

## Land Degradation In Ethiopia Causes Impacts And

Resource degradation is a critical problem in highland Ethiopia. Past soil and water conservation efforts did not bring about significant results. This thesis discusses the need for and possibilities of implementing integrated watershed management (IWM) approach.

"The objectives of this workshop are to review and discuss the main findings and policy implications of recent research conducted on these topics by IFPRI, Wageningen University and Research Center (WUR), the International Livestock Research Institute (ILRI), Mekelle University (MU), the Ethiopian Agricultural Research Organization (EARO) and other Ethiopian collaborators; to discuss options for improving the development of agricultural markets and land management in Ethiopia, considering different stakeholders' perspectives; and to develop recommendations for priority policy actions and further research based upon lessons learned from the research and remaining knowledge gaps. IFPRI has worked for more than a decade in Ethiopia studying the root causes of the interrelated problems of famine, rural poverty, low agricultural productivity and natural resource degradation, and helping to identify strategies and policies to

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overcome these problems. The need for effective and efficient markets for agricultural commodities and productive inputs, as well as effective measures to combat land degradation are clearly recognized by the government of Ethiopia in its current rural development strategy and poverty reduction strategy. Ethiopia has made great strides in recent years in increasing farmers' access to productive technologies. Yet as we are all increasingly aware, these advances are necessary but not sufficient to achieve the goal of agriculturally led industrialization. Market development and sustainable natural resource management are essential building blocks of a successful rural development strategy, requiring policy makers and other stakeholders to identify and invest in an appropriate mix of institutions, infrastructure, information, and innovation systems. This workshop is intended to help contribute to these important efforts by taking stock of what is known and what we have learned from several years of recent research on sustainable land management and agricultural market development. " --Authors' Abstract.

This volume deals with land degradation, which is occurring in almost all terrestrial biomes and agro-ecologies, in both low and high income countries and is stretching to about 30% of the total global land area. About three billion people reside in these degraded lands. However, the impact of land

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degradation is especially severe on livelihoods of the poor who heavily depend on natural resources. The annual global cost of land degradation due to land use and cover change (LUCC) and lower cropland and rangeland productivity is estimated to be about 300 billion USD. Sub-Saharan Africa (SSA) accounts for the largest share (22%) of the total global cost of land degradation. Only about 38% of the cost of land degradation due to LUCC - which accounts for 78% of the US\$300 billion loss – is borne by land users and the remaining share (62%) is borne by consumers of ecosystem services off the farm. The results in this volume indicate that reversing land degradation trends makes both economic sense, and has multiple social and environmental benefits. On average, one US dollar investment into restoration of degraded land returns five US dollars. The findings of the country case studies call for increased investments into the rehabilitation and restoration of degraded lands, including through such institutional and policy measures as strengthening community participation for sustainable land management, enhancing government effectiveness and rule of law, improving access to markets and rural services, and securing land tenure. The assessment in this volume has been conducted at a time when there is an elevated interest in private land investments and when global efforts to achieve sustainable development

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objectives have intensified. In this regard, the results of this volume can contribute significantly to the ongoing policy debate and efforts to design strategies for achieving sustainable development goals and related efforts to address land degradation and halt biodiversity loss.

This paper reviews past studies on the costs of land degradation in Ethiopia, with a view to drawing implications for policies, programs, and future research on sustainable land management (SLM). Given the wide range of methods and assumptions used in the studies, their findings concerning annual costs of land degradation relative to agricultural gross domestic product (AGDP) are of remarkably similar magnitude. The minimum estimated annual costs of land degradation in Ethiopia range from 2 to 3 percent of AGDP. This estimate does not take into account downstream effects such as flooding, suggesting that actual total costs are possibly much higher than the 2-3 percent range. A onetime occurrence of a 2-3 percent reduction in AGDP might be manageable, but the cumulative losses to land degradation over time are very serious for an agriculturally based economy. Such cumulative losses represent a significant drag on rural growth and poverty reduction and jeopardize long-term, sustainable development.

The papers presented at the workshop dealt with a wide array of topics related to land management in

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the highlands of Tigray.

Doctoral Thesis / Dissertation from the year 2020 in the subject Environmental Sciences, grade: A, Addis Ababa University, course: Environmental Science, language: English, abstract: This research is aimed at exploring the changes in indicators of ecosystem services associated with integrated land management practices and generating information and data from agricultural landscapes. The specific objectives are to evaluate changes in selected soil physicochemical properties of the treated site taking the neighboring control site as a base, to quantify the change in water discharge due to integrated land management practices, to assess plant species richness in the watershed and compute changes due to integrated land management practices, to determine the plant biomass production and carbon stock of the watershed associated with integrated land management practices. This thesis is organized in five chapters. The first chapter provides general background information followed by the research problem, justification of the study, research objectives, hypotheses and research questions. The second chapter is a review of relevant literatures that gives existing evidences on the severity of land degradation, rehabilitation efforts and outcomes of rehabilitation works in Ethiopia, and the third chapter is the materials and methods section that begins with a description of the study area and explanations the

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research methods. Chapter four presents results and discussion of each research objective which are published in or submitted to peer-reviewed scientific journals and manuscripts under preparation. Chapter five provides the conclusions and recommendations of the research.

Forest conversion - soil degradation - farmers' perception nexus: Implications for sustainable land use in the southwest of Ethiopia. Resettlements in the forest regions instigate considerable impacts on the natural resource base. This study presents a comparative assessment of the biophysical processes of resource degradation and the farmers' awareness in a cereal-based farming system of the settlers and an indigenous coffee-based farming system. The study analyzes the extent of forest conversion and soil degradation in the two farming systems. Furthermore, the farmers' response and coping mechanisms are assessed. The need for providing land management technologies to farmers to use their resources sustainably is emphasized and a review of the resettlement policy is underlined. Poor land management has degraded vast amounts of land, reduced our ability to produce enough food, and is a major threat to rural livelihoods in many developing countries. This book provides a thorough analysis of the multifaceted impacts of land use on soils. Abundantly illustrated with full-color images, it brings together renowned academics and policy

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experts to analyze the patterns, driving factors and proximate causes, and the socioeconomic impacts of soil degradation.

Agricultural productivity in the highlands of Ethiopia is threatened by severe land degradation, resulting in significant reductions in agricultural GDP. In order to mitigate ongoing erosion and soil nutrient loss in the productive agricultural highlands of the country, the government of Ethiopia initiated a Sustainable Land Management Program (SLMP) targeting 209 woredas (districts) in six regions of the country. This study evaluates the impact of SLMP on the value of agricultural production in select woredas by using a panel survey from 2010 to 2014. Whereas previous studies have used cross-sectional data and short timeframe field trials to measure sustainable land management (SLM) effects on agricultural productivity, this analysis exploits data collected over four years to assess impact. The results of this analysis show that participation by farmers in SLMP, regardless of the number of years of participation in the program, is not associated with significant increases in value of production. This may be due to several reasons. First, similar to previous studies, it is possible that longer term maintenance is necessary in order to experience significant benefits. For example, Schmidt and Tadesse (2014) report that farmers must maintain SLM for a minimum of seven years to reap benefits in value of production.

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Second, this analysis finds that value of production, as well as SLM investments, increased significantly in both treatment and non-treatment areas over the study period. Previous research has found that non-treatment neighbors learn from nearby program areas, and adopt technologies similar to programmed areas, which would dilute the impact measurement of program effects (Bernard et al. 2007; Angelucci and DiMaro 2010). Finally, it is important to note that kebeles that were not selected in the SLMP, but are downstream relative to a targeted kebele may receive indirect benefits through reduced flooding, increased water tables, etc. Thus, the impact of the SLMP may be underestimated in this analysis if non-program kebeles are benefiting indirectly from the program. The perseveration of our natural environment has become a critical objective of environmental scientists, business owners, and citizens alike. Because we depend on natural resources to survive, uncovering methods for preserving and maintaining these resources has become a focal point to ensure a high quality of life for future generations. Natural Resources Management: Concepts, Methodologies, Tools, and Applications emphasizes the importance of land, soil, water, foliage, and wildlife conservation efforts and management. Focusing on sustainability solutions and methods for preserving the natural environment, this critical multi-volume research work

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is a comprehensive resource for environmental conservationists, policymakers, researchers, and graduate-level students interested in identifying key research in the field of natural resource preservation and management.

Thesis (M.A.) from the year 2018 in the subject Politics - Environmental Policy, University of Gondar, course: law, language: English, abstract: Using qualitative method this study tries to find out whether the ANRS rural land laws' normative and institutional frameworks and their enforcement mechanisms are adequate or not in protecting environmental degradation in rural areas of South Wollo Zone, Ethiopia. Legal provisions of the ANRS rural land laws which deal with unlimited land use right, limited land distribution, land right registration and certification, obligations to conserve and protect the land, expropriation for environmental purpose, incentive and the existence of legal remedy will encourage the zone's rural environmental protection. However this does not mean that such laws are comprehensive rather such laws fails to comprise all possible obligations of land users, lacks clarity and provided in general terms with weak remedies. There is also no cooperation mechanism or forum among stockholders in the areas of rural land administration and environmental protection. Much attention is given to land administration issues than environmental protection. Environmental

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degradation related to rural land in Ethiopia in general and in ANRS, in particular, is reflected in the form of land degradation, loss, and degradation of water resources, deforestation as well as decline and/or loss of biodiversity. Ethiopia has designed a number of environmental laws. But such laws suffer from various defects which affect their ability to promote environmental protection. So efforts to use laws to protect the rural environment should look beyond just environmental statutes. Therefore seeking a solutions and studying rural land administration laws will be helpful to defy land degradation in rural areas. The rural land and environmental protection institution also lack financial, material and manpower capacities which hold back to carry out its duties. Due to these reasons, the rural land administration and environmental protection institutional setup of the Zone remains inadequate to properly protect the rural environment. In relation to rural land environmental protection, the ANRS rural land laws are practically not enforced in the zone due to the legal gap and unclear less, insufficient and political will to enforce the rural land laws. So the rural land environment of the South Wollo Zone remains in peril so long as there is no effective and enforced rural land law, government commitment, and well-designed, empowered and coordinated institutions. Estimates indicate that a majority of the earth's land

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has been seriously degraded. One of the key degradation problems is poor soil health, which has been identified as a key constraint in agricultural productivity and reducing rural poverty in many parts of the tropics, particularly in Sub-Saharan Africa. Ethiopia's economy is primarily based on agriculture. However, this sector is increasingly being confronted with a rapidly growing population, and this has resulted in land use/cover changes. The changes in land use disturbs ecosystem balance and lead to a significant change in the physical, chemical, and biological soil health thereby yield declines. Half of the Ethiopian highland arable lands are moderately to severely degrade. Tigray, the Northern region of Ethiopia, suffers from extreme land degradation and soil health deterioration. Agulae catchment, the study area which is found in Eastern Tigray also has similar problems. Since previous studies on factors affecting soil health depletion has not been made at a catchment level, this study was conducted to fill the existing knowledge gap on the effects of and use change on soil health and its implication on soil management.

This paper investigates the impacts of sustainable land management (SLM) on water security and poverty based on an evaluation of a watershed level SLM program promoted in Amhara regional state of Ethiopia. A household survey was conducted in two WLRC watersheds with SLM programming as well as

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complementary support and two adjacent watersheds without such programming. Our findings show that the SLM program significantly increased plot-level adoption of SLM practices, particularly of soil bunds and stone terraces. We also find that SLM contributes to water security for both crop and livestock production.

Households in SLM-supported learning watersheds have more access to groundwater for irrigation and have higher crop yields for maize, mango and millet; have experienced improving water availability for livestock production in the past five years; and have higher income from livestock products than households in control watersheds. The positive impacts of SLM and complementary interventions on livestock income is attributed to the improved water security conditions in the learning watersheds, access to better animal forage planted along the SLM constructed structures, and animal vaccination and artificial insemination services that were part of the broader set of interventions. These findings further show that although SLM impacts were limited, the potential to improve welfare of smallholders across several livelihoods is enhanced when SLM is combined with other multifaceted complimentary interventions.

Policymakers and technology development institutions have mostly focused on high-potential farming areas, which have better resource endowments and greater access to markets and infrastructure than less-favored areas. However, in developing nations more than one billion people live in less-favored areas, where, despite disadvantages, appropriate policies and programs can

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generate high returns and contribute significantly to poverty reduction. IFPRI and its partners' research in the highlands of Ethiopia shows how poverty and land degradation can be reduced in a less-favored area. Using a bioeconomic model to analyze the effects that land degradation, population growth, stagnant technology, market imperfections, and increased risk of drought have on household production, welfare, and food security, the report gauges how alternative policy choices affect poverty and land degradation. According to the study, land quality and household welfare are both in peril in the Ethiopian highlands. The population in the region could suffer devastating effects if proper policies are not put in place. The bioeconomic modeling approach used in this study can be usefully adapted and applied in many other settings and at larger spatial and socioeconomic scales.

Having been under colonial rule for the first half of the century, by 1965 all but a handful of African countries had regained their independence and were poised to take off into an era of development. However, Africa now suffers from the most acute form of underdevelopment anywhere in the world. Bringing together a broad selection of case studies covering a wide range of key issues, this volume provides a multidisciplinary exploration of Africa's development opportunities and challenges into the twenty-first century.

This book focuses on the effects of resettlement schemes on the environment. The chapters of the book include: Theories, typologies and processes of settlement, resettlement and resettlement schemes in

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Africa and other countries; Effects of the 1960s, 70s and 80s resettlement schemes on the overall bio-physical and human environments and brief presentation on the ongoing resettlement programme in Ethiopia; Effects of the resettlements on the soil resources, water, vegetation, land-use and farming systems, fires, health and wildlife in Gambela Region. Most of the resettlement projects were designed on the basis of political motives, short-sighted economic gains in mind, and were not integrated to other development programmes. As a result, they have aggravated land-use and ethnic conflicts, environmental degradation, food insecurity and poverty. It can be reversed through environmental knowledge, regional integration, effective land-use planning, and conservation-based sustainable utilisation of the natural resources.

Land Degradation The Main Environmental Problem in Ethiopia : Its Scale, Impacts, Causes, and

Cures Reservoir Siltation in Ethiopia Causes, Source Areas, and Management Options Cuvillier Verlag

Land Degradation and Strategies for Sustainable Development in the Ethiopian Highlands Amhara Region ILRI (aka ILCA and ILRAD)

Environment and Environmental Change in Ethiopia Nature and Causes of Land Degradation in the

Oromiya Region A Review ILRI (aka ILCA and

ILRAD) Land Degradation and Strategies for Sustainable

Land Management in the Ethiopian Highlands Tigray

Region ILRI (aka ILCA and ILRAD) Policy Analysis for Sustainable Land Management and Food Security in

Ethiopia A Bioeconomic Model with Market

Imperfections Intl Food Policy Res Inst

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Poverty, malnutrition, low agricultural productivity, severe land degradation, shortage of water and fuel wood are common problems in the highlands of Ethiopia. A complex set of natural, political, and socio-economic factors have been responsible for the degradation of land resources. This study was conducted to characterize the nature of land use practices, nature and extent of land degradation in the highlands, assess the causes of land use change and land degradation, identify knowledge gaps and some options about the possible pathways of overcoming the problems and improve agricultural productivity. This study shows that the perspectives of local communities and households about the dynamics of land use, management and the degradation process and possible solutions are very useful and practical contribution to the research, extension and policy making community as well as the generality of citizens in the region.

This book is about the Grand Ethiopian Renaissance Dam newly being built on the Blue Nile, a transboundary river. Due to rising population and increasing water demand in the Nile basin, major projects raise interest and concern by millions with potential for water conflict. The dam design, reservoir filling policy, operation of the dam, riparian countries response, dam site importance and social impact and economy of the dam are presented in the book.

This book is a contribution by the presenters of the 2020 International Conference on the Nile and Grand Ethiopian Renaissance Dam (GERD). The Nile basin is facing unprecedented level of water right challenges after the construction of GERD has begun. Ethiopia, Egypt and Sudan have struggled to narrow their differences on filling and

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operation of the GERD. The need for science and data-based discussion for a lasting solution is crucial. Historical perspectives, water rights, agreements, failed negotiations, and other topics related to the Nile is covered in this book. The book covers Nile water claims past and present, international transboundary basin cooperation and water sharing, Nile water supply and demand management, Blue Nile/Abbay and Grand Ethiopian Renaissance Dam, land and water degradation and watershed management, emerging threats of the Lakes Region in the Nile Basin, and hydrologic variation and monitoring. This book is beneficial for students, researchers, sociologists, engineers, policy makers, lawyers, water resources and environmental managers and for the people and governments of the Nile Basin.

Essay from the year 2020 in the subject Forestry / Forestry Economics, Wollega University (Wollega University Gimbi Campus, Forestry Department), language: English, abstract: Land degradation can be considered in terms of the loss of actual or potential productivity or utility as a result of natural or human factors; it is the decline in land quality or reduction in its productivity. It causes running down of soil organic matter and available water for crop growth. Consequently, implementation of soil and water conservation especially level soil bund is supposed to alleviate the impacts of soil erosion and increase agricultural land production and crop productivity. Based on that the effects of level soil bund was evaluated by conducting on-farm study during the cropping season of 2019 in Eba wakeyo kebele, Nejo District, Western Wollega of Oromia Regional State with the objective of evaluating level soil bund on teff productivity and soil properties. The study involves two factor: level soil bund (with and without) was a main plot and the ages of level soil bund was taken as the sub-plots. The treatment (T1=with bund of six year splited in to 7, T= with bund of 4 year splited in to 7,

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T3= with bund of 2 year splited in to 7and T4= without splited in to 7) with randomized complete block design. The data was analyzed using general linear model procedures and to separate difference between mean LSD (5%) was used. The level soil bund increased the mean value of soil moisture contents at 0-30 cm and 0-60 cm soil depth, the teff (*Eragrostis tef*) grain yield increased by 22.85% when compared with controlled block and the teff biomass increased by 24.32%. As the wall, it is concluded that level soil bund improves soil fertility, soil moisture status and teff (*Eragrostis tef*) grain yield and yield components.

This report on Ethiopia's Assessment of Development Results (ADR) focuses on the following three thematic areas: fostering democratic governance; achieving the Millennium Development Goals (MDGs) and reducing poverty under a human development perspective; and ensuring environmental sustainability. Reflecting on the characteristics of Ethiopia's economic history, its current juncture and prospects, the ADR examined the past with a forward-looking perspective.

Ongoing debate over water resource management in the Nile basin and continuing land degradation in agricultural areas of Ethiopia suggest a need for efficient mechanisms to improve agricultural output in the Blue Nile basin in Ethiopia.

Numerous econometric and hydrological models have been developed to assess the effects of sustainable land and watershed management (SLWM) investments, however these models fail to address the trade-offs faced by rural farmers in maintaining such structures. This study combines household survey data that evaluates the economic determinants of program sustainability with a detailed hydrological model that explores location specific effects of

SLWMstructures. Household survey analysis suggests that households that invested in SLWM infrastructure on their agricultural plots between 1992 and 2002 and subsequently

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maintained those structures had a 24 percent higher value of production in 2010 than farming households that did not make such SLWM investments. The location specific hydrological model analysis suggests that terraces on middle and steep slope areas have the largest benefit in terms of decreased runoff and sediment and increased agricultural yields. Utilizing the results from the econometric and hydrological model, a systems model is constructed to analyze investment packages. Results suggest that the benefit of implementing only terracing on steep and mid-slope terrain does not outweigh the cost of foregone off-farm labor opportunities nor compensate for a fall in the price of agricultural output (due to increased supply). However, more comprehensive investments (such as increased fertilizer use with SLWM) show economically significant increases in household income, suggesting that a packaged investment approach is needed to reap welfare benefits from investments in SLWM infrastructure at farm level.

This book constitutes the refereed post-conference proceedings of the 6th International Conference on Advancement of Science and Technology, ICAST 2018, which took place in Bahir Dar, Ethiopia, in October 2018. The 47 revised full papers were carefully reviewed and selected from 71 submissions. The papers present economic and technologic developments in modern societies in five tracks: agro-processing industries for sustainable development, water resources development for the shared vision in blue Nile basin, IT and computer technology innovation, recent advances in electrical and computer engineering, progresses in product design and system optimization.

Evaluating the impact of soil degradation o food security. Past and present effects of soil degradation. Future effects of soil degradation and threats to developing-

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country food security. Policy and research priorities. Academic Paper from the year 2019 in the subject Geography / Earth Science - Geology, Mineralogy, Soil Science, grade: A, Wollega University, course: Soil physical properties, language: English, abstract: Land degradation is a pervasive problem that negatively influences agricultural productivity in Ethiopia as it cause depletion of soil organic matter. Therefore, implementation of soil and water conservation is believed to mitigate the impacts of soil erosion. An on-farm study was conducted in Arjo Gudetu kebele, Eastern Wollega of Oromia with the objective of evaluating soil and water conservation practices on soil physio chemical properties and productivity of crop lands. The study involves one factor: level soil bund (with and without) was a main plot. The treatment (Treatment1=with bund splited in to 12 and Treatment2 = without splited in to 10) with randomized complete block design. Soil sample were collected at 0-50cm and 30-60cm soil depth and analyzed for selected physical and chemical properties. Yield and yield components of the crops were determined using a quadrant sampling technique 1\*1m. The data was analyzed using general linear model procedures and to separate difference between mean LSD (5%) was used. On maize (*Zea Mays L.*) field, level soil bund increased the mean value of soil moisture contents at 0-30 cm and 30-60 cm soil depth, the grain yield increased by 26% and biomass increased by 22%. On sorghum (*Sorghum bicolor L.*) field the mean value of soil moisture content, days to flowering, maturity dates significantly affected and biomass was increased by

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8.25%.

This study aims to inform the implementation in Ethiopia of the AgrInvest-Food Systems Project, a collaboration between the Food and Agricultural Organization of the United Nations (FAO) and the European Centre for Development Policy Management (ECDPM) to promote private investment in African food systems that contributes to sustainable development objectives. The study analyses the Ethiopian food system, identifying and explaining notable trends, important socio-economic, food security and nutrition and environmental outcomes generated by the food system, as well as the structural factors, institutions, and actors that shape food system outcomes in Ethiopia.

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