Sudan University of Science and Technology

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Assessment of the Economic feasibility of Community Forests

Case Study of Sinnar State (Sudan)

تقييم الجدوى الاقتصادية لغابات المجتمعات

دراسة حالة ولاية سنار (السودان)

A thesis submitted for the fulfillment of the degree of Doctor of Philosophy Ph.D. in Forestry science

By

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Dedication

To my father, mother, brothers and sisters

To my lovely children Fatima, Amro, Abu baker, and Reem

To my friends

I dedicate this effort.

Acknowledgements

While this thesis is produced, I realized the efforts and support provided by a number of distinguished individuals and esteemed organizations who have given their hands for this work. This study would have been inconceivable without their efforts.

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Assessment of the Economic feasibility of Community Forests Case Study of Sinnar State (Sudan)

Abstract:

Community forestry is practiced in various countries throughout the world for livelihood, forest protection purposes and also for urban amenity values. The main objective of this study was to assess the economic feasibility of different types of community forests in Sinnar State. Specifically, the study aimed to investigate the elements of costs and benefits of community forests, estimate the value of costs and benefits, and to assess the socioeconomic impacts of communal forests.

The study was carried out in Sinnar State purpose by where different community forestry practices exist. Two types of data were collected namely, primary and secondary data. The sources of the secondary data were mainly the Forest National Corporation documents, files, articles, and annual reports. The methods for primary data collection were; structural face-to-face interview with primary stakeholders (private forests – village forests), group discussion with key informants, and a self-administered questionnaire with the staff of FNC.

The collected data was analyzed using the Statistical Package for Social Sciences (SPSS). Descriptive statistics including frequency distribution and cross tabulations were used to obtain the percentages to interpret the qualitative information collected from the respondents. Chi-Square test, and t-test were used as tools for conducting tests of significant

differences between the variables (return, guarding, taxes, area, production, Price), where it was deemed necessary. Financial feasibility analysis and Multiple Regression Analysis were carried using Excel programme.

Results of this research revealed that there was significant variation ($P<0.01$) in education level among respondents. The result of the study showed that private and village forests owners are highly aware of forests cultivation and community forestry in the study area provides services to the community (water, electricity, and building of schools, health care centers). The study reveals that the forests were sources of income and community members were involved in their management.

The result of the multiple regression of private forests (the area per feddan, cost of fencing, cost of guarding and cost of taxes) showed coefficient of determination was 0.66 (meaning that the explanatory variables included in the model explained 66% of the variations in the dependent variable (revenue per feddan).

The results of the multiple regression of village forests (cost guarding, taxes, the area per fedden, the production /m^3/fed) showed that coefficient of determination was 0.62 (meaning that the explanatory variables included in the model explained 62% of variations in the dependent variable (revenue per feddan).

The indicators of the economic feasibility studies of the private and village forests showed that the two types of forests were profitable under the specified discounting rate for development projects (12%).The Results showed that private forests in the study area were profitable because NPV was 2561.97 (SDG/fed), B/C ratio was 4.01, PI = 7 years, IRR = 16.50% .In

the village forests NPV was 1351.0(SDG/fed), B/C ratio was 4.50, PI = one year, IRR = 13.08%.

The indicators of the Sensitivity analysis studies of the private and village forests showed that profitable the two types of forests to increase costs and decrease of revenues with percentage (5%) were under the specified discounting rate for development projects (12%).The Results showed that private forests in the study area were profitable because NPV was 2348.74 (SDG/fed), B/C ratio was 3.63, IRR = 16.15% .In the village forests NPV was 1244.93(SDG/fed), B/C ratio was 4.08, IRR = 12.87%.

The study recommended that Forests National Corporation should train the local people in management and supervision of the different communal forest activities. Different forms of direct and indirect taxes imposed by the government need to be revised and government should find outlets to finance the farmers. Finally, government should open channels for the marketing of forest products.

تقييم الجدوى الاقتصادية لغابات المجتمعات

دراسة حالة ولاية سنار (السودان)

الخلاصة:

تمارس فكرة غابات المجتمعات في عدة دول في العالم، من أجل توفير سبل عيش وحماية الغابات الطبيعية وإمدادها لقيم الترفيه في الحضر.الهدف الرئيسي من هذه الدراسة هو تقييم الجدوى الاقتصادية لغابات المجتمعات في ولاية سنار .تحديداً تهدف الدراسة إلى معرفة التكاليف والمنافع من غابات المجتمعات، وتقدير القيمة لها، ومقارنة الآثار الاجتماعية والاقتصادية لغابات المجتمعات. اجري البحث في ولاية سنار تحديداً لوجود أنشطة مختلفة لغابات المجتمعات.

تم جمع نوعين من البيانات تحديداً، هما البيانات الأولية و البيانات الثانوية.اشتملت البيانات الثانوية بشكل أساسي على الوثائق والملفات والمقالات، والتقارير السنوية للهيئة القومية للغابات. تم جمع البيانات الأولية عبر المقابلة الشخصية للمستهدفين (أصحاب الغابات الخاصة, أصحاب غابات القرى)، ومجموعات النقاش مع مفاتيح المعرفة بالإضافة إلى استبيان للعاملين بالهيئة القومية للغابات.

تم تحليل البيانات التي تم جمعها باستخدام برنامج الحزم الإحصائية للعلوم الاجتماعية .(SPSS) تم استخدام الإحصاء الوصفي بما في ذلك توزيع التكرارات وتبويبها عبر الحصول على النسب المئوية لتفسير المعلومات النوعية التي تم جمعها من المستجوبين .تم استخدام اختبار Chi) Square) واختبار (t-test) كأدوات لإجراء اختبارات فروق ذات دلالة إحصائية بين المتغيرات (الدخل الكلي ،الحماية ،الضرائب ،المساحة ،الإنتاج ،سعر المنتج) .أيضا استخدام برنامج اكسل لتحليل الجدوى المالية، وتحليل الانحدار المتعدد.

أظهرت نتائج هذا البحث أن هناك تباين هاماُ ($P< 0.01$) في مستوى التعليم بين أفراد العينة عنه في السنوات السابقة. أظهرت نتائج الدراسة أن ملاك الغابات الخاصة وغابات القرى بمنطقة الدراسة يدركون بشدة أهمية زراعة الغابات وان غابات المجتمعات في منطقة الدراسة تقدم خدمات للمجتمع (الماء, الكهرباء, بناء المدارس ومراكز الرعاية الصحية). كشفت الدراسة أن الغابات هي مصدر للدخل في المجتمع يشارك المجتمع في إدارتها.

وأظهرت نتيجة الانحدار المتعدد في الغابات الخاصة آن معامل التحديد يساوي 0.66 وهذا يعني أن (المساحة بالفدان، تكلفة التسوير، تكلفة الحراسة، تكلفة الضرائب)المدرجة في النموذج أوضحت 66٪ من الاختلافات في المتغير التابع هو العائد بالجنيه /لفدان تعود إلى المتغيرات المستقلة .

أثبتت نتيجة الانحدار المتعدد لغابات القرية ان معامل التحديد كان يساوي 0.62 وهذا يعني أن المتغيرات التفسيرية (تكلفة الحراسة، تكلفة الضرائب، المساحة بالفدان، الإنتاج بالفدان /م^3) المدرجة في النموذج تفسر 62٪ من الاختلافات في المتغير التابع العائد بالجنيه/ لفدان .

أبانت مؤشرات دراسة الجدوى الاقتصادية للغابات الخاصة وغابات القرى أن هذين النوعين من الغابات مربحة في ظل سعر الخصم المحدد لمشاريع التنمية 12%.كما أظهرت النتائج أن الغابات الخاصة مربحة حيث إن صافي القيمة الحالية يساوي 2561.97 جنيه سوداني /لفدان, و نسبة المنافع للتكاليف تساوي 4.01 , فترة الاسترداد هي 7 سنوات , معدل العائد الداخلي يساوي 16.50% .في غابات القرى صافي القيمة الحالية يساوي 1351.0 جنيه سوداني/لفدان , نسبة المنافع للتكاليف 4.50 , فترة الاسترداد سنة ,معدل العائد الداخلي 13.08 %.

أبانت مؤشرات تحليل الحساسية للغابات الخاصة وغابات القرى أن هذين النوعين من الغابات مربحة بعد زيادة التكاليف وتقليل العائدات بنسبة 5% في ظل سعر الخصم المحدد لمشاريع التنمية 12%.كما أظهرت النتائج أن الغابات الخاصة مربحة حيث إن صافي القيمة الحالية يساوي 2348.74 جنيه سوداني/ لفدان, نسبة المنافع للتكاليف تساوي 3.63, معدل العائد الداخلي يساوي 16.15% .في غابات القرى صافي القيمة الحالية يساوي 1244.93 جنيه سوداني/لفدن , نسبة المنافع للتكاليف تساوي 4.08 , معدل العائد الداخلي يساوي 12.87 %.

أوصت الدراسة انه علي الهيئة القومية للغابات تدريب السكان المحليين في كيفية إلا دارة والإشراف على الأنشطة المختلفة لغابات المجتمعات وتقليل الضرائب والجبايات علي العائد من منتجات غابات المجتمعات لخصوصيتها . علي الحكومة البحث عن وسائل لتمويل المزارعين وفتح قنوات لتسويق منتج الغابات.

TABLE OF CONTENTS

Title **Page**

Dedication…… I

Acknowledgments……. II

Abstract (English)…… IV

Abstract (Arabic)…… VII

Table of contents……. IX

List of tables…… XV

List of figures…… XVI

List of abbreviations…… XVII

CHAPTER ONE

INTRODUCTION

1.1. General……1

1.2. Problem statement……3

1.3. Objectives……..…4

1.3.1. General objective……4

1.3.2. Specific objectives……..4

1.4. Hypotheses……6

1.5. Organization of the thesis……..…6

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction……7

2.1.1. The importance of forests……..…..7

2.1.2 Economic and social values of forests in Sudan…….…..…7

2.2. Definition of community forest…….…8

2.2.1. Community forestry in Sudan……..…9

2.2.2. Objectives of community forestry……..10

2.3. Participatory forestry……12

2.4. Participation and decision-making in community forest activities sustainability and stewardship…….....14

2.5. Income generation and employment creation…….…15

2.6. Benefits from community forestry……..15

2.7. Role of community forestry for poverty alleviation…….16

2.8. Community forestry strategies…….…19

2.9. Community forestry and rural development…….....22

2.10. Constraints to community forestry……24

2.11. Community forest management…….…25

2.12. Policies and laws related to community forestry in the Sudan……28

2.13. Examples of community forests development and management by communities……..…30

2.13.1. Joint Afforestation Project. Sudan government/Sudan and Council of Churches…….....30

2.13.2. Fuel wood development for energy in Sudan ……...30

2.13.3. Sudan Finland Afforestation Project…….…31

2.13.4. Restocking of Gum Arabic Belt Projects……..31

2.13.5. UNSO Afforestation and Reforestation project in Northern Region of the Sudan……...31
2.13.6. Womens Forestry Project (WFP), River Nile State……..32
2.13.7. Elodaya Anti-desertification Project…….32
2.14. Financial feasibility study of community forests……..…32

CHAPTER THREE
STUDY AREA

3.1. Location……34
3.2. Climate……..…34
3.3. Administrative structure……..…35
3.4. Population……..…37
3.5. Geology, topography and soil types of the state……..…37
3.6. Vegetation covers…….……38
3.6.1. *Acacia mellifera* (thornwood land)……38
3.6.2. *Acacia seyal-Balanites* (wood lands)……38
3.6.3. Acacia nilotica (riverain forests)……..39
3.7. Water resources……40
3.8. Land use pattern……..…41
3.9. Community forestry in the study area……42

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1. Background……43
4.2.1. Methods of data collection……..43
4.2.2. Primary data collection……43
4.2. 3. Secondary data collection……43
4.3. The main contents of the questionnaire……44
4.4- construction of the questiostionnaire ……44
4.4.1 Organization of data……45
4.4.2. Sample size and selection of respondents in this study…….45
4.5. Methods of analysis……..…46
4.5.1. Chi-square test……46
4.5.2. T – Test……..…46.
4.5.3. Multiple regression analysis……..…47
4.5.3.1. The linear multiple regression model……47
4.5.3.2. Equation of private forests …….…..47
4.5.3.3. Equation of village forests ……...48
4.6. Interpreting Regression Coefficients……..48
4.7. Dependent and Independent Variables……...49
4. 8. Feasibility study of establishment of community forestry in Sinnar state……49
4.8.1. Background……49
4.8.2. Data used in the feasibility study……49

4.9. Calculating Discounted Cash Flows ……..…..51

CHAPTER FIVE

RESULTS AND DISCUSSION

5.1. Socio-economic characteristics of the owners of private forests……53

5.2. Origin of community forests……55

5.3 Establishment of forests between 1980 to 2010……56

5.4. Average forest area in feddan in the private and village forests…….57

5.5. Average income per feddan in the private and village forests……58

5.6. The objectives of villages and private forests establishment in the study area……59

5.7. Uses of returns in the villages and private forests ……61

5.8. The participation of gender in private and villages forests ……62

5.9. Silviciltural operations in community forests…….63

5.10. Harvesting of private and village forests……65

5.11. Marketing of community forests private and village forests……..65

5.12. Profitability of community forests…….….66

5.13. Threat confronting community forests in the study area……68

5.14. T-test analysis……..……69

5.15. The multiple regression equation of the private forests……...70

5.16. The Multiple regression equation the village forests……72

5.17. Financial feasibility study…….…75

5.17.1. Private forest……75

5.17.2. Village forest ……..…79

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.2. Main Findings and conclusions……83

6.2. Recommendations……..85

References…….86

Appendices……...…96

Appendix (1): Questionnaire (I).Submitted for the private forests ……96

Appendix (2): Questionnaire (II) Submitted for the villagers forests….…100

Appendix (3); Chick list for group discussion……105

Appendix (4): The private forests Correlations…….…106

Appendix (5)The village forests Correlations……107

Appendix (6): private forests costs and revenue/ feddan (SDG)……108

Appendix (6): village forest costs and revenues/ feddan (SDG)……109

List of Tables

Table No **Page**

Table (2.1): Social forestry management strategies…….....…21

Table (3.1)Averages of temperature, relative humidity and rain fall in Sinnar state (2000-2009) …….…..….…35

Table (3.2) Administrative structure of sinnar State……35

Table (3.3): Types, numbers and areas of reserved forests in Sinnar state.. 39

Table (3:4) The Community forests in Sinner state ……39

Table (5. 1): Education of the private forests owners……...53

Table (5.2): Jobs, of the private forests owners……54

Table (5. 3): Income of the private forests owners……..55

Table (5. 4): Forests origin of private and villages forests ……55

Table (5. 5): Private and villages forests established during the period 1980-2010……57

Table (5.6): T – test ……69

Table (5.7.a): Results of the multiple regressions of private forests……..70

Table (5.7.b): Shows ANOVA results of the multiple regressions of private forests ……71

Table (5.7.c): Shows model summary results of the Multiple regression of private forests……71

Table (5.8.a): Results of the multiple regressions of village forests……...72
Table (5.8.b): Shows ANOVA results of the multiple regression of village forests…….……...…73
Table (5.8.c): Shows model summary results of the Multiple regression of village forests……...73
Table (5.9): Feasibility indicators of private forests ……75
Table (5.10): Sensitivity analysis of the private forest ……77
Table (5.11): Feasibility indicators of village forests……79
Table (5.12): Sensitivity analysis of the village forests……81

List of Figures

Figure No. **page**

Figure (5. 1): Forest areas in private and villages forests in feddan……..…58
Figure (5.2): Income in private and villages forests per feddan ……..…59
Figure (5.3): Objectives of village and private forests establishment in the study area……..……60
Figure (5.4): Uses of returns in the villages forests……..…61
Figure (5.5): Uses of returns in the private forests ……63
Figure (5.6): Participation of gender in private and village forests……63
Figure (5.7): Silvicultural operations in villagers forests……64

Figure (5.8): Silvicultural operations in private forests……..…65

Figure (5.9): Profitability of community forests……67

Figure (5.10) constraints confronting community forests in the study area…….….68

Map (3.1): Map of the study area……..…36

Abbreviations

B/C	=	Benefit/ cost ratio
CFs	=	Communal Forests.
CBFM	=	Community Based Forest Management
DCF	=	Discount Cash Flow
FAO	=	Food and Agriculture Organization.
Fed	=	Feddan (1 Feddan = 0.42 hectar = 4200 m^2)
FNC	=	Forests National Corporation.
GDP	=	Growth Domestic Product
IRR	=	Internal Rate of Return.
JFM	=	Joint Forest Management
m^2	=	Squares Meter
m^3	=	Cubic Meter.
Max/Temp.	=	Maximum Temperature.
Min/Temp.	=	Minimum Temperature.
NGOs	=	Non-Governmental Organizations.
NIE	=	New Institutional Economics
NTFPs	=	Non-timber forest products
NPV	=	Net Present Value
PBP	=	Payback period
PI	=	Profitability Index
PVC	=	Present Value of Cost
PVR	=	Present Value of Revenue
RH	=	Relative Humidity.
SDG	=	Sudanese Pound.
SIDA	=	Swedish International Development Cooperation Agency.
SFM	=	Sustainable Forest Management

SOS = Safes our Souls

SPSS = Statistical Package for Social Sciences

TOE = Ton of Oil Equivalent.

TII = Total Initial Investment

UN = United Nations

USAID = United State Aid Programme.

WFP = Women Forestry Project