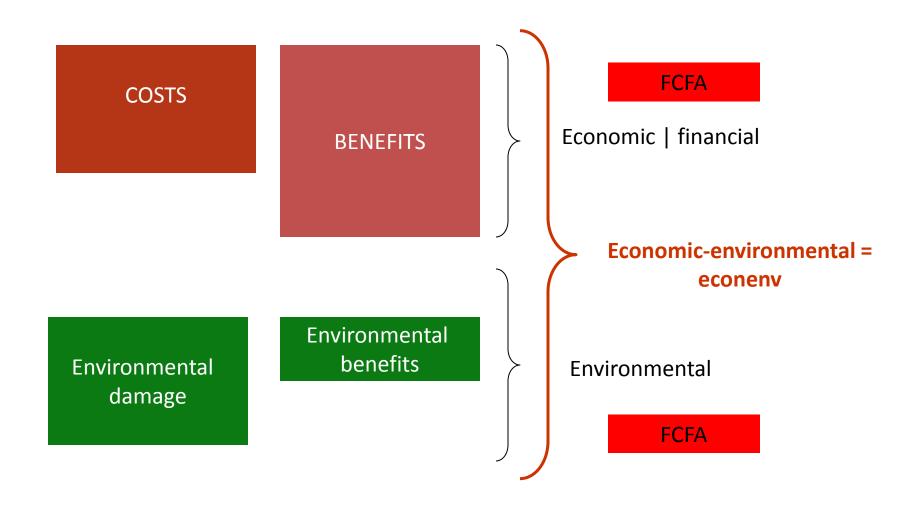
Economic impact of environmental degradation

→ Costs of damage and inefficiencies (CDI): economic impact

Damage: welfare losses (suffered by the population) & financial losses (with negative impacts on the economic activities) resulting from the change in the quality of the environment and the availability of environmental inputs.

Inefficiencies: economic losses in terms of wasted resources. These losses can be described for example as excessive water leaks in the distribution network, lack of energy conservation, or the avoidable loss of materials in the production process.

Methodology: monetization of environmental damage

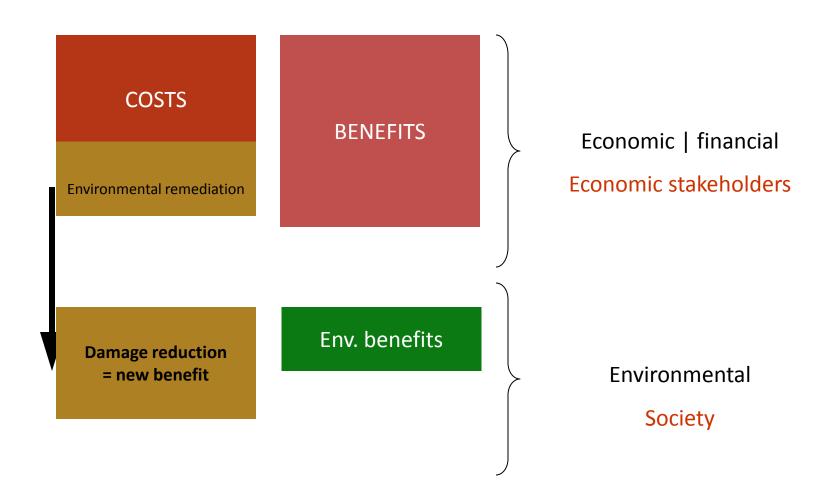


Economic impact of the environment degradation

- → Costs of damage and inefficiencies (CDI): economic impact
- → Cost of Remediation (CR) : protection measures

Cost of Remediation: necessary expenses, according to the available knowledge and data, to protect the environment by preventing or remedying its degradation

Methodology: monetization of environmental damage



Economic impact of environment degradation

- → Cost of Damage and Inefficiencies (CDI) : ► Economic impact
- → Cost of Remediation (CR) : protection measures
- → Ratios CDI/CR : tool that supports decision-making (CDI/CR = B/C)

How much damage (CDI) are avoided by investing one FCFA in remediation (CR)?

The remedial actions → Elimination of damages and inefficiencies at the lowest cost → benefits

A cost-effective remedial action would imply that the total benefits outweigh the costs, in other words, that the B/C ratio be greater than 1.

Organization analysis

a) Environmental fields

Air

Water

Littoral, soils, landscape

Waste

Energy, materials

Global environment

b) Economic categories

Health, quality of life

+ Natural ressources

= Costs of damage

+ Inefficiencies | Economic losses

= Costs of damage + inefficiencies

+ Global environment

= Total costs

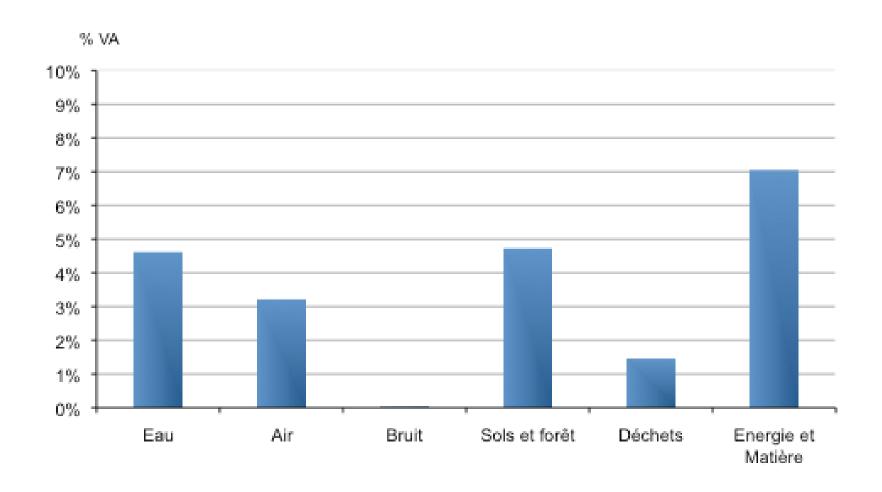
RESULTS

CDI - 2008

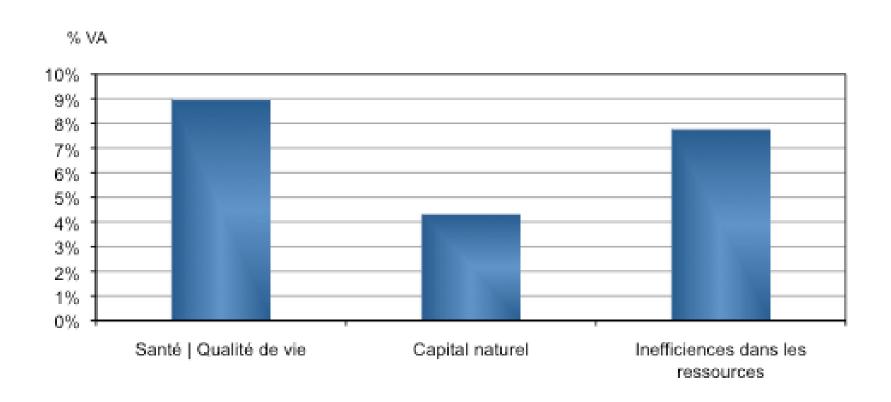
Environmental estegories	BF	Val	ue
Environmental categories	%GDP	USD	CFA
Water	4.6%	381'770'491	170'956'826'028
Air	3.2%	265'545'927	118'911'466'043
noise	0.05%	3'817'284	1'709'379'689
Soils andforests	4.7%	390'324'497	174'787'309'950
Waste	1.5%	119'975'836	53'725'179'193
Energy and materials	7.1%	581'280'354	260'297'342'661
Total I	21.2%	1'742'714'389	780'387'503'564
Global environment	0.37%	30'262'100	13'551'368'180
Global env. (with sequestration)	-0.004%	-329'571	-147'582'025
Total II	21.5%	1'772'976'489	793'938'871'744
Total II (with sequestration)	21.1%	1'742'384'818	780'239'921'538

Economic catagories	BF	Value		
Economic categories		USD	CFA	
Health Quality of life	9.0%	741'903'946	332'224'587'092	
Natural Capital	4.3%	357'691'898	160'174'432'052	
Inefficiencies in the ressources	7.8%	643'118'545	287'988'484'420	
Total I	21.2%	1'742'714'389	780'387'503'564	

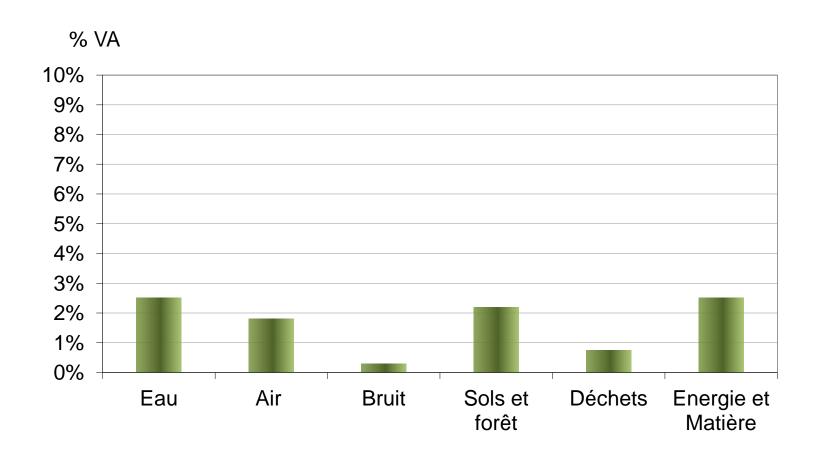
CDI – 2008 | environmental fields



CDI – 2008 | economic categories



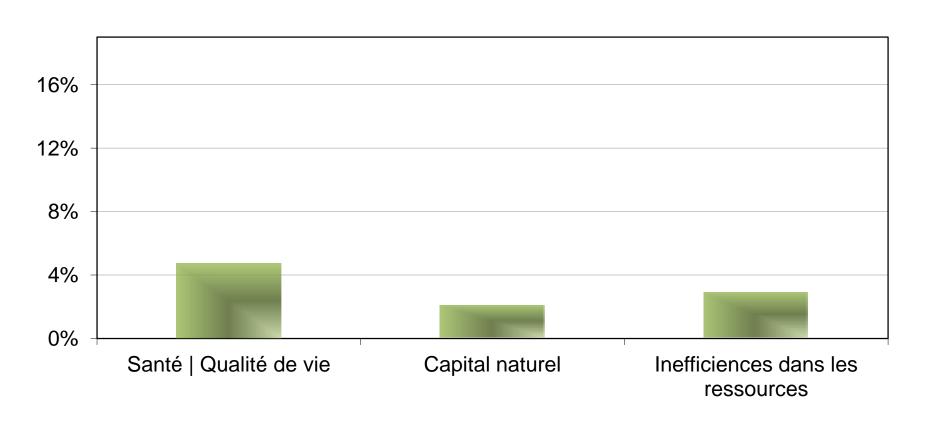
CR – 2008 | environmental fields



The remediation costs or the costs of damage avoidance represent 10% of GDP, or about two times less than the value of CDI = 7% of the public environmental expenses

CR – 2008 | economic categories

% VA

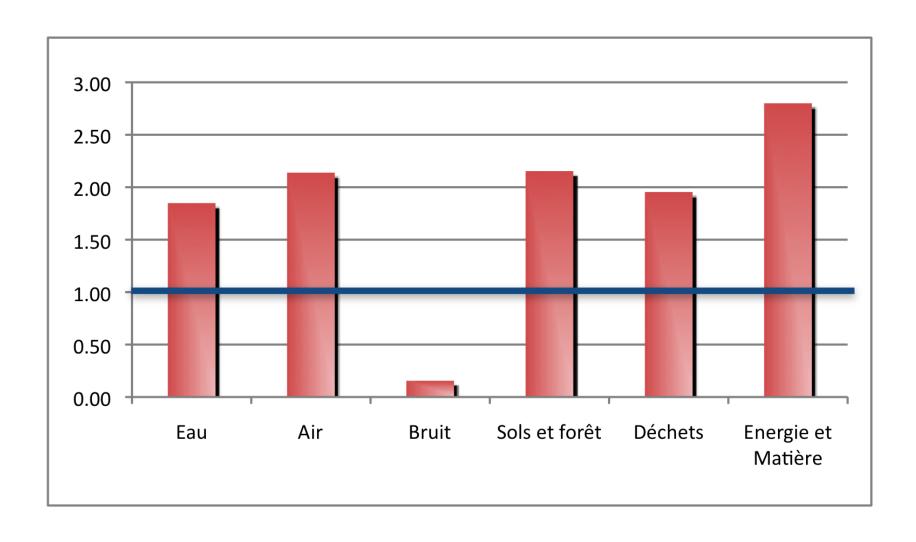


CDI/CR ratios

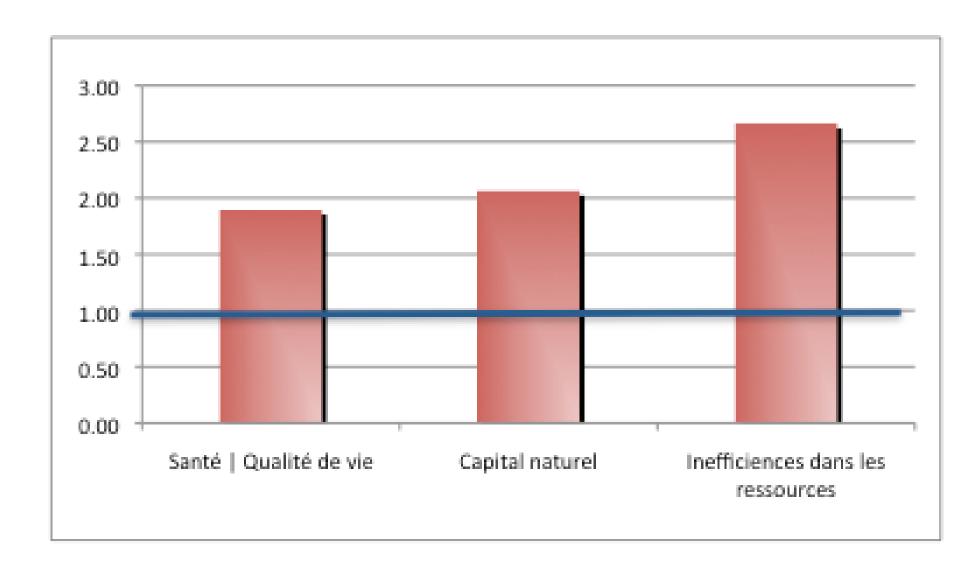
Environmental categories	BF		
Environmental categories	Ratios		
Water	1.85		
Air	2.14		
Noise	0.16		
Soils and forests	2.15		
Waste	1.95		
Energy and materials	2.80		
CDI total / CR total	2.16		
average	1.84		

Economic esterories	BF		
Economic categories	Ratios		
Health Quality of life	1.90		
Natural capital	2.07		
Inefficiencies in the resources	2.67		
CDI total / CR total	2.16		

Ratios CDI/CR -2008 | environmental fields



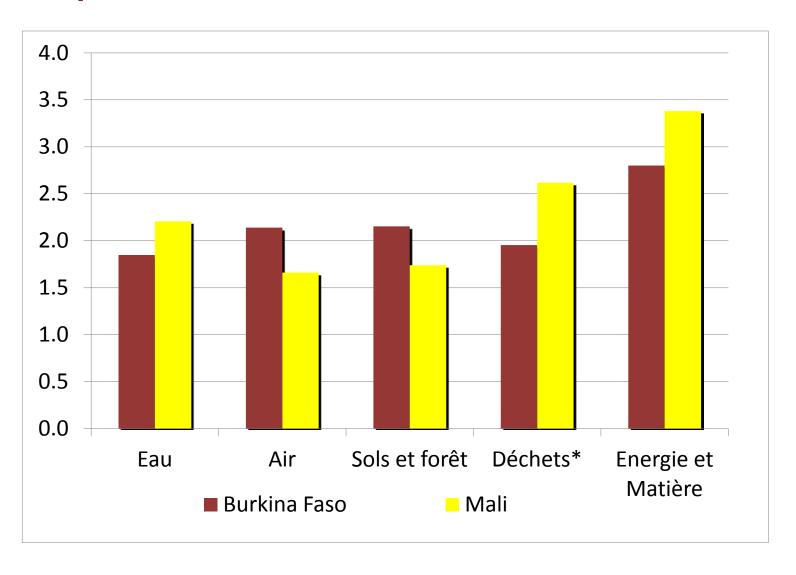
Ratios CDI/CR – 2008 | economic categories



Comparisons

Environmental categories	Burkina Faso	Mali	
	%PIB	%PIB	
Water	4.2%	4.8%	
Air	3.2%	2.4%	
Noise	0.0%	-	
Soils and forests	4.6%	5.8%	
Waste*	1.5%	1.8%	
Energy	7.1%	7.9%	
Total (hors buit)	20.6%	22.7%	
Global environnemental I	0.4%	1.5%	
Total II	21.0%	24.2%	

Comparisons



Comparisons

	CD*	CD/head - USD
Malawi	5.3%	14
Mozambique	6.5%	20
Burkina Faso	6.3%	35
Mali	6.5%	33
Algeria	3.6%	173
Egypt	4.8%	151
Tunisia	2.1%	109
Morroco	3.7%	118
Syria	3.5%	95
Jordania	2.8%	73

Limits

 Hypothesis and experts opinions, missing data → range

Refinement / sectorial supplement /udpate

Adequacy damage-remediation

Engineering work

Monetization

A complementary view into a multi-criteria analysis

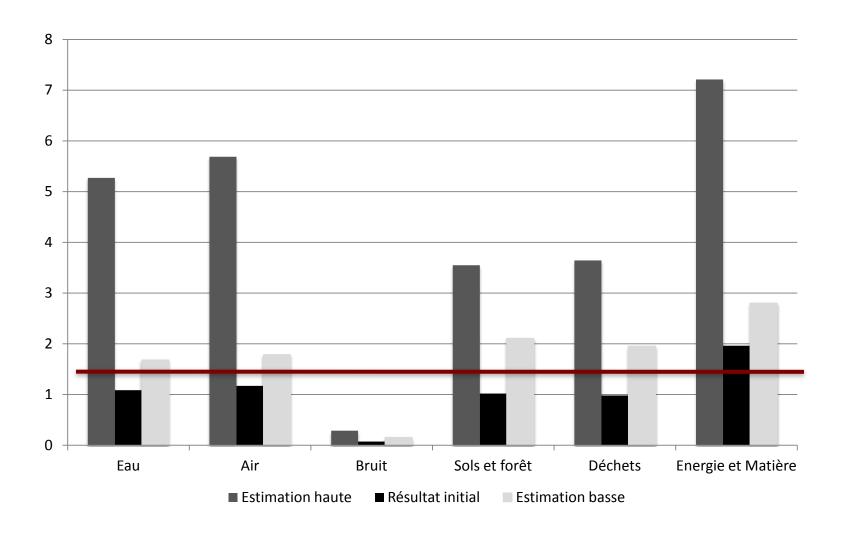
Sensibility analysis

Environmental categories	CDI haute	CDI bas	Diff.	CR haut	CR bas	Diff.
Water	6.65%	3.04%	119%	2.80%	1.26%	122%
Air	4.72%	2.26%	109%	1.92%	0.83%	132%
Noise	0.06%	0.03%	86%	0.45%	0.21%	114%
Soils and forests	6.48%	3.51%	85%	3.45%	1.83%	89%
Waste	1.96%	1.07%	83%	1.09%	0.54%	103%
Energy and materials	10.58%	4.94%	114%	2.51%	1.47%	71%
Total	30.45%	14.85%	105%	12.23%	6.13%	99%

28.05% 18.56%

Economic categories	CDI haute	CDI bas	Diff.	CR haut	CR bas	Diff.
Health Qualiy of Life	13.40%	6.25%	114%	6.11%	2.63%	132%
Natural capital	5.35%	3.10%	73%	3.12%	1.81%	72%
Inefficiencies in the ressources	11.70%	5.50%	113%	3.00%	1.69%	78%
Tota	30.45%	14.85%	105%	12.23%	6.13%	99%

Sensibility analysis



Environment contribution

Types d'activités	VA Mds FCFA	VA Révisée Mds FCFA	% PIB (soit VA)	% PIB (révisé)
Sylviculture	96,67	242,77	2,62%	6,58%
Agriculture	660,43	660,43	17,90%	17,90%
Élevage	535,35	535,35	14,51%	14,51%
Pêche	8,49	8,49	0,23%	0,23%
Mines	182,26	182,26	4,94%	4,94%
Agrégats de construction	16,60	16,60	0,45%	0,45%
Total	1 500	1 646	40,65%	44,61%

Environment contribution

Type d'activité	Méthodes	Valeurs Totale (FCFA)	Valeur par ha (FCFA/Ha)	% PIB
Sylviculture	Déforestation annuelle	57'841'192'321	716'442	1.57%
Agriculture	Différentiel de rendements moyens des sols agricoles selon les spéculations	72'496'535'862	16'812	1.96%
Élevage	Différentiel de rendements inter zones des sols de parcours pour pâturages	37'032'591'721	7'702	1.00%
Pêche	Différentiel de rendements des plans d'eau piscicoles	630'125'000	8'632	0.02%
Production d'énergie = Eau	Différentiel de coût de revient du KWh de l'énergie thermique et de celle hydroélectrique	71'029'179'000	1	1.93%
	Total	239 029 623 903		6.48%

Conclusion

High ratios: strong incentive for action (wellness gain)
Provided that he planned remediation actually lead to the removal of damage, their implementation would result in a gain of over 400 billion FCFA, approximately 27,500 FCFA / per cap. / year.

Priority fields: reducing inefficiencies (mainly due to the low cost of remediation), soils and forests, waste

Strong uncertainties – wide error margins, but priorities remain stables

Redistributive aspects: interior air and deforestation

Conclusion

Strong contribution of the environment to the economy (income, employment, food security, export)

- →Underestimation
- →Conflict of uses (forests wood NWFP)

Development of processing industries: job creation and income

- → support : credits, market
- → Information and knowledge

