



USAID
FROM THE AMERICAN PEOPLE

SYNERGIES OF NATURE, WEALTH, AND POWER

LESSONS FROM USAID NATURAL RESOURCE MANAGEMENT
INVESTMENTS IN SENEGAL



JUNE 2014

CONTRIBUTORS

United States Forest Service International Programs

Lindsay Dozoretz

Bechir Rassas

Erik Vickstrom

World Resources Institute

Anne-Gaëlle Javelle

Robert Winterbottom

COVER PHOTO

TOP LEFT: Conservation farming group president Babacar Sisé stands before his garden parcel.

TOP RIGHT: Sacks of baobab fruit piled in a remote village outside of Bala. Market linkages enabled rural communities to enter the value chain for this local product.

CENTER: Baobab silhouettes.

BOTTOM LEFT: Doudou Diamé in front of the laden garlands of his oyster farm.

BOTTOM RIGHT: Members of Dindéfelo women's group GIE Fouta sit among their stores of *fonio* and powdered baobab, hopeful there will be buyers next market day.

PHOTOGRAPHY

All photographs used in this report were taken and edited by Lindsay Dozoretz.

SYNERGIES OF NATURE, WEALTH, AND POWER

LESSONS FROM USAID NATURAL RESOURCE MANAGEMENT
INVESTMENTS IN SENEGAL

JUNE 2014

DISCLAIMER

This project was made possible by the generous support of the American people through the United States Agency for International Development (USAID) under the terms of a Participatory Agency Partnership Agreement No.AEG-T-00-07-00003-00 between USAID and the USDA Forest Service International Programs. The authors' views expressed in this publication do not necessarily reflect the views of USAID or the United States Government.

FOREWORD

My first visit to Senegal was in 1982 to assist in the evaluation of the “*Projet Autonome de reboisement de la Forêt de Bandia*”. Since then, I have been following the evolution of USAID efforts to support Senegal and its people in the management of Senegal’s natural resources. After thirty years of USAID engagement, it was time to capture that history and recognize the impacts in Senegal, in Africa and, as a data point in the genesis of the Nature, Wealth and Power framework, worldwide.

The Biodiversity Analysis and Technical Support (BATS) program of the Office of Sustainable Development, Division for Economic Growth, Environment and Agriculture of the USAID Bureau for Africa exists to provide analytical and technical assistance to USAID/Africa and support its operating units in the design and implementation of development, security, and humanitarian assistance activities in Africa in a manner that conserves natural resources and biodiversity, including tropical forests and other critical habitats.

BATS has taken a lead role in reviewing USAID’s conservation experience in Africa, understanding lessons learned, and charting the way forward. Reports to date include: *Protecting Hard-won Ground: USAID Experience and Prospects for Biodiversity Conservation in Africa*; *A Vision for the Future of Biodiversity in Africa*; *US-AID Support to the Community-based Natural Resource Management Program in Namibia: LIFE Program Review*; and *Paradise Lost? Lessons from 25 Years of USAID Environment Programs in Madagascar*. This paper is the most recent product in that series. All of these papers are available on the web site of the Africa Biodiversity Collaborative Group at www.ABCG.org.

Building and reflecting on long USAID involvement in Senegal and the Sahel, USAID launched the Wula Nafaa project in 2003 with the goal of integrating tools to increase productivity of natural resources with the empowerment of local people and the identification and improvement of value chains. This paper’s analysis goes deep on the last ten years’ experience and finds Wula Nafaa areas had surpassed, by multiple indicators, comparison communities. Accompanying this rise in overall prosperity are affiliated broad-based impacts on health, nutrition, education, employment status and significant improvements for women.

The Forest Service Office of International Programs assembled an excellent team of facilitators, contributors and key consultants to review the experience, interview the observers and participants and compress a large body of knowledge into what I believe to be a coherent package. The World Resources Institute played a key role in both the development and production of the reports from this project.

I am proud to present this work to you.

Tim Resch, Bureau Environmental Advisor
USAID Bureau for Africa, Office of Sustainable Development

CONTENTS

- FOREWORD1
- ACKNOWLEDGEMENTS4
- ACRONYMS AND ABBREVIATIONS5
- EXECUTIVE SUMMARY8
- 1 INTRODUCTION19
 - 1.1 Overview22
 - 1.2 The NWP Framework23
 - 1.3 Nature, Wealth, Power Retrospective Study24
- 2 QUANTITATIVE EVIDENCE OF WULA NAFAA'S IMPACTS ON POVERTY REDUCTION26
 - 2.1 Impact Evaluation of Wula Nafaa26
 - 2.2 Wula Nafaa Impacts30
 - 2.3 Conclusions33
- 3 RETROSPECTIVE STUDY OF THE EVOLUTION OF USAID INVESTMENTS IN NRM, ENTERPRISE DEVELOPMENT, AND GOVERNANCE35
 - 3.1 Senegal: Environmental, Institutional, and Economic Context35
 - 3.2 Looking Retrospectively at 30 Years of USAID NRM Investments41
 - 3.3 Conclusion51
- 4 WULA NAFAA53
 - 4.1 Approach, Tools, and Outcomes of Wula Nafaa54
 - 4.2 Wula Nafaa Outcomes Through the NWP Lens78
 - 4.3 Summary of Approaches and Outcomes82
- 5 CHARCOAL THROUGH THE LENS OF NWP84
 - 5.1 Charcoal, NWP, and Wula Nafaa86
 - 5.2 Charcoal Commodity Chain: Elements of Context88
 - 5.3 Charcoal and Wealth91
 - 5.4 Charcoal and Nature96
 - 5.5 Charcoal and Power 100

6	REFINING THE VISION FOR INTEGRATED NRM PROGRAMMING.....	103
6.1	Integrate Agriculture and NRM.....	103
6.2	Give More Attention to the Role of Trees & Forests in Sustainable Landscape Management..	104
6.3	Increase Attention to Climate Change and Resilience.....	105
6.4	Incorporate Wildlife, Livestock, and Rangeland Management.....	105
6.5	Revise Outlook on Fuelwood and Energy	106
6.6	Support Decentralization Reforms.....	106
6.7	Support Continued Forest Policy Reform	109
6.8	Revisit Forest Management Planning.....	110
6.9	Move Away from Donor Dependency.....	111
6.10	Improve Monitoring & Evaluation.....	112
6.11	Maintaining the Triple Bottom Line.....	116
6.12	Recommendations	116
7	UNDERSTANDING HOW CHANGE HAPPENS.....	120
7.1	Factors Enabling Change: Best Practices.....	120
7.2	Factors Working Against Change.....	122
7.3	Strategies for Overcoming Persistent Barriers to Change.....	123
7.4	Despite Barriers, Positive Change is Happening	125
7.5	Conclusions	125
	WORKS CITED.....	127
	APPENDIX A: METHODOLOGY.....	132
	APPENDIX B: LIST OF INFORMANTS	137

ACKNOWLEDGEMENTS

This document is the result of a true collaborative process and the authors would like to acknowledge the contributions that many people have made along the way. Tim Resch of USAID/Washington provided leadership and guidance throughout the process. Bill Bradley and Aaron Brownell of USAID/Senegal were instrumental in shaping the early conceptualization of this project, as was Peter Trenchard of USAID/West Africa. Aminaata Badiane, Pape Dieye, Oumou Ly, and Vaque Ndiaye from USAID/Senegal all provided valuable insights. Jeff Povolny, Abdou Sène and Madior Fall from the Wula Nafaa project team generously shared their time and knowledge, as did the following former Wula Nafaa facilitators: Amie Diop, Ahmet Bathily, Boubacar Diallo, and Ibrahima Faty. All of the participants of the September 2013 consultative workshop—Tim Resch, Peter Veit, Olive Muthoni, Bechir Rassas, Mike McGahuey, Mike Colby, Jon Anderson, and Kathy Alison—shared insightful comments on the evolving document, and Ceece Polansky, Roy Hagen and John Heermans provided constructive feedback during the review process. Gray Tappan of the US Geological Survey assisted the team with background documentation, imagery and helpful comments on the draft reports. Craig Giesecke at the USAID Knowledge Services Center helped with preparatory research. Support from the US Forest Service was coordinated by Matthew Edwardsen and Adam Welti. Peter Veit of the World Resources Institute provided technical guidance and Jesse Ribot and Papa Faye worked as key consultants for WRI during all phases of the work. Finally, we are deeply grateful for the World Resources Institute’s logistical and administrative support, especially that of Danielle King.

ACRONYMS AND ABBREVIATIONS

AG	Agriculture
BFC	Baobab Fruit Company
CBNRM	Community Based Natural Resource Management
CBO	Community Based Organization
CF	Conservation Farming
CFA	<i>Communauté Financière Africaine</i> or African Financial Community
CFU	Conservation Farming Unit (Zambia)
CILSS	<i>Comité Inter-état de Lutte contre la Sécheresse dans le Sahel</i> or Inter-state Committee for Drought Control in the Sahel
CL	<i>Convention Locale</i> or Local Convention
CLUSA	Cooperative League of the USA (National Cooperative Business Association)
COMFISH	Collaborative Management for a Sustainable Fisheries Future in Senegal
CONSERE	<i>Conseil Supérieur des Ressources Naturelles et de l'Environnement</i> or Higher Council for Natural Resources and Environment
CR	<i>Conseil Rurale</i> or Rural Council, which governs a Rural Community / <i>Communauté Rurale</i> , a geographically defined administrative district comprising a dozen or more villages and settlements
CSE	<i>Centre de Suivi Écologique</i> or Center for Ecological Monitoring
CSO	Civil Society Organization
DGL-Felo	Democracy and Local Governance – Progress (USAID/Senegal project)
DHS	Demographic and Health Survey
E/NR	Environment/Natural Resource
FAO	Food and Agriculture Organization
fCFA	Franc CFA (currency used in Senegal and in other countries of the <i>Communauté Financière Africaine</i>); exchange rate has averaged 1 USD = 500 fCFA in recent years
FMNR	Farmer Managed Natural Regeneration
FMP	Forest Management Plan
FRAME	USAID funded knowledge management initiative and platform for NRM communities of practice
FTF	Feed the Future
GAF	<i>Gestion et Administration Financière</i> or Accounting and Financial Management
GIE	<i>Groupement d'Intérêt Economique</i> or Economic Interest Group
GOS	Government of Senegal
GPS	Global Positioning System

GTZ/GIZ	Formerly <i>Deutsche Gesellschaft für Technische Zusammenarbeit</i> , now <i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i> or German Society for Technical Cooperation
IREF	<i>Inspection Régionale des Eaux et Forêts</i> or Regional Office of Water and Forests
IRG	International Resources Group
ISRA	<i>Institut Sénégalais de Recherche Agricole</i> or Senegalese Institute for Agricultural Research
IUCN	International Union for Conservation of Nature
JICA	Japan International Cooperation Agency
KAED	Kaolack Agricultural Enterprise Development
KAP	Knowledge, Attitude and Practice
LC	Convention Local or Local Convention
NGO	Non-governmental organization
NKNP	Niokolo Koba National Park
NRBAR	Natural Resource Based Agricultural Research
NRM	Natural Resource Management
N'TFP	Non-Timber Forest Product
NWP	Nature, Wealth, Power
PAF	<i>Plan d'Aménagement Forestier</i> or Forest Management Plan
PAGERNA	<i>Projet d'Auto-promotion et de Gestion des Ressources Naturelles</i> or GIZ Self-Promotion and NRM Project
PARFOB	<i>Projet Autonome de Reboisement de la Forêt de Bandia</i> or USAID/Senegal Fuelwood Production Project in the Bandia Forest
PERACOD	Rural Electrification and Household Energy Supply Program
PCA	Principle Component Analysis
PCE	<i>Projet Croissance Economique</i> or Economic Growth Project
PCR	<i>Président du Conseil Rural</i> or Rural Council President
PES	Payment for Environmental Services
PGCRN	<i>Projet de Gestion Communautaire des Ressources Naturelles</i> or USAID/Senegal CBNRM project
PGIE	<i>Projet de Gestion Intégrée de l'Environnement</i> or Integrated Environmental Management Project
POAS	<i>Plan d'Occupation et Affectation des Sols</i> or Land Use Plan
PROGEDE	Sustainable and Participatory Energy Management Program - World Bank funded project
RC	Rural Community (<i>Communauté Rurale</i>) – geographically defined administrative district comprising a dozen or more villages and settlements, and governed by a Rural Council or <i>Conseil Rurale</i>
REDD	Reduced Emissions from Deforestation and Degradation
RNA	<i>Régénération Naturelle Assistée</i> or Assisted Natural Regeneration
RNCD	<i>Reserve Naturelle Communautaire de Dindéfelo</i> or Community Nature Reserve of Dindéfelo

SFS	Senegalese Forest Service or <i>Eaux et Forêts</i>
SODEVA	Society for Agricultural Development and Extension
SRP	Senegal Reforestation Project
TWG	Technical Working Group
USAID	United States Agency for International Development
USGS	United States Geological Survey
VITA	Volunteers in Technical Assistance
WRI	World Resources Institute

EXECUTIVE SUMMARY

Senegal has a rich history of environment and natural resource management (NRM) programs implemented by the U.S. Agency for International Development (USAID) over the past 40 years. However, until about ten years ago, these programs were limited in their long-term impact on biodiversity conservation, environmental protection, poverty reduction, and local empowerment.

In 2003, USAID-Senegal initiated the Wula Nafaa project—its name meaning “value of the forest” in the Mandinka language—which departed from traditional NRM projects by integrating tools to increase the productivity of natural resources by empowering local people and identifying and improving value chains. The project’s design and implementation deliberately followed the principles and recommendations of USAID’s seminal Nature, Wealth and Power (NWP) framework (USAID, 2002). The framework, a distillation of lessons learned and best practices, described and advocated for a tripartite approach to NRM development, balancing economic growth with governance gains and natural resource conservation.

Over the past 10 years, Wula Nafaa’s integrated approach—premised on the need to integrate biophysical, economic, and governance dimensions of natural-resource-based rural development—has led to dramatic broad-based poverty reduction in villages in the targeted regions of Senegal. In addition to helping resolve technical and productivity issues in natural resource management, the program addressed natural resource-based value-chain and market dynamics and promoted local control and decision making over forests and other natural resources.

Rural communities that participated in Wula Nafaa, which previously lagged behind comparable communities, have now surpassed their counterparts on many economic and social indicators. A measurably higher increase in wealth for Wula Nafaa areas was shown in an impact evaluation using Demographic and Health Surveys (DHS) data in a side-by-side comparison of Wula Nafaa project areas with non-intervention areas. The onset of the program corresponded with a turnaround and accelerated growth, broad-based improvement in well-being, and poverty reduction in the program areas.

Project communities reversed a long-term trend: whereas Wula Nafaa areas had previously been in decline, post-project numbers showed that they had surpassed comparison communities. Accompanying the rise in overall prosperity were affiliated impacts on health, nutrition, education, employment status, and significant improvements for women. The indicators measured change in durable assets, and observed long-term impacts in education, employment, health, and nutrition, suggesting that changes brought about by Wula Nafaa’s integrated NWP approach are structural and self-perpetuating.

This study presents the results of the economic impact analysis along with analysis and information from which these conclusions were derived.

OVERVIEW OF THE RETROSPECTIVE STUDY

With the completion of the Wula Nafaa project, USAID-Senegal and its partners concluded a ten-year program of integrated natural resource management with wealth creation and good governance components—a successful demonstration of the relevance and effectiveness of the NWP development paradigm. With a range of successful applications in different ecological and cultural contexts, a significant and measurable impact on income generation at the household level, and an impressive net return on development investment, the USAID Wula Nafaa program contains many valuable lessons for implementation of integrated NRM programs in Senegal as well as for improving NRM and catalyzing sustainable rural development around the globe.

This retrospective study “tells the story” of the historical context and evolution of USAID’s long-term commitment to sustainable development in Senegal through NRM program assistance. The study is designed to contribute to a greater appreciation of the achievements and impacts of USAID investments in environment and natural resource management projects, and to contribute to USAID’s institutional memory in this area. It aims to capitalize on key

lessons learned from these projects and to provide guidance to increase the effectiveness of interventions aimed at addressing poverty alleviation, economic growth, environmental governance and climate change adaptation as well as improved natural resource management, biodiversity conservation, and related sustainable development objectives.

This study focuses on the last ten years of NRM programming in Senegal, which centered around the Nature, Wealth and Power paradigm implemented via the Wula Nafaa program. In viewing Senegal as a case study of ten years of the NWP approach in action, this document examines what has been achieved and explores programmatic complexities to provide recommendations for future initiatives.

IMPACT EVALUATION: EVIDENCE OF WULA NAFAA'S EFFECT ON POVERTY REDUCTION

While it has been argued that an integrated approach like NWP is necessary for long-term sustainable natural resource management (USAID, 2002), this report provides robust quantitative evidence that integrated NRM programming can also deliver significant results in poverty reduction. The application of NWP principles in Senegal illustrates how an integrated approach can stimulate rural wealth creation without degrading the natural resource base. The evidence also affirms that decentralized, community-driven approaches may be more appropriate for long-term development than centrally managed government approaches.



Neene Sylla proudly displays baobab powder that she will sell through the community women's federation of Dindéfelo.

A statistically rigorous analysis of comparative wealth generation in project versus non-project areas revealed that applying NWP principles via Wula Nafaa resulted in proportionately better progress in target areas. The study used a unique form of impact evaluation— a quasi-experimental design— to analyze data from Senegal's demographic and health surveys. The quasi-experimental design methodology compares changes over time for the treatment group (population living in Wula Nafaa program areas) and the control group (a similar population living outside Wula Nafaa program areas).

The results lend empirical support to the conclusion that Wula Nafaa has delivered a crucial impetus to poverty alleviation in the program areas through physical asset growth and human capital accumulation. After trailing other communities before Wula Nafaa was initiated, the Wula Nafaa program communities outpaced the control areas in durable asset ownership and material comfort. They also outperformed the control areas

in employment, education and nutrition status.

The poorest segments of the population and women were the primary beneficiaries of Wula Nafaa achievements, with positive effects on socioeconomic equality. Equality in employment opportunities between the poorest and richest quintiles was, on balance, more prevalent in the Wula Nafaa rural communities than in the control group, as was equality in education status. The benefits of Wula Nafaa narrowed the gender gap and generated significant employment security for both men and women, but the benefits to women were more substantial. Finally, overall nutrition status was higher in the Wula Nafaa areas than in the control areas, according to an examination of four widely used nutrition indicators.

This study demonstrates that the NWP approach can reverse the decline of rural communities. Importantly, this powerful quantitative evidence is coupled with evidence of perceptual change among beneficiaries at the village level, an indication of grassroots buy-in, which is a necessity for long-term structural change.

From charcoal forests to baobab groves, from primate conservation to anti-salinization efforts, from conservation farming to fisheries to mangroves, the Wula Nafaa project demonstrated the diverse applicability of the NWP

paradigm in a variety of ecological and cultural settings, and within a range of biophysical and economic contexts. Although much work remains, application to this multitude of contexts succeeded in terms of proven poverty reduction, and an impressive return on development investment.

The impact evaluation shows empirically that Wula Nafaa had a positive impact across the board, and the design of the data analysis allows these impacts to be directly attributable to the project. A major outcome and lesson for other countries—Sahelian, African, and beyond—is that systematic application of NWP principles is a successful way to reverse the declining socioeconomic status of rural villages and to create accelerated growth in place of economic decline, while simultaneously empowering local people and enacting measures to protect the natural resource base for future generations.



The waterfall at Dindefelo, an ecotourism site in southeastern Senegal and home to endangered chimpanzees. Project assistance has helped establish a community reserve for combined conservation and village-based enterprise.

By virtue of its support for natural-resource-based enterprises, improved local governance, and a policy shift toward more sustainable use and improved management of the resource base, Wula Nafaa clearly had a positive, measurable, and multifaceted impact on the socioeconomic status of the communities it served, reversing worrisome trends, and influencing broad-based quantifiers of human well-being.

LOOKING RETROSPECTIVELY AT 30 YEARS OF USAID NRM INVESTMENTS

Looking retrospectively at the past several decades, USAID NRM-based aid has evolved from being directed at disaster mitigation and urgent environmental catastrophes—drought, famine, desertification in the 70s, and 80s—to the current attention to long-term, sustainable, integrated solutions to the converging crisis of poverty, natural resource depletion, food insecurity, political instability, and climate change. In Senegal, this progression was particularly evident as programs shifted from dune stabilization and tree-planting in response to drought and the onset of desertification to programs addressing the emergent issues of climate change, loss of arable soils, and salinization and their links to rural poverty, poor health, food insecurity and political instability.

Whereas other USAID missions adopted a narrower program focus (such as Madagascar where NRM programs were focused on biodiversity conservation), in Senegal the program objectives in environment, natural resources, forestry, and sustainable agriculture/food security were deliberately integrated. Table 1 shows a timeline of projects over USAID’s tenure in Senegal.

Table 1: USAID/Senegal NRM programming, 1979-2013

Time Period	Programmatic Focus	Main USAID Investments
1970s-80s	Focus on desertification control and fuelwood	<ul style="list-style-type: none"> Fuelwood Production Project (PARFOB), 1979-1982 Renewable Energy Accelerated Impact Project, 1980-82
1970s, 80s, 90s	Sand dune stabilization and reforestation	<ul style="list-style-type: none"> P.L. 480 Title III (Food for Work) (1981-84) Senegal Reforestation Project (SRP), 1987-1995
1992-1998	Knowledge, Attitudes and Practice (KAP) Surveys	<ul style="list-style-type: none"> Conducted in 1992, 1994, 1996, and 1998
1991-1998	Integration of Agriculture and NRM	<ul style="list-style-type: none"> Natural Resource Based Agricultural Research, NRBAR, 1991-1998 Kaolack Agricultural Enterprise Development, KAED, 1992-1997
1993-2003	Community Based Natural Resource Management (CBNRM)	<ul style="list-style-type: none"> Projet de Gestion Communautaire des Ressources Naturelles (PGCRN), 1993-2003
1999-2004	Integration of Enterprise Development and Decentralization with NRM	<ul style="list-style-type: none"> DynaEnterprises, 1999-2004 Decentralization and Local Governance, (DGL-Felo), 2000-2004
2000-2002	Emergence and Articulation of the Nature-Wealth-Power paradigm	<ul style="list-style-type: none"> “Nature, Wealth, Power: Emerging Best Practice for Revitalizing Rural Africa”, 2002
2003-2013	An Integrated Approach to NRM	<ul style="list-style-type: none"> Wula Nafaa Phase 1, 2003-08 Wula Nafaa Phase 2, 2008-13
Post-Wula Nafaa programming	Continuation of selected aspects of Wula Nafaa approach in Food Security and Nutrition and Economic Growth programs	<ul style="list-style-type: none"> The Feed the Future (FTF) “Yaajeende” project Collaborative Management for a Sustainable Fisheries Future (COMFISH) Economic Growth Project (PCE), 2005-2015

USAID projects and programs over the past 40 years have addressed a wide range of problems. Mistakes have been recognized and corrected; for example, USAID-Senegal no longer invests heavily in fuelwood plantations, woodlots, or roadside tree planting. Senegal is still challenged by deforestation, environmental degradation, and food security, while emerging issues include resilience in the face of climate change. Visions of slowing desertification through reforestation and the establishment of “greenbelts” have shifted to include measures aimed at scaling up community based forest management, sustainable landscape management and agroforestry in farming systems by promoting farmer-managed natural regeneration (FMNR) and climate-smart agriculture.

The evolution of USAID’s environment and natural resource investments is positive. In the past decade, assessments have underscored both the value and contribution of “environmental income” (or income derived directly from renewable natural resources) and the continued pressures on the resource base. Although more progress is needed, indicators show that the rural poor in USAID-assisted areas are securing a greater share of environmental income and are having a greater voice in land-use planning and decentralized NRM, which should eventually slow degradation and boost the productivity of natural resources.

WULA NAFAA: TEN YEARS OF IMPLEMENTATION OF THE NWP PARADIGM—IMPACTS AND OUTCOMES

Lessons from past projects throughout the evolution of several decades of USAID NRM investment in Senegal crystallized in the ambitious Wula Nafaa project. It was designed to slow deforestation and reduce rural poverty by developing small enterprises based on natural resources and nontraditional agriculture. In the first phase, it assessed progress in terms of increased local incomes, improved environmental governance, and an increased role of communities in managing forests. As the program evolved, more attention was given to boosting agricultural production through conservation farming and to conserving biodiversity by establishing community reserves and

promoting ecotourism. The project included activities to improve rural water supplies, including anti-salinization measures, and addressed community management of marine resources in fisheries and mangrove ecosystems. Relatively modest efforts were aimed at identifying policy reforms and developing a framework for monitoring and evaluating the impact of the program.

Wula Nafaa had major impacts nationwide, assisting in the establishment of long-term community-based NRM strategies in an impressive variety of contexts: from degraded forests to seasonal floodplains, from mangrove systems to chimpanzee habitat, from fisheries to farmland. Ten years of project implementation resulted in improved management of over 130,000 hectares of forest, the elaboration of local conventions—plans for community land use—in 20 rural communities, and a greater overall increase in rural wealth in project areas versus non-project areas. Conservation farming techniques more than doubled rainfed grain production, and greater access for rural producers’ to charcoal markets has contributed to a six-fold increase in their incomes. Overall calculations show Wula Nafaa helped create more than 15,000 full-time jobs—including more than 5,000 for women. More than 1,700 village enterprises generated more than \$41 million in revenues in the last five years, an enviable return on an investment of \$22.5 million, according to USAID (USAID-Senegal, 2013b).

Project impact indicators showed that “over 40,000 people have sustainably increased their incomes by \$36 million through the management and conservation of natural resources, an additional 10,000 tons of primary foods and grains have been produced by rural enterprises, and over 9,900 families have increased their production of key agricultural products” (USAID-Senegal, 2013b). The Wula Nafaa team noted that these impacts were accomplished in association with “improved, transparent and responsive local governance by local authorities, local community organizations and small businesses” (USAID-Senegal, 2013a).

During Wula Nafaa’s first phase, from 2003–08, it reportedly increased incomes by 80 percent for more than 4,000 enterprise groups engaged in the production and marketing of products with 11 market chains in 32 rural communities. As of late 2012, during its second phase, 31,000 people (42 percent of whom were women) benefitted from 2,169 training events (USAID/Wula Nafaa, 2012). Over the life of the project, through the formal adoption of 20 local conventions, progress was made in establishing the conditions for the improved management of natural resources across a 2.6 million hectare area (International Resources Group, 2008).

The Wula Nafaa approach, which integrated interventions in governance and enterprise development with improved natural resources management, has increased the volume and value of products generated and marketed through natural resource-based enterprises. The project achieved a major breakthrough in enabling community organizations and local producers to produce and market charcoal; 25 percent of the charcoal consumed in Senegal is now produced more sustainably from community-managed forests. During its second phase, the Wula Nafaa project supported conservation farming by 10,000 farmers, resulting in increased crop yields and more resilient agricultural production.

Departing from the sectoral approach of NRM programs, Wula Nafaa used an integrated approach combining assistance with improved governance, enterprise development, and NRM through support for the following activities and tools:

- Use of community facilitators
- Strengthening and training of producer and NRM groups
- Identification of targeted value chains
- Technical support to Rural Councils, CBOs, and the Forest Service
- Participatory land use tools (i.e. local conventions, forest management plans)
- Enterprise development in association with ecotourism and conservation
- Assistance with major infrastructure development linked to sustainable intensification of agricultural production

Prior to Wula Nafaa, the common approach for NRM projects was to fund the operation of nurseries and small tree plantations, and assist with technical preparation of land-use and management plans, detailed natural resource

inventories, strengthening of central government and its technical services, and support for guards for the Forest Service and Park Service. However, governments often failed to enforce many national laws and regulations, or to implement forest management beyond the life of a project because of deficiencies in funding, staff, or institutional and community support.

Rigorous monitoring of environmental change may be needed to understand the actual impact of Wula Nafaa on the condition of natural resources. But the past decade indicates that rural communities can be mobilized to change their behaviors and will actively pursue a pathway toward more sustainable use and management of forests, fisheries, and other natural resources upon which they depend for their livelihoods and well-being when their rights are clarified and when they recognize how they stand to benefit from improved management.



A women's *fonio* producers group preparing their harvest for sale.



Sacks of baobab fruit piled in a remote village outside of Bala. Market linkages enabled rural communities to enter the value chain for this local product.

CHARCOAL THROUGH THE LENS OF NWP

Charcoal production is one of the profitable activities associated with community-based forest management at many Wula Nafaa project sites. Historically, charcoal production, together with livestock grazing and the conversion of forest to cropland, were viewed as the biggest threats to Senegal's forest resources. The Government of Senegal often pointed to woodcutting for fuel as a primary source of forest degradation. Thus, it was wary that the decentralization laws of 1996 would allow communities to degrade forests by overharvesting trees for fuelwood. At the time, Senegal's charcoal business was an oligopolistic market dominated by a cartel of politically well-connected businessmen who captured the lion's share of profits (Ribot, 1999). Prior efforts to "reform" the charcoal business and to increase economic benefits for communities while giving them a greater voice in decisions about forest management, and charcoal production and marketing were largely unsuccessful.

Successfully addressing the charcoal situation was the crux of the Nature-Wealth-Power challenge in Senegal. It called for intervening in the delicate balance among avoiding the degradation of a valuable natural resource, taking advantage of economic opportunity, and navigating charged political dynamics. The unceasing demand of Senegal's urban populations for an inexpensive fuel source combined with the exploitation of community forests for fuelwood extraction called for an urgent response to strike a balance without causing fuel shortages in the cities or the destruction of community forests.

In the community of Sare Bidji, sustainable charcoal production and increased local marketing was the entry point for an integrated natural resource management strategy through the Wula Nafaa project. The story of Sare Bidji is detailed in this report. When the Wula Nafaa project helped to break the monopoly of the charcoal cartel in 2010–11, local charcoal producers were able to earn twice as much per bag of charcoal. As more areas were brought under community-based forest management, more local producers became involved in charcoal production. Overall, incomes from the sale of charcoal produced in Wula Nafaa areas rose from 68.6 million fCFA in 2009–10 to 386.7 million fCFA (\$860,000) in 2010–11.¹

¹ Pers. comm. John Heermans, Wula Nafaa Chief of Party

Despite this huge increase in income, there were a few negatives. The economic boost favored participating households, not all community members, thus increasing overall inequality. Forest management plans designed to promote natural regeneration of areas harvested for charcoal and increased yields of wood fuels may not be sufficient to conserve biodiversity. And while the project helped rural councils exercise their authority, there is still pushback by the Senegalese Forest Service that prevents full decentralization.

Senegal's Decentralization Law of 1996 and the 1998 Forestry Code officially shifted authority over forests away from the State and gave communities jurisdiction over their local forest resources. However, the Senegalese Forest Service retains significant power in forest management decisions. A 2012 assessment of the implementation of Senegal's Forest Management Plan found that the Forest Service still has extensive authority over management of forests legally under the responsibility of Rural Communities.

Economically, charcoal merchants and urban wholesalers maintain their power within the commodity chain; the Forest Service continues to adopt regulations and practices that limit local producers' profits and are inconsistent with decentralization laws; and within rural communes, elites control positions that manage local production. In terms of governance, local elected councils, legally in charge of forest management, are still not able to exercise their authority over charcoal production in their forests or to respond to their constituents' requests to increase production or access to lucrative urban markets.

While the formal adoption of forest management plans may help stem the outright conversion of forests to farmland or other uses, they may fall short of attaining forest management objectives. Research suggests that current charcoal production contributes to a loss of biodiversity and that forest management efforts must be strengthened to deal more effectively with uncontrolled grazing, wild fires, illegal cutting, and rotation cycles that are too short for adequate regeneration of harvested areas (Wurster, 2010).

The case of the community of Sare Bidji provides a poignant example of the interaction of all these elements: producer groups benefited from secondary income derived from the charcoal trade and yet local income inequalities increased; local elected officials are learning to exercise their powers and yet central government and state technical services still hold sway; and while forest management plans were enacted successfully, the desired beneficial impacts on ecosystems over time are still precarious.

REFINING THE VISION FOR INTEGRATED NRM PROGRAMMING

The case of Senegal shows impressive impacts on wealth generation via the integrated NWP approach, and significant inroads in decentralized governance mechanisms and sustainable resource management schemes. However, barriers remain to effective natural resource management practices that achieve the stated Nature-Wealth-Power objectives of sustainable natural resource management and increased productivity, as well as environmental rehabilitation and recovery. The following recommendations are meant to address shortcomings in the application of the NWP approach to guide future programming.



Mallal Diallo, president of a village charcoal enterprise, stands in a regenerated section of forest.



Charcoal producers in Sare Bidji prepare their kiln in the community forest.

RECOMMENDATIONS

1. Continue integrated support for enhancing the contribution of forests and other resources to rural development using the NWP framework
 - a. Consolidate achievements and continue with interventions to ensure that the rural poor benefit from “environmental income” while improving management of natural resources and environmental governance
 - b. Streamline approaches to support community-based forest management by empowering rural producers as the primary stakeholders; investing in additional needed reforms of Forest Service policies and regulations; enabling more effective local enforcement of rules, and facilitating the implementation of simplified, performance-based management plans
2. Focus on recovery and restoration of ecosystems as well as their productivity as exploitable natural capital
 - a. Equip rural communities to protect ecosystems from overexploitation by providing for regeneration and countering ecosystem degradation as aspects of sustainable use and improved management, increasing resource productivity and enhancing the flow of natural resource-based incomes
 - b. Scale up farmer-managed natural regeneration and related climate-smart agriculture practices across agricultural landscapes, working with grassroots farmer-innovators and addressing knowledge gaps
3. Increase the attention to agroforestry, livestock and wildlife management
 - a. Scale up agroforestry and conservation farming, re-assess the focus and intervention strategies of USAID’s Feed the Future program, and give more priority to climate-resilient farming practices
 - b. Address the role of livestock production in the degradation of forests; capitalize on the economic importance of pasture resources in forest management
 - c. Expand support for community-based management of wildlife and nature reserves; increase community benefits from game hunting and ecotourism, with attention to needed policy and institutional reforms
4. Reinforce environmental monitoring
 - a. Expand monitoring of ecosystem health and natural resource conditions and trends; improve monitoring to assess changes in forest conditions over time at the level of ecosystems and ecosystem services
 - b. Encourage relatively low-cost, participatory monitoring of changes in resource conditions to inform adaptive management
 - c. Track local innovations that improve natural resources management; make use of remote sensing, local knowledge and other evidence to re-examine the major drivers of nonsustainable natural resource use and degradation
5. Shift monitoring and evaluation focus to combine performance monitoring with impact evaluation
 - a. Include impact evaluations in future monitoring and evaluation frameworks to assess whether achievements are legitimately attributable to project interventions
 - b. Use Demographic and Health Surveys as a source of relevant data of unparalleled depth
6. Strengthen partnerships and networks
 - a. Include as a project objective the development of a cadre of well-trained facilitators who can support community-based organizations engaged in sustainable landscape management activities through national nongovernmental organizations and the private sector
 - b. Continue to invest in training, capacity building, and knowledge management
 - c. Establish a locally accessible clearing house for information on the lessons learned from Wula Nafaa and prior USAID natural resource management investments and related efforts using the NWP framework
 - d. Support public-private partnerships and collaboration with the private sector

7. Institutionalize rural participation in national policy engagement

- a. Help form federations of elected local authorities; enable public forums to discuss national policies that affect rural populations; improve rural access to grievance mechanisms such as courts
- b. Replicate successful institution-building programs such as the USAID-funded Democracy and Local Governance project (DGL-Felo) that train rural councils to know their rights as local representatives and the channels by which they can defend, exercise, and expand those rights; train rural populations on their rights and on the roles and powers of their elected representatives
- c. Support the diffusion of information on laws and regulations in local languages; and train rural councilors (in their local language) on their roles, rights, and responsibilities

8. Leverage decentralization to transfer powers to local communities and help build their capacity

- a. Encourage governments to devolve rights (not just transfer obligations) to local communities and decentralized management bodies, and provide support to these entities to meet agreed upon performance standards for improved management
- b. Support a transition of the Forest Service's role from that of command and control to one of overseeing the devolution of resource rights and strengthening decentralized resource management bodies
- c. Support efforts for fiscal decentralization, both legally and through local financing via collection of the rural tax and other revenue generation efforts

9. Adopt a minimal environmental standards approach

- a. Create management and use standards that specify the ecological conditions that must be maintained if production or use is to be allowed.
- b. Manage forests for the needs and aspirations of rural populations.

10. Move away from donor dependency

- a. Promote measures for long-term sustainable financing of natural resource interventions via price differentiation and fiscal policies that support improved management.
- b. Build capacity for innovation and creative problem solving to enable local development of solutions that are not directed by donors.

UNDERSTANDING HOW CHANGE HAPPENS

The clear success of the USAID Wula Nafaa project—as demonstrated by its broad-based impacts on governance, natural resources, economic growth, and improved rural living conditions—has shown that poverty alleviation can be achieved through integrated natural resource management programs. By understanding how change happens and what inhibits progress in revitalizing rural landscapes, we can design future initiatives to more effectively generate impacts that are positive, lasting, and transformative.

The approach and tools of Wula Nafaa and the USAID NRM projects that preceded it in Senegal suggest a number of best practices in NWP project design and implementation that are generalizable to any context, regardless of resource allotments, local governance structures, or level of poverty. The best practices for Nature advance a long-term model for sustainable resource management that is community driven and promotes overall ecosystem health and resource protection. The best practices for Power support decentralized management, local ownership of resource-based decisions, and transfer of competence and authority to community leadership. The best practices for Wealth encourage growth of community enterprises, promote diversification of incomes, and endorse greater organization and opportunity to develop sustainable livelihoods.

Factors inhibiting change include institutional resistance to effective power sharing. A review of the experience and lessons from USAID-Senegal's investments in environment and natural resource projects shows that many achievements occurred despite the focus of the central administration on other priorities and approaches. For decades,

the priority of the Forest Service and Ministry of Environment was to support reforestation and government-directed forest management, including costly and donor-dependent approaches to fire control, forest inventory, and forest management planning.

The Ministry of Environment wanted to maintain its control over significant revenue flows linked to charcoal production, hunting, and exploitation of timber and non-timber forest products. The Ministries and departments dealing with governance and decentralization were largely focused on provisions for elections and “deconcentration” rather than true devolution of authority and empowerment of producer groups engaged in managing natural resources. In considering the organization and priorities of the national government of Senegal, it became clear that an integrated approach designed to address the root causes of poverty and ecosystem degradation was liable to run against the grain of most central government policies and programs.

Senegal’s decentralization reforms of 1996 and 1998 opened the door for integrated development based on the Nature-Wealth-Power paradigm. These reforms allowed rural communities to become legitimate development partners. Indeed, in Senegal, the idea of “good enough governance” (Grindle, 2004, 2007)—the “minimal conditions of governance necessary to allow political and economic development to occur”—is very appropriate. Without decentralization laws, the achievements of Environment/Natural Resource programming and Wula Nafaa may not have been possible. Legal decentralization paved the way for further community empowerment and capacity building, and handed over the power and jurisdiction over natural resources to communities.

In Wula Nafaa, programmatic emphases on local conventions (a mechanism of participatory local governance), strengthening local organizations, and breaking up value-chain cartels allowed its project areas to achieve a higher level of “good enough governance” than other areas, allowing for significant improvements and measurable change.

However, the axiom that “governance achievement can also be reversed,” is a caution appropriate to Senegal’s current situation. Despite legal recognition of decentralization, the central government has not relinquished habitual controls, nor have local representatives had the confidence and capacity to effectively take the reins. Though great gains have been made in transitioning to effective decentralization, the fledgling governance innovations are at risk. They need to be expanded and additional support provided to local communities to back the innovations.

Persistent institutional barriers should not diminish the positive achievements of NRM programs in Senegal. They are discussed to highlight the nuances of context and the process of change as the impacts of recent interventions ripple through the country. Conflict is a necessary part of change, and will occur as power and management authority is redistributed. Although engrained vested interests may resist change, successes reveal a trend of community pushback and the rural voice is only getting stronger. Battles are no longer being fought exclusively by the donor community, but by the forest users and other community groups as well.

A delicate balance between central economic control and management powers devolved to local governments—or *nested decentralization*—is a successful model for effective NRM on a national scale. In Senegal, movement toward this model is part of the enabling condition for integrated NRM program success. But it can also be a barrier if the State retains too much control and does not hand over enough power to local government. That said, Wula Nafaa outcomes have shown that the Nature, Wealth and Power approach can help to achieve greater success in achieving development objectives when governance is “good enough”.

CONCLUSION

The integrated strategy of Nature Wealth and Power approach has strength and resilience. As demonstrated in the Wula Nafaa project in Senegal from 2003-13, the NWP approach can achieve overall success in reducing poverty, while making strides in facilitating “good enough governance” and improving local management of natural resources. It can be applied in a variety of contexts, engaging diverse types of resources.

Wula Nafaa’s integrated programming allowed villages that were worse off than comparison villages to become better off, not just in terms of poverty reduction but including positive impacts in gender, education, health and inequality. These results show that NWP is a successful strategy for reversing the decline of rural communities by encouraging local wealth generation and sustainable management of natural resources.

It is clear that decentralized, intensive, community-managed approaches can lead to comparatively greater long-term development gains. This retrospective study shows that improvement of rural livelihoods, local empowerment in governance, and sustainability of the resource base are interrelated and have synergistic outcomes.

Wula Nafaa’s NWP program presents a model for poverty reduction via an integrated natural resource management approach, and demonstrates how positive change can result from working simultaneously from both the top and bottom: for example, policy change and shifting industry norms at the top paired with perceptual change and empowerment in the community. This is how paradigms shift, how conventional wisdom is challenged and overturned, and how a pathway toward sustainability begins to be revealed.

Development investors should look to the Nature, Wealth and Power approach as a model of a tested implementation framework for improved resource management and community empowerment with a significant, tangible impact on reducing poverty.



Doudou Diamé of Medina Sangako shows cement bricks made of oyster shells, a byproduct of oyster farming in the village mangroves.

1 INTRODUCTION

In the village of **Dindéfelo** in southeastern Senegal, the USAID-funded Wula Nafaa project has helped to establish a community conservation reserve to protect an area of rich biodiversity, including a small and threatened chimpanzee population. Capacity building of local governance structures has led to a community land use plan that incorporates protective measures for the area's forest ecosystem, and creates rules for sustainable use and economic exploitation of the area for education and ecotourism purposes. Community groups have been organized to derive greater economic gain from the local forest— through harvesting of non-timber forest products like *maddé*² and *jabe*³, fruits with high local market value. Women's groups have learned to process baobab fruit as a value-added product, and streamlined processing of the indigenous *foñño*⁴ grain as well as baobab have helped to diversify livelihoods in the community, while land use strategies such as delimited grazing areas and specific harvest allocations attempt to preserve the resource base from which wealth derives. The arrangement is not yet perfect, with conflicts arising between the community's stated aims for the Reserve and the habits and desires of community members. Current contention over use-rights for the village's freshwater stream has the village women – who have done their clothes-washing and private bathing in the stream for generations – feeling usurped by the chimps' need for that same precious water. But the litter and soap residue clouding the stream make their argument tricky and tenuous. Luckily Wula Nafaa has helped put in place tools for participatory dialogue, resulting in local leaders taking more and more responsibility to resolve disputes and address key issues. The goal is for the community members and chimpanzees to coexist in harmony, with both populations prospering from the rich biodiversity around them.



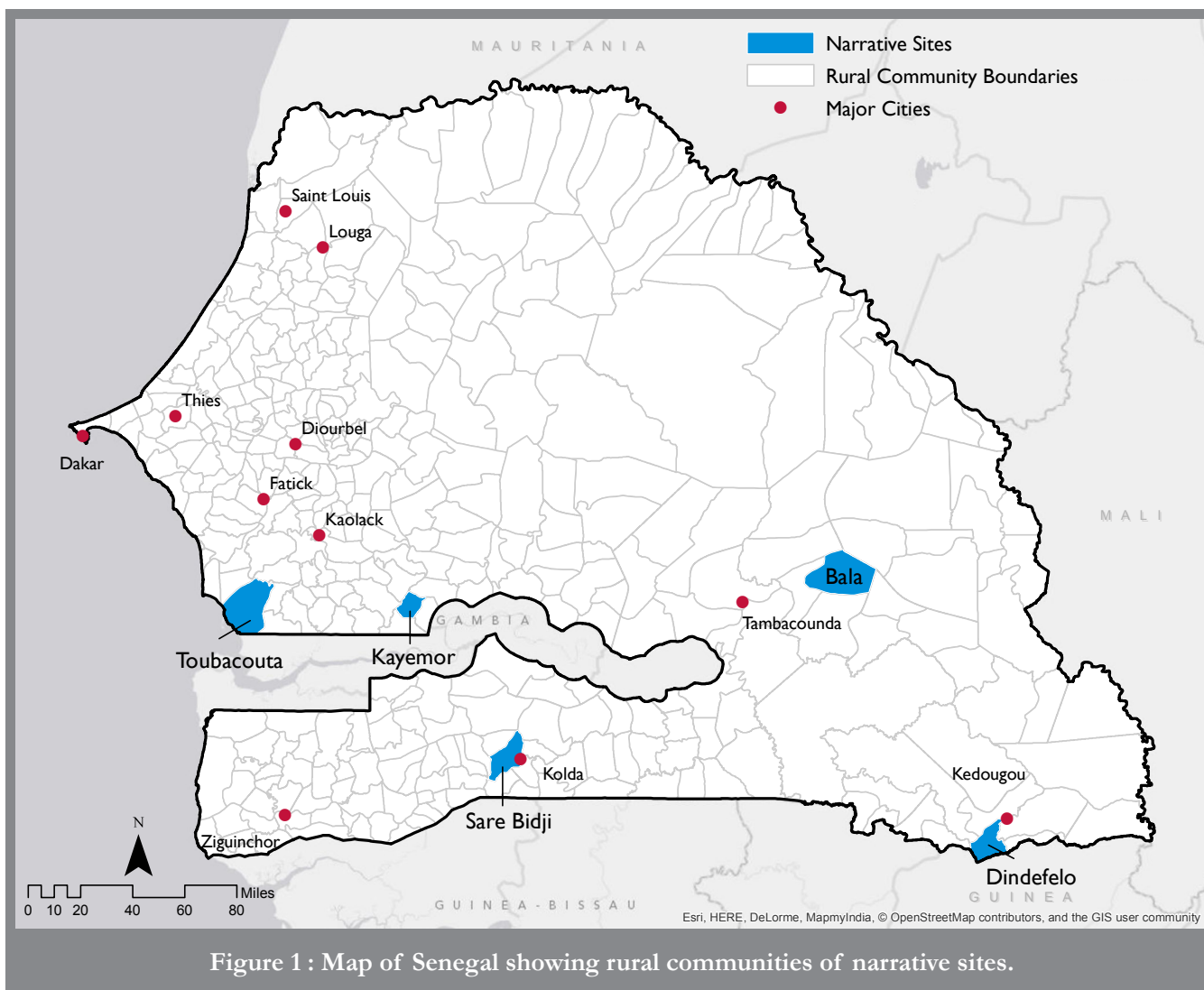
Safiatou Barry and her daughter harvest baobab fruit in the Rural Community of Bala.

In **Sare Bidji**, Wula Nafaa has helped the community to re-claim their right to use and benefit from their community forest. After many years of external exploitation of the community forest for charcoal production, Wula Nafaa has leveraged existing decentralization laws to help devolve and secure the management rights of the local community over designated community forests. A rotational harvest system now forms part of the rural community's Forest Management Plan, a long-term vision for sustainable charcoal production which allows for areas of forest to regenerate between cuttings, and for village producers to share in the harvest more equally. Local villagers who were formerly excluded from production in their forest have become engaged in this new system and are working their own forests to derive economic benefit. As an effective complement to agricultural incomes, the charcoal industry has been an enormous boon to the local economy, and is assisting communities to move closer to realizing decentralized governance. The transition is not an easy one. Tension exists between the Senegalese Forest Service, which has been resistant to surrendering their former jurisdiction over the charcoal trade, and community producers, who have been kept subservient to old systems despite their legal dissolution. Groups and individuals are slowly standing up for their rights, however, and community incomes from charcoal are on the rise. While the implementation of the forest management and associated rotation schemes are still in the early stages, and have not undergone rigorous testing or monitoring as of yet, the effective use of a forest management plan holds promise for meeting the growing demand for charcoal in Senegal's big cities, while enabling rural populations to take on more responsibilities in sustained yield forest management and to benefit from the increased economic opportunities associated with improved forest management.

2 *Saba senegalensis*.

3 *Ziziphus mauritiana*, also known as jujube, is a tropical fruit tree species belonging to the family *Rhamnaceae*.

4 *Digitaria exilis*.



In the semi-arid district of Bala, village-based producer groups are beginning to reap the rewards of the local baobab harvest. Wula Nafaa’s efforts to valorize this under-valued indigenous forest product have resulted in a thriving value chain with links to international export markets. A partnership between large-scale buyers and the Wula Nafaa project has resulted in effective community engagement in the market for this product. Participatory governance structures establish harvest rules so that communities can regulate their own resource, and advocate for fair prices and market access. For the moment, the new trade is booming, and local groups are gaining valuable income in the agricultural off-season. However, the entire product chain is subject to the whims of the marketplace, and in particular via the main buyer in the region – the Baobab Fruit Company (BFC). In 2013, BFC changed its policies on purchasing baobab powder, formerly sourced from village women’s groups. Instead of the hand-pounded product, with its inherent variations in quality, BFC decided it was in their best interest to do in-house processing. Abrupt changes such as these have rippling impacts, and reveal the vulnerability of this otherwise prosperous value chain for the long-term. But for now, the harvest goes on, with the baobab fruit becoming a commodity in high demand.

The rural community of Kayemor, twenty-three villages had been grappling with a serious salinization problem for many years. The community wetland, which had previously supported local vegetable gardens, slowly grew saltier and saltier, until it no longer could support plant growth. Livestock water holes and fodder supplies were affected, and salt was beginning to encroach on farmers’ fields. Working together with Rural Council President (PCR) Abdoulaye Cisse, the local leader who gained valuable leadership skills during the prior USAID CBNRM project, Wula Nafaa sponsored an anti-salt dike to contain area rainwater in a reservoir to support agricultural and herding activities. Within one year of the dike’s construction, the community had returned to their gardens with a flourish, and garnered

added benefits from the reservoir such as regenerated habitat for fish populations, forage grasses, and other wildlife. Kayemor farmers in this same community adopted the practice of conservation farming to help restore the fertility of cultivated soils, a practice that is slowly but surely taking hold.

In Medina Sangako, a village in the Rural Community of Toubacouta, a sustainable oyster industry has brought a new level of prosperity to the local community. With Wula Nafaa project assistance, the local oyster cultivation group, utilizing an innovative ‘garland’ technique to grow valuable oysters for the fresh fish market in Dakar, expanded from four members to 100 active producers. The Rural Council adopted a ‘Local Convention’—a set of locally agreed upon and enforceable rules governing land and resource use, sanctioned by local authorities—for management of the fragile mangrove system, which hosts the oyster farms. This Local Convention resulted in establishment of biological rest periods and local enforcement of regulations for shellfish harvesting, fishing and better managed and more sustainable exploitation of mangrove branches for fuelwood. Inspired by the financial gains of the enterprise, and the visible improvements in ecosystem health that also helps to build up local fish populations and grow a plentiful oyster harvest, villages have begun to replant and restore the mangrove forests.

* * *



Dindéfelo's Laxo Touunkara proudly shows off her hand-pounded powdered baobab.



Charcoal producers of Sare Bidji stand before their charcoal kiln, ready to be fired.



Babacar Sisé, leader of the conservation farming group of Kayemor.

Between 2003 and 2013, Wula Nafaa’s integrated approach—premised on the need to integrate biophysical, economic and governance dimensions of natural resource based rural development—led to dramatic and broad-based poverty reduction in villages in Senegal. The program, in addition to working to resolve and improve technical and productivity issues in natural resource management, addressed value-chain and market dynamics and promoted local control and decision-making over resources. The synergistic impact of these interventions is evident in the results of an impact evaluation using data from the Senegal Demographic and Health Surveys (DHS): villages that have participated in these interventions, previously lagging behind their counterparts, have now surpassed them on many economic and social indicators. This side-by-side comparison of Wula Nafaa project areas to non-intervention areas showed a measurably higher increase in wealth for Wula Nafaa areas. The onset of the program corresponds with a turn around and accelerated growth, broad based improvement in inclusions and well-being, and poverty reduction in the program areas.

Perhaps equally as significantly, project communities reversed a long-term trend: whereas communities in Wula Nafaa areas had previously been lagging in economic development, post-project numbers showed that Wula Nafaa areas had surpassed comparison communities. Accompanying this rise in overall prosperity are affiliated broad-based impacts on health, nutrition, education, employment status and significant improvements for women. The changes brought about by Wula Nafaa’s integrated NWP approach thus seem to be structural and self-perpetuating. This report presents the evolution of USAID’s investment in natural resource management (NRM) programs in Senegal that led to Wula Nafaa’s integrated approach, discusses approaches and tools of the Wula Nafaa project, and analyzes a variety of data to examine the impact of the evolution towards an integrated approach to NRM.



The women of the oyster cultivation group of Soukouta reach into the mangrove waters to check their oyster garlands from a pirogue.

1.1 OVERVIEW

Senegal has a rich history of natural resource management programs implemented by USAID over the past 40 years. However, until about 10 years ago, these programs were limited in their impact on long-term natural resource protection, poverty reduction, and local empowerment. In 2003, USAID-Senegal initiated the Wula Nafaa project. With its name meaning ‘value of the forest’ in the Mandinka language, Wula Nafaa departed from traditional NRM projects by integrating tools to increase productivity of natural resources with the empowerment local people and the identification and improvement of value chains. The project’s design and implementation deliberately followed the principles and recommendations of the seminal ‘Nature, Wealth and Power’ document (USAID, 2002). This distillation of lessons learned and best practices (called NWP) described and advocated for a tripartite approach to NRM development, balancing economic growth with governance gains and natural resource conservation⁵ and management.

Wula Nafaa built on lessons learned from previous USAID projects and experiences to integrate natural resource management with wealth creation and good governance

components. With a range of successful applications in different ecological and cultural contexts, a significant and measurable impact on income generation at the household level, and an impressive net return on development investment, the USAID Wula Nafaa program contains many valuable lessons for implementation of integrated NRM programs in Senegal and for improving NRM and catalyzing sustainable rural development across the globe. With the completion of the Wula Nafaa project in 2013, after ten years of program implementation based on the NWP paradigm, comes the opportunity to reflect on the evolution of USAID’s work in the NRM sector in Senegal: to highlight progress, take stock of successes and to note areas in need of improvement.

This retrospective study “tells the story” of the historical context and evolution of USAID’s long-term commitment to sustainable development in Senegal through NRM program assistance. The study is designed to contribute to a greater appreciation of the achievements and impacts of USAID investments in Environment and Natural Resource Management projects, and to contribute to USAID institutional memory in this area. It aims to capitalize on key lessons learned from these projects and to provide guidance to increase the effectiveness of follow-on interventions aimed at addressing poverty alleviation, economic growth, environmental governance and climate change adaptation as well as improved natural resource management, biodiversity conservation and related sustainable development objectives.

⁵ Conservation—defined as wise use, to benefit the present and future generations—includes improved management, sustainable use and protection of the resource base.

1.2 THE NWP FRAMEWORK

In 2002, USAID funded the publication of the “Nature, Wealth and Power” discussion paper that presented principles and action steps that consolidated lessons learned from more than 20 years of natural resources-based development in Africa. The integrated framework that emerged—called “Nature, Wealth, and Power” (NWP)—not only distilled what has worked in the past but also put forward a series of “best bets” that could make future investments and programs in Africa more effective.

Three decades ago, rural development and natural resource management programs were predominantly driven by a strategy emphasizing technical solutions to real and perceived environmental crises. More recently, it has become increasingly apparent that natural resource management rests on three interrelated development dimensions: environmental management (Nature), economic considerations (Wealth), and governance systems (Power)⁶. From this perspective, natural resource conservation should be seen not only in the context of resource management and preservation, but also from the perspective of opportunities for sustainable economic utilization of nature. Similarly, political accountability, access and property rights -- communal or private, formal or informal -- lay the foundation for interaction with and management and utilization of natural resources. Figure 2 portrays the synergy between Nature, Wealth, and Power in an integrated approach to rural development.

NWP is based on the idea that “recognizing the natural, economic, and governance dimensions of resources is critical to developing appropriate management systems” (USAID, 2002)⁷. Ultimately, the goals of a successfully implemented NWP approach are the following:

- Increasing the productivity of the resource base and conserving biodiversity;
- Increasing economic growth for local communities and national accounts; and
- Assisting the move of rural people along the path from subject to citizen, leading the way toward a more democratic, decentralized, and vibrant society.

Since its publication, the NWP document has catalyzed implementation and discussion of integrated NRM programs in Africa and in other regions across the world. This has been especially true in the case of Wula Nafaa: USAID/Senegal and the International Resources Group (IRG), Wula Nafaa’s lead implementing organization, explicitly drew on the NWP framework to design and implement the project. The Senegal USAID Mission has continued to leverage NWP in its design of other Agriculture/NRM activities, such as the COMFISH project, and has started to apply the approach in USAID’s Feed the Future initiative via the Yaajeende project. NWP thus provides a critical lens through which to view the evolution of NRM programming in Senegal and the success and shortcomings of the integrated approaches of the last ten years.

6 This could be further specified as preservation and regeneration of the natural resource base (*Nature*), economic prosperity and poverty alleviation (*Wealth*), and governance, rights and empowerment (*Power*).

7 The complete document, “Nature, Wealth and Power: Emerging Best Practice for Revitalizing Rural Africa,” can be found at <http://rmportal.net/library/content/nature-wealth-and-power-emerging-best-practice-for-revitalizing-rural-africa/>

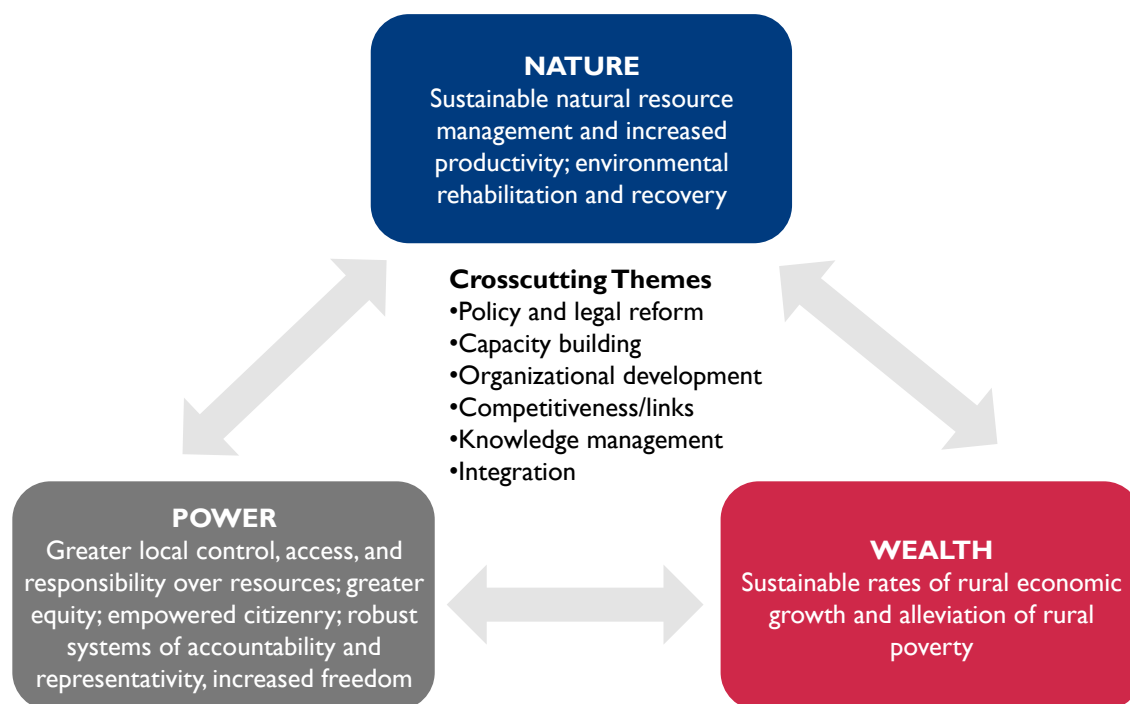


Figure 2: An illustration of the integrated outcomes of NWP. Source: USAID, 2002

1.3 NATURE, WEALTH, POWER RETROSPECTIVE STUDY

This Retrospective Study will have a specific focus on the last 10 years of NRM programming in Senegal, which has been centered on the Nature, Wealth and Power (NWP) paradigm implemented via Wula Nafaa. In viewing Senegal as a case study of 10 years of the NWP approach in action, this document will provide a framework to examine what has been achieved, and to explore programmatic complexities, in order to provide concrete recommendations for future initiatives. Doing so will be invaluable for guiding future program directions and knowing how to respond to emerging development circumstances—natural, social and climatic—in the years to come.

With the focus on NRM programming in Senegal, this document will not be so much a commentary on the NWP paradigm, but will rather utilize NWP as a lens through which to examine program evolution over the last 30 years in Senegal, which has culminated in an integrated NRM and rural development approach shaped by NWP. The Nature, Wealth and Power paradigm is likewise evolving, with the publication of ‘NWP 2.0’ in late 2013.

The narratives from Dindéfelo, Sare Bidji, Bala, Kayemor, and Medina Sangako above demonstrate the varied application of the NWP paradigm as implemented by the Wula Nafaa project in Senegal, and document examples of benefit and impact on communities on the ground. As these stories reveal, each site and situation presents its own nuances and particularities. The integrity of NWP as a triple-bottom line strategy can be maintained in combination with a flexible and adaptive approach in its implementation, with certain applications emphasizing one aspect or another. For example, programming in Dindéfelo hinged on conservation of the local chimpanzee population, placing great emphasis on the Nature component, whereas in Sare Bidji, motivation for improved forest management came directly from the realized financial gains of charcoal production. How were these successes arrived at? What enabling factors allowed for effective implementation? What measurable impact have these programs had on target populations? What challenges remain for this integrated development strategy to take hold and generate impacts in all three program focal areas? These questions will be explored in the following pages, along with detailed recommendations for application of NWP and similar integrated programs in the future.

The NWP framework generated a series of “principles and action recommendations” designed to guide donor investments in each of the component areas. These principles and actions included prescribed best practices in the areas of Nature, Wealth and Power. This study will reflect on USAID-Senegal’s investment in NRM activities over the last 30 years through the lens of these principles and action recommendations.

The Methodology of this report included desk reports, field visits, an impact evaluation, a commodity chain survey, and informant interviews. The final product is a consolidation of inputs from research and analysis teams⁸ and is a collaborative effort. It is important to note that this document is neither an evaluation nor an assessment, nor is it intended to be read as a technical manual for NRM practice. Instead, this study will consolidate and reflect on 30 years of NRM programming in Senegal, an exercise which primarily relied on existing documentation and reports. Though additional new data and analysis came to light during this exercise, the study was not able to compensate for the lack of long-term monitoring in some key areas. Further description of the methodology can be found in Appendix A.

1.3.1 DOCUMENT MAP

This report contains the following sections:

- Section 1: **Introduction**, provides a description of the study’s aims and objectives.
- Section 2: **Quantitative Evidence of Wula Nafaa’s Impacts on Poverty Reduction**, presents the original analysis of DHS data providing evidence for the role of Wula Nafaa in reducing rural poverty.
- Section 3: **Retrospective Study of the Evolution of USAID Investments in NRM, Enterprise Development, and Governance**, provides a historical chronology of USAID NRM interventions in Senegal over the last thirty years, describing programmatic evolution towards an integrated approach.
- Section 4: **Wula Nafaa: Ten Years of Implementation of the Nature-Wealth-Power Paradigm in Senegal—Impacts and Outcomes**, describes the Wula Nafaa project, the ten-year embodiment of integrated NRM programming implemented by USAID over the last decade in Senegal, and summarizes the project approach as well as discussing the multiple program outcomes and impacts.
- Section 5: **Charcoal Through the Lens of NWP: A Case Study of Wula Nafaa Interventions in a High-Value Commodity Chain and Implications for the Future of Community Forest Management Practices**, presents a specific case study of the Nature, Wealth, and Power impacts of Wula Nafaa activities on charcoal production in a rural community in southern Senegal, grounding discussion of project approach and impact in an on-the-ground example.
- Section 6: **Refining the Vision for Integrated NRM Programming: Discussion and Recommendations**, provides actionable recommendations for future implementation of the NWP framework, both in Senegal as well as in other countries in the region, and across the globe.
- Section 7: **Understanding How Change Happens**, presents a discussion on how change has occurred in Senegal, pointing out factors that have enabled change, factors working against change and strategies for overcoming resistance to change, concluding with final remarks on NWP in the context of the way forward in sustainable development.

⁸ See component reports available at pdf.usaid.gov/pdf_docs/PA00JW67.pdf (Nature), pdf.usaid.gov/pdf_docs/PA00JW5K.pdf (Wealth), and pdf.usaid.gov/pdf_docs/PA00JW64.pdf (Power).

2 QUANTITATIVE EVIDENCE OF WULA NAFAA'S IMPACTS ON POVERTY REDUCTION

While it has been argued that an integrated approach like NWP is necessary for long-term sustainable natural resource management (USAID, 2002), this report provides robust quantitative evidence that integrated NRM programming delivers significant results in poverty reduction. The application of NWP principles in the Senegalese context illustrates how an integrated approach can stimulate rural wealth creation without degrading the natural resource base. The accumulated evidence affirms that decentralized, community-driven approaches may be more appropriate for long-term development than those driven by centrally managed governance structures.

A conclusive analysis of comparative wealth generation in project versus non-project areas reveals that application of NWP principles via Wula Nafaa resulted in proportionately better progress in target areas. While Wula Nafaa communities were in decline prior to project intervention, they have now surpassed comparison communities in income generation, along with broad-based improvements in status in terms of education, health, gender inequality, and nutrition. The case of Senegal therefore demonstrates that application of the NWP approach can reverse the decline of rural communities. Importantly, this powerful quantitative evidence is coupled with evidence of perceptual change among beneficiaries at the village level, an indication of grassroots buy-in which is a necessity for long-term structural change.

From charcoal forests to baobab groves, from primate conservation to anti-salinization efforts, from conservation farming to fisheries to mangroves, the Wula Nafaa project demonstrated the diverse applicability of the NWP paradigm in a variety of ecological and cultural settings, and within a range of biophysical and economic contexts. While there is still much work to be done, application to this multitude of contexts has been successful in terms of proven poverty reduction, and is further strengthened by the impressive return on development investment experienced in this project. Village-based enterprises created and supported by the Wula Nafaa project generated more than \$41 million in revenues during the second project phase, an impressive return on an investment of \$22.5 million. (USAID-Senegal, 2013b).

This section presents data that show empirically that the program has had this positive impact across the board, and the design of the data analysis allows these impacts to be directly attributable to Wula Nafaa. A major outcome and lesson for other countries—Sahelian, African, and beyond—is that systematic application of NWP principles is a successful way to reverse the declining socio-economic status of rural villages and to create accelerated growth in place of decline, while simultaneously starting to empower local people and introduce measures to protect the natural resource base for future generations.

2.1 IMPACT EVALUATION OF WULA NAFAA

The proof of successful poverty reduction in Wula Nafaa project areas was arrived at through meticulous analysis of project area communities versus comparative non-project communities, in a unique new form of impact evaluation using quasi-experimental design to analyze data from Demographic and Health Surveys.

2.1.1 PREMISE OF IMPACT EVALUATION

USAID evaluations have generally emphasized performance monitoring: what activities are being offered, what and how activities have been implemented, and whether expected results have been occurring. Emphasis has been placed on performance or process evaluations that have incorporated before-and-after comparisons, and have tended to rely on less formal modes of inquiry and less rigorously defined methods.

One of the most recent USAID reforms has been to revitalize program assessments to include impact evaluations that “measure the change in a development outcome that is attributable to a defined intervention” (USAID, 2011, p. 2). These evaluations “are based on models of cause and effect and require a credible and rigorously defined counterfactual to control for factors other than the intervention that might account for the observed change” (USAID, 2011, p. 2). Thus, impact evaluations focus on outcomes that reflect changes in well-being—such as whether people are healthier, better educated, or less vulnerable to adverse shocks—that can be attributed to a particular intervention (or “treatment”). Evaluating the impact of the intervention hinges on a fundamental question: What would the situation have been if the intervention had not taken place?

The answer to that question has varied along a continuum of complexity and rigor, but has concentrated on the identification of changes in key welfare indicators among a group of participants through descriptive monitoring to impact evaluations. While descriptive monitoring leaves ample room for differing interpretations of how much the identified change can be attributed to the intervention, impact evaluation relies on more sophisticated methods to disentangle the net gains from that intervention. Impact evaluations vary in complexity from randomized designs to quasi-experimental methodology, to statistical controls and simulations using computable general equilibrium models.

2.1.2 METHODOLOGY OF WULA NAFAA IMPACT EVALUATION

This impact evaluation relies on quasi-experimental design to analyze Demographic and Health Survey (DHS) data to determine impact of Wula Nafaa program activities on poverty reduction/wealth creation. The quasi-experimental design methodology compares changes in outcomes over time a population that is enrolled in a program (the treatment group) and a population that is not (the comparison group).⁹

This comparison involves four different groups, not only two (see Figure 3). The distinction between the four groups is based on two determining factors: time and space. In addition to the group that received the treatment (the population that benefited from Wula Nafaa), the three other groups are not affected by the treatment: the treated group prior to its treatment (the population living in the Wula program areas before the program was introduced); the control group in the period before the treatment occurred (i.e., before Wula Nafaa was introduced to the Wula Nafaa program area); and the control group in the current period.



Figure 3: Impact evaluation analytical framework

⁹ Following the literature, the event for which an estimate of the causal effect is sought is called *treatment*. The *outcome* is what will be used to measure the effect of the treatment. The treatment and control groups do not necessarily need to have the same pre-intervention conditions. The two groups may well have different characteristics. However, many of those characteristics (e.g., level of economic development; a region’s location close to the ocean or in a forested area) can reasonably be assumed to remain constant over time or at least over the course of an evaluation.

The rationale behind this empirical approach is that if the two Wula Nafaa and the two control groups are subject to the same time trend, then potential confounding factors are removed and the outcome—that is, the impact of Wula Nafaa—can be estimated (see, for instance, Card & Krueger, 1994; Lechner, 2010).¹⁰

Since this investigation is observational in nature and no randomized treatment is made, the possibility exists—as with any quasi-experimental design—that identified variations in the indicators used for analysis are spurious and due to some factor other than Wula Nafaa. However, there is wide agreement that though quasi-experimental designs do not allow the researcher to make definitive causal inferences, they provide the most rigorous analysis tools when experimental methods cannot be applied.

2.1.3 DEFINING WEALTH

This impact evaluation attempts to answer the question of whether the interventions supported by Wula Nafaa have resulted in increased household wealth—or, equivalently, lower poverty—in the project area. Economists have traditionally measured wealth using direct measures of economic status, including income and expenditure. However, direct measures of wealth have severe limitations, particularly in a developing-country context. Not only that income data are often unavailable, they are also inherently unreliable (see, for instance, Filmer & Pritchett, 2001; McKenzie, 2005).

Wealth is multi-dimensional. It includes both physical assets and human capital, particularly education and nutrition. To overcome the limitations of measuring wealth through income and expenditure, researchers have developed a proxy measure in the form of an asset index. The index is a set of weighted indicators associated with financially-based definition of wealth, including durable assets such as refrigerators, television sets and motor vehicles. The indicators extend to other items of material comfort, including infrastructure and housing characteristics such as material of dwelling floor, main source of drinking water, type of toilet facility, and type of fuel used for cooking.

It is tempting to think that since there is no *a priori* system of weighting the various assets, the most straightforward way to proceed is to assign an equal weight to each asset. However, despite its appeal in terms of simplicity and apparent objectivity, numeric equality is arbitrary and leads to inaccurate results. Assigning equal weights to all assets is equivalent to saying that individuals with different economic resources and standards of living will be assigned the same wealth status. For example, an individual who owns a radio and a bicycle would be assigned the same score as an individual who owns a television set and a motor vehicle. To derive an asset index that incorporates non-arbitrary weights, researchers have increasingly relied on Principal Component Analysis (PCA), a standard technique for computing statistically derived weights that can be used to compare the socio-economic status of households or populations over time and across space.

PCA offers several other advantages. First, it is a methodology in which the distribution of household assets weights luxury assets more heavily. Second, PCA determines the statistical relationship among a large, pre-determined set of indicators such as household assets by re-expressing them in terms of their underlying or latent structure. As such, it is an ideal data reduction tool for filtering out the statistical noise associated with highly correlated or redundant asset variables, especially when the distribution of variables varies widely across households.

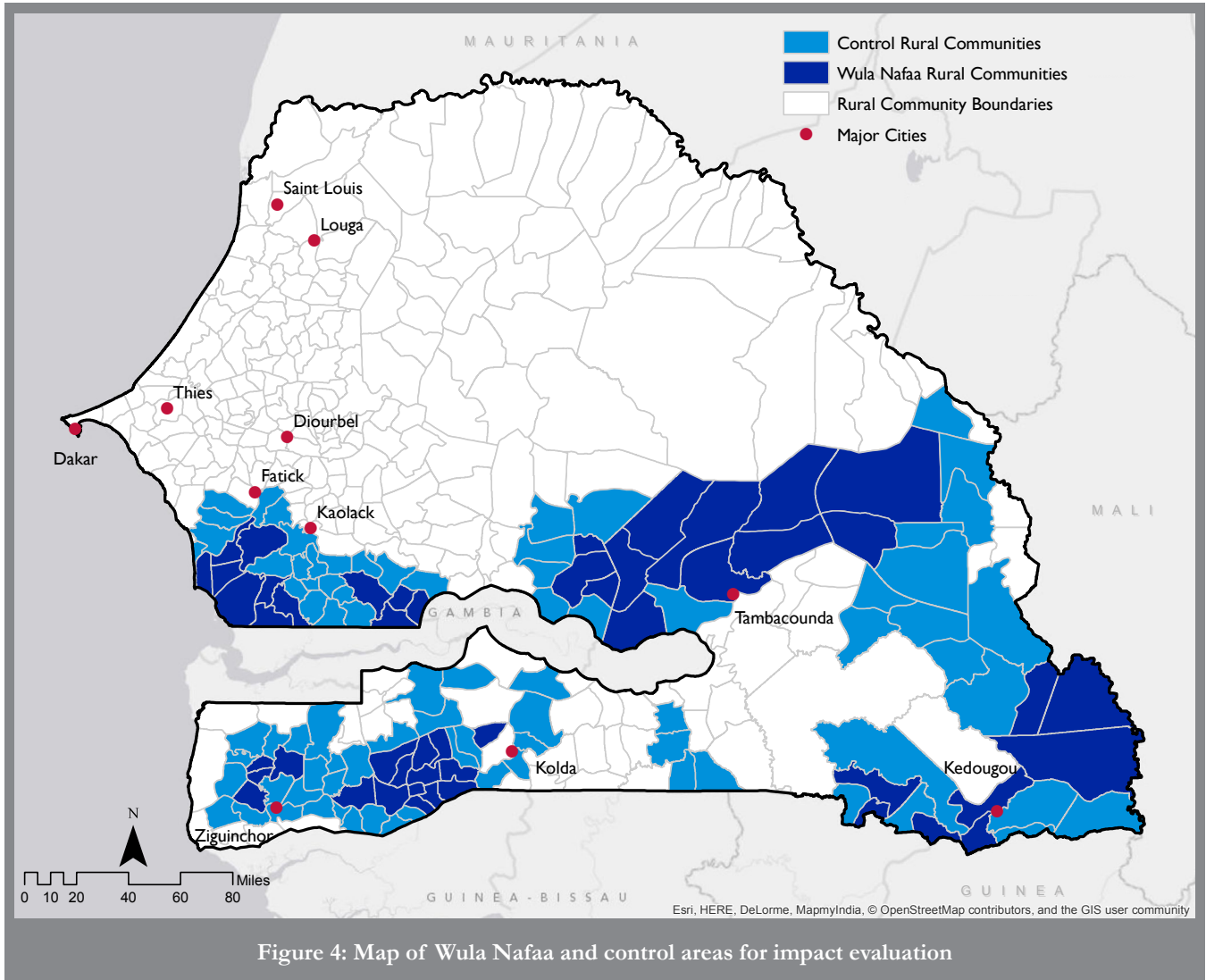
Since the principal focus of PCA is on differences among groups of individuals—defined in terms of the wealth or assets of the households where they reside—it is a powerful tool for measuring relative wealth. In this context, a household is defined as rich (poor) when it has more (less) than what is common to other households or what defines an average household in a given society.

The asset index can also be used to compare households (or any other living units) across settings (e.g., countries or rural/urban settings) or over time, provided the separate indices are calculated using the same variables. Since the PCA asset index is a relative measure of wealth, it is sensitive to contextual variations across countries or rural-urban settings.

¹⁰ Fundamentally, quasi-experimental design is identical to the controlled experimental design, except that the subjects cannot be randomly assigned to either the experimental or the control group, or the researcher cannot control which group will get the treatment. Equivalently, participants do not all have the same chance of being in the control or the experimental groups, or of receiving or not receiving the treatment.

2.1.3.1 DATA SOURCE: DEMOGRAPHIC AND HEALTH SURVEYS

This impact evaluation compares Rural Communities that participated in Wula Nafaa’s intervention to Rural Communities that did not. The Rural Communities in Wula Nafaa (n=49) and control areas (n=84) were identified using Wula Nafaa program documents as well as direct interviews and other communications with local and foreign experts with particular knowledge of the Wula Nafaa and control areas and their geographic and historical context. Rural communities in the control areas were selected for their proximity and similarity to the Wula Nafaa areas. Figure 4 depicts the locations of Wula Nafaa and control RCs.



2.2 WULA NAFAA IMPACTS

The PCA results show that Wula Nafaa has achieved measurable gains across the board. Wula Nafaa has accelerated wealth creation. The wealth status of households was higher in the control areas than in the Wula Nafaa areas in 1997, before Wula Nafaa was launched. The situation was, however, reversed with the introduction of Wula Nafaa.

Figure 5 indicates that the percentage of population owning durable assets and having access to electricity and water piped into the compound was higher in the control rural communities than in the Wula Nafaa rural communities in 1997, before Wula Nafaa was launched. After trailing behind before Wula Nafaa was initiated, the Wula Nafaa program areas have outpaced the control areas in durable asset ownership and material comfort.

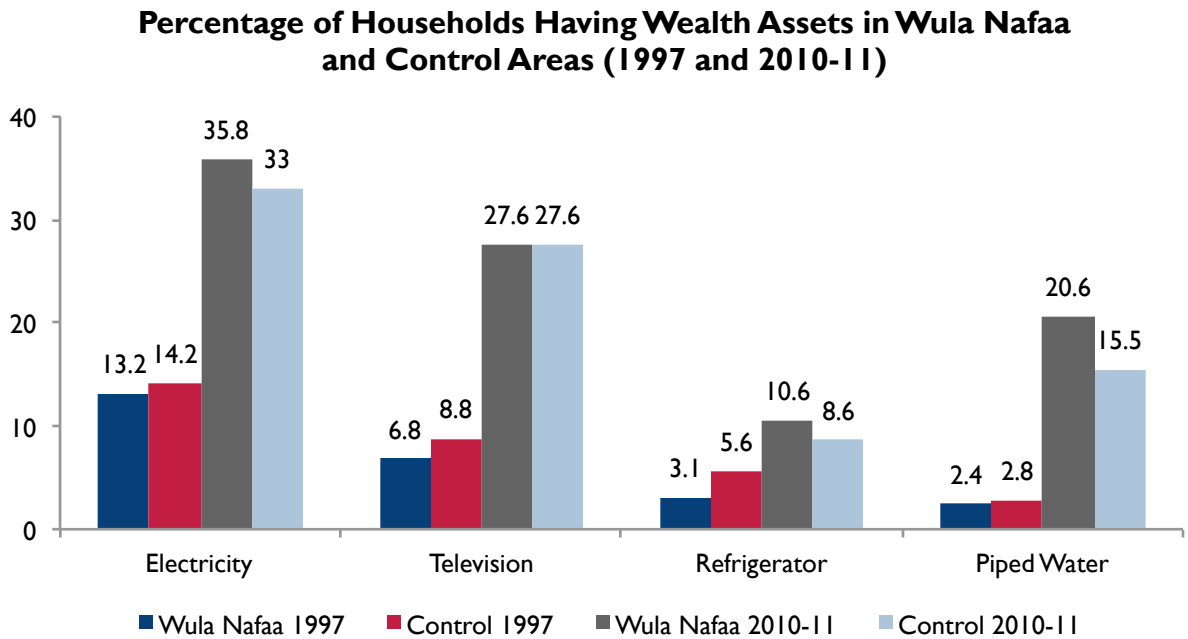


Figure 5: Percentage of household having wealth assets in Wula Nafaa and Control areas (1997 and 2010-11)

This result was significant across the board, but more substantial for certain items. For instance, the percentage of households owning a refrigerator in the Wula Nafaa areas, which was 45 percent lower in 1997, became 23 percent higher in 2010-11, for a net gain of nearly 70 percent over the control areas (compare corresponding ratios in Table 5, which illustrates this reversal further).

Table 2 shows that the annual percentage increase for all asset indicators was higher in the Wula Nafaa areas than in the control areas – over 30 percent higher for electricity, over 40 percent higher for television sets and piped water, and over 460 percent higher for refrigerators.

Table 2: Annual percentage increase in wealth status: Wula Nafaa and control areas, from 1997 to 2010-11,
Source: Principal Component Analysis results from DHS Senegal data

Wealth Item	Wula Nafaa Areas	Control Areas
Electricity	13.5	10.2
Television	23.5	16.5
Refrigerator	18.7	4.0
Piped water	9.7	6.8

The wealth status pattern in the Wula Nafaa areas relative to the control areas in 1992-93 was similar to the pattern observed in 1997, providing further evidence that the introduction of Wula Nafaa in 2003 reversed **a longstanding pattern of greater wealth in the control areas to a new pattern of greater wealth** in the Wula Nafaa areas. Since physical assets are accumulated over time and last longer, this finding is likely to reflect structural—rather than temporary—effects, with long-term implications on living standards.

In addition to having impacts on household wealth, Wula Nafaa has succeeded on many other counts. A comparison of the employment status in both areas reveals that Wula Nafaa has generated significant employment security to both men and women and that the benefits to women have been more substantial (see Figure 6). This is corroborated by Wula Nafaa’s own project numbers that showed 5,000 jobs created for women over the life of project (USAID-Senegal, 2013b). Wula Nafaa supported women’s income-generating activities through establishment of cooperatives and federations, training in value-added product transformation—such as with *foñio* and baobab fruit power—and productive vegetable gardening and rice production. For example, a 15-fold increase in rice production was measured in project communities between 2009 and 2012, from 192 metric tons to 2,900 tons (USAID-Senegal, 2013b). Here the emphasis of this impact is again on women since nearly 1,500 of 2,133 rice producers assisted by the project were women (USAID-Senegal, 2013b).

In addition, equality in employment opportunities between the poorest and richest quintiles is, on balance, more prevalent in Wula Nafaa areas than in the control areas for both men and women, suggesting that the benefits of Wula Nafaa have narrowed the wealth equity gap in the program area.

This finding is all the more important because high levels of income inequality contribute to high levels of poverty in three major ways. First, for any given level of economic development or mean income, higher inequality implies higher poverty because a smaller share of resources accrues to those at the bottom of the distribution of income or consumption. Second, higher levels of inequality may reduce the benefits of growth for the poor because a higher initial inequality may lower the share of the poor’s benefits from growth. Third, individuals and households do not assess their levels of welfare only in terms of their absolute level of wealth or poverty—they also compare themselves with others.¹¹ Therefore, for a given level of wealth, high inequality has a direct, negative effect on welfare.¹²

An equivalent comparison shows that equality in education status is higher in the Wula Nafaa than in the control areas **for both men and women** and that equality in educational opportunities between the poorest and richest quintiles is higher in the Wula Nafaa areas.

11 This is consistent with the relative deprivation theory developed by W.G. Runciman (1966).

12 It should also be noted that several studies have shown a strong link between equitable distribution of environmental benefits and poverty alleviation (see, for instance, Naschold, 2002; USAID, 2006).

Employment Opportunities for Women in Wula Nafaa and Control Areas in 2010-11 (percent)

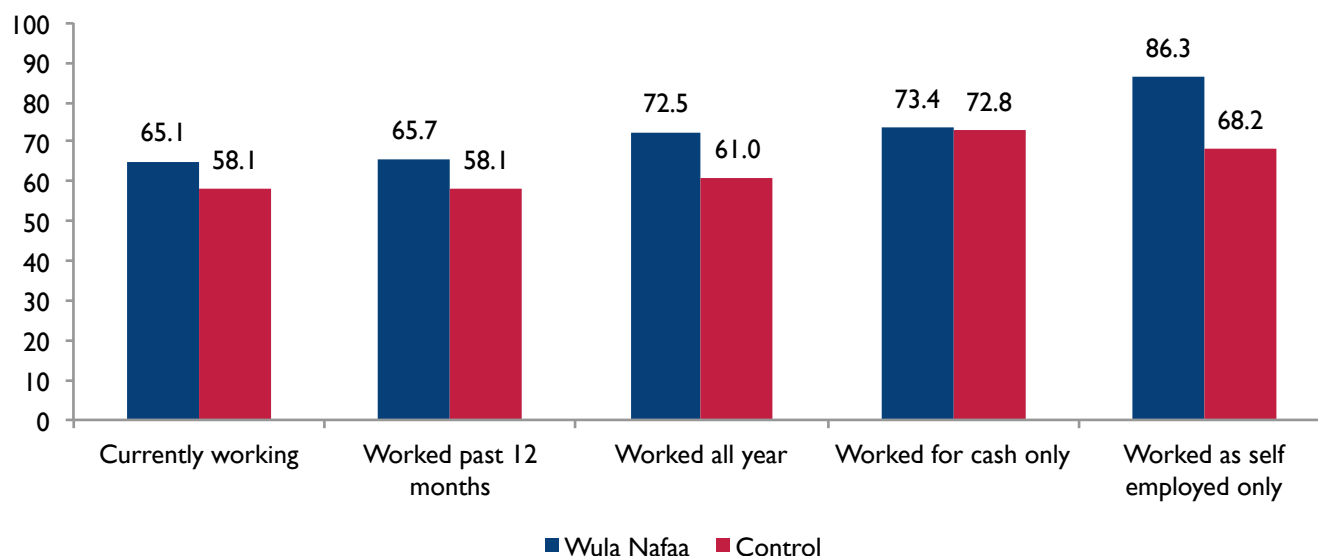


Figure 6: Employment opportunities for women in Wula Nafaa and control areas in 2010-11 (percent)

This finding is important for at least two reasons. First, education is associated with positive direct, indirect and intergenerational effects. A close association exists between education and higher earnings from nonagricultural activities. There is consensus among researchers that education is, in the long run, as important to poverty reduction as physical capital accumulation. In many settings, it is indeed the primary source of physical wealth. Theoretical as well as empirical studies have shown the benefits associated with education, and the role schooling plays at both the individual and society levels (see, for example, Acemoglu, 2009; McMahon, 1999). Education is particularly important for girls and women, and investing in their education is one of the most effective ways to reduce poverty. This is true not only because education is an entry point to other opportunities, but also because the educational achievements of women can have ripple effects within the family and across generations (UN 2005).¹³

Second, education plays a key role in the changing dynamics of poverty in Senegal in particular. A recent study (Diawara, 2011) shows that the higher the education levels in Senegal, the higher the probability of moving out of poverty.

Despite this apparent improvement, **it is important to note that the overall education status in both control and Wula Nafaa areas is abysmal. 78% of women and 69 % of men in the project area (which had a more favorable education outlook overall) still have no education.** This highlights that there may still be a lot of work to do before educational status changes have an impact on poverty in Senegal.

¹³ After examining the characteristics of households moving out of or falling into poverty in Ethiopia, one study (Bigsten, Kebede, Shimeles, & Tadesse, 2003) concluded that households with at least primary education have a higher probability of getting out of, and a lower probability of falling into, poverty. Another study (Fuwa, 2007) this paper attempts to analyze the patterns of poverty exits by examining socio-economic mobility in a Philippines village. Macroeconomic growth was a major factor explaining poverty-exit probabilities until the early 1980s. After the 1980s, poverty exit-paths through agricultural ladder narrowed, schooling and growth became equally important factors owing to the increased returns to schooling, and labor endowments also became important for the lower, but not upper, social strata (providing an economic incentive to have more children for the poor used an approach based on socioeconomic groups to investigate the patterns of “poverty exits” in a village in the Philippines. Four socioeconomic groups were identified: the irregularly employed, the tenant-farmer, the small-owner and the regularly employed. The study found that education was a key determinant in the movement toward the higher employment status. Grootaert et al. (1997) have found that, for rural areas in Côte d’Ivoire, each additional year of education in the household is associated with a 2000 fCFA increase in expenditure per capita. A study conducted in Ghana on the impact of schooling (Gyimah-Brempong & Asiedu, 2009) has shown that the higher the education level, the lower the probability of being poor and the smaller the income and expenditure gaps.

Communities benefitting from Wula Nafaa’s interventions also showed improvements in nutrition status among women and children. Anemia, underweight, stunting, and wasting¹⁴ are the four indicators most widely used to describe the nutrition status of a population.¹⁵ An examination of these four widely used nutrition indicators reveals that the overall nutrition status is higher in the Wula Nafaa areas than in the control areas (Table 3). At 59 percent, anemia for women is lower than in the control areas (61 percent). Although wasting among children is more prevalent in the Wula Nafaa than in the control areas, the percentage of underweight children is lower in the Wula Nafaa than in the control areas (5.5 percent and 6.3 percent, respectively)—and so is the percentage of children suffering from stunting (6.8 percent and 7.1 percent, respectively).

Table 3: Nutrition status of women and under-five children in Wula Nafaa and control areas, 2010-11

Nutrition indicator	Percentage of Households	
	Wula Nafaa area	Control area
WOMEN		
Anemia	59.0	61.0
UNDER-FIVE CHILDREN		
Underweight	5.5	6.3
Stunting	6.8	7.1
Wasting	2.1	1.2

This finding is particularly meaningful when stunting for under-five children is considered. Called “shortness” or chronic malnutrition, stunting is the most relevant long-term indicator of poverty or the overall wellbeing in a community because it reflects deprivation over a period of months or years. The measurable impact of Wula Nafaa in reducing stunting among children in the program area is particularly significant because the proportion of children who are stunted in Senegal is eight times the level expected in a healthy, well-nourished population (ORC Macro, 2006).

Wula Nafaa thus clearly had a positive, measurable, and multi-faceted impact on the socioeconomic status of the communities that it served, reversing the worrisome trends that existed before the project, and influencing broad-based quantifiers of human wellbeing.

2.3 CONCLUSIONS

This retrospective study used Demographic and Health Survey (DHS) data from Senegal on select household assets and characteristics¹⁶ to carry out an analytically robust impact evaluation. In order to determine the impacts of project interventions on wealth and poverty alleviation in target communities, a rigorous statistical analysis was undertaken, comparing wealth and income-related data points from multiple rounds of DHS conducted in Senegal on a national

¹⁴ Figures discussed in this section are for severe underweight, stunting and wasting (see next footnote for definitions).

¹⁵ *Malnutrition* refers to a variety of nutrition-related factors such as inadequate diets, infections, undernutrition, and micronutrient deficiency. *Undernutrition* refers to three normalized indicators: underweight, wasting, and stunting. Mild, moderate and severe underweight is a composite measure of short-term and long-term undernutrition, corresponding to less than one, two or three standard deviations from median weight for age of the reference population. Mild, moderate and severe *stunting* is an indicator for chronic undernutrition, corresponding to less than one, two or three standard deviations from median height for age of the reference population. Mild, moderate and severe *wasting* is an indicator for inadequate nutrition in the recent past, corresponding to less than one, two or three standard deviations from median weight for height of the reference population. Globally, the most significant contributor to the onset of anemia is iron deficiency. Among the other causes of anemia are: heavy blood loss as a result of menstruation; parasite infections that lower blood hemoglobin concentrations; and acute and chronic infections, including malaria, tuberculosis, and HIV.

¹⁶ Listed in Table 1 of the Wealth component report at pdf.usaid.gov/pdf_docs/PA00JW5K.pdf

scale. Since DHS data were generated for national government use, and collection of these surveys was completely separated from project work, the results thus present an unbiased confirmation of quantifiable wealth generation and poverty alleviation in project areas.

The results from this impact evaluation lend empirical support to the conclusion that Wula Nafaa has delivered a crucial impetus to poverty alleviation in the program area through physical asset growth and human capital accumulation. After trailing behind before Wula Nafaa was initiated, the Wula Nafaa program areas have outpaced the control areas in durable asset ownership and material comfort. They have also outperformed the control areas in employment, education and nutrition status.

The poorest segments of the population and women have been the primary beneficiaries of Wula Nafaa achievements, with positive effects on socioeconomic equality. Equality in employment opportunities between the poorest and richest quintiles is, on balance, more prevalent in the Wula Nafaa rural communities than in the control group, and so is equality in education status. The benefits of Wula Nafaa have also narrowed the gender gap in the program area. The employment status in the Wula Nafaa rural communities and the comparison communities reveals that Wula Nafaa has generated significant employment security to both men and women, but that the benefits to women have been more substantial.

It is important to note that these results show proof of impact through the quasi-experimental method for estimating causal effects. The results are attributable to the sum total of Wula Nafaa's interventions because the methodology effectively removed other sources of variation from analysis. The results do not point to *how* the interventions had the resulting impact, nor do they point to the specific parts of interventions that caused particular impacts. Everything Wula Nafaa did contributed to this impact, and as a result it is not possible to decompose the individual effects of all the elements of the intervention nor to say which intervention had the most impact. It is the package of interventions that had this overall effect. The rest of the document looks more closely at how these impacts were achieved. The approaches and tools that were used to achieve this impact and that could account for these outcomes are outlined in Section 4.

3 RETROSPECTIVE STUDY OF THE EVOLUTION OF USAID INVESTMENTS IN NRM, ENTERPRISE DEVELOPMENT, AND GOVERNANCE

Since colonial rule, Senegal has seen a dramatic deterioration in its natural resource base, caused by a confluence of factors: population pressures on local land and forest resources, unsustainable forestry and agricultural practices, changes in rainfall patterns and climatic trends, as well as a steep rate of urbanization and the consequent rise in energy demand. Primary threats to the depleting natural resource base come from human activities—clearing of agricultural land, uncontrolled grazing, and extraction of fuelwood—which contribute to and exacerbate effects of climate change, desertification, soil erosion and soil salinization. With a population characterized by poverty, inequitable access to economic opportunity, and rural flight, there has been great need for an effective Natural Resources Management (NRM) strategy in Senegal that protects the natural resource base for future generations, while also addressing the need for rural wealth creation.

USAID/Senegal has been a consistent, indeed a staunch supporter of development in the environment/natural resources and forestry sectors in Senegal over the last three decades. Over the course of this period, dating back to the post-Sahelian drought era, the USAID NRM portfolio has evolved in response to the growing recognition in the region of the relationships between land use, governance, economic growth, agricultural productivity and desertification. USAID programs focused their support on new and more effective development paradigms, and pioneered approaches aimed at developing new sources of revenue and changes in behavior of rural populations to secure long term beneficial impacts. This section will first outline the legal and environmental contexts of USAID’s NRM investments over the last 30 years, and will then turn to the evolution of USAID-Senegal’s NRM portfolio over this time period as seen through the lens of the NWP framework. The lessons learned over the first 20 years of NRM investment in Senegal helped inform the codification of the NWP framework, which subsequently set the stage for the innovations of both USAID-Senegal’s flagship Wula Nafaa project and subsequent NRM and economic growth investments.

3.1 SENEGAL: ENVIRONMENTAL, INSTITUTIONAL, AND ECONOMIC CONTEXT

3.1.1 ENVIRONMENTAL CONTEXT OVER THE LAST 30 YEARS

The environmental context over the last 30 years has shown significant degradation in the natural-resource base. In the 1980s, a comprehensive network of some 600 field sites were established across Senegal to provide baseline inventory information on the condition of the natural resource base. This information was used to prepare the “*Plan National d’Aménagement du Territoire*” (National Land Management Plan), and has continued to serve as a point of reference for assessing changes in land cover and land use. The work by USGS, the Senegalese *Centre de Suivi Ecologique* (CSE) and others helped to document the effects of drought and land use pressures in the 1970s- 1980s

Land Cover

- Forest
- Savanna
- Wetland - Floodplain
- Steppe
- Plantation
- Mangrove
- Agriculture
- Water Bodies
- Sandy Surfaces
- Rocky Land
- Bare Soil
- Settlements
- Irrigated Agriculture
- Gallery Forest
- Bowe
- Agriculture in shallows and recession
- Sahelian short grass savanna

Senegal

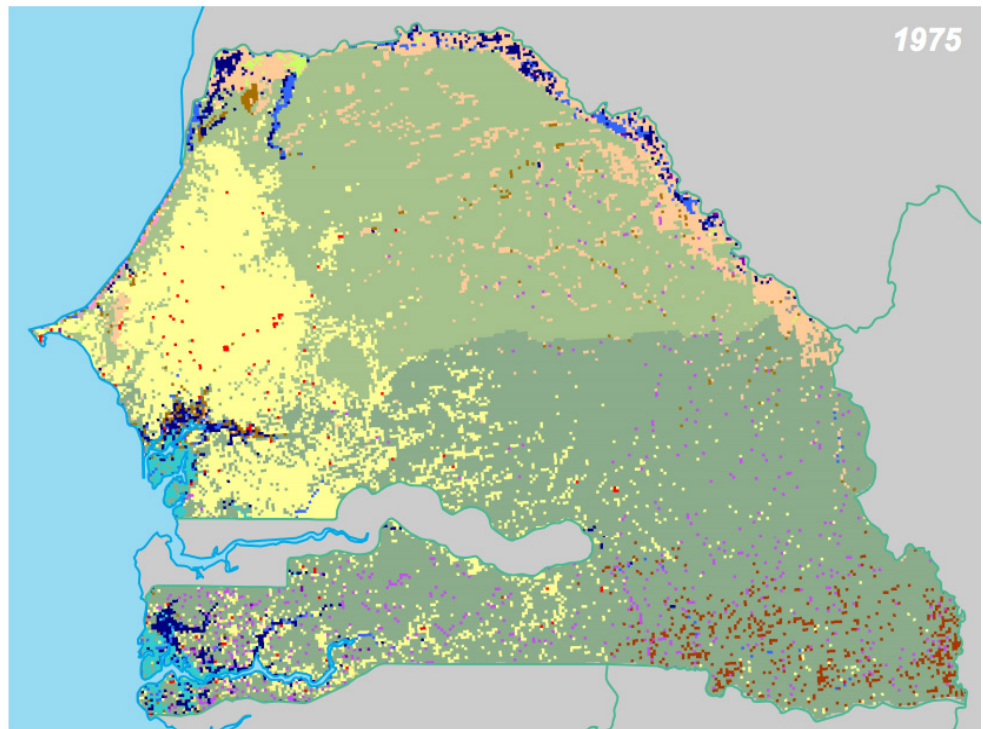
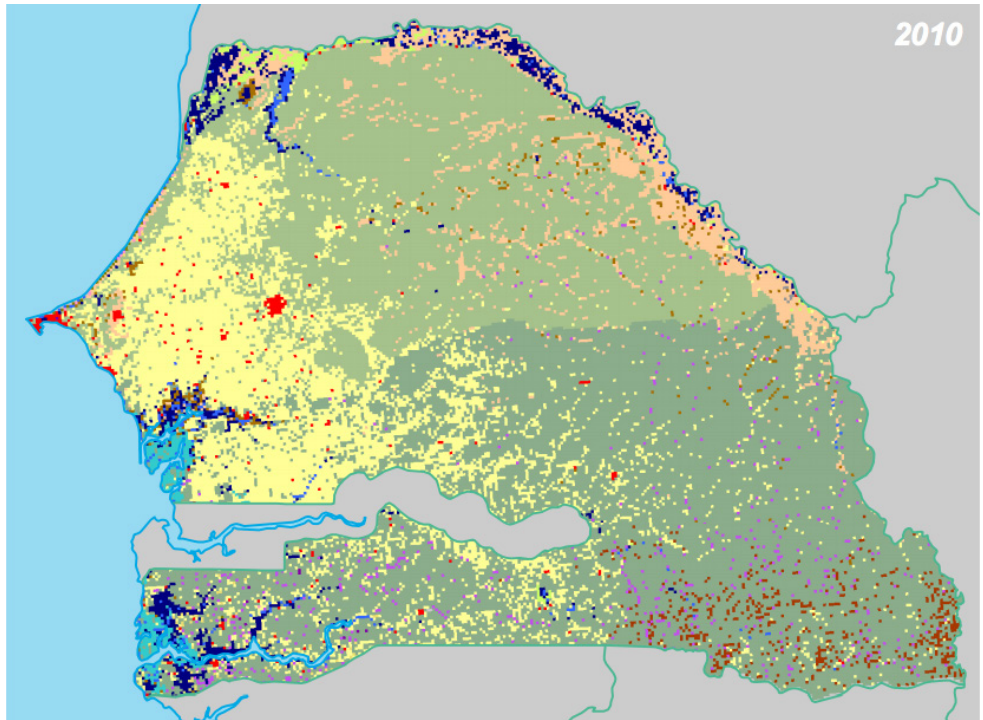


Figure 7: Map pair depicting changes in land use and land cover in Senegal and the Gambia, 1975-2010.
Source: USGS, 2013

when tree mortality was significant, and continuing into the 1980s and 1990s when population growth contributed to land degradation, especially in the densely populated peanut basin. The overall trends of gradual expansion of cropland into savanna woodlands, and the growth in large urban settlements are visible in land use/land cover maps prepared by USGS for 1975 and 2010 (see Figure 7)¹⁷

Some of the major long-term trends in land use and land cover changes in Senegal from the 1970s to 2000 that were revealed by the USGS/CSE analysis include (see USGS, CSE, CILSS, & USAID, 2007):

- Steady encroachment of agricultural lands on natural habitats, with associated declines in biodiversity and tree density
- 57% loss of Senegal's dense forests (from 252 km² to 108 km²) between 1975 and 2000, including:
 - Noted loss of riverine forest cover in the Senegal River valley west of Podor
 - Noted loss of semi-evergreen forests in the lower Casamance, and of the biologically important gallery forests (decline of 6%)
- 17% increase in bare soil (1228 km² to 1432 km²) mainly in the ferruginous pastoral eco-region as a result of land degradation and drier conditions
- Significant decrease in agricultural area in the West Central Agricultural region (Peanut basin) with cropland being abandoned and shifting to fallow, shrub and tree savanna (driven by low prices for peanuts and out-migration to urban areas, particularly Dakar and Touba)
- Significant expansion of agriculture and conversion of savanna to farmland (loss of 127 km² per year) outside of the peanut basin
- 102% increase in irrigated agriculture, from 328 km² to 664 km²

3.1.2 INSTITUTIONAL, LEGAL, AND POLITICAL CONTEXT OVER THE LAST 30 YEARS

Senegal has a long history of de-concentration reforms, dating back to colonial times. These reforms are often described as decentralization reforms, while they merely delegated power from central authorities to centrally appointed local administrators (Figure 7). Those administrators were *ordonnateurs* in the 1964 law, and *préfets* in the 1975 law establishing rural communes (Piveteau, 2005).

Over the last 30 years, however, Senegal took important steps to formally transfer decision-making authority over daily administration tasks to elected local governments: a law adopted in 1990 allowed, for the first time, mayors and rural councils to manage their communes; their decisions, however, were still submitted to oversight and approval (called 'prior control') by the *préfet*, thereby maintaining central state control over local decisions and politics. The 1996 decentralization law lifted the prior control rule: since, a control of the legality of local government decisions is performed *a posteriori*.¹⁸ The law 96-07 of 7 March 1996 also extended the area of competence of local government to nine domains, including NRM and land-use planning.¹⁹ Any responsibility transferred from the central state to local government was to be supported with the transfer of corresponding resources and means (République du Sénégal, 1996b, sec. 5).

¹⁷ Images provided by Gray Tappan, USGS, January 2013.

¹⁸ Except for a few important matters, including land use decisions over national lands.

¹⁹ The nine domains are: state land registry ('*domaines*'), environment and natural resource management, health and social welfare, youth sports, culture, education, planning, land use planning, urban planning and habitat.

Figure 8: Decentralization and Deconcentration

Decentralization is any act by which a central government formally cedes powers to actors and institutions at lower levels in a political administrative and territorial hierarchy.

Democratic Decentralization or Political Decentralization (sometimes called Devolution) occurs when powers and resources are transferred to authorities representative of and accountable to local populations. These are typically elected local governments. Democratic decentralization aims to increase public participation in local decision-making. Democratic decentralization is an institutionalized form of the participatory approach. Of the two primary forms of decentralization, democratic decentralization is considered the stronger and the one from which the theory indicates the greatest benefits can be derived.

Deconcentration or Administrative Decentralization concerns transfers of power to local branches of the central state, such as prefects, administrators, or local technical line ministry agents. These upwardly accountable bodies are appointed local administrative extensions of the central state. They may have some downward accountability built into their functions, but their primary responsibility is to central government. Deconcentration is considered the weaker form of decentralization because downward accountability is not as well established as in the democratic or political form of decentralization

In 1998, the Forest Code was reformed to incorporate changes brought by the 1996 decentralization laws: it confirmed the right for local government (*collectivités locales*) to administer the management of non-gazetted public domain forests (called *domaine forestier de l'Etat*), and enabled them to enter agreements with the Forest Service and co-manage areas within Government gazetted forests (*forêts classées*).²⁰

Figure 9 shows the concurrent structures of de-concentrated central government and decentralized governance at different territorial levels. Key to decentralized natural resource management are the structures at the level of the Rural Community (RC) or *communauté rurale*, a geographically defined administrative district comprising a dozen or more villages and settlements. As of 2009, there were 353 RCs in Senegal (Gilbert & Taugourdeau, 2013). RCs are governed by a Rural Council or *conseil rural* (CR) made up of representatives elected by direct universal suffrage for five-year terms; the number of councilors in a CR ranges from 30 to 80 based on the RC's population (Gilbert & Taugourdeau, 2013). The CR elects an executive bureau, led by the Rural Council President or *président du conseil rural* (PCR). For decentralization to be effective, powers of management, enforcement and decision-making must be properly devolved to the local governance structures of the Rural Community as specified by the decentralization legislation.²¹

20 The reforms to Rural Communities' rights and responsibilities in natural resource management specified in the 1998 Forest Code are described in more detail in Section 5.2.

21 Throughout this study, we refer to Rural Communities as "RCs" and Rural Councils as "CRs."

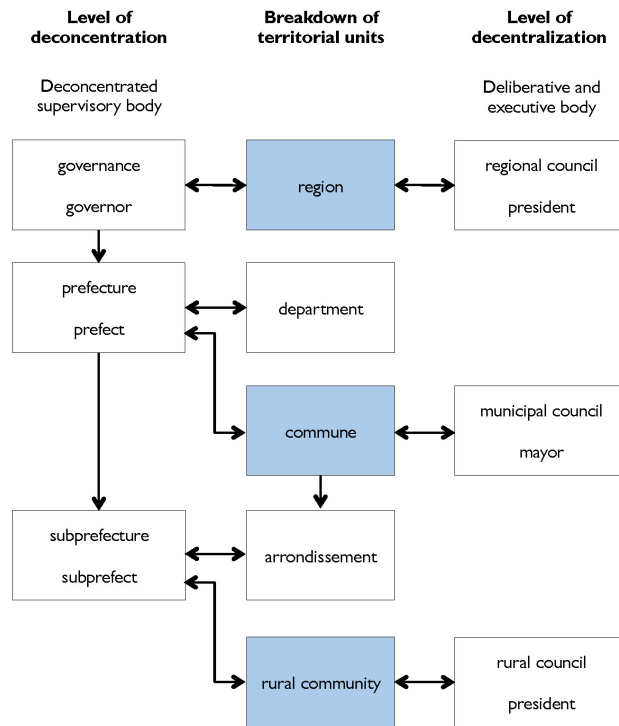


Figure 9: Territorial organization in Senegal. (Reproduced from Gilbert & Taugourdeau, 2013)

The legal changes significantly altered the distribution of power and authority between central government technical and administrative services, and local government. The local representatives of central government, *Préfets* and *Sous-Préfets* alike, were stripped of the roles that had made them the most powerful local actors. The Forest Service, which monopolized decisions relating to every forest in the country, was to become a technical advisor to Rural Council Presidents (PCRs). State representatives, whose authority had been uncontested since colonial times, and whose power had been extended and deepened by decades of de-concentration reforms, have resisted these decentralization reforms. They have used a whole “repertoire of resistance” strategies (Poteete & Ribot, 2011) to prevent CRs from exercising the authority legally given to them. This was particularly the case with regard to devolving authority for forest management and charcoal production in non-gazetted public domain or community forests.²²

In practice, implementation of decentralization has been slow. Responsibilities have been transferred to CRs without the legally mandated “transfer from the State of the resources and means necessary for the normal exercise of these powers” (République du Sénégal, 1996a, sec. 6). A recent World Bank study found that for most Regions, Communes and Rural Councils, “only four out of the nine assigned functions receive grants (education, health, youth and sport, and culture). The other functions are not compensated by a grant as is statutorily required” (Gilbert & Taugourdeau, 2013). Local government is authorized by law to raise local taxes but they lack financial management skills and collection capacity. Tax recovery rates are low, except for high-yield taxes such as taxes on companies. One poignant sign that decentralization exists more on paper than in reality is that “the levels of local spending are the same as they

22 The Forest Service seemed to have less resistance to moving ahead with co-management of classified or gazetted forests—as they were happy to have project assistance to do this, and to engage the populations in protecting forests from fire, etc. But they clearly resisted turning over power to Rural Councils to manage charcoal production revenues in areas outside of classified forests. In Tambacounda, they were slow to formally recognize community forests and to empower local communities to manage them—the FS wanted to apply their own template for management of classified forests to the management of community forests and maintain their authority by retaining the right to approve the management plans, and treat the community forests as just another production forest for charcoal regardless of local management priorities or concerns. (pers. comm. Bob Winterbottom, 1/3/14)

were before decentralization.” (Gilbert & Taugourdeau, 2013, p. 234). In the forestry sector, the Forest Service has been reluctant to let CRs fulfill their new mandate over forests, arguing that they do not have the capacity to enforce the law and manage their forests sustainably.

3.1.3 SOCIO-ECONOMIC CONTEXT OVER THE LAST 30 YEARS

While still one of the poorer countries in the world, Senegal has shown some improvements in its poverty statistics over the past decade. In 2011, 46.7% of the population of Senegal was living below the poverty line compared to 55.2% in 2001. Life expectancy at birth in 2001 was 58 years, but rose to 63 years in 2011. Primary school enrollment rose from 70% in 2001 to 84% in 2011 (World Bank, 2013). Nonetheless, other metrics suggest that Senegal still faces substantial challenges in improving the well-being of its population. According to the United Nations Development Program, the country’s 2011 Human Development Index (HDI) places it at 154 out of 187 countries worldwide, and Senegal’s HDI is below the regional average for sub-Saharan Africa as a whole (United Nations Development Programme, 2013).

3.1.3.1 RECOGNITION OF ENVIRONMENTAL INCOME

Beginning in the late 1990s, research was carried out in Senegal by IUCN and ISRA to assess the contribution of wild plants and animals to human welfare. This research revealed that non-timber forest products (NTFP) in the regions of Tambacounda and Kolda contributed approximately 1.6 to 3.1 billion fCFA (about \$2.9-\$5.6 million) annually to national income (UDRSS/VALEURS, 2002).²³ This estimate does not include the economic value of fuelwood, charcoal and building materials derived from forests (estimated to be about 31.6 billion fCFA in 2000), as these products are largely accounted for in national statistics. The economic contribution of freshwater fisheries in two of three major fishing areas surveyed amounted to 9.2 billion fCFA per year. According to the IUCN research team, the total annual value added from all non-timber wild plants, animals and freshwater fisheries was estimated to range from 14 to 25 billion fCFA (\$25-\$45 million). The IUCN surveys indicated that non-timber wild plants, game and freshwater fish are mainly produced for sale with a small proportion destined for home consumption. The study team concluded that these “wild” products were especially important for poor households, and contributed up to 50% of their annual cash income.

Senegalese small-scale artisanal fisheries accounts for three quarters of the fisheries catch in West Africa and nearly 90% of the catch in Senegal. Over 600 million poor people keep livestock as a key asset for their livelihoods. The rural poor are highly dependent on the productivity of these natural ecosystems and managed natural resources. These systems are often dependent on the local management regimes developed for “common property resources” and can be over-exploited and depleted if common property management systems are undermined. And as later demonstrated by the experience of Wula Nafaa in Senegal, modest efforts aimed at reinforcing and improving these management systems, and in increasing the productivity and value added for producers engaged in utilizing these resources can have a significant impact on rural incomes and in the security of these natural resource-based livelihoods.

In addition to the economic contribution of these wild resources, the IUCN survey teams also assessed the sustainability of NTFP harvesting. Recorded sales of many NTFPs rose in the late 1990s, apparently due in part to the devaluation of the CFA franc in 1994 and increased competitiveness of local wild products in the market compared to imports and industrial substitutes (see UDRSS/VALEURS, 2002). In 2001, local producers expressed concern over the apparent decline in *madd*, baobab, *nete* and tamarind.²⁴ Interviews with producers and traders also suggested that the collection of *laalo mbep* gum²⁵ and other natural products was being made more difficult as a result

23 US dollar equivalent values based on exchange rate of 550 fCFA=\$1.00

24 *Saba senegalensis*, *Adansonia digitata*, *Parkia biglobosa*, *Tamarindus indica* (cited in UDRSS/VALEURS, 2002).

25 Karaya gum extracted from the *Sterculia* tree.

of bush fires, drought, rudimentary tapping techniques and the poor regeneration of harvested trees. Conventional methods of gathering honey from wild bee hives also appeared to be particularly damaging because of the destruction of bee colonies and uncontrolled bush fires.

3.2 LOOKING RETROSPECTIVELY AT 30 YEARS OF USAID NRM INVESTMENTS

USAID NRM-based aid has evolved from being directed uniquely towards disaster mitigation and as a response to urgent environmental catastrophes—drought, famine, desertification (in the 60s, 70s, and 80s) to the current attention on long-term, sustainable, integrated solutions to the converging crisis of poverty, a depleted natural resource base, food insecurity, political instability, and climate change. In Senegal, this progression was particularly evident, as programs shifted from a response to drought and the onset of desertification with dune stabilization and tree-planting programs, to more recently emergent issues of climate change, loss of arable soils, salinization and their link to rural poverty, poor health, food insecurity and political instability.

Within this context, Senegal has been a rare, steady example of a stable democracy within a corrupt, unstable Africa. USAID installed its mission there in the 1960s, and Peace Corps has been operational continuously for over 50 years—one of its longest tenures worldwide. The USAID mission has had a consistent NRM program in Senegal for over 30 years, a long-term presence which makes Senegal a useful ground for analysis.

Whereas other USAID missions have typically adopted a much narrower program focus (such as Madagascar where NRM programs were focused almost exclusively on biodiversity conservation), in Senegal the program objectives in environment, natural resources, forestry and sustainable agriculture/food security have been more diverse and deliberately integrated together. This trend towards integration resulted from USAID/NRM programs' lengthy tenure in Senegal, and the subsequent evolution of program strategy, which emphasized incorporating lessons learned from one initiative into the next. This natural advancement also meant that program progression in Senegal matched quite closely with evolution of overall NRM development thought, so it was unsurprising that codification of the NWP paradigm coincided with on-the-ground conditions in Senegal being ripe for an integrated NRM approach, expressed in the ten-year long Wula Nafaa project begun in 2003. Senegal thus provides a potent case study of NWP implemented on the ground, complete with nuances, idiosyncrasies, impacts, and results over a variety of settings across Senegal.

The evolution of NRM interventions in Senegal described below is set within the context of the emergence of the NWP framework. Along with describing the sequence and type of programmatic interventions, this section will highlight the shortcomings and consequences of poor or misdirected programming, as well as successful implementation strategies that were replicated and improved upon in subsequent programs, eventually consolidating into the Wula Nafaa project. See Table 1 in the Executive Summary for a concise listing of the projects discussed in this section.

3.2.1 1970s/80s: FOCUS ON DESERTIFICATION CONTROL AND FUELWOOD

In Senegal as in other Sahelian and sub-Saharan African countries, USAID's programming in Environment and Natural Resources Management (E/NRM) was initially influenced by a series of perceived crises and challenges. In the late sixties and early 1970s, the region was affected by recurrent droughts, crop failures, loss of livestock and associated food shortages, human hardship and land degradation. Development assistance programs focused on humanitarian relief in the short term and desertification control and other longer term development interventions, including training and capacity building, health and nutrition, agriculture and rural development. Programming for E/NRM interventions was initially focused on addressing a perceived driver of land degradation: deforestation resulting from unsustainable harvesting and high levels of consumption of fuelwood. In retrospect, it is interesting to note that other important drivers of land degradation and loss of ecosystem services and biodiversity were recognized, even if they were not directly addressed by E/NRM programs in the 1970s and 1980s that were focused on desertification

control and fuelwood production. These drivers include population growth and demographic pressures leading to high rates of conversion of forests to cropland, unsustainable agricultural practices linked to “extensification,” along with agricultural development strategies and forest policies that resulted in the removal of trees from cropland.²⁶

In the 1980s, USAID and other donors provided funding for increased fuelwood production through large-scale fuelwood plantations, most often carried out by state forest agencies. In Senegal, USAID carried out the **Fuelwood Production Project** (*Projet Autonome de Reboisement de la Forêt de Bandia* or PARFOB) between 1979 and 1982 to establish a large fuelwood plantation in western Senegal in proximity to major urban centers. Within a few years, NRM technicians and practitioners working in Senegal and across the Sahel to support reforestation and fuelwood production projects noted that the costs of site preparation, plantation and maintenance were not justified by the modest growth rates of the selected “fast growing” exotic species such as Neem, Cassia, Gmelina and Eucalyptus (see Winterbottom & Hazlewood, 1987).

Within a decade, as more experience was gained with the protection and management of natural woodlands, it became clear that in lieu of investing in state-managed industrial fuelwood plantations, much could be done to restore and improve the forest cover through the regeneration and improved management of remaining reserved or classified forests. Natural forest management (NFM) was more cost effective than plantations, as it required less investment in mechanized land clearing and replanting; much of the relatively high cost of fuelwood plantations was related to the use of bulldozers for site preparation, nurseries to produce seedlings, and paid labor for fire protection and other required plantation maintenance. NFM also provided a broader range of economically valuable forest products, including fodder and other non-timber forest products (NTFPs) and considerable scope for community participation through co-management and other approaches. Multiple studies revealed the diversity and value of these products from the “useless brush” that plantation projects worked to clear away (see Christophersen & Weber, 1979; Christophersen, 1988; Morris, 1982).²⁷ In time, NFM projects were able to capitalize on the interest of local communities in sustaining a flow of these products to engage them in the improved protection and management of natural forests.

In addition to reforestation, many donors including USAID began to invest in developing and promoting the use of improved cookstoves and bottled gas or other substitutes, in order to help reduce the dependence of rural and urban communities on charcoal and fuelwood for cooking. Over the years, there has been continued interest by USAID, GTZ, and other donors in incorporating support for more efficient cookstoves and policy measures to facilitate the transition to other fuels and more sustainable production of biomass fuels for household energy into NRM and rural development projects. In Senegal, USAID funded the **Renewable Energy Accelerated Impact Project** between 1980 and 1982, which worked with Volunteers in Technical Assistance (VITA) and other partners to support the development of the Casamance kiln as a means to increase the efficiency and reduce of loss of energy in the charcoal production process. Variations of the Casamance kiln continue to be promoted among charcoal producers. In the past decade, both USAID’s Wula Nafaa project and the World Bank funded PROGEDE project included a component aimed at increasing the efficiency of charcoal production.

3.2.2 1970s/80s/90s: SAND DUNE STABILIZATION AND REFORESTATION

In the 1960s and 1970s, coastal food production areas along the coastal areas north of Dakar were threatened by shifting and erosion of dune systems. A noteworthy effort in Senegal that showed success and lasting impact was the stabilization of dunes and protection of productive vegetable gardens in the coastal areas north of Dakar. With technical support from FAO and others in the late 1970s and 1980s, USAID’s **P.L. 480 Title III (Food for Work) Dune Stabilization and Reforestation** program provided an effective means to fund the investment and mobilize

26 Extensification refers to short term strategies by rural households to produce more food for larger families, while compensating for stagnant or declining yields crops, by clearing more land and cultivating larger fields. To counter extensification, more attention is needed to restore soil fertility on existing permanent cropland, and to adopt conservation farming, integrated soil fertility management, agroforestry and other practices associated with intensification and diversification of agricultural production systems. Integrated landscape management approaches based on land use planning and integration of a consideration of ecosystem services and sustainable land management are also needed.

27 Economic analysis of NFM projects in Burkina Faso in the 1980s revealed that fodder and NTFPs provided equivalent returns from forest management to harvested wood products.

local communities to stabilize sand dunes along Senegal's northwest coast by planting strips of *Casuarina equisetifolia* trees between 1981 and 1984. Project evaluations and field visits determined that the windbreaks were successful in stabilizing the dunes and in protecting the adjacent cropland. These benefits have in turn reinforced continued local and national efforts to ensure their protection and management in order to help maintain the productivity of the vegetable gardens along the coast. Monitoring and mapping of long term changes in land use/land cover by the United States Geological Survey (USGS) and the Senegalese *Centre de Suivi Écologique* (CSE) revealed that the area of bare, sandy land (mainly coastal dunes) decreased by 72% between 1975 and 2000, largely as a result of the success of coastal reforestation and dune stabilization projects (USGS et al., 2007).

In the late 1980s and 1990s, these fuelwood plantation and dune fixation programs evolved into a major effort to support tree-planting and the establishment of community woodlots, as well as extensive planting along roads through USAID's **Senegal Reforestation Project (SRP)**. From 1987 to 1995, this project worked closely with the Forest Service to provide food for work and cash payments as incentives for tree-planting, principally of *Eucalyptus*. The SRP provided institutional support to the Senegal Forest Service and raised the profile of annual tree-planting campaigns. Much of the tree planting was along roads and in the public domain and carried out as "public works" projects.

In retrospect, the SRP revealed that long-term sustainable progress in reforestation and in restoring forest cover could not be achieved simply by investing in nurseries, seedling production and government managed plantations and extension efforts. Rather, more attention was needed to mobilize and empower communities to address tensions among competing land uses for the production of agricultural crops and livestock production as well as forests and other products and ecosystem services. The project's shortcomings also demonstrated that it was important to clarify resource rights and to increase economic incentives for local investment in trees on farms and in the protection and management of remaining forests through tenure reforms and removal of barriers to the production and marketing of tree and forest products.

The SRP's shortcomings also underscored the importance of building the capacity of stakeholders in local communities. While the project favored engagement with community based organizations, a lesson was that local successes and failures of this program largely depended on external factors such as village organizations or local authorities' ability to deliver services (Lichte, 1999, p. 66). In 1995-1997, the SRP's "Test Program"—an initiative designed to serve as the bridge to the follow-on Community Based Natural Resource Management project—tried to address these problems by supporting the creation and operations of community based organizations. Again, local politics were perceived as a problem that should be addressed: *Présidents des Conseils Ruraux* (PCRs) dominated the NRM committees set up by USAID, and *Conseils ruraux* (CRs) were unable to implement sound accounting and financial management. The conclusion was that the next NRM project would have to "support decentralization as much as support NRM" (Lichte, 1999, p. 66).

3.2.3 1992-1998: KAP SURVEYS

USAID invested in the organization of **Knowledge, Attitudes, and Practices (KAP) surveys** in 1992, 1994, 1996 and 1998. These household-level surveys were focused on the southern half of Senegal, and surveyed the knowledge and use of both NRM and agricultural and related practices such as seedling production, windbreaks, live-fencing, alley-cropping, protection of trees in fields, composting, check dams, and the use of improved seed, fertilizer and improved cook stoves. The data were analyzed and mapped, and made available to USAID staff to assist in impact assessments and the development of program strategies and project design. Findings from long term environmental monitoring and the KAP surveys underscored the need to reduce deforestation and support the uptake of specific NRM practices, which encouraged continued investments in E/NR programs. They also helped to inform the evolution of E/NR investments, shifting from a focus on reforestation, to CBNRM and to other complementary projects focused on the integration of NRM into agriculture, and on facilitation of decentralized NRM through projects such as DGL-Felo and Wula Nafaa.

3.2.4 1991-1998: INTEGRATION OF AGRICULTURE AND NRM

As experience was gained with projects in the forestry sector across the West African Sahel, it became increasingly evident that investment in more than tree-planting, natural forest management and CBNRM would be necessary to address the root causes of land degradation, deforestation and conversion of natural forest to farmland or barren, unproductive land. Studies by CILSS and support by USAID for “stocktaking” exercises revealed both the need and the opportunity to build upon farmer initiatives and to increase efforts to support the diversification, intensification and sustainability of agricultural production systems, for both rainfed crops and livestock (see Rochette, 1989; Shaikh, 1989). These studies highlighted needs and opportunities to invest in restoring and encouraging traditional agroforestry systems, and in soil and water conservation, including rainwater harvesting and composting, manuring, mulching or other methods to restore and manage soil fertility.

For years, USAID and others invested in agricultural research. In Senegal, support for agriculture and farming systems research evolved to include an effort specifically aimed at integrating NRM into agricultural research—the **Natural Resource Based Agricultural Research (NRBAR) project**. This project provided support from 1991 to 1998 to investigate a series of improved agricultural practices and technologies such as composting, conventional soil and water conservation practices, agroforestry, and soil fertility management. While difficult to judge the long term impact, considerable resources were provided for long term human resources development and institutional strengthening for institutions like the *Institut Sénégalais de Recherche Agricole (ISRA)*.

A number of these improved agricultural and NRM practices and technologies were promoted in the **Kaolack Agricultural Enterprise Development (KAED) project** implemented in the Kaolack region by Africare from 1992 to 1997 (Eriksen & Miller, 1998). This project demonstrated that improved crop yields and increases in local incomes and other benefits were possible through the adoption of on-farm NRM and sustainable agricultural practices such as windbreaks, field boundary tree planting, and other agroforestry and soil fertility management practices. The KAED project demonstrated these improved technologies could be introduced through a participatory approach based on the organization and strengthening of community organizations, particularly groups of women. Through the participatory approach, the technologies were applied to achieve locally determined objectives related to income-generation, increased food security, diversification of incomes, and intensification of crop production systems.

The women’s groups and rural organizations assisted by KAED also provided a solid foundation for developing local capacity through training in functional literacy, accounting and enterprise management, as well as the adoption of these NRM and sustainable agricultural practices. Through the use of NRM practices that increased crop production, the groups generated sufficient income to invest in the further intensification and diversification of their production systems through livestock fattening, dry season gardens and other means. The management of their own savings and the operations of their groups enabled them to gain access to commercial credit, which provided the resources for additional investment in local enterprises and further increases in income. In contrast to prior projects, KAED seemed more successful in achieving visible governance results by adding activities on transparent management techniques to its traditional technical activities.

3.2.5 1993-2003: COMMUNITY BASED NATURAL RESOURCE MANAGEMENT

As more recognition was given to the need for community based land use planning and decentralized natural resources management, the SRP was followed by the **Community Based Natural Resource Management (CBNRM) project**, from 1993 to 2003 (also known as the *Projet de Gestion Communautaire des Ressources Naturelles* or PGCNRN). Like the SRP, this project was implemented through the Senegalese Forest Service and Ministry of Environment, which limited its ability to address issues related to agricultural development and the root causes of unsustainable farming, and deforestation driven by conversion of forest to farmland. Also, the CBNRM project did not attempt to engage communities in the sustainable production and direct marketing of charcoal from community managed forests or in community based wildlife management. Rather, this project provided capacity building for

community based land use planning and resource mapping, and provided a variety of assistance to implement specific CBNRM activities in targeted locations. These included the provision of small grants for soil and water conservation, for the establishment of woodlots and other NRM practices in rural landscapes.

Although it was a national program, the CBNRM project design did not lead to a national movement or sustainable, landscape level transformations across large areas. Support for CBNRM activities in local communities was largely provided by project funded technical assistance and field staff, and with the exception of CSE, did not focus on building a network of national NGOs to support CBNRM or service providers from the private sector. And while the CBNRM project was designed to increase local participation in project implementation, the technical interventions were still largely driven by the Forest Service, with their preference for planting fast-growing trees such as Eucalyptus. This species was well suited in some locations to produce crops of poles, but a significant unmet need was the extension of agroforestry practices and the empowerment of farmers themselves to innovate and develop more effective approaches to address problems of erosion, mining of soil nutrients and declines in soil fertility and loss of soil organic matter.

With the involvement of Peace Corps and others, efforts were made to promote windbreaks with cashew and other species, but these did not lead to the large scale adoption of such practices. While the Ministry of Environment, the Forest Service, NGOs and others worked to promote reforestation and community based land use planning to promote the adoption of NRM practices, the legacy of the Ministry of Agriculture and the push for animal traction, mechanized agriculture, removal of trees in fields and dependence on state-subsidized agricultural inputs by the *Société de Développement et de Vulgarisation Agricole* (SODEVA) contributed to agricultural “extensification”, and widespread reduction of forests and tree cover in agricultural landscapes and other non-sustainable practices and land degradation.

In the governance domain, the CBNRM project focused on providing rural councils (CRs) with technical NRM skills, such as drafting land-use management plans. The project failed to address more general capacity needs of CRs, and was mistaken in assuming that any acquired technical capacity would trickle down to residents and result in more sustainable NRM.

3.2.6 1999-2004: INTEGRATION OF ENTERPRISE DEVELOPMENT AND DECENTRALIZATION WITH NRM

USAID’s investments in Economic Growth had delivered promising results through the **DynaEnterprises project**, which provided support from 1999 to 2004 for micro-enterprise development and income generation by providing training and other assistance to private sector operators engaged in business development services in targeted value chains. DynaEnterprises developed a number of training modules and approaches that worked well to support micro-enterprise development and income generation. However, the project targeted urban based, small manufacturing, retailing and service enterprises, and did not include specific activities aimed at ensuring the sustainable use of resources that provided the raw material for enterprises (IBM, 2004).

In 1999, an evaluation of USAID’s NRM programs called for cross-sectorial actions to address all factors constraining growth in the agricultural sector of Senegal: “Narrowly defined programs are not sufficient to increase agricultural production and rural incomes unless those programs work in an environment in which the basic enabling conditions for a productive and profitable agriculture already exist” (Acedo, 1995). Just as sectorial programs highlighted the need to address governance problems, the **Decentralization and Local Governance Support Program** (DGL-Felo) showed that governance could be best improved through concrete improvements in key sectors such as NRM. From 2000 to 2004, this project incorporated activities aimed at “resolving real-life service delivery or resource management problems”: beside generic training and technical assistance, the program addressed governance issues that sector-specific USAID programs were facing, especially the NRM program. The DGL-Felo project was the first USAID

initiative in Senegal directly addressing local governance failure. This program, and later Wula Nafaa II,²⁸ supported other local authorities in the exercise of their mandates: rural councils (CRs), Environmental Commissions within CRs, local Forest Service representatives, Regional Councils and other regional agencies.

This project laid the ground for most governance activities later implemented through Wula Nafaa. It covered 50 Local Communities in nine of the ten Regions of Senegal. It invested heavily in training, capacity building and empowerment at the level of Rural Communities, and was directly engaged in supporting the role of Rural Communities in improving the protection, conservation and management of community forests and other natural resources. It had four main objectives:

- Building local institutions' capacity;
- Increasing local institutions' access to financial resources;
- Increasing local populations' participation in the management and supervision of local affairs;
- Enhancing the effectiveness of the implementation of decentralization policies and regulations.

The project's main strategy was to set up Technical Work Groups (TWG) representative of various sections of the community (*e.g.*, adult males but also women and youth), which identified development priorities and developed action plans and grant proposals. TWGs also helped mobilize community members for the implementation of these action plans (*e.g.*, organize forest fire control, solid waste management, etc.). NRM activities were therefore only one aspect of the project, and perhaps equally as significant were the establishment of these tools and methods for participatory planning that included marginalized groups.

At the end of DGL-Felo, a Senegal Democratic Governance Assessment (Gellar, Charlick, & Thioub, 2004) conducted for USAID recommended that the Democracy and Governance program focus on non-governmental actors at all levels (both national and local) to promote sound and transparent public financial management. The one area in which the assessment recommended to work directly with the GOS was through election preparation activities (*e.g.*, public debates and inter-party communication). These recommendations support the hypothesis that programs promoting effective decentralization, community empowerment and local governance were regarded as having more impact than support to central government actions and activities.

3.2.7 2002: THE EVOLUTION OF THE NATURE-WEALTH-POWER PARADIGM

As Senegal's NRM program strategies were evolving, taking into account lessons learned and refining best practices for future interventions, the NWP framework was in gestation, incorporating these same feedback mechanisms to proffer a consolidated strategic framework for the Sahelian region, including Senegal. While the NWP framework had its immediate roots in a FRAME contact group meeting in Cape Town, South Africa in 2002, USAID investments over the previous 30 years had helped to set the stage for this effort.

USAID and other development assistance agencies worked in Senegal and across the Sahel region to increase the attention given to decentralization and tenure security as key factors to be addressed in order to make progress with rural development and sustainable agriculture. With assistance from USAID and others, national institutions and government agencies and NGOs in Senegal were engaged with the Interstate Committee for Drought Control in the Sahel (CILSS) and others in the region to reflect upon the key challenges of long term development and how they might be addressed. In 1989, a regional conference convened in Ségou, Mali, reached consensus on principles and strategies to guide economic development in the region. This included a number of strategic orientations that are still relevant decades later:

²⁸ Under Wula Nafaa I, the project mostly engaged Presidents of Rural Councils. Toward the end of this phase, and in Wula Nafaa II, project activities were extended to other Council members and to Environment Commissions (Benjamin, 2008).

- Invest in ecological rehabilitation
- Support a sense of responsibility in local communities
- Encourage decentralized management
- Strengthen tenure rights
- Increase the availability of funds at the local level through savings and rural credit
- Involve and integrate women
- Emphasize information and training
- Review population policies

Ten years after the “*Rencontre de Ségou*,” USAID organized stocktaking teams across the Sahel to review progress and experience in following the main orientations adopted in Ségou. With USAID assistance, a regional workshop was convened in close collaboration with CILSS in Koudougou, Burkina Faso in 1999 to provide a forum for Sahelian experts in various domains of NRM to share lessons learned and their assessment of progress and needs.²⁹ The experts noted numerous examples of progress, including testing and promotion of decentralized, participatory approaches, preparation of legislation to increase tenure security, support for village organizations, rural finance and dissemination of NRM techniques. To a degree, each of these areas of progress was being addressed in the evolving portfolio of E/NR projects in Senegal during the 1980s and 1990s.

In 1999, the Koudougou workshop participants identified several areas for continued action, including:

- Effective decentralization of NRM and increased efforts to clarify the rights and obligations of community based organizations and the transfer of authority and competence to local levels
- Increase the contribution of NRM to the economy and to improving the standard of living of rural populations by improving access to markets and to credit, and promotion of NR based enterprises
- Increase the contribution of internal resources to NRM financing by strengthening mechanisms to mobilize local resources and to ensure equitable distribution of benefits among actors
- Ensure better monitoring and evaluation of the impact of NRM programs, to determine changes in the condition of resources and provide for information sharing through networks

Many of the strategic orientations from the Ségou encounter of 1989 and the Koudougou stocking workshop of 1999 (outlined above) fed into the development of the Nature-Wealth-Power paradigm. These included:

- Investing in the restoration of natural resources, the natural capital that is the “wealth of the poor”, through a rights-based, decentralized approach to NRM
- Increasing the attention given to the integration of women in NRM
- Emphasizing training and the provision of information to key stakeholders empowered to improve the management of natural resources
- Mobilization of local resources (knowledge, manpower, finances) to intensify and diversify production systems in ways that increase the resilience of local communities
- Giving more attention to monitoring and evaluation

29 See NRM in the Sahel – Where are We? Natural Resources Management in the Sahel: taking stock of experiences, lessons and perspectives. USAID/EPIQ/IRG 1999 (on www.frameweb.org and www.cilss.org).

Through USAID support for stocktaking of lessons learned, field surveys of farmer innovations, stakeholder workshops, and strategic assessments of E/NR activities and opportunities, USAID NRM specialists and consultant teams were able to provide guidance and inform the design of USAID programs and project designs during the 1990s and more recently.

The NWP discussion paper itself, prepared in 2002,³⁰ was a product of these efforts, and it directly influenced the E/NR portfolio in Senegal, notably through the implementation of Wula Nafaa, as evidenced by the references to NWP in the descriptions of the project approach and rationale. By the time the Wula Nafaa project was launched in 2003, there was also a growing awareness of the need to shift from non-sustainable, extractive use of natural resources that provided additional, significant sources of income for rural communities. This awareness led to a commitment to increase investment in the improved management of natural resource based production systems for a range of forest and non-timber forest products, such as charcoal, timber, baobab fruit, gums, fruits, edible leaves, fibers, honey and other products that were exploited in rural areas.

3.2.8 2003-2013: WULA NAFAA: AN INTEGRATED APPROACH TO NRM

3.2.8.1 OBJECTIVE, STRATEGY, AND ORGANIZATION

The Wula Nafaa project was launched in 2003 to address something of a paradox: **many of the poorest households in rural Senegal were located in the more heavily wooded eastern and southern regions where the natural resource endowment was relatively richer** in comparison to the extensively farmed soils of the peanut basin in western and central Senegal, and the drier rangelands and more marginal agricultural lands in northern Senegal. Wula Nafaa began as an effort to develop the non-traditional agricultural crops and natural-resource-based enterprises that appeared to have significant potential to reduce rural poverty. Thus the Agriculture/Natural Resource project became known locally as Wula Nafaa, or the value/richness of the natural forest or “bush”.³¹

Implementation of Wula Nafaa started in 2003 and was completed in September of 2013. The overall objective of the project was to contribute to poverty reduction and sustainable local development by increasing the income of rural producers and the local communities through the empowerment of local authorities and the promotion of integrated, decentralized, participatory resource management (International Resources Group, 2008). Project implementation was based on the premise that improved economic incentives and enhanced local governance would enable local communities to manage natural resources more sustainably.³²

Designed with a view towards capitalizing on lessons learned from CBNRM experiences, along with other projects in biodiversity conservation, enterprise development, poverty reduction and governance (such as DynaEnterprises and DGL-Felo), the AG/NRM project, which later became known as the first phase of Wula Nafaa, was funded jointly by USAID/Senegal’s Economic Growth strategic objective (SO1) and NRM strategic objective (SO2).³³ It included components aimed at 1) generating economic benefits for local communities through the development of natural resource based rural enterprises and non-traditional agriculture such as *fonio* and cashew, 2) reinforcing the clarification of rights and responsibilities and associated participatory NRM plans, Local Conventions and by-laws and other measures to strengthen decentralized, community based NRM and environmental governance, and 3) support for policy and institutional reforms to address barriers to scaling up sustainable natural resource use and local investment in improved NRM. This program explicitly moved away from the technical, mono-sectorial approach used in previous

30 It is important to note that there has been innovation and an updated version of Nature Wealth and Power—NWP 2.0—was published in October 2013.

31 The bush or “*la brousse*” is a term used to refer to the woodlands, pastures and other natural resources found in rural landscapes, outside of the villages and adjacent cropland. The bush has traditionally been a primary source of firewood, charcoal, poles, high value hardwoods, pasture and fodder, wild fruits, seeds and nuts, gums and resins, edible leaves, medicinal plants and numerous other products harvested and used for local consumption and sold in local and regional markets.

32 Wealth report, p. 1, at pdf.usaid.gov/pdf_docs/PA00JW5K.pdf

33 SO1 was aimed at sustainable increases in private sector income-generating activities in selected sectors, and SO2 was aimed at improved delivery of services and sustainable use of resources in targeted areas. (see International Resources Group, 2008).

NRM programs, and adopted the NWP framework to guide the project strategy. The program started in January 2003 with a budget of US\$11.75 million for the first phase of 5 years. A second phase (Wula Nafaa II) extended the program from 2008 until 2013, with an additional five-year budget of US\$12.6 million.

By design, the Wula Nafaa strategy was based upon the principles and action recommendations of the Nature-Wealth-Power paradigm, leveraging the experience of prior projects related to CBNRM, enterprise development and governance to support an integrated approach to rural development. Unlike many of the earlier forestry sector and NRM projects, Wula Nafaa was not limited to promoting tree planting, agroforestry or a particular technology related to the improved management of natural resources; rather, it explicitly took account of the need to incorporate attention to income generation and market-led enterprise development as well as sustainable resource use. And Wula Nafaa went well beyond the scope of conventional enterprise development and poverty reduction projects to integrate not only NRM but also the all-important elements of resource rights, effective decentralization and good governance. In Wula Nafaa, governance activities focused on “creating, fostering and strengthening the capacities of new economic organizations such as producer groups, processing groups and producer networks” (Weidemann Associates, 2006). The program supported Rural Communities (*Communautés Rurales* or CRs) and their elected leaders (Rural Councils and their presidents) to develop forest management plans and Local Conventions, and successfully pushed for a legal recognition of the latter.

Toward the end of Wula Nafaa I, project staff recognized the need for broader institutional strengthening of CRs. New governance activities were added in Wula Nafaa II to enhance local capacity for planning, budgeting and financial management. The program sought to increase fiscal revenue for CRs and to develop accountability mechanisms through public scrutiny of Rural Councils’ (CRs’) financial management.

From the standpoint of USAID, the initial phase of Wula Nafaa was designed to increase agricultural production and improve the decentralized management of natural resources, in ways that contributed to local incomes as well as biodiversity conservation. For the locally elected officials and regional leadership of the Government of Senegal, Wula Nafaa was appreciated as an effort to contribute to sustainable local development and poverty reduction by empowering local communities and increasing revenues for local beneficiaries. For the Ministry of Environment and Senegalese Forest Service (SFS), there existed some friction between the stated project aims to reduce control of traditional centralized natural resource management structures—like the SFS—and the SFS’s desire to implement Wula Nafaa in much the same manner as the SRP and CBNRM projects that preceded Wula Nafaa, with a continuation of institutional and technical support to build upon earlier reforestation, forest management and community based land use planning and NRM interventions.

3.2.8.2 2003-2008 WULA NAFAA: PHASE ONE

The first phase of Wula Nafaa was organized to implement project activities in three inter-related components:

- **Community Benefits:** designed to identify potentially marketable AG/NR products and increase significantly the revenues and volume of production of a growing number of natural resource based and non-traditional agricultural enterprises
- **Rights and Responsibilities:** designed to increase the number of rural communities that have undertaken community led activities and developed local agreements to increase the productivity of NR, and to increase the number of communities engaged in implementing formal co-management and community based NRM plans
- **Policy:** designed to support assessments and foster increased consultation on policy issues and enabling conditions for CBNRM, reduce the regulatory and administrative barriers and support the development of needed tools and information systems for sustainable resource use

During the first phase of Wula Nafaa, the Community Benefits component focused its efforts on the organization of producer groups to develop selected NR-based enterprises, including gum, baobab, *fonio*, cashew, charcoal and several other products. At the same time, the Rights and Responsibilities component initiated a process to increase the participation of communities in the co-management of classified forests, and in the demarcation and management of

community forests and protected areas. The Policy component focused on the completion of baseline assessments, and on the organization of series of local, regional and national consultations and roundtables on a range of policy issues related to the sustainable use and improved management of NR. The project was initially based in the Tambacounda region, and gradually extended its range of operations to Kedougou and Kolda in 2003-2005, and to Ziguinchor and other areas of southeastern Senegal in 2005-2007.

3.2.8.3 2008-2013 WULA NAFAA: PHASE TWO

In 2008, a second phase of Wula Nafaa was initiated. In addition to building upon and consolidating the NR-based enterprise development, forest co-management and community based NRM activities, it extended the project activities to a number of targeted areas in central Senegal (Fatick) and Casamance (Sedhiou) including sites for community based management of fisheries and irrigated agriculture as well as conservation farming. During the second phase, in keeping with a new emphasis by USAID on food security and “Feed the Future” program investments, Wula Nafaa included new activities related to water supply and food security, and broadened its scope of interventions to include irrigated rice and gardening as well as fisheries.

Section 4 will discuss the approach and tools of Wula Nafaa in greater detail and will outline some of the project’s accomplishments before analyzing its successes and shortcomings through the NWP lens.

3.2.9 SENEGAL NRM AFTER WULA NAFAA: FOOD SECURITY & NUTRITION

Wula Nafaa helped set the stage for the Senegal Mission’s subsequent efforts at integrated programming while USAID’s priorities shifted towards agriculture and food security. The experience of Wula Nafaa and these other integrated projects shows that the NWP framework is relevant beyond traditional NRM programming.

3.2.9.1 FEED THE FUTURE

An ambitious program to improve global food security, USAID’s **Feed the Future (FTF) program** in Senegal piggybacked on the successes of Wula Nafaa, utilizing many Wula Nafaa project sites as entry points. FTF is working in Senegal to increase food security and reduce poverty through a set of interrelated activities, notably by supporting equitable growth in the agricultural sector and to improving the nutritional status of the Senegalese people.³⁴ FTF programming aims to increase agricultural productivity via improved agricultural technologies, agriculture-related infrastructure, market linkages and human resources. By improving value chains of staple grains, increasing consumption of quality and nutritious foods, building capacity of maternal and child health networks, and promoting sustainable fisheries management, the objective is to achieve an impact in poverty reduction while simultaneously decreasing malnutrition. Environmental sustainability and gender are cross-cutting themes for project implementation in Senegal.

USAID/Senegal’s **Yaajeende Agriculture and Nutrition for Food Security Program**— one of the original programs of the Feed the Future initiative—attacks the endemic food security problem through an integrated approach that works with rural producers through nutrition-led agriculture, whereby improved agricultural and wild food products are promoted within the rural value chain that would diminish identified nutritional deficiencies when consumed. Implemented by the Cooperative League of the USA (CLUSA), the project also engages entrepreneurs who buy, resell, store, transport and transform agricultural products, microfinance Institutions and banks who provide loans and services for the producers and the entrepreneurs, as well as Cooperatives and Civil Society Members that are involved in decision making and local policy-making on topics related to food security and nutrition.³⁵ Notably, Yaajeende carries forward the pioneering work of Wula Nafaa on conservation farming.

34 <http://www.feedthefuture.gov/country/senegal>

35 <http://www.ncba.coop/usaaid-yaajeende-agriculture-and-nutrition-development-program-for-food-security-in-senegal>

3.2.9.2 COMFISH

Just as Yaajeende's implementation framework echoes Wula Nafaa's integrated approach, additional innovations spearheaded by Wula Nafaa have started diffusing to other USAID/Senegal NRM projects. The **Collaborative Management for a Sustainable Fisheries Future in Senegal (COMFISH) project** was initiated during the second phase of Wula Nafaa and is run in cooperation with the University of Rhode Island. Through COMFISH, USAID/Senegal is providing assistance to improve the management of coastal estuaries and associated fisheries. These projects aim to strengthen community-based management of local fisheries and the improved management of mangroves through the adoption of Local Conventions and empowerment of local bodies charged with managing artisanal fisheries. These local bodies are able to raise awareness of the risks and costs of overfishing, and helped to establish and increase the effectiveness of sanctuaries and closed fishing periods.³⁶ With obvious roots in the successful approach of Wula Nafaa and the NWP framework as applied to fisheries, COMFISH is slated to run through 2015.

3.2.9.3 PCE

USAID/Senegal's **Economic Growth Project (Projet Croissance Economique or PCE)** also ran concurrently to COMFISH and Feed the Future. The project, begun in 2005, aims to help Senegal stimulate accelerated growth, competitiveness and trade. Initial work has been focused on improving value chains of a number of products produced in Senegal, specifically mangoes, cashews dairy and textiles, as well as commodities targeted by Wula Nafaa such as fisheries and *fonio*. Poverty reduction, women's empowerment and employment creation are cross-cutting themes for PCE implementation.

3.3 CONCLUSION

Beginning in the 1970s, USAID began to invest in Senegal and across the Sahel to address desertification, the effects of recurrent droughts and to stimulate economic development while restoring the environment. Projects and programs have been supported over the past few decades to address a wide range of problems, and we can look back on the contributions of institutions such as CSE to our improved understanding of environmental changes. Some mistakes have been recognized and corrected: USAID/Senegal is no longer investing heavily in fuelwood plantations, woodlots and roadside tree planting. At the same time, Senegal is still confronted with challenges in relation to deforestation, environmental degradation, food security, and some new issues have emerged, such as resilience in the face of climate change. Visions of slowing desertification through reforestation and the establishment of "greenbelts" have shifted to include measures aimed at scaling up sustainable landscape management, FMNR and climate smart agriculture.

The overall evolution of USAID-Senegal's E/NR investments seems to be quite positive, aided by periodic stocktaking assessments and the capitalization of lessons learned through such reports as the "Opportunities for Sustainable Development" study (Shaikh et al., 1988) and NWP. In the past decade, assessments have underscored both the value and contribution of "environmental income" and continued pressures on the resource base. Although more progress is needed, there are indicators, however, that the rural poor are securing a greater share of environmental income and are having a greater voice in land use planning and decentralized NRM, which should in time contribute to slowing degradation and boosting the productivity of natural resources.

These lessons crystallized in Wula Nafaa, which became an increasingly ambitious program over time. It was designed and launched as a project to slow deforestation and reduce rural poverty by developing natural resource based and non-traditional agriculture based small enterprises. In the first phase, it assessed progress in terms of increasing local incomes, improving environmental governance and increasing the role of local communities in managing forests. As the program continued and evolved, more attention was given to boosting agricultural production through conservation farming and to conserving biodiversity through the establishment of community reserves and

36 See *Plan de Gestion des Zones de Cueillette des Mollusques et Coques, CLPA de Missirah et CLPA de Toubacouta*. Région de Fatick, Communauté Rurale de Toubacouta. février 2011.

promotion of ecotourism. The project also included some activities aimed at improving rural water supplies, including anti-salinization measures, and addressed community management of marine resources in fisheries and mangrove ecosystems. Relatively modest efforts were also aimed at identifying needed policy reforms and to developing a framework for monitoring and evaluating the impact of the program.

Looking back on what has been achieved, while also looking forward and considering what remains to be done, it seems that many of the strategic orientations from the Ségou encounter of 1989 and the Koudougou stocking workshop of 1999 (outlined above) are still relevant. This includes:

- Investing in the restoration of natural resources, the natural capital that is the “wealth of the poor”, through a rights-based, decentralized approach to NRM;
- Increasing the attention given to the integration of women in NRM;
- Emphasizing training and the provision of information to key stakeholders empowered to improve the management of natural resources;
- Mobilization of local resources (knowledge, manpower, finances) to intensify and diversify production systems in ways that increase the resilience of local communities;
- Giving more attention to monitoring and evaluation.

4 WULA NAFAA

TEN YEARS OF IMPLEMENTATION OF THE NATURE-WEALTH-POWER PARADIGM IN SENEGAL—IMPACTS AND OUTCOMES

Building on the evolution of thirty years of USAID investment in NRM in Senegal, lessons from past projects coalesced in the NWP paradigm. The Wula Nafaa project, which has resulted in improved governance, improved management of natural resources and improved incomes in rural communities in Senegal, has been the main application of the NWP paradigm in Senegal. To some extent, the very considerable and well-documented activities and associated outcomes of Wula Nafaa can be viewed as the culmination of several decades of investment in AG/NRM by USAID. Wula Nafaa took advantage of the experience gained and staff developed with the support of DGL-Felo, DynaEnterprises and the CBNRM project, and took account of lessons learned from the Senegal Reforestation Project and others. It also capitalized on earlier investments in human resources development in the Ministry of Environment and Forest Service, as well as ISRA and CSE.

Wula Nafaa has had major impacts nation-wide by assisting in the establishment of long-term community based NRM strategies in a variety of contexts, from degraded forests to seasonal floodplains, from mangrove systems to chimpanzee habitat, from fisheries to farmland. Over ten years of project implementation has resulted in improved management of over 130,000 hectares of forest, the elaboration of Local Conventions—plans for community land use—in twenty Rural Communities, and a greater overall increase in rural wealth in project areas versus non-project areas. Where conservation farming was applied the technique has more than doubled rain-fed grains production, and the increase in rural market entrants into the charcoal commodity chain has resulted in a sextupling of incomes in the region. Overall calculations show Wula Nafaa to have facilitated the creation of “more than 15,000 full time jobs—including more than 5,000 for women. More than 1,700 village-based enterprises generated more than \$41 million in revenues in the last five years, an enviable return on an investment of \$22.5 million” (USAID-Senegal, 2013b).

In January 2013, the project team compiled 25 success stories from the period 2008-2013. During that time, the project impact indicators showed that **“over 40,000 people have sustainably increased their incomes by \$36 million through the management and conservation of natural resources, and an additional 10,000 tons of primary foods and grains have been produced by rural enterprises, and over 9,900 families have increased their production of key agricultural products”**. The Wula Nafaa team also noted that these impacts were accomplished in association with “improved, transparent and responsive local governance by local authorities, local community organizations and small businesses” (USAID-Senegal, 2013a).

The Wula Nafaa team and their approach that integrates interventions in governance and enterprise development with improved natural resources management has increased the volume and value of products generated and marketed through natural resource-based enterprises. The added income now exceeds the total investment in \$22 million in project assistance mobilized for the second phase.³⁷ As noted above, the project has achieved a major breakthrough in enabling community based organizations and local producers to engage in the production and marketing of charcoal, and **25% of the charcoal consumed in Senegal is now produced more sustainably from community managed forests**. During the second phase, the Wula Nafaa project also provided significant support for the development and spread of **“conservation farming” by some 10,000 farmers**, resulting in increased crop yields and more resilient agricultural production (see following section for more details).

This section will review the approach and tools of the Wula Nafaa project, with a focus on how it applied an integrated NWP framework in its pursuit of development objectives. This section will also draw on both quantitative and qualitative evidence to summarize some of the outcomes associated with these tools. The goal of this section is to compile an inventory of tools that “worked,” which will then feed into a reflection of the overall viability of the NWP approach as an integrated development framework.

37 Pers comm. Jeff Povolny, Wula Nafaa Chief of Party, and USAID-Senegal (2013a)

4.1 APPROACH, TOOLS, AND OUTCOMES OF WULA NAFAA

4.1.1 USE OF COMMUNITY BASED FACILITATORS FOR EXTENSION AND ROLLOUT

As a project designed to promote and support community based NRM, empowerment of rural communities and the strengthening of rural producer groups engaged in the development of NR-based enterprises, a key element in the approach of Wula Nafaa was the recruitment, training and fielding of more than 30 facilitators³⁸ during the life of the project. This was particularly important as Wula Nafaa was working with relatively informal natural product value chains with less involvement of commercial service providers than commercially important agricultural value chains. There was a need to organize rural producers and natural resource-based enterprise groups, and to raise awareness among them of the potential economic benefits to be gained from strengthened natural product value chains, as a means to encourage the engagement of rural producers in the improved management of these resources.

While the CBNRM project in Senegal and other E/NR projects had often relied on networks of extension agents recruited by the government and supported by the project, in the case of Wula Nafaa, the Cooperative League of the USA (CLUSA) ensured that the facilitators were particularly effective agents of knowledge transfer and empowerment. These men and women were recruited locally, fluent in local languages, vetted by the local communities in the region where they were assigned, and trained in participatory approaches; in addition, many also had prior NRM experience and technical skills. They were provided with facilitation and enterprise development skills, motorcycles and other logistical and technical support. CLUSA, as a major implementing partner for Wula Nafaa with long experience in working with cooperatives and enterprise development, took the lead in supporting and managing the facilitators. The facilitators served as the major interface between local communities, the team of project technical specialists, and key stakeholders including national and local government authorities and private sector operators.

Given Wula Nafaa's goals of improved community level organization, empowerment and devolution of management rights, increased collaboration between rural producers and government technicians and facilitated engagement in market led enterprise development, the long term success and impact of the project was dependent on the effectiveness of these community based facilitators. The facilitators also played a key role during the first phase of Wula Nafaa in integrating the community benefit/enterprise development and rights and responsibilities/NRM components of the project. And the facilitators contributed to the work of the policy component at the local level, and played an important role in monitoring and evaluation.

Once the first phase of the project had made initial investments in launching the project and in organizing a participatory approach with this network of well-trained, community based facilitators who had developed a good rapport with local resource user groups and local leaders, many of the household- and community-level impacts and positive contributions to enterprise development were achieved by relatively low-cost interventions. **The Wula Nafaa project infrastructure made it possible to facilitate a shift from disorganized and uncontrolled exploitation of natural resources, which was the norm at the start of the project, to many cases of better organized producer groups and more controlled and better managed utilization of the forests and other natural resources in the areas targeted by Wula Nafaa.** A critical element was support for more transparent benefit sharing in the natural resource based enterprise development and NRM interventions of the project.

4.1.2 STRENGTHENING AND TRAINING OF PRODUCER AND NRM GROUPS

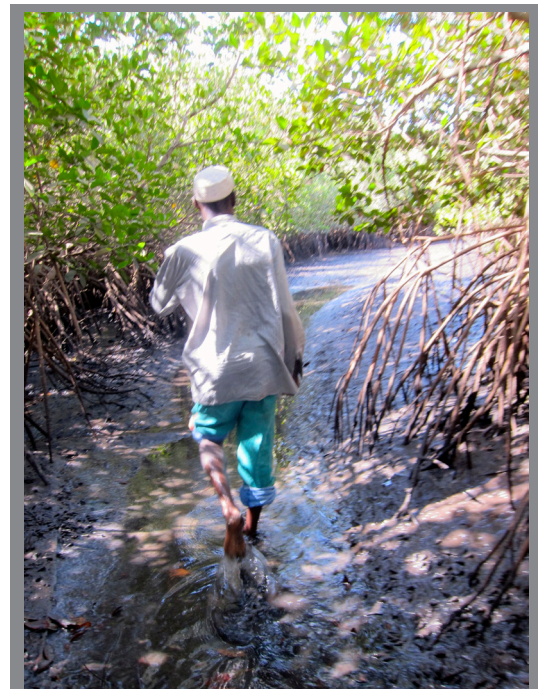
A key role of the aforementioned facilitators was to strengthen the organization of community based groups. The USAID vision of strengthening accountability historically emphasized NGOs and civil-society organizations (CSOs) as key players to balance government powers. This vision was central in the design of policy components in many USAID projects in Senegal, from CBNRM to DGL-Felo and up through the current Democracy and Governance Program (DGP). Similarly, Wula Nafaa engaged with existing NGOs and CSOs, or directly with citizens, helping to set up new community based organizations (CBOs) like GIEs (*Groupements d'Intérêt Economique*)—a form of

38 A "facilitator" is the term used for a project-funded extension/training and capacity building agent who is in charge of disseminating program activities to the local or regional areas for which s/he is responsible.

cooperative for-profit association with a specific economic purpose (e.g., association of *fonio* producers)—and forest user groups (*blocs*). These groups are primarily organized for an economic or management objective, but they also aimed to empower their members to create avenues for local income generation via small community based enterprises, with the idea that these groups would have strong interest in holding local government accountable for decisions affecting their members.

These groups included Rural Community members who were active in a targeted value chain (producer groups), as well as groups organized to improve the management of targeted natural resources (NRM groups). In both cases, the groups benefitted from extensive training efforts led by facilitators. Facilitators began with organizing local-level training and capacity building on a range of topics generated through interactions with local stakeholders. A critical initial step was the identification of interested stakeholders in specific value chains, and the strengthening of community based organizations and rural producer groups. There was particular interest in and demand for training related to functional literacy, accounting, improved knowledge of laws and regulations related to decentralized NRM, and all aspects of NR-based enterprise development, including measures to increase resource productivity, improve product quality, negotiate better prices and joint ventures with the private sector, improve storage and value added processing, branding and marketing as well as accounting and enterprise management. As of late 2012, during the second phase of Wula Nafaa, some 31,000 people (42% of whom were women) benefitted from 2,169 training events supported by the project (USAID/Wula Nafaa, 2012).

Another important training and knowledge-management activity involved the organization of cross-visits and exchange of information from other groups with shared interests and challenges. For example, the project organized visits for individuals from communities living in regions with relatively intact natural woodlands to go see communities in the degraded agricultural landscapes of central Senegal, including those assisted by the GTZ PAGERNA project, which had been successful in protecting and restoring the productivity of managed areas; these visits served to galvanize action in local communities in eastern Senegal. Exchange of information between Wula Nafaa and the Conservation Farming Unit (CFU) in Zambia, with its relatively extensive experience in developing and promoting the adoption of no-till, conservation agriculture, enabled the project team and stakeholders to capitalize on the knowledge of the Zambia CFU.³⁹



Doudou Diamé leads the way into the bolong where GIE Ostreicole cultivate thousands of oysters.

4.1.2.1 COMMUNITY MANAGEMENT OF MARINE RESOURCES

Wula Nafaa also assisted with community management of marine resources. Along the Casamance River, fishing had been disorganized and uncontrolled. In an area of 36 hectares near Boudhie-Balantacounda, Wula Nafaa worked with local communities to facilitate the adoption of a Local Convention (see section 4.1.4.1 for more information on Local Conventions) that served to reduce the destructive fishing practices and to reinforce local monitoring and use of improved fishing practices, including the use proper net size and gear. As a result of the adoption of improved practices and locally enforceable rules, the communities noted a return of bigger fish and shrimp in greater quantities. From 2009 to 2010, local production of shrimp increased from 95,000 kg valued at 169 million fCFA to 374,000 kg valued at 300 million fCFA (USAID-Senegal, 2013a).

³⁹ CLUSA was active in both Senegal through Wula Nafaa and in Zambia through other USAID funded rural and agricultural development projects, and was well positioned to facilitate the cross visits and information exchange with the Zambia CFU.



Doudou Diamé in front of the laden garlands of his oyster farm.

Wula Nafaa activities have also helped to curtail the cutting of mangrove forests in the intertidal zones off the Senegalese coastline. A crucial component of the coastal ecosystem and a powerful form of erosion control and salinity regulation, mangroves have suffered from over-harvesting both for fuelwood, as well as harvest of shellfish and mollusks. In the Sine-Saloum delta region, Wula Nafaa has aided in finding a balance between mangrove restoration and local economic benefit, promoting new methods of raising oysters on strings or “garlands” in the mangrove channels.⁴⁰ These more sustainable and productive methods have enabled the **local groups to double their annual income, from 6 to 11 million fCFA** (USAID-Senegal, 2013a).

4.1.2.2 WEALTH IN THE MANGROVES: THE CASE OF THE MEDINA SANGAKO OYSTERS

Ankle deep in the dark grey muck of the mud-pan beside the sleepy village of Medina Sangako, the wet earth is blessedly cool. Even at this mid-morning hour, the air is already thick and humid, making it difficult to negotiate the slippery ground. Ahead, Doudou Diamé parts the branches of a tangle of mangroves and reveals a dark, narrow tunnel. He is leading into the bolongs—the meandering salt-laden channels that snake through spits of clumped mangrove forest, where Doudou and 100 other Sangako villagers farm oysters. Ducking beneath an arch of waxy leaves, the growing oysters become visible, glistening on strings hung from lengths of bamboo. Stretching far as the eye can see, along neatly-carved, meticulous rows, the products of this lucrative sustainable enterprise sway in the sunlight, glinting silver above the receding tide.

* * *

Unlike the majority of Senegal, stretching hot and wide across an arid expanse of savannah, the region of Toubacouta is quite slenderly contained. Here, small villages like Medina Sangako have quietly grown up between the mangroves and the waters of the delta, where children are raised to fish with hand-nets and reach into the wet sand for cockles and sand-crabs, and life is dictated by the rhythms of the tides.

The coastline of Senegal is dotted with communities like this that were founded on the abundance of the seas, fishing and gathering shellfish both for subsistence, as well as forming the basis for a regional economy. In recent decades, Senegalese waters have suffered immensely from overfishing, and local communities have seen a vast decrease in fish populations. Marine pollution, deforestation of coastal forests and mangroves, and human development have further degraded coastal ecosystems, leaving many villages, including Sangako, in near-dire circumstances. Forced to go farther out into the sea to fish and gather food, and slicing deeper into the mangrove forests for fuelwood, these communities have been watching their resources diminish before their eyes. However, over the last decade, some communities around Toubacouta, such as Medina Sangako, have begun doing things differently.



Doudou Diamé's rows of planted mangrove shoots for reforestation.

* * *

40 The garland technique was introduced to the Sine-Saloum delta in the 1990s by JICA technical assistance.

Doudou Diamé is a man of few words. His pant-hems are bleached pale from diurnal journeys into the salty bolongs that wind in and out of his village like dark fingers. There he monitors the oyster ‘fields’—neatly trimmed channels within the mangrove system that are the production site of GIE Ostréicole. This group is a successful community oyster-farming enterprise, 100 members strong, of which Doudou is President.

The Medina Sangako oyster project began with the arrival of a JICA funded Japanese NGO to the Sine-Saloum delta area in the late 1980s to experiment with low-cost, easy-to-replicate oyster-culture methods that could be applied to the estuaries of the West African coast, and built with local materials. Several years of trial-and-error led to the currently utilized ‘garland’ technique, which uses a specific type of bamboo to form the ‘perches’ along which oyster strands are strung like beads. This technique recycles old oyster shells, literally sewing them onto fishing line ties, allowing the new oysters to develop within the old shells. Leftover crushed shells are used to make a local form of cement for construction of village houses. The marvel of this technique is the way these oysters grow at a relatively uniform rate, and to the pre-determined size of their host shells. This makes the harvesting process significantly easier for the farmers, and they are able to raise the large-sized oysters so prized by the fresh oyster market. Doudou is proud of this new industry: “For me there is nothing better than oyster-culture. Now this is the only thing, the best thing...”

Doudou talks about the change in perspective within the village: now that their mangrove is becoming healthy again, villagers understand how important it is to take care of their environment. The oyster farm is just adjacent to the village, which previously held the most damaged and over-exploited parts of the mangrove. Proximity is very important, both for visibility and vigilance, as well as for the women who must carry the oysters back from the bolongs in heavy, laden basins balanced on their heads.

To further emphasize the value of this efficiency, Doudou guides past the long rows of garlanded oysters, and exits into a clearing of young mangrove shoots, each one with a spread of new leaves on its waist-high sprout, rising out of the ground at carefully spaced intervals. “Reforestation,” Doudou declares with a smile, and proudly motions to his careful rows. The planted area, now in its second year of growth, covers at least an acre, and was planted with women who wanted to increase production close to the village. “Oysters are heavy” Doudou explains. “This is what makes the women tired. So we are trying to make it easy for everyone.” In Medina Sangako, the women can walk out into the nearby bolongs, and harvest as they wish. In other communities, it is not as easy.



Soukouta women's group members harvest farmed oysters from 'garlands', a non-invasive cultivation technique, standing in waist-deep water.

* * *

The woman of GIE Ostréiculture of Soukouta pool together their fCFA—1000 each—to buy fuel on the local black market to be jettied out to their oyster farm by motored pirogue. These women have built their oyster farm far from the village, in a section of bolongs a winding half-kilometer off shore, reached only by boat. At dusk, as the baobab trees turn to eerie silhouettes, they board the narrow pirogue and zoom away from shore.

On the journey out, Mariama Diamé explains the hard work of establishing their production areas each year. They start by taking out the pirogue at high tide, when the water is deep enough to afford passage to their farm-site. They cart all of their gear—the perches, the string, the oyster shells—and then wait for the tide to recede so they can descend from the pirogue and plant their garlands into the estuary floor. Once finished they have to again wait for the tide to rise in order to make the return journey.

Long ago they used to harvest close to the village, but now due to over-exploitation and cutting, those adjacent mangroves are severely degraded. Any oysters that do grow there are quickly poached. Now the women take a pirogue far from the village, where they can manage their farm in peace and know that people won't steal or destroy their work.

As Mariama describes this process, the women suit up, donning an assortment of gear pulled out from plastic bags within their harvest-buckets: knit hats and mismatched woolen gloves, socks pulled up to the calves and tied in place with strips of patterned cloth, hooded sweatshirts and sweat pants. They put on these heavy clothes despite the sweltering late afternoon heat—these layers will act as makeshift wetsuits when the women descend into the cool water for harvesting.

Reaching their farm, the tide is still high—only the very tops of the perches sitting on the water’s surface are visible. Piroguier Moussa cuts the engine and edges in closer, steadying the boat in the mud with a long bamboo pole. He lifts up some oyster garlands with the pole, holding them out for inspection to the women. They shake their heads: No. Not ready. He pushes off again and steers towards a different section: unwilling to take this trip at a loss, the women will wild-harvest.



Seinou Diamé demonstrates wild-harvest with an oyster from the mangrove roots.

The women unsheathe wide flat-edged palate knives and begin sharpening them vigorously on stones as the pirogue pulls in beside another section of mangrove. Seinou Diamé lifts a sinewy mangrove root straight out of the water and lays it in her lap, showing the various-sized shells that have attached to the root. She demonstrates the way Wula Nafaa facilitators taught them to wild-harvest, carefully prying the selected oyster from the root with the palate knife until its suction is released. Formerly, they would just chop the entire root and take it with them, peeling off the oysters afterwards. But they now know that this damages the mangrove and stunts its growth, which in turn ruins the area for natural oyster growth until the mangrove can rehabilitate.

Wild harvested oysters are smaller and will be taken back to the village to be dried or boiled, packaged in small bags, and sold on the local market. The women say they have never had a surplus of product—there is always a buyer for however many oysters they can harvest and process. At the Toubacouta market, dried oysters fetch 3000 fCFA (\$6) per kilogram, boiled oysters 4000 fCFA (\$8). Some vendors buy them to bring further inland, where they are sold at yet a higher price. In Dakar dried oysters can sell for up to 7,500 fCFA per kilo (\$15). The fresh oysters from their farm are pooled together with those from Medina Sangako and other villages, and brought to the high-end raw oyster market in Dakar.

* * *

On the edge of Pointe des Almadies, the oysters of Medina Sangako and Soukouta float in ‘cleaning basins’ of dike-regulated seawater, being washed of any microbial residue by the current, and ‘degorging’—a process during which the salt is expelled from the oyster body and thus purified to their fresh-tasting ready-to-slurp state. The Almadies beach is the capital city of Dakar’s informal local food dining at its best, and Ibrahima Diamé of Medina Sangako is there at the end of the value chain, serving up his community’s cultivated oysters with pride.

As Diamé carefully places a shucked dozen on a platter, garnishing with a halved lime, Siaka of Toubacouta fills bags with unshucked oysters and cockles for city restaurant traders. The stall—run by a cooperative of Toubacouta area village representatives—does a good business with hotels and restaurants in the city, and like their women counterparts back in the delta, they always sell out.

The four community representatives stand in warm coats in the windy night air watching a group of customers slurp the oysters one by one from their smooth custard-dish shells, making courteous sounds of satisfaction. For a humble village enterprise that has pretty much cornered the capital city’s fresh oyster market, seeing this end is very satisfying: these men know the journey of the oysters all the way from the strings they sway on in the mangrove tide, through the hands of woolen-gloved women in a wet pirogue, down the bumpy sand road, across the ferry at Foundiougne, and through the funneled Dakar traffic all the way to this westernmost point of the continent. A complete value chain, kept locally managed and for community benefit from source to plate.

The bill comes at the end of the fine meal. The half dozen impeccably shucked, perfectly grown, pearly gorgeous oysters from those magical black-water bolongs are only fCFA 750 (\$1.50), while the beer costs fCFA 1000 (\$2). Imagining the wrinkled ankle skin and salt-bleached trousers of Doudou Diamé, the women donning their snow hats and woolen gloves and wide palate-knives, the pang of regret is that these delectable delicacies, so preciously handled, a product of such delicate local environmental controls and carefully mediated community politics, painstakingly harvesting, transported, basin-rinsed, and shucked, cost less than the beer they are washed down with. While this price is still a windfall for this village enterprise, it seems there is still major potential for growth and increased benefit all the way down the line.

4.1.3 IDENTIFICATION OF TARGETED VALUE CHAINS

Considerable effort in the first phase of Wula Nafaa was devoted to the analysis of the socio-economic and ecological potential of value chains that could be targeted by the project. Analysis by the Wula Nafaa project in 2003-2004 revealed the economic importance of numerous natural product-based value chains that constitute sources of environmental income (Sene & Ndione, 2004). The largest percentage of revenue to the Tambacounda region from non-timber forest products (NTFPs) came from *Sterculia mbepe* gum (79%), followed by baobab (8%) and honey (4%). In the Kolda region, the main sources of revenue from NTFPs were from palm oil (42%), honey (29%), baobab (9%) and tamarind (8%). The data in Table 4 confirm the economic contributions of these and other NTFPs to the income of local households and to the regional and national economy. It is interesting to note that there is a wide variation of the values of NTFPs across the

two regions studied, and also that the estimated revenues from NTFPs are almost as high as those from hunting or charcoal production. And they also help to explain why the Government of Senegal has continued to affirm state ownership of all such “natural products”, and is able to generate considerable revenues from taxes collected on the sale of these products. The data also reveal why the Forest Service has been reluctant to devolve management rights and enable local communities to become major actors in capturing revenue from hunting and charcoal. See Table 4.



Table 4: Estimated Revenue from NTFPs, Tourism and Forest Products, 2003⁴¹

Product – Value Chain	Tambacounda region (millions fCFA)	Kolda region (millions fCFA)	Total Revenues from 2 regions (millions fCFA)	Estimated total revenues (US dollars)
Mbep gum	567.9	2.8	570.7	\$1,037,636
Honey and wax	30.6	137.7	168.3	\$306,000
Baobab	54.1	41.4	95.5	\$173,636
Palm Oil		201.0	201.0	\$365,454
Tamarind	7.4	36.2	43.6	\$79,272
All NTFPs	718.8	471.7	1190.5	\$2,164,545
Hunting - Tourism	1062.2	210.0	1272.2	\$2,313,091
Charcoal via Forest Service	591.4	908.6	1500.0	\$2,727,273

In the first phase of Wula Nafaa, the project team examined documentation on 45 different natural products and non-traditional agricultural value chains, and the 15 most promising value chains were analyzed with respect to a number of factors, including the percentage of the population and numbers of producer groups and private sector actors engaged in harvesting and selling these products, the total revenues and volume of production, the potential for increased demand and market growth, and the potential for increased and sustainable supply (USAID/Wula Nafaa, 2004). This analysis made use of the IUCN surveys and data generated by the UDRSS/VALEURS project, as well as a series of consultations with value chain actors and market studies organized by the Wula Nafaa team.

Some of top ranked value chains or subsectors initially investigated by WN and with high potential in the Tambacounda region were mbep gum, honey, baobab fruit and leaves, bamboo, shea⁴² butter (*karité*), *netetou*,⁴³ *bissap*,⁴⁴ *fonio*, *madd*, medicinal plants, jujube, oil palm,⁴⁵ sesame, and moringa as well as ecotourism and charcoal. By 2006, as the project extended its activities into the Kolda region, the WN team had decided to focus on some eight subsectors, including *mbep*, baobab, *fonio*, cashew and oil palm. As the team refined its focus on specific subsectors, more in-depth studies were carried out to guide interventions to increase the revenues of producers and the value of the forest and non-traditional agricultural products.⁴⁶ During the second phase, more attention was given to producers working with charcoal and cashew as well as baobab and *fonio*. During the first phase of Wula Nafaa, from 2003-2008, **the project reportedly increased incomes by 80% for more than 4,000 enterprise groups engaged in the production and marketing of products with 11 market chains in 32 Rural Communities.**

Over 1,000 villages and communities were engaged during the first phase of Wula Nafaa in activities aimed at protecting and increasing the productivity of targeted natural resources, including building of firebreaks, tree planting and controlling bush fires. Particular attention was given to supporting the regeneration of baobab and improved harvesting methods (less destructive tapping techniques) for *Sterculia* (gum *mbep*) trees. This work with local communities on the adoption of locally enforced rules, management plans and other efforts to promote the

41 Estimated annual revenue, with exchange rate of 550 fCFA = \$1.00 (Source: UDRSS/VALEURS, 2002)

42 *Vitellaria paradoxa*

43 “*Netetou*” is the Wolof term for the fermented seeds of *Parkia biglobosa* (locust bean tree or *nééré*). This product is also known as “*sumbala*” in Mandinka and “*oji*” in Pular.

44 *Hibiscus sabdariffa*

45 *Elaeis guineensis*

46 For a detailed discussion of the Community Benefits strategy and approach, see Johnson (2006).

protection and regeneration of targeted resources was linked to the “valorization” of these targeted value chains and natural products, in order to increase community benefits and the level of wealth generated by these resources, to reinforce the commitment of local communities to protect and improve the management of these resources.



For example, **the project was able to boost local incomes by enabling local producers to increase the production of collected “wild” non-timber forest products** such as baobab fruit and gum *mbeɓ*, oysters, shrimp and local fisheries, along with a diverse array of products from palm groves, natural forests, cultivated soils and other natural resources. Previously, local communities were mainly involved in collecting and selling pieces of baobab fruit of varying quality. With assistance from Wula Nafaa, the producer groups were better organized and used their training to improve the quality of their product (selling clean and unbroken fruit), negotiate better prices, and expand their access to other, higher valued markets. For example, the project effectively partnered with the Baobab Fruit Company to provide a linkage between the producer groups and

markets for high-end sales of baobab based cosmetics and other products consumed in Europe. With assistance from the Wula Nafaa project team, the producer groups were also able to take advantage of new and lucrative markets for baobab seeds, and for processed baobab products like baobab fruit powder which helped at one point to generate more value for local producers as they became directly involved in value-added processing.

4.1.3.1 FOREST-RELATED COMMODITY CHAINS: THE CASE OF BAOBAB FRUIT

The baobab⁴⁷ fruit, also called “monkey bread”, has bark, leaves and fruit pulp used in traditional medicines (to treat fevers, dysentery) and as a cooking ingredient. Domestic and regional demand for this dry, not-easily perishable fruit are has been steadily growing, and accounts for a significant share of household revenues in the Tambacounda region—the second source of revenue among non-timber forest products according to IRG (2003). International demand for the baobab fruit has historically been modest, with the fruit being used mainly in cosmetic and pharmacy products. New prospects were expected after the European Union authorized the use of baobab fruit in food products and beverages in 2008.

Baobab fruits are collected from the trees, with larger trees producing more fruits. Total collection of fruits tends to reduce the potential for tree regeneration. Tree productivity is affected by variation in annual rainfall, by the age of the baobab trees, and by the techniques used to harvest the fruit as well as the timing of the harvest. Most harvesters are local people, mainly women and youth, who use a pole to get the fruits. Harvest campaigns are set by the Forest Service, usually between January and March, to ensure that fruits are ripe. However, Sanogo and Tamba (2012) found that large quantities are often harvested before the campaign legally starts.

Traditionally, the fruits are sold within the village to local or outside intermediaries, who either sell them on local markets to other intermediaries or to industrial clients; or bring them to urban retailers. All fruits end up in town-based traditional or semi-industrial processing units, which sell the product to supermarkets or consumers (Sanogo & Tamba, 2012).

Intermediaries and retailers tend to control purchasing prices. First-level intermediaries who purchase the fruits from villagers are usually men between the ages of 35 and 60 years. They can be local or come from other regions of

47 *Adansonia digitata*



Safiatou Barry working her *lonk* in the baobab's branches.

Senegal. The latter tend to arrive ahead of the harvest campaign to secure the village's production with a down payment, encouraging villagers to start harvesting before the official opening and hide the production until they get the permit from the Forest Service (Sanogo & Tamba, 2012).

Second-level intermediaries who purchase the fruits from local markets are also called *bana-banas*. They get the fruit in bags and arrange truck transportation to the larger market towns or Dakar where they have their clients—retailers or *coxeurs*. Like the *bana-banas* of the charcoal chain (see Section 5.2), they know the market well and are able to hold on to their products for several weeks in order to get better prices in high-demand seasons (religious celebrations and non-harvest season).

Industrial companies (e.g., the Baobab Fruit Company, Bioessence) buy the fruit either whole or already processed. They face a growing international demand that they cannot meet, driving them to diversify their source locations beyond Senegal. These companies are also tied to specific quality standards, which is another important factor determining where they source from.

4.1.3.2 BALA AND THE MIRACLE TREE

Taking the road west from Tambacounda towards the Malian border to Bala, a rural community where the baobab trade is bustling, is like venturing into no-man's-land. Vast expanses of sparsely vegetated savannah are peppered by the occasional

compound of mud huts, and colored only by the passing of blue-robed herders amidst a scuffle of sheep. Every so often, the route passes a majestic grove of baobabs, their spindly limbs reaching in all directions and striking an impressive silhouette against the rising sun.

In the Kothiary depot—a repository where the baobab harvest from local villages is collected, counted, and positioned for transport—stacks of 50-kilo rice sacks are filled to bursting with baobab fruit. There are over 2,000 sacks piled up neatly in a swept sand courtyard, and a truck is on its way to unload the most recent load from a village about 21 kilometers away. Next week, the truck will come back for this stock, and take it off to Thiès.

The harvest has begun in earnest, and all the area's villages are busy collecting fruit, filling sacks and then calling up Ahmed Bathily, who coordinates pick-ups. Bathily, a former facilitator for Wula Nafaa during 10 years of project assistance in Bala, has now been hired as community liaison by Baobab Fruit Company (BFC), the export company working in the Tambacounda region where Bala is located. Operating along the main transport road between Kayes (Mali) and Thiès (Senegal), BFC loads thousands of sacks of the fruit onto trucks every year, harvested in dozens of Pulaar, Bambara, Soninke and Seranxole villages, and sends them down the dusty, pothole-fettered road to the BFC processing and export hub in Thiès.

Off on a harvest check, Bathily zooms down the main route, hoping to intercept the producers loading their bounty onto the truck. Everything appears to be moving along like clockwork in this hot, dry paradise. The baobab fruit is abundant, and moving quickly from tree limbs, to basins and bowls, carried in on villager's heads, dumped into sacks, and transported onward to village depots, loaded onto trucks, off-loaded at the regional depot, and, finally, raised onto BFC trucks and sent down the steaming tarmac to Thiès.

After several kilometers he turns onto a worn sand-track going towards one of the highest producing villages: Sinthiou Dhioké. At a small compound on the village outskirts, Bathily comes upon a lone woman struggling with her *lonk* (a harvesting tool) beneath a mammoth baobab. Safiatou Barry is long and lean, with thin-boned arms and

glassy, yellowed eyes. Her eyes look in two directions and display the cloudy, bluish film of long-established cataracts, but she manages to work her bamboo pole in the tall branches, dislodging the fruit and harvesting a little bit each day. Every small load brings in valuable extra income. She is grateful to be able to walk a short distance from her hut and participate in this lucrative activity. “There is so much fruit,” she says. “One could never pick it all.”

Moving through the villages, people are happy, enthusiastic even, and baobab is selling at a great price, almost four times as much as it sold for 10 years back. It seems too good to be true: this uncelebrated, unremarkable fruit—formerly plucked off the ground for local consumption, or left to rot at the tree stump to be nibbled at by goats—is now as lucrative, per sack, as charcoal or millet. This ordinary fixture in the “poor man’s diet,” which appears year after year on the hundred-year-old baobab limbs without input or investment, is now bringing much-needed income to the region. It seems indeed the miracle tree.

And the end-consumers, buying baobab creams, baobab Pepsi and baobab smoothie powders off First World shelves, are saying the same thing. Baobab is hailed as the “superfruit that makes açai and pomegranate look like small fry” (“Baobab—a superfruit that tastes good. Is it possible?,” 2013) Indeed, with three times the Vitamin C of oranges and twice the calcium of a glass of milk, more potassium than bananas, and packed with soluble fiber, magnesium, iron and a host of other antioxidants (“Baobab—a superfruit that tastes good. Is it possible?,” 2013), baobab fruit is nutritionally exceptional. And the healing properties of baobab oil are still being discovered.

The fruit is piquing local curiosity as well—villagers realize the baobab must be special if there is such keen foreign demand. One Bala resident, Oumou Sy, member of GIE Tinaare—a women’s enterprise group that processes and packs baobab fruit powder—now always keeps a bag of the powder in the house. “In the powdered form it is easy to quickly mix into juice,” says Oumou. “Now if somebody is sick, I give them baobab to drink. If there are guests that come to the house I make it for everybody.”

Meanwhile BFC is growing, and sells every ounce of fruit that comes in from the rural areas. As a business they have the demand capacity for growth, but according to CEO Pascal Ottovani there is not yet enough supply, despite the mounds of sacks rolling out of these villages. Pascal estimates that only 3% of the total potential is currently being exploited.

Wula Nafaa is very appreciated in these villages where baobab production was formerly a secondary activity, at best, and if sold on the local market would only bring in about a quarter of the current price. The harvest now lasts for four months, arriving conveniently at the end of the farming season – allowing for a diversification of activities that do not conflict with one another. The whole village gets involved, including the children. Previously, many villagers would leave during the dry season and seek work in the cities; others would go into the already-sparse forests and cut down trees for charcoal. But now, Bathily says, people prefer baobab.

One harvester, Abdoulaye of Sinthiou Diokhé, says his village has become proud to work with baobab. “Before it was poor man’s work—it was not considered an occupation—when they [Wula Nafaa] asked people if they wanted to do this work, we thought ‘Why?’ Now we realize that the baobab is wanted very far away. We have something important here.”

4.1.3.3 USAID IMPACTS ON THE BAOBAB FRUIT VALUE CHAIN

As mentioned above, local baobab fruit producers (mostly women and youth) traditionally sell the fruit mostly raw, whole or husked, with frequently two levels of intermediaries to get the fruits to urban centers. In contrast with the charcoal market, this commodity chain has more intermediaries but is also less structured. Wula Nafaa encouraged local producers to form groups; informed these groups on market chain actors and costs; helped install rural



processing units; and tried to reduce the number of intermediaries to increase producers' net income. Wula Nafaa succeeded in connecting several producer groups with the international market through the Baobab Fruit Company (BFC), the Italian firm purchasing various forms of the fruit for export. Similar support was generally provided for other products beside the baobab fruit, such as *mbepp* gum, *madd* and *fonio*.

As described in Figure 10, Wula Nafaa effectively helped reduce the number of intermediaries between local producers and final consumers, and increase producers' prices. Gathered in local groups to reach higher volumes, producers arguably gained some negotiating power and established direct contracts with industrial processors (one of Wula Nafaa's success stories), or with urban retailers (Wula Nafaa reports do not indicate this as similarly successful, however, partly due to difficulties in transporting the fruits to town). A total of 17 rural processing units were established through project support, and received training to diversify products and improve quality (Sanogo & Tamba, 2012). These units were able to get annual contracts with BFC and significantly increase sales. Products were also directly sold on rural markets, in town-based boutiques and to urban retailers.

Wula Nafaa annual reports indicate that these activities had contributed to the creation of 183 baobab producer enterprises in Ziguinchor, Tambacounda and Kolda by 2006. In 2011, project-supported rural processing units recorded close to fCFA 275 million (approximately US\$550,000), resulting in a revenue increase for 1,172 persons (52% of whom were women). Revenue generated through baobab fruit sales and transformed products (e.g., powder, seeds) rapidly increased every year since the project started (39% increase between 2010 and 2011), except for 2012 (-23%) due to lower production rates associated with climate events (IRG, 2011, 2012).

No information could be found on the respective volumes, prices and expenses associated with the three marketing channels. A 2012 study mentions price changes in 2009-2011, without specifying which marketing channel they apply to. This study suggests that producers' prices increased between 2009 and 2011 from 1,500-2,000 Francs CFA to 2,500-2,750 Francs CFA (prices for a 22 kg sack of fruit pulp), while retailers' prices decreased from 3,850 to 2,750 Francs CFA for early season fruits, and increased by 25% for late-season fruits (Sanogo and Tamba, 2012). Although these changes cannot be directly attributed to changes in the commodity chain, producers' share seems to have increased while intermediaries' shrunk.

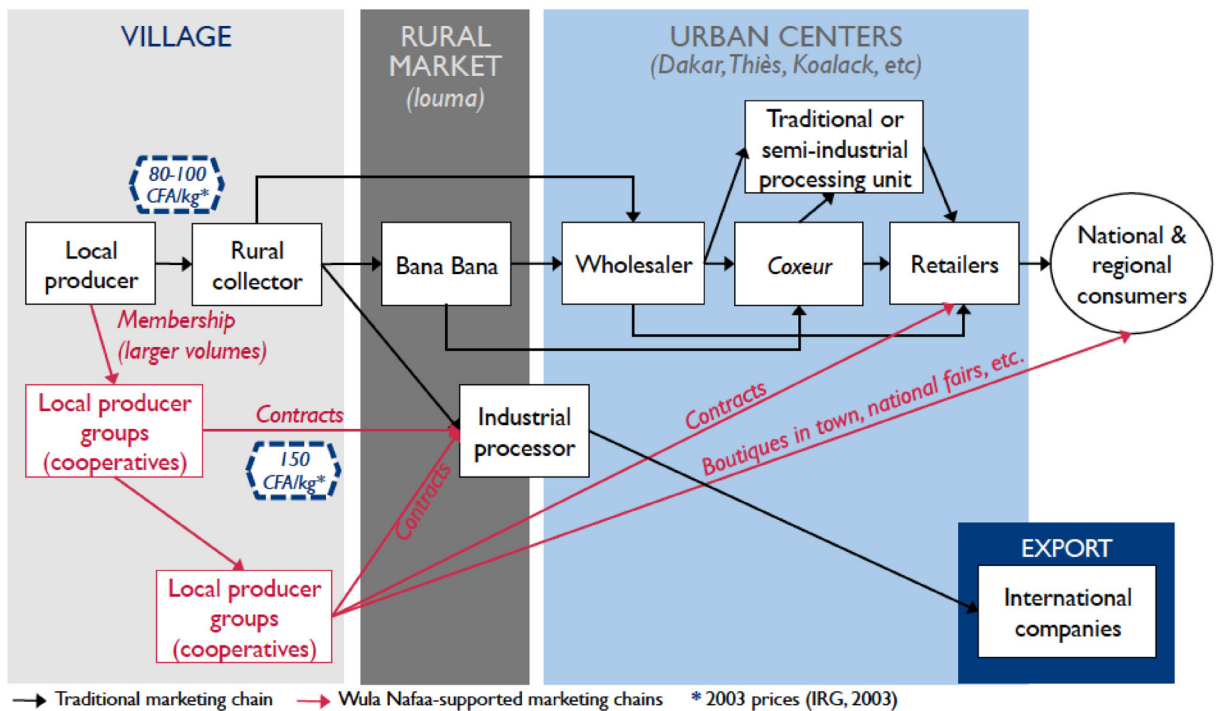


Figure 10: Wula Nafaa effects on the Baobab fruit marketing chains

In the absence of any market share data, it is impossible to assess the extent to which local producers gained power to determine prices. Wula Nafaa annual reports indicate a sharp and constant increase in direct sales from producers to industrial processors, who offer better prices than *bana-banas*. Industrial processors are few, however, and it is not clear that producers' groups are in a position to choose between potential clients—e.g., an industrial processor and a *bana-bana*. As an example, BFC's decision to stop purchasing baobab powder from rural processing units in 2013 had the effect of pushing up prices for raw products. Although good for producers, this decision also resulted in rural processing units facing higher expenses together with a sharp sales drop. This illustrates the limited control local populations still have over the market chain.

In contrast with the charcoal market, Wula Nafaa did not encounter significant resistance from the Forest Service to address administrative or regulatory barriers, such as obtaining certification or legal authorizations to put products on the market following European norms. Of course, this is a relatively new market and so there is also no history of regulation.⁴⁸ Local Conventions, enforced by the Rural Council (CR), generally organize the production by defining who can produce (e.g., any villager or members of local producers group) and when, depending on fruit maturity. The Forest Service seems to be playing its role of a technical advisor to the CR.

The case of the baobab fruit market chain would deserve a more in-depth evaluation to reach definite conclusions. Based on available information, it seems to confirm that, while Wula Nafaa did contribute to raise producers' prices by connecting them with industrial companies, the program did not fundamentally change the distribution of power within the commodity chain: local producers have limited capacity, if any, to negotiate the price despite being better informed of market opportunities and prices, and despite the diversification of products (shelled and unshelled baobab fruit, powder and seeds) local value-added production is unable to compete with the economies of scale of large export companies. In 2013 this was observed when BFC changed their purchasing policy for baobab powder. Deciding, for reasons of quality control and uniformity of product, to do in-house value-added processing rather than purchasing from village enterprises, this business choice effectively put processing groups—like Bala women's GIE 'Tinaare'—out of business.

Wula Nafaa also intervened to help producer groups to develop and make use of improved packaging and marking that was responsive to consumer preferences. Once the effectiveness of the packaging was demonstrated and the groups learned how to access the suppliers and retailers, they could continue to make use of the packaging and boost their sales and profits. The increase in value and volume of products that Wula Nafaa made possible for the baobab value chain was repeated for *mbep* gum, cashew, jujube, *fonio* and other natural and non-traditional products. Many of these value chains have grown significantly; in the case of cashew, some 9,600 tons were sold in 2011 compared to 2,887 tons in 2010.

4.1.4 TECHNICAL SUPPORT TO RURAL COUNCILS, CBOS, THE FOREST SERVICE, AND USER/PRODUCER GROUPS

Before 2000, USAID projects tended to provide technical support directly to natural resource users, constituted in CBOs or producer/user groups, rather than local government institutions. Wula Nafaa departed from this USAID tradition by extensively engaging local government. Wula Nafaa governance activities aimed at informing citizens, elected officials and public servants on the decentralization laws; training local governments to perform their basic duties (e.g., creating and executing a budget, levying taxes, establishing bookkeeping and reporting procedures); supporting them in the provision of services to citizens; and helping villagers organize into user groups to manage and exploit natural resources.⁴⁹ Capacity building for these producer groups, processing groups and producer networks focused on “creating, fostering and strengthening the capacities of new economic organizations” (Weidemann Associates, 2006).

48 The Forest Service historically collected taxes on baobab as a natural product, but it did not receive the level of political attention given to charcoal and timber.

49 Wula Nafaa did not set up separate community based management institutions. Instead of facilitating the creation of “conservancies” as per the law of Namibia, Wula Nafaa facilitated the application of decentralization laws and the functioning of rural councils. And the organization and functioning of local enterprises who had rights to resources represented by the rural councils.

Also during the first phase of Wula Nafaa, the Policy component of the project organized 101 roundtables at the community level and 32 national level roundtables as part of a process to identify and resolve 33 targeted policy barriers, such as barriers to improved NRM and implementation of activities within the NWP framework.⁵⁰ During the second phase, in 2011-2012, Wula Nafaa made considerable progress in promoting conservation farming and negotiated agreements with the Government to support the policy of promoting sustainable agriculture (see IRG, 2012).

To bring local voices into the process, Wula Nafaa organized numerous forums, workshops and discussion groups at the community, regional and national levels to gather stakeholders' ideas on how to reform the legal and regulatory framework to support sustainable NRM and wealth generation. In the same spirit, Wula Nafaa pushed for specific measures that would help institutionalize project tools (such as Local Conventions) or build on project lessons, for example. Since 2008, Wula Nafaa has also actively engaged in the revision of the 1998 Forest code (discussed in Section 6.7.2).

Additionally, Wula Nafaa organized radio programs and "citizenship workshops" in several project sites, where villagers could learn about their rights and duties in the rural community (*e.g.*, the taxes they are expected to pay, what these taxes are used for), about the responsibilities of CRs and how they can influence their decisions and monitor their actions.

Technical skills are an important component in the exercise of authority: institutions and individuals that legally have the authority to manage natural resources, without the skills to do, may not be able to perform their duty. This argument is often used by state central and de-concentrated services to resist the transfer of authority to decentralized government. Wula Nafaa's interventions in this area included the development of NRM tools, such as Local Conventions; support to the use of legally required documents, such as forest management plans; and training of villagers and user groups in management techniques.

The design and implementation of the first phase of Wula Nafaa was aimed at identifying the remaining areas of relatively productive and "high potential" natural forests, and leveraging increased community support for their improved protection and management through co-management of state forests and devolution of authority for community based management of unclassified forests. The project successfully worked to reach agreements on land use (via a *Plan d'Occupation et Affectation des Sols* or POAS), including the designation of community forests and nature reserves, and on rules governing access and use codified in Local Conventions.⁵¹ A critical next step was the preparation of forest management plans, as an approved management plan was required before the national forest service would allow economic benefits to flow to local communities. Establishment of a practice of utilizing these tools set the stage for decentralized governance of NRs.

Support for the writing up of Local Conventions and Forest Management Plans was described in Wula Nafaa annual reports as highly participatory (see Figure 11), although this has not been verified through an external evaluation. Local Conventions would cover the use of a variety of natural resources, such as gum Arabic, *fonio*, baobab fruit and charcoal. The role of CRs in these conventions varies with the type of resources: some require less involvement from the CR, such as *fonio* or baobab fruit than charcoal production, which mobilize the PCR's intervention at critical phases (*e.g.*, the PCR participates in the annual meeting where production targets are decided and decides who can produce in the Council's forests).

4.1.4.1 LOCAL CONVENTIONS

Within the framework of decentralization and the devolution of authority from the central administration of the State to locally elected authorities in Rural Communities, Wula Nafaa also continued the work of the DGL-Felo project in supporting the preparation and formal adoption of Local Conventions. These conventions or agreements consisted of locally enforceable rules governing the use of natural resources within the territory of Rural Communities. These

50 See complete list of policy barriers in annex in the separate working paper on Nature (at http://pdf.usaid.gov/pdf_docs/PA00JW67.pdf).

51 Local Conventions were mainly about what was restricted in terms of access and use, while management plans were mainly about what was prescribed in terms of access and use.

rules typically addressed agriculture (proposing measures to reduce erosion, promote agroforestry, control burning and land clearing for cropland), livestock production (to limit over-grazing, to designate grazing reserves, promote livestock vaccination, reduce theft of livestock), and environmental management (to reduce bush fires, promote regeneration of harvested NTFPs, specify periods for collecting NTFPs, promote protection of wildlife and critical wildlife habitats, reduce wildlife-human conflicts).⁵² The onus is on the Rural Council (CR) to enforce the rules specified by the Local Conventions; for example, some Rural Councils hired local guards, financed through revenues related to harvesting of charcoal (such as the *redevance* of 200 fCFA per sack of charcoal produced).

Figure 11: Wula Nafaa's Work with Local Conventions

Local Conventions (LCs) are documents formalizing local rules of access and use of natural resources and agricultural or grazing lands within a community. In their simplest form they aim to reflect existing local arrangements, enforced by traditional or customary figures, and support their enforcement through transcription from oral to written rules. In most cases, they are drafted with external support from NGOs or aid agencies. The GTZ-funded PAGERNA project used Local Conventions in the late 1990s in Senegal in conjunction with trainings on sustainable NRM and to promote inclusive decision-making within communities by supporting the participation of community's youth and women in the LC crafting process.

Wula Nafaa's approach to LCs, as formalized in the updated guidebook to LCs (USAID-Senegal, 2008) encompassed an elaborate 19-step process taking a minimum of 13 months' work. Starting with consultations with Regional and Rural Councils and the signature of memoranda of understanding between them and Wula Nafaa, these steps provide detailed guidelines on the management structure to set up (steering committees, consultations, indicator-based monitoring, etc.), the methods to achieve each step (how to do a participatory zoning exercise, where to obtain maps and how to give LCs a legal standing, whom to involve at each step) and the deliverables to produce (land zoning plan, management plans, annual action plans, etc.).

This guidebook explicitly relies on the assumption that these LCs need to be crafted with intensive external support—although the institutional set-up promoted in the guidebook supports the use of existing local authorities (Rural Councils and environmental committees within these Councils), which should ensure sustainability of the process after project withdrawal.

Difficulties identified with LCs during a Wula Nafaa-sponsored workshop in January 2009 (USAID-Senegal, 2009) include: lack of support to LC enforcement from local Forest Service and other partners, lack of financial means and equipment of institutions in charge of managing LCs, insufficient commitment by Rural Council Presidents who refuse to fine offenders for political reasons.

52 See for example, *Convention Locale pour une gestion durable des ressources naturelles. Communauté Rurale d'Ethiolo, Région de Kédougou. Octobre 2012, élaborée avec l'appui du Programme USAID Wula Nafaa.*

The conventions were developed through a process that assessed current land use, identified non-sustainable practices and NRM issues that needed to be addressed, and negotiated agreements on measures that could be taken to address the problems and provide for more sustainable use.⁵³ According to the Wula Nafaa staff, the Local Conventions helped to avert or settle conflicts over resource use, in addition to contributing to improved resource management.⁵⁴ See Figure 11 for additional information on Local Conventions.

Over the life of the Wula Nafaa project, through the **formal adoption of 20 Local Conventions, progress was made in establishing the conditions for the improved management of natural resources across an area covering some 2.6 million hectares** (International Resources Group, 2008). In the fertile Casamance region the negotiation, adoption and local enforcement of a Local Convention also helped to govern the use of palm groves in Bambaly in the Sedhiou region. The convention provided for both increased local protection of the palms from abusive cutting, and increased monitoring to promote improved pruning and nut harvesting practices to ensure a steady supply of raw materials used for making brooms, palm oil and other products that contribute to local incomes (USAID-Senegal, 2013a). In coastal communities, the Local Convention tool helped regulate use of marine resources for both greater conservation and greater profit, curtailing over-exploitation of fisheries and curbing excessive cutting of mangroves. Management areas including no fishing areas were also supported through the adoption of management plans for coastal fisheries and mangrove areas in Missirah and Toubacouta (IRG, 2012).

4.1.4.2 LAND USE PLANS

As a critical step in enabling decentralized NRM, Wula Nafaa also supported the preparation of land use plans (*Plan d'occupation et d'affectation des sols* or POAS). These plans were based on an assessment of land and resource use and provided a framework for managing the use of different resources and land use zones within the boundaries of a Rural Community. The POAS generally incorporated the rules adopted through a Local Convention, and provided additional information to guide and support land use planning and NRM. The POAS incorporated information from a participatory mapping and zoning exercise that took account of social and economic infrastructure (education and health facilities, water supply, roads and markets) as well as environmental resources and biologically important resources (soils, water resources, forests, pastures, cropland, protected areas, critical wildlife habitat) to produce a land use/land cover map. The POAS also examined issues related to conflicts over resource use and constraints to sustainable use and improved, integrated natural resource management across the landscape of a given Rural Community (CR).

The preparation of these plans directly contributed to local initiatives to demarcate and formally establish community conservation areas, for example, in the buffer zones adjacent to the Niokolo Koba National Park. In collaboration with PROGEDE, PGIE, the Ministry of Environment, CSE and USGS, Wula Nafaa helped to demarcate and map nine community reserves in the region of Kedougou, including several reserves established as buffer zones around the national park. The Local Conventions and POAS were also prepared as a foundation for the elaboration of a legally mandated Forest Management Plan (*Plan d'aménagement forestier* or PAF).

4.1.4.3 FOREST INVENTORIES AND MANAGEMENT PLANS

During the first phase of Wula Nafaa, the Forest Service was inclined to have Wula Nafaa follow the example of the World Bank PROGEDE project in supporting relatively costly forest inventories and forest management plans with detailed prescriptions for rotational harvesting of fuelwood that were prepared by Forest Service technicians working as project consultants. The project staff noted with interest the example of the GTZ PAGERNA project in facilitating the preparation of “simplified management plans” that were based on local consultations, sketch maps and management proposals developed by the local community. With assistance from the US Forest Service and others, the Wula Nafaa team organized a series of training workshops and consultative sessions to familiarize local

53 See Programme AG/GRN, *Guide d'animation de la Convention Locale*.

54 Pers. comm., Abdou Sene, Wula Nafaa, Deputy COP

Figure 12: Description of Forest Management Regimes

There are three main types of management regimes:

- Classified Forests—managed by the Forest Service
- Co-Managed Classified Forests—managed by the Forest Service in partnership with Rural Communities
- Non-Classified Forests (sometimes referred to as “community forests” as they are allocated by Rural Community)—designated for management by communities (i.e. the local government and local producer/user groups) with Forest Service oversight.

Community management comes in the form of community user groups—called “*blocs*”—who are allocated the use of particular section of the community forest. Community forest management is supported by the use of the *redevance* (usage fee or royalty), which feeds per-sack taxes back into a management fund earmarked for improvement of the resource.

Legally, community forests still require a management plan approved by the Forest Service in order to engage in woodcutting as well as in the production and sale of charcoal, etc. User groups, enterprises, and persons in a position to be “local managers” operate on lands owned by the state and governed through the authority devolved to Rural Councils (CR) in a designated district, or Rural Community (RC)

stakeholders with the objectives and approaches of different types of forest inventories and forest management plans. By the end of the first phase of Wula Nafaa, an 11 step process had been developed and was documented in manuals and guidelines to support the forest management planning process (see USAID/Wula Nafaa, 2008).

Forest Management Plans were prepared with the assistance of Wula Nafaa to engage communities in demarcating and safeguarding forest resources as part of a permanent forest estate in a targeted landscape that could then serve as a source of economic and environmental benefits.⁵⁵ In order to enable local communities to have role in the management of these areas and to benefit from the flow of forest products and associated revenues, the Forest Service required a plan that specified how these forests would be managed “in time and in space.” The Forest Code of Senegal stipulated that a forest management plan be composed of at least two parts: an analysis of administrative, ecological and social conditions with supporting maps, and a management plan that provided details concerning the demarcation of management units, timing of harvests and other management prescriptions. Forest Management Plans were to cover a period of 10-25 years, and needed to specify primary and secondary management objectives and maximum sustainable yield of forest products based on the regenerative capacity of the managed stands.⁵⁶

In each of the forest management plans prepared with the assistance of Wula Nafaa, considerable efforts were made to document the communities living in the vicinity of the forest and associated infrastructure, and to identify the primary and secondary uses of the forest, as well as causes of degradation. Following this extensive section on “*description du milieu*” (description of the setting) in the Forest Management Plans, sections of the forest management plans were typically devoted to management objectives, division of the forest for “*aménagement par série*” (rotational management) and administrative arrangements. Figure 13 provides an example of the kinds of data included in a forest management plan. (See also Working Paper on USAID/Senegal NWP Retrospective Study Contribution on Nature, 2013 pp. 37-43.)

55 Pers. comm. John Heermans, Wula Nafaa COP

56 Code Forestier, Titre I, Chapitres 1-2 cited in USAID/Wula Nafaa (2008).

Figure 13: FMP for the Paniates Forest

The Forest Management Plan for the Paniates forest (40,900 ha) identified 39 large and small villages with a population of some 15,000 people from 3 major ethnic groups were surveyed, including farmers, herders, charcoal producers, natural product harvesters, traders and others. More than 50 water bodies were noted, and used by some 32,000 cattle, sheep, goats and other livestock in the area. The plan noted the wildlife resources, the range of products harvested, and trends with resource productivity and regeneration. Fire, cutting and grazing were particularly important pressures on the forest and thought to be the main causes of degradation.

During the first phase of Wula Nafaa, the project team facilitated the **development of forest management plans for three community forests covering 70,000 hectares, and co-management plans for two classified state forests covering 60,000 ha.**⁵⁷ The project also assisted in developing the capacity of four regional units of the Forest Service established to assist with forest inventory and management planning. During the second phase of Wula Nafaa, provisions for improved management were also enabled through the preparation of plans for the Mangagoulack forest and the Dindefelo Community Nature Reserve (which included areas previously included in hunting concessions) as well as wildlife habitat zones protected through the adoption of Local Conventions for Dar Salam and Ethiolo in the Salemata Department of the Kedougou region.

However, the project apparently has not been able to systematically survey and assess the extent to which natural resources have actually been conserved as a result of the adoption of these Local Conventions and associated POAS and Forest Management Plans.

4.1.4.4 ADMINISTRATIVE AND FINANCIAL MANAGEMENT (GAF)

An important element in the implementation of forest management plans with the support of Wula Nafaa has been the elaboration of plans with rules and procedures for administrative and financial management, or *plan de Gestion Administrative et Financière* (GAF). DGL-Felo devoted significant effort to working with CRs to develop sustainable models of financing in support of NRM and other activities. Wula Nafaa continued this work with a focus on sustainable financing/increased local revenues streams and increased local authority over these financial flows in support of CBFM. The agreements negotiated between the Forest Service, CRs and producers in the GAF were major elements of the financial-management tools of Wula Nafaa.

One financial management tool that exists within the charcoal forest schemes is the *redevance*, in which a small percentage of the profit from each sack of charcoal sold is returned to the community to support forest management. Local groups must return fCFA 100 (or approximately 7% of the profit) per sack of charcoal in the form of *redevance*, whereas external exploitants must return fCFA 200. Of this fund, 60% of it goes directly towards forest management protocols: paying the RT (the Forest Service technician) for surveying and marking out the different user blocks, as well as some basic fire prevention and other technical services. 40% goes to management at the level of the Rural Council and the community, split in the following way: 10% towards the overall funds of the Rural Council, 10% to support the local Forest Management Committee, 10% towards salaries of the representatives of these bodies, and 10% to a “community fund” split between the villages of a Rural Community and used for whatever need may be most pressing: a well, medicine for their dispensary, etc.

Mamadou Mbaye, the president of the forest management council of the Rural Community of Missirah, explained the importance of the *redevance* for the management of the community forest. Without any other source of revenue for forest management activities specified in the forest management plan, the Rural Council and the forest users groups depend on the *redevance* for their legally mandated maintenance activities. Missirah’s Rural Council has also used these funds to finance the reconstruction of two rural roads at a cost of fCFA 1.2 million (\$2,400) and has also set up grain banks to promote food security.

57 Community forests included Koulor (39,200 ha), Sita Niaoule (18,000 ha) and Sare Bidji (19,800 ha); for additional details, see International Resources Group (2008).

According to Wula Nafaa staff, the preparation and negotiation of agreements documented in the GAF helped to increase the transparency and effectiveness of forest management interventions.⁵⁸ Through participation in the preparation of forest management and associated administrative and financial plans, Rural Communities have been able to play a role in the oversight of high-value commodity chains, such as charcoal production. Both Mbaye and Lamarane Sow, the president of a bloc management committee in the Missirah community forest, agree that Wula Nafaa's GAF activities have been of key importance in allowing their Rural Community to collect and manage these royalties. They argue that the financial and management controls put in place allow for greater transparency, and that the local population now trusts the management process.

Wula Nafaa's GAF activities have also helped to facilitate increased access to commercially available credit, particularly among charcoal producer groups, which has allowed them to increase their investment in their businesses and scale up production and increase sales. Wula Nafaa has helped with authorizations needed to obtain "FRA codes" of the Ministry of Commerce that are required to expand the operations of enterprises in processing, packaging and export sales of products. And the project has also provided assistance public procurement and budgeting procedures for Rural Communities to improve local governance, as well as in ensuring the transparent use of revenues from forest funds to motivate more effective surveillance of managed forests by forest rangers.⁵⁹ Nonetheless, major challenges still exist in the lack of a sustainable funding mechanism capable of generating the resources to cover management costs of the CRs' NRM activities.

4.1.5 ECOTOURISM AND CONSERVATION

Another key form of assistance provided by Wula Nafaa has been the provision of information about and the organization of exchange visits around the benefits of conservation. A group of individuals from the Rural Community of Dindéfelo was able to visit another Senegalese community that had set up a community reserve and developed an ecotourism initiative. This visit, in combination with the organization of community meetings and other facilitation by Wula Nafaa, spurred the community of Dindéfelo to establish a 13,000-ha reserve with a management plan. It should be noted that the Jane Goodall Institute (JGI) also played and continues to play a key role in research and community advocacy for the reserve. The partnership between Wula Nafaa and the Jane Goodall Institute was a critical enabling factor for this initiative. The Reserve is directly contributing to the conservation of critical habitat for chimpanzees and helping to safeguard their populations, while also boosting local incomes through community led ecotourism ventures. Previously, the government approach to conserving wildlife in the region was to remove communities that had encroached upon the Niokolo Koba national park.

4.1.5.1 FINDING A BALANCE WITH NATURE: THE CASE OF THE DINDEFELO COMMUNITY RESERVE

"The Community Nature Reserve of Dindéfelo has become a national and international example of engagement of local population in research and preservation of biodiversity, endangered species, and the environment, and in sustainable management of natural and cultural resources. Ecotourism activities guarantee the continuation of conservation programs, research, training and sustainable development. The visitors benefit from an extraordinary experience and the local population of an improved environment and quality of life." (*Plan de Gestion de la Réserve Communautaire de Dindéfelo*, p 18)

Arriving at Dindéfelo—after crossing hundreds of miles of the flat, semi-arid landscape that characterizes the majority of Senegal—is like happening upon an oasis. The cliffs of Guinea rise up out of the gentle rolling hills, striking a barrier between two lands. Sloping trees and brush dot the steep escarpment, and the land curves inward to gorges where water tumbles dramatically over stony ledges. Here in this unique niche of biodiversity, a vulnerable group of chimpanzees makes their home. At dusk the silhouettes strike sharply, and in the silence between moments, one might just catch the guttural call of a chimpanzee echoing through the slender canyons.

58 Pers. comm. Abdou Sene, Wula Nafaa, Deputy COP

59 For more information related to governance and benefit distribution, see companion report on "Power".

Dindefelo, a village of over 1,500 inhabitants, sits at the base of one of the more startlingly dramatic cliffs, where a waterfall spills from the rock face into a deep green pool. Dindefelo, meaning “beside the mountain,” is the last major village before the Guinean border, and has long been a stopping point for migrants and traders making the trans-frontier journey. Due to this, Dindefelo hosts a busy Sunday market, or *luumo*—a thriving trading post for livestock, grains, indigenous fruits, wood and ironwork, and a place where rural villagers can access goods from nearby cities.

All of this positions Dindefelo as a regional rural hub, and now Dindefelo also has the RNCN—the Community Nature Reserve of Dindefelo. The reserve, put in place in 2010, was designed to protect the vulnerable chimpanzee population and preserve area biodiversity, while bringing economic benefit to the village. Its establishment was a huge accomplishment in itself, and the community agreed on a management plan in 2012. The recency of this arrangement makes it still very much a work in progress. Early in 2013 people are still not fully on board, and there remains doubt that the community will truly benefit. Many of the kinks are still being worked out.



The breathtaking Dindefelo waterfall, spilling down from the Guinean cliffs to a deep, green pool below.

One local entrepreneurial sector that has not had a uniform stance on the reserve is the tourist industry. For decades there has been a small trade catering to mostly foreign tourists that come to Dindefelo to see the waterfall, go on short hikes, and visit the Sunday market. While not an overtly thriving enterprise, it has been a consistent source of income for certain community members for many years, supporting four village *campements* (rustic lodging) and sustaining a local trade of cold drinks, crafts, bread and lunch stalls, batteries and other supplies. Normally, these local entrepreneurs should be the reserve’s biggest champions, as the reserve stands to provide a profoundly more specialized tourist attraction for Dindefelo, and to bring in more regular traffic. Some, like *campement* owner Djiby Camara, clearly back the reserve and have been staunch supporters the whole way along. As Djiby explains, there is potential to charge upwards of US\$500 to see the chimpanzees in the reserve. This money would go towards managing the reserve and would also come back to the village as income. “It will help us buy medicine for our health hut and dispensary, we can use it to dig wells, maintain our assets, have funds to solve our problems—this is a lot, this is to our benefit. It is not someone giving us money from outside, this is us controlling our own future.”

But others have been staunchly against the reserve, even spreading rumors about the Jane Goodall researchers, aiming to expel them from the community. For these few, the reserve threatens their domination of the tourist trade which up until now has not been threatened. The notion of a reserve “for the community” begins to question their positions of control and benefit, which have not been previously shared.

Carim Camara, once the most vehement opponent to the RNCN’s establishment, has made a 180-degree turn to become its biggest advocate, now acting as the president of the Reserve’s Management Committee. At first, Carim, a high-school teacher, thought outsiders were seeking to benefit from the community’s natural riches, but then after learning the true aims of the reserve, he sees the big picture, and understands what is at stake. “Everywhere you hear ‘Dindefelo’, it goes with our waterfall. It is our name, is our pride, it is what makes us known and famous around



Members of Dindefelo women's group GIE Fouta sit among their stores of fonio and powdered baobab, hopeful there will be buyers next market day.

Senegal; people come from near and far to visit our village because of it. We must take care of it for our future, for our reputation, for the chimpanzees and for ourselves. They are at risk, but we are also at risk. If we ruin what Allah has given us it is on our heads.”

But it is not that straightforward for everyone, especially not the village women. Aside from advocating for and facilitating organization of the RNCD, the Wula Nafaa program trained village women in entrepreneurial skills. In Dindefelo, women were eager for this opportunity and have become very busy working in self-organized collectives and federations, forming small businesses around non-timber forest products (NTFPs), their harvest, their transformation and their sale.

These products—*madd*, baobab fruit, shea butter, honey, and other goods—come

mostly from the community forest, much of which now lies in the Reserve. The women realize all of this work is dependent on the productivity of the forest, which depends on the health of the forest, and thus it is important that the forest remains intact, and is protected. But the community nature reserve is confusing to them because now that they have been taught the value of forest products, how to properly harvest, process and bring them to market, the Reserve is placing limits on what they can do. Mata Diallo, president of the women’s federation of Dindefelo, says, “they are joking with us—first they give something, and then just as we are getting the hang of it, they take it away. They are treating us like children.”

In another affront to the women, the new Reserve rules have also declared the stream that comes from the waterfall—the same stream the village women use for washing—as a precious water source that needs protection, and that can no longer be used for laundry, as it has been for generations. The women don’t seem to see the connection between their behavior in the stream and the health of the forest, and are taking this new rule very personally.

Mata follows a footpath, meandering from the round thatch huts out towards the cliffs, to the water source. A mere 100 meters from the last household, just a few minutes’ walk from the clacking conversation of women pounding grain, the path ducks under a canopy of gallery forest and all sound condenses upon the singular song of flowing water. Suddenly the world is attuned to a different rhythm – groups of young girls carry basins of freshly-washed clothing on their heads, scurrying back to their households down the narrow pathway. As the forest grows more dense the sound of the waterfall grows louder and louder. The path skirts larger pools – evident sites for clothes-washing, marked by the scraps of faded, worn strips of fabric strewn across tree branches, and the blue-white foam that bubbles and spirals on the water’s surface. OMO laundry soap wrappers, single-serve tea cartons, biscuit packets and debris litter the ground and adhere to the banks of the flowing stream. As the path nears the waterfall, the washing pools are larger and even more littered. Women pass back and forth in numbers, each with massive piles rising out of washing basins. A throaty ‘whoop-whoop’ floats through the canopy from above—and it is striking that right here, amidst all this human activity, there are chimpanzees.

The waterfall and its meandering stream are not only the center of the village’s ecotourism industry and the women’s laundry area, but are also the main water source for the Reserve’s few endangered chimpanzees. According to surveys conducted by the Jane Goodall Institute, there are only between 40 and 50 individuals living in the area, and if the group grows any smaller they will be on the brink of extinction, purely through lack of breeding potential. Since water is critical to the chimpanzees’ survival, the villagers have agreed that women will start to utilize

the newly-constructed concrete washing station on the edge of the village—an arrangement that formed part of the participatory Resource Management Plan meeting during which the reserve was mandated. But the women seem to have a different view, and are vehemently refusing: “It is too small, too hot, it’s just not what we want,” says women’s federation leader Mata Diallo. For the women, the washing area is sacred social space—where women bathe, bring their children, gossip and share stories, and support one another. The privacy and autonomy of the Dindéfelo stream has a cultural value that the concrete washing station could never provide. With the reserve rules, the women feel that their needs have been superseded in favor of something they cannot begin to conceptualize. In Mata’s words, “Allah has given us this abundant water in the forest—the perfect washing spot. He surely meant for us to use it?”

4.1.6 ASSISTANCE WITH MAJOR INFRASTRUCTURE DEVELOPMENT

The Wula Nafaa project provided support for infrastructure development that local communities were unable to finance on their own, which contributed to higher crop yields and increased local incomes. For example, in Boly, Wula Nafaa helped to build dikes and assisted in providing mechanized plowing services and seed to enable farmers to expand the area of rice cultivation from 5 to 150 hectares. In Samecouta, rice yields were increased to 3 or 4 tons/ha through technical, financial and organizational assistance from Wula Nafaa.

The project has also intervened to provide access to potable water and sanitation by working with local communities and government technical services to build latrines, water towers and cisterns, and to drill wells and equip them with manual and solar powered pumps. The improved wells and increased access to clean water have directly benefitted women and contributed to improved hygiene and health (USAID-Senegal, 2013a).

To counter salinization in affected communities, Wula Nafaa financed anti-salt dikes that opened up the possibility for extended cultivation of crops and vegetable gardens.



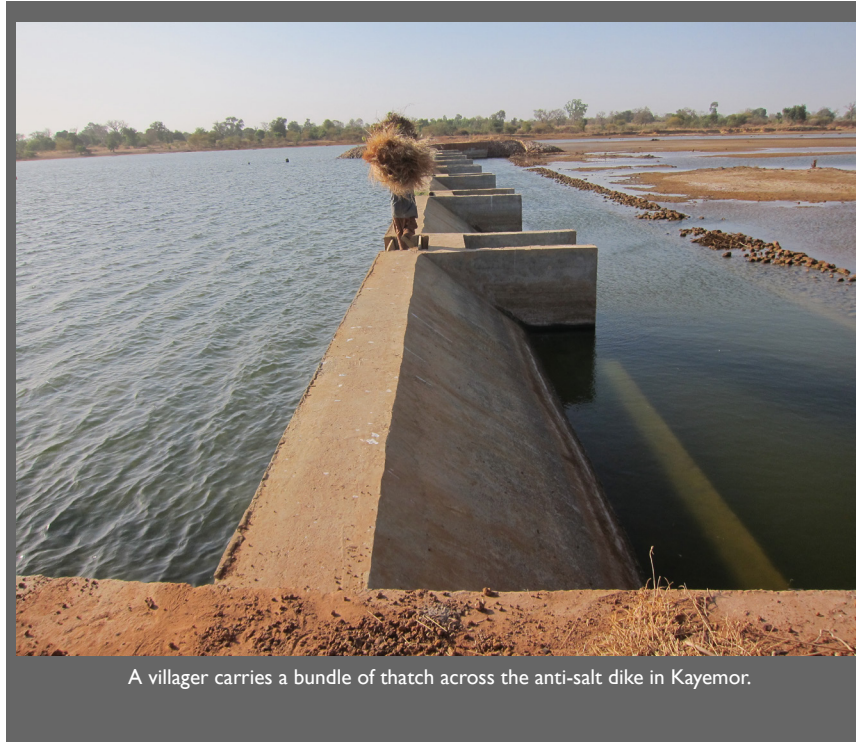
Soap foams amidst scraps of cloth, litter, and debris in the Dindéfelo stream -- the endangered chimpanzees’ only water source.



Women returning from washing in the Dindéfelo stream.

4.1.6.1 INFRASTRUCTURE FOR NRM: THE CASE OF THE KAYEMOR ANTI-SALT DIKE

Tall and slender in a bright red patterned boubou, Babacar Sisé leads the way on his shiny moto through the vast wetland “*bas-fonds*” where the women of Keur Samba Dieye—one of the *Communauté Rurale* of Kayemor’s 23 villages—are bent over their hand hoes turning the heavy earth. Still heavy with this year’s rains, the soil is a leaden grey, and the work to clear space for vegetable gardens is slow but steady. Surveying the lands before him, Babacar gazes through a makeshift fence through thick-framed spectacles, “All of this was too salty to farm before the dam came...”



A villager carries a bundle of thatch across the anti-salt dike in Kayemor.

* * *

Arriving at the USAID-funded anti-salt dam in Kayemor is like coming upon another world. From the sandy, dry-dusted peanut basin suddenly the world has a glossy finish. The breeze across the water’s surface is moist and cool, the air fresh and clean, and a land that screamed of scarcity and thirst abruptly transforms into a tree-lined water world aplenty with fish, birds and drinking cows.

Half a kilometer wide and holding the rainfall waters in a glorious salt-free reservoir, the Kayemor dike is fitted with levers which allow the community to control the water’s height. Before the rains arrive, the levers are lifted and the reservoir is allowed to drain gradually back into the salt-plain before replenishing again. During the hot, dry season, the levers are lifted and locked, and the reservoir glistens—a haven of life, and a literal oasis in this desert.

The presence of the dike both prevents saltwater intrusion and protects the local water table, ensuring fresh water in the community’s wells used for drinking water. The dike will allow farmers to cultivate and irrigate more than 250 hectares of land, for rice production, vegetable gardens and reforestation. Constructed at the cost of \$430,000, this dam is expected to pay for itself in benefits accrued to the community, and will help the communities adapt to climate change. According to USAID, “Since the 1970s, decreased rainfall combined with rising sea levels has permitted salt water from the Gambia River estuary to infiltrate into the adjacent land, killing forests and rendering the surrounding land useless for farming” (Taylor, 2013). While this costly infrastructure may not present a viable solution for every community, it has brought hope to the Kayemor area.

A villager approaches with a huge bundle of thatch-grass on his head. Tipping the straw bundle onto the ground he stops to gesture enthusiastically about the dam. He eagerly begins to list its many virtues, intermittently thanking

Allah for bringing this good fortune to their community. First, he speaks to the cleanliness of the water: “even I drink from it!” he says. He continues: “Before, the cows were coming to our wells to drink because the delta water was too salty. Now they have returned here to drink.” He shakes his head feverishly. “And there are fish, so many fish to eat.”

Ibrahima Faty, the local facilitator for the USAID Wula Nafaa program, which was responsible for the dam’s construction, affirms these accolades with fervent head nods. He points to the banks of the reservoir where the wetland vegetation is starting to grow back in the shallows of the dam. “These reeds and grasses provide feed for livestock, habitat for fish, and stabilize the soil on the banks,” he explains. The vegetation is also an indicator of ecosystem health within the reservoir, which appears alive and well.

* * *

Back in the *bas-fonds*, Ibrahima and Babacar descend to the village vegetable gardens. They step through a woven bamboo gate and into a waving sea of lush green garden rows leading down towards the reservoir. There are hundreds of loosely segregated garden patches here, a surprisingly large operation.

Row upon row of plush sea-green cabbages, blocks of thick-stemmed tomato plants, chiles, *bissap* (a variety of hibiscus flower), *jaxatu*⁶⁰ (bitter eggplant), onions, sweet potato, lettuce and peppers paint the landscape in a coat of color. The vegetables are sold locally in Kayemor, but many are brought to the thriving weekly markets at Farafenni—the border-crossing into the Gambia, a mere 45 kilometers away.

Groups of men tend to the garden patches, walking the long rows with watering cans, one in each hand, then returning to the shallow-dug wells to replenish. Peering over the edge of one such well allows a view of the water sitting just below the soil layer. The water table is so high here that the gardens are practically floating on the surface of the reservoir—an ideal location for gardening.

* * *

Kayemor is still reveling in the newly recovered bounty of their gardens, since the dam was installed. Before that, the soil was so laden with salt that it could not support vegetable growth, and the people of Kayemor literally watched their livelihoods shrivel up before their eyes.

It was about 5 years prior to the dike’s construction that the people of Kayemor were finally forced to abandon the lands next to the delta as un-farmable due to salinization. Aminaata Seck, a village leader, also remembers that time. She came to settle in the village in 1981, and recalls that there had always been a slight saltiness to Kayemor water, but year upon year it grew worse and worse. The years following 2004 were significantly graver, she recalls. “We found it was so bad we had to stop farming completely next to the water. Whatever you planted, everything would die,” says Seck matter-of-factly.

Fish, formerly abundant, were few and far between, wells were turning salty and people were growing desperate. The valley where villagers had begun to get rich off gardens was also rendered infertile. Diao, a gardener, describes trying to plant tomatoes one year, fertilizing and weeding and doing everything to protocol. The seeds sprouted, but then at only a few inches of height the plants



Conservation farming group president Babacar Sisé stands before his garden parcel.

60 *Solanum aethiopicum*

hopelessly stunted, and eventually shriveled up and died. Diao and his group became afraid—all the investment put into the garden that year was lost. He shares how so many garden groups abandoned doomed seedlings in the ground that season, and many left the village seeking alternative work. This was when the situation became dire, and PCR Abdoulaye Cisse began his lobbying campaign.

* * *

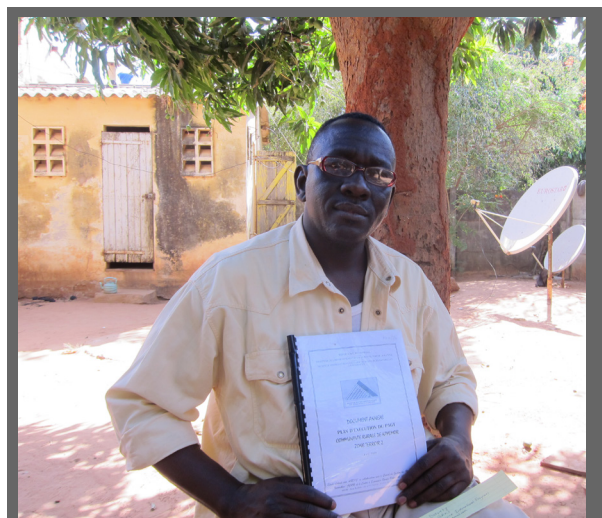
Kayemor Rural Council President Abdoulaye Cisse works out of an office in his cement house in the HLM quarter of Niore du Rip, the nearest large town to Kayemor. In a small room a TV blares and scratches, and his two assistants sit studiously before a whirring computer and piles of documents. An imposing man with a presence of leadership and intelligence, Abdoulaye is eager to share about the changes he has seen in Kayemor.

A young boy delivers him a glass of sweet gunpowder tea, and with a few loud slurps the PCR launches into a full biography of his life: how he rose to leadership, and where he learned to be an effective community leader. He attributes his success and his skills as PCR to the USAID CBNRM project⁶¹, which came to Kayemor in 1998. “CBNRM taught me how to lead,” he says definitively, without a shred of doubt in his voice. Cisse was the President of the Rural Council’s Environmental Management Committee during CBNRM, which completed in 2001. In 2002 he was proposed candidate for PCR, and was successfully elected. He is currently serving his second consecutive term, his mandate having been renewed in 2009. “Honestly, I learned from CBNRM how to manage the CR, and because of this I fell easily into positions of leadership.” As if to prove that fact, he takes out the CBNRM project manual he has kept all these years and pages through it, painstakingly explaining what is on every single page. “I would never have understood what it means to stand up for your community if not for CBNRM. With those skills I learned how to advocate for the dam, and see—our problem is being resolved!”

Abdoulaye was instrumental in engaging his community in Wula Nafaa, and drove local participation in project activities throughout construction and installation of the dike. Kayemor gardens are now flourishing again, and farmer groups are practicing conservation farming in order to rehabilitate the soils in their community, hoping to create more resilient agriculture systems that can be a model for the area, and prevent future disasters.



Plots of onions as far as the eye can see in the Kayemor wetland vegetable gardens.



PCR Abdoulaye Cisse showcases his CBNRM project manual. “CBNRM made me into the community leader I am today.”

61 See Section 3.2.5 for more information about the CBNRM project.

4.1.7 INCLUSION OF AGRICULTURE IN THE NRM AGENDA: CONSERVATION FARMING

As one site that received training in conservation farming practices, Kayemor is an example of the inclusion of agriculture in the NRM agenda during the second phase of Wula Nafaa. During this later phase of Wula Nafaa, as interest grew in sustainable agricultural intensification, capitalizing on the potential benefits from scaling up “climate smart agriculture” and promotion of the techniques associated with “reduced-tillage” or “conservation farming” (CF), the project began working with farmers in 2009 to explore the application of CF principles and practices developed in other regions. Unlike conventional farming, which results in considerable disturbance of the soil through annual plowing of the entire field, and which generally leaves the soil bare and exposed to wind and water erosion after the harvest, CF promotes minimal or no tillage, and increased protection of the soil by leaving crop residues in place or planting of a cover crop. Over time, conventional farming practices deplete the soil of organic matter and nutrients, while CF helps to replenish soil organic matter and increases the efficiency of use of added mineral and organic nutrients.

By 2011, the area under conservation farming had increased to 4,827 ha, involving 4360 farmers (IRG, 2011), and by 2012, the area under CF had expanded to 7,164 ha with 5,229 farmers (IRG, 2012). In Senegal, the prescribed practices include cultivating only the rows where crops are planted (spaced 80 cm apart) and preparation of planting pits at 40 cm intervals along the line. Compost and 12 grams of fertilizer are applied to each seedbed, and an additional cover of mulch and 12 grams of urea are added 45 days later. In 2010, when rains were relatively good, average cereal yields were 2,286 kg/ha; however, in 2011 when rains were poor, average yields in conventionally farmed fields were reduced by 400 kg, to 1,886 kg/ha. In that same year, however, and despite the poorer rains, in fields where farmers had adopted CF, yields averaged 2,634 kg/ha, an increase of 348 kgs from the average yields in 2010 in untreated fields. In Kaolack, farmers practicing CF benefitted from yield increases of 49-71% in 2011 (USAID-Senegal, 2013a).

Across the Sahel, in addition to conservation farming, considerable impacts on crop yields have been achieved through farmer innovation and extension of improved practices related to rainwater harvesting including zai or tassa, stone lines, half-moons, contour ridging. Farmer managed natural regeneration (FMNR or *régénération naturelle assistée*—RNA) and systematic protection and regeneration of *Faidherbia albida* and other economically valuable farm trees, nitrogen-fixing legumes and agroforestry species in farm fields have also helped to replenish soil organic matter, slow rainfall runoff, increase infiltration and restore soil fertility while providing a range of other products such as fodder, firewood, edible fruits and leaves, fibers and medicines. Other organizations such as World Vision are having success in supporting the spread of FMNR and increased density of *Faidherbia* in farm fields.

4.2 WULA NAFAA OUTCOMES THROUGH THE NWP LENS

4.2.1 PROGRESS AND IMPACTS IN RELATION TO THE NWP FRAMEWORK FOR NATURE

As we reflect upon lessons learned in applying the NWP framework, it is useful to review the experience of Wula Nafaa and other USAID funded AG/NRM interventions in Senegal with respect to the main recommendations of NWP⁶². The NWP principles and action recommendations for Nature were grouped in five areas, each with related progress and impact during Wula Nafaa:

- **Improve information and knowledge management systems, including improved data and information use, and development of monitoring and evaluation systems at all levels.**

Improved knowledge management, particularly in terms of farmer-to-farmer exchanges and networking of producer groups certainly proved useful and played a key role in the achievements of Wula Nafaa. For example, exchange visits played a role in catalyzing community actions to engage in land use planning and to adopt Local Conventions and improved NRM practices.

62 While NWP has been a useful framework for assessing Wula Nafaa’s integrated approach to NRM-based development, the approach itself has since been revised in NWP 2.0 and will continue to be refined. See rportal.net/library/content/nwp-2.0

Wula Nafaa and other projects also made considerable efforts to develop monitoring and evaluation systems, although these systems were primarily driven by the need to provide USAID with information on indicators related to project performance monitoring, and on a relatively short term basis (quarterly and annual reports). And while there were efforts made by USGS and others to support long term environmental monitoring and assessment of behavior changes, there are considerable gaps in documenting and understanding the impact of Wula Nafaa on biodiversity conservation, wildlife and fisheries, soil fertility, rates of deforestation, sustainable landscape level management, as well as overall food security and resilience to climate change. This study's analysis of DHS data, however, does indicate a positive impact on poverty reduction at the landscape level in targeted Rural Communities.⁶³

- **Promote local land use planning and appropriate resource tenure systems.**

The promotion of local land use planning was an important element in the approach of both CBNRM and Wula Nafaa. Wula Nafaa went further than the CBNRM project by accompanying the land use planning (POAS) with the negotiation of Local Conventions that provided an opportunity for local communities to agree on sustainable uses that were permitted, and non-sustainable uses that would not be allowed. And through the elaboration and adoption of financial-management (GAF) guidelines, Wula Nafaa also worked to secure the rights of local producers to be engaged in harvesting and marketing charcoal and promoted the role of Rural Communities in assuming their role in the decentralization of oversight and management of charcoal harvesting.

- **Foster social learning, innovation and adaptive management.**

This was one of the areas that appears to have received less attention. This may be a result of focusing efforts on the provision of technical assistance and support through the project to local communities to achieve specified targets and outcomes proposed to USAID in annual work plans and quarterly reports (as noted above). USAID may want to consider how to reconcile its insistence on managing for results and being accountable to USAID mandated performance indicators and targets, with a recognition of the importance of fostering learning, innovation and adaptive management.

- **Build capacity and invest in human resources.**

Wula Nafaa and previous projects clearly invested in building capacity and developing human resources, including the training of facilitators, community and civil society leadership, private sector service providers and government technical services. This in turn set the stage for developing and promoting cost-effective technical advisory services which were critical for transferring knowledge, development of new approaches, facilitation and empowerment. The Africare KAED project along with Wula Nafaa also made notable progress by promoting participatory approaches that addressed gender issues, working directly with women and working through the strengthening of local user groups.

- **Promote cost-effective technical advisory and intermediary services.**

This is another area where Wula Nafaa achieved good progress by training and fielding community based facilitators, and by supporting farmer to farmer and group approaches. Wula Nafaa engaged with the private sector and encouraged partnerships and negotiated agreements between producer groups, processing services, buyers and retailers of natural products. Wula Nafaa also invested in developing the capacity of the Forest Service to provide technical advisory services for forest management planning, although it remains to be seen how effective this strategy will be in the long term with respect to actually conserving forests and improving their management.

4.2.2 PROGRESS AND IMPACTS IN RELATION TO THE NWP FRAMEWORK FOR POWER

Wula Nafaa's impacts on the distribution, exercise and accountability of power in Senegal were limited, but promising. On one hand, the most important decisions regarding forest management are still made by the Forest

63 See USAID/Senegal Retrospective study, Wealth component, May 2013.

Service. On the other hand, CRs are more knowledgeable of their rights and duties, and are more involved in daily NR management decisions, involved in local initiatives on water, sanitation, health and education. Still, CRs remain unable to fulfill important parts of their mandate regarding charcoal production, which is by far the most lucrative activity in many rural communities, with direct impacts on forest cover. This assessment indicated that USAID invested most resources into NWP's Power recommendations of "improving rural representation and amplifying rural voices in public decisions"; "distributing environmental authority and functions to institutions best positioned to exercise them"; and, to a lesser extent, "strengthening procedural rights for rural people" and "encouraging conflict management":

- **Strengthen procedural rights for rural people.**

USAID used participatory processes to establish Local Conventions—agreements between local government and the government on resource management and use.

- **Improve rural representation and amplify rural voices in public decisions that affect their lives and wellbeing.**

DGL-Felo, Wula Nafaa and smaller Democracy and Governance projects provided extensive support to strengthening rural organizations, such as producer groups, for-profit groups like GIE, producers' federations and civil-society organizations. The DGL-Felo impact assessment of 2008 showed that governance training had had a lasting, positive impact on the performance of local government.

- **Distribute environmental authority and functions to institutions best positioned to exercise them.**

USAID played a key role to facilitate national debates where rural views were expressed. Resulting clarification of the status of Local Conventions has helped institutionalize local participation in NRM decisions. USAID relentlessly pushed the Forest Service to relinquish their former command-and-control style of authority over forest management: the CBNRM project and Wula Nafaa offered trainings to generations of Forest Service officials on decentralization and changes brought by the 1998 Forest Code; USAID, PROGEDE and PAGERNA then PERACOD engaged the Forest Service in collaborative efforts to draft and approve forest management plans with CRs. Despite these efforts, progress was modest: the Forest Service constantly pushed back, using innovations (contracts and forest management plans) to block decentralization of forestry decisions. The extent of their resistance to decentralizing of the lucrative charcoal trade reflects the financial and political stakes. The Forest Service paid limited interest to regulating the less-remunerative baobab fruit trade.⁶⁴

- **Transfer environmental powers to authorities representative of and accountable to local populations.**

USAID strengthened the capacity of elected Rural Councils (CRs) to better perform their roles—a significant milestone toward this objective. But few discretionary powers over forests have been transferred to the elected local authorities. In practice, USAID rather aimed to fill the capacity gap than advocate to transfer powers before capacity was demonstrated (see Bâ, 2006a; Faye, 2006; Kanté, 2006). Further, USAID promoted the use of forest management plans, which define more obligations than rights (Faye, 2013), resulting in transfer obligations rather than the discretionary decisions making powers that would constitute decentralization.

- **Explore a minimum environmental standards approach.**

No USAID project seemed to have explored this option. Wula Nafaa actually went the other direction by supporting forest management plans with costly and time-consuming forest resources inventories. The plans supported by Wula Nafaa were, however, not as expensive and time-consuming as the PROGEDE plans—and also not as simple as the PAGERNA local conventions—but followed a middle ground, in order to be simpler, faster, less costly than PROGEDE but still responsive to Forest Service requirements.⁶⁵

- **Encourage checks and balances, pluralistic approaches, and conflict management.**

64 This could change, however. Indeed, in 2002-2006, the Forest Service members of an advisory committee to a CODESRIA-WRI-CIRAD study of the charcoal sector asked repeatedly for the project to study the new baobab fruit market (among other markets). They said these chains needed to be studied since they had not yet 'mastered' these chains (Ribot, Personal communication, May 2013).

65 Bob Winterbottom, pers. comm., July 2013.

Conflicts over NRM most often cited in USAID project literature concerned herders and farmers. USAID, like PAGERNA and PERACOD, promoted the use of Local Conventions for local communities to discuss their needs and agree on a set of rules. The evaluation of PAGERNA indicates that the positive impact of these tools is visible several years after the project ended, giving good hopes that USAID impact in this area will also be sustained.

4.2.3 PROGRESS AND IMPACTS IN RELATION TO THE NWP FRAMEWORK FOR WEALTH

Wula Nafaa was successful in implementing many of the NWP action recommendations for wealth, particularly “be strategic about the economics of natural resource management”, “strengthen markets and make market incentives a more important part of NRM strategies” and “invest in rural organizations as the long-term ‘building blocks’ of rural development”. The project was partially successful in “creating a framework in which people can make better NRM choices in their own self-interest”, with some progress still needed to “assure that resource managers have – and perceive themselves to have – secure access to the means of production and the benefits of their NRM investments”.

- **Be strategic about the economics of natural resource management.**

Particular progress was made in “support of alternative income strategies,” as emphasized through the focus on strengthening rural value chains based on non-timber forest products, indigenous fruits and grains (such as baobab and *fonio*), particularly those which provided supplementary income opportunities in the agricultural off-season. By leveraging decentralization and strengthening the capacity of local governing bodies and community producer groups, the “focus on tomorrow’s economy” through “encouraging an enabling environment” was evident.

- **Strengthen markets and make market incentives a more important part of NRM strategies.**

Wula Nafaa worked successfully to “build competitive rural markets,” and made significant progress in certain key value chains. In particular, challenging the charcoal cartel and opening up the charcoal industry to rural producers⁶⁶ has had large impact on rural actors’ participation in that value chain. Through linking rural producers to trade partners, as well as assisting in formation and strengthening of producer groups, cooperatives and federations has meant significant progress in “promoting and/or facilitating joint ventures.”

- **Invest in rural organizations as the long term “building blocks” of rural development.**

Diversified income strategies and greater participation in lucrative markets for local commodities helped to “promote self-reliance”, though more attention could have been placed on “local credit schemes” and other systems for “financial sustainability”. Via GIEs, producer groups, and federations, Wula Nafaa succeeded in “creating systems that facilitate market participation” and “promoting establishment of robust rural groups and federations”. As noted during the first phase of Wula Nafaa, from 2003 to 2008, the project reportedly increased incomes by 80% for more than 4,000 enterprise groups engaged in the production and marketing of products with 11 market chains in 32 Rural Communities.

- **Create a framework in which people can make better NRM choices in their own self-interest.**

The project focused strongly on “promoting NRM solutions that make financial sense and foster economic opportunity.” As noted above, from 2008 to 2013, the project impact indicators showed that “over 40,000 people have sustainably increased their incomes by \$36 million through the management and conservation of natural resources, and an additional 10,000 tons of primary foods and grains have been produced by rural enterprises, and over 9,900 families have increased their production of key agricultural products”. With this impact, very little attention was put towards “exploring ways of assuring payments for environmental services”.

- **Assure that resource managers have – and perceive themselves to have – secure access to the means of production and the benefits of their NRM investments.**

66 See Section 5 for more details on Wula Nafaa’s interventions in the charcoal commodity chain.

Study outcomes have revealed that despite legal transference of responsibilities and rights, there is still work to be done on the perception of secure access among rural resource managers. Future efforts should focus on strengthening actions in this area, particularly “planning for how changing production requirements interact with land tenure systems” as well as continued work on effective decentralization to ensure “clear tenure and property rights” as well as “legitimate and democratic common property management.”

4.3 SUMMARY OF APPROACHES AND OUTCOMES

Taking account of conversations with key informants, the documentation reviewed for this report and the experience of the authors, it seems that some of the key activities supported by Wula Nafaa to improve the management of natural resources in the landscapes targeted by Wula Nafaa were often low-cost, closely tied to issues of power and governance and dependent on successful facilitation of community participation and local empowerment. This included:

1. *Convening of key stakeholders* in local communities (local leadership, authorities, resource user groups, women) to facilitate transfer of information, discussion and deliberation, with a view towards addressing non-sustainable resource use, managing conflicts, and taking advantage of opportunities to increase incomes and local benefits through improved management;
2. *Improved information dissemination* at the local level of detailed information, made available in local languages and conveyed to largely illiterate stakeholders, about the provisions of codes, laws, regulations, to ensure a shared understanding of legal frameworks and provisions for good governance (although there is need for much additional effort in this regard, particularly among illiterate and uneducated women who were included in project activities, in order to attenuate further the power of central authorities, technical services and local elites);
3. Concerted and continuing efforts to provide *training* and to develop the capacity of local institutions (with community based organizations and rural enterprises and at the level of Rural Communities or local government) with particular attention to the most vulnerable stakeholders (illiterate and uneducated);
4. *Engagement and empowerment of local communities* through a *progressive process* of land use planning, development of locally enforceable rules, demarcation of managed areas, agreement on management objectives and planning for more effective protection, regeneration and sustainable harvesting of resources and transparent administration of locally managed permits, revenues, surveillance and management activities, with due regard to ensuring full ownership of the process by local stakeholders;
5. The demarcation of managed areas was reinforced by support for placement of *boundary markers*, and the enforcement of *locally agreed upon rules* governing the protection and use of natural resources was reinforced by the organization of *local surveillance committees* and local recruitment of guards financed by locally managed revenues;
6. Community based forest management and the local collection of revenues was reinforced by *locally negotiated MOUs* between producer groups and local authorities governing charcoal production and locally organized processes to review and approve requests for harvesting of forest products (previously the sole prerogative of the Forest Service); instead of being sent to the central treasury, collected taxes associated with the harvesting of forest products were managed locally and used to carry out activities agreed upon in annual work plans for forest management operations;
7. Establishment of *demonstration plots* and dissemination of information about practices to increase crop yields through improved practices that capitalized on opportunities to improve rainwater harvesting and management of soil fertility as well as increased tree cover in agricultural landscapes;

These successful tools form the basis for the generalizable best practices to integrated NRM programming presented in Section 7.

Prior to Wula Nafaa, the more common approaches and interventions for NRM projects were related to funding the operations of nurseries and roadside or block tree plantations, the preparations of land use plans and management

plans by technical services, the organization of detailed natural resource inventories, the strengthening of central government and technical services, and the provision of equipment and allowances for guards employed by the Forest Service and Park Service. Many centrally adopted laws and regulations were not enforced, and many management plans were not implemented beyond the life of a given project because of a short of funds, staff, institutional and community support.

Although, as noted in the following sections, there is relatively little evidence of the impact of Wula Nafaa on the condition of natural resources, the experience of the past decade seems to demonstrate that rural communities can be mobilized to change behaviors and will actively pursue a pathway of more sustainable use and improved management of forests, fisheries and other natural resources upon which they depend for their livelihoods and well-being when their rights are clarified and when they recognize how they stand to benefit from improved management.

5 CHARCOAL THROUGH THE LENS OF NWP

A CASE STUDY OF WULA NAFAA INTERVENTIONS IN A HIGH-VALUE COMMODITY CHAIN AND IMPLICATIONS FOR THE FUTURE OF COMMUNITY FOREST MANAGEMENT PRACTICES



Thorny twigs, burrs, shrubs, and grasses fill the gaps between widely spaced trees in the community forest around the village of Sare Bidji. There is no dense canopy covering this “forest.” Blackened circles of charred ground punctuate the scratchy undergrowth, marking the sites of charcoal kilns that dot the 19,800 hectares of wooded savannah around this village in southern Senegal, which became a hotbed of charcoal exploitation in recent decades. The practice of making charcoal has caused a great amount of destruction to the area’s forest, previously with little benefit to the local population.

Historically, powerful merchants from Dakar brought teams of migrant workers to the local forest to cut down trees and make charcoal. Stuffed into 50-kilogram sacks and stacked high on diesel trucks, this charcoal is the primary

cooking fuel for urban Senegal, and demand for this fuel has steadily increased in recent decades. With more households switching from firewood to charcoal and a growing urban population (Ribot, 1993), **95% of the urban population of Senegal uses charcoal as the primary source of energy for cooking** (Wurster, 2010). As a result, charcoal supply to cities, especially Dakar, is considered a highly political issue by the government of Senegal, which has taken steps to ensure its continuity. Charcoal also represents a source of wealth for the oligopolistic charcoal merchants who have historically controlled its production and sale.

Charcoal production has also been linked to the degradation and depletion of forests. In 1997, the National Environmental Action Plan for Senegal was published by the Ministry of Environment and Nature Protection and CONSERE, and **it noted that charcoal production was a key contributor to land degradation** along with population growth and expansion of cropland. **Studies have demonstrated that the high demand for charcoal has had an impact on more than 50% of the wooded savannas of Senegal** (Tappan, Sall, Wood, & Cushing, 2004; cited in Wurster, 2010).

Mallal Diallo, a humble elder of the Sare Bidji-Thietty Rural Community, has witnessed shifts in the political, economic, and environmental organization of the charcoal business over the last ten years, since the USAID-funded Wula Nafaa project began working within his community to create a Forest Management Plan. With Wula Nafaa's support, the villagers themselves have been trained in charcoal production, and have been taught to exploit their forest in a sustainable way, using a rotation system where demarcated forest stands recuperate for eight years between harvests. Mallal, among the first in the area to be trained in charcoal production, explains: "Before the forest management plan you could take whatever tree pleased you—we'd just cut every tree in the whole space, we wouldn't leave a single one behind. Now we've been trained, which are the trees that are ready to be cut, which are the trees not to be cut—they are not a loss, they are being left to grow wider for the next cut—it's an investment!"

The goal of this method is a long-term sustainable production system that still offers a substantial workload and income source for the local populations. Over the last six years, through governance trainings, capacity building and support for small enterprise, average incomes for local charcoal producers have doubled, and overall local revenue from the charcoal trade has sextupled. Village producers have been able to create a place for themselves in the formerly impermeable commodity chain.

"At the beginning nobody wanted to do it," says Mallal. "Charcoal making was seen as dirty, difficult, unseemly work." At the project's inception, a mere six villagers from his forest users' *'bloc'* stepped forward to learn the trade. They made a lot of mistakes, but they also made money. Soon, others started to join. "The work is incredibly labor-intensive and taxing on the body," Mallal shares, "but we persevered." After a few years, the group grew from six to 16, they organized to form a GIE (*Groupement d'Intérêt Economique* or Economic Interest Group), and they elected Mallal as their president.

Mallal uses income from previous campaigns to buy donkey carts for transporting the charcoal, and other business investments like chainsaws and motorcycles. Now he is responsible for training his workers in the functioning of the rotational system, determining which trees can be cut, and when. Before working with charcoal the members of Mallal's producers group were farmers, growing both for subsistence as well as for market—they cultivated peanuts, millet, corn, cassava. Some had cashew orchards. Now they sell some crops to market, but there is not as much pressure to survive on that alone—the forest has become their primary income source.

Charcoal has also proven a boon to Sare Bidji resident Ibrahima Baldé, who has progressed from first-time charcoal producer to a leader in the local charcoal trade in a short six years. Today Ibrahima is President of GIE 'Waakilaare,'⁶⁷ another charcoal producers' group (*bloc*) in the Sare Bidji forest. It was the Wula Nafaa project that supported his initial application for a loan, and the line of credit he received is directly responsible for the small fortune he has since amassed, along with a great amount of political power, local influence, and prestige. A major accomplishment was Ibrahima's purchase of his own semi-trailer truck, allowing him to skirt the almost-impossible-to-break monopoly on transport of goods from rural areas to the city, and thus quadrupling his charcoal sales and personal profits.

67 *Wakkilaare* is "effort" in the local language of Pulaar.

With a wide smile on his worry-free face, Ibrahima describes his luck with a Pulaar proverb: “*Si lingi yarii njuuri, ko fi gooto lawji palaati no wadi njuuri ka maayo makeko.*” (“If a fish drinks honey, it is because somebody washed their honey jar in his river.”) Just as a fish cannot climb into a tree to get honey from a hive, a rural villager cannot become a wealthy trader in the city. Or so Ibrahima thought. With Wula Nafaa, he was given an opportunity otherwise beyond the realm of possibility. Now, villager turned successful entrepreneur, he is changing the face of the local charcoal market, and inspiring dreams of success and prosperity in his community.

Alassane Baldé, president of the Rural Council of neighboring *communauté rurale* of Thietty⁶⁸, also lauds the positive effects of the community’s involvement in charcoal production. He is worried, though, about the challenges of local governance over resources: “We need more help with the forest management system – the people are greedy. More people want to make charcoal every year – already there is conflict between the local producers and the external exploitants. What will happen when there is conflict between local groups over the same trees? Will they abide by the rules? I don’t see it. Even now the blocs compete against each other—who can get the best price, make the most money, get their load to Dakar earliest....”

PCR Baldé is also concerned that the central government and its agents are unable and perhaps unwilling to support local authorities in the resolution of these conflicts: “The State insists that some of the local quota⁶⁹ go to them [the city merchants], even though we could meet it within our own communities. At the quota distribution meeting⁷⁰ they said we must concede to this; they said to us ‘**Le Senegal est indivisible**’ (Senegal is indivisible), as if we are somehow responsible for their success too—when we are the rural poor!” He shakes his head, murmuring that decentralization still has a long way to go...

5.1 CHARCOAL, NWP, AND WULA NAFAA

The story of Sare Bidji is significant when reflecting on the application of the NWP framework in Senegal because of its economic, ecological, and governance impacts. Charcoal production is one of the profitable activities associated with community based forest management in many Wula Nafaa project sites. Historically, charcoal production, together with livestock grazing pressures and the conversion of forest to cropland, was viewed as one of the biggest threats to Senegal’s forest resources. The Government of Senegal often pointed to woodcutting for fuel as a primary source of forest degradation in Senegal,⁷¹ and deforestation from uncontrolled land clearing and for wood-based fuel production was a central concern in the formulation of the decentralization laws of 1996, which mention forest resources more than other natural resources. Additionally, the structure of the charcoal business in Senegal is an oligopolistic market dominated by a cartel of politically well-connected businessmen who captured the lion’s share of profits (Ribot, 1999). Prior efforts to “reform” the charcoal business and to increase economic benefits for local communities while giving them a greater voice in decision-making with the Forest Service and wealthy business were largely unsuccessful.

For these reasons, success in addressing the charcoal situation can be viewed as the crux of the Nature-Wealth-Power challenge in Senegal and represents the delicate balance between avoiding the degradation and loss of a valuable natural resource, taking advantage of economic opportunity, and navigating charged political dynamics. Applying the NWP paradigm to rural charcoal production is addressing a natural resource conflict where tensions run deep and stakes are high. The unceasing demand for an inexpensive and accessible fuel source for Senegal’s urban populations combined with the continued exploitation of community forests for fuelwood as well as uncontrolled, unmanaged overcutting for charcoal called for an urgent response able to strike a balance without causing a crisis on either end.

68 In the political reorganization of 2008, the singular *Communauté Rurale* (RC) of Sare Bidji was split into two separate entities: one retaining the name Sare Bidji, and the other named Thietty. The two RCs, still share and operate within the same community forest (referred to as the Sare Bidji community forest), with three *blocs* allocated to Sare Bidji and two to Thietty respectively.

69 It should be noted here that while the quota has been officially abolished, actual practice still revolves around a quota. This is discussed in further detail in Sections 5.2 and 5.5.

70 A regional meeting held to determine the permissible amount of charcoal that can be harvested from each section of forest that year.

71 The actual greatest threat to forest depletion is expansion of agricultural land.

It should be noted that the choice to examine charcoal more closely was tied to a number of factors including the contested nature of this commodity in Senegal. Charcoal production as a strategy for sustainable community forest management, however, is only one of many possible NRM options. As this section illustrates, charcoal production requires stringent management and effective monitoring mechanisms to be successful in terms of sustainable yield, but can form part of an overall approach to curb the cutting of forests for agricultural land.

When considering in depth the case of charcoal, this study examines a community where sustainable charcoal production and increased local participation in charcoal marketing has been the entry point to an integrated natural resource management strategy. Sare Bidji participated in the Wula Nafaa project and is home to local producers who have begun to derive meaningful financial gain from their work in the charcoal trade. Since the project facilitated the participation of rural producers in the production and direct marketing of charcoal, incomes have significantly increased. When the monopoly of the charcoal cartel was broken, from 2010 to 2011, charcoal producers were able to earn twice as much per bag (of charcoal) produced. And as the area brought under community based forest management increased, more producers became involved in charcoal production. Overall, incomes from the sale of charcoal produced in areas assisted by Wula Nafaa rose from 68.6 million fCFA in 2009-2010 to 386.7 million fCFA (\$860,000) in 2010-2011.⁷²

However, there are important nuances to this story. The economic boost that ensued from the opening of the charcoal trade to village producers has favored the participating households but not all community members, and thereby increased to some degree overall inequality. Forest Management Plans designed to promote natural regeneration of areas harvested for charcoal and increased yields of wood fuels may have negative effects on biodiversity. And while the project has done a good job of getting Rural Councils to exercise their authority, there is still pushback by the Forest Service that prevents full expression of decentralization.

To further explore this dynamic, an analysis of the charcoal commodity chain was undertaken. This type of analysis identifies each actor involved in the commercialization of a natural resource from extraction to its final users; measures the distribution of income and expenses amongst them, as well as the “dynamics of control and maintenance of access” to the resource enabling each actor to derive commercial benefit from it (Ribot, 1998). Assessing governance changes at the commodity-chain level offers a useful view of articulations between power (*e.g.* changes in hierarchical structure, roles and responsibilities), wealth (*e.g.*, changes in revenue distribution among parties within a commodity chain) and nature (*e.g.*, changes in management of the forest).

Assessing the charcoal commodity chain is particularly interesting for many reasons. First, Wula Nafaa invested heavily in supporting sustainable participatory forest management and villagers’ access to the charcoal commodity chain. Through technical trainings on kiln construction, sustainable woodcutting, and regulations organizing production, Wula Nafaa helped structure local producers’ groups into forest *bloc*⁷³ committees, GIEs and federations of producers. The project took villagers to town to meet with wholesalers and learn about charcoal prices and also connected local producers with truckers to arrange transportation.

Second, the charcoal business is immensely lucrative given the high demand for this commodity in the country’s major cities, in particular in Dakar. As the project facilitated the participation of rural producers in the production and direct marketing of charcoal, incomes were significantly increased, both at the level of individual producers as well as overall sales.

Third, since 1998, rural communities have the right to decide how much charcoal can be produced in their forests and by whom, but without project support, these communities have been unable to exercise this right in practice. The

72 Pers comm. John Heermans, Wula Nafaa Chief of Party

73 Community forests are divided into ‘blocs’ (blocks) or areas of management. Each *bloc* is given its respective harvest quota and is generally worked by a single producer’s group. Blocs are further divided into parcels. In a forest managed for charcoal production in an eight-year cutting cycle, like Sare Bidji, there will be eight parcels per block, with one parcel allocated for harvest each year.

experience of Wula Nafaa in enabling community based forest management⁷⁴ and in facilitating increased local control over charcoal production and marketing demonstrated that local engagement in the charcoal industry can contribute to reducing poverty in rural areas.

While charcoal is not necessarily the most important natural resource, nor is it the most important driver of deforestation, charcoal production is happening regardless of development objectives, and is an arena where the interrelationships between Nature, Wealth and Power are heightened and thus interesting to examine. As a high-value commodity chain, examination of the charcoal case in Senegal may lend insight into applications of NWP in other contexts where resource conflicts are tied up with high-profile commodities.

The next section sketches the organization of the charcoal commodity chain and its legal foundations. The following sections examine charcoal through the lens of each of the NWP components: The “Charcoal and Wealth” section looks at how Wula Nafaa has helped open this commodity chain to new producers. “Charcoal and Nature” examines the impacts that community forest management has had on the regeneration and biodiversity of charcoal-producing forests. Finally, the “Charcoal and Power” section analyzes the effects that Wula Nafaa’s activities have had on the distribution and exercise of power over natural resources at the level of the rural community.

5.2 CHARCOAL COMMODITY CHAIN: ELEMENTS OF CONTEXT

The historical organization of the charcoal market in Senegal largely followed colonial practices, and was based on the perception that local populations, left uncontrolled, would cut down all the forests (Ribot, 1993).

The Senegalese Forest Service (SFS) has historically been in charge of ensuring both that the production capacity is maintained, and that charcoal supply meets urban demand. To strike this balance, the Forest Service would (prior to the changes enacted in the 1998 Forest Code) identify charcoal production zones and assign production plots at the village level. The Forest Service defined a national production quota that would, theoretically, not exceed the production capacity of forests, but certainly they were mainly focused on ensuring continued production by shifting zones of production as they were depleted.

The Forest Service would then allocate woodcutting permits to licensed charcoal merchants, who sent their woodcutters, called *surgas*⁷⁵, into forests to produce the charcoal. Merchants, who are generally urban-based notables, were organized into cooperatives and grouped in the *Union nationale des coopératives des exploitants forestiers* (National Union of Forestry Cooperatives). *Surgas* received advances from their *patron* (merchant) for their work, and informed him when the charcoal is ready. The merchant obtained a transport permit from the Forest Service and organized transportation to the cities, either with his own truck or by hiring transporters. In the city, merchants sold their charcoal to urban wholesalers called *coxeurs*⁷⁶, who distributed the charcoal to retail vendors called *Diallo keriñ* (Ribot, 1998). Figure 14 provides a graphical representation of the organization of this historical commodity chain.

74 “Community forest management” is not necessarily equivalent to community forestry, but more specifically means that the right to manage community forests is devolved to the Rural Council—the elected representative body of the Rural Community, and therefore by proxy to the community.

75 *Surgas* are mostly Fulbe migrant workers from Guinea. Their role in charcoal production will be further discussed in this document.

76 The word ‘*coxeur*’ was introduced to Wolof from Gambian English. It was originally used to refer to a person in a car park whose job it was to coax people to ride in their taxi. Hence it is a broad term used to refer to many different kinds of intermediaries.

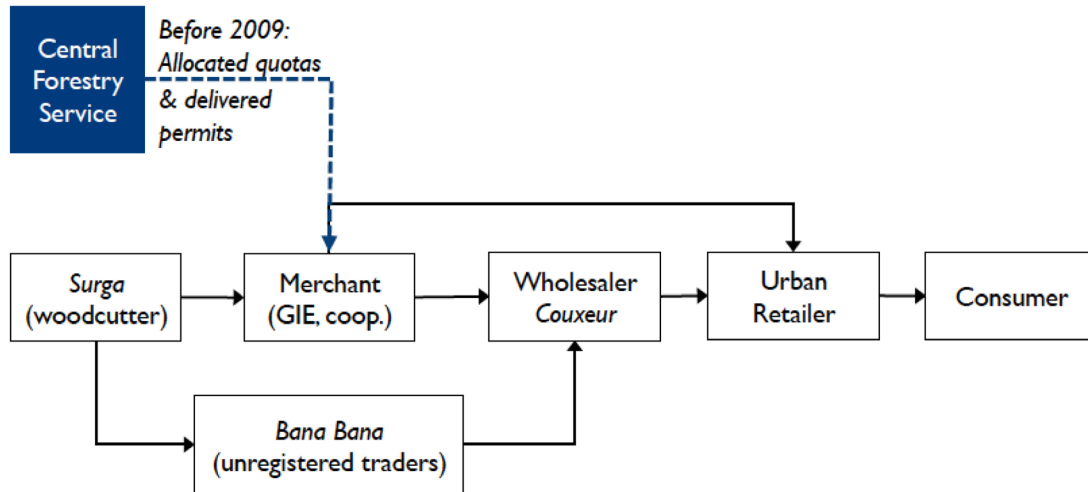


Figure 14: Historical charcoal commodity chain until 2009.

In 1986, the charcoal commodity chain was estimated to include approximately 11,000 migrant woodcutters, 2,900 merchants, 300 wholesalers (*couxieurs*) and 2,000 retail vendors (Ribot, 1998). **The national Forest Service was omnipresent in the commodity chain:** these agents of the national government delivered merchant licenses, required them to be organized in cooperatives or associations, determined annual production quotas and allocated them among cooperatives, delivered permits for woodcutting (place and quantity), determined the dates for the production season, regulated transportation and storage, levied taxes and fixed retail prices (Ribot, 1998).

Villagers had no say in the allocation of woodcutting permits in nearby forests, nor could they enter the commodity chain, given the financial and social capital required to get a producer license. Villagers could derive indirect income from the presence of woodcutters in the village by renting out huts and providing meals. But they would also bear the costs of woodcutting operations, since women would have to go farther to gather firewood. Acting as a *surga* in charcoal production was perceived as a low-status activity, left to Guinean migrants, or to poor farmers during a hunger gap.

Regulations designed to organize production failed, however, to stem the depletion of forests close to Dakar: **areas of charcoal production moved from a 70-200 km radius to a 300-450 km radius around the capital city**, whereas quotas consistently remained below the city's needs, pushing prices up (Ribot, 1993). The quota system shaped the charcoal market, giving the Forest Service immense power over producers, prices and buyers.

The 1996 decentralization laws and the 1998 Forest Code radically changed the role of the Forest Service in the charcoal market—at least on paper. Per Law 96-07 of 22 March 1996, Chapter II, Rural Communities (RCs) manage forests located within their territorial boundaries following a management plan approved by the competent State authority (the Forest Service). Woodcutting in RC forests requires prior approval by the PCR. Rural Councils have the discretion to create protected woods and areas.⁷⁷

The 1998 Forest Code incorporated these changes, confirming that local governments now had full discretion to decide on management of forests located within their territorial boundaries, except for gazetted State forests, with three important restrictions: (1) The Forest Service approves forest management plans, which condition the actual transfer of forest management responsibilities to Rural Councils (CRs)⁷⁸; (2) the Forest Service remains the authority actually delivering woodcutting permits: they ensure that the PCR has approved the permit request and that it abides by the forest management plan⁷⁹; (3) the Forest Service delivers transport permits, without which forest products

77 Law 96-07 of 22 March 1996, article 30.

78 Decree No. 98/164 of 20 February 1998, Article L-7

79 Decree No. 98/164 of 20 February 1998, Article L-4

cannot legally circulate⁸⁰. However, despite the 1998 Forest Code changes, which declared a formal abandonment of the quota system on February 21, 2001,⁸¹ the SFS continued using the quota system until the campaign of 2009 with various justifications.

USAID and the World Bank worked actively to encourage the Forest Service to move away from this “quota system”—by which the Forest Service would determine production quotas and allocate them to charcoal merchants—that effectively prevented decentralized forest management. Wula Nafaa and PROGEDE helped CRs draft forest management plans, and shepherded them through the Forest Service for approval. The projects then lobbied the Forest Service to de-concentrate quota-setting meetings from the national to the regional level, and to have PCRs and local producer group leaders⁸² attend these meetings.

Since 2009, although the SFS still has a strong influence on charcoal decisions, there are no longer any formal quotas dictated for charcoal production. This is reflected in Figure 15, which shows the organization of the charcoal commodity chain since 2009, wherein elected rural councils and local producers play a larger role. To organize production within rural communities, the Forest Service requires in the annual *arrêté* that local producers form production groups (*comités* or for-profit local groups, called GIEs for *Groupement d'Intérêt Economique*). Leaders of local producer groups effectively become merchants of the group’s charcoal, taking on greater responsibility for the organization of the production as well as the marketing and sale of the charcoal produced.

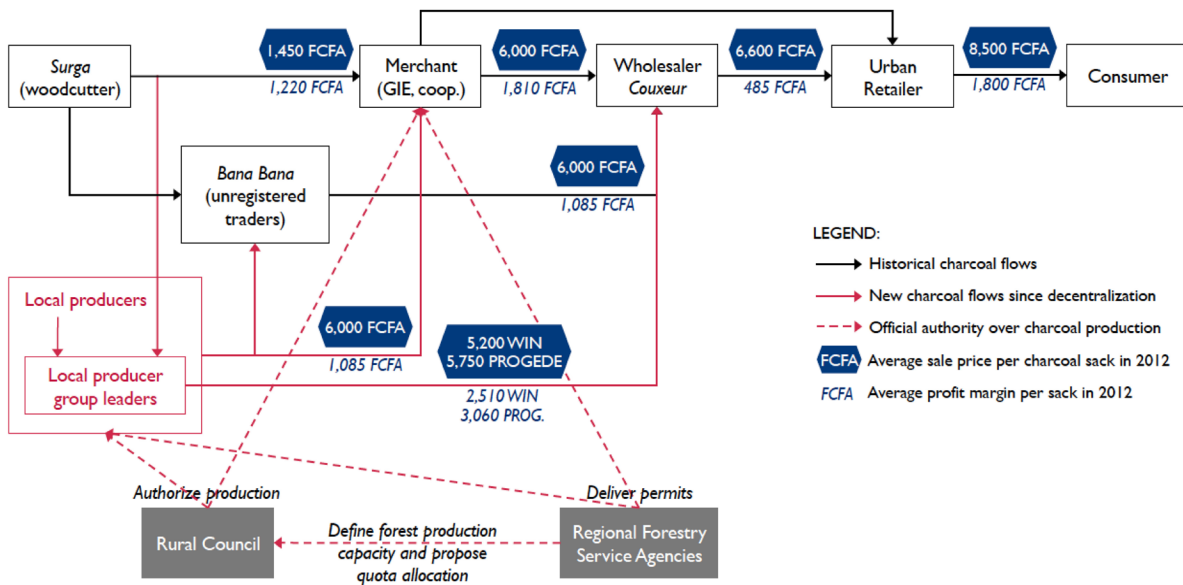


Figure 15: New charcoal commodity chain since 2009, sale prices and margins per charcoal sack in 2012.

80 Decree No. 98/164 of 20 February 1998, Article R-22

81 Decree No. 98/164 of 20 February 1998, Article R-66.1

82 The local producers group leaders who were able to participate in these meetings are “*présidents de structure locale de gestion forestière*”, a general expression used to overcome the different terminology used in Wula Nafaa and PROGEDE to designate these group leaders.

5.3 CHARCOAL AND WEALTH

Local villagers and authorities are enthusiastic about the economic opportunities that these legal changes have brought about, and many have begun to derive meaningful financial benefits from their work in the charcoal trade. Since **the project facilitated the participation of rural producers in the production and direct marketing of charcoal, incomes have significantly increased. When the monopoly of the charcoal cartel was broken, from 2010 to 2011, charcoal producers were able to earn twice as much per bag produced.** And as the area brought under community based forest management increased, more producers became involved in charcoal production. **Incomes from the sale of charcoal produced in areas assisted by Wula Nafaa rose from 68.6 million fCFA in 2009-2010 to 386.7 million fCFA (\$860,000) in 2010-2011.**⁸³

Mallal leads the way into the forest, to a clearing within the 2013 allocation where charcoal production is underway. Winding through the yellowing brush, scraping against dried leaves and brittle grass, he escorts the group to an opening in the forest. Before him is a gigantic mound of sand, approximately 15 meters in diameter, out of which protrudes a rustic chimney made of two oil barrels welded together. The earthen outer layer of this “Casamance kiln” insulates a temporary oven, which contains hundreds of recently harvested tree-rounds, meticulously stacked into a pyre. The Casamance kiln⁸⁴ technique, developed in southeastern Senegal in the 1980s, is a method for more efficient charcoal making without the need for expensive inputs or permanent infrastructure. The size, the shape, and the specific stacking order of the logs all slow the firing process, resulting in higher yields of finished charcoal.



Casamance kiln ready to be lit and begin the transformation process, turning trees into charcoal.

Two members of Mallal’s producer group, Mawdo and Buaro, proudly show off their prepared kiln—and seem eager for their vigil over the charcoal fire, a watch that can last from ten to thirty days. They are prepared for their camp-out with stacked Jerri cans of water, prayer mats, dried goods for cooking, pots and blankets. They will stay in the bush, monitoring the burn and steadily removing ready charcoal to the outer edges of the mound to cool.

In another section of the community forest, three more of Mallal’s group are ten days into their charcoal burning, with rings of black coal surrounding the remainder of their sand oven. As they see Mallal and his crew approaching through the trees, the men head to their water containers and wash their

faces —everything is black: their clothes, their feet, the ground around the burn, the rakes they are using to pull ready charcoal out from the pile. And the air in this cleared section of forest, this circle of charred earth, is stiflingly hot. The others inspect the charcoal, using the blackened rakes to sift through ashen rows, and nod their heads, impressed. The three men in charge of this burn stand tall and proud: “a few more days to go,” they say. The physical hardship of this labor is evident, and yet the producers are upbeat and happy. “Not everyone can do this. But we can, and we do. Because we have no other choice—this is where the money is!”

Afterwards they will load their charcoal into sacks and take it out of the forest on donkey-carts. They will bring it straight to Mallal, who handles the commerce side of the enterprise, linking the goods to transporters and then to buyers in Dakar. They should be able to obtain about 1½ truckloads from this burn—or 600 sacks. At a minimum

83 Pers comm. John Heermans, Wula Nafaa Chief of Party

84 See Section 3.2.1 for more information on USAID’s contributions to the development of the Casamance kiln.



A charcoal kiln in Sare Bidji, partway through transformation. As the tree rounds burn, ready charcoal is raked from the fire to cool in wide rings.

of 1000 fCFA profit per sack, or for a total minimum profit of 600,000 fCFA (approximately \$1,250), their weeks of laboring are well worth the effort to them.

Quantitative evidence from the commodity chain study supports Mallal's group's experience of increased economic opportunity, and demonstrates a major Wula Nafaa achievement: forest villagers, who were previously excluded from the charcoal commodity chain, are now able to produce charcoal and to profit from its sale.

As indicated in Table 5⁸⁵, local producers in the Wula Nafaa project area received a net income⁸⁶ from charcoal sales of 332,785 Francs CFA per producer per year (approximately US\$ 665⁸⁷). This finding is consistent with the net income calculated by Wula Nafaa staff for the 2009 campaign, which was estimated at 322,498 Francs CFA (US\$ 644) on average per producer (IRG, 2010, p. 88).⁸⁸ This represents about 15 to 20% of annual expenditures for an average rural household.⁸⁹

Table 5: Average annual net income per category of actor in the charcoal campaign of 2012

Actors in the charcoal value chain	Average net income per person (Francs CFA)
WN Local producers	332,785
PROGEDE Local producers	285,690
WN Local committee leaders	1,440,750
PROGEDE Local producer group leaders	1,534,445
Charcoal merchants	8,688,000
Bana banas (unregistered traders)	2,777,600
Urban wholesalers (coxeurs)	3,717,525
Urban retailers*	N/A
Total of market shares	18,776,795

* N/A due to lack of sufficient data at this level of the market. Source: Faye, 2013

85 The commodity chain study looked at charcoal production and markets in Wula Nafaa and PROGEDE areas. PROGEDE was a World Bank funded project that also worked with rural charcoal production. In this case study the focus is on Wula Nafaa so PROGEDE is not treated here, but for more information and detailed results see the companion Power report, or consult Faye 2013.

86 Net income is defined throughout this document as sale price minus production costs. A detailed breakdown of production costs is provided in Faye, 2013.

87 2012 average exchange rate of US\$1 = 500 fCFA used here and throughout this section, unless specified that constant US dollar value was used.

88 Subsequent Wula Nafaa reports did not provide average net income per producer. The 2010-2011 Wula Nafaa Annual Report only mentions that sales increased by 463% in value from 2010, and that 328 local producers increased their revenue in 2011, mainly due to the canceling of quotas in managed forests.

89 Based on ANSD (2006); annual expenditure levelized using the 2012 consumer price index of the World Development Indicators: <http://databank.worldbank.org/data/home.aspx>

These economic opportunities also led to changes in attitudes and perception. Prior to the arrival of these projects, forest villagers did not want to be part of the charcoal trade and did not want charcoal produced in their areas. As Mallal affirmed, charcoal production was seen as a lowly (caste)⁹⁰ profession. Forest villagers were against it because it was dirty, it was destroying their forests, and they were gaining nothing from it. Their exclusion was partly due to the fact that the merchants who dominated the market worked with migrant laborers (who held permits from the Forest Service), hence villagers did not have the opportunity to enter into the trade themselves. At the outset of Wula Nafaa, it was challenging to persuade forest villagers to engage in an activity that they felt was not desirable. Now at the close of project, villagers are eager to work in the charcoal industry, convinced it is worthwhile since it is lucrative (Ribot, 2008).⁹¹

* * *

Ibrahima waits beneath the zinc roof of a Kolda market boutique, in a sparkling white boubou. It is clear right away that he is a content man—happiness spreads across his cheeks when he smiles, which is often. Without preamble he launches into the story of how he, a humble villager, came to buy a *camion*—one of the large, 40-ton semi-trailer transport trucks that shuttle heavy loads of goods, including charcoal, throughout Senegal. To own one is to effectively cut out the middleman—*bana bana*—that most village enterprises are helplessly subject to and dependent on to get their goods to market.

When the charcoal-production training began, Ibrahima claims he was the only one in his bloc that started the work. He did it all alone, using his own money (earned through successful agriculture enterprises including a large vegetable garden, a cashew orchard, and field crops) to rent chainsaws in order to cut the required quantity of trees. Slowly, people started to join in, and then the first true step into entrepreneurship occurred when Wula Nafaa helped him to apply for a loan. Several investments later, Ibrahima is making real money. Aside from his truck, he is building a large house in Kolda—“four tons of cement so far!” he boasts, and he dreams of having a house in Dakar.

Ibrahima’s bypassing of the traditional charcoal middlemen is indicative of the new opportunities that have come into being since the initial dissolution of the charcoal cartel. The commodity chain survey similarly revealed that several merchants have been able to further their vertical integration within the commodity chain to maximize their net income: seven out of fifteen merchants interviewed said they used their own trucks to transport charcoal to town; an unknown number of *coxeurs* were also merchants.⁹² Additional income captured by merchants through this integration could not be measured in this survey, but it can be estimated using Table 6. For example, by adding a merchant’s net income per charcoal sack (1,810 fCFA) with that of an urban wholesaler (485 fCFA), we can assume that an integrated merchant-*coxeur* may be able to reap a net income of 2,295 fCFA. That said, truck ownership is far from universal: Ibrahima of Sare Bidji is the only such producer that he knows that owns his own truck.

Nevertheless, an important achievement of Wula Nafaa is that some local producers *are* able to sell their charcoal in the city of Dakar at all, where prices are much higher. Local producers who were able to procure transport permits and means of transportation and thus sold their charcoal directly in Dakar were able to double their net income compared to sales along the main road near production sites (average net income between 2,510 and 3,060 Francs CFA per charcoal bag in Dakar, compared to 1,220 Francs CFA per bag along the road). Local producers had, however, few opportunities to sell their charcoal in the capital city: only two out of the 24 interviewed had sold their charcoal in Dakar during the last campaign.

Despite this increased access, Wula Nafaa annual reports since 2009 enumerate new difficulties for local producers that appear each year in accessing Dakar markets: forest management plans not approved in time; the decree opening the charcoal production campaign issued too late into the winter season, which is the main period during which villagers can be away from their fields; local producers not able to obtain woodcutting permits necessary to transport

90 West Africa has a long-standing caste system that designates various categories of labor.

91 Also Personal Communication, Jesse C. Ribot, 2013.

92 When interviewed for this survey, *coxeurs* would not necessarily mention that they were also merchants—and merchants would not mention they were also *coxeurs*. This was only discovered toward the end of the survey, and could therefore not be measured here.



Ibrahima Baldé in front of his city house in Kolda, currently under construction.

the charcoal to town.⁹³ Wula Nafaa interventions also played the role of intermediaries by finding transporters and connecting local producers with urban wholesalers (*caxeurs*) who would buy their charcoal, as few local producers had market connections.

Ibrahima is unapologetic for his success, which places him economically far above his fellow villagers, including those involved in the charcoal trade. Ibrahima believes if his fellow villagers see one of their own having success, it encourages everyone. “Now, more and more people want to do charcoal work—even the women!” he shares. However, there is already beginning to be a surplus of workers. As of today, Ibrahima’s group ‘Wakkilaare’ is able to harvest and produce the entire quota they are allocated, and many more want to join in. Ibrahima is not sure how they will deal with this in their community, but doesn’t seem to fear being jostled from his position. In fact, he thinks his success earns him the right to dominate the local trade. Already there are other producer groups who want a larger share of the Sare Bidji quota, but he refuses to give any of his group’s own share to other groups.

Although his collectivist spirit only stretches so far, Ibrahima has been coached into being a successful entrepreneur. “Even if nobody else comes to help, no more projects, no more money—I’m on my way, helping myself, working together with the bank and making my own success.”

Ibrahima’s experience illustrates another finding from the commodity chain study: **while local production has led to increased overall incomes, it has also increased inequality within the value chain.** Income distribution amongst categories of actor in the charcoal value chain remains considerably unequal. On average, this survey found that **a charcoal merchant earned 28 times more than a local producer in the 2012 campaign**, with a total net income of 8,688,000 Francs CFA (US\$ 17,365) per merchant. Comparing prices and net income of 2002-2003 and 2012 (Table 6), we see that woodcutters and local producers have increased their net income (by 36% for *surgas*), reversing a negative trend on the net income of *surgas* between 1987 and 2002-2003. Meanwhile, charcoal merchants were nevertheless able to increase their net income even more (by 90%). **This shows that inequality of income distribution has increased since the onset of Wula Nafaa.** Additionally, **local producer-group leaders surveyed were able to reap four to five times the average market share of local producers in Wula Nafaa areas, making them primary beneficiaries of project support.**

It is no surprise that these new local producer groups are generally led by local elites and that the new lucrative opportunities are strengthening such elites. **While the intention of the project was not to reinforce local elites, these elites may be more likely to reinvest their income locally than are the urban elites who certainly do not return their profits to the forest villages with which they have little relation** (see Bardhan, 1997). While this concentration of wealth may be due to illegal activities such as hiring of migrant laborers (which is forbidden by the Forest Service), or due to buying charcoal from forest villagers, new capital is at least partly being retained at the village level, which is not the case with urban charcoal merchants.

93 See below for additional information on the permitting process.

Table 6: Changes in prices and net income per category of actor since 1987

	1987	2002-2003	2012	1987-2002/3 Variation Pre-Wula Nafaa	2002/3-2012 Variation Wula Nafaa Project	1987-2012 Variation
AVERAGE PRICES PER CHARCOAL SACK						
WN Local producer price to merchant or bana bana			1,500 (rd)* 5,200 (D)**			
PROGEDE Local producer price to merchant or bana bana			1,500 (rd) 5,750 (D)			
Surga price to merchant	1,030	957	1,450	-7%	52%	41%
Merchant price to urban wholesaler	3,444	4,246	6,000	23%	41%	74%
Bana Bana price to urban wholesaler	N/A	N/A	6,000	N/A	N/A	N/A
Wholesaler price to retailer	3,720	4,636	6,600	25%	42%	77%
Retailer price to consumer	4,466	N/A	8,500	N/A	N/A	90%
NET INCOME PER CHARCOAL SACK						
WN Local producer margin			1,225 (rd) 2,510 (D)			
PROGEDE Local producer margin			1,220 (rd) 3,060 (D)			
Surga margin	901	894	1,220	-1%	36%	35%
Merchant/GIE margin	734	952	1,810	30%	90%	146%
Bana Bana margin	N/A	N/A	1,085	N/A	N/A	N/A
Urban Wholesaler Margin	276	390	485	41%	24%	76%
Retailer Margin	637	N/A	1,800	N/A	N/A	183%

* (rd) = roadside price or net income. ** (D) = Dakar price or net income

* * *

An upholstered armchair is set in the dirt yard of Alassane Baldé's house in Kolda. He lounges comfortably, and has an air about him of one who is accustomed to others doing his bidding. PCR Baldé speaks highly of the Wula Nafaa project: "There have been many, many projects that have come to Sare Bidji—so many that the people are tired of them, and distrusting. This is the first program that really brought importance to our people." He pauses for emphasis: "The 'reinforcement of capacity' that they [Wula Nafaa] spoke about; it really happened. With charcoal exploitation in our forest, and the new system, it has truly reduced the poverty in our community. Many people now know their primary income is from the forest. They still farm but there is not the same pressure on production. They farm for their own subsistence, not for market. Instead of clearing forest to expand their farming area, they are endeavoring to make the sustainable forest management plan work. People no longer live or die based on farming. If it is a drought year they can still make the charcoal. Children will not go hungry. This is what is meant by 'diversification of activities', and I see that it works."

The survey conducted in 2013 for this assessment echoes PCR Baldé's perceptions of the success of the Wula Nafaa project. The results show that local producers perceive that Wula Nafaa enabled them to enter the charcoal market and break charcoal merchants' domination. All but one Wula Nafaa producer mentioned that the project had either

“freed them from charcoal merchants’ vile prices” (in the words of a surveyed local producer) or allowed a significant price increase, from 400-600 to 1,500-1,750 fCFA per sack on the roadside (Faye, 2013). **This finding shows radical improvement for local producers, which is new since previous studies had not revealed such a positive trend.**

Through the assistance provided by Wula Nafaa for the community based management of the Sare Bidji forest, community members were able to diversify their livelihoods beyond the cultivation of peanuts and gardening by becoming directly engaged in producing and marketing charcoal from community managed forests, and significantly boosted their household income as a result.

5.4 CHARCOAL AND NATURE

Mallal wants to demonstrate the forest rotation system at work, so he guides through the bush to ‘Parcelle A’—the first section of his group’s forest bloc that was harvested for charcoal production in 2007. This area has since been off limits to exploitation, and is now in its seventh year of natural regeneration. According to the Forest Management Plan, this section will be ready for its second harvest next year. Observing the condition of the forest, and its regrowth, is revealing. There are many species of decent size, and the undergrowth is relatively undisturbed. It is not immediately apparent that there was a mass cutting here.

Mallal points to a blackened circle of ground where the charcoal was fired in 2007. Deeper into the brush are the cement blocks that demarcate the boundary of the managed forest, and several stumps of trees that were cut during that first campaign. The stumps have since developed new shoots, sprouting out like fingers from the sliced trunk, some trees exhibiting ten or eleven shoots each. Many of the shoots reach over four meters high. Mallal describes the way they will thin these shoots in the coming campaign and that this is part of their harvesting method.

Wula Nafaa has specified this cutting protocol, which allows for cutting stems that are between 10 and 25 cm in diameter, leaving standing those shoots less than 10 cm or greater than 25 cm. The protocol also instructs producers to cut only one of every two shoots within the acceptable diameter range “for the sake of cutting conservatively and because of a lack of research on regeneration time and quality” (Alegria & Polansky, 2007). In addition there are certain species that are prohibited from cutting altogether. When a stump has regenerated into a multiple-stemmed tree where more than one stem is between 10 and 25cm, the producer will cut the stems down until one of adequate diameter is left behind. Once thinned according to these rules, the parcel is then left to regenerate for the next eight years without cutting. (Alegria & Polansky, 2007).

There is much left to be monitored: what impacts will the cutting cycles have on ecosystem services and biodiversity? How might the rotation scheme be affected by other factors and disturbances such as fire, wildlife populations, and rainfall? Will rotation cycle length and associated regrowth rate be adequate to support local industry? And if regeneration rates are not as they are expected to be, how will the management plan be adjusted accordingly?

Field studies and interviews with local stakeholders indicate that



Mallal Diallo (left) shows the regeneration of a tree stump cut in the 2007 charcoal campaign.

woodlands impacted by charcoal production do in fact regenerate, but that fuelwood collection and charcoal production are reducing biodiversity in these areas (Tappan et al., 2004; Wurster, 2010). As noted by Wurster (2010, p. 19):

“Over the last 20 years in Senegal, a change is being documented by scientists, government officials and local people – fuelwood is becoming scarcer around charcoal consuming urban centers causing charcoal producers to travel greater distances away from these centers to collect charcoal. In 1985, nearly all of Senegal had adequate forest cover allowing for most regions to produce and export charcoal. As population increased and demand for charcoal grew in urban centers, particularly around Dakar, forest resources became degraded to the point where there were too few trees to produce charcoal.”

By 2010, government quotas allowed charcoal production in only two regions: Tambacounda and Kolda. As a way to stem the tide against deforestation and degradation of Senegal’s forests and savanna woodlands, 213 forest areas covering more than 19 million hectares were set aside as “classified” forests to be protected and managed by the Forest Service of Senegal. Tambacounda is one of the regions with one of the largest areas of classified forests, totaling 1,635,819 ha in 17 forests (Wurster, 2010). As evidenced by the analysis of land use/land cover change in the southern peanut basin by Tappan et al. (2004), however, the classification of these forest reserves and assignment of management responsibilities to the Forest Service has had only limited success in preventing their degradation. In principle, classified forests were off limits for charcoal production, and up until 1998, the Forest Service allocated all charcoal production quotas to unclassified forest and woodland areas. Since 1998, local authorities of Rural Communities have been more involved in managing the allocation of production quotas in these rural areas. **With support from the World Bank PROGEDE and USAID Wula Nafaa projects, more than 700,000 hectares of co-managed classified and community forests have been included in the charcoal-producing areas.**

Using remote sensing, field surveys and interviews, in 2008, Wurster (2010, p. 19) assessed the effect of varying forest management strategies on forest structure and diversity, regeneration and sustainability after harvesting of trees for charcoal production on 77 plots (16 undisturbed and 61 harvested) in the Tambacounda region. The plots included sites affecting by 4 different forest management regimes, including two types of government management (Classified Forests and *Communauté Rurale* Forests) and two types of co-managed forests (Progede forests and Wula Nafaa forests).

Wurster (2010) analyzed the average of Simpson’s diversity index values to compare differences between undisturbed and harvested plots within each forest management type. **Results from his study indicate that species composition and structure in harvested and undisturbed plots are significantly different. Harvesting of trees for charcoal significantly changed the structure and species composition of the forest.** Not surprisingly, average tree height and diameters were smaller in harvested areas. While regeneration of *Combretum glutinosum* is robust in all harvested plots, large hardwood tree species were rare in both harvested and undisturbed plots. Co-managed plots had higher species diversity than traditionally harvested, government managed plots, but large declines of species diversity were observed between undisturbed and harvested plots (Wurster, 2010, pp. 96–97).

Wurster concluded that “**a new forest landscape is taking shape in the Tambacounda region, one dominated by fast growing and resilient species.** Forest management could play an important role in slowing this change, but currently is having little influence on forest composition, structure and regeneration rates” (Wurster, 2010, p. 78).

As charcoal production has extended to rural areas farther and farther from Dakar and other urban centers of consumption, and as the woodlands of the Tambacounda region have been affected by charcoal production, local people interviewed by Wurster described changes in terms of the reduction of wildlife, tree species diversity and large trees. Wurster noted that the interviews revealed how other sources of disturbance contributed to the changes in the woodland landscapes, including livestock grazing, fire and harvesting of large trees for timber.

Wurster’s study provides important insights into the changing dynamics of forests and woodland formations in areas affected by charcoal production and subject to different management regimes. **This research suggests that current modes of charcoal production do contribute to a loss of biodiversity and that forest management efforts need to be strengthened to deal more effectively with issues of uncontrolled grazing, wild fires, illegal cutting and rotation cycles that are apparently too short for adequate regeneration of harvested areas.**

One should be careful, however, not to conclude that charcoal production cannot be sustained and should be phased out, and that efforts to bring forests under management are ineffective and should be abandoned. As Wurster himself notes, “forest management had the potential to play an important role, but under current government or co-management types, a lack of consistent action and forestry law enforcement exists” (Wurster, 2010, p. 160). Wurster also notes that despite a move towards decentralized forest management and empowerment of local authorities, more progress is needed.⁹⁴

“The reality is a majority of the indirect and direct decision making power is still held by government officials. The current relationship between Forest Service and local groups results in local populations having little power to control and/or manage legal or illegal forest activities. Local people felt they didn’t have the responsibility of authority to tell another community member to stop cutting timber. Because of this, many illegal activities occurring in the forest, particularly timber harvesting, are left untouched and unenforced” (Wurster, 2010, pp. 160–161)

Looking at Mallal’s regenerated parcel, the Forest Management Plan appears to be working, at least in terms of community adherence to the new plan. Local producers are following the new management dictates, and there is optimism around changes brought about by the new system. WN Facilitator Ahmet Baldé observes, “Actually the forest is much denser than before, and much healthier. Prior to this management plan, people would come into the forest whenever they wished and cut at random for their needs. There was no strategy. Now people stay out of these sections and let the trees grow back.” Without the rotation scheme, he explains, all of the forest would be progressively cut into, with the areas nearest to the village continually more and more degraded. In addition, outside producers would come into the Sare Bidji forest and make charcoal at will. The villagers had no control or jurisdiction over their own trees. Now, though enforcement is its own challenge, the forest management plan gives them the right to claim the resource as their own.

Nonetheless, assessments of the ecological efficacy of forest management plans have been mixed. Ribot (2009b) noted that the legally mandated resource inventories included in forest management plans (*Plans d’Aménagement Forestier* or PAFs) are costly; that they help to recentralize forest management decisions into the Forest Service; and that they are not necessary to assess production potential of forests (Wurster, 2010; Ribot, 1999 on natural regeneration). Indeed, Wurster (2010) shows through transect and satellite analysis that **these management plans have no discernible ecological effect**—hence they are not of any ecological consequence or relevance. Indeed, the NWP Framework suggests that management plans impose unnecessary constraints while the same, if not better,



Timber rounds stacked for charcoal production.

environmental outcomes can be achieved through a minimum standards approach—a recommendation formulated by Ribot in his 2009 analysis.⁹⁵ The minimum standards idea is a counter to the Forest Service approach of developing management prescriptions and instead shifts the focus to agreeing on what successful performance and improved management would look like, thus holding the community accountable to ensuring the result of good management, instead of making them follow the prescriptions of the Forest Service. Peltier (2012) argued, on the contrary, that PAFs needed to be better enforced, considering inventories as necessary and even suggesting that they be renewed at the end of each parcel rotation period to ensure that FMPs set sustainable production rules. Perhaps it can be concluded that the PAFs are more related to power over the forest and jurisdiction over use rather than about environmental controls.

94 See also analysis and recommendations in “Power” report.

95 Setting minimum environmental standards is one of the six guiding principle spelled out in the NWP Framework. A minimum environmental standard approach is an alternative, more effective approach to management plans. They “specify goals, set targets, and establish restrictions and guidelines for environmental use and management. Any government agency, private institution, or individual operating within those restrictions and meeting goals/targets needs no approval from a government or management plan to use or manage resources” (USAID, 2002, p. 30).

In theory, forest management objectives are defined by the community—or in consultation with them. In fact, the Forest Service has a lot of influence and tends to impose their pre-set management objectives. Figure 16 shows the different actors in forest management in Senegal, and demonstrates the overlapping responsibilities and the numerous possibilities for conflict in the execution of forest management. The Forest Service’s role is evident in the prescriptions of most forest management plans. For example, it is interesting to note that the relatively standardized management prescriptions were generally oriented to production of “wood energy”, with less treatment given to resolving specific management issues, challenges and needs noted in the first part of the management plans. For example, in the case of the forest management plan for the community forest of Koulor (39,214 ha), the author noted that one of the primary motivations for establishing the community forest was to provide a grazing reserve and to ensure continued harvests of economically important NTFPs. However, the section of the plan that described the “forest potential” had relatively little information about pastures resources, and noted that the Koulor forest had a similar composition to the Missiriah/Kothiary forest, with 51 species and 84% of the volume composed of three species exploited for charcoal production (*Combretum* and *Terminalia*). It is not clear if a new forest inventory was carried out for the Koulor community forest.

As with other co-managed classified forests, the management plan for the Koulor community forest developed in partnership with the Forest Service included a plan for rotational harvesting of *Combretum* and other fuelwood species. The distribution of the cutting blocks or parcels in this case also reveals the influence of external priorities, given the heterogeneity of the soils and vegetative types and the area of land in each of the land use / land cover categories, which included 10% of the area in cropland, degraded forest and bare soil, which clearly could not support cutting.

As demonstrated by the Koulor case, communities have hugely varied interests in their forest, and theoretically, empowered communities should be able to decide themselves how they want to manage their forests, which may or may not include charcoal production. Forest Service actors continue to make a case for having some level or type of forest inventory or resource assessment or baseline as well as some type of monitoring to assess regeneration after harvesting, etc. Indeed, some type of assessment and monitoring is needed as part of a management regime, though sophisticated inventories with data accessible only to the Forest Service may not be necessary. Future forest management planning should look towards more participatory, low cost and simple methods, with scientists working alongside the community to supplement what local assessments can provide.

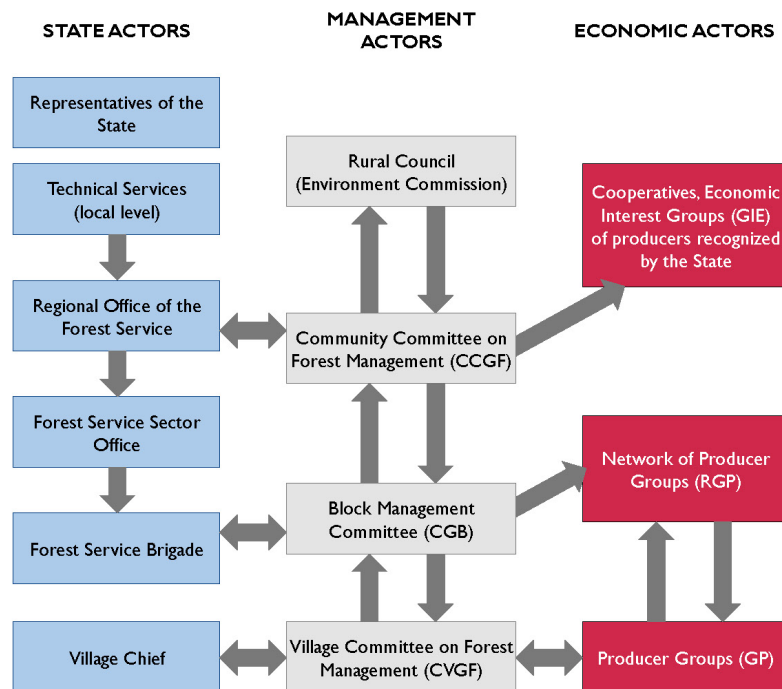


Figure 16: Organigram of Forest Management Structures.

5.5 CHARCOAL AND POWER

On the day of the regional meeting to declare this year's charcoal quota, local government officials, leaders of the community charcoal producer groups, forestry agents and inspectors, and several big charcoal dealers or '*exploitants*' from Dakar, all gathered to discuss the 2013 charcoal allowances for the Sare Bidji community forest. These production targets (still talked about as 'quotas') determine – in truckloads – how much charcoal can be made within the confines of a sustainable harvest scheme (and therefore how much of the forest can be exploited) in the demarcated brush. The people of Sare Bidji anxiously await the decision, and with it, the official start of this year's charcoal campaign in their community forest.

Senegal's Decentralization Law of 1996 and the 1998 Forestry Code officially shifted power and authority over forests away from the State and, by handing management rights over to locally-elected government bodies, gave communities jurisdiction over their local forest resources. Through this legislation it became the responsibility of localities to manage and control their own forests. Wula Nafaa has attempted to support the transition to decentralized management by building capacity for good governance on a local level, and by organizing wealth-creation programs that derive benefit from sustainable exploitation of community-managed forests. Through this legal vehicle, communities are theoretically able to participate in forest management planning or ways to sustainably exploit their forest, as Sare Bidji is doing with charcoal.

Some aspects are certainly working, and in Sare Bidji the community is benefitting greatly from their access and ability to exploit, at least partially, their own forest. One consistent challenge voiced by local actors was the role of the Senegalese Forest Service (or *Eaux et Forêts*), which formerly presided over all forest-related affairs in Senegal. From primary decision-maker, the Forest Service has been legally transferred to the role of technical advisor to the Rural Communities in their forest management. With the new legislation it is the Rural Councils that are meant to legally determine production quantities and decide who can produce charcoal in unreserved forests (*forêts non classées*) located within the territorial boundaries of their community. Formally, the Forest Service can no longer impose quotas, or influence who would produce charcoal in CRs' forests.

Several years after the decentralization law and the new Forest Code were enacted, however, the Forest Service has been able to retain significant power in forest management decisions through these dispositions. Forest management plans require technical expertise to prepare, which the Forest Service is best positioned to provide to CRs. Forest agents use their role as facilitators to remain involved in any forest-related decision. In fact, despite the suppression of quotas in the 1998 Forest Code, the SFS was able to impose the continuation of charcoal production quotas onto CRs for another 10 years, arguing that CRs did not have the technical knowledge necessary to manage forests⁹⁶ (Bâ, 2006b).

A 2012 assessment of Forest Management Plan (FMP) implementation, which did not address this issue directly, found that the Forest Service still has extensive authority over management of forests legally under CR responsibility. For instance, the Forest Service was demarcating exploitation blocs; delaying the start of the production season later in the year, thus favoring charcoal merchants over villagers who must work in the fields during the rainy season. The Forest Service's prerogative to deliver woodcutting permits enables them to bypass CRs (legally sole decision-makers on who can produce in the Councils' forests) and favor charcoal merchants over villagers. These elements indicate that, with or without project support, the Forest Service is able to overstep the limits of its legal authority, and prevent CRs from exercising the authority they should have. **Today, production targets are decided at the annual regional "coordination meetings"—gatherings of PCRAs, the Forest Service and charcoal merchants. Forest agents are still able to impose production targets on CRs through these meetings.** Charcoal merchants continue to request woodcutting permits from the Forest Service, who can obtain PCRAs' approval through a mix of coercion and collusion (Bâ, 2006a). **As a result, the Forest Service has been able to maintain control over the commodity chain** (Bâ, 2006b; Faye, 2006; Ribot, 2006).

The production quota system is thus still in place, albeit under a different name: officially, the Forest Service cannot determine production quotas in managed forests under CRs' authority. However, as described earlier, it

96 The Forest Service continued imposing production quotas in annual *arrêtés* organizing charcoal production every year. This is further described below.

continues to determine each year, in an *arrêté* (or “decree”), production targets based on forest bloc ‘capacity’⁹⁷. These targets are shared during annual “negotiation” meetings hosted by Regional Councils, which gather the regional Forest Service agency, PCRs and registered charcoal merchants. The Forest Service allocates production targets, just the same way it used to allocate production quotas: initial “production targets” are defined by the Forest Service, and allocated among local producers and merchants.

In truth, the continued adherence to a quota-like system is a barrier to effective community management. Quotas are a legacy of past administration of forests by the Forest Service. A shift towards decentralized and community based management should put more emphasis on meeting local priorities in management, in keeping with locally management assessments of resource conditions, potentials and plans for restoring, improving productivity, and otherwise providing for sustainable use and improved management to have more success in meeting locally defined management goals.

Many PCRs complained that there was no room for negotiation during these meetings. Regional Forest Service officials would threaten to blame PCRs for delaying the charcoal production campaign and thereby preventing local producers from participating if they refused to endorse the Forest Service allocation⁹⁸; an old argument according to Ribot (2008, 2010). After completion of mid-campaign evaluations, the Forest Service allocates the remaining permits—just as reserve quotas were allocated to fast producers in the past. In practice, most permits are allocated to merchants, the Forest Service arguing that local producers broke production rules. (Faye and Ribot, 2013).

In 2013 in Sare Bidji the regional meeting followed this pattern, not respecting the dictates of decentralization, but rather parrying to a long-standing alliance between the Forest Service and non-local charcoal traders. Despite the fact that the local producers stated their ability and their wish to fulfill their local forest quota themselves (which is their right under the Forestry Code)⁹⁹, 30% of the quota was given to the external *exploitants*—the influential charcoal merchants from Dakar.

When the local charcoal producer groups reacted to this decision, the Forest Service cautioned them against speaking out, threatening that it could be seen as a form of revolt. The Forest Service’s Regional Inspector (IREF) scolded Ibrahima Baldé, who spoke for his charcoal producers group, saying they are now capable of meeting their forest quota and more, “Let it be. Do you want to be the cause of an uprising?”

Findings from the commodity chain survey corroborate these anecdotes, suggesting that, in spite of Wula Nafaa and PROGEDE efforts, **Rural Councils are still not able to exercise their official authority over charcoal production in their forests; or to respond to their constituents’ insistent request to increase local producer’s share in production quotas or their access to the lucrative urban markets.** The “contract” system (*contractualisation*) that Wula Nafaa and PROGEDE pushed for as an alternative to the quota system has become a new form of quota, limiting local producers’ ability to increase their share of production and their access to markets.

Former Wula Nafaa facilitator Boubacar Diallo has led awareness-raising trainings around decentralization laws and local rights in Sare Bidji. He shakes his head at the 2013 quota verdict, which allocated 15 out of 45 truckloads to the big charcoal merchants from Dakar. “This is not the way it was designed—decentralization means that the villagers are the ones in charge of their own forest. If they can do the labor in their forest to fill the quota, then they are to do it—that is how forest preservation is linked to community well-being. They shouldn’t have to follow the dictates of the State or its actors—that is exactly contrary to the decentralization law.”

97 Forest bloc capacity is determined with the use of forest inventories, maps and other data but it should be noted that it is also a largely politically motivated exercise of allocation areas for revenue collection.

98 Faye, pers. comm., April 2013

99 The objectives of decentralization should imply that local populations can cut wood without prior authorization from the Forest Service as long as they follow the Forest Management Plan. Law n°98-164 of 20 February 1998 yet states that anyone wishing to engage in forest exploitation activities must first obtain a permit from the Forest Service, which is granted upon proof of payment of the local tax (redevance locale) to the Rural Council. Woodcutting permits are then required to obtain a transport authorization from the Forest Service. These permits are necessary to take charcoal to town markets and pass the numerous road checkpoints. In practice, however, local producers selling their charcoal along the road near the production site do not seek permits. Few obtain them when they seek them.

PCR Baldé agrees. He says that the key part of decentralization is the transfer of competence to local authorities.¹⁰⁰ The problem lies in that only half of the technical competencies¹⁰¹ have been handed over. “The State does not yet trust in the capacity of us – the local leaders. What they don’t realize is that things have changed. It is not like the old days; now those of us in leadership even at the local level are intellectuals. We are capable of the same work as the central government.”

According to PCR Baldé, the Forest Service is not willing to relinquish its local power and authority, and is consistently overstepping the boundaries of its newly changed role. He claims arbitrary fees are levied on local producers, the Forest Service using their sway with the bana banas and urban traders to retain authority. “We will not be able to resolve the authority question without outside help. Even today, for this quota meeting, everyone is called to the IREF (*Inspection Régionale des Eaux et Forêts*)—it should be that the external exploitants go directly to the collectivité locale to negotiate their share of the quota. But the truth is the Forest Service maintains their place in the middle because the State does not yet want to give up their link to the influential charcoal traders.”

* * *

Overall, commodity chain survey findings indicate that Wula Nafaa project’s efforts have resulted in limited changes with regards to the distribution of power within the charcoal commodity chain. Charcoal merchants and urban wholesalers maintain their power within the commodity chain; the Forest Service continues to adopt regulations and practices that limit local producers’ profits and are inconsistent with decentralization laws; and within rural communes, existing elites seem to control new positions created to manage local production. There is some improvement since local producers are now allowed to produce and get higher forest-edge prices for their charcoal; but the huge disproportion between local producers’ and merchants or *coxeurs*’ net income show that there is still much room for improvement (Table 5). While major progress has been achieved, more effort and attention is required to clearly transfer rights and responsibilities in a manner that is sufficient for power redistribution between local elected officials and community actors, and the SFS and powerful merchants who have historically wielded control over the charcoal value chain.

When asked what work still needs to be done, Thiety PCR Alassane Baldé digs right into the issues of effective decentralization: “We need two more years of support of the decentralization process—this has only just begun to enter the local mentality, but it is not yet strong. Even if people understand what it (decentralization) means, they do not yet understand how to do it. Decentralization at the moment is giving with the right hand and taking with the left hand. There is still a lot lacking.”

* * *

The impact evaluation of Section 2 revealed the evidence of positive impacts from Wula Nafaa interventions. Yet, as noted in the case above, despite the fact that the work to break the charcoal cartel and community based management of forests has led to increasing economic benefits to local charcoal producers, there is room for further devolution of authority, improvement of governance and even greater impacts in reducing rural poverty. Additionally, the need for environmental monitoring in order to truly understand and quantify impact in respect to the cutting cycles, regeneration, change in species abundance, conservation of biodiversity, wildlife populations and species, and whether sustainable yield is being achieved, is of utmost importance for long-term sustainability.

A key lesson learned from the case above is that CRs and communities do not yet have the economic and political power to defend their legal rights as dictated by Decentralization. There is still a long way to go towards achieving this aim. While USAID need not continue to fund the same interventions for years, there is scope for continued support in key areas to help prevent backsliding and to capitalize on the progress made to date.

100 Decentralization laws transferred authority for many types of decisions to Rural Councils who directly represent Rural Communities, and thus is the mechanism for how local communities were empowered through decentralization.

101 This refers to areas or sectors of management or decision-making that are devolved to lower levels – e.g. matters related to health, education, forestry etc.

6 REFINING THE VISION FOR INTEGRATED NRM PROGRAMMING

DISCUSSION AND RECOMMENDATIONS

The ultimate success of any application of the NWP framework is tied to simultaneously achieving increases in local income and other socio-economic benefits (Wealth), in ways that are linked to more secure rights and more transparent and accountable decision-making and equitable benefit sharing (Power), in order to provide for both the means and the incentives to invest in environmental conservation and improved natural resource management (Nature).¹⁰²

The case of Senegal reveals impressive impacts on wealth generation via the integrated NWP approach, and significant inroads in decentralized governance mechanisms and sustainable resource management schemes. However, as noted in the case study on charcoal production and elsewhere in this report, there remain barriers to truly effective natural resource management practice that achieves the stated NWP objectives of sustainable natural resource management and increased productivity, as well as environmental rehabilitation and recovery. Similarly, evidence shows that decentralization measures are only beginning to take hold and that further support is needed for effective empowerment of local government and by extension rural communities and their citizens.

This section seeks to distill the lessons that can be taken forward into the future and to offer actionable recommendations for future integrated NWP-based programming.

6.1 INTEGRATE AGRICULTURE AND NRM

A significant unmet need within the work of Wula Nafaa was the extension of agroforestry practices and the empowerment of farmers themselves to innovate and develop more effective approaches to address problems of erosion, mining of soil nutrients and declines in soil fertility and soil organic matter. While the Ministry of Environment, the Forest Service, NGOs and others worked to promote reforestation and community based land use planning to promote the adoption of NRM practices, the legacy of the Ministry of Agriculture and SODEVA's push for animal traction, mechanized agriculture, removal of trees in fields, and dependence on state-subsidized agricultural inputs all contributed to agricultural "extensification" and widespread reduction of forests and tree cover in agricultural landscapes as well as other non-sustainable practices and land degradation.

A major paradigm whose legacy persists today is that of agriculture being categorically divided from NRM as a sector, which influences the potential for integration both in development programming and government policy. The NWP approach is an opportunity to re-frame agriculture as part of NRM, and as critical to sustainable resource management strategies. Agriculture in this framing comprises many integrated and sustainable land management practices like agroforestry and conservation farming—practices promoted throughout Wula Nafaa.

To improve progress, a variety of measures can be and are being taken to promote farmer managed natural regeneration (FMNR) and other agroforestry practices, for example. These include increasing support for farmer-to-farmer visits to highlight the positive experiences of farmer innovators and the benefits of FMNR. Additional support could be given for well-informed dialogues about measures that could be taken to address key barriers

102 Nature report, pp. 32 -43

to scaling up FMNR. Engagement of the media as well as political elites in the dialogue with farmers and field practitioners is particularly important. Using these approaches, it is now estimated that 5,000 to 10,000 ha of cropland are being restored each year through the application of FMNR.¹⁰³

Perennially productive, multi-yield landscapes that combine field crops with tree products allow for diversified incomes while protecting and regenerating soil, trees and shrubs on farms, and other natural resources. Knowing the damage caused by the trend of forest destruction for creation of farmland (which leads to soil degradation and erosion), this shift is even more critical. Greater extension efforts and emphasis on this is needed for widespread adoption. Wula Nafaa has laid down the framework for this effort in valorizing NFIPs, and in promoting a basic conservation farming practice, as well as through methods of finding economic value and marketable products in existing forests and bushlands. Future programs should aim to establish more models of integrated landscapes that are both productive and regenerative and that marry agriculture with NRM.

6.2 GIVE MORE ATTENTION TO THE ROLE OF TREES AND FORESTS IN SUSTAINABLE LANDSCAPE MANAGEMENT

Project support for reforestation can be useful for a demonstration effect, and in the case of food for work or cash payments, as a temporary relief and recovery activity. However, over the medium and longer term, a reasonable density and distribution of trees in agricultural landscapes and natural forest cover can be maintained when mainstream agriculture and rural development programs explicitly address the importance of trees and forests. The key policy and institutional factors that have contributed to the loss of trees on farms and in rural landscapes need to be identified and interventions supported to support the development of agroforestry, community forestry and tree-based enterprises.

These interventions include increased security of land tenure, clarification of resource rights including the rights to manage and harvest trees without undue interference from government regulations and permitting procedures, as well as facilitation of access to information, credit and markets. Increased recognition of the role of trees in increasing and diversifying household income, renewing soil fertility, boosting crop production and ensuring food security, protecting water supplies, and in adaptation and resilience is also important.

Project support for the CBNRM approach as organized in Senegal is a useful but not sufficient intervention to trigger sustained, transformative change at the landscape level. A broader and more comprehensive effort is needed, including support for **integrated landscape approaches** that address sustainable land use, linkages between production systems and the management of inter-related ecosystem services as well as potentials for enterprise development and attention to governance and institutional issues at multiple levels. Among the root causes of ecosystem degradation and rural poverty that need to be addressed are the distortions induced by policies and institutional practices that contribute to non-sustainable land use and inequitable distribution of benefits from natural resource exploitation.

While the recent focus of community based forest management and other NRM activities on developing the opportunities to increase the revenue of local government and the income of rural households is understandable and has merit, it is also important to ensure that rural communities are equipped and encouraged to give consideration to other important aspects of sustainable use and resource productivity, such as protection against over-exploitation, provision for regeneration and other measures needed to counter ecosystem degradation, contribute to restoration and monitor changes in resource conditions.

However it must be noted that effective creation of livelihood strategies developed in conjunction with restrictions on forest use aiming at curbing non-sustainable and destructive exploitation, and increased support for decentralized forest management is a major success of Wula Nafaa, and shows progress. The 2010 Madagascar retrospective

103 See Les Cahiers du Grep, no. 7, Mai 2013, p. 10 and Pers Comm. Tony Rinaudo, World Vision. See also Africa Regreening Initiative Blog by Chris Reij, May 3, 2013. <http://africa-regreening.blogspot.com/>

(Freudenberger, 2010), for example, stated a desperate need for this (p. 95) as well as for the dissolution of the artificial distinction between environment and economic growth (p. 94). In Senegal these two aims seem to have been achieved, and therefore now we can look towards even further refinement towards sustainability.

6.3 INCREASE ATTENTION TO CLIMATE CHANGE AND RESILIENCE

USAID/Senegal made a laudable effort to integrate NRM into agricultural production systems through the research and activities supported by the NRBAR project; however, it is not clear to what extent the research led to widespread changes in behavior and the adoption of practices which contributed to more sustainable and resilient agricultural production. Although it was not sustained or scaled up, the KAED project demonstrated the promise of intensifying and diversifying rural production systems and agriculture based enterprise development through the mobilization and facilitation of women's groups and CBOs to adopt NRM and improved production and enterprise development practices. The project did provide important lessons learned which proved valuable for Wula Nafaa. These included a recognition of the potential of women's groups, and the importance of literacy training in CBO strengthening and success with NR-based enterprise development. And KAED also illustrated the potential benefits from intensification and diversification of rural production systems, through the integration of NRM into agriculture and the development of AG/NR-based enterprises.

More recently, Wula Nafaa has demonstrated the beneficial impacts of increased efforts to scale up the adoption of conservation farming and other practices that directly contribute to restoring soil organic matter, improved soil fertility management, erosion control and rainwater harvesting (USAID/Wula Nafaa, 2010). These interventions are particularly important and relevant as our knowledge increases about the impact of climate change and its impact on food security and vulnerability. Temperatures are warming, precipitation regimes are shifting, and extreme weather events are more common in Senegal as in many other countries, and these changes are setting the stage for more hunger and deepening poverty, unless interventions are supported to reduce and counteract the "resilience deficit" (Catterson et al., 2010). **As documented by the Wula Nafaa team, numerous farmers assisted by Wula Nafaa to adopt conservation farming (CF) have benefitted from crop increases despite rainfall fluctuations.¹⁰⁴ At this point, it would be useful to probe more deeply into what can be done to improve the policy environment and enabling conditions to trigger the large scale adoption of CF, FMNR and related improved practices.**

6.4 INCORPORATE WILDLIFE, LIVESTOCK, AND RANGELAND MANAGEMENT

While there has been progress recently in improving the management of capture fisheries and in increasing the productivity and economic benefits for rural communities engaged in fisheries-based enterprises, **the succession of E/NR projects supported by USAID/Senegal, including Wula Nafaa, appear to have missed an opportunity to have a significant impact on wildlife conservation and hunting. While there were efforts to increase community benefits from tourism, the project was not able to achieve a breakthrough in revenue sharing agreements for the Niokolo Koba National Park (NKNP) or to fundamentally alter the hunting concession model (functioning of zones amodiées).** The major protected areas like the NKNP have had limited success in conserving biodiversity, although there has been progress with local conservation efforts centered on community reserves.

Although livestock production and the use of grasslands and woodlands by livestock are economically and environmentally very important in the landscapes targeted by USAID and the Wula Nafaa project, little progress has been made in transitioning to improved pasture management systems. Wula Nafaa had an explicit focus on agricultural and forest user groups as opposed to pastoralists. Particularly important in Sahelian countries such as Senegal, where livestock comprise a major asset of rural people and constitute a large part of

¹⁰⁴ See online videos and Technical Notes on Conservation Farming, the Wula Nafaa "Evaluation à mi-parcours du conservation farming campagne 2009-2010", and quarterly and annual progress reports.

household income, is the issue of grazing. As climatic and population pressures result in greater and greater conflict over resources, such as water and pasture lands, it is ever more crucial to account for livestock and pasture production in sustainable rural land use strategies. Grazing is a primary land use in rural communities and must be examined alongside and in conjunction with forestry and farming. Inclusion of strategies for sustainable livestock raising must necessarily form part of an over-arching land use and sustainable landscape plan.

Experience in Burkina Faso and Niger revealed that the value of fodder production and other non-timber forest products could be equivalent or greater than the value of wood production from managed natural forests. However, for many years, government-led forest management efforts in Senegal were focused on even-aged management of woody formations for charcoal production. As communities were given more authority in setting forest management objectives, more attention was given to management of fodder and other products and provisions for pasture reserves. However, **the needs and opportunities for improving the management and increasing the productivity of most of Senegal's grazing lands have not yet been effectively addressed.**

6.5 REVISE OUTLOOK ON FUELWOOD AND ENERGY

In looking back over the succession of USAID-funded E/NR projects in Senegal, a number of observations come to mind. With respect to firewood and charcoal, despite the concerns raised in the 1970s and 1980s, and which continue to resurface, **the demand for fuelwood is most likely a less important driver of deforestation and land degradation than non-sustainable agricultural practices and continued conversion of forests to cropland.** Furthermore, the problem of deforestation is unlikely to be solved by investment in massive tree-planting programs or government-managed fuelwood plantations. Experience from many countries indicates that fuelwood shortages and price spikes along with the negative impacts of non-sustainable harvesting of fuelwood can best be avoided by addressing governance issues in the fuelwood sector.

In the case of Niger, fuelwood shortages have been eliminated largely through the increased density of trees in farm fields following a series of interventions and changes in circumstances which contributed to the widespread adoption of agroforestry practices like “farmer-managed natural regeneration”.¹⁰⁵ It is also helpful to provide assistance for more efficient charcoal production and efficient use of fuelwood by the dissemination of improved woodstoves.¹⁰⁶

Investing less in nurseries and in state-managed fuelwood plantations, and more in agroforestry and community based forest management, is paying off. In Senegal, it was particularly important to leverage policy changes to break the monopoly and political influence of the charcoal cartel, and to facilitate the increased role of Rural Communities and local producer groups in the managed production and marketing of charcoal.

Moving forward, in addition to building on the successful initiatives of Wula Nafaa to support community based forest management and increased wood production from trees on farms and agroforestry, future programs could also explore viable charcoal alternatives and substitutes to reduce pressures for extracting fuelwood from rural forests. This could include, for example, advocating for reduced barriers to innovation in the energy sector, and support investment in alternative fuels, solar power, compressed paper bricks and other charcoal/energy substitutes.

6.6 SUPPORT DECENTRALIZATION REFORMS

A recent USAID Democracy, Governance, and Human Rights assessment of Senegal (USAID, 2013) reviewed the history, shortcomings, and future prospects of the country's decentralization efforts. The report recommended that USAID support the so-called “Act III of decentralization,” which has been stymied by the central government's reticence to devolve real authorities to local collectivities. The report recommended that support to future decentralization efforts include (1) elaboration of a system of fiscal decentralization featuring block grants to collectivities, (2) regulations clarifying the respective roles and responsibilities of the collectivities and decentralized

105 See United Nations Development Programme, United Nations Environment Program, World Bank, & World Resources Institute (2008), and more recent publications by Chris Reij et al. (Reij, 2012).

106 See Kremer (2003).

services, (3) decentralization of additional competencies to the collectivities, and (4) design of a program for improving collectivity capabilities to implement the Code of Collectivities and to budget and manage additional funds. These recommendations are supported by this study's findings about the progress and shortcomings of effective decentralization as promoted by Wula Nafaa.

6.6.1 ADDRESS POWER INEQUALITIES AND INEFFICIENCIES AT THE LEVEL OF THE CR

According to the 1996 decentralization laws, Rural Councils (CRs) have the official authority to manage forests within their jurisdiction. The same laws established a number of levers for local populations to hold CRs accountable, such as the election of CR members every five years, or the requirement for CR deliberations to avoid centralizing power within the PCR. However, as previously mentioned, these levers used to hold CRs accountable can be quite deficient. Survey findings¹⁰⁷ from the commodity chain study suggest, however, that the main problem undermining accountability is not these accountability levers, but the fact that **CRs cannot effectively exercise their official authority over forest management decisions**: the Forest Service is still making all major decisions, particularly related to charcoal, such as: who can produce in CR forests, where they can produce, when they can produce, and how much can be produced. Rural Council Presidents are not able to change quota allocations (or “potential” estimates) “proposed” by the Forest Service, and cannot help local producers get a larger portion of the “potential” production, or simply get all the permits reserved for them on paper. **In these conditions, since the Forest Service, rather than their elected leaders, make all decisions, local populations have no lever to hold accountable those with power over the most important decisions affecting net income distribution within the charcoal market. In this respect, USAID did not significantly improve the accountability of power and authority**, highlighting a future focus area.

USAID, however, did address important constraints on accountability, which may bear fruit in the future. By insisting that quota allocation decisions be discussed at the regional level, **USAID did help create a forum for discussion between the Forest Service, PCRs and merchants that did not exist in the past**. With time and experience, PCRs may be able to gain more ground in the long term, having the 1996 decentralization laws work for them. USAID provided PCRs and Rural Councilors with essential negotiating tools and skills through numerous trainings and training material disseminated.

Rural Councils are in a better position today to demand the powers associated with the authority attributed to them by law but still withheld from them in practice. They are better informed, better trained, better connected with de-concentrated administrations, better organized to provide their constituencies basic services. This may not be a sufficient condition for CRs' empowerment, but it is a necessary one. Meanwhile, CRs are already in a position to exercise their authority over some, less-important forest management decisions, such as the drafting or revision of Local Conventions affecting forest management, or the collection and use of rural fees (*redevance rurale*). Fiscal support for CRs to do their duties is a continuing struggle, and Wula Nafaa initiated efforts to enhance CRs ability to raise local funds through taxes and fees. Further support for fiscal decentralization is also necessary to enact, as proposed in Act III of the Decentralization law.

USAID contributed to changing local expectations from elected local government, which is also one important condition to strengthen downward accountability in the long run. The next step is to help those elected local authorities to gain their legally specified powers so that they are able to respond to local expectations. If there are no responses to the expectations from local people, people's expectations and demands will evaporate.

At present, channels of accountability from local elected officials to their constituents are muddled: local constituents still do not feel it is their right to make demands of their leaders. For example, interviews conducted with forest bloc managers indicated that they feel unable to contest PCR decisions: “They are the boss, what can we do?” (Peltier, 2012, p. 13). Respect for existing social and ethnic hierarchies may motivate this perception of powerlessness, which projects like Wula Nafaa or PROGEDE may involuntarily reinforce by channeling more support to CR members than

107 From Charcoal Commodity Chain study, Power component report and Faye (2013)

bloc managers. Wula Nafaa's initiative to create and strengthen forest bloc management is clearly a positive move to re-distribute power more equitably within CRs, and to strengthen downward accountability; but it might have come too late in the project to have sustainable impact.

6.6.2 ADDRESS TENDENCY FOR REINFORCEMENT OF LOCAL ELITES WITH DECENTRALIZED GOVERNANCE

Conclusions from this report show that democratic processes have resulted in reinforcement of or increase in status of local elites, perhaps partially due to lack of authentic accountability levers as discussed above. Data from the charcoal commodity chain study also revealed evidence of rising inequality *within* wealth-generating commodity chains (see results in Section 5.3). This gap between the haves and have-nots within rural populations needs to be addressed, in order to ensure that gains in poverty alleviation are meaningful for large segments of the population. If there is something within the poverty-alleviation mechanism/strategy that is causing an increase in inequality or the creation of a new rural socio-economic divide then this must be identified and refined so that greater economic disparity is not caused by intervention actions.

6.6.3 TRANSFER POWERS AND RESOURCES TO LOCAL GOVERNMENT

Under Wula Nafaa, USAID tried to address limitations to local government's power. A September 2008 report specifically examined the problem of fiscal decentralization in forest management. This report (Djigo, 2006) tackled dispositions in existing fiscal arrangements that weakened the effective power of CRs by reducing their sources of revenue, such as: the absence of fiscal transfers from the state for environmental responsibilities; the non-inclusion of Local Councils in the national commission establishing taxes and fees, in contradiction with the 1996 Decentralization laws; and the existence of a regime of exception regarding the sale of confiscated wood. In addition, the report called for the suppression of quotas and the official recognition of Local Conventions as a tool for land-use planning and local access to resources. Wula Nafaa, and earlier, the PAGERNA project, had supported CRs in establishing these Local Conventions in a participatory manner. They would also define fees and sanctions, and distribute responsibilities within the RC to enforce them. **While Local Conventions became a practice during Wula Nafaa, CRs are still a long way off from independent management, and fiscal decentralization is still far from being institutionalized.**

6.6.4 CAPACITY BUILDING

When Wula Nafaa started working with CRs, their committees were rarely functional: responsibilities were not clearly distributed with the CR; their members lacked technical and even basic literacy skills. Along the lines of DGL-Felo's project design, Wula Nafaa focused on building their capacity as a first necessary step for these committees to start playing their role, and really "own" Local Conventions and other management tools set up with project support.

Capacity building for elected local authorities is a good investment. It is limited by the failure to transfer powers to these authorities so they can exercise and develop their skills and play their legally attributed roles. The application of capacity building programs should be predicated in future on commitment from the Forest Service and Central Government to transfer significant discretionary powers mandated by decentralization laws.

While Wula Nafaa project activities focused on basic literacy, leadership skills, and knowledge of decentralization tenets, there persisted a general lack of recognized authority or legitimacy of CRs to levy fees, collect taxes, and enforce rules of local management plans. Exacerbating this limitation was a lack of adequate training and tools for revenue generation at the level of CR—even if local elected officials had leadership capacity, their governing bodies lacked adequate financial resources to support decentralization duties, despite the fact that Wula Nafaa pushed hard, in its last years, to enhance committees' ability to raise local funds through taxes and fees.

Underlying all successes and all challenges is this fundamental need for capacity building, not just of local officials, but of rural communities on the whole. With an average of 70% of the population in project areas reported as having no education (see Section 2.2), it is easy to understand why decentralization is precarious. Literacy, basic accounting, and an understanding of the rationale behind NRM are all necessary not only for program success but for entrenching a sustainable practice in future generations. Despite valiant efforts by project activities, education, literacy, accounting need even more emphasis, and must form a fundamental part of NWP in practice.

In addition, the notion of ‘capacity building’ must rise to the next level, towards “innovation training”—moving beyond basic skills and literacy, towards coaching in problem-solving and creative thinking; building the facility for beneficiaries to invent and find their own solutions; and seeing possibilities for entrepreneurship, management and stewardship that are not donor-directed. Related to this are issues of effective participation in the participatory planning processes that are key to decentralized NRM.

6.6.5 PROMOTE AUTHENTIC PARTICIPATION

Participation was flagged in the Wula Nafaa phase I final report as a major constraint: the report mentions that lack of full and authentic participation by rural councilors, Forest Service agents and other Government officials and key stakeholders was a serious problem to implementation of Local Conventions, Forest Management Plans, and Accounting and Financial Management Plans. Local populations and their elected officials were not able to support the Local Conventions and FMPs due to insufficient knowledge of legal texts on decentralization, low levels of literacy, and lack of motivation in the absence of economic benefit. Participation is, however, an issue in most projects, which struggle to include socially marginalized groups (*e.g.*, the poor, women, youth) and to avoid perpetuating inequality within communities (Agrawal & Gupta, 2005; Bandiaky, 2007; Ribot, 1999).

Additionally, the conditions required for effective participatory process (upon which the core decentralization tools of POAS, Local Convention and FMPs are based) may be inherently in conflict with hierarchical organization of villages, including both patriarchal structures and systems of filial piety. An effective participatory process requires participants to assume a democratic equality where each participant has equal voice and equal say in the process. However, this may run counter to social structures in Senegalese village society in which there exist distinct hierarchies, gender relations, and leadership structures. Taking these into account could affect a more authentic participatory process, perhaps incorporating local tools for decision-making.

6.7 SUPPORT CONTINUED FOREST POLICY REFORM

6.7.1 SUPPORT POLICY CHANGES TO FURTHER EMPOWER LOCAL OFFICIALS IN FOREST MANAGEMENT

USAID should further support local elected authorities to weigh in on policy- and law-making processes to redefine forest management policies and supporting administrative texts and regulations as a political, rather than a technical problem. Annual regulations adopted by the Forest Service both contradict the Forest Code and are against the interests of local people. Local councils are supposed to manage forests, but Forest Service regulations, by specifying forest management as a technical problem to be managed by the Forest Service, contribute to maintaining control over important decisions that the Decentralization laws have transferred to CRs. The laws at the national level cannot resolve this conflict without input from local authorities whose powers are curtailed by these ostensible technical concerns. What is needed is real substantive representation of rural populations—*via* their elected representatives in the CRs. USAID should help these representatives **federate**, such as has been done by the *Union des Associations*

des Elus Locaux—a Senegalese federation of local elected officials¹⁰⁸—to lobby national lawmakers so as to create policies that do support their decision-making roles in the implementation of forestry policies and local-level forest management.

6.7.2 PROTECT DECENTRALIZATION GAINS IN PROPOSED FOREST CODE

USAID should work to keep the innovations of the 1998 Forestry Code that support most of Wula Nafaa's achievements in the proposed forestry code. In 2009, as the Government of Senegal was preparing a new Forest Code, USAID had the draft bill analyzed (Ribot, 2009a, pp. 2, 8, 10–11). The resulting report indicated several articles in the draft Code that would re-centralize decision-making on forest management by: reducing forest areas under CR authority; imposing on rural communities objectives for their forest use; and maintaining the Forest Service's prerogative to deliver permits and professional cards without prior approval from CRs. **These changes in the draft Forest Code have gone unchallenged by USAID and other donors. If the bill does pass (and it is still sitting in the national assembly), rural communities and their elected leaders will lose most of the ground won under Wula Nafaa's long fight to engage elected CRs in forest management.** CRs will be engaged, but much less than the 1996 decentralization and 1998 forestry code had promised. The 2009 revision of the Forest Code has not yet materialized into a new Forest Code, but Local Conventions, which USAID fought for, are now widely recognized by the Forest Service.

6.8 REVISIT FOREST MANAGEMENT PLANNING

In principle, biodiversity can be conserved by slowing the rate of deforestation, and ensuring that more areas of remaining forests and woodlands are not converted to agricultural land use. **And to gain community support for maintaining forests as forests, communities need to have the rights and be empowered and enabled to benefit from a significant flow of economic as well as ecosystem benefits from these forests.** And, in keeping with current policies and regulations in Senegal, a forest management plan must be prepared and approved before communities can benefit from an increased flow of economic benefits.

However, a number of issues and problems have emerged over the past decade with forest management planning as currently practiced—to the point where some would question the need for such a plan. There is evidence that there is minimal impact from preparing and approving a forest management plan on forest structure, biodiversity and productivity (Wurster, 2010). Furthermore, this is a risk that **the requirements for forest management plans are used to counter the stated goals of devolution, empowerment and transfer of authority in the interest of decentralized, community based management** (Ribot, 2004, 2009b). And most importantly, **if local communities and other resources cannot be mobilized and funding sustained to implement critical elements of a management plan, then it clearly serves no purpose and cannot be expected to have an impact** on forest conditions, productivity and flows of economic benefits and ecosystem services.

If in fact the management plans are simply a paper exercise, and not funded or implemented, then they cannot be of much use. But it should be stated that there is a vigorous debate about plans and whether they are needed. The bottom line, however, is that a plan is simply a way to organize operations in time and space, management of resources is impossible without some sort plan to control access, use, protection, and regeneration of the resource. Even a relatively simple management plan that can be produced relatively quickly with the community (in the form of agreed upon rules, schedule of interventions, etc.)—and then implemented with minimal reliance on large amounts of external funding or further decision making authority by external units such as the central offices of the Forest Service—would be useful.

With a co-management plan for classified forests and a FMP for community forests, there were opportunities to increase the economic benefits that accrued to local communities, from increased and direct participation in charcoal production and other activities; without a plan approved by the Forest Service, there would not be sufficient manpower and other resources available to the Forest Service to adequately protect and manage classified forests,

108 <http://www.uel.sn>

nor sufficient economic incentives and land use controls to prevent the conversion of community forest and pasture lands to cropland, with an attendant loss of biodiversity and ecosystem services. Figure 21 outlines the basic steps necessary for sustainable management of forest landscapes culled from the experience of Wula Nafaa and other NRM programs in Senegal.

6.9 MOVE AWAY FROM DONOR DEPENDENCY

6.9.1 MEASURES FOR LONG-TERM SUSTAINABLE FINANCING OF NR INTERVENTIONS

Given that CRs continue to struggle to finance enforcement of Local Conventions and management plans, and to fund the costs of management associated with NR-based enterprise, sustainable financing should be highlighted as an area for urgent attention. Price differentiation and fiscal policies that support and favor sustainable production models and products will assist in the establishment of models and approaches for improved NRM that will not be dependent on long term external financing, which are cost-effective and can be sustained. A key element for sustainable financing of NRM is **price differentiation of products from managed vs. unmanaged areas**. The added margin from higher prices could in theory serve to offset the higher costs of improved management. Higher prices in the marketplace depend on branding and labeling, quality control, and other measures to encourage consumers to pay higher prices for these products. However, Wula Nafaa encountered difficulties in securing higher prices for targeted products; buyers of natural products were often reluctant to pay a price premium for “natural” products originating from managed areas.¹⁰⁹

At the same time, sustainable financing for NRM can be facilitated through **fiscal policies that reduce or eliminate taxes, fees, transport permits and other costs** imposed on natural products, when these products originate from managed areas. In time, the combination of higher prices from consumers and reduced taxes by the government could help to create a sufficient and sustainable flow of resources to invest in measures that would increase the productivity of the managed resource, and further contribute to the long term sustainability of financing management operations. As part of the exit strategy of Wula Nafaa, it may be useful to delve more deeply into what measures are needed in this regard.

6.9.2 EXPLORE ADDITIONAL FRAMINGS OF NATURAL CAPITAL SUCH AS PES AND REDD+

While Wula Nafaa was extremely successful in demonstrating and increasing value of natural products, in creating markets for locally-produced commodities, and linking rural communities to urban and export markets, the emphasis was placed on exploitable resources such as NTFPs and agricultural products. **Future permutations of NWP should also explore avenues for income generation based on stewardship of natural resources, and acknowledgement of the value of ecosystem services such as carbon sequestration, erosion prevention, water purification, soil fertility, salt regulation** etc. Payment for Environmental Services (PES) schemes as well as mechanisms like Reduced Emissions from Deforestation and Degradation (REDD+) can provide opportunities for rural income generation without exploitation, or for areas where products are less available, markets inaccessible, or natural systems too fragile to sustain exploitation without prior recovery and regeneration.

6.9.3 INVEST IN ENVIRONMENTAL EDUCATION

A population with 70% having no education in project areas is an immense barrier. To empower people to effectively be “in charge of their own destiny,” **there is a great need to invest in education, targeting the future community resource managers: the children of today. This is a longer-term aim than most development objectives and programs but should be incorporated as much as possible into project work at the community level.**

¹⁰⁹ Pers. comm., Brook Johnson.

Environmental education that is practical and experiential will translate much more effectively into uptake of sustainable NRM practices. Creating future leaders with environmental knowledge will help enable locally-driven solutions and innovations to imminent challenges such as climate change.

6.10 IMPROVE MONITORING & EVALUATION

6.10.1 ENVIRONMENTAL MONITORING

This report has clearly demonstrated the need for more rigorous environmental checks and balances (via institutions/watchdogs/legal frameworks) to be built into program design, monitoring and evaluation. Given the emphasis of USAID in demonstrating progress in bringing large areas of land under “improved management” through the signature of Local Conventions, on completing the lengthy process of preparing forest management plans, along with increasing the revenues of community based enterprises making use of natural products and engaged in charcoal production and marketing, less attention was given to demonstrating to what extent biodiversity was actually conserved in managed forests, or to what extent the increased level of production and flow of revenues was based on sustained yield management and increased productivity of the forest resources.

As noted by the series of land use/land cover studies carried out by USGS and CSE (see Section 3.1.1), **there are worrisome trends in resource changes that need to be monitored and addressed, and tools and techniques employed to assess these changes.** An important premise of Wula Nafaa was that the biggest threat to biodiversity was deforestation driven by the conversion of natural forests to agricultural land. Accordingly, **the project has worked to slow deforestation by increasing the value of standing forests for local communities and to reduce the degradation of cropland through conservation farming,** and to a lesser extent, through the promotion of FMNR.

However, initial evaluations of re-greening (Tappan et al., 2004), and also of forest conditions after charcoal exploitation has taken place (Wurster, 2010), reveal the need to examine much more closely the impacts these actions are having at the ecosystem level. This is particularly crucial when considering replication of particular interventions over vast areas.

While the Wula Nafaa project reports describe activities organized to improve forest and land management, and provide data on the area covered by conventions and plans, much less information was generated from monitoring and reporting of changes in forest cover, composition, volumes and growth rates with details about changes in species and forest conditions and trends. Training and technical support was provided for initial forest inventories needed to prepare forest management plans, but time-series data is not being systematically collected to assess the impact of harvesting regimes and changes in forest condition.¹¹⁰ And although the costs of monitoring changes in the productivity of forests, cropland, wetlands, coastal zones, grazing lands and other natural resource conditions may seem to be unwarranted or “unsustainable,” more attention could have been given to encouraging relatively **low-cost, participatory monitoring of changes in resource conditions, to inform adaptive management.**

Although Wula Nafaa has not produced landscape-level assessments of changes in forest and tree cover, soil fertility or other measures of changes in the conditions of the natural resource base, the indications from specific research such as that reported by Herrman and Tappan (2013) suggest that “greening” is not as widespread in Senegal as what has been observed in Niger, Burkina Faso and Mali. This appears to be largely a function of the relatively greater emphasis outside of Senegal on activities that directly contribute to scaling up FMNR and related practices—including working with farmer innovators at the grass roots, systematically identifying and promoting needed policy, legal and

¹¹⁰ The reasons cited for this by key informants included the added costs, and that such information was not required or did not seem to be necessary; “success” was being measured in other ways – including completion of activities (e.g. approval of conventions, preparation of management plans) and by providing evidence of impacts on people (data on increased incomes, improved well-being, crop yields, volume of marketed products).

institution reforms, expanded outreach and communication and investing in addressing knowledge gaps (see Reij, 2012). However, recent efforts by World Vision, IED Afrique, GREP and other partners of the African Regreening Initiative to promote FMNR in Senegal are promising.¹¹¹

In principle, local communities now have greater incentives to invest in increasing the productivity of locally managed resources, although there is little information available about the extent of changes at the landscape level in the condition and productivity of natural resources like gum *mbep*, baobab, *madd* and other tree and forest resources, as well as croplands, pastures, fisheries and wildlife, both within the landscapes targeted by Wula Nafaa and in adjacent areas that did not benefit from Wula Nafaa. As noted in section 5.4, research investigating the effect of forest management and charcoal production on forests in Senegal indicated that **production did contribute to differences in forest structure and tree species composition, and the effects of charcoal production were similar in managed and unmanaged forests** (see Wurster, 2010). However, this may be essentially due to the ineffective application of management activities in the areas reportedly covered by management plans.

This paucity of data and lack of pointed monitoring mechanisms points to a major recommendation of this study, which is **the need to design, integrate and capture far more detailed and disciplined monitoring of the impacts of interventions on existing natural resources – moving beyond general land use/land cover change into more technical analyses of soil, water, biodiversity and ecosystem services**. It is clearly stated that land use/land cover change analyses, while accurately identifying the quantity of land under tree cover or a specific land use, can speak very little to the quality of that resource. In the example of a managed forest, for example, these analyses cannot tell us about internal forest conditions and health, species types and diversity, biodiversity, soil health and fertility, water quality etc. Rather, the conclusions led to more detailed questions about the change and impact on the resource base *beyond* measurements of tree cover and land use patterning.

To this effect, bolstering institutional monitoring of the natural resource base on a national level is also necessary. Senegal has benefitted from considerable investments in strengthening national institutions, such as CSE, ISRA, and the Ministry of Environment. Yet, it is not clear to what extent these institutions are working to assess changes and make good use of information about the condition and trends of natural woodlands and agroforestry parklands, and the changing density, dynamics and contribution of trees on farms to soil fertility, agricultural production, food security and water supplies. What are the long-term prospects for maintaining or increasing the production of baobab fruit, *mbep* gum, *madd*, *vene* hardwood, bamboo, and other “natural” products?

6.10.2 SHIFT FROM PERFORMANCE MONITORING AND EVALUATION TO IMPACT EVALUATION

6.10.2.1 IMPACT ASSESSMENT AS PART OF M&E PRACTICE

Demonstrating that interventions cause development effects depends on theories and rules of causal inference that can support causal claims. In an attempt to provide the strongest evidence of the relationship between Wula Nafaa and its benefits, this study has attempted to apply a rigorous methodology that extends beyond the performance or process evaluation approach traditionally used to support the performance management or “Managing for Results” process. It may be useful to contrast the methodology used in the present study with a Wula Nafaa program evaluation conducted in 2006. After presenting a list of results from the performance management plan (PMP) related to the wealth component, the evaluation states: “Though difficult to monitor and to estimate with any degree of accuracy, such impacts are clearly widespread” (Weidemann Associates, 2006). But no evidence—*anecdotal or otherwise*—was given to substantiate the statement. This study has demonstrated that the quasi-experimental design methodology offers a unique tool for evaluating the impact of natural resource management programs in the most rigorous way feasible, and that it could be successfully applied to other programs whenever data similar to those used in this study are available.

¹¹¹ See <http://africa-regreening.blogspot.com/>

Figure 16: Basic Steps For Sustainable Management of Forest Landscapes

For improved conservation and increased productivity of forests being brought under local management, the following basic steps should be supported and implemented as part of a process to shift from open-access woodlands susceptible to over-exploitation, degradation and conversion, to managed forest landscapes.

- **Formal devolution of rights:** Clear and formal devolution of management authority and assignment of rights to benefit from the improved management of a designed resource
- **Landscape assessment:** Facilitation of local community leaders and other key stakeholders to assess the use and management of natural resources within a targeted landscape, with a view towards identifying critically important resources (forests, pastures, wetlands and water resources, watershed catchments, wildlife and fisheries habitat, productive agricultural land, etc.)
- **Demarcation of managed areas:** Agreement on the location and boundaries of the forested lands and other resources where management is to be focused and improved
- **Resource inventories:** Participatory assessment of the quality and quantity of the specific natural resources being managed
- **Management objectives:** Agreement on management objectives that recognize local priorities and take account of the natural resource capabilities and potentials
- **Address causes of degradation:** Assessment of non-sustainable practices (that need to be controlled and curtailed) and other causes and drivers of degradation of the resources targeted for management
- **Identify sustainable uses:** Agreement on the types of permitted land uses and harvesting techniques and levels of off-take that are permitted and can be sustained, and locally enforceable rules to govern resource access and use
- **Establish management organization:** Agreement on the management bodies, institutional mechanisms and key stakeholders responsible for oversight and implementation of management activities
- **Work planning and budgeting:** Development of plans to prioritize and guide activities – with special attention given to activities that can be implemented by the local community with minimal dependence on external resources to protect, regenerate and increase the productivity of the managed area, and to manage fires, hunting, grazing, harvesting of forest products and other activities that could threaten the maintenance or restoration of a healthy, functioning ecosystem, and provisions for regeneration of harvested resources if uncontrolled
- **Benefit distribution:** Agreement on administrative processes to orient and ensure equitable, transparent benefit sharing and revenue distribution among producer groups and management bodies.
- **Monitoring:** Organization of resource monitoring activities to track and report on changes in resource conditions and trends, and to provide feedback and guidance for the organization of management activities.

6.10.2.2 COMBINING IMPACT EVALUATION WITH MONITORING AND PROCESS EVALUATION

Although an impact evaluation can be distinguished from other evaluation methods, it should not be conducted independently of program monitoring and process or operational evaluation (M&E). The impact evaluation complements the M&E system and is not a substitute for it.

Monitoring data enable program implementers to document beneficiary participation, how fast the program is expanding, how resources are being utilized and whether activities are being implemented as planned. The process or operational evaluation compares what was planned with what is actually delivered to identify potential gaps between planned and realized outputs. As such, they represent a valuable source of information on how program implementation can be improved and on lessons learned for future program design and implementation.

However, the M&E framework does not demonstrate whether indicators, targets and achievements are a result of program interventions. It is the role of the impact evaluation to document whether program participants are benefitting from the program *and not from any other sources*.

6.10.2.3 IMPACT EVALUATION USING DHS AND SIMILAR WEALTH ASSET INDICATORS

An important conclusion of this study is that the Demographic and Health Surveys (DHS) represent a source of relevant data of unparalleled depth that USAID should tap into to conduct its impact evaluations, whenever possible. Although health projects can benefit from DHS data the most, the methodology used in this study has demonstrated that the surveys can dependably be used to conduct impact evaluations of agricultural and natural resources management programs. Quasi-experimental design analysis of DHS data should be explored for incorporation into future program monitoring and evaluation rubrics to measure impact. This would help USAID further leverage the considerable resources it already allocates to ongoing DHS data collection efforts across the globe.

It can be argued that since the DHS are typically conducted every five to seven years in a given country, they may not coincide with the beginning and end of a program for which USAID may want to conduct an impact evaluation. However, in those cases USAID could collect comparable baseline and end-of-program information on such indicators as household assets, employment, and similarly practical variables that can be readily and most cost-effectively collected and analyzed to assess change.

6.10.3 INSTITUTE PERFORMANCE & BASELINE MONITORING FOR POWER CHANGES

In terms of project management, this assessment illustrates **the importance of defining performance measures and establishing a baseline before project inception through well-defined surveys, including on governance**. On this respect, Wula Nafaa failed to produce a baseline against which performance on the Power component of the NWP framework could have been assessed. The Wula Nafaa project did, however, remain flexible on project boundaries to address problems that may not have been initially within project limits, but were nonetheless perceived as important by stakeholders to achieve project goals. **This illustrates the need to strike a balance between making sure to measure progress on anticipated outcomes and impacts, while maintaining flexibility in the project to adapt to local contexts and demands**. Wula Nafaa annual project reports show every year new activities added to respond to local demands. Wula Nafaa's flexibility in this regard enabled the project to address barriers in different sectors (*e.g.*, support to access credit, to access new markets through new partnerships in local towns and through new regulations, etc.).

6.10.4 MEASURING SUSTAINABILITY

Projects today need to move towards establishing measures for sustainability so there is some rubric against which to measure success in relation to the goal of sustainability. Acknowledging that monitoring must have a long-term outlook (following up five or ten years after the end of project) to see what gains remain or have been further built upon and to assess any unintended or unanticipated consequences, both positive and negative, provisions must be made for long-term monitoring mechanisms that are not tied to project timelines, and are perhaps linked to the presence of the USAID mission.

Additionally, integrated programs can create challenges for monitoring and evaluation, as synergistic outcomes become difficult to track and measure. In this regard, it may also be recommendable for USAID to rethink its focus on quantitative data to include more qualitative capturing methods. Powerful proof of impact comes both from quantitative attribution of impact to project work, as well as evidence of perceptual change and reported qualitative impact at the community level. Both are critical and important.

6.11 MAINTAINING THE TRIPLE BOTTOM LINE

What comes first in NWP? Is the governance aspect—the rules that ensure that local people can have a seat at the table—the most important? Project implementation would suggest that demonstrating the potential economic potential of natural resources is important for getting people to the table in the first place—but would there even be a “table” to sit at unless the rules allowed for one? Another view is that investing in the protection and improved management of natural capital gives rise to both the economic benefits and the impetus for governance of the resource—although project implementation has also shown that low-value commodities can become high-value commodities with the right market linkages and resource governance.

Looking back on the implementation of the Wula Nafaa program in Senegal, it is clear that the Wealth component was a key entry point for the integrated strategy. Communities were motivated by the prospect of income generation from their resource base, and programming was designed with emphasis on economic growth. Most often natural resources were viewed as natural capital—something to derive income from—rather than as having inherent value. While this framing proved effective to bring communities on board, and begin to assimilate aspects of environmental governance and more integrated land use approaches, it is apparent as well that “wealth” outcomes have been clearly measurable, while “nature” and “power” impacts were more diffuse and difficult to quantify. While by the end of project there were clear positive measurable impacts on wealth, it was not clear that sustainability of the resource base or local empowerment will be maintained. In fact, it is clear that both require more support.

Senegal provides a clear example of the extent to which a failure to address NWP issues in an integrated and comprehensive manner will slow progress in addressing chronic and structurally rooted rural poverty and vulnerability, inequitable benefit sharing and continued disenfranchisement of the rural poor, and associated non-sustainable use of natural resources and ecosystem degradation. And it also provides an example of the many successes that can and have been achieved by simultaneously addressing the needs and opportunities to intervene with respect to improved governance, enterprise development and natural resource management.

Future applications of NWP should incorporate feedback and monitoring mechanisms to ensure interventions achieve all three components of Nature, Wealth and Power more or less equally. Internal checks and balances should be included to make sure that one aspect is not being undermined for the sake of another, safeguarding the overall integrity of the approach.

6.12 RECOMMENDATIONS

1. Continue integrated support for enhancing the contribution of forests and other natural resources to rural development using the NWP framework

- a. Consolidate the achievements and continue the most critical and cost-effective activities of Wula Nafaa discussed in this report by following through with an **integrated set of interventions** to ensure that the rural poor benefit to a greater extent from “environmental income” while improving the management of natural resources and environmental governance
- b. Work to **streamline the approaches** used to support community based forest management, by dealing with the most essential tasks to empower rural producers as the primary stakeholders; invest more effort in achieving additional needed reforms of Forest Service policies and regulations instead of accommodating them; enable more effective local enforcement of rules against unauthorized timber harvesting, bushfires and grazing, and facilitate the preparation *and implementation* of simplified, *performance-based* management plans, along with transparent accounting and equitable benefit distribution
- c. Encourage **cross-national comparisons for greater insights into best practices and lessons learned** from similar approaches to decentralized forest management, for example

2. Give as much focus to recovery and restoration of ecosystems as to their use and productivity as exploitable natural capital
 - a. Ensure that **rural communities are equipped and encouraged to give consideration to other important aspects of sustainable use and resource productivity**, such as protection against over-exploitation, provision for regeneration and other measures needed to counter ecosystem degradation, contribute to restoration and monitor changes in resource conditions
 - b. **Scale up FMNR and related practices**—including working with farmer innovators at the grass roots, systematically identifying and promoting needed policy, legal and institution reforms, expanded outreach and communication and investing in addressing knowledge gaps
 - c. Give **more attention to demonstrating to what extent biodiversity is actually conserved** in managed forests, or to what extent the increased level of production and flow of revenues is based on sustained yield management and increased productivity of the forest resources
 - d. Encourage and support institutions such as CSE, ISRA and the Ministry of Environment to assess changes and **make good use of information about the condition and trends of natural woodlands and agroforestry parklands, and the changing density, dynamics and contribution of trees on farms** to soil fertility, agricultural production, food security and water supplies
3. Increase the attention given to agroforestry, livestock and wildlife management
 - a. Take stock of what is needed to **accelerate the scaling up of agroforestry (FMNR) and conservation farming**, building upon the positive experiences of KAED, Wula Nafaa, Yaajeende and World Vision's Food and Livelihood Enhancement Initiative; re-assess the focus and intervention strategies of Feed the Future and give more priority to activities that contribute to climate resilient farming practices
 - b. Give more attention to **management of livestock production, as well as wildlife**, by applying lessons learned from Wula Nafaa's support to community based natural resource based enterprise development and forest and fisheries management;
 - i. Address the role of livestock production (and associated browsing, lopping of branches and bush fires) in the continued degradation of forests and forest lands, and capitalize on the economic importance of pasture resources in forest management
 - ii. Expand support for community based management of wildlife and nature reserves and strategies to **increase the level of community benefit from game hunting and ecotourism activities**, with due attention to needed policy and institutional reforms
4. Reinforce environmental monitoring
 - a. Reinforce and expand activities to **monitor ecosystem health and natural resource conditions** and trends; improve environmental monitoring to assess time-period changes within forest conditions at the level of ecosystems and ecosystem services
 - b. Encourage relatively low-cost, participatory monitoring of changes in resource conditions, to inform adaptive management; **strengthen participatory monitoring as a means to inform and guide improved management and decentralized NRM** while also contributing to longer term monitoring efforts, and augment community based monitoring with periodic natural resource assessments and stocktaking exercises
 - c. Identify and **track local innovations** in sustainable use and improved management of natural resources, and assess key interventions that contribute to the scaling up of particularly effective improved practices and sustainable production systems
 - d. Make use of remote sensing, local knowledge and other evidence to re-examine the major drivers of non-sustainable use and degradation of natural resources, and to **re-assess strategic interventions** to more effectively address key drivers and contribute to transformative, sustainable progress with the full suite of NWP indicators at the landscape level

5. Shift M&E focus to combine performance monitoring with impact evaluation

- a. **Include impact evaluations** in future M&E frameworks in order to assess if achievements are legitimately attributable to project interventions
- b. Recognize that **Demographic and Health Surveys (DHS) represent a source of relevant data** of unparalleled depth that USAID should tap into to conduct its impact evaluations, whenever possible
- c. **Make use of experimental design methodology** as a rigorous analysis tool to be incorporated into future program M&E rubrics when utilizable data is available

6. Strengthen partnerships and networks

- a. Include as a project objective and outcome the development of a **cadre of well-trained facilitators** who can be mobilized to support community based organizations engaged in CBNRM and sustainable landscape management activities through national NGOs and the private sector
- b. Continue to **invest in training**, capacity building and knowledge management, with particular attention to impact assessment, cost-economic analysis and increased attention to governance issues as well as monitoring the effectiveness of NRM practices and NWP interventions
- c. Work with concerned Ministries, CSE, the Regional Councils and other partners to establish a **locally accessible clearing house for information** related to the experience and lessons learned from Wula Nafaa and prior USAID E/NR investments and related efforts using the NWP framework.
- d. Support public-private partnerships and **collaboration with the private sector**. As was shown in the case of baobab fruit and BFC, with a growing international market and eager buyers like BFC, some success would probably have taken place without WN, but having observed directly how it happened and what happened – the private sector working alone would not have led to the results and achieved the same outcome as that was achieved with support from Wula Nafaa

7. Institutionalize rural participation in national policy engagement

- a. Help form federations of elected local authorities; **enable public forums for the discussion of national policies that affect rural populations**; improve rural access to grievance mechanisms such as courts
- b. **Replicate successful institution building programs such as DGL-Felo** that train rural councils to know their rights as local representatives and the channels by which they can defend, exercise and expand those rights; train rural populations on their rights and on the roles and powers of their elected representatives
- c. **Diffuse information on laws and regulations in local languages**; training in local languages of Rural Councilors on their roles, rights and responsibilities

8. Leverage decentralization to transfer powers to local communities with all capacity building efforts

- a. **Devolve rights (and do not just transfer obligations) and financial resources to local communities and decentralized, community based management bodies**, and provide support to these entities to meet agreed upon performance standards for improved management
- b. **Support transition of the Senegal Forest Service** to shift from a role of command and control, to oversight of the transfer and devolution of resource rights, with more emphasis given to strengthening decentralized resource management bodies; project interventions must be contingent on SFS transfer of those powers to Rural Councils that are already specified in the law of decentralization and in Senegal's forestry code
- c. **Ensure that “contracts” transfer more benefits than burdens**, that “conventions” transfer more discretionary powers than obligations, and that “management plans” follow ecological requirements to meet local needs rather than ecologically unnecessary inventory and management activities
- d. **Support efforts for fiscal decentralization**, both legally via “Act III of decentralization” legislation, as well as through efforts to enabling local financing of development via collection of the rural tax and other revenue generation efforts at the level of the CR

9. Adopt a minimum environmental standards approach

- a. **Apply an approach that specifies the ecological conditions that must be maintained** if production is to be allowed. Production and use can then proceed if these standards are met. Manage forests for the needs and aspirations of rural populations. If urban populations need forest products, make the conditions of supply worthy of rural aspirations
- b. **Create management and use standards** that are the minimum conditions needed for forest production
- c. **Allow Rural Councils to decide** whether or not production is necessary or wise given the management requirements established

10. Move away from donor dependency

- a. **Promote measures for long-term sustainable financing of NR interventions**
 - i. Work towards price differentiation of products from managed vs. unmanaged products
 - ii. Promote fiscal policies that reduce or eliminate taxes, fees, transport permits and other costs imposed on natural products, when these products originate from managed areas
 - iii. Explore wealth creation mechanisms for sustainable management of natural resources such as PES and REDD+
- b. **Expand “capacity building” to include “innovation training”**
 - i. Move beyond basic skills and literacy, towards problem-solving and creative thinking by building the facility for beneficiaries to invent and find their own solutions that are not donor-directed

7 UNDERSTANDING HOW CHANGE HAPPENS

The successes of the USAID Wula Nafaa project—demonstrated by broad-based impacts in governance, natural resources, economic growth and improved rural living conditions—have shown that poverty alleviation can be achieved through integrated natural resource management programming. This section will examine the factors that contributed to the accomplishments of these last ten years of NWP programming in Senegal, with the aim of articulating criteria for continued implementation and effective replication. This synthesis will thus consolidate and examine some of the major lessons learned over the last ten years of NWP as implemented in Senegal via the Wula Nafaa project, and will analyze factors enabling change, persistent barriers to change, and strategies for overcoming those barriers. By understanding how change happens and what inhibits progress, future programming and initiatives can be designed to more effectively create impact that is positive, lasting and transformative.

7.1 FACTORS ENABLING CHANGE: BEST PRACTICES

BEST PRACTICES: NATURE

The best practices for Nature are those that advance a more long-term model for sustainable rural economic development and natural resource management that is community-driven and promotes overall ecosystem health and resource protection while contributing to development goals related to food security, economic growth and climate change

- **Codification of tools for participatory sustainable land use at the community level**
 - Land Use Plans (POAS), Local Conventions, Forest Management Plans (FMPs)
- **Piloting community based forest management efforts**
 - Such as charcoal production rotation schemes
- **Promotion of agroforestry, FMNR and conservation agriculture**
 - Transition from straight fuelwood production towards more integrated land use solutions that restore soil fertility and enable natural regeneration
- **Promotion of sustained yield harvesting of forest products, and valorization of NTFPs**
 - Work with low-profile, local product commodities such as baobab fruit, *madd*, *fonio*, demonstrated value of local forests
- **Demonstration sites as living examples of NWP**
 - Project sites act as proof of concept, allowing for the demonstration effect where positive models are taken up via the influence of neighbors

BEST PRACTICES: POWER

The best practices for Power support decentralized management, local ownership of resource-based decisions, and transfer competence and authority to community leadership.

- **Leveraging decentralization to forward local empowerment in NRM**
 - 1996/1998 decentralization laws were a critical enabling factor for the support for effective decentralization undertaken through Wula Nafaa project activities.

- **Adoption of Local Conventions**
 - LCs saw great success in two areas: first, in convening and bringing rural voice into national dialogues; second, in enabling the rural councils and rural producers to exercise the rights given to them by law.
- **Establishment of community conservation reserves**
 - As an alternative model to national parks with restricted use, community reserves allow local groups to benefit directly from biodiversity stewardship
- **Extension via community facilitator network**
 - The recruitment and training of a cadre of excellent, capable facilitators as the base for extension of program activities was a key factor for success.
- **Invest in capacity-building for local authorities**
 - Local government bodies benefit greatly from skills training and support

BEST PRACTICES: WEALTH

The best practices for Wealth encourage growth of community based enterprise, promote diversification of incomes, and endorse greater organization and opportunity to in order to develop sustainable livelihoods.

- **Promotion of diversified livelihoods and secondary income strategies**
 - Via dry-season NRM activities such as baobab harvest or charcoal production, as well as value-added processing of raw materials
- **Strengthened rural participation in national and international markets**
 - Via facilitation of market linkages between village producer groups and transport networks or large-scale buyers or export companies
- **Capacity building of rural producers groups, GIEs and federations**
 - Establishment of legal business entities expands opportunities for credit, lends legitimacy to village-based enterprise and supports local product value chains
- **Leveraging of policy and institutional changes to facilitate the market access of charcoal produced from community managed forests**
 - Enhances the prospects for earning sufficient income to provide significant incentives to invest in sustainable use and improved management of the forest

In noting best practices, it is worthwhile to acknowledge that an emphasis on development of value chains allowed for engagement on all three components—Nature, Wealth and Power. Experience shows that easy successes can be achieved by focus on undervalued value chains and products, developing value that allowed community structures to emerge and benefit. These gains are more difficult to achieve in contested resources or politicized commodity chains, like charcoal in Senegal versus baobab fruit or *fonio*. With a high value resource, the value chain is much harder to break into and make change, whereas in the case of a low-value/undervalued commodity it is easier to break into and make change.

However, too strong of a focus on value chains, and developing enterprises and revenues without first having management systems in place, can be risky. Indeed, NWP recommends not to do this until empowered managers and a nucleus of a management system are in place for all products that can be harvested destructively. More attention could have been given to identifying and promoting improved NRM practices and “NRM systems” including forest management, but project implementation was overtly based on the premise that improved economic incentives and enhanced local governance would facilitate more sustainable resource management by local communities, not the other way around. Indeed, institutional knowledge—held in project staff and facilitators—of NRM systems already existed. Wula Nafaa addressed the fact that the challenge lies in applying those systems. To do so required working on government policy, community organization, financing, and market linkages, etc.

7.2 FACTORS WORKING AGAINST CHANGE

7.2.1 HISTORICAL LEGACY OF GOVERNMENT OF SENEGAL PRIORITIES

In reviewing the experience and lessons learned from USAID/Senegal's investments in E/NR projects over thirty years of engagement, it does appear that many of the achievements have occurred despite the focus of the central administration of the Government of Senegal on other priorities and approaches. For decades, the priority of the Forest Service and Ministry of Environment has been to support reforestation and government managed and directed forest management, including costly and donor-dependent approaches to fire control, forest inventory and forest management planning.

The Ministry of Environment has been especially keen to maintain its control over significant revenue flows linked to charcoal production, hunting and exploitation of other timber, NTFPs and forest products. Similarly, the priority of the Ministry of Agriculture and agricultural development programs has been on research, extension and investment focused on modernization and mechanization, increased use of inputs, value chain strengthening and investment in infrastructure (see Gadibous, Daffe, & Diallo, 1996). The priority of the Parks Department in the Ministry of Environment has been to improve biodiversity conservation by encouraging private-public partnerships to develop and manage tourism infrastructure in the national parks and to reinforce protected-area poaching control activities by equipping guards.

The priorities of the Ministries and departments dealing with governance and decentralization were largely focused on provisions for elections and “deconcentration” **rather than true devolution of authority and empowerment of producer groups engaged in managing natural resources** (USAID, 2013). The ministries and services dealing with enterprise development and the expansion of trade were largely focused on expansion of production and exports, with little regard to sustainable use and improved management of natural resources. And the ministries and national programs aimed at poverty reduction were not focused on addressing the root causes of insecure access to natural resources and inequities in benefit distribution associated with the charcoal production, state controlled game hunting, and the regulatory framework of taxes and permits that encouraged rent-seeking, corruption and reduced the income of the rural poor engaged in harvesting and marketing natural products. Since the publication of NWP in 2002, **while Wula Nafaa helped to draw attention to the utility of the NWP framework in Senegal, NWP is far from being mainstreamed into development strategies and programs in Senegal.**

In considering the organization and priorities of the national government of Senegal, it becomes clear that an integrated approach that is designed to address the root causes of poverty and ecosystem degradation is liable to run against the grain of most central government policies and programs. To some extent, this helps to explain some of the shortcomings of Wula Nafaa and earlier projects in achieving greater progress with sustainable use of grazing lands, and improved conservation and management of wildlife and game hunting. It also may help to explain why Senegal has been slow to capitalize on the potential benefits of scaling up agroforestry, “climate smart agriculture” and FMNR.

7.2.2 FOREST SERVICE ROLE IN COMMUNITY FOREST MANAGEMENT

As highlighted above, the main responsible body for governance over natural resources (forest resources in particular), namely the Senegalese Forest Service (SFS), has been perhaps the most reluctant to accept and implement the changes instituted by decentralization legislation. Theoretically, changing the role of central forest management and shifting control of resources to sub-entities should result in better resource management, increased wealth at the grass roots, and more equity. There is much evidence in Senegal that this has, indeed, been the case; however there is still much work to do to enact a true handover of responsibilities from the SFS to local elected officials and committees. While Wula Nafaa worked via capacity building and efforts to strengthen local governance to diminish and transform the role of the Forest Service in rural forest management from a supervisory authority to technical advisor, regional Forest Service agents have clung strongly to their long-held authority. Wula Nafaa annual reports mention difficulties in getting the Forest Service to collaborate with CRs in the drafting of Forest Management Plans (PAFs), and to sign

completed PAFs—a condition for CRs to actually get authority over forest management. Anecdotal evidence reveals other ways that the Forest Service has impeded local exercise of the right of management, and continues to sway decision-making on the local level. This pattern continues to persist and requires attention if project achievements in decentralized forest management are to persist beyond the life of the Wula Nafaa project.

By extension, the hosting of Wula Nafaa within the Ministry of Environment and thus in the same ministry as the Senegalese Forest Service may have been counterproductive due to the long-standing authority of SFS over NRM decisions. The fact of Wula Nafaa's successes despite the antagonistic relationship with the SFS is a testament to its integrity and strength. However in the future, it may be worth looking for different partners within GOS – such as the Ministry of Decentralization, or the Ministries of Agriculture and Rural Development.

7.2.3 STRUCTURES OF POLITICAL ACCOUNTABILITY AS BARRIERS TO EFFECTIVE DECENTRALIZATION

Local elected officials continue to be more accountable to central government structures than to local constituents, a predisposition that consequently undermines the decentralization process. This tendency toward upward accountability is related to political processes and electoral rules that limit accountability of Rural Councils (CRs) to community residents (Ribot, 1999): CR members must be registered in national political parties, which propose candidates before each election. Villagers are unable to create political parties, or to influence the national ones. Independent candidates cannot run for election, and elected CR members lose their seat if they defect from their party of affiliation. Many CR members are notables who do not necessarily live in the village where they were elected (Peltier, 2012). As a result, CR members will likely favor their party's interests (meaning, the interests of fellow party members) over their constituencies'. In practice, this upward accountability toward political parties may contribute to PCR's proclivity to collude with charcoal merchants or Forest Service officials (J. C. Ribot, 1999, 2008, 2010). Participation and decentralization are promoted on the basis that they can increase equity, yield greater efficiency, benefit the environment and contribute to rural development. Reaping these benefits is predicated on (1. Forest user groups (*comités villageois de blocs*) and CR members have diverging interests in matters of taxes and fees, and user groups have complained about PCRs favoring their powerful friends over villagers in the allocation of charcoal woodcutting permits (Peltier, 2012, p. 18).

7.3 STRATEGIES FOR OVERCOMING PERSISTENT BARRIERS TO CHANGE

Decentralization was a key enabling factor in Senegal for the success of integrated NRM programming that followed after 1998. Legal decentralization reforms formally devolved rights and management powers to local governance structures, and this provided the foundation for gains achieved in integrated community based NRM. With devolution of forest management rights and responsibilities legally mandated in 1996, with further expansion in 1998, the subsequent CBRNM program funded by USAID assisted with initial enactment of this new policy. The governance-focused program DGL-Felo project reinforced knowledge of rights and responsibilities under the new decentralization laws, working to build awareness of transferred community roles in local elected officials and regional leadership bodies. When Wula Nafaa began in 2003, decentralization legislation was already five years old, and the legal constructions in place on paper, if not yet effective on the ground.

Decentralization reforms of 1996 and 1998 opened the door for integrated development based on the Nature-Wealth-Power paradigm. These reforms defined NWP in Senegal because they allowed for work with rural communities as legitimate development partners. That said, decentralization has been neither a perfect nor a complete process in Senegal, and there is still real potential for backsliding—a possibility which admittedly could undo everything. The initial shifts we see today were made possible by the GOS sanctioning of decentralization, but in order for these to translate into real structural change, decentralization must be more fully realized in practice.

The idea of “good enough governance” (Grindle, 2004, 2007) is a useful framing in thinking about Senegal’s progress in achieving effective decentralization. The concept suggests that governance need not be perfect in order to achieve successful development aims. It gives permission for institution and capacity building to occur over time, and recognizes that there may be minimal conditions necessary and if these exist, then that can be “good enough” for political and economic development to occur. Good enough governance posits that governance may evolve in tandem with other development directives, while recognizing that governance achievement is also vulnerable to reversal.

Indeed, in Senegal, the idea of “minimal conditions of governance necessary to allow political and economic development to occur” (Grindle, 2007, p. 554) is quite appropriate. Without decentralization laws in place, the achievements of NRM programming and Wula Nafaa may never have been possible. If governance is already “good enough,” then interventions in Wealth and Nature can pay off. Or alternatively, incremental improvements in governance can tip the balance to “good enough governance” and allow for change. Wula Nafaa lends support to the idea that improvements in N, W, and P can occur simultaneously, and strengthens the argument that governance gains that are not perfect, but “good enough,” may nonetheless contribute to integrated development success. Legal decentralization paved the way for work done to further community empowerment, capacity building on the local level, and a handover of the power and jurisdiction over natural resources to local communities. In Wula Nafaa, programmatic focus on Local Conventions (which were a mechanism of participatory local governance), strengthening of local organizations, and a focus on breaking up value chain cartels all allowed Wula Nafaa project areas to get to a stronger level of “good enough governance” than other areas, allowing for significant improvements and measurable change.

That said, it is significant to recall the caution that “governance achievement can also be reversed,” (Grindle, 2007, p. 554) and to recognize that this too is evident in terms of where Senegal currently stands. Despite the legal recognition of decentralization, central government has not been quick to relinquish their habitual controls, nor have local representatives had the confidence and capacity to effectively take over the reins. Much progress has been made to shift this dynamic for the better, but gains are still fragile. Despite the great amount of change that has occurred, the situation is still tenuous and there is more work to be done to solidify this shift, as explained in the discussion below.

Figure 17: What is “Good Enough Governance”?

This concept suggests that not all governance deficits need to be (can be) taken at once, and the institution and capacity are a product of time; governance achievement can also be reversed.

Good enough governance directs attention to consideration of minimal conditions of governance necessary to allow political and economic development to occur.

The concept of good enough governance has provided a platform for questioning the long menu of institutional changes and public capacity building that are currently deemed important for development.

7.3.1 THREATS TO “GOOD ENOUGH GOVERNANCE” AND DECENTRALIZED NRM

Though great gains have been made in transitioning to effective decentralization, the fledgling governance innovations achieved are at risk. They need firm backing in the local arena and they need to be expanded upon. The potential for influence through national dialogues is the greatest channel by which local democracy can be strengthened to fight for its own rights to serve and respond to local needs and aspirations. The potential to expand rural incomes is enormous—for one example, the charcoal commodity chain survey found that most producers who are not selling in the cities have increased their incomes significantly (Faye, 2013). The potential to increase these margins is still enormous and requires mere vigilance and a well-organized and conscious rural polity and population. These are the great successes of Wula Nafaa. They continue to have great potential to improve rural wellbeing. They are also at risk of being lost in the face of Forest Service retrenchment.

It would be useful to clarify the distinction between decentralized bodies of authority and de-concentrated government in the political sphere. The channels of accountability and the electoral process for central government are not currently supportive of the decentralization model, and are confusing to constituents and government actors alike. This is an interesting area to examine and potentially an arena for future programs to work.

7.4 DESPITE BARRIERS, POSITIVE CHANGE IS HAPPENING

Persistent institutional barriers should not diminish the positive achievements of NRM programs in Senegal, but rather are outlined in order to highlight the nuances of context and the areas that are still in the process of change as the impacts of recent interventions ripple through the country.

It is important to acknowledge that conflict is a necessary part of change, and will occur, especially when dealing with re-distribution of authority and powers of management. While there is still resistance because of vested interest, and gains remain somewhat fragile, successes reveal a trend of community pushback and the rural voice is getting stronger—the battles are no longer being fought exclusively by the donor community, but by the forest user groups, for example.

The practice of local rule-making reduces conflict within rural communities, particularly resource-based conflict—such as that between herders and farmers, or between different forest users. This presents a powerful argument for focusing on demand-driven governance—the type supported by decentralization—versus a “supply-side” focus on elections and electoral processes. This focus makes sense in the context of greater governance trends, as there has been an evolutionary change in the DG sector resulting in attention to governance at the provincial and community levels as a more effective leverage point.

To conclude, it appears that a delicate balance of the State retaining national economic control but management powers being handed over to local governance—or **nested decentralization**—is a successful model for effective NRM on a national scale. In Senegal, movement towards this model is part of the enabling condition for integrated NRM program success, but is also part of the continued barrier—the State is maintaining too much control and not handing over enough to local government. That said, Wula Nafaa outcomes have shown that project support can forward greater development objectives when “good enough governance” has been achieved, and that in turn, those development successes can forward governance objectives as well.

7.5 CONCLUSIONS

7.5.1 NWP AS EFFECTIVE SUSTAINABLE DEVELOPMENT

The integrated strategy of NWP has incredible strength and resilience as a development approach. As demonstrated via the case of the Wula Nafaa project implemented in Senegal from 2003 to 2013, NWP can be applied in a vast variety of contexts, engaging with incredibly diverse types of resources, and achieves overall success in reducing poverty, while making strides in facilitating “good enough governance” and improving local management of natural resources.

The development hypothesis of the Nature Wealth Power paradigm is as follows: if NWP holds true, we should see:

- Transformation in local governance: assisting the move of rural people along the path from subject to citizen; leading the way toward a more democratic, decentralized, and vibrant society.
- Poverty reduction: increasing well-being and economic growth for local communities and national accounts, particularly with respect to increased food security and diversification of local sources of income
- Reversal of degradation of natural resource base: increasing the productivity of the resource base and conserved biodiversity while contributing to climate change adaptation and mitigation goals

Assessing Wula Nafaa against this framing of NWP reveals that it was a programmatic success. Looking to the future, it is clear that decentralized, intensive, community-managed approaches lead to comparatively greater long-term development gains. Project communities benefitted from greater economic gain—through value added processing, increased market access, negotiation of higher prices, fewer middle men, sustainable or increased yield from NRM interventions aimed at increasing productivity, and higher yields for activities already being practiced. Poverty reduction in target communities was paired with gains in education and nutrition. In the contested arena of charcoal, villagers and local producers are getting a larger share vis-à-vis the government and cartel and their producers that previously captured all or most of the revenue and profits—as per the intent of the decentralization laws and changes supported by Wula Nafaa.

In regards to Nature outcomes, even without hard data it can be observed that the situation has improved—with Local Conventions in place, management plans, and progress towards the establishment of NRM systems. This is a vast improvement compared to what was encountered as the status quo in 2003—widespread uncontrolled cutting in forests, conversion of forests to croplands, extensive use of destructive harvesting practices, etc., and pervasive poverty with only a select few capturing most of the profits from exploiting some resources. In the case of “managed” forests, results from Wula Nafaa still present a much better biodiversity outcome than if those forests were converted to cropland. Again, there is room for improvement, and a need to do better at conserving biodiversity as part of the forest management interventions—but Local Conventions, POAS, FMPs are all better than what happened in other areas of Senegal where forests that were under the protection and management of the Forest Service were degraded, cleared, or lost.

With a repeated emphasis on the need for continued support and active advancement of decentralization reforms in order to assure a genuine transfer of powers, as well as much more stringent and comprehensive monitoring of natural resource conditions, results from this Retrospective demonstrate that improvement of rural livelihoods, local empowerment in governance, and sustainability of the resource base are inter-related and have synergistic outcomes.

NWP principles work, and the synergistic outcomes of this approach are significant. With Wula Nafaa, integrated programming took villages that were worse off and made them better off, not just in terms of poverty reduction but also with broad-based impacts in gender, education, health and inequality. These results show that NWP is a successful strategy for reversing decline of rural communities: encouraging local wealth generation, and in turn demotivating urban migration, and inspiring sustainable management to support long-term returns on the economic benefit of local resources to rural communities.

As Wula Nafaa reveals, configurations of NWP will be different in different places, given differing allocations of natural capital, existence of biophysical resources, capacity of local management, etc., but the results show that the approach’s integrity is not diluted even if there are different levels of accomplishment across N, W, and P. The paradigm requires in implementation that each component be taken into account, and even if one aspect is emphasized more than another, none can be ignored entirely.

The results of the impact evaluation are indisputable: Wula Nafaa has achieved multi-faceted impacts towards revitalizing a stagnant rural economy. Complementary anecdotal evidence of impact on the level of the individual and household support this major conclusion, such as the case of Ibrahima Baldé, the charcoal producer in Sare Bidji, or Safiatou Barry, the householder in Bala benefiting from the rural baobab trade. Although the Wula Nafaa project has ended, the impacted people are still on the ground in their communities, using the tools, initiatives and momentum started by Wula Nafaa to continue to improve rural lives.

These concepts have clear applications beyond Senegal. NWP presents a model for how change can effectively occur from both the top and bottom at once: policy change and shifting industry norms can pair with perceptual change and empowerment at the grassroots level. This is how paradigms shift, how conventional wisdom is challenged and overturned, and how a pathway towards sustainability begins to be revealed. Future development investments should look to this approach as a model when designing NRM programs, as a tested implementation framework for improved resource management, community empowerment and with a significant, tangible impact on reducing poverty.

WORKS CITED

- Acedo, A. (1995). *History of USAID/Senegal*. USAID/Senegal.
- Acemoglu, D. (2009). *Introduction to modern economic growth*. Princeton: Princeton University Press. Retrieved from http://books.google.com/books?hl=en&lr=&id=DsPH5fWNdrsC&oi=fnd&pg=PT2&ots=wfVqc7ep80&sig=FOCJUITGP8tB9xMT_pZmRMr_cjM
- Agrawal, A., & Gupta, K. (2005). "Decentralization and participation: the governance of common pool resources in Nepal's Terai." *World Development*, 33(7), 1101–1114.
- Alegria, J., & Polansky, C. (2007). *Recommendations Concerning Inventory of Timber, Fuelwood, and Nontimber Products and Charcoal Species Regeneration for Areas of Wula Nafaa Intervention in Eastern and Southern Senegal*. Washington, D.C.: USDA Forest Service/USAID. Retrieved from http://pdf.usaid.gov/pdf_docs/pnaacc269.pdf
- ANSD. (2006). *Banque de Données des Indicateurs Sociaux du Sénégal, Edition 2005-2006*. Dakar, Senegal: Agence Nationale de la Statistique et de la Démographie.
- Ba, E. H. D. (2006a). *La réglementation de la filière du charbon de bois à l'épreuve de la décentralisation: entre discours, lois et pratiques*. Dakar; Washington, D.C.; Dakar Etoile: Codesria ; World Resources Institute ; Centre de coopération internationale en recherche agronomique pour le développement.
- Ba, E. H. D. (2006b). *Le quota est mort, vive le quota: ou les vicissitudes de la réglementation de l'exploitation du charbon de bois au Sénégal*. Dakar, Sénégal; Washington, D.C.: CIRAD : CODESRIA ; WRI.
- Bandiaky, S. (2007). *Engendering Exclusion in Senegal's Democratic Decentralization: Subordinating Women through Participatory Natural Resource Management* (No. 31). Washington, D.C.: World Resources Institute.
- "Baobab - a superfruit that tastes good. Is it possible?" (2013, February 21). Retrieved from <http://www.news.com.au/lifestyle/food/baobab-a-superfruit-that-tastes-good-is-it-possible/story-fneuz8zj-1226582891020>
- Bardhan, P. (1997). "Corruption and development: a review of issues." *Journal of Economic Literature*, 35(3), 1320–1346.
- Benjamin, C. (2008). *Wula Nafaa II Local Governance Component: Observation and Opportunities, Volume I Report*. International Resources Group.
- Bigsten, A., Kebede, B., Shimeles, A., & Tadesse, M. (2003). "Growth and Poverty Reduction in Ethiopia: Evidence from Household Panel Surveys." *World Development*, 31(1), 87–106. doi:10.1016/S0305-750X(02)00175-4
- Card, D., & Krueger, A. B. (1994). "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania." *The American Economic Review*, 84(4), 772–793.
- Catterson, T., McIntyre, B., Ndiaye, R., Diallo, S., N'Deckey, R., Ba, S., & Polansky, C. (2010). *USAID Wula Nafaa and Economic Growth Project: Report of the Programmatic Environmental Assessment (PEA) of the USAID/Senegal Enhanced Agricultural Productivity Activities Under the Feed the Future Initiative by USAID/Senegal and its Implementing Partners*.
- Christophersen, K. (1988). *An Economic Approach To Arid Forest Project Design: Experience From Sahelian Countries*. E/DI, USAID, University of Idaho.
- Christophersen, K., & Weber, F. (1979). *Energy Potential from Native Brushland in Niger: The Economic Perspective : Report to Office of Energy, Agency for International Development*. Washington, D.C.: USAID.
- Diawara, B. (2011). "The role of education on poverty reduction in Senegal." *Unpublished Paper*. Retrieved from [http://web.ias.tokushima-u.ac.jp/naito/No.14\(Diawara\).pdf](http://web.ias.tokushima-u.ac.jp/naito/No.14(Diawara).pdf)
- Djigo, A. (2006). *Axes d'orientation pour l'élaboration des textes sur la fiscalité Forestière* (Report to USAID Wula Nafaa).
- Eriksen, J., & Miller, D. (1998). *KAED Impact Evaluation*. USAID.

- Faye, P. (2013). *Document de Travail: Analyse de la Filière Charbon de Bois en Zones USAID-Wula Nafaa—Programme Agriculture/Gestion des Ressources Naturelles: Marges et Part des Acteurs de la Filière Charbon de Bois*. USAID. Retrieved from http://pdf.usaid.gov/pdf_docs/pa00jw7k.pdf
- Faye, P. (2006). *Décentralisation, pluralisme institutionnel et démocratie locale: étude de cas de la gestion du massif forestier Missirah/Kothiary (région de Tambacounda, Sénégal)*. Dakar, Sénégal; Washington, D.C.: CIRAD : CODESRIA ; WRI.
- Filmer, D., & Pritchett, L. H. (2001). “Estimating Wealth Effects without Expenditure Data—or Tears: An Application to Educational Enrollments in States of India.” *Demography*, 38(1), 115–132. doi:10.2307/3088292
- Freudenberger, K. (2010). *Paradise Lost? Lessons from 25 Years of USAID Environment Programs In Madagascar*. Washington, D.C.: US Agency for International Development.
- Fuwa, N. (2007). “Pathways out of rural poverty: a case study in socio-economic mobility in the rural Philippines.” *Cambridge Journal of Economics*, 31(1), 123–144. doi:10.1093/cje/bel015
- Gadbous, M., Daffe, M., & Diallo, A. (1996). *Senegal Agriculture Sector Retrospective Study*. Tropical Research & Development, Inc.
- Gellar, S., Charlick, R., & Thioub, I. (2004). *Senegal Democracy and Governance Assessment: work conducted by Management Systems International, Inc. for USAID/Dakar, and the Center for Democracy and Governance (G/DG) Bureau for Global Programs, Field Support, and Research US Agency for International Development*.
- Gilbert, G., & Taugourdeau, E. (2013). “The Local Government Financing System in Senegal.” In B. Dafflon & T. Madiès (Eds.), *The political economy of decentralization in Sub-Saharan Africa: a new implementation model in Burkina Faso, Ghana, Kenya, and Senegal*. Washington, DC: World Bank.
- Grindle, M. S. (2004). “Good enough governance: poverty reduction and reform in developing countries.” *Governance*, 17(4), 525–548.
- Grindle, M. S. (2007). “Good enough governance revisited.” *Development Policy Review*, 25(5), 533–574.
- Grootaert, C. (1997). “The Determinants of Poverty in Côte d’Ivoire in the 1980s.” *Journal of African Economies*, 6(2), 169–196.
- Gyimah-Brempong, K., & Asiedu, E. (2009). *Remittances and Poverty in Ghana. Presented at the 4th African Economic Conference on Fostering Development in an Era of Financial and Economic Crises, Addis Ababa, Ethiopia*.
- Herrmann, S. M., & Tappan, G. G. (2013). “Vegetation impoverishment despite greening: A case study from central Senegal.” *Journal of Arid Environments*, 90, 55–66. doi:10.1016/j.jaridenv.2012.10.020
- IBM. (2004). *Final Evaluation Report: Evaluation of DynaEntreprises Activities in Senegal*.
- International Resources Group. (2008). *USAID/Senegal AG-NRM Program – Wula Nafaa Final Report Feb 2003-May 2008*.
- IRG. (2003). *Programme Agriculture – Gestion des Ressources Naturelles « Wula Nafaa »: Filières Intéressantes pour Wula Nafaa. Report to Wula Nafaa*.
- IRG. (2010). *USAID Wula Nafaa Program Annual Report October 2009-September 2010*.
- IRG. (2011). *USAID Wula Nafaa Program Annual Report October 2010-September 2011*.
- IRG. (2012). *USAID Wula Nafaa Program Annual Report October 2011-September 2012*.
- Javelle, A. (2013). “Working Paper: Evaluating the Impact of the Wula Nafaa Natural Resources Management Program in Senegal on the Distribution, Exercise, and Accountability of Power.” USAID. Retrieved from http://pdf.usaid.gov/pdf_docs/pa00jw64.pdf
- Johnson, B. (2006). *Briefing Paper : Community Benefits, AG/NRM Program*.

- Kanté, A. M. (2006). *Décentralisation sans représentation: le charbon de bois entre les collectivités locales et l'État*. Dakar, Sénégal; Washington, D.C.: CIRAD : CODESRIA ; WRI.
- Kremer, W. (2003). *Capitalisation des acquis du PAGERNA dans le domaine de la réhabilitation du couvert végétal et de l'habitat de la faune sauvage*. Dakar, Senegal: MEPN/GTZ. Retrieved from <http://www.environnement.gouv.sn/IMG/pdf/capitalisation-couvert.pdf>
- Lechner, M. (2010). *The Estimation of Causal Effects by Difference-in-Difference Methods* (University of St. Gallen Department of Economics working paper series 2010 No. 2010-28). Department of Economics, University of St. Gallen. Retrieved from <http://ideas.repec.org/p/usg/dp2010/2010-28.html>
- Lichte, J. A. (1999). *Impact Assessment of the AG/NRM Strategic Objective of USAID/Senegal Annex A. The Ecological and Historical Context in Senegal* (Environmental Policy and Institutional Strengthening Indefinite Quantity Contract (EPIQ), USAID-Senegal., Vol. 2).
- McKenzie, D. J. (2005). "Measuring inequality with asset indicators." *Journal of Population Economics*, 18(2), 229–260. doi:10.1007/s00148-005-0224-7
- McMahon, W. W. (1999). *Education and Development: Measuring the Social Benefits: Measuring the Social Benefits*. Oxford: Oxford University Press. Retrieved from http://books.google.com/books?hl=en&lr=&id=gWZhEYGof88C&oi=fnd&pg=PA1&dq=McMahon,+W.+W.+1999,+Education+and+Development:+Measuring+the+Social+Benefits&ots=aZ2hIIP_-i&sig=v1f0PaLsm5T8obymavl65HOCeeg
- Morris, J. (1982). *Survey of NTFPs from the Dinderesso Forest*.
- Naschold, F. (2002). "Why inequality matters for poverty." *ODI Inequality Briefing Paper, 2*.
- ORC Macro. (2006). *Nutrition of Young Children and Mothers in Senegal: Findings from the 2005 Senegal Demographic and Health Survey*. Calverton, MD: ORC Macro.
- Peltier, R. (2012). *Evaluation de la mise en œuvre des plans d'aménagement forestier dans les Forêts Communautaires appuyées par le programme USAID Wula Nafaa* (Report to USAID Wula Nafaa).
- Piveteau, A. (2005). "Décentralisation et développement local au Sénégal. Chronique d'un couple hypothétique." *Tiers-Monde*, 46(181), 71–93. doi:10.3406/tiers.2005.5553
- Poteete, A. R., & Ribot, J. C. (2011). "Repertoires of Domination: Decentralization as Process in Botswana and Senegal." *World Development*, 39(3), 439–449. doi:10.1016/j.worlddev.2010.09.013
- Rassas, B. (2013). *Evaluating the Impact of the Wula Nafaa Natural Resources Management Program in Senegal on the Socio-Economic Status of the Population: A Quasi-Experimental Design Analysis*. USAID. Retrieved from http://pdf.usaid.gov/pdf_docs/pa00jw5k.pdf
- Reij, C. (2012). *Scaling up in Agriculture, Rural Development and Nutrition: Building on Successes in Re-greening in the West African Sahel*. Washington, D.C.: International Food Policy Research Institute.
- République du Sénégal. *Loi n° 96-06 du 22 mars 1996 portant Code des Collectivités locales* (1996).
- République du Sénégal. *Loi n° 96-07 du 22 mars 1996 portant transfert de compétences aux régions, aux communes et aux communautés rurales* (1996).
- Ribot, J. C. (1993). "Forestry Policy and Charcoal Production in Senegal." *Energy Policy*, 559–585.
- Ribot, J. C. (1998). "Decentralization, Participation, and Accountability in Sahelian Forestry: Legal Instruments of Political-Administrative Control." Retrieved from <http://www.escholarship.org/uc/item/8037h8wk#page-4>
- Ribot, J. C. (1999). "Decentralisation, Participation and Accountability in Sahelian Forestry: Legal Instruments of Political-Administrative Control." *Africa: Journal of the International African Institute*, 69(1), 23–65. doi:10.2307/1161076

- Ribot, J. C. (2004). *Waiting for democracy: the politics of choice in natural resource decentralization* (WRI Report). Washington, D.C.: World Resources Institute. Retrieved from <http://www.citeulike.org/group/15968/article/10698241>
- Ribot, J. C. (2006). *Analyse de la filière Charbon de Bois au Sénégal—Recommandations*. Washington, D.C.: World Resources Institute. Retrieved from http://pdf.wri.org/senegal_policy_brief_a4.pdf
- Ribot, J. C. (2008). *Weex Dunx and the Quota: Plucking Local Democracy in Senegal*. Retrieved from <http://vimeo.com/9922998>
- Ribot, J. C. (2009a). *Analysis Of Senegal's Draft Forestry Code* (Report to USAID Wula Nafaa).
- Ribot, J. C. (2009b). "Authority over Forests: Empowerment and Subordination in Senegal's Democratic Decentralization." *Development & Change*, 40(1), 105–129. doi:10.1111/j.1467-7660.2009.01507.x
- Ribot, J. C. (2010). *Semmiñ Ñaari Boor*. Retrieved from <http://www.cultureunplugged.com/documentary/watch-online/play/7645/Semmin-Naari-Boor--Double-Bladed-Axe->
- Rochette, R. M. (1989). *Le Sabel en lutte contre la desertification: lecons d'experience*. CILSS, GTZ.
- Runciman, W. G. (1966). *Relative deprivation & social justice: study attitudes social inequality in 20th century England*. London: Routledge & Kegan Paul. Retrieved from <http://www.citeulike.org/group/2546/article/1361362>
- Sanogo, D., & Tamba, A. (2012). *Inventaire des parcs de baobab et du potentiel pain de singe dans les Communautés Rurales de Koussanar et Bala dans la région de Tambacounda et la Communauté Rurale de Dar Salam dans la région de Kedougou. Final Report to Wula Nafaa*.
- Sene, A., & Ndione, C. (2004). *Analyse Financiere des filieres des produits naturels et agricoles dans le Senegal Oriental. Programme Gestion des Ressources Naturelles. Annex 4 – Regional Incomes*.
- Shaikh, A. (1989). *Opportunities for Sustainable Development*. USAID, IRG.
- Shaikh, A., Arnould, E., Christophersen, K., Hagen, R., Tabor, J., & Warshall, P. (1988). *Opportunities for Sustained Development: Successful Natural Resource Management in the Sabel*. Washington, D.C.: USAID/AFR/TR.
- Tappan, G. ., Sall, M., Wood, E. ., & Cushing, M. (2004). "Ecoregions and land cover trends in Senegal." *Journal of Arid Environments*, 59(3), 427–462. doi:10.1016/j.jaridenv.2004.03.018
- Taylor, Z. (2013, March 11). "U.S.-Constructed Anti-Salt Dike Builds Resilience And Safeguards the Environment in Kaolack." Retrieved February 9, 2014, from <http://www.usaid.gov/senegal/press-releases/us-constructed-anti-salt-dike-builds-resilience-and-safeguards>
- UDRSS/VALEURS. (2002). *The economic value of wild resources in Senegal: a preliminary evaluation of non-timber forest products, game and freshwater fisheries*.
- United Nations Development Programme. (2013). *Human Development Report 2013: The Rise of the South: Human Progress in a Diverse World. Explanatory note on 2013 HDR composite indices - Senegal*. New York: United Nations Development Programme. Retrieved from <http://hdr.undp.org/sites/default/files/Country-Profiles/SEN.pdf>
- United Nations Development Programme, United Nations Environment Programme, World Bank, & World Resources Institute. (2008). *World Resources 2008: Roots of Resilience Growing the Wealth of the Poor*. Washington, D.C.: World Resources Institute.
- USAID. (2002). *Nature, Wealth, and Power: Emerging Best Practice for Revitalizing Rural Africa*. Washington, DC. Retrieved from http://www.usaid.gov/our_work/agriculture/landmanagement/pubs/nature_wealth_power_fy2004.pdf
- USAID. (2006). *Issues in Poverty Reduction and Natural resource Management*. Washington, D.C.
- USAID. (2011). *Evaluation: Learning From Experience. USAID Evaluation Policy*. Washington, D.C.: US Agency for International Development.

- USAID. (2013). *Democracy, Human Rights, and Governance Assessment of Senegal: Final Report*.
- USAID/Wula Nafaa. (2004). *Analyse Financiere des Filieres des Produits Naturels et Agricoles dans le Senegal Oriental*.
- USAID/Wula Nafaa. (2008). *Guide d'Elaboration du Plan d'Aménagement Forestier Participatif*.
- USAID/Wula Nafaa. (2010). *Formation Technique et Appui en Agriculture de Conservation*.
- USAID/Wula Nafaa. (2012). *Conservation Farming Information Sheet*.
- USAID-Senegal. (2013a). *Agriculture and Natural Resources Management Program (USAID Wula Nafaa) Success Stories*.
- USAID-Senegal. (2013b, August 29). "Wula Nafaa: A Decade of Innovation Harnessing the Power of Nature to Help Senegal Feed the Future." *Dateline: Dakar*, (78).
- USGS, CSE, CILSS, & USAID. (2007). *Land Use and Land Cover Change in Senegal: a Synthesis*.
- Weidemann Associates. (2006). *Evaluation of USAID/ Agriculture and Natural Resources Management Program "Wula Nafaa."*
- Winterbottom, R. (2013). "Working Paper: USAID/Senegal Nature-Wealth-Power Retrospective Study Contribution on 'Nature'." USAID. Retrieved from http://pdf.usaid.gov/pdf_docs/pa00jw67.pdf
- Winterbottom, R., & Hazlewood, P. T. (1987). "Agroforestry and sustainable development: making the connection." *Ambio*, 16. Retrieved from <http://agris.fao.org/agris-search/search/display.do?f=1987/SE/SE87012.xml;SE8711208>
- World Bank. (2013). "World Bank World Development Indicators: Senegal." Retrieved February 8, 2014, from <http://data.worldbank.org/country/senegal>
- Wurster, K. (2010). *Management Matter? Effects of Charcoal Production Management on Woodland Regeneration in Senegal* (Ph.D. thesis). University of Maryland, College Park, MD. Retrieved from <http://drum.lib.umd.edu/handle/1903/10307>

APPENDIX A: METHODOLOGY

This Retrospective study is the product of a collaborative effort of separate consultant teams. Since the Retrospective was shaped by the NWP framing, the design for data analysis mirrored the NWP structure, consisting of three distinct analyses organized around the sectorial themes of Nature, Wealth and Power respectively (presented in separate component reports¹¹²). Each team was responsible for analysis of 30 years of USAID NRM investment in Senegal, with a specific focus on Wula Nafaa—an integrated program implemented over the last ten years in Senegal, which was designed to be an implementation of NWP in practice. Study coordinators received subsequent inputs from the three consultant teams, and used those, along with the results of an initial scoping mission and a qualitative narrative collection mission, to create a cohesive draft. This draft went through a feedback and peer review process among key stakeholders. The final report incorporated feedback from this process to produce a synthesis report, which is this Retrospective Study.

The consultant team inputs consisted of three separate reports for “Nature”, “Wealth” and “Power”. The analyses carried out by the World Resources Institute (WRI) included an investigation of aspects related to “Nature” and “Power”.¹¹³ The main questions investigated while preparing the Nature report are related to the successes and shortcomings in applying the NWP approach to support the sustainable use, improved management and increased productivity of natural resources (forests, soils, water, pastures, wildlife and fisheries) and to contribute to environmental rehabilitation and recovery in Senegal. The Power report looks into issues of good governance, such as participation, representation, transparency, and the distribution, exercise and accountability of power in natural resources management. The “Wealth” component is based on a comparative assessment of the socio-economic status of populations within and outside the areas targeted by Wula Nafaa.¹¹⁴ The consolidated, summary report for the Senegal Retrospective study was prepared by the team leaders and consultants mobilized by the USFS/International Programs and utilized these component reports as key inputs.

METHODOLOGY OF WEALTH REPORT

The Wealth report is based on a comparative assessment of the socio-economic status of populations within and outside the areas targeted by Wula Nafaa.¹¹⁵ Data on socio-economic status was obtained through analysis of key variables included in Demographic and Health Surveys (DHS) carried out over the past 20 years. See section 2.1.2 of this study for Impact Assessment methodology. For additional details see the Wealth report.¹¹⁶

The Wealth report investigated possible use of other surveys in Senegal besides the DHS; none of the other surveys could be used, either because they are not easily accessible to researchers or because the data contained in those surveys do not provide enough consistency over the survey rounds to be of any use in an impact evaluation. Since Wula Nafaa has been implemented over the past 10 years, results for the 1997 and 2010-11 DHS are used in the analysis. Reference to the 1992-93 survey data are made only to place the results in a broader historical perspective.

DHS data typically draw upon responses to questions about household assets included in the DHS questionnaire, which were generally similar for all three surveys. The DHS questionnaires gathered information on a large number of indicators about employment; education; health, nutrition, and population; service use; and relevant behaviors of household members.

112 See component reports available at pdf.usaid.gov/pdf_docs/PA00JW67.pdf (Nature), pdf.usaid.gov/pdf_docs/PA00JW5K.pdf (Wealth), and pdf.usaid.gov/pdf_docs/PA00JW64.pdf (Power).

113 See USAID/Senegal Nature Wealth and Power Retrospective Study: Contribution on “Nature” from WRI, 2013. And Evaluating the Impact of the Wula Nafaa Natural Resources Management Program in Senegal on the Distribution, Exercise and Accountability of Power. WRI, 2013

114 See Evaluating the Impact of the Wula Nafaa Natural Resources Management Program in Senegal on the Socio-economic Status of the Population: A Quasi-experimental Design Analysis. Bechir Rassas, 2013.

115 See Evaluating the Impact of the Wula Nafaa Natural Resources Management Program in Senegal on the Socio-economic Status of the Population: A Quasi-experimental Design Analysis. Bechir Rassas, 2013.

116 See Evaluating the Impact of the Wula Nafaa Natural Resources Management Program in Senegal on the Socio-economic Status of the Population: A Quasi-experimental Design Analysis. Bechir Rassas, 2013.

Each survey consists of several datasets. The main set is for individual women records, but there are datasets for births, children, males, households, couples, and HIV test results. Many variables can appear in multiple datasets. For the purposes of this assignment the “households recode” dataset was the main data source. A “geographic dataset” is also available for most DHS rounds, starting in the mid-1990s when GPS equipment became more widely accessible. A small spreadsheet contains geographic coordinates (latitude and longitude) for each cluster of sample households.

DHS surveys use a two-stage sampling procedure, first selecting locations for clusters, then selecting 20 households around each cluster. Individual household GPS coordinates are not available; all households in the vicinity of a cluster are assigned the central coordinates of the cluster.

With the geographic coordinates for each cluster, we were able to break down the sample dataset by province and district. Using a map of the administrative districts (or Rural Communities) where Wula Nafaa has been active, we identified household clusters in the DHS data that fell in Wula Nafaa districts. Within each district, the specific communities where Wula Nafaa has been implemented were identified. Wula Nafaa rural communities were compared with a control group consisting of sample households from surrounding rural communities. The household sample sizes used for this study are displayed in Table A1. This impact evaluation compares Rural Communities that participated in Wula Nafaa’s intervention to Rural Communities that did not. The Rural Communities in Wula Nafaa (n=49) and control areas (n=84) were identified using Wula Nafaa program documents as well as direct interviews and other communications with local and foreign experts with particular knowledge of the Wula Nafaa and control areas and their geographic and historical context (a complete list of those rural communities is provided as Annex I in the Wealth Component report). Rural communities in the control areas were selected for their proximity and similarity to the Wula Nafaa areas. Figure 4 depicts the locations of Wula Nafaa and control RCs.

TABLE A1: Impact Evaluation Sample Size

	2010-2011	1997
Wula Nafaa	1,070	456
Control	1,480	983

When identifying rural communities in the Wula Nafaa and control areas, particular care was taken to exclude from the sample the rural communities where the World Bank-financed Sustainable and Participatory Energy Management project (PROGEDE)¹¹⁷ was implemented so that the results can be attributed solely to Wula Nafaa. ArcMap, a geographic mapping and analysis application, was used to identify the specific rural communities to which each household in the sample belonged.

METHODOLOGY OF NATURE REPORT

The Nature report is based on a review of available project documentation and related literature, together with interviews with key informants carried out in late 2012 and early 2013. Most of the documentation reviewed was produced by USAID project teams, and is largely in the form of quarterly progress reports, annual reports and technical or thematic reports prepared with USAID project funding. Several published articles in the scientific literature were also consulted, along with documentation related to environment and natural resource management (NRM) issues in Senegal prepared by technical departments of the government of Senegal, NGOs and other projects. As the Nature report was prepared as a desk study in Washington, D.C., WRI was not able to supplement the document review with field visits and interviews with a range of key informants in Senegal; most of the persons contacted for the Nature report are now residing in the US but have had some association with USAID or the Wula Nafaa project.

¹¹⁷ PROGEDE focused on the implementation and monitoring of over 300,000 hectares of environmentally sustainable community-managed forest resource systems in the Tambacounda and Kolda regions, forming in the process a managed protection zone around the Niokolo-Koba National Park.

METHODOLOGY OF CHARCOAL COMMODITY CHAIN STUDY

A mix of qualitative and quantitative data was used to create an understanding of both measured impact and process. Questionnaires were given to various actors in the sector, and interviews were sought with those who have influence over the policies and management regulating the sector. The work was divided into two parts: a survey of the actors in the main production region, Tambacounda, and another of the urban actors involved in the charcoal commodity chain. The questionnaires were tested from February 26 to 28, then adjusted between March 1 and 2. The actual survey took place during the remainder of March 2013, in both Dakar and Tambacounda.

The objective of the quantitative portion of the survey was to collect data to estimate the actors' net income and expenses at every level of the chain. The survey also aimed to identify and evaluate the factors influencing the vertical and horizontal distribution of net income among the different actors. The survey was conducted in Wula Nafaa project areas, and in areas where PROGEDE, another major project (further described hereafter), was working with similar objectives as Wula Nafaa with regards to the charcoal sector. For local producers, we sought to survey at least 12 individuals in Wula Nafaa and 12 individuals in PROGEDE areas. For other actors involved in the charcoal commodity chain, at least 12 actors were surveyed.¹¹⁸

Qualitative data was collected through interviews with representatives of the main institutions involved in the Wula Nafaa project or with charcoal sector regulation (*e.g.*, Forest Service). In addition to providing reports and possible interview contacts, project staff from USAID-Wula Nafaa, PROGEDE and a third project called PERACOD (another project involved in charcoal production, further described hereafter) also provided input on the effectiveness of policies implemented with the goal of achieving a better integration of local populations in the charcoal sector.

The overall objective of this study was to chart the changes in income at different nodes in the charcoal commodity chain since before the decentralization laws were enacted in forestry in order to see if decentralization laws and the programs that were supported by USAID and the World Bank resulted in greater income for rural producers and whether it presented them with a greater share of the market profits in charcoal. This was achieved by comparison with earlier commodity chain studies conducted in 1987, 1994 and 2002-3.

The Forest Service (*Eaux et Forêts*), provided statistics on logging and charcoal production. While the representatives with whom we were in contact agreed to answer questions and provide additional background, they were not available for follow-up questions: the reasons varied from business travel and meetings, to new employees replacing those we had originally contacted.

LIMITATIONS AND SHORTCOMINGS OF CHARCOAL COMMODITY CHAIN STUDY

In spite of its many advantages, the method used in this assessment presents a number of practical and conceptual shortcomings. Practical limitations stemmed from the contrast between the wide scope of this study—assessing 30 years of USAID interventions in multiple NRM-related sectors—and the necessarily more limited means available to carry out this assessment. Initially designed as a desk-review only, this assessment was later expanded to include a field survey to address the scarcity of cross-time data on governance issues on one commodity. Ideally, similar work on other commodity chains would have been necessary to grasp sectorial differences.

The sample size for charcoal commodity chain survey is limited, with only 12 to 15 questionnaire responses for each type of actor involved in the chain (this is explained further in Section IV of the Power report). The survey could only be conducted in one of the three main charcoal production regions in Senegal. Because all major charcoal production regions did receive some form of project support (by USAID, another organization or multiple organizations), comparing the USAID project area to an area without project support was impossible. In the absence of a true control group, we opted to compare the USAID project area to the World Bank project area.

¹¹⁸ In addition, this survey found a new type of actors in the chain: local residents, called *depositaires légaux*, authorized by the Forest Service to produce charcoal from woods lopped for fire-prevention purposes (they enter the charcoal business occasionally, and are therefore not reflected as an actor of the value chain in this document).

Conceptual limitations pertain to using the charcoal value chain as the main basis to assess changes in environmental governance: the charcoal value chain, because it is highly political and politicized, may not be representative of other forest commodities. Rural Councils' (CRs') legal authority may not be disputed as much; constraints on villagers' access to other markets, such as fonio, gum Arabic, baobab fruit, are likely different from the factors limiting their access to the charcoal market—distance from roads and markets, lack of information on potential buyers, scarce credit availability, inadequate organization of the value chain may be more or less of a constraint for different forest products. To account for these differences, information on these other forest products will be used whenever possible throughout this report to illustrate changes in environmental governance. The lack of detailed, quantified data on these commodities is, however, a major limitation to their use in this assessment. Moreover, just as these commodities may present a very different picture of power dynamics from charcoal, some may not provide much insight on power dynamics precisely because they are less attractive to those with power. The Power component of the NWP framework is most relevant where there are struggles over control and access to resources.

METHODOLOGY OF NARRATIVE COLLECTION

A targeted visit in February 2013 was made to five different Wula Nafaa project sites in Senegal to gather narratives of project implementation and impact via direct interaction with project beneficiaries, community facilitators, and other Wula Nafaa program staff. Sites for narrative collection were selected with the assistance of Wula Nafaa Chief of Party as well as key staff members at the USAID/Senegal mission. The following sites were visited over a 15 day period: Dakar, Dindéfelo, Sare Bidji, Kayemor, Medina Sangako/Soukouta and Bala. Methods for narrative collection included preliminary interviews with project staff, unstructured interviews on site, observation and photography. Over 56 interviews were conducted in English, French, and Pulafula.

SCOPING VISIT

An initial scoping visit was made to Senegal by the Retrospective Team Leader in April 2012 to meet with key informants at the USAID/Senegal mission, to further consolidate the Scope of Work for this project, and to visit field sites and key actors in the NRM field in Senegal, in order to further inform the study moving forward.

OVERALL LIMITATIONS OF RETROSPECTIVE METHODOLOGY

The findings in regards to the analysis of impacts are limited by the emphasis in USAID progress reports on project implementation activities. In regards to the Nature component, project monitoring and evaluation has been focused on indicators designed to show socio-economic and development impacts, as well as progress in completing designed activities. The project reports describe specific project related accomplishments at the household or community level, and most reported “successes” were related to income generation at the household and community level and summary descriptions of benefits on natural resources. While there were reports of some baseline data collection in relation to biodiversity, forest cover and other environmental and natural resource indicators, it was difficult to find data on changes in natural resource conditions and resource productivity at the landscape level directly attributable to USAID funded projects.

As noted in the report, USAID has supported a number of significant interventions on long term environmental monitoring at the national level in Senegal, including an analysis of long term changes in land use and land cover. This information provides useful context for the analysis of medium to longer-term impacts on the natural resources in the areas directly impacted by USAID projects. Similarly, USAID supported a series of surveys of knowledge, attitude and practices at a sub-national scale, which provided some insights into the extent of adoption of selected NRM practices by rural populations. However, there is still a paucity of data about the direct and cumulative impacts of USAID projects and associated NRM interventions on the natural resource base, and on the scaling up of NRM practices within and outside the landscapes targeted by USAID projects.

Specifically, Wula Nafaa adopted the standard USAID indicators—measuring increased area of land under improved management, using those areas under Local Conventions as a proxy for areas where biodiversity was being conserved. It would have been much more useful and targeted to collect data on actual impact on biodiversity and changes in more precise indicators of biodiversity in order to derive more precise correlations between management practices promoted by interventions and their impact on natural resources.

In regards to the Wealth component, project data reported on changes within program areas but did not compare these changes to non-project areas. This limitation did inspire valuable innovation in examination of the Wealth component, which was accomplished by analysis of Demographic and Health Surveys via quasi-experimental design. This new technique for measuring impact on wealth outcomes making use of existing data sources was immensely effective and decisively informative for future replication.

In respect to governance, Wula Nafaa failed to produce a baseline against which performance on the Power component of the NWP framework could have been assessed. To bolster available data on power and governance changes, the Power team conducted a commodity chain survey to obtain data on power shifts within the charcoal commodity chain—a major intervention area for Wula Nafaa—and to discern the influence of project intervention on facilitating those shifts. In terms of project management, this assessment illustrates *the importance of defining performance measures and establishing a baseline before project inception through well-defined surveys, including on governance.*

It is important to acknowledge the inherent limitation in evaluation of an integrated approach through segregated analysis. We have done our best to consolidate the findings in order to gather lessons learned and conclusions on the program and approach as a whole, but recognize that a segregated analysis from the outset can tend to shape the findings thematically, and can present challenges for determining key areas of overlap and synergy, and unified programmatic impact.

APPENDIX B: LIST OF INFORMANTS

Jon Anderson, NWP manager, Engility Corporation

Ahmet Bathily, Facilitator, Wula Nafaa

Aminaata Badiane, AG/NRM Specialist, USAID/Senegal

Bouba Ba, Colonel, Chef de l'Inspection, Inspection Régionale des Eaux et Forêts

Ahmet Baldé, Facilitator, Wula Nafaa, Sare Bidji

Alassane Balde, Président, Conseil Rural, Thietty

Demba Baldé, Senior Social Development Specialist, World Bank, Dakar

Ibrahima Baldé, Président, GIE Waakilare, Sare Bidji

Safiatou Barry, Resident, Sinthiou Diokhe, Bala

Samba Barry, USAID/Senegal

Jean-Michel Borie, Principal Technical Advisor, Biodiversity, Wula Nafaa

William Bradley, Agriculture Officer, USAID/EGO

Aaron Brownell, Economic Growth Officer, USAID

Djiby Camara, Owner, Campement Africa Cascade, Dindéfelo

Carim Camara, Président, Comite de Gestion RNCD, Dindéfelo

Tom Catterson, team leader, USAID/Senegal, Programmatic Environmental Assessment

Abdoulay Cissé, Président Conseil Rural, Kayemor

Bassoriba Cissé, Président Conseil Rural, Missirah

Kadiatou Cissé, Predient, GIE Le Baobab, Bala

Rabi Cissé, Owner, Baraka Boutique, Tambacounda

Binta Coly, Wealth Creation Team Leader, Wula Nafaa, Tambacounda

Sadio Coulibaly, Monitoring & Evaluation Team Leader, Wula Nafaa, Tambacounda

Sidi Coulibaly, Agence Régionale de Développement, Tambacounda, Senegal

Philip DeCosse, Food Security specialist, Engility Corporation

Lamine Diémé, Facilitator, Wula Nafaa, Tambacounda

Boubacar Diallo, Facilitator, Wula Nafaa, Kolda

Hawa Diallo, GIE Le Espoir, Tambacounda

Kikala Diallo, Président, Conseil Rural, Dindéfelo

Mallal Diallo, Président, Charcoal Producers Group, Sare Bidji

Mata Diallo, President, Women's Federation, Dindéfelo

Doudou Diamé, Président, GIE Ostreicole, Medina Sangako

Ibrahim a Diamé, Vendor, GIE Ostreicole, Medina Sangako
Ibou Diamé, Président Conseil Rural, Toubacouta
Mariama Diamé, Groupement Ostreiculture, Soukouta
Seynou Diamé, Groupement Ostreiculture, Soukouta
Pape Dieye, Agriculture Specialist, USAID/Senegal
Amath Diop, Wealth Creation Team Leader, Wula Nafaa, Tambacounda
Amie Diop, Facilitator, Wula Nafaa, Kaolack
Massamba Diop, USAID/Senegal
Sarah Durso, Wula Nafaa project manager, IRG and NCBA/CLUSA
Matthew Edwardsen, Africa Program Coordinator, US Forest Service International Programs
Madior Fall, Communications Director, Wula Nafaa
Ibrahima Faty, Facilitator, Wula Nafaa, Kayemor
Papa Faye, Researcher
Craig Giesecke, Research Analyst, USAID/KSC
Patrick Gonzalez, Washington DC
Ferran Guellar, Lead Researcher, Jane Goodall Institute/Spain, RNCD, Dindéfelo
Salif Gueye, National Coordinator, GOS/Wula Nafaa
John Heermans, former Chief of Party, Wula Nafaa
Brook Johnson, former CLUSA representative and manager of Community Benefits, Wula Nafaa
Demba Kante, Facilitator, Wula Nafaa
Sori Kebe, Resident, CR Dindéfelo
Poonam Jusrut, Researcher
Nick Loomis, Multimedia Journalist
Oumou Ly, USAID/Senegal
Mamadou Mbaye, Président, Conseil de gestion de la forêt, Missirah
Mike McGahuey, USAID Washington
Momar Mbaye, Biodiversity Team Leader, Wula Nafaa, Tambacounda
Mike McGahuey, USAID, Bureau for Economic Growth, Education and Environment
Vaque Ndiaye, Fisheries Expert, COMFISH, Dakar
Alassane Ngom, Operations Director, PROGEDE, Dakar
Pascal Ottaviani, Commercial/Processing Italy-Senegal, Baobab Fruit Company
Ceece Polansky, Independent consultant

Jeff Povolny, Chief of Party, Wula Nafaa

Tim Resch, USAID, Africa Bureau

Jesse Ribot, Professor, Department of Geography, University of Illinois

Bienvenu Sambou, Director, Institut des Sciences de l'Environnement (ISE)

Aminaata Seck, Resident, Kayemor

Elhadji Djibril Seck, Assistant Coordinateur Facilitateurs du Programme, Wula Nafaa

Abdou Sene, Deputy Chief of Party, Wula Nafaa

Babacar Sisé, President Conservation Farming Group, Kayemor

Lamarane Sow, Président, Comité de gestion, bloc 3, Missirah

Oumou Sy, Member, GIE Tinaare, Bala

Mahamadou Sylla, Chef, Centre d'appui au développement locale, Missirah

Mohammed Tall, Baobab Fruit Company

Gray Tappan, U.S. Geological Survey

Laxo Tounkara, Producer and Member, Women's Federation, Dindéfelo

Peter Trenchard, USAID

Mohamadou Wade, Adjoint au Sous-Préfet, Missirah



U.S. Agency for International Development
1300 Pennsylvania Avenue, NW
Washington, DC 20523
Tel: (202) 712-0000
Fax: (202) 216-3524
www.usaid.gov