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REVIEWING EFFORTS IN GLOBAL FOREST CONSERVATION FOR SUSTAINABLE FOREST MANAGEMENT: THE WORLD WIDE FUND (WWF) CASE STUDY

I. J. NWADIALOR

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ABSTRACT

The world's forests are in crisis - facing greater threats than ever before; and there is need to document efforts made in protecting them for effective forest resources management. The paper compiled and assessed from 1996-1998 a maiden report of the efforts of a leading world forest conservation Organization - the World Wide Fund (WWF) in the five geo-continental zones of the world. The quantitative-temporal change analysis, revealed that about 34.21 to 56.60 million Swiss Francs were committed to global forest conservation during the period; and that between 1996 and 1997, there were changes (increases) in the "effort" parameters studied, viz; Expenditure, Certified Forest Cover, Number of Certified Forests and Number of WWF Projects, Between 1997 and 1998, there was a change (decrease) in only the Expenditure; although the Organization still recorded an improvement in its targets. The regression analysis, showed poor relationships of about 0.5% to 34.8% (at 5% significant level) between Expenditure and the other three variables. This was attributed to the integrated approach adopted by the WWF (field projects, policy initiatives, campaigns, partnerships and community participation) which was not accounted for in the relationships considered. This implies that the expenditure profiles of the WWF in forest conservation have multidimensional perspectives.

KEYWORDS: Global Forest, Conservation, Assessment, WWF Organization, Efforts.

INTRODUCTION

Forests and related land cover types (woodlands, shrublands, degraded forests and forest fallows) are important terrestrial ecosystems. They account for over 52 x 10^6 km^2 of the earth's land area, occupy three times the area of croplands and 75% more area than grasslands (Soussan and Millington, 1992). They are vital to the ecological functioning of the planet, producing 60% of the net primary productivity of all terrestrial ecosystems, of which tropical forests account for approximately two-thirds (op. cit).

The world's forests, apart from being the habitat of a large proportion of earth's plant and animal species, also serve a series of vital environmental services, without which the functioning of the biosphere would be endangered. These include; safeguarding of the hydrological systems, regulating temperature, acting as reservoir of soil fertility, etc.

Tree resources - also, of major economic importance form a range of industries, notably timber, processed wood and paper. Apart from the timber species, there are many non-timber tree species such as: herbs and shrubs of major economic values, as producers of food, fodder, fibres, drugs, wild fruits and other commodities in the rural economy.

These services invariably show that man depends heavily on forest resources for his existence; and continued interaction with the forest, has resulted in the phenomenon of deforestation.

Martin (1996) has observed that the world's forests are in crisis; and that nearly one per cent of the world's tropical forests disappear each year. He noted also that similar losses in forest quality are taking place in temperate and boreal forests. The annual rate of deforestation in the Brazilian Amazon, he observed had increased by over 34% since the Earth Summit in Rio de Janeiro in (1992). Also during the 1996, the impact of transnational logging companies has become much more severe. He further disclosed that large forest tracts in countries, which had previously been 'safe' from destruction are now being targeted by these international loggers; hence, WWF (a leading world forest conservation organization) with the help of the European Commission is intensifying efforts in halting the trend.

Also, as observed by Arunarwati (1997), the rate of deforestation and forest degradation in tropical countries caused by human interference has been high and has increased over the past two decades. An increase from 0.6 per cent per year in the second half of the 1970s to 0.8 per cent in the 1980s, has been recorded; thus indicating a 30 per cent increase in the deforestation rate within a decade.

I. J. NWADIALOR. Department of Land Surveying & Photogrammetry, Federal University of Technology, Minna, Nigeria.

Sullivan and Jeanrenaud (1997) reported that new research by WWF shows that almost two-thirds of the world's original forest cover has been lost; and of what remains, 94% is unprotected. WWF, they said, is committed to halting and reversing this continuing degradation through the work of its International Forest Unit and Forests for Life Campaign. WWF is sponsoring more than 300 forest projects in over 60 countries of the world. They opined that it is quite clear that far greater efforts need to be made by governments and industry if we are to prevent the virtual extinction of most of the world's natural forests in the next fifty years. Many Non-Governmental Organizations (NGO's) had hoped that the second Earth Summit, held in New York in June 1997, might lead to substantive commitments to act to prevent forest loss and degradation worldwide. However, the meeting degenerated into a stalemate over whether or not a Global Forest Convention should be established, with little discussion about what such a document might contain.

His Royal Highness (HRH)- The Duke of Edinburgh Philip (1998), has observed "the alarming fact is that only a tiny fraction of the world's natural forests have been given any form of protection and the remainder are being exploited faster than they can regenerate".

According to Annan (1998) a target of placing 10% of the worlds forest under some form of legal protection needs to be seen in a larger context; and that larger context is a future for forests thriving as life-supporting ecosystems which can meet the needs of all people.

Martin (1997, 1998), also observed that the problems facing the world's forests are too large for any one group to tackle alone, and that some partnerships in which working relationships have to be set up with many collaborators, have been initiated by the WWF. Joint projects are now running with governments, intergovernmental bodies, commercial companies, aid agencies, NGOs, indigenous groups, academic bodies and research organisations. The five joint objectives are: establishment of a network of ecologically - representative protected areas; environmentally appropriate, socially beneficial and economically viable forest management outside protected areas; development and implementation of ecologically and socially appropriate, forest restoration programmes. Others include reduction of forest damage from global change, including a decrease of pollution below damage thresholds, as measured by critical loads; use of forest goods and services at levels that do not damage the environment, including elimination of wasteful consumption, to attain a level of use of forest goods and services within the regenerative capacity of the forest estate.

Nwadialor (2001) has critically opined that much attention has appeared to be centred on environmental mapping (with forest as integral part) than on assessing extent of the forest conservation and commitments in local or global context. A multitude of authors some of whom had carried out researches in forest mapping include: Foody and Curran (1994); Ikhuoria (1993); Murai and Honda (1991); Persson (1995); Olsson and Ardo (1992); and Osterlund (1992).

This subtle remark has stimulated the paper to attempt to model some efforts made on forest protection with focus on a leading world forest conservation organization (the WWF) from 1996 to 1998. The information derivable from this approach, would be invaluable in tackling the problem of global deforestation as well as encouraging other organizations to contribute to this objective.

STUDY AREA/SCOPE

The study areas considered, arise from the available data from WWF reports of 1996, 1997, and 1998 on the global annual forest conservation of "Forests for Life Campaign". The reports covered five continents of the world namely; Africa/ Madagascar, Asia/Pacific, Europe/Middle East, Latin America/Caribbean, and North America respectively.

The WWF organization was founded in 1961 and is a key player in global forest protection and conservation. The first of its Annual Forest Reports was initiated in 1996. It marked the organization's 35th anniversary and its long involvement in forest conservation worldwide. It adopts an integrated approach in tackling the global deforestation and loss of forest quality problems, through; field projects, policy initiatives, campaigns and partnerships, and drawing on the expertise of hundreds of staff, consultants, advisers and partners. It is also developing networks and innovative partnerships to build on traditional conservation efforts, through community participatory approach to help maintain forest that are good for people and for wildlife. The organization is supported by funds generated worldwide through the partnerships, and goodwill/voluntary ventures.

The period of this study would have been extended, but for the lack of statistical data for subsequent years. Despite this, it is envisaged that the data and methods would be adequate to project the efforts so far made by the WWF for commendation and encouragement, and for other similar organizations worldwide to emulate. Already many countries of the world have pledged to place 10% of their forest under some form of legal protection in the year 2000, through the WWF lobbying and persuasion strategy.

Furthermore, informed buyers of forest products in some parts of the world are now insisting on purchasing products from well managed forests.

MATERIALS AND METHODS

The data for this research were extracted from the WWF "annual global forest reports" of 1996, 1997, and 1998. These were, however, modified for better statistical presentation and analysis as shown in Tables 1 to 5 below.

The methods of analyses included the following:

(a) Some comparisons of the change analyses of the efforts were made; including the computation of the following:

(i) Total Number of Certified Forest Cover and total expenditure for each continent during the period (1996 to 1998), and deriving expenditure per hectare of certified forest cover for the purpose of assessing the WWF financial efforts in terms of expenditure incurred in the process as shown in table (1 to 4).

(ii) Total Number of WWF projects and total expenditure, including expenditure per project per continent were also computed for the purpose of the assessment as in table 5.

(b) Further analyses were made by statistically modelling the "efforts" of the WWF in the five continents in terms of the following parameters contained in the tables (1 to 3), namely: Certified Forest Cover (CFCover); Number of Certified Forest (NCForest); Number of WWF projects (NWWF); and Expenditure (Exp.), respectively. The data for this period of three years were later sumed up to form observation points, which totalled fifteen sample points for the five continents (for better statistical analysis of the objective) since the three years period appears to be a small sample size. The fifteen observation points approach was considered in the form stated due to lack of data to increase the number of samples.

Simple regression analyses were then carried out at 95% confidence limit or 5% significant level between Expenditure (Exp). (dependent variable), and each of the other three independent variables; namely; Certified Forest Cover (CFCover), Number of Certified Forests, (NCForest), and Number of WWF projects (NWWF). This was followed by multiple regression between the former (Exp.) and latter independent variables. The hypothesis in each case is that the relationships between these variables, are not significant.

The coefficient of determination, R^2 equal or greater than 50% is a significant condition; while R^2 of less than 50% is considered insignificant. The purpose of these regressions is to assess the relationships of the variables in order to determine the factors that may be influencing the expenditure efforts/commitments of the WWF Organization in forest conservation. These approaches were so designed for adequate evaluation of the efforts for input in arresting global deforestation in all the geo-environmental continental zones of the world for better information dissemination.

RESULTS AND DISCUSSION

4.1 CHANGE ANALYSES AND RESULTS OF THE EFFORTS

This section presents and discusses the results of the data in Tables 1 to 3 to assess the quantitative/temporal changes in the efforts/achievements made by the WWF during the period under investigation. During the 1996 year, a total of 34.21 million Swiss Francs (S.F)

Table 1: WORLD FOREST CONSERVATION EFFORTS/COMMITMENTS (1996).

S/No.	Continents	Certified Forest Cover (Hectares) (Ha)	Number of Certified Forests	Number of WWF Projects	Expenditure in Swiss Francs
1	Africa/Madagascar	26,250	2	72	13,964,306
2	Asia/Pacific	12,701	3	92	6,261,338
3	Europe/Middle East	1,841,543	9	38	3,708,020
4	Latin America/Caribbean	251,046	6	53	7,730,348
5	North America	615,621	8	3	2,521,818
	Total	**1,747,411**	**28**	**258**	**34,205,830**

Source: Adapted from Worldwide Fund (WWF, 1996).

Table 2: WORLD FOREST CONSERVATION EFFORTS/COMMITMENTS (1997).

S/No.	Continents	Certified Forest Cover (Hetares) (Ha)	Number of Certified Forests	Number of WWF Projects	Expenditure in Swiss Francs
1	Africa/Madagascar	134,828	7	44	18,496,108
2	Asia/Pacific	71,476	17	106	13,041,471
3	Europe/Middle East	1,877,019	16	104	15,024,765
4	Latin America/Caribbean	311,998	10	50	8,364,330
5	North America	644,461	15	4	1,665,130
	Total	**4,039,782**	**65**	**308**	**56,595,804**

Source: Adapted from Worldwide Fund (WWF, 1997).

Table 3: WORLD FOREST CONSERVATION EFFORTS/COMMITMENTS (1998).

S/No.	Continents	Certified Forest Cover (Hetares) (Ha)	Number of Certified Forests	Number of WWF Projects	Expenditure in Swiss Francs
1	Africa/Madagascar	1,783,181	12	49	15,705,810
2	Asia/Pacific	114,078	15	91	16,096,031
3	Europe/Middle East	6,269,677	44	121	9,579,601
4	Latin America/Caribbean	889,052	23	41	7,287,365
5	North America	1,459,699	35	13	693,125
	Total	**10,515,687**	**129**	**315**	**49,361,932**

Source: Adapted from Worldwide Fund (WWF, 1998).

Table 4: TOTAL AREA OF CERTIFIED FOREST COVER AND TOTAL EXPENDITURE FOR EACH CONTINENT (1996 - 1998).

S/No.	Continents	Total Area of Certified Forest Cover (in Hectares)	Expenditure in (Million) SWISS Francs	Expenditure Per Hectare of Certified Forest Cover in Swiss Francs
1	Africa/Madagascar	1,944,259	48,166,224	24 .77
2	Asia/Pacific	198,255	35,398,840	178. 55
3	Europe/Middle East	9,988,239	28,312,386	2. 83
4	Latin America/Caribbean	1,452,096	23,382,033	16. 10
5	North America	2,719,781	4,880,073	1.79

Source: Modified from WWF Report (1996 - 1998).

was spent in certifying 1.75 million hectares of forest cover; establishing 28 certified forests, and 258 WWF forest projects in the five geo-continental zones of the world (Table 1).

Between 1996 and 1997, there was a change (increase) in Expenditure of about 39.56%; 131.19% in Certified Forest Cover; 132.14% in the number of Certified Forests; and 58.14% in the number of WWF projects, respectively. This signifies a remarkable effort by the WWF organization in forest conservation (Tables 1 and 2).

Between 1997 and 1998, there was a change (decrease) in Expenditure of about 12.35%; and change (increases) of 160.30% in Certified Forest Cover; 98.46% in the number of Certified Forests; and 2.27% in number of WWF projects established (Tables 2 and 3). This is also a commendable effort despite a small percentage decrease in Expenditure because the Organization was able to achieve a substantial improvement in its targets. The drop in the Expenditure might have arisen from expenditures incurred in sustaining other aspects of the WWF

Table 5: TOTAL NUMBER OF WWF PROJECTS, AND TOTAL EXPENDITURE PER CONTINENT (1996 - 1998).

S/No.	Continents	Total Number of WWF Projects	Expenditure in (Million) SWISS Francs	Expenditure Per WWF Project Per Continent in (Thousand) Swiss Francs
1	Africa/Madagascar	165	48,166,224	291,916.51
2	Asia/Pacific	289	35,398,840	122,487.34
3	Europe/Middle East	263	28,312,386	107,651.66
4	Latin America/Caribbean	144	23,382,033	162,375.23
5	North America	20	4,880,073	244,003.65

Source: Modified from WWF Report (1996 - 1998).

strategies (policy initiatives, campaigns and lobbying, and forming of partnerships) during the period.

ASSESSMENT OF TOTAL EXPENDITURE AND TOTAL AREA OF CERTIFIED FOREST COVER PER CONTINENT (1996 - 1998).

The sum of 34.21million Swiss Francs (S.F.) was spent on forest conservation by the WWF in 1996; 56.60million S.F. in 1997; and 49.36million S.F. in 1998, in the five geo-environmental continental zones of the world. (That is 140.16million S.F. in the three years of effort).

The continent of Africa/Madagascar got the highest total expenditure of 48.17million S.F., followed by Asia/Pacific with 35.40million S.F. This may be expected because these two continents always have serious ecological problems often induced by poverty, ignorance and climatic factors of drought and desertification with their forest highly threatened. This agrees with the statement by Wellens and Millington (1992,) that woodland clearance to provide land for rain-fed agriculture is common in Africa, South Asia and Latin America. A lot of expenditure may, therefore, be required to protect and conserve these forest ecosystems.

On the other hand, it was noticed that the latter continent got the highest expenditure per hectare of Certified Forest Cover of 178.55 S.F., while the former followed with 24.77 S.F. These figures surprisingly reflected low expenditures of certification per hectare of forests contrary to expectation of high expenditure values. Some implications can be adduced to this development as follows. Firstly it is highly suspected that free/voluntary labour from the native communities which was not quantified in monetary terms was used by the WWF in their project executions; otherwise, the costs for certification would normally be expected to be high because of the high value attached to it as a clear indicator of good forest management. The voluntary services may connote a development of awareness posture by the communities of these continents about the ecological problems and the need to solve them. Secondly the low expenditure per hectare of certified forests (Table 4) for Europe/Middle East, Latin America/Caribbean, and North America of 2.83 S.F., 16.10 S.F., and 1.79 S.F., respectively, may be attributed to awareness, stability of some forest ecosystems, or the unaccounted expenditures of the individuals and communities in the community forest plantation ownership programmes.

ASSESSMENT OF TOTAL NUMBER OF WWF PROJECTS AND TOTAL EXPENDITURE PER CONTINENT (1996-1998)

The results of this assessment showed that Asia/Pacific has the highest number of WWF projects of 289, followed by Europe/Middle East with 263 projects, and Africa/Madagascar, the third with 165 projects. This appears to be in harmony with Millington (1992,) who stated that the rates of erosion in many parts of Europe are naturally high because of the climate, rugged topography in mountainous areas, unfavourable rock lithology and erodible soils. Some areas as in the Mediterranean zone, have a long history of forest clearance and agriculture dating back to Greek and Roman civilizations. The high number of conservation projects in Europe/Middle East thus established seems to be a reflection of these environmental factors. However, Africa/Madagascar has the highest expenditure per project of 291.92 S.F. as may be expected due to its fragile ecosystems.

North America was the second in the expenditure per WWF project of 244.004 S.F., and has the least number of projects and expenditure. This may be expected due to high awareness factor on environmental issue, which makes WWF effort in this continent a little easier. However, the high expenditure per project might

have arisen from this awareness attitudes on the part of the North America in which the WWF appears to encourage them for it. It may also mean that North America has few, but seriously threatened forests that need huge expenditure to conserve. This may be different from the situation in Africa/Madagascar where the high expenditure per project might have arisen from the ever endangered and vulnerable nature of the continent's environment.

CORRELATION ANALYSES OF THE EFFORTS

The results of the simple regression analyses (including the multiple regression) carried out between the parameters constituting the efforts are discussed below. This is to assess the criteria that may be influencing the WWF in realizing its efforts.

Table 6: in the appendix gives the summary of the regression analysis. The results of the simple regression analyses showed that there is no significant relationships between Expenditure and Certified Forest Cover, Number of Certified Forests, and Number of WWF Projects. They appear to be in each case poorly correlated with Expenditure. This may imply that the WWF organization does not base its expenditure solely on these variables. This is also confirmed by the result of multiple regression analysis between Expenditure and the three independent variables under consideration, which showed a non-significant relationship of 44.4%. However, the relationship between Certified Forest Cover and Number of Certified Forests, showed a significant value of 58.0% as may be expected (since the former increases with the latter) with correlation coefficient being 76.16%.

The non-significant relationship and poor correlations between Expenditure and other three "effort" variables can be rather surprising. This situation could be explained as a result of the integrated approach being adopted by the WWF organization in tackling the global deforestation problems. These include: filed projects, policy initiatives, campaigns, partnerships, and the use of local/community participatory approach, which may not have been accounted for in the relationships being considered.

CONCLUSIONS/RECOMMENDATION

The phenomenon of deforestation and its processes have been an age-long problem and man's consciousness of the adverse environmental and socio-economic consequences, is fast gaining ground for some decades now. It is nevertheless surprising that while researchers have been publishing their works, Forest Conservation Organization appear non-chalant in doing the same.

The efforts made by the World Wide Fund (WWF) Organization in forest protection and conservation have been reviewed in the five geo-continental zones of the world, and found to be remarkable and commendable for emulation. The struggle to arrest local, regional or global deforestation problem should not be left to an individual researcher or organization alone. It should be a combination of individual and collaborative effort for it to be effective and successful. Researchers should not leave the results of their research efforts to 'rot' in files or cabinets. They should be displayed in the Internet systems together with the research expenditures for others to enjoy and appreciate.

It has been observed that one of the cardinal strategies adopted by the WWF in combating global deforestation is through the community participatory approach. However, in doing that, it is recommended that the philosophy of bottom - up decision/participatory approach," be highly considered as an insurance of the communities in the management of their resources. It is also recommended that any contributions made by these natives; either in terms of free/voluntary or subsidized labour be quantified in monetary terms and documented properly as it would help in knowing the commitments of both the natives and the WWF alike. This is informed by the low expenditures per hectare for certified forests which were highly suspected to have arisen from free or voluntary services rendered by the local citizens which were unaccounted for in the expenditures displayed. The expenditure for certification of forests cannot be so low for the value attached to it to be meaningful as it is a vital measurement indicator of good forest management.

Through increasing awareness, informed buyers of forest products in some parts of the world are now insisting on purchasing products from well-managed/certified forests, for example, with labels of the Forest Stewardship Council (FSC) which is an international organization coordinating independent certification of good forest management. Nigeria in particular and other African states are, therefore, advised to follow the new trend in ensuring sustainable forest management for posterity.

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APPENDIX

TABLE 6. SUMMARY OF SIMPLE/MULTIPLE REGRESSION ANALYSIS

S/No.	Dependent Versus Independent Variable(s)	Regression Equation	R-Square (R^2)	Remark
1	Exp. Vs CFCover	Exp = 9612499 - 0.25 CFCover	0.5%	N.S
2	Exp. Vs NCForest	Exp = 10785830 - 97513 NCForest	3.8%	N.S
3	Exp. Vs NWWF	Exp = 4033405+90396 NWWF	34.8%	N.S
4	CFCover Vs NCForest	CFCover =-461083+104592 NCForest	58.0%	S
5	CFCover Vs NWWF	CFCover = 289514+13576 NWWF	10.3%	N.S
6	NCForest Vs NWWF	NCForest = 11.6 + 0.0541 NWWF	3.1%	N.S
7	Exp. Vs CFCover, NCForest, NWWF.	Exp = 5494644 -0.37 CFCover- 116456 NCForest +101763 NWWF	44.4%	N.S
	S = Significant	N.S = Not Significant		

Source: Data analysis by the author.