Green Economy and Sustainable Development:
Bringing Back the Social Dimension
CONFERENCE

Social Welfare Sustainability in Rural Nigeria: Path to a Greener World

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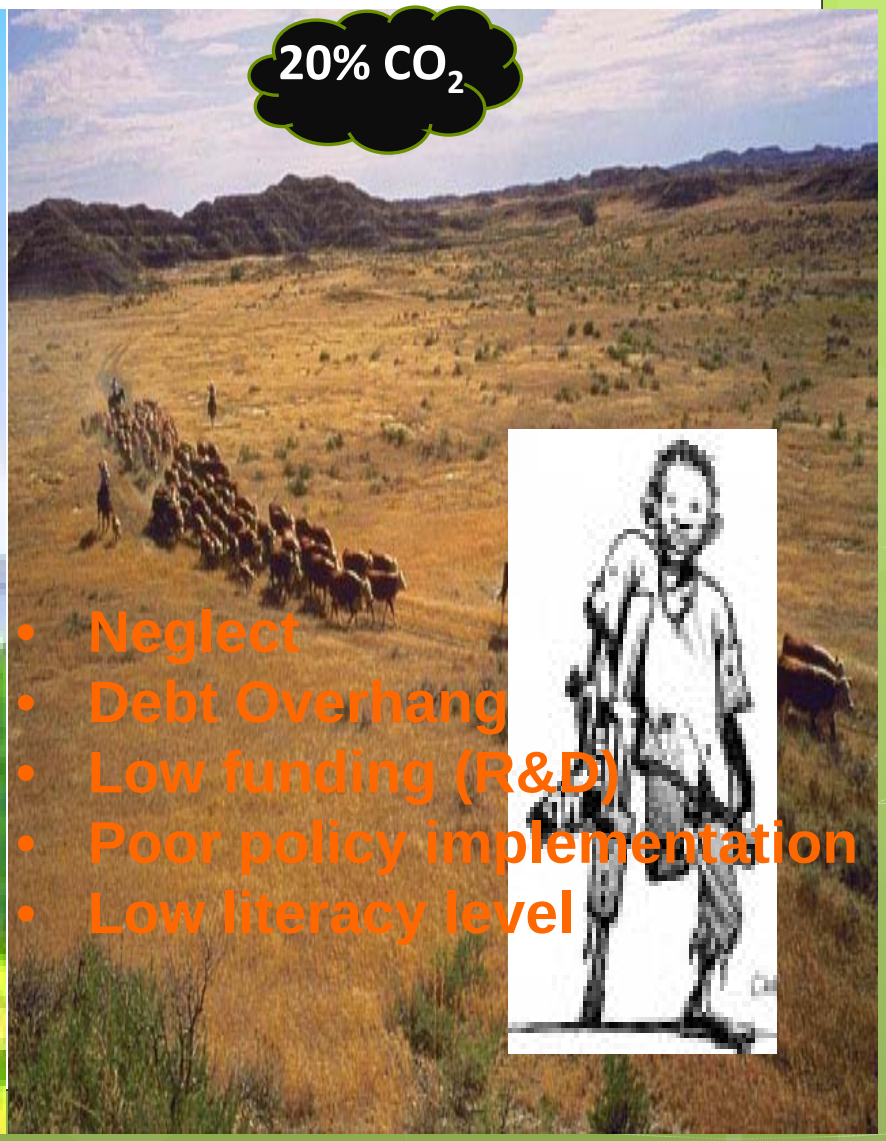
Introduction

- 36.4% poor live in rural area on < US$1/day.
- Agriculture is subsistence & about 70% of the population is involved
- Low soil productivity hence low yield
- Deforestation & Environmental Degradation is high (495,662 km^2 Affected).
- Climate change aggravates the issue
- Green Environment is threatened. How?

Resilience threatened

Developed world

Sub-Saharan Africa



Methodology

- data was obtained from the Community-Based Forest Management Initiative of the Ondo State Ministry of Agriculture and Rural Development in 2010. Data was obtained through random sampling technique
- Three Forest reserves were used. These are Idanre FR (Latitude-06.91900 & Longitude- 005.19680); Oluwa FR (Latitude-06.85394 & Longitude-004.56545); and Oyinmo FR (Latitude-07.36628 & Longitude- 005.64787).
- Data from 452 respondents within the forests enclaves was analysed.

Methodology Cont'd

- Analytical Technique

Poverty Analysis was done using the Foster, Greer and Thorbecke (FGT).

$$P_{\alpha i}^{i} = \frac{1}{n}\sum_{i=1}^{q}\left[\left(z-y\right)/Z\right]^{\alpha}$$

$$when \quad \alpha = 0, \quad P_0 = \frac{1}{n}\sum_{i=1}^{q}\left[\left(z-y\right)/Z\right]^{0} = \frac{q}{n} \quad \rightarrow Poverty\ incidence\ or\ head\ count$$

$$\alpha = 1, \quad P_1 = \frac{1}{n}\sum_{i=1}^{q}\left[\left(z-y\right)/Z\right]^{1} \quad \rightarrow Poverty\ gap\ or\ depth$$

$$\alpha = 2, \quad P_2 = \frac{1}{n}\sum_{i=1}^{q}\left[\left(z-y\right)/Z\right]^{2} \quad \rightarrow Poverty\ severity$$

Determinant of welfare was obtained through the conventional model of household economic behaviour under constrained utility maximization:

$$y_i/z_i = \beta_0 + \Sigma\beta_{1i}X_i + \Sigma\beta_{2i}C_i + \varepsilon_i$$

Table 1: Per Capita Expenditure Distribution

Decile	Mean PCE	Expenditure distribution (%)
1	233.34	1.45
2	555.12	3.46
3	834.59	5.18
4	939.00	5.83
5	1435.37	8.92
6	1915.60	11.90
7	2002.68	12.43
8	2559.47	15.89
9	2726.54	16.93
10	2899.22	18.01
Total	16100.93	100
Mean	1610.09	
$^2/_3$ MPCE	1073.39	

: *Computed from CBFMS Field Survey Data (July - September, 2003).*

Table 2: Poverty by Gender

Gender	P_0	P_1	P_2
Male	0.252	0.206	0.162
Female	0.316	0.218	0.143
All	0.370	0.253	0.121

Source: Computed from survey data analysis

Table 3: Poverty by Forest Reserves

Forest reserve	P_0	P_1	P_2
Idanre	0.381	0.251	0.079
Oluwa	0.367	0.213	0.055
Oyinmo	0.391	0.364	0.054
All	0.372	0.198	0.043

Source: Computed from survey data analysis

Results and Discussion

Table 4: Determinants of rural poverty among Male headed Household

Variable	OLS		Fixed Effects	
	Coefficient	t-value	coefficient	t-value
Constant	1.2431***	5.476	-	-
Age	0.4986	1.362	.0152**	1.460
Household size	-.0953*	-.1.3123	-.0184**	-3.0223
Marital Status	.0229	.1.3264	.0353*	1.7468
Primary Edu.	-.0141*	-.1116	-.2168	.3243
Secondary Edu	.0237	.4056	.0522	1.4342
Tertiary Edu.	.1280	.2260	.0388	.5796
Farming	-.1420**	-.2254	.1003	.7353
Safe water	.0149	.223	.0263	.3552
Safe Toilet	.3761* **	0.744	.0601	2.1223
Idanre FR	-.176	-3.247	-	-
Oluwa FR	-.254**	-1.177	-	-
Oyinmo FR	-.316	-1.964	-	-
Diagnostics	R^2 = .245; Adj. R^2 = .2718		R^2= .4021; Adj.= .3837	

Source: Data analysis result

, **, and * = Level of significance at 10%, 5% and 1%*

Results and Discussion

Table 5: Determinants of rural poverty among female headed Household

Variable	OLS		Fixed Effects	
	Coefficient	t-value	coefficient	t-value
Constant	1.795***	4.352	-	-
Age	.103	1.307	.014***	3.501
Household size	-.046**	-5.204	-.064**	-5.071
Marital Status	-.223*	-2.868	-.301**	-1.082
Primary Edu.	.011	.044	.027*	.362
Secondary Edu	.084	2.055	.204	2.430
Tertiary Edu.	-.136	-1.129	-.232	-2.020
Farming	-.308***	-3.282	.128***	1.384
Safe water	.0149	.223	.0263	.3552
Safe Toilet	.3761**	0.744	.0601	2.1223
Idanre FR	.1223 *	1.8432	-	-
Oluwa FR	.1298	1.4115	-	-
Oyinmo FR	.1311***	1.2702	-	-
Diagnostics	R^2 = .2054; Adj. R^2 = .1826		R^2= .4730; Adj.= .3449	

Source: Data analysis result **, **, and *** = Level of significance at 10%, 5% and 1%*

Table 6: Determinants of rural welfare among Idanre FR households

Variable	OLS	
	Coefficient	t-value
Constant	2.341***	2.112
Age	312*	1.428
Gender	.120	.325
Household size	-.152**	-2.543
Marital status	-.604**	-1.367
Prim-education	-.232	-.843
Sec –education	.421	0.633
Ter-education	.134	.192
Farming	-.350***	-1.238
Safe water	.085***	2.035
Safe toilet	-.534	-1.151
Diagnostics	R^2 = 0.3914;	Adj.R^2 = 0.2167

Source: Data analysis result

, **, and * = Level of significance at 10%, 5% and 1%*

Table 7:Determinants of rural welfare among Oluwa FR households

Variable	OLS	
	Coefficient	t-value
Constant	1.460**	3.033
Age	.122***	.616
Gender	.210	.115
Household size	-.222**	-1.154
Marital status	-.265	-.458
Prim-edu	-.324*	-.654
Sec –edu	1.110	0.541
Ter-educ	.182	.222
Farming	-.171***	-.168
Safe water	.129	2.123
Safe toilet	-.617	-2.143
Diagnostics	R^2 = 0.2422; Adj.R^2 = 0.2018;	

Source: Data analysis result

, **, and * = Level of significance at 10%, 5% and 1%*

Table 8: Determinants of rural welfare among Oyinmo FR households

Variable	OLS	
	Coefficient	t-value
Constant	1.362***	1.701
Age	.817*	1.624
Gender	.352*	.144
Household size	-.280**	-1.552
Marital status	-.262	-1.161
Prim-edu	-.210	-.224
Sec –edu	.022	0.633
Ter-educ	.144	.273
Farming	-.561***	-2.329
Safe water	.164***	1.027
Safe toilet	-.431	-1.022
Diagnostics	R^2 = 0.3254;	Adj.R^2 = 0.2313

Source: Data analysis result

*, **, and *** = Level of significance at 10%, 5% and 1%

Table 9: Biodiversity indices for natural forest in the study areas

Indices	Ose-Oba FA	Ondo East FA	Uso- Owo FA	Idanre FR	Oluwa FR	Oyinmo FR	Total
Shannon-Weiner index (H')	2.66	2.54	2.75	2.68	2.73	2.51	3.39
Evenness (E)	0.52	0.51	0.52	0.44	0.44	0.46	0.46
No of species	18	17	19	20	20	17	52
No of Families	15	16	12	17	21	15	28
No of stem/ha	***168***	***148***	***196***	***432***	***468***	***232***	***1644***

Source: CBFMS Report, 2010. *Note: FA means Natural forest area i.e free area outside of reserves.*

Forest reserve	P_0	P_1	P_2
Idanre	0.381	0.251	0.079
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Recommendation

- Country Level

  - Reducing deforestation in the area and Nigeria at large must incorporate social welfare programs for poverty reduction.

  - National agriculture must be redefined. Needs to change from eco-efficiency to sustainable consumption and production.

  - Agricultural policy must be inclusive in its formulation and implementation

  - investment in innovations that increase efficiency and decouple economic growth from the use of natural resources is necessary.

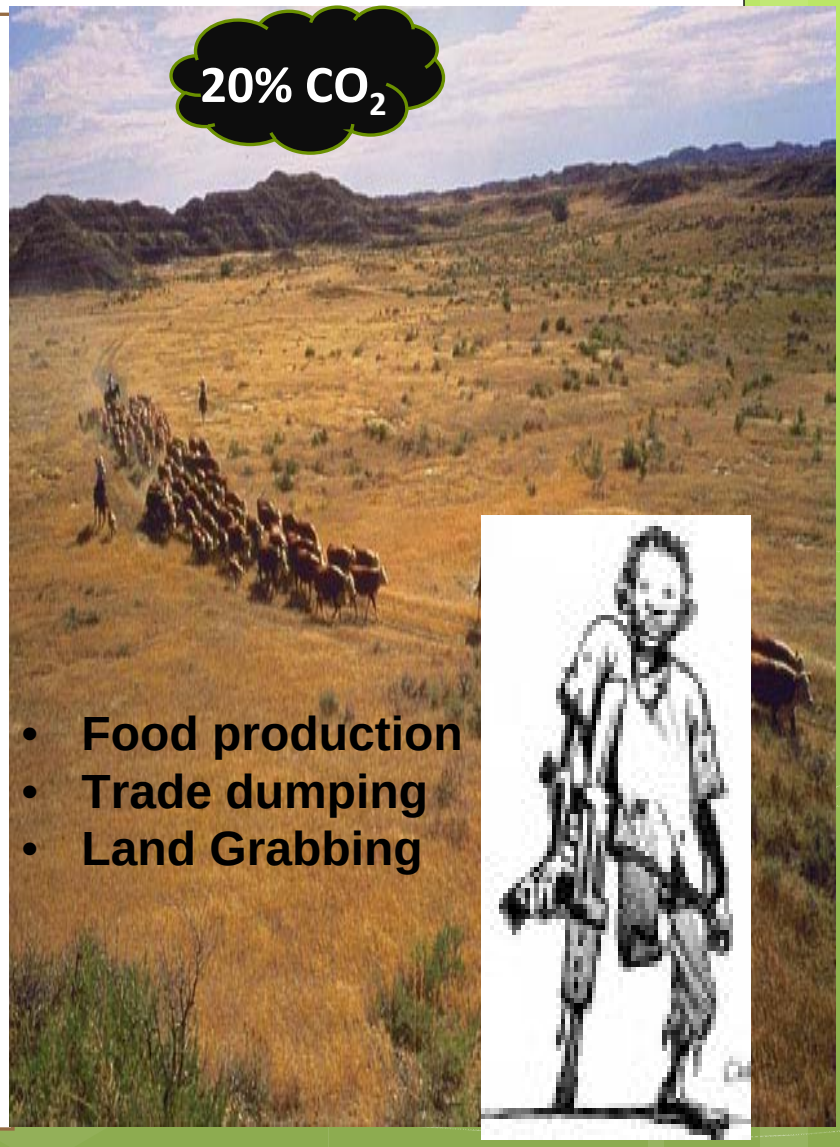
  - Carbon marketing- REDD should be explored. However, caution must be exercised. Why?

Recommendation

Developed world

Multilateral organisation (WB, WTO etc.) & international NGOs should assist and protect

Sub Saharan Africa



Thank you