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NATURE, WEALTH, AND POWER^{2.0}

LEVERAGING NATURAL AND SOCIAL CAPITAL FOR RESILIENT DEVELOPMENT



OCTOBER 2013

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- Bangladesh – Fishing for Living (Sirajul Hossain): USAID/Bangladesh’s Integrated Protected Area Co-Management project restored opportunities for the sustainable use of wetland resources in Hail Haor, Srimongol.
- Brazil – Xingu Dancers (Michael Colby, USAID): Men and women from the indigenous eastern Amazon Xingu peoples celebrate the opening of the Katoomba XIV Meeting on using payments for ecosystem services markets to avoid deforestation in Cuiabá, Brazil.
- Sahel – Agroforestry in the Sahel (Jeff Povolny, Engility-IRG): A young agricultural crop coming up under a stand of *Faidherbia albida*, a nitrogen-fixing tree.
- Nepal – Carbon monitoring by Nepal community (Ann Koontz, Relief International): Women and men from a Nepalese Community Forest User Group (CFUG) conduct science-based monitoring to support sustainable management of their forests and forest enterprises.
- Namibia – Livestock rearing in Namibia (WWF Namibia): Practicing Community-based Rangeland and Livestock Management (CBRLM).

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DISCLAIMER

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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ABBREVIATIONS

CBFM	Community-based Forest Management
CBNRM	Community-based Natural Resources Management
CBRLM	Community-based Rangeland and Livestock Management
CBO	Community-Based Organization
CBT	Commodity-based Trade
CBWaM	Community-based Water Management
CBWiM	Community-based Wildlife Management
CFUG	Community Forest User Group
CMO	Co-management Organization
COMACO	Community Markets for Conservation (Zambia)
CSO	Civil Society Organization
FAO	UN Food and Agriculture Organization
FDP	Fertilizer Deep Placement
FECOFUN	Federation of Community Forestry Users
FMNR	Farmer-managed Natural Regeneration (of indigenous trees)
GHG	Greenhouse Gas
GoB	Government of Bangladesh
ICRAF	International Center for Research in Agroforestry, aka World Agroforestry Center
IIED	International Institute for Environment and Development
ISFM	Integrated Soil Fertility Management
MCA	Millennium Challenge Account
M&E	Monitoring and Evaluation
NACSO	Namibian Association of CBNRM Support Organizations
NGO	Non-Governmental Organization
NRM	Natural Resource Management
NWP	Nature, Wealth, and Power
NWPI	2002 NWP Paper
NWP2	This Document
PES	Payment for Ecosystem Services

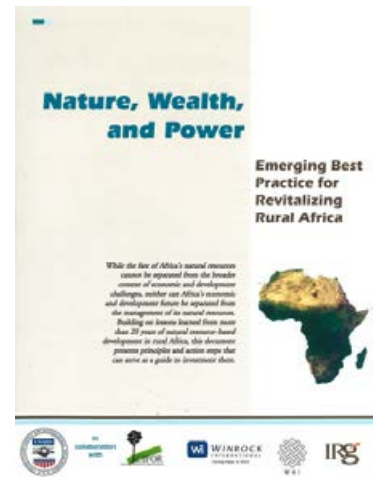
REDD	Reducing Emissions from Deforestation and Forest Degradation
SCI	System of Crop Intensification
SI	Sustainable Intensification
SOM	Soil Organic Matter
SRI	System of Rice Intensification
SWM	Soil and Water Management
TEEB	The Economics of Ecosystems and Biodiversity
TEV	Total Economic Value
UDP	Urea Deep Placement
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
USAID	U.S. Agency for International Development
WCS	Wildlife Conservation Society

ACKNOWLEDGEMENTS

This volume is a sequel to the original *Nature, Wealth, & Power* framework paper (NWP1), produced in 2002 by Jon Anderson, Asif Shaikh, Chris Barrett, Christine Moser, Peter Veit, Jesse Ribot, Bob Winterbottom, Mike McGahuey, and Roy Hagen, with contributions by Bruce Campbell, Kadi Warner, Marilyn Hoskins, Pam Cubberly, Alex Serrano, and George Taylor.

This expanded edition, *Nature, Wealth, and Power 2* (NWP2), is based on that work plus what has been learned around the world in the 11 years since the first NWP volume. It was prepared by **Jon Anderson**,¹ **Mike Colby**,² **Mike McGahuey**,² and **Shreya Mehta**,¹ after extensive consultation and brainstorming sessions during the Fall of 2012, and a webinar in March 2013.

We gratefully acknowledge the many insights, contributions, and critiques from the following people: Arun Agrawal, Charles Benjamin, Scott Bode, John Boos, Carl Bruch, Ashwini Chhatre, Doug Clark, Pam Cubberly, Elizabeth Cushion, Brian Child, Philip DeCosse, Lindsay Dozoretz, Tom Erdmann, Lisa Gaylord, Megan Hill, Carter Ingram, Brook Johnson, Brian Jones, Ann Koontz, Chris Kosnik, Tim Mahoney, Juan Carlos Mendez, Augusta Molnar, Christine Moser, Gregory Myers, Moffatt Ngugi, Judy Oglethorpe, Jeffrey Povolny, Bechir Rassas, Tim Resch, Jesse Ribot, Mary Rowen, Diane Russell, Asif Shaikh, Emmy Simmons, Jenny Springer, Lisa Steel, Wendy Stickel, Erik Streed, Gray Tappan, Jim Tarrant, George Taylor, Peter Trenchard, Jessica Troell, Dan Tunstall, Peter Veit, Erik Vickstrom, Kadi Warner, Chris Weaver, David Wilkie, Paula Williams, Peter Wilshusen, and Bob Winterbottom. The keen interest and assistance of so many expert colleagues is greatly appreciated, and they should in no way be associated with any remaining weaknesses or errors in *NWP2*. We apologize to any other participants in interviews, brainstorming sessions, or the webinar who may have inadvertently been left out of this list.



Invitation to Contribute

The longstanding *NWP Community of Practice* remains live on FRAMEweb: <http://frameweb.org/>

USAID/E3/LTRM also plans to launch a webpage/library/WorkGroup devoted to NWP on its *Natural Resources Management and Development Portal* (aka “RMPortal”), at www.rmportal.net/nwp. There you will be able to make comments, participate in discussions, find and contribute more case studies and literature, etc.

Contact Information

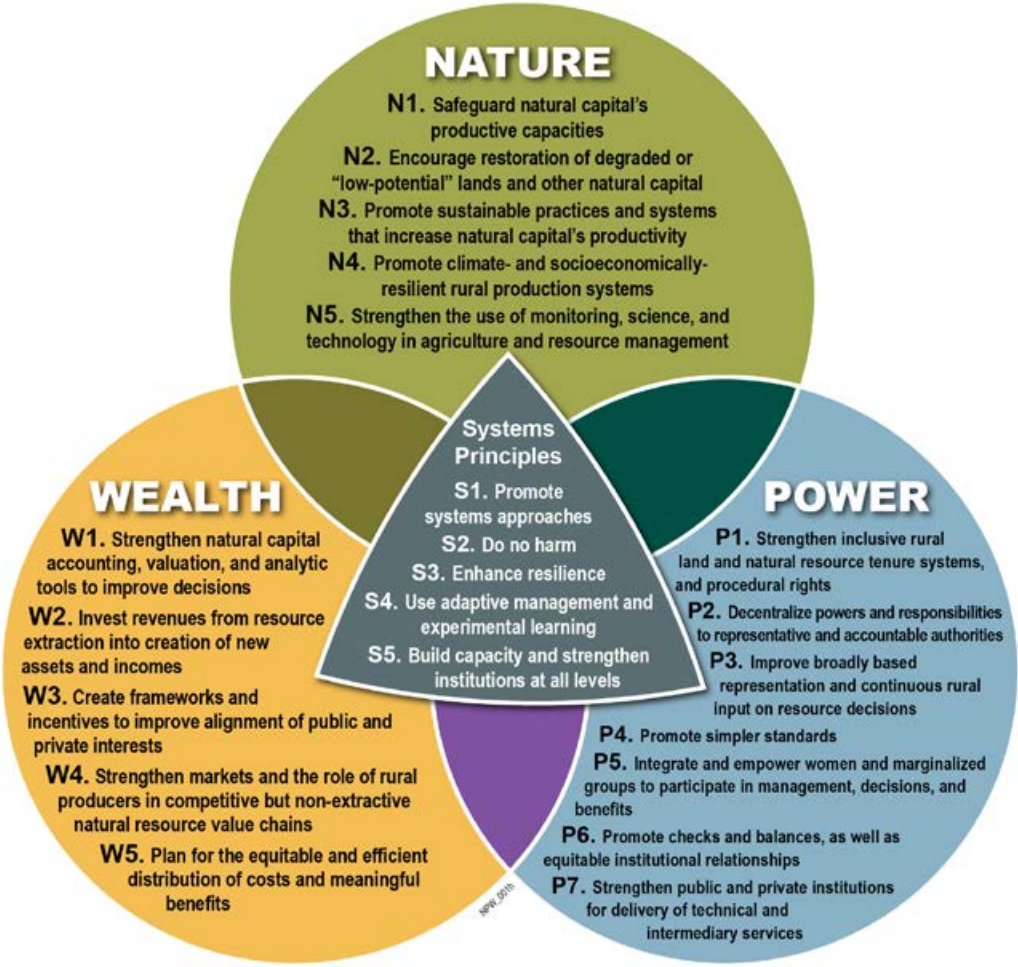
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¹ During the preparation of this volume, Jon Anderson and Shreya Mehta worked for IRG/Engility, under contract with USAID/E3/LTRM.

² Mike Colby and Mike McGahuey worked for USAID/E3/LTRM via a PASA mechanism with USDA/FAS.

EXECUTIVE SUMMARY

In 2002, *Nature, Wealth, and Power: Emerging Best Practice for Revitalizing Rural Africa* (NWP1) was published as a flexible framework for improving rural development through better integration of biophysical, economic, and governance dimensions, raising the profile of both economic and power issues as key to poverty reduction and sustainable natural resource management in rural areas. NWP is a framework that allowed practitioners, planners and policy-makers in a number of places to see the various interlinked dimensions of rural development, and develop and implement programs that were more successful and sustainable. The challenges and opportunities of rural development have accentuated since 2002, and are more critical than ever. Global challenges include feeding a still-growing world population that is simultaneously adapting to and minimizing the degree of climate change, lifting billions of people out of poverty, and empowering marginalized and disenfranchised rural people. Information sharing and knowledge management tools have improved, and the world is more globalized and interconnected. While official development assistance has not declined, foreign direct investment by the private sector has increased dramatically and is now a much larger share of development resources. This investment must be leveraged to benefit local economies and avoid being extractive.



Principles of Nature, Wealth, and Power^{2.0}

This volume, *Nature, Wealth, and Power*^{2.0}: *Leveraging Natural and Social Capital for Resilient Development* (NWP2), updates, strengthens, and attempts to be more comprehensive than NWP1. It makes the NWP framework more relevant to other regions of the world, adding case studies from Asia and Latin America. It goes beyond a perceived focus on the micro or project level and includes recommendations for working at the national, regional, and programmatic levels. It provides more information on implementation and contains an illustrative toolbox. Finally, it broadens the scope of the initial framework – sometimes perceived as dealing only with the “traditional” natural resources of forests, wildlife, and fisheries – to include principles and actions relevant to mining, climate change, and both small and large scale agriculture. Its main potential for impact may well be within the agriculture sector, by expanding a systems approach that integrates ecological, economic, and governance components that promote resilient development.

Nature

Natural capital is the foundation of the rural economy and many developing countries’ national economies. It includes not only renewable and non-renewable resources but also biodiversity and ecosystem functions and services. NWP2 recognizes that not only must natural capital be safeguarded and restored, its productivity must be increased to meet global needs. Agricultural and other rural production systems need smart intensification which integrates external inputs with internal improvements, and they need to be made more “climate smart” (greenhouse gas efficient and adaptive/resilient to changes in temperature, precipitation, and ecological patterns), and socio-economically resilient. This requires not only an integration of the dimensions but a landscape approach which considers the eco-system inter-linkages.

Wealth

In terms of resource **economics** there is a glaring need to improve rural development decisions through better natural capital accounting, valuation, and analysis. This will help to re-invest revenues from resource extraction into new assets and incomes, and improve the alignment of public and private interests. The latter is particularly important as growing externalities must be internalized and payments for ecosystem services are needed. At the same time, continued strengthening of markets that work for the poor, the empowerment of rural producers and their associations, and the production of meaningful benefits that are equitably and efficiently distributed is needed.

Power

People’s use of resources for development are mediated and constrained by **rights frameworks, institutions, and policies**. Power over resources and influence over decision-making largely determines who benefits from resource management and the incentives for sustainable management. Key to resilient development of rural communities is the appropriate mix of resource property and procedural rights, decentralization, and representation, which must be strengthened to unleash the power of the poor. Special emphasis is needed on gender and marginalized groups. Institutional strength and the quality of relationships often guide results and impacts and systems of checks and balances are needed.

Systems approach

Ecosystems, natural resources, and rural production systems, are **complex systems** that interact with equally complex social, economic, and political systems. A systems approach was implicit in the original version of NWP. NWP2 is much more explicit about the characteristics of a systems approach and how it

is necessary for successful implementation and policy development. Such an approach integrates the use of NWP principles and promotes understanding of the diversified, holistic, and dynamic nature of rural worlds. It promotes resiliency through capacity building, diversification, and other measures. At the same time, it respects the “do no harm” principle. This requires a shift in the management paradigm to emphasize adaptive management that emphasizes learning and feedback systems.

The Case Studies

NWP2 contains a number of examples sprinkled throughout the text, in addition to five case studies (with four of them discussed in much greater depth in annexes). The **Namibia** case, focusing on wildlife management, is a follow-up to a case presented in 2002, with 10 more years of impressive gains that validate the NWP approach in terms of natural resource production and productivity, economic growth and poverty alleviation, and empowerment and rights transfers. It has become a key national rural development program.

Demonstrating regional impact, a large area of the **Sahel**, centered in Niger but also including parts of Mali and Burkina Faso, has shown a remarkable recovery over the past 20 years. Simple techniques (such as farmer-managed natural regeneration) have been unleashed on a large scale due to empowerment of local groups and communities, better and more equitable partnerships between local people and outsiders, and more appropriate service delivery. Not only is agriculture production up, but so are incomes and food security, even in drought years. Most important, however, is that this approach has increased resiliency and decreased dependency.

The **Bangladesh** case, which focuses on forestry and fisheries, shows that when local people are empowered through co-management and the allocation of fishing leases both productivity and poverty alleviation improves. However, vested interests can be strong and gains can be fragile, as demonstrated by communities that have not had their leases renewed.

Community forestry in **Nepal** is well-known and is having national level impact, as over 14,000 forest user-groups have formed an active national federation. There is now evidence that in many community forestry areas, forests have recovered and are more productive now than 20 years ago. However, the use of community forestry approaches in high value forests has been subverted by strong elite interests and significant natural capital is being liquidated without proper accounting and re-investment. In addition, the increased value of regenerated forests may have increased competition and prompted other actors such as the state to try and extract additional resources.

In **Brazil** an NWP approach has helped solidify an indigenous group’s control over its territory, strengthened its capacity to do sustainable development planning, and explored cutting-edge approaches to payment for environmental services which helps conserve the local resource base. This case set precedents for international validation and verification of carbon, biodiversity, and community benefits, and more importantly, for indigenous carbon rights in the Amazon. It has just made its first carbon sale.

Adaptive Management

The application of adaptive management and a systems approach is not always easy, although the case studies presented here and in the annexes show that it is possible in more situations than one may think. Integrated approaches that encompass environmental sustainability and productivity, economic growth and development, and equitable distribution and fairness are not luxuries but necessities, as we move forward.

Although individuals may not have the breadth to cover all the aspects of an integrated approach, they need to know enough to advocate for such an approach and to seek out the relevant expertise.

An Illustrative Toolbox

In addition to case studies that highlight various principles of NWP2 and how they work together, NWP2 contains an illustrative toolbox to make it more implementation-friendly. While there are no “NWP tools” *per se*, there is a range of tools that even when focused on biophysical, economic or governance dimensions, promote a broader view and the integration of the three dimensions – they contribute to a systems approach.

The Future

NWP2 aims to strengthen and broaden the impact of the integrated framework and increase its application. Broader application could mean less poverty and more resilience, development, and empowerment in the rural areas that are key to our common future.

NWP2 should be useful to planners, designers, and implementers of programs that aim to stimulate development in the diverse environments of the rural world. This includes agriculture, forestry, fisheries, wildlife, and extractive industries, especially in landscape and livelihood settings.

There are billions of individuals in villages struggling daily to make better lives for themselves and their families. Many of these people have very little influence over the factors that determine their livelihoods. In some cases, they have less influence than their parents did. If poverty is to be eradicated, the environment well managed, and citizens (not subjects) developed, this will have to change. These people are the frontline actors of development – prepared to continue to struggle, and ready to grow and develop as the conditions around them allow. This is not optional. It is one of the obligatory challenges of our time.

A new website and group workspace on NWP (<http://rmportal.net/groups/nwp/>) will be used to share and discuss principles, actions, and cases cited in the report, plus new cases and new tools.

INTRODUCTION

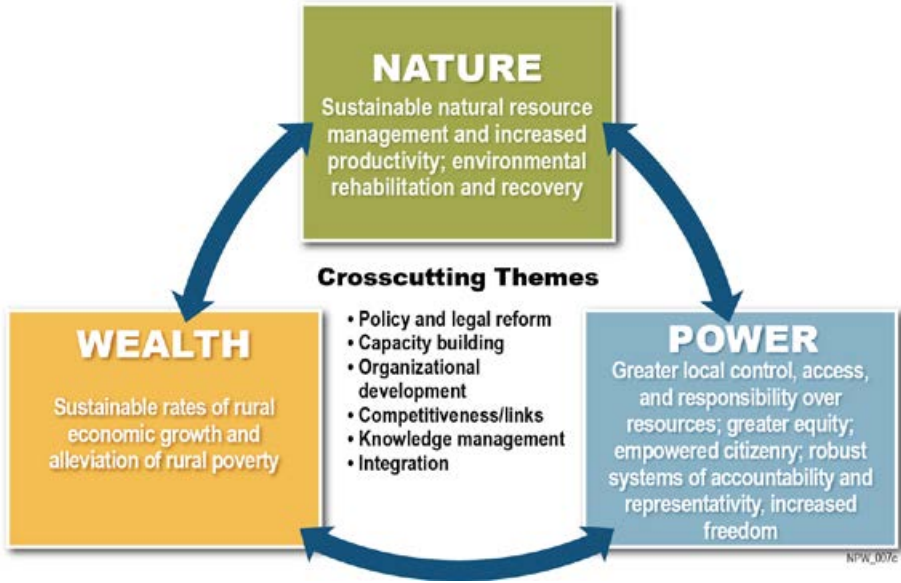


Figure 1. Nature, Wealth, & Power: Outcomes and Cross-Cutting Themes

Source: Adapted from USAID, 2002, p. 35.

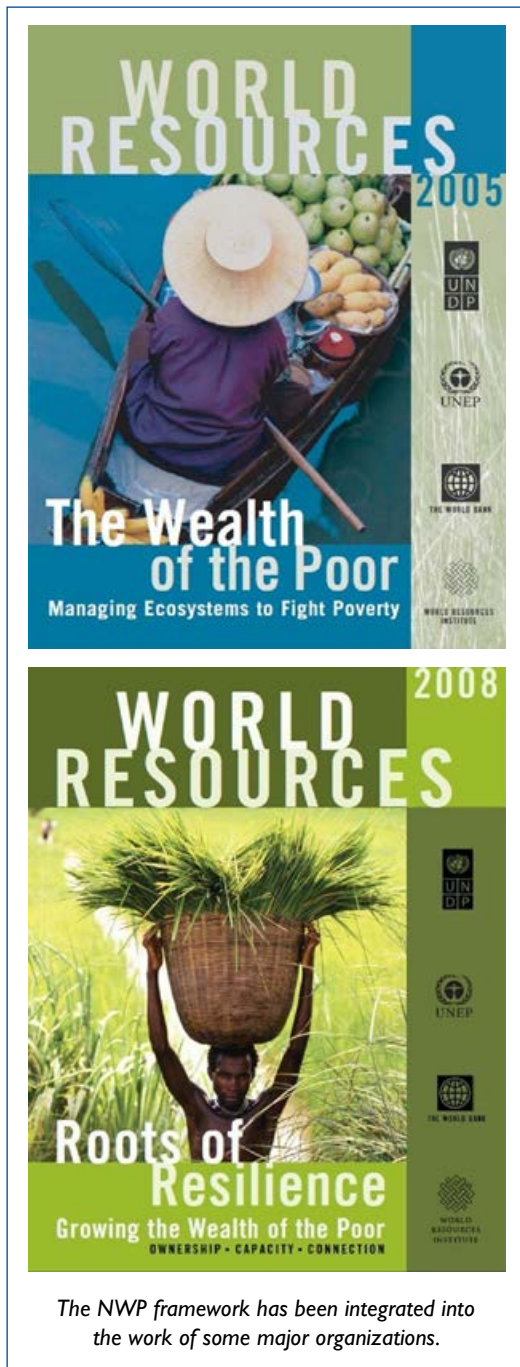
This volume is a sequel to the original *Nature, Wealth, & Power* framework paper (NWP1), produced in 2002. That document, although focused on rural Africa, was found useful by a variety of development practitioners around the world, and elicited significant interest from different disciplines and regions from both practical and theoretical perspectives (e.g., World Resources Institute, et al., 2005 and 2008; World Bank, 2010b).

Figure 1 is adapted from the last page of NWP1, and shows the desired outcomes across the three critical dimensions of rural development, and several cross-cutting themes.

The world context has changed since 2002, and development theory and practice have also evolved. Therefore, in 2012, USAID initiated an assessment and updating of the NWP framework. A series of brainstorming /consultation sessions and a webinar suggested a number of important changes, including the following:

- Broadening the scope beyond Africa, projects, and renewable natural resources
- Strengthening the biophysical principles and actions under Nature, and the economic ones under Wealth
- Making the framework more useful to practitioners by providing tools
- Improving the evidence base through better use of cases, available research, and documentation
- Reflecting changes in context including significant increases in direct foreign investment, the expanded role of the private sector, the transformation in access to data and communication technologies, and shifts in the centers of knowledge and knowledge management.

This second framework paper (NWP2) attempts to respond to these challenges. It is targeted at practitioners involved in the design, implementation, and evaluation of natural resource–based rural development activities around the world, trying to make them more equitable, efficient, and effective. We also hope it will be useful



to policy makers who are designing policies, laws, and administrative instruments to spur rural development. It does not claim to be a sure-fire recipe for success, but is an updated framework compiled from and consisting of best practices.

Rural areas are heterogeneous, especially in developing countries, but face some major challenges in common. There are or will be widespread difficulties in producing enough goods and services – especially food and ecosystem services to economies – for a population of more than 9 billion by 2050. There are the issues of responding to threats such as climate change, loss of biodiversity, and degradation of other environmental services and functions. (The 2005 *Millennium Ecosystem Assessment* stated that 60 percent of the examined services provided by nature to humankind were in decline worldwide, including freshwater cycling, capture fisheries, air and water purification, and regulation of regional and local climates, natural hazards, and pests.³ Many observers have called climate change the challenge of our time: “the greatest and widest-ranging market failure ever seen.”⁴) There is also the enormous challenge of reducing poverty of 2 billion people living on less than \$2/day. Overcoming disenfranchisement and disempowerment, and promoting freedom and good governance are also major imperatives.

The success of rural areas is linked to an increasingly urbanized world. Rural areas are where food will be grown, where other products will be produced, where many will enter or drop out of the formal economy, where environmental challenges must be addressed to a large extent, where poverty tends to be particularly severe and sharpened by increasing population pressure, and where people struggle to find voice.

These challenges are not unresolvable. In fact the power to overcome them resides to a great extent in the hands and minds of the people who live in rural areas.

Natural capital is the foundation of the rural economy. It includes not only renewable and nonrenewable resources that humans directly use, but also biodiversity and ecosystem functions and services that humans use directly or indirectly through their regulation and support of food, water, energy, fiber, and materials production (see **Figure 2**). Natural capital is often key to national development, and central to good governance. Natural resources – land, soil, water, minerals, oil, forests, reefs, wildlife, fish, etc. – are essential to the livelihoods of the still growing numbers of people in rural areas,⁵

3 Millennium Ecosystem Assessment (2005), p.1.

4 Stern (2007), p.1.

5 Although most countries are rapidly urbanizing, rural populations continue to grow too, albeit at a slower rate than urban areas.

dominating the economies of many developing countries.⁶ Agriculture, forestry, fisheries, mining, and nature-based tourism are all forms of management of natural capital.

Many developing countries have rich natural resource endowments. In some areas, these resources are under-used, and their full potential is not even known. They can also be inefficiently used, or inappropriately over-used. In many countries, renewable resources are not managed sustainably or optimally, while non-renewables are inequitably exploited and fail to contribute to inclusive economic growth.

Natural capital is key not only to growth for many developing countries, but also to resilience and better governance.⁷ The governance issue that matters most to rural people is often the control, access, and rights over their local natural capital. It is a bread-and-butter issue on which democracy must deliver. Without access and rights to local natural capital, rural people will remain marginalized. The enfranchisement of rural citizens necessarily involves control over local resources.

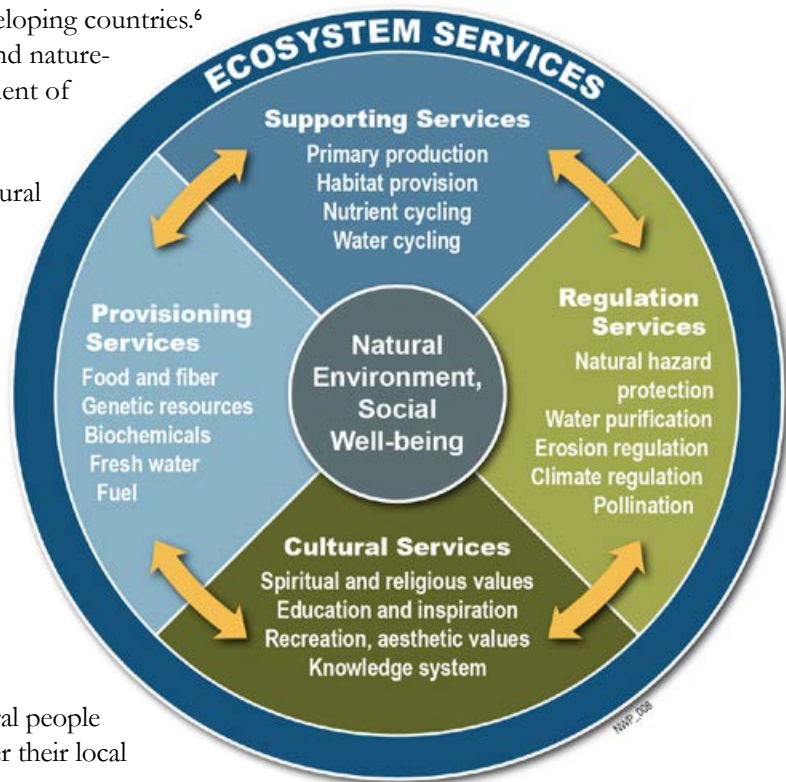


Figure 2. Ecosystem Services to the Economy

Source: Adapted from OECD, 2010.

“Natural capital – our ecosystems, biodiversity, and natural resources – underpins economies, societies and individual well-being. The values of its myriad benefits are, however, often overlooked or poorly understood. They are rarely taken fully into account through economic signals in markets, or in day to day decisions by business and citizens, nor indeed reflected adequately in the accounts of society. The steady loss of forests, soils, wetlands, and coral reefs is closely tied to this economic invisibility. So, too, are the losses of species and of productive assets like fisheries, driven partly by ignoring values beyond the immediate and private.”

**Liberian President
Ellen Johnson Sirleaf (2012)**

In spite of the potential, many areas within developing countries remain mired in poverty. National opportunities for growth and resilience are missed, as resources are often mismanaged, and rural people – especially women – remain disenfranchised. The NWP framework is based on the premise that **these challenges are fundamentally interrelated.** NWP represents a **systems approach to complex development issues.** We believe that these issues can be tackled more effectively, efficiently, and equitably through a systems approach.⁸

6 World Bank (2006).

7 Ribot and Larson (Eds.) (2005).

8 Ackoff (1974 & 1999); Sagasti and Colby (1993).

In the NWP framework:

- **Nature** stands for the biophysical aspects of natural capital management, including both marketed and non-marketed resources and ecosystem services (such as resource productivity, ecological interactions, environmental sustainability, technologies and behaviors for their enhancement, etc.).
- **Wealth** stands for the economic aspects of natural capital management (such as livelihoods, existence and functioning of markets, pricing and distribution policies, valuation and markets for ecosystem services, improved accounting, financial and economic sustainability, and investment policies).
- **Power** refers to governance and social capital related to natural capital; particularly rights, authorities, accountability, and representational issues (such as legal frameworks, resource access rights and responsibilities, distribution of power/control, institutional capacity, formal and informal rules, and benefit sharing).

“Social Capital refers to the norms and networks that enable collective action. It encompasses institutions, relationships, and customs that shape the quality and quantity of a society’s social interactions. Increasing evidence shows that social capital is critical for societies to prosper economically and for development to be sustainable. Social capital, when enhanced in a positive manner, can improve project effectiveness and sustainability by building the community’s capacity to work together to address their common needs, fostering greater inclusion and cohesion, and increasing transparency and accountability.”

World Bank Social Capital webpage:
<http://go.worldbank.org/C0QTRW4QF0>

In the past 20 years, these dimensions have experienced significant changes – in some cases, “transformations.” In economic terms, markets are more integrated and globalized, and foreign direct investment now dwarfs official development assistance. The private sector is an inevitable partner and brings much to the table. Several of the cases in this document demonstrate public-private partnerships and more sophisticated approaches to markets. Information and communication technologies have transformed the way knowledge is managed in all its dimensions, and has profoundly affected the economic and governance dimensions. Furthermore, there have been developments on human rights and a sense of “development as freedom” that have mobilized people throughout the world to struggle for empowerment and enfranchisement.

Figure 3 shows a set of key principles that identify each of the Nature, Wealth, and Power dimensions. In addition, the intersection of the three circles enumerates several key elements of a systems-based approach to these issues. Leveraging natural and social capital for resilient development often requires that the key linkages and overlaps be planned for, implemented, and evaluated together. By taking an integrated *systems* approach, a “triple bottom line” of ecological, economic, and social results may be achieved.⁹

Consideration of the ecological, economic, and governance/social dimensions of the management of natural capital at all levels is critical for success. Natural resource–based growth and management rests on the interaction among resource characteristics, policies, institutions, skills, and economic signals. Programs that integrate best practices from Nature (biophysical management), Wealth (economic management), and Power (good governance and management of social capital) have delivered results in a diverse array of countries, ecosystems, and cultures.

⁹ Colby (1990, 1991).

Today, there are cases, tools, and proven strategies where the management of natural resources has simultaneously led to increases in the productivity of the resource base and biodiversity conservation. It has also provided more food and dramatic economic growth for local communities and national accounts, helping move rural people along the path from subject to citizen, leading the way toward more democratic, decentralized, and vibrant societies.

These experiences have generated a set of principles and associated actions – embodied in the NWP Framework – that may serve as a guide to managing natural capital for growth and governance. The effectiveness of this framework to guide the management of natural capital for development is paralleled by its potential contribution to **building resilience**.¹⁰ For people, communities, and nations to mitigate, adapt, and recover from shocks and stresses in ways that enable inclusive growth, they need a menu of improved technologies and techniques, as well as economic systems that promote a slate of diverse livelihood options economic tools (e.g., investment, insurance, and so on) and governance systems that promote accountability, access, participation, and rights.

¹⁰ This definition of resilience comes from USAID's resilience policy: "the ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth" (USAID, 2012). For more on resilience, see www.usaid.gov/resilience.

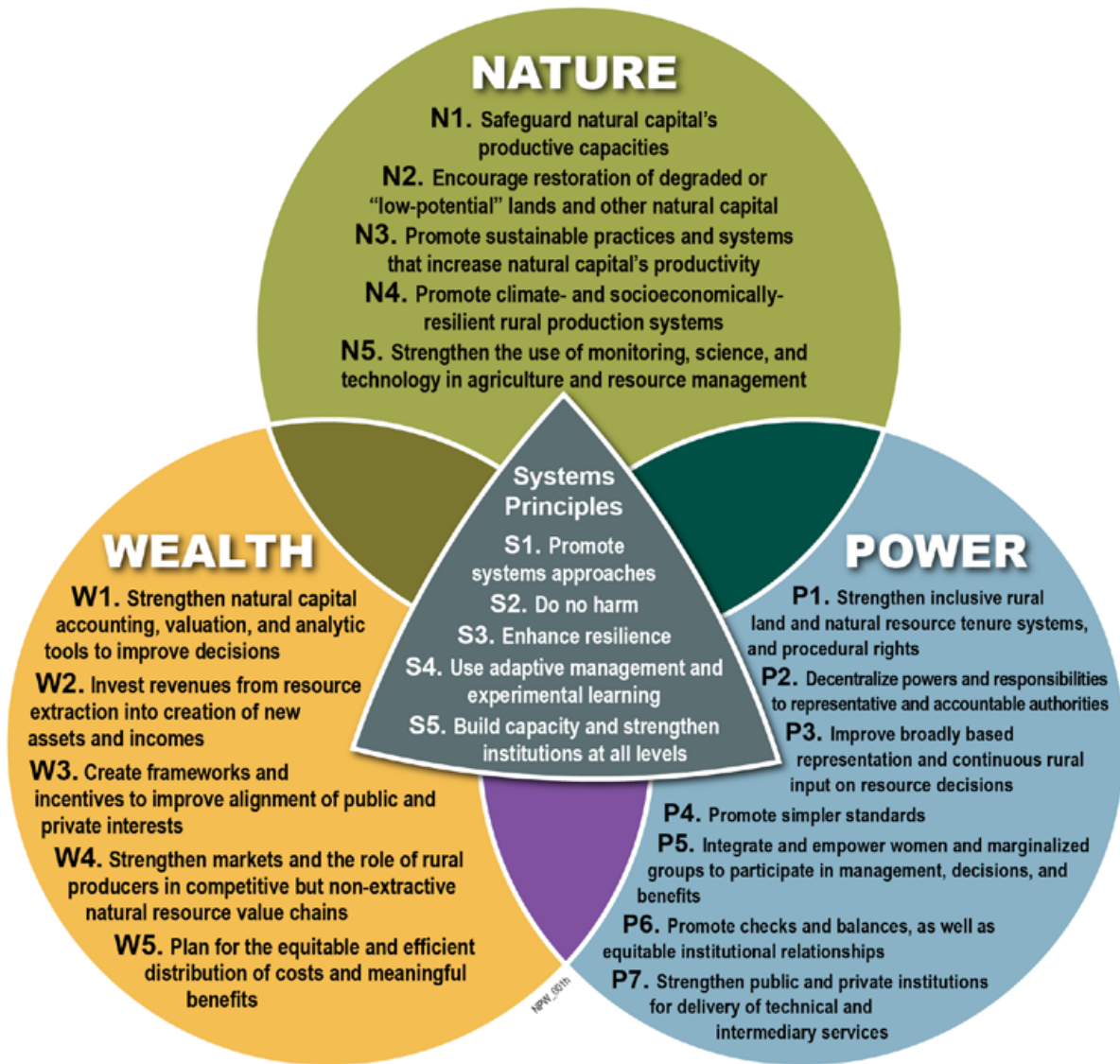


Figure 3. Principles of Nature, Wealth, and Power^{2.0}

The following three sections of the document lay out the main principles and actions for each of the Nature, Wealth, and Power dimensions. They are followed by a section on systems principles and actions, which links the three NWP dimensions with an integrated approach of adaptive management and capacity building (as per **Figure 3**). Although there is not yet an “NWP Toolkit” *per se*, a number of existing tools can be helpful when carefully selected and used in ways that reflect the systems thinking of the framework. Annex 2 provides a list of many such tools. USAID/E3 plans to support further work on research and development of NWP Tools in the coming years. These main sections are separated by short case studies from Nepal, the Sahel, Brazil, Namibia, and Bangladesh, and there are longer versions of all but the Brazil Case in Annex 3.

NWP in Action: NEPAL – Country Level Transformation from the Grass Roots

In the 1970s, concern about the degradation of forests in Nepal – a small but densely populated country – led to the development of *community forestry* as a means to engage local populations in forest management, with some rights over forest use allocated to local communities. The transfer of rights was made easier because hillside forests were severely degraded and considered relatively worthless. High-value, relatively intact forest areas were not included. Today, community forestry is an extensive land-use system, providing an array of goods such as fuelwood, timber, and fodder for livestock. It also serves important ecological functions such as biodiversity conservation, erosion and flood control, maintenance of soil fertility, and carbon sequestration.

After some resistance, particularly from parts of the Forest Department, community forestry has evolved into one of the major components of Nepal's forest development strategy. Local community forest user groups (CFUGs) are charged with conserving and restoring the forests, with support from the government and donor agencies. Recent studies and visual interpretations indicate that Nepal's forest coverage and condition are significantly improving due to the community forestry strategy. This is especially visible when compared to areas not under community management (see **Figure 4 next page**).

Community and leasehold forestry account for improvements in livelihoods, partly through increased employment opportunities. Households are able to diversify their livelihood strategy by undertaking forest-based income-generating activities. Some CFUGs, for example, are the managers and users of community forests from which *Certified Wildlife Friendly*TM products such as wintergreen and other essential oils are sourced for international markets.¹¹ Forestry can account for 20–25 percent of mean household income, a six percent greater contribution to incomes than earnings from agriculture and livestock. As a result, CFUGs in Nepal are growing more self-sufficient, as groups currently absorb a little more than 70 percent of their own operational costs. Revenue is primarily used for maintaining the community forests and strengthening the CFUG's institutional capacity. The remaining balance is accumulated in the CFUG's fund, which is used for community development projects.

While user groups play an important role in managing forests, they have also been central to promoting social inclusion and grassroots democracy throughout Nepal. In the most successful cases, community forestry has contributed to increasing community-based groups' self-governance skills and democratic processes. Political changes since the 1970s have allowed local people to claim rights over forests as active political agents, rather than passive recipients of government services.

The Federation of Community Forestry Users (FECOFUN), established in 1995, is a nationwide network of **more than 17,000 CFUGs** that emerged as key players in forest-sector policy debates and brought previously overlooked civil-society perspectives into the policy-making process. FECOFUN has grown into a social movement organization with about **8.5 million members**.

More than three decades of operational innovation, legislative developments, and evolving practice in Nepal's community forestry program have demonstrated success in enhancing access to forest products, improving livelihood opportunities, and strengthening local organizational capacity. The prevalence of CFUGs and the improvement to community forests attest to the success of incorporating NWP in natural resource management programs. Community forestry in Nepal illustrates the vital importance of “getting the governance right” or providing the poor with the capacity to own and manage their natural resources. By elevating communities to the role of custodians, managers, and beneficiaries, and by supporting this effort with a strong legal and regulatory

¹¹ Himalayan Bio Trade Pvt. Ltd., http://rmpportal.net/library/content/translinks/translinks-2009/wildlife-conservation-society/brochure_wfenhimalayanbiotradepvtld.pdf/view.

framework and robust civil-society networks, Nepal has strengthened the contribution of communities to both local development efforts and to the country's national development. For more information, see the full case study in Annex 3.1.

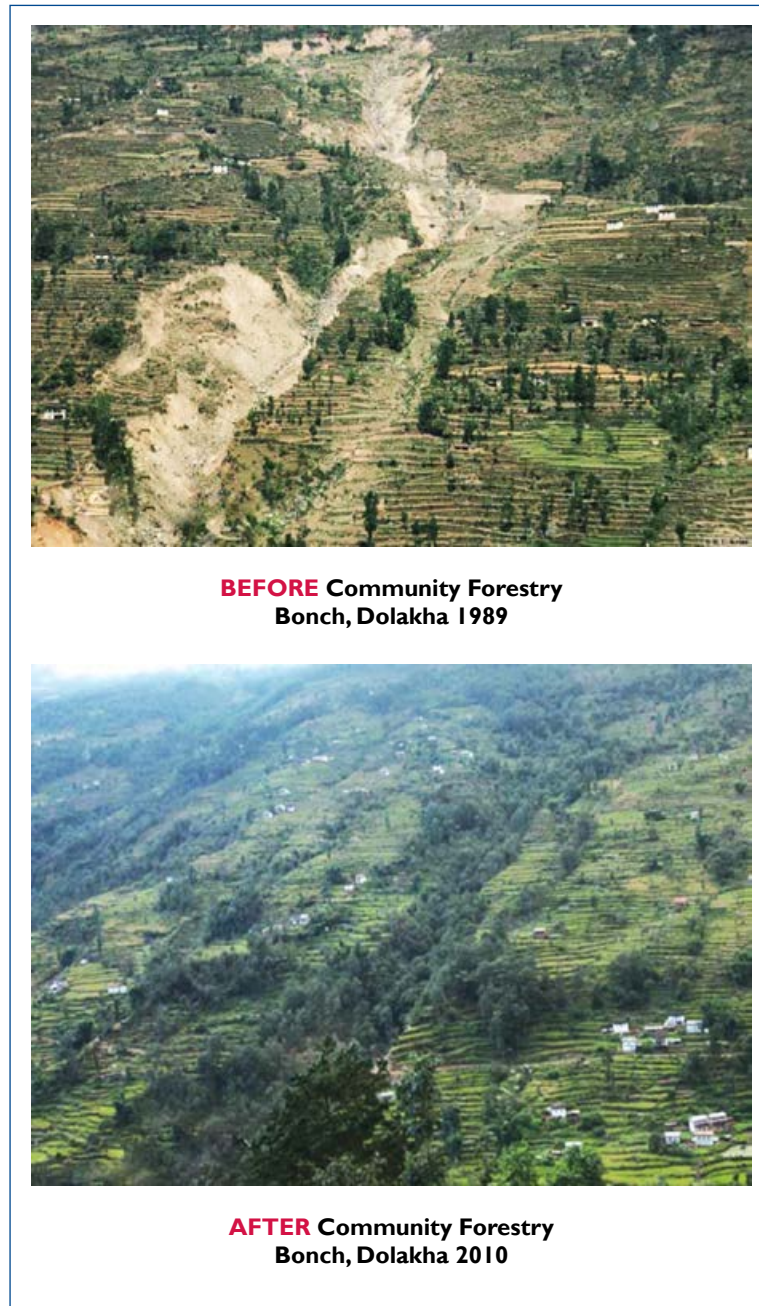


Figure 4. Site in Boncha, Dolakha province in northeast Nepal before (1989) and after (2010) community forestry

Source: Carter, Pokharel, and Parajuli, 2011.

NATURE PRINCIPLES AND ACTIONS



NATURE

- N1.** Safeguard natural capital's productive capacities
- N2.** Encourage restoration of degraded or "low-potential" lands and other natural capital
- N3.** Promote sustainable practices and systems that increase natural capital's productivity
- N4.** Promote climate- and socioeconomically-resilient rural production systems
- N5.** Strengthen the use of monitoring, science, and technology in agriculture and resource management

As discussed above, *natural capital* is the basis for rural economic growth in many developing countries. How successful rural communities are in managing these natural resources and functions to produce food, water, fuel, materials, and other goods and services is key to global development and sustainability. Despite its importance, however, natural capital throughout the world – particularly major ecosystem services – is in trouble, according to the *Millennium Ecosystem Assessment*.¹² A new emphasis is needed on the use of science, technology, capacity building, and improved knowledge management to safeguard, restore, and increase the productivity of the natural resource base, as well as developing ecologically, economically, and socially resilient rural production systems. This section lays out five fundamental principles and actions toward this goal, followed by suggestions for further reading.

NI. Safeguard Natural Capital's Productive Capacities

It is often more cost-effective to maintain the productive capacity of soil, water, forests, range, habitats, and other natural resource systems than to rebuild after degradation. Threats to safeguarding these assets include “the tragedy of the commons,” in which individual or community property rights are not clearly established and where the incentives to degrade natural capital before someone else does are high. Lack of economic options is another threat. If people think they have no alternative to degrading natural capital in order to feed their family, the capital will likely be degraded. However, when people have clear property rights, when the rules are clear and responsible parties have the means to enforce them (see the Power section), and when future economic returns clearly favor maintaining the natural capital (see the Wealth principles W1 and W3), the chances of safeguarding natural capital are enhanced. Recommended actions include the following:

Maintain sustainable yield levels for renewable resources

Natural capital's productive capacity can be permanently damaged if *sustainable yield* levels – that is, what can be harvested without reducing the stock of natural capital itself – are exceeded for extended periods (see box for fuller definition). While in rare cases an argument might be made for liquidating a renewable resource, respecting sustainable yield allows for continuous flows of benefits from the resource over time.

¹² Millennium Ecosystem Assessment (2005).

Sustainable yield: The ecological yield (also known as flow or interest on capital stocks) that can be harvested without reducing the stock of natural capital itself, that is, the surplus production above what is required to maintain ecosystem services and regenerative capacity at the same or increasing levels over time. This yield usually varies over time with the needs of the ecosystem to maintain itself. For example, a forest that has recently suffered a blight, flooding, or fire will require more of its own ecological yield to sustain and re-establish itself in a mature state. While doing so, the sustainable yield may be lower than usual.

Consider the reversibility of actions and avoid those that undermine the ability of natural capital to continue to produce

One of the principles of adaptive management¹³ of complex socio-ecological systems (see the Systems section) is the attention paid to *reversibility* (see box for definition). There are some natural assets, such as rainforests, coral reefs, and biodiversity, that once lost may be gone for good. Care needs to be taken to ensure that decisions do not lead to irreversible loss of ecosystems or species.

Reversibility: Refers to the permanence of interventions or decisions. Natural resource decisions that permanently change the ecosystem or production system, such as draining a wetland for agriculture, require a great deal of prudence. In situations where uncertainty exists about future outcomes and development, interventions that are reversible or can go back to their previous state may be preferable.

Negotiate clear limits and boundaries to areas being managed

Field experiences (see box below for an example) demonstrate the need to define boundaries for natural resource management (NRM) activities in order to better enable the enforcement of rules and regulations, and to control free riders. Poorly defined boundaries create confusion and weaken incentives to invest in sound management. Some type of rotation and/or partitioning of resource use is also often necessary. Local land-use planning is a step toward locally enforceable separation, reduced conflict, and improved management. At the same time, it is important to maintain the connectivity of ecological processes that cross boundaries (e.g., water quality and quantity, habitat for pollinators and natural pest managers, wildlife migration, etc.), and provide opportunities for synergy as a result of alternative management systems rather than tradeoffs.

One of the first steps in the **Namibia** and **Sahel** cases was for communities to work together with their neighbors and other stakeholders in order to transparently identify the boundaries controlled and managed by a community. Clearly identified boundaries are also essential to reducing emissions from deforestation and forest degradation (REDD+) projects, such as in the Brazil case.

Analyze trade-offs between additional spatial expansion of agriculture (land conversion) versus sustainable intensification and/or reclamation of degraded lands

Achieving food security for a growing world population will require increasing agricultural production. Historically, this was first done by converting forests and other lands, also known as extensification. However, land is now fully occupied in many areas, and remaining forests are increasingly needed for their ecosystem services. In the absence of other options, even these remaining natural areas will be threatened by the daily needs of a growing rural population. As a sub-principle, it can be said that if it is in the short-term economic interests of people to convert forests and other natural areas to other uses, the chance that they will be

¹³ See Fisher, Prabhu, and McDougal (2007) for discussion of adaptive management.

cleared is still high, even if this means contradicting their cultural values and long-term economic interests. Therefore increasing agricultural production will increasingly require more sustainable intensification pathways.¹⁴ Sustainable intensification (SI) has been defined as “producing more output from the same area of land while reducing the negative environmental impacts and at the same time increasing contributions to natural capital and the flow of environmental services”¹⁵ (see N3 below for more information on how this can be done). In addition, if new frameworks and incentives to improve alignment of public and private interests (principle W3), including mechanisms such as payments for ecosystem services (PES), can be put in place to help address peoples’ short-term imperatives and economic interests, the chances of simultaneously maintaining their long-term interests can be enhanced. Governments and donors could assist with the careful analysis of options under local circumstances to help farmers determine the optimal solution for private and public interests.

All of the cases included in NWP2 show that, given the right economic incentives and enabling conditions, rural communities acting in their own interests may choose to maintain functioning ecosystems rather than convert them to other uses.

In another example, farmers in the Upper Niger River Zone (OHVN) of **Mali** invested their finite labor and capital into agricultural intensification (judicious amounts of fertilizer and improved seed, in tandem with rainfall management and applications of organic matter), because they felt that intensifying crop production on existing crop land was a better investment than clearing new lands. They also valued the ecological services provided by the forest lands (water and fuel supply, erosion control, game, foods and medicines, etc.). With that in mind they took measures to protect forests from internal and external threats. In a 20-year period, deforestation rates declined in most villages. These villages were helped by having received organizational training and having gained clear rights over their village forests.

Assure mechanisms for the regulation of natural resource use

Clear rules must be established and enforced, especially for common property resources, in order to safeguard the productive capacity of natural resources. In some cases, local rules overlap with more central, formal mechanisms. In many instances, overlap or even conflict has occurred when new realities (e.g., the breakdown of traditional systems or emergence of new markets, new technologies, a crisis, etc.) collided with laws that were made in a different era under very different conditions. One way these conflicts over sets of rules have been resolved is when all parties have acted in good faith. Forums have been held allowing each party a voice, and the government has played the role of facilitator. True negotiations took place that resulted in clearer rules and the creation of mechanisms to implement the rules and resolve disputes.

The **Nepal** case shows how communities worked with other communities and the Forest Service to define new rules including harvesting regimes and worked with the government to make sure they are enforced. In the **Brazil** case, indigenous people developed a large scale and comprehensive management and development plan, with remote sensing verified by rigorous on the ground monitoring.

¹⁴ Garnett et al. (2013).

¹⁵ Godfray et al. (2010).

N2. Encourage Restoration of Degraded or “Low-Potential” Lands and other Natural Capital

Large areas of land and waters have been degraded worldwide due to conversion of forests for a variety of unsustainable agricultural practices – for example – mismanaged grazing, subsidized overfishing, etc. Other areas may not have appeared promising in the past and were therefore used in ways that didn’t meet their true potential. Many of these areas may still be rehabilitated and restored to greater production with improved management practices. What is “low potential” for governments and the private sector may be a key opportunity for local communities to increase productivity and strengthen resilience. In other cases, people missed the major constraint and, therefore, the solution. For example, experience from semi-arid drylands in Africa showed that the absolute amount of rainfall is less of a challenge than management of that rainfall. It has been shown that producers applying fairly simple technologies have been able to overcome the constraints to increased productivity (see text box below). Examples include raising carefully managed, high-value wildlife, livestock, and/or tree crops in dry rangeland or even moister savannah areas, rather than low-value staple crops). The application of water-harvesting technologies is another example of an opportunity for increasing resilience, particularly in areas of high rainfall runoff rates (see example below). An inappropriate classification for land of “low potential” may even be an advantage for the poor, as they are then more likely to gain access before the benefits of better management are fully appreciated.

In Nepal, degraded hillside forests were considered of low value or potential to the government, but are a vital resource for local communities. In the Sahel, economically viable land-management practices have not only maintained, but raised the value of land, essentially building natural capital. By drastically reducing rainfall run-off rates (run-off rates have been documented to be 50 percent or higher) and increasing soil productivity through the use of water-harvesting and agroforestry, farmers in **Burkina Faso, Mali, Niger, and Senegal** have substantially increased the productivity of millions of hectares of crop land, in some cases creating land markets for areas that had been considered “useless brush.” (See the Sahel and Nepal cases.)¹⁶

Recognize that restorative measures may require patience and short-term sacrifice or support

Restoring degraded or low-potential land can take time. However, research on some techniques such as no-fishing zones,¹⁷ farmer-managed tree regeneration (FMNR), water harvesting for soil fertility restoration (see box above), and perhaps even rangeland restoration via improved grazing management,¹⁸ suggests that recovery can be achieved remarkably quickly and efficiently. One of the principal means of restoration involves no-use or reduced-harvest zones, which although temporarily diminishing access to resources can be effective and cost-efficient in restoring productivity and “spillover” yields (recovering natural capital can spread to other areas). During no- or low- harvest periods where investment exceeds production benefits, communities may need transitional support.

Plan for the fact that, as restoration continues and productivity rises, so will competition

In some instances, local people, usually those less well off, have worked hard to restore areas to higher levels of productivity, only to see the interest of other powerful stakeholders rise as a result of their success. Local communities should prepare for this likelihood by building up strong organizations to resist such efforts at

¹⁶ Reij, Tappan, and Smale (2009).

¹⁷ Leisher, Sanjayan, Blockhus, and Kontoleon (2010).

¹⁸ Savory & Butterfield (1999); Volkmann et al. (2011). Or see www.savoryinstitute.com and www.holisticmanagement.com.

“elite re-capture.” Authorities, traditional and statutory, need to be aware of the risks of appropriation by more powerful interests.

Community forestry in **Nepal** gives an example of increased competition: as hillside forests recover, the government has now proposed increasing fees on CFUGs. Although governments have rights of taxation, the proposed increase in government fees from 5 to 50 percent may, if put into effect, become a disincentive to local management. In **Bangladesh**, it appears that some communities have recently lost community leases to fishing areas partially because of intense lobbying by other stakeholders.

In **Niger**, when women restored lands that had been abandoned as “useless” through water-harvesting techniques, some men became increasingly interested in taking control over them. Fortunately, village elders recognized the problem and defended the women’s rights to retain the value they had created.¹⁹

Re-evaluate views on the causes of degradation

If natural capital is to be well managed, the reasons for its degradation must be determined and understood by stakeholders. Erroneous assumptions can lead to poor policy and programming. Some commonly held perspectives about the causes of degradation do not always hold up (e.g., overgrazing and overpopulation in dry areas). Other analyses blame the poor as agents of degradation. Although sometimes true, the poor can also be proxies for the rich. Elites have frequently mined rural areas, not just for minerals, but also for wood and unsustainable agriculture or aquaculture. In addition, national-level policies and incentives such as price controls or subsidies for agricultural commodities may be encouraging unsustainable behavior by the poor and the rich alike. Each situation is unique, and it pays to be skeptical about commonly held generalizations.²⁰

N3. Promote Sustainable Practices and Systems that Increase Natural Capital’s Productivity

As noted under N1, achieving food security for a growing world population will require increased agricultural production. It was recommended to conduct a careful analysis of the local tradeoffs between *extensification* and intensification methods to find more *sustainable intensification* pathways to increasing production.²¹ Recommended action steps include the following:

Promote sustainable intensification by using soil and water management to make external inputs more efficient

While achieving food security via intensification frequently requires external inputs, low fertilizer-uptake efficiency in old, weathered soils that have little inherent capacity to retain nutrients can make fertilizers uneconomical for poor farmers.²² Where rainfall is erratic and soils are nutrient poor, combining *soil and water management* practices (SWM), to increase soil moisture and organic content with more modest inputs of fertilizers can make the inputs more efficient.²³ Even where there is sufficient water for irrigation and rice production, SWM is still an important approach. For example, under the *System of Rice [or Root or Crop]*

19 Yamba, Larwanou, Hassane, and Reij (2005). Page 20 refers to women defending their rights to maintain possession of the restored land.

20 Freudenberger (2010).

21 Garnett et al. (2013).

22 Marenja and Barrett (2009a; 2009b), Breman et al. (2007).

23 Wopereis, Mando, and Vanlauwe (2008), Marenja and Barrett (2009a; 2009b), Breman et al. (2007).

Intensification (SRI/SCI), careful management of water inputs to maintain soil moisture without constant flooding contributes to increased productivity.²⁴ These techniques also permit the characteristics of improved seed to be more fully realized. When farmers carefully manage a range of inputs (rainfall, irrigation, improved seed, and fertilizers), they can maximize yield while stabilizing or improving the soil's productive capacity. SWM, integrated soil fertility management [ISFM], and SRI provide ways to increase yields over time, all while reducing water demand, GHG emissions, and harm to fisheries.

Promote renewable resource management systems that optimize use of growing space and time

NRM systems that take maximum advantage of available light, water, space, and nutrients tend to be more productive and resilient. Productive resources in natural systems not only change throughout the year (rainy versus dry seasons, for example), but exist at multiple levels above and below ground. Some plants and animals can only capture parts of this space. Mixing several species that use different parts of the resource base can increase production and resilience.

In **Asia**, agroforestry home gardens use a mix of species in dense and intensely managed gardens to capture as much of the light, water, space and nutrients as are available. Other agroforestry systems in **Africa** use deeply rooted trees, such as *Faidherbia albida*, in cultivated fields to tap mineral elements and water deep in the subsoil that are unavailable to annual crops such as millet or maize, and partially fertilize the soil and those crops by fixing nitrogen naturally. In addition, *F. albida* has a reverse deciduous cycle: it is leafless during the rainy season and thus does not compete for light with local crops.²⁵ There are also production systems that integrate crop and livestock or fish production in the same space.

Act locally, but promote an ecosystem/landscape vision

Despite the occasional need for partitioning land use discussed above, it is usually best to manage the landscape as a whole – rather than as separate blocks of cropland, production forest, irrigation water, fisheries, and protected areas. This maintains connectivity so that each portion contributes to increasing the productivity of adjacent areas and the whole system through agroforestry and other techniques. Increasing the productivity of natural capital has long depended on people within natural systems working in unison. Although individual producers will give priority to their own fields, forests, and bodies of water, everyone is better off if they coordinate through a transparent system-wide management plan (see the Sahel case).

N4. Promote Climate- and Socioeconomically-Resilient Rural Production Systems

Climate change is perhaps the major challenge of our time, contributing to shocks and stresses at all levels. The rural sector, especially through agriculture and deforestation (including livestock as a major driver in some areas), is a major contributor to climate change, but has the potential to become a climate change mitigator. Many measures to reduce GHGs produced by agriculture have also been shown to increase

24 Originated with rice in Madagascar (<http://sri.ciifad.cornell.edu/aboutsri/origin/index.html>), SRI has come to be known more generically as System of Root Intensification or System of Crop Intensification (SCI). The techniques of SRI/SCI have been adapted to several crops, including wheat, potatoes, sugarcane, millet, teff, maize, eggplant, onions, carrots, turmeric, and others. <http://sri.ciifad.cornell.edu/aboutsri/othercrops/otherSCI/index.html#onions>, <http://rmportal.net/news/news-usaid-nrmd-video-spotlight/indias-rice-revolution-2013-audio-slideshow>.

25 Garrity, et al. (2010).

agricultural productivity, making them attractive to farmers. (For example, soil organic matter [SOM] is highly correlated to soil productivity on weathered tropical soils.²⁶ In addition to increasing carbon sequestration, SOM increases the percentage of nitrogen that goes into the crop instead of into the air.) A number of approaches, techniques, and systems have a track record of helping farmers strengthen their resilience to market and climatic shocks, while contributing to climate change mitigation objectives. Recommended action steps include the following:

Promote climate-smart agriculture

Climate-smart agriculture “seeks to increase productivity sustainably, strengthen resilience, reduce agriculture’s GHG emissions, and increase carbon sequestration. It strengthens food security and delivers environmental benefits.”²⁷ See the following boxes for cases and techniques.

Investments in farmer-managed natural regeneration (FMNR) – discussed in the **Sahel** case – have increased grain yield, fuelwood, browse (food for livestock), and other natural products, not only in normal rainy seasons, but also during the 2005 drought when farmers were able to sell fuelwood harvested from their fields to get by.²⁸ Instead of having to divest themselves of land, animals, or other productive assets to feed their families, farmers retained these assets for future use. In addition to this increased ability to adapt, FMNR farmers have helped climate change mitigation efforts by sequestering more carbon both in trees and in soils, and reducing the release of GHGs. From the farmers’ perspective, climate adaptation and mitigation are flip sides of the same coin. Every gram of nitrogen that is volatilized, runs off, or leaches into the water table is a gram of expensive nitrogen that does not go into the crop. Consequently, FMNR farmers invest in practices that keep nitrogen in the root zone and out of the atmosphere. They also contribute to sequestration by investing in on-farm trees as a source of nutrients and ground cover. Furthermore, FMNR farmers know that a good measure of soil productivity is the content of soil organic matter so they invest in building this up.

26 Bationo, A., and A. Buerkert (2001).

27 World Bank (2010a). Also see FAO (2013a).

28 Yamba (2006); Abasse, Guero, and Rinaudo (2009).

Illustrative Climate-Smart Techniques for Rural Production Systems

Climate-smart techniques include but are not limited to the following:

- Conservation agriculture (low-tillage and maintaining soil cover, to reduce soil and moisture loss, with crop rotation to reduce pest loads)
- Evergreen agriculture (combining agroforestry with the principles of conservation farming)²⁹
- Integrated soil fertility management (ISFM)
- Integrated watershed management
- Intercropping of annuals and perennials
- Organic nutrient management
- Farmer-managed natural regeneration (FMNR) of woody perennials
- “Carbon farming:” managing soils, trees, and crops for carbon sequestration
- Low water/reduced-emission rice farming, including SRI/SCI and urea or broader combinations of fertilizer deep placement (UDP/FDP)³⁰
- Rainwater harvesting
- Drought- and flood-resistant varieties
- Agro-silvi-pastoral systems, some even including aquaculture
- Herder-managed rangeland restoration through improved grazing management/Community-Based Rangeland and Livestock Management (CBRLM)³¹
- Assisted natural mangrove restoration (to restore fisheries while providing storm protection and wood)³²
- Commodity-based trade (CBT) approach to livestock disease co-management with wildlife^{33 & 34}

Recognize and support diversified livelihoods

The “sustainable livelihoods framework” was developed to increase the resilience of vulnerable populations, recognizing that rural, resource-dependent people, no matter how poor, always manage a portfolio of assets – physical, financial, social, human, and natural.³⁵ The approach integrates the vulnerability context, capital assets, structures, and processes that lead to livelihood strategies and outcomes. Diversification is key to strengthening resilience. Interventions should build on existing diversification strategies and provide supplemental approaches. Although many technologies in such a portfolio can improve productivity, they cannot by themselves enable producers to survive regular shocks (although there are drought-resistant seeds, none are drought proof). In contrast, diversified sources of livelihood have allowed people to avoid selling

29 Garrity et al. (2010).

30 USAID, 2013. <http://www.usaid.gov/bangladesh/press-releases/research-shows-improved-fertilizer-application-increases-rice-and>.

31 Savory and Butterfield (1999); Volkmann et al. (2011).

32 Lewis (2003, 2005); Salem and Mercer (2012).

33 CBT is an animal quarantine plus product processing and marketing approach to disease management rather than a geographic, fence-based system, allowing for co-existence of livestock and wildlife-based value chains, and increasing the local value-added component of meat commodities. See SADC (2012) @ www.wcs-ahead.org/phakalane_declaration.html; Commodity-based trade represents an array of alternatives to geographically-based livestock disease control that can be used to ensure the production and processing of a particular commodity or product such as beef are managed so that identified food safety and animal health hazards are reduced to appropriate risk levels. OIE Terrestrial Animal Health Code

34 Also see Barnes (2013); Cassidy, Thomson, and Barnes (2013).

35 Carney (1998).

off their productive assets (a step that would threaten many with falling into poverty). For example, in areas that experience regular occurrences of drought, when annual staple crops fail, farmers with systems that include tree crops and livestock do cope better.³⁶

In the Multiple Use Zone of **Guatemala's Maya Biosphere Reserve** (Petén region), Wildlife Conservation Society, Counterpart International, and other partners have developed concession agreements with 12 community forest groups and two private timber companies that manage timber and a variety of non-timber forest products (NTFPs).³⁷ These products include xate palm fronds for the floral industries in the US and Europe, chicle gum resin, and allspice. They also developed a very low impact but lucrative tourist sport hunting concession program for the Ocellated Turkey, which previously had suffered from subsistence hunting, but is now so valuable that even with sport hunting, monitoring has shown that its population is now increasing.³⁸

N5. Strengthen the Use of Monitoring, Science, and Technology in Agriculture and Resource Management

As both opportunities and risks increase, people will require better information to invest wisely in the natural resource base. Investments in monitoring and science, when used strategically, have helped resource users in this respect. Transparency and general access to information are important to developing and implementing management plans, particularly those that involve common resources. Recommended action steps include the following:

Strengthen the role of science and technology and evidence-based decision making in rural production systems

Good knowledge of what does and does not work depends on rigorous data collection and analysis. The biophysical sciences are powerful tools for natural resource management, particularly for testing new approaches and assessing their potential for broader application, “connecting” dots that had not been obvious, and challenging old paradigms that may be blocking progress. For example, science provided evidence on the high correlation between agricultural productivity and soil organic matter content. This is a linkage that had been ignored in efforts that promoted “green revolutions” through technology alone.

Increase collaboration of scientists and technicians with local people

Farmers and other rural resource users are problem solvers, and many use systematic approaches to identify and prioritize problems. Although few use tools found in formal experiments (e.g., research design, statistics, computer calculations, laboratory equipment, and deep review of the literature), they have an inherent interest in “getting the question right” and testing it. Many also visit and discuss techniques with their peers.

Understanding the full range of rural development challenges requires that scientists and technicians consult and collaborate with farmers and other stakeholders in order not only to share knowledge, but to understand perspectives. For example, although a crop variety may meet agronomic criteria established by a research station, it may lack other qualities sought by rural families (e.g., taste, stalk quality, resistance to birds, etc.).

36 Yamba (2006).

37 Radachowsky et al. (2011).

38 Baur et al. (2009); Baur et al. (2012).

In **Bangladesh** technicians and local people, including youth, collaborated to develop monitoring tools that were both scientifically rigorous, and easy to use and integrate by local communities, including local boy scouts. These tools were both for monitoring nature and as well as power.

Increase rigorous monitoring, data collection, and analysis, particularly by resource users

Natural resource management, particularly in unstable social and economic environments, requires close monitoring of the socio-ecological system in order to spot changes and adapt to them. As those closest to the action and with the most at stake, it is critical that local users be involved. Monitoring by local users can also be empowering because, equipped with information, they are in a better position to negotiate with outsiders and affect decisions.

In **Namibia**, community monitoring of wildlife numbers allows them to negotiate hunting quotas with the government based on locally generated data that the government itself does not have. The conservancy program for communal resource management has developed simplified yet rigorous monitoring techniques and has built capacity to use them.

Monitoring with geo-referenced smartphones as well as remote sensing is critical to the Surui forest carbon project in **Brazil** and most if not all REDD projects. Using participatory monitoring methods also allows all stakeholders to know the value of the resource being managed and how the benefits are distributed.

Collect and use information more effectively

Lack of information is not always the primary challenge. In many cases, the body of knowledge is rich but so diffuse, poorly organized, or inaccessible to those who could use it, that it might as well not exist. Powerful new information collection and distribution tools – remote sensing, geographic information systems, decision support tools, smartphones, etc. – are at our disposal.

The use of satellite data to track positive trends in **Sahelian** ground cover is one example where the data have contributed to a general awareness of “re-greening” and support for it in the Sahel and beyond. That process was based on collaboration across U.S. government agencies, as well as across nationalities, and had clear objectives and questions to address.

Take stock of impacts and lessons from past investments

The development community has invested in rural economies for decades. In that time, numerous projects have been designed, implemented, and subjected to end-of-project evaluation. For many institutions, the end-of-project report is the last time that it critically assesses the impacts and lessons from its investments. However, retrospective studies³⁹ conducted several years later have shown that many of the most important impacts and lessons (1) occur in the years following the end of project and (2) were unanticipated by performance indicators and, consequently, were never tracked. Given that such long-term impacts and lessons

³⁹ In 2004 USAID and other donors supported the Inter-State Committee to Combat Desertification to conduct retrospective impact assessments to determine impacts from the massive investments that had been made since the 1970s. The first assessment was conducted in Niger. See the initial report by Yamba, Larwanou, Hassane, and Reij (2005).

are among the highest objectives of investments in development, more “stock-taking assessments” after the end of a project should strengthen returns from those investments.

Further Reading: NATURE

- **Millennium Ecosystem Assessment: Ecosystems and Human Well-Being** (Millennium Ecosystem Assessment. 2005) is an international synthesis by more than 1,000 of the world’s leading biological scientists that analyzed the state of the Earth’s ecosystems and provides summaries and guidelines for decision makers. The assessment measured 24 major ecosystem services, concluding that only four showed improvement in the past 50 years, 15 are in serious decline, and 5 are in a stable state overall but under threat in some parts of the world.
- **World Resources 2005: The Wealth of the Poor: Managing Ecosystems to Fight Poverty** by the World Resources Institute in collaboration with United Nations Development Programme, United Nations Environment Programme, and World Bank (2005) describes how ecosystems are – or can be – the wealth of the poor. Includes case studies from Namibia (updated in this volume), India, Tanzania, Indonesia, and Fiji.
- **Natural Resource Conservation** by Daniel D. Chiras and John P. Reganold (2010) emphasizes practical, cost-effective, sustainable solutions to natural resource conservation that make sense from social, economic, and environmental perspectives.
- **Roots in the African Dust: Sustaining the Drylands** by Michael Mortimore (1998) offers an alternative view to the doom and gloom scenarios for Africa’s drylands, based on extensive work and examples from East and West Africa. Work by USAID and the International Centre for Research in Agroforestry on “re-greening” has since corroborated much of this work.
- **Climate-Smart Agriculture Sourcebook** by the FAO (2013) notes the importance of developing climate-smart agriculture to achieve future food security and climate change goals. The book examines key technical, institutional, policy, and financial responses; and includes field-based case studies. It surveys institutional and policy options available to promote the transition to climate-smart agriculture, considers current financing gaps, and makes innovative suggestions on the combined use of different sources, financing mechanisms, and delivery systems.

NWP in Action: The SAHEL – Landscape Level Improvements

By the 1980s the Sahel had suffered a decade of drought that killed more than 100,000 people and made several times that number dependent on food aid. In many areas, farmers’ problems were compounded by population pressure, which left little fallow land – the traditional means of recharging the soil’s productivity. In addition to food shortages, conflicts between herders and farmers over land had become more common, displacing traditional synergistic relationships. Declining crop yields put additional pressure on trees and other resources as sources of revenue to make up for the food shortage.

By 2005, however, Niger had 5 million hectares of farmland with more tree cover than 20 years earlier, even though the population had about doubled (see **Figure 5**). Hundreds of thousands of hectares have improved similarly in Burkina Faso, Mali, and Senegal. Crop yields are up. Conflicts are down. Although droughts still occur and the rural economy is still fragile, people are much more adept at coping. Browse, fuelwood, and other forest products are more available. This is a case not only of “more people, more trees,” but of resilient development in a harsh environment, because of the integration of nature, wealth, and power. What changed? Some threads of this complex story follow, with a more detailed picture in **Annex 3.2**.

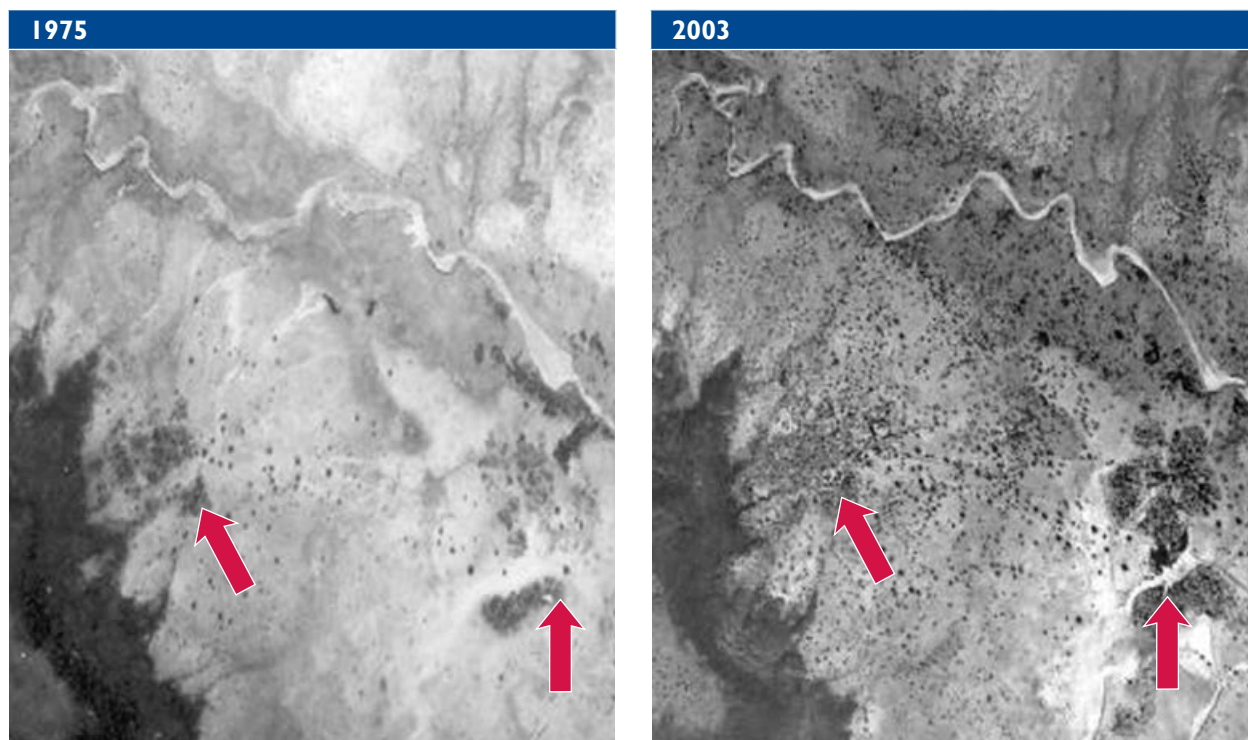


Figure 5. More People, More Trees

The two photos compare tree and population densities in 1975 and 2003 in Galma, Niger. (The red arrows point to settlements.) As can be seen, both tree and population densities increased. Source: Gray Tappan, US Geological Survey.

In the early 1980s, radio announcements reporting on the outcomes of an international meeting reinforced the idea that drought and deforestation are linked but not inevitable, and people could react to drought in a positive way. Another bad drought occurred in 1984. “Serving-in-Mission” (SIM)⁴⁰ agreed to provide food for work and introduced “Farmer-managed Natural Regeneration” (of indigenous field trees) as a technology to improve productivity and resilience. Local forestry officers agreed to “relax” the national ban on tree cutting, and to allow farmers to manage trees on their own fields. The conditions were right for farmer-managed natural regeneration (FMNR) to begin producing multiple benefits.

To accompany FMNR, community-based organizations were supported, including organizations established to protect trees in farmers’ fields and enforce other land management rules established by villages. Committee members had the authority to stop and take people who were illegally cutting trees to the village leader, who could impose fines. The increased security that came with the establishment of commonly recognized rules, and the right to enforce those rules, encouraged villagers to join with other villages to form cooperatives to market wood collectively. The wood comes from farmers’ fields, and was harvested in a manner that balances wood production with soil fertility and other services (e.g., browse production for livestock). The cooperatives were legally recognized (as were rights of the members to harvest trees from their own fields), and governed by representatives from each village. Income increases were substantial from wood selling alone, but income from a greater variety of crops, livestock, and tree products also increased. Demonstrations contributed to the spread of FMNR. These initiatives also produced important additional benefits, including a more equal collaboration between rural villages and outside partners. Furthermore, there was a gradual reversal of the long-standing adversarial relationship between the Forest Service and rural communities.

⁴⁰ SIM is a faith-based organization based in Maradi, Niger.

The process of landscape transformation clearly demonstrates many principles of NWP. Strengthened local institutions with the power to identify boundaries and impose sanctions are critical for success. These institutions, when facilitated and joined by the state, form a continuous platform for dialogue and input into decision-making. Testing new interpretations of the Forest Code before formal reform demonstrated the national government's commitment to promoting practices that increased productivity and maintained natural capital, instead of the letter of the code. The alignment of private (personal economic gain) and public interests (environmental recovery) led to win-win situations. Simple yet effective NRM techniques, implemented by thousands of individuals and groups, can have landscape-level impacts. Equitable partnerships – public, private, and civil society – were also key to structural change. The integration of NWP principles helped lead to better environmental, economic, and governance outcomes in a large multi-country area.

For more information on this case see the full Sahel case study in **Annex 3.2**.

WEALTH PRINCIPLES AND ACTIONS



WEALTH

- W1.** Strengthen natural capital accounting, valuation, and analytic tools to improve decisions
- W2.** Invest revenues from resource extraction into creation of new assets and incomes
- W3.** Create frameworks and incentives to improve alignment of public and private interests
- W4.** Strengthen markets and the role of rural producers in competitive but non-extractive natural resource value chains
- W5.** Plan for the equitable and efficient distribution of costs and meaningful benefits

In addition to natural resources that are directly harvested for markets as well as subsistence, ecosystems provide a multitude of non-marketed services to economies that can be expensive to replace if degraded. Only in extenuating circumstances should natural capital be consumed faster than it or renewable substitutes can be created. To do so means liquidating assets (wealth) for short-term consumption, rather than managing them to provide sustainable incomes. Better accounting of these resources and services, transparent re-allocation of revenues from resource extraction to investments in income-producing assets, and frameworks for aligning public and private interests in markets are needed to improve decision making for sustainable development across all levels. Distribution of costs and benefits needs to be both efficient and equitable. Principles W1-3 and their respective actions, take on added urgency with the rapid growth seen in the role of foreign direct (private) investment in mining and other extractive industries; large land acquisitions for growing food and biofuels for export; as well as infrastructure such as roads, pipelines, dams, and ports.

W1. Strengthen Natural Capital Accounting, Valuation, and Analytic Tools to Improve Decisions

An array of efforts is needed to improve the accounting, valuation, and pricing of natural capital (direct economic resources, indirect/ecosystem services, and biodiversity) across multiple levels (public-private and international-national-local, etc.) to improve decision making to reduce harmful impacts and foster more sustainable economies. Recommended actions follow.

Track harvest and regeneration rates of all marketed natural resources

Building on the first action under principle N1 (*safeguard natural capital's productive capacities*), the biophysical depletion rates for natural resources, both renewable and nonrenewable, as well as regeneration rates for renewables, need to be tracked *annually* at corporate and national levels to facilitate appropriate planning and pricing. These calculations may be simplified and focused at the local level, but at the national level there is a pressing need to annually re-calculate the number of years to depletion at current extraction and regeneration rates. This will vary from year to year and relates closely to the following two actions and the first action under principle W2 (*invest revenues from resource extraction into creation of new assets and incomes*).

Re-invigorate international efforts to reform the U.N. System of National Accounts

The system of national accounts, used by most countries, miscounts natural resource sales, which can also constitute natural capital depletion, as well as spending on environmental restoration efforts, all as additions to *income*. An effort in the 1990s to create “integrated environmental satellite accounts” to the system was neither integrated nor effective.⁴¹ “Greening” the accounts needs to be directly integrated into the calculation of gross domestic product. It also needs to distinguish between nonrenewable and renewable resources.⁴²

Building on efforts of TEEB, UNEP/UNDP, OECD, and other partners, the World Bank’s \$15M **Wealth Accounting and the Valuation of Ecosystem Services (WAVES)** program is a global partnership that aims to promote sustainable development by ensuring that the national accounts used to measure and plan for economic growth include the value of natural resources and ecosystem services. Funded by EU countries, the program is working in **Botswana, Colombia, Costa Rica, Madagascar, and the Philippines**.
<http://www.wavespartnership.org/waves/>

Improve accounting and transparency of revenues from natural resource harvests

Building on the two actions above, accountants and economists need to properly disaggregate the net revenues from resource harvests into what constitutes *true* or *consumable income* (which can be reported in gross domestic product) versus natural *capital depletion* (also known as *user cost*) that should be saved and reinvested under the first action (*re-allocate revenues from extractive or resource-depleting harvests*) under principle W2.⁴³ Greater transparency about government receipts from resource harvests will also contribute to improving natural resource governance.⁴⁴

In **Niger**, the Wula Nafaa project in **Senegal**, and with **Nepal’s** CFUGs, government-approved management plans stipulate that a given percentage of revenues from the sale of wood goes back into forest management. **Timor-Leste’s** Petroleum Fund, started in 2005, won the highest rank among such resource revenue management funds for transparency and accountability from the World Bank in 2009.⁴⁵

Invest in estimating natural capital’s non-marketed benefits

natural resources, ecosystem services, and biodiversity usually have multiple functions and values, some of which may be marketed and others that are not. Non-marketed values are often discounted as being worth nothing, which leads to overharvesting and depletion. To *safeguard natural capital production functions* (N1),

41 El Serafy (2013), Chs. 1–2.

42 El Serafy (2013), Ch. 3. Also, relevant Systems principles here include that no system can grow forever in a finite environment, nonrenewable resources are stock limited, and renewable resources are flow limited (Meadows 2008, p. 190).

43 El Serafy (2013), Ch. 9. This is a simple procedure if one knows the resource stocks (reserves) and the annual depletion rates, as would be tracked under the first action under Wealth principle 1 (W1). Note that national governments as well as companies should apply this method each year to their revenues from harvesting both nonrenewable mineral/petroleum resources, as well as from theoretically renewable resources such as forests and fisheries that are in fact frequently harvested faster than they can be regenerated. El Serafy also suggests a discount or interest rate in the range of 3 to 4 percent, which is more consistent with the discount rate preferred in cost-benefit analysis by the U.S. Army Corps of Engineers, more sustainable economic growth rates, and suggestions by Sir Nicholas Stern in his analyses of climate change (Stern 2013), compared with the rate of 12 percent now used by USAID or 7 percent used by most of the U.S. Government.

44 See the Extractive Industries Transparency Initiative (<http://eiti.org>), Revenue Watch Institute (www.revenuewatch.org), and Natural Resource Charter (<http://naturalresourcecharter.org>).

45 World Bank (2009), p.4.

better assessments of the total economic value of all types of natural capital are needed (see **Figure 6**, The Economics of Ecosystems and Biodiversity studies,⁴⁶ the Natural Capital Project, and its InVEST model⁴⁷).

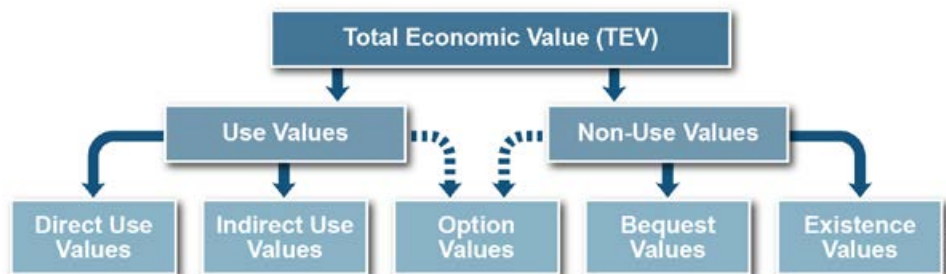


Figure 6. Types of values contributing to total economic value by natural capital

Market economics typically only account for the lower left box (direct-use values)

Source: Adapted from OECD, 2010.

Apply extended cost-benefit and cost-effectiveness analysis tools

Too few cost-benefit analyses of projects and investments analyze the total economic value of all the forms of natural capital that are being used or affected by development projects. Using the results of the preceding action (invest in estimating natural capital’s non-marketed benefits), enhanced economic analysis techniques⁴⁸ could improve decision making about projects that both directly and indirectly involve natural resources, ecosystem services, and biodiversity. Apply such extended analysis systematically from different user perspectives (for both internal and external funding, including looking at different gender perspectives). Analyze markets, trade links, and emerging demand carefully.

The Inter-American Development Bank (IDB) recently launched a “Biodiversity and Ecosystem Services Program” that seeks to expand the Bank’s usual economic analysis methodology to include economic valuations of ecosystem services at the “project preparation” stage of their project cycle in key sectors such as transport, energy, agriculture, water and sanitation. It also aims to incorporate “biodiversity inclusive” environmental impact assessment methodology at this same stage, and develop standardized impact indicators and methodologies to measure benefits at the impact evaluation stage. Countries especially interested in this program include **Colombia, Paraguay, and Honduras**.

W2. Invest Revenues from Resource Extraction into Creation of New Assets and Incomes

Following the accounting steps in the first and third actions under W1 (track harvest and regeneration rates of all marketed natural resources, and improve accounting and transparency of revenues from natural resource harvests), the natural capital depletion portion of revenues from extracting nonrenewable resources or renewables harvested above their regeneration rates should be reinvested into creation of new assets that

46 See The Economics of Ecosystems and Biodiversity (TEEB) program (2008–13) at: www.teebweb.org/our-publications.

47 See the Natural Capital Project (www.naturalcapitalproject.org).

48 Bennett (2009). See the further reading list at end of Wealth section.

can produce sustainable income streams in the future. This aims to replace the lost, temporary income from the depleted resources.⁴⁹

Reallocate revenues from extractive or resource-depleting harvests

The natural *capital depletion* (or *user cost*) portion of revenues calculated in the third action under W1 (*improve accounting and transparency of revenues from natural resource harvests*) should be reallocated from *consumption* to investing in productive infrastructure, machinery for value-added processing, human capital (practical education and health services), restoring productivity of degraded lands and ecosystem services, and foreign investments that can generate reliable returns, for when absorptive capacity is lacking. Reinvesting some of this user cost from extractive industries and infrastructure development into productive wetland and biodiversity banking/offsets can be a means of safeguarding those types of natural capital.⁵⁰

A number of Oil Investment Funds have been set up to combat common problems associated with resource windfalls. This includes inflation, “Dutch disease,” the temptation to spend everything at once, lack of absorptive capacity, corruption, and providing incentives for prudent financial management to provide diverse and sustainable income streams past when the oil runs dry for future generations. The World Bank in 2009 found **Timor-Leste** and **Azerbaijan** to have the two best-managed funds among those from developing countries.⁵¹ **Chile** also set up a similar fund for its copper revenues.

Plan and invest at national, regional, local, and micro levels

Strengthen the government’s ability to assess needs, analyze costs and benefits, and plan and allocate resources. Focus on assuring that programs respond to the emerging and changing incentive structures that small producers face. Include “trend analysis” as part of the core analytical framework for making programming decisions.

W3. Create Frameworks and Incentives to Improve Alignment of Public and Private Interests

An enabling environment that provides incentives for conserving natural capital (and disincentives for destroying it) is needed. “Externalities” (public costs of private benefits) need to be internalized into market systems. Alternatively, it may sometimes be cost-effective to compensate protectors/producers of natural capital or ecosystem services to the economy for the cost of altering their other production systems to maintain these functions.

Encourage an enabling environment

Focus programs and, in particular, donor assistance on creating an enabling environment, including a sound and enforced policy framework, rural organizations (producer organizations, cooperatives, conservancies, community forestry associations, etc.), core market infrastructure, and programs and infrastructure coordinated across sectors. These sectors would include energy, mining, agriculture, forestry, fisheries, tourism, health, and finance.

49 El Serafy (2013), Ch. 9. See also <http://naturalresourcecharter.org/content/precept-7>.

50 For more information on the Business and Biodiversity Offsets Program, see <http://bbop.forest-trends.org>.

51 World Bank (2009). http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/04/02/000334955_20090402085247/Rendered/PDF/479900BRI00ENG10Box338877B01PUBLIC1.pdf.

Internalize costs of pollution, water, carbon, biodiversity, and other environmental services

Building on the last two actions under W1 (*invest in estimating natural capital's non-marketed benefits and apply extended cost-benefit and cost-effectiveness analysis tools*), establishing prices for carbon, water, and other ecosystem services, and requiring cleanup of pollution will strengthen market incentives for rural smallholders and the private sector to internalize environmental externalities – such as carbon dioxide and other greenhouse gas emissions changing the climate – into their production calculations, and reward maintenance/production of those services.⁵² This is also known as the *polluter pays principle*.

Promote NRM solutions that make financial sense and foster economic opportunity

Understand NRM as an economic activity for which people must use their time and energy and from which they expect a return. Promote NRM options that generate sustainable cash income, and be careful about proposing solutions that increase work burdens – especially for women – during peak agricultural seasons. This will focus attention on localized market-driven opportunities where they are appropriate and yield a richer, more complex, and more meaningful menu of options to fit real life needs.

Develop systems of conditional payments for ecosystem services (PES)

Rural people can produce many enviro-economic services that benefit the larger public through improved management of their production systems, such as watershed management and carbon sequestration in trees and soils, but these improved practices often have costs associated with them (extra labor, or capital, and opportunity costs if traditional production declines as a result). Depending on the circumstances, biodiversity conservation may be a stand-alone service worth paying for, or a co-benefit “bundled” with one overall payment or “stacked” separately (separate payments from different activities). Compensation via PES systems to cover peoples’ opportunity costs in doing so are just emerging. These will increase the attractiveness of good management. Governments and/or nongovernmental organizations (NGOs) can play important intermediary roles in reducing the transaction costs of getting large numbers of poor smallholders signed up and paid, although care must be used in determining the optimal combination of environmental and social benefits.⁵³ (This has been a continually evolving issue in Mexico’s national payment for watershed services program.⁵⁴)

52 *Nature corollary to this action under W3:* Storage of a molecule of “green” or “blue” (together “living”) carbon (organic matter above and below ground or water) is worth more than storage of a molecule of brown or “fossil carbon,” because of living carbon’s roles in crop, livestock, and fishery productivity via soil, nutrient, and water cycling and conservation, and well as biodiversity production and other co-benefits. Organic soil carbon correlates to crop productivity and makes artificial fertilizers more efficient (reducing the dosage of expensive inputs needed for a given increase on production, and reducing water pollution and greenhouse gas emissions in the process).

53 Note: it is not always necessary to conduct detailed valuation studies for these services; willing buyers and sellers can often come to a negotiated agreement over the prices to be paid for services provided without conducting expensive but sometimes imprecise valuation studies. There is a legitimate role for governments in maintaining “nested” monitoring systems to account for “leakage” of harmful practices to other areas or lack of permanence of stored carbon.

54 See, for example, Alix-Garcia et al. (2010).

PES is not as simple to implement in the real world as the elegant economic models that justify it imply. There are often sticky scientific (nature), economic (wealth), governance, and/or social (power) issues to resolve before it can be viable. See the Brazil mini-case, as well as the Petén, **Guatemala**, Tmatboey, **Cambodia**, **Nepal** REDD, Simanjoro, **Tanzania**, Makira, **Madagascar**, and Mbé, **Gabon** cases from the TransLinks program at <http://rmportal.net/library/content/translinks/case-studies>, and the SANREM/BASIS CRSPs at www.oired.vt.edu/sanremcrsp/professionals/research-themes/pes.

Secure land or resource tenure is often a prerequisite to PES systems, and governments may have to invest in improving tenure security to make such systems viable. More experiments such as the one in Sumberjaya, Indonesia are also needed in which conditional tenure (temporary, if the service provider performs as contracted) is the actual incentive/reward/payment, rather than the prerequisite⁵⁵ (see www.worldagroforestrycentre.org/downloads/publications/PDFs/pp06374.pdf).⁵⁶

W4. Strengthen Markets and the Role of Rural Producers in Competitive but Non-Extractive Natural Resource Value Chains

Markets are critical to development in rural areas; many millions of people have been lifted out of poverty through integration into markets and value chains. Increasing rural people's access to markets that are transparent and competitive is then key to rural development success. However, in some cases, markets and value chains do not always work well for the rural poor or the environment, and efforts must be made to improve market performance and fairness.

Emphasize transparency and financial sustainability

Emphasize transparency and sustainability from the outset within rural organizational structures that take the lead on credit, marketing, and common property management. Develop transparent, clear, and equitable benefit- or revenue-sharing distribution and use mechanisms (also see principle W5 below).

Focus on changing tomorrow's economy

Capitalize on underlying trends that are driving the economy and peoples' lives. These trends will determine other choices people make. For example, cellphone technology has revolutionized how farmers get market information and given them power that they did not have when the buyers had all of the price information. Efforts should be made to develop the software side of this technology and improve access to it. In addition, the private sector is becoming a more important player, and it will be vital to develop new models of public-private partnerships, such as the joint ventures described in the **Namibia** case study (Annex 3.3). Analysis of areas experiencing high levels of development and inclusive growth may have lessons for other areas.

55 Suyanto et al. (2006).

56 Power corollary to PES action under W3: Ensure that payments and incentives for ecosystem services get channeled to rural land managers and smallholders, rather than being disproportionately captured by elites and governments (see Power section).

Use the **Conservation Marketing Equation Tool**, a manual for selecting and defining the products, value chains, market, prices, regulations, institutions, and intermediaries necessary to develop new “natural products” for markets.⁵⁷ This tool has been used in conjunction with certification tools such as that of the *Certified Wildlife-Friendly™ Enterprise Network*, which has certified businesses around the world, including but not limited to *Himalayan Bio Trade Ltd.* in **Nepal**, *Ibis Rice* in **Cambodia**, *All Things Alpaca* in **Ecuador**, *Elephant Pepper* in **Zimbabwe**, Community Markets for Conservation’s (COMACO) *It’s Wild!* in **Zambia** (see box below), and *Aroma Forest* in **Madagascar**.⁵⁸

Establish robust rural producer groups and federations

Focus assistance resources on helping rural communities to establish and manage strong community-based organizations. Invest in developing practical guidelines that can be applied widely. Invest in tools, information, and training modules in the local language. Pay particular attention to assuring that organizations are not “hijacked” by local or external power elites. Encourage groups to be representative in selection of members and officers to ensure open participation and selection of the best people to hold key positions. Provide adult literacy and numeracy to a large percentage of members and provide organizational, negotiation, and enterprise management skills to key personnel. By themselves, rural groups have limited influence on policies and markets; however federations of such groups can produce economies of scale, critical mass, and advocacy effectiveness.

One type of robust producer group is the farmer cooperative, such as the 35,000-member **COMACO** in the Luangwa Valley of **Zambia**, which produces a surplus of nutritious foods (peanut butter, honey, chemical-free rice, soy, fortified breakfast cereals) for export from a previously food-insecure area, all while protecting wildlife from poachers and managing human-wildlife conflicts. <http://rmportal.net/library/content/translinks/comaco-video> and http://rmportal.net/library/content/translinks/translinks-2009/wildlife-conservation-society/brochure_wfencommunitymarketsforconservation.pdf/view

Another example of a successful producer group is one focused on local NRM needs, such as the *Federation of Forest User Groups* (FECOFUN) in the **Nepal** case (Annex 3.1), which has over 17,000 forest-user member groups and over 8 million members. Such groups have the legitimacy and credibility to speak on behalf of the rural people and community-based organizations that make up their constituency.

Create systems that facilitate market participation

Globalized markets are penetrating deeper into isolated rural areas almost daily. The issue is often not whether local people have the option of not participating in the market, but under what conditions they will be integrated. Rural populations are often so poor that they cannot intervene efficiently in markets and have little influence over them. As individuals, farmers are also at a severe disadvantage in negotiating with market intermediaries. It will be important to help smallholders create and manage rural economic organizations such as marketing cooperatives. Invest in information systems and approaches to improve farmer/cooperative competitiveness. Encourage an array of revenue-generating community-based NRM activities that reinforce and diversify livelihoods. Assemble or combine production of community-based enterprises for better

57 A. Koontz (2008).

58 See <http://rmportal.net/library/content/translinks/wildlife-friendly-enterprise>.

negotiation and marketing as done by Nepal's community forest user groups working with Himalaya Bio Trade, Zambia's COMACO, and Cambodia's Ibis Rice cases cited above.⁵⁹

The Ibis Rice/Tmatboey case in **Cambodia** actually involves a combination of (1) a payment for biodiversity protection (nests of endangered national bird and others), (2) development of a community-owned ecotourism (birding) business that links with external markets, and (3) Wildlife-Friendly™ agricultural zoning, improved production, and a price-premium marketing program. See set of documents available at: http://rmpportal.net/library/content/translinks/translinks-2009/wildlife-conservation-society/casestudy_paymentsforbiodiversityconservation_cambodia.pdf/view.

Promote local value added and processing

Local people can capture more of a product's value if they can participate in value addition and processing – even basic processing. As products go from the producer to the consumer through the value chain there may be a number of steps in which value is added. In some cases, these are among the most remunerative steps of the process. Rural producers who market unprocessed products often get little return.

In places like **Senegal**, local processing facilities for non-wood forest products have been developed that allow local producers to capture more value and increase their incomes.

Foster competitive rural markets and value chains

Base resource management strategies on sound economic principles, especially regarding markets, subsidies, and the role of producers in the value chain. Pay attention to developing roads and cellular communications infrastructure to encourage competition among wholesale purchasers and reduce the costs of internal and external trade. Use accessible and reliable market information to help rural producers get fair market prices. Strengthen the capacity of producers to be full and active stakeholders in value chains. Experience has shown that this encourages producer groups to deliver higher-quality products at the right time to the right place in the right quantity – results that increase the competitiveness of the value chain. Provide training and intermediary services that build the skills of producer groups to act as full partners. Provide intermediary services that build trust and confidence between producer groups and other parties in the value chain (e.g., buyers, suppliers, processors, etc.). Demonstrate to all stakeholders in the value chain that helping each other increases their respective margins and allows the value chain to be more competitive.

Promote and/or facilitate joint ventures

Under the right conditions, the private sector is often a vital part of catalyzing growth in rural areas and brings skills and resources that are not always available at the local level. This approach has generated benefits for both parties, as the private sector operator brings to the table skills that the community has not yet developed and the private company can run an economically viable activity.

⁵⁹ See <http://rmpportal.net/library/content/translinks/wildlife-friendly-enterprise>.

In **Bangladesh**, the improved co-management of forest reserves has led to increased private sector interest in investing in new local rest houses and in nature centers. In **Namibia**, empowered and trained community-based organizations have entered into joint ventures directly with private tourism companies and operators to enhance the value of their resources and increase the revenue generated from them.

Promote and fund local credit schemes

Local financial services are critical for rural development because many rural people have limited savings and little access to banks, yet need to make investments and have access to small amounts of funds. Examples of local services include rural credit cooperatives, producer organizations, and microfinance institutions. Remittances are often a source of funds that need careful management and investment opportunities. Many of these locally adapted mechanisms have proved low cost and highly effective. They build self-reliance; have an excellent record for targeting women, who are often left out of formal credit mechanisms; and show good repayment rates. Build on and replicate successful models, sponsor visits to communities where successful credit schemes are operating, and assure that the legal and regulatory framework provides the right incentives – and does not create hindrances – for locally managed credit programs.

W5. Plan for the Equitable and Efficient Distribution of Costs and Meaningful Benefits

Economic benefits need to be significant enough to not only cover costs, but meaningful enough to provide an incentive to change behavior and habits. Transaction and opportunity costs are an important part of the calculation by local people. In addition, equitable, transparent, and timely distribution of benefits, particularly from group management of natural resources, is a key to success and sustainability. Better equity in distribution of benefits can lead to better efficiency and effectiveness.

Ensure coverage of transaction and opportunity costs

When planning or proposing an activity, consider transaction costs (the costs other than money costs when exchanging goods and services, such as time and travel expenses) and opportunity costs (the benefits of an alternative action, such as farming instead of forest management) of different groups (especially women and other vulnerable populations). Rural people are busy, and their time has value; many programs ignore transaction and opportunity costs, which can lead to failure.

Aim for meaningful incremental benefits to stimulate permanent behavior change

Rural development often involves behavior change, which can be slow and arduous. In some cases returns to the change must significantly exceed the returns of the previous methods if the change is to be effective and sustainable. Experience has shown that rural people will change behavior at a critical level of benefit received. The bigger the benefit, the more robust the change is likely to be.

Plan early for the equitable distribution of costs and benefits

Prevent undue capture of benefits by elites, or unfair externalization of costs. Early development and vetting of a clear plan can help facilitate people's participation. A vetted plan means less risk of conflict when benefits are shared, and more transparency in their distribution.

Benefit-sharing plans: In Namibia, before conservancies can be registered, the community is required to develop a benefit distribution plan that has been fully vetted by all members of the community – men and women – and present it to the government for approval. The government provides some guidelines but wisely is not heavy-handed in prescribing the content and format of these plans. All formally recognized conservancies have such a plan, which are widely believed to have limited conflict and improved the functioning and sustainability of the groups.

Support resilient income-assurance strategies

Better coordinate and integrate NRM strategies with disaster management and economic development. Safety nets based on public works programs, rainfall insurance, and the like sometimes provide new investment (e.g., reforestation), but more importantly, they almost always defend against temporary resource overexploitation in times of stress.

Further Reading: WEALTH

- **Macroeconomics and the Environment: Essays of Green Accounting** (2013) by Salah El Serafy is a detailed account by an esteemed retired World Bank economist of the reasoning behind some major advances and disappointments in the field of natural resource macroeconomics and accounting, including his breakthrough on how to account for and manage the revenues from natural resource harvests for sustainability.
- **The Economics of Ecosystems and Biodiversity** (TEEB, 2008–13) is a global research effort sponsored by the European Union and several of its donor countries, focused on drawing attention to the economic benefits of ecosystem services and biodiversity and the growing cost of their degradation and loss. Available at: www.teebweb.org.
- **TransLinks** (short for **Promoting Transformation by Linking Nature, Wealth, and Power**), 2006–12, was a centrally funded USAID program led by the Wildlife Conservation Society, with Forest Trends, EnterpriseWorks/VITA, the University of Wisconsin-Madison's Land Tenure Center, and Columbia University's Earth Institute. TransLinks conducted research, developed tools, and implemented training programs in about two dozen countries on payments for biodiversity, forest carbon, and watershed services and helped develop a new certification program for Wildlife Friendly™ enterprise. The complete collection of TransLinks' products is available at: <http://rmportal.net/translinks>.
- **“Advancing Ex-Post Impact Assessment of Environmental and Social Impacts of CGIAR Research”** (2009) by Jeff Bennett is a paper that provides an unusually broad survey and assessment of available methods for estimating the value of environmental and social impacts of research and development projects.
- **USAID PES Sourcebook** (2007) by R. Jindal, J. Kerr, T. Dillaha, and M. Colby is a collection of briefs on design and best practices for pro-poor payments for ecosystem services (PES) programs, and also includes regional surveys of one category – payments for watershed services projects – in Latin America, Asia, and Africa as of 2007. Available at: www.oired.vt.edu/sanremcrsp/professionals/research-themes/pes.

NWP in Action: BRAZIL – Rights, Conservation, and Development through Carbon Credits

Indigenous reserves cover about 105 million hectares, or about 20 percent of the Brazilian Amazon. But these reserves and their peoples are often threatened with encroachment and harassment by illegal loggers, cattle ranchers, soya and oil palm plantations, and hydropower dams. In the past decade, a new development tool to help ameliorate these pressures has emerged – **Payment for Ecosystem Services (PES)** – and especially the trading of carbon credits under U.N.-approved methodologies for **REDD+**. Some indigenous groups perceive REDD+ as a threat, but the *Paiteer-Surui* people in western Brazil⁶⁰ studied it carefully and came to see it as an opportunity, with risks they can manage.⁶¹ Conceived by the *Surui* people with assistance from several partners,⁶² the **Surui Carbon Project** aims to finance forest monitoring and protection activities, sustainable production, and human resource enhancement – contributing to environmental conservation and cultural strengthening on their reserve through producing and selling forest carbon credits in Brazilian and international markets. In the process, they have set a major precedent for indigenous rights across the Amazon region and other threatened Brazilian ecosystems.



Almost since their discovery in the late 1960s, the Surui have had to fight to conserve their natural resources against external pressures. In the past decade, they developed a 50-year strategic plan for the conservation, protection, and sustainability of their lands. Under REDD+, the most relevant activities are (1) avoiding further deforestation and (2) reforestation of previously cut areas. The Surui are aiming to do both.

But first, a major hurdle for the plan involved the unsettled question of who owns the rights to the carbon stored in the Brazilian Amazon and, therefore, to any “carbon credits” created by REDD+ projects. The USAID/EGAT-sponsored *TransLinks* project⁶³ helped support a review in 2009 of the Brazilian Constitution and statutes concerning land and resource tenure, which concluded that recognized indigenous peoples do have the legal right to benefit from forest carbon in their reserves.⁶⁴ USAID/Brazil subsequently supported development of the path-breaking *National Policy for Environmental Management in Indigenous Lands*, solidifying recognition of these rights on June 5, 2012, and providing guidance on the potential development of REDD+ projects with indigenous peoples.

60 The Surui's *Indigenous Land Sete de Setembro* is located outside the municipalities of Cacoal and Espigão d'Oeste, mostly in the state of Rondônia. It has an area of 248,000 hectares and a population of about 1,300 people. See www.paiteer.org.

61 See ACT Brazil (2010) for details on the rigorous *free, prior and informed consent* process followed by the Surui. Available at www.forest-trends.org/documents/files/doc_2693.pdf.

62 With technical support from environmental and indigenous organizations, such as Forest Trends (www.forest-trends.org), the Amazon Conservation Team Brazil (ECAM) (www.ecam.org.br), Kanindé (www.kaninde.org.br), IDESAM (www.idesam.org.br), the Brazilian Fund for Biodiversity (FunBio) (www.funbio.org.br), and Google Earth, and financial support from the Gordon and Betty Moore Foundation (www.moore.org), USAID/EGAT's *TransLinks* program, and others.

63 USAID/EGAT's (2006–12) *TransLinks* program (“Promoting Transformations by Linking Nature, Wealth, and Power,” (<http://rmportal.net/translinks>)) was led by the Wildlife Conservation Society and Forest Trends.

64 See *Instituto Socioambiental and Forest Trends* (2010) for the legal study. Available at: www.forest-trends.org/publication_details.php?publicationID=2626 (pp. 125–143).

Meanwhile, in March 2012, the Surui's REDD+ project design document received *validation* from the *Verified Carbon Standard* (<http://v-c-s.org>) for its carbon storage, as well as the *Climate, Community, and Biodiversity Alliance Standard* (www.climate-standards.org) for its biodiversity, watershed, and cultural co-benefits, which attract a price premium in voluntary carbon markets. In addition to providing an accurate account of the carbon stored on their 248,000 hectares, the project design document described the indigenous reserve's richness in biodiversity and natural resources (see **Figure 7**), the relationship between Surui communities and the environment, the threats, and how to avoid them and maintain their forest.

In May 2013 *Surui Carbon* became the world's first indigenous-led REDD+ project to become *verified* under the rigorous Verified Carbon Standard criteria, meaning that the project has successfully generated carbon credits that can be sold in carbon markets. In September 2013, they announced their first sale of 120,000 verified tons of carbon credits to Natura Cosméticos, Latin America's largest cosmetics maker. The aim is to create a **long-term funding mechanism** to support the Surui's

50-year strategic plan.⁶⁵ The community created its *Surui Fund* to follow principles of good governance and transparency, with strong roles for representative indigenous advisors. The fund will receive all revenue from carbon credit sales and apply it to community development activities.

Using this innovative financial mechanism to integrate NWP, the Surui have not only developed a plan for sustainable development of their territory but strengthened their rights, while gaining the experience, partnerships, and organizational capacity needed to carry the plan out. Their activities have contributed to national-level policy shifts that recognize additional indigenous rights and market opportunities, which will eventually benefit many of the indigenous peoples of the country and help to sustainably manage the unique ecosystems of Brazil.

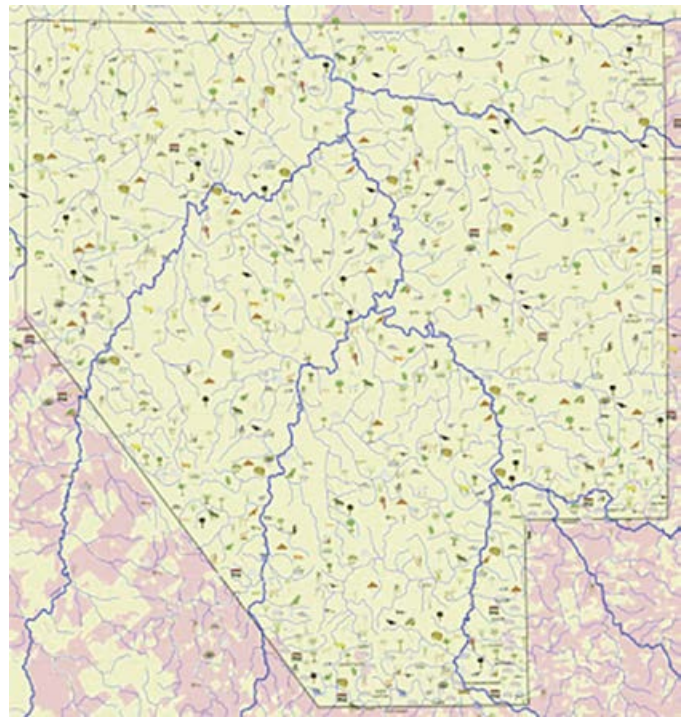


Figure 7. Map of the Surui's Indigenous Reserve and Its Resources

The pink areas mostly outside the boundaries, represent already deforested land. From ECAM, <http://rportal.net/library/content/translinks/translinks-2010/forest-trends/brazil-surui-carbon-fund-english-and-portuguese/view>.

65 Available in Portuguese at www.equipe.org.br/arquivos/publicacoes/sete008.pdf and in English on request.

POWER PRINCIPLES AND ACTIONS



POWER

- P1. Strengthen inclusive rural land and natural resource tenure systems, and procedural rights
- P2. Decentralize powers and responsibilities to representative and accountable authorities
- P3. Improve broadly based representation and continuous rural input on resource decisions
- P4. Promote simpler standards
- P5. Integrate and empower women and marginalized groups to participate in management, decisions, and benefits
- P6. Promote checks and balances, as well as equitable institutional relationships
- P7. Strengthen public and private institutions for delivery of technical and intermediary services

People's use of resources for development are mediated and constrained by rights frameworks, institutions, and policies. Adequate frameworks and institutions help create the conditions in which people can align their interests with the public good. Because natural capital is so important for both developing countries *and* rural people, it is where many of the struggles for power take place. In many cases, the rights and power of rural people need to be strengthened, not only as a good in itself, but as a means of achieving positive natural capital outcomes for their futures. Key elements of the power dynamics are property rights and resource tenure regimes, subsidiarity, representative and accountable organizations, empowerment of the marginalized, strengthened administration, and institutional arrangements. Other aspects of the power dimension include important elements of social capital; including trust, cohesion, and reciprocity. Cultural aspects of rural production systems and the ability to work within this context have been shown to be a key element of success of certain conservation programs.⁶⁶

PI. Strengthen Inclusive Rural Land and Natural Resource Tenure Systems, and Procedural Rights

The distribution of rights over resources, both property and procedural, are key to sustainable, efficient, and equitable outcomes.⁶⁷

Encourage and protect clear resource tenure and property rights systems for smallholders

Included in this is not just *land* tenure and property rights, but rights to benefit from and tenure over trees, wildlife, water, fish, carbon, etc. – at least one of which is illustrated in each of the case studies in the annexes. Although the bundle of rights that make up a property right can be complicated, few will invest in maintaining, much less improving, resources over which they do not know they have secure, long-term claims. In addition,

⁶⁶ Waylen et al. (2010).

⁶⁷ For a fuller discussion of natural resource rights see Ribot and Larson (2005) and the Rights and Resource Initiative at: (www.rightsandresources.org).

formal security of tenure provides additional security in areas where larger entities such as corporations are attempting to gain control over large tracts of land in developing countries.⁶⁸

Plan for how changing production requirements interact with land tenure systems

In the Nature section, climate-smart agriculture, which includes the concept of “sustainable intensification”⁶⁹ was discussed to meet growing food demand from existing arable land, due to the importance of halting deforestation to climate, watershed, biodiversity, and other ecosystem services. The Wealth section above discussed the need for enabling policies and incentive systems to encourage investment in maintaining/restoring/improving the natural capital on which such intensification rests. As just mentioned above, land and resource tenure security is a vital part of such incentive systems. In order for farmers to make investments to build the natural capital (e.g., soil carbon, nitrogen fixation, water capture, and use efficiency) of their land to enable intensification, the importance of secure, long-term tenure over those specific parcels of land sharply increases. Some traditional tenure systems have adapted to respond to these new circumstances; others have not. These sets of relationships – which may differ among locations and cultures – need consideration because they often drive the technical and financial viability of NRM investments.

Foster clear, stable, legitimate, and democratic common-property management

The relatively rare cases of open-access regimes (not be confused with common-property regimes) need to be converted into regimes that encourage sustainable management. If there are to be more generalized programs for community management (based on successful project-specific initiatives), the generalized “rules of the game” will need to be considerably clearer, better communicated, and much stronger. The complexity of this task, however, should not be underestimated, because local circumstances, traditions, resource endowments, and institutional capacities vary greatly. The challenge will be to find policies that provide across-the-board incentives, while maintaining the flexibility to respond to local needs.⁷⁰

Assure that rights include the basic procedural rights of access to information, decision making, and recourse

Adequate access to information fosters the awareness of local people and the public in general on NRM issues and its capacity to develop alternative policy proposals. Citizen vigilance allows NRM problems to be identified and addressed at an early stage and complements government inspection and enforcement efforts. By participating in administrative review processes and making use of the courts, citizens can also foster compliance with national laws and ensure fair distribution of natural resource goods and compensation (as well as costs) for environmental injuries. Access to recourse and neutral mediation of potentially unfair decisions helps level the playing field and provides for checks and balances.

Promote understanding of procedural and property rights

A prerequisite for communities and local people to assert their rights is understanding them. Even when laws and rights are favorable, rural people are often ill informed about not only their content, but the processes that lead to their enactment and implementation. This can even be the case for employees of technical ministries. A study in Mali showed that government foresters had a wide variety of interpretations of the

68 See the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries, and Forests in the Context of National Food Security at: www.fao.org/nr/tenure/voluntary-guidelines/en.

69 Garnett et al. (2013).

70 See Ostrom (1990).

forestry code.⁷¹ Rights training including the translation and development of appropriate communication techniques should be attempted where knowledge of rights and laws is weak.

In **Brazil**, a local indigenous group has been fundamental in inspiring new legislation about carbon rights after an intense program of discussion of REDD+ principles, approaches and opportunities. A number of countries such as **Namibia** and **Nepal** have made significant efforts to translate and diffuse appropriate NRM legislation to make it more understandable and accessible to local people. Some countries, such as **Mozambique**, have organized training programs not only to inform people, but also to build capacity to exercise their rights. In many cases, they develop communications strategies and campaigns that bring big dividends.

Assure rights of association, speech, movement, and access to government institutions⁷²

Government institutions with NRM roles include the cabinet, legislature, national environmental protection agency, and local governments. Examples of important liberties for citizens, citizen groups, and their elected representatives include the right to file a petition, submit a citizen's or citizen's group (private) bill, provide testimony (including in a parliamentary hearing), attend parliamentary sessions, and access the parliament library and documents. These rights are more often articulated in parliamentary rules of procedures than in national legislation. Minimal recognition of the rights to organize and "self-determination" are needed if local people are to manage resources effectively. Local legitimacy often needs to be sanctioned by the state.

The importance of rights of association for NRM groups and their ability to be legally recognized is illustrated in the case of **Nepal**, where thousands of forest user groups are recognized as well as their federation at the national level (see Nepal case study, Annex 3.1).

Strengthen natural resource legislation and implementing regulations

To be effective not only does the natural resource legislation need to be strong, clear and comprehensive, but the implementing regulations and administrative orders that turn legislation into reality need to have these characteristics as well. Language in legislation should "have teeth" and clarify the specifics while promoting clear guidance for administrative action. Administrative orders should facilitate and empower the implementation of legislation.

In **Namibia**, legislation on wildlife management was followed up with clear accompanying regulations that facilitated the formation of conservancies – community-based organizations with wildlife management responsibilities.

71 McLain, Rebecca (1992). Recommendations for a new Malian forest code: observations from the Land Tenure Center's study of land and tree tenure in Mali's Fifth Region, Research Paper, No. 109.

72 See the work of The Access Initiative of the World Resources Institute.

P2. Decentralize Powers and Responsibilities to Representative and Accountable Authorities

This principle closely tracks the *subsidiarity principle*, which holds that decisions should be made at the lowest or smallest level that can effectively deal with the matter.⁷³ Decentralization includes the transfer of not only powers and rights, but also responsibility and accountability.

Transfer discretionary decisions before or along with obligations

Decentralization efforts often transfer obligations onto local communities – such as patrolling, monitoring, management planning, rehabilitation, etc. – before transferring any discretionary power or additional access to resources. In other words, costs and obligations are decentralized before benefits and local decision-making.⁷⁴ Every program should be analyzed to assure that local people are not impoverished in order to achieve environmental outcomes (as many communities have experienced when they were excluded from new protected areas, for instance).

Community forestry in **Kenya** is an example of potential burdening of local communities by government through imposition of bureaucracy both procedures and organizations. Obligations have been imposed on communities, such as monitoring, patrolling and planning, while delaying discretionary and benefit-generating activities until approval of a management plan (if then).⁷⁵ Some plans have taken at least 5 years to be approved.

Encourage experiments with transfer of power and responsibility

Authority is a prerequisite for responsible management. One of the priorities and a defining characteristic of decentralization is the creation of a “domain” of local discretion in decision-making. Local authorities are more likely to be respected, viewed as legitimate in the local arena, and serve as channels of communication and action around which civil society can organize. To test the impacts of policies on peoples’ willingness to invest in the natural resource base, encourage experiments with transfer of power and responsibility to specific bodies before policies or laws have been formally reformed.

Such “experiments” have led to policy reforms or policy interpretations that have had transformational impacts on countries and even whole sub-regions (e.g., the **Sahel** case Annex 3.2).

Make transfers of rights secure

The degree to which a rights transfer is secure helps to determine the degree of independence and security that local authorities have in exercising powers. It also reflects the degree to which governments are serious about creating a domain of local discretionary power, which is basic to effective decentralization. Legislation carries with it more security than an administrative decree, which can change with administrators. However, legislation often requires accompanying regulatory tools and administrative decrees to make it effective, which too often have been left undone or incomplete.

⁷³ For more on the decentralization of natural resource management see *Democratic Decentralization through a Natural Resource Lens*, edited by Ribot and Larson (2005).

⁷⁴ See Acemoglu and Robinson (2012).

⁷⁵ See Mogoi, Obonyo, Ongugo, Oeba, and Mwangi (2012).

In **Namibia**, rights were transferred by legislation, which was subsequently made effective by administrative orders.

Transfer powers even before capacity is demonstrated

Central governments are often reluctant to devolve powers before technical and managerial capacities have been demonstrated. However, local authorities need powers to gain the experience necessary for building capacity. In addition, many local natural resource decisions do not require special capacities. Capacity building that accompanies power transfer may be a sufficient option when training is in fact a constraint. Avoid making capacity or other requirements artificial prerequisites for empowerment.

Shift the role of central state authorities from command and control toward technical support and legal oversight

Rather than designing and implementing projects that exercise direct resource-use law enforcement and oversight, the roles of central agencies should be to assure that appropriate skills and information are available to local people and that local decentralized authorities and institutions are acting within the guidelines and standards of the law. This may require retraining of public servants in this approach and role. Local leaders and organizations need legitimacy from within the community. However, this is often not enough. State sanction and formal recognition is often needed in order for these groups to interact with other stakeholders from outside the community and perform certain activities such as signing a contract.

In the case of **Niger**, government authorities helped to mitigate conflict among various groups by convening representatives of the groups to negotiate a resolution. Their job was to facilitate, not dictate. In the end, resource management plans and rules were negotiated and mechanisms established to resolve disputes. Productivity increased and conflicts were significantly decreased, both in frequency and severity.

P3. Improve Broadly Based Representation and Continuous Rural Input on Resource Decisions⁷⁶

To reflect the realities of rural areas, the voice of rural producers in decision-making about natural resources needs to be amplified and maintained. In very local settings, striving for total participation may be ideal, but at larger scales, representation is necessary. Broadly based representation can enhance the equity, effectiveness, and efficiency of input in decision making at all levels.

Build and strengthen independent organizations that represent rural views and establish active networks and platforms for advocacy and learning

Many developing countries have seen a virtual explosion in the numbers of local NGOs and civil society organizations (CSOs). Although some of these organizations are weak and confusion exists on their mandates, many are providing important checks and balances, oversight, and development functions. CSOs and NGOs cannot replace local organizations and should not be conflated with federations of local groups themselves.

⁷⁶ For a discussion of the role of representation in natural resource management see the World Resource Institute's work on this topic at www.wri.org/publication/market-access-working-papers, and Child (2004).

Federations, such as FECOFUN (**Nepal**), whose members are actual forest user groups, are particularly valuable in amplifying rural voices because they directly represent forest user groups. In some cases, as an interim measure CSOs can advocate on behalf of local groups. In addition to capacity building, civil society organizations are helping to draft environmental policies and legislation in a number of countries, such as the **Namibian Association of community-based natural resource management (CBNRM) Support Organizations (NACSO)** (a consortium of support organizations and not a federation of actual user groups) and are performing valuable advocacy and lobbying functions on behalf of rural people.

Encourage inclusive national-level debate to guide restructuring of natural resource governance

Principles are needed to guide the selection and location of powers among levels of government and between public and private spheres concerning natural resources. This requires an inclusive national-level debate in an environment that allows rural and other voices to weigh into decisions. Participation of elected representatives may slow the process but may also be the best way to institutionalize participation and create an enduring management process. The central government should at least (1) establish a broad legal framework so the public can hold national decision-making bodies accountable, (2) set national priorities and minimum standards, and (3) assure implementation and enforcement of these laws.

Establish a holistic and integrated rural policy and legislative framework

National and local policy and legislative frameworks need to reflect the fact that natural resource systems are complex and interactive, and that rural people attempt to manage their portfolios in an integrated way. These linkages and the benefits of a holistic framework may be especially important between agriculture policies and policies for other resources of the rural production system, because agriculture can drive deforestation and degradation.

P4. Promote Simpler Standards

The organizational and procedural requirements for natural resource management and rural production need to be kept to a necessary and sufficient minimum and be accessible and appropriate to the people who must employ them. Overly complex and unfamiliar requirements raise transaction and opportunity costs and do not necessarily empower rural people to make timely and locally appropriate decisions.

Make procedures simple, straightforward, and understandable

Although often well intentioned, the net effect of burdensome procedures is to sabotage decentralization and devolution. Too often, management plans, regulations, procedures, and other required NRM elements are unduly complex and obtuse. Procedures, and the goals behind them, must be understood by those who use them. If procedures and plans are simple, straightforward, and understandable – and designed with the participation of the ultimate users – they can improve transparency and resource governance.

Keep legal frameworks and organizations no more complex than necessary

Policies, guidelines, and regulations should also be accessible to – and understandable by – local people and organizations. There is a tendency for each rural sector (sometimes with donor support), such as agriculture, forestry, wildlife, etc., to insist on their own (new) organizations and to develop new legislation and regulations. Although this may be well intentioned, they will often be unfamiliar to local people and difficult for them to master, possibly dramatically increasing transaction costs for local organizations. Management

institutions need to be matched to the specific requirements of the resources to be managed and should be no more complex than necessary.

Encourage the establishment of minimum standards

Minimum standards for a variety of requirements such as benefit sharing, resource monitoring, frequency of community-based organization (CBO) elections, etc. create general parameters within which local producers can exercise some discretion, employ local knowledge, and customize rules to their situation. In many cases, these may be superior to the sometimes more prescriptive and detailed approach often imposed on rural people.

For example, in **Namibia**, general minimum standards for conservancies, such as the need to identify boundaries and have a benefit-sharing plan, are set in the legislation.

P5. Integrate and Empower Women and Marginalized Groups to Participate in Management, Decisions, and Benefits

Many rural people are isolated and marginalized. Their capacity to engage with authorities, take the development initiative and become independent advocates for their future needs is severely inhibited. Engaging women and the marginalized in all aspects of rural development is an issue of equity and human rights, and should be pursued as such. But it is also an effectiveness and efficiency issue. A Food and Agriculture Organization (FAO) study found that if women had both equal access to and control over productive resources, agricultural production yields could increase by 20–30 percent, which could reduce the number of hungry individuals in the world by 12–17.2 percent.⁷⁷ Developing context-specific approaches to mainstream socioeconomic inclusion is needed to meet the challenges of rural development.

Analyze gender roles and their impacts on local production systems

Data show that gender roles, responsibilities, and inequalities can and do affect the ability to achieve broadly based economic growth, strong communities, and food security in emerging market countries.⁷⁸ Gender analyses can help explain the difference between the roles that women and men play in communities and societies and the impacts it has on rural production systems. They can identify root causes of existing gender inequalities or obstacles to female empowerment in the context of rural production systems and how we can proactively address them in the project design and promote women's participation.

Assure that women and marginalized groups participate in all development activities

The participation and empowerment of women has proven to be key in successful natural resource management everywhere. The return on investment in women's groups is high. All user groups should have the opportunity for meaningful participation, especially if some uses and users have previously been excluded. Inclusive land-use planning is a potential conflict prevention tool. Many techniques to do this exist, including developing female role models, recruiting women in programs and projects and as consultants, creating specific forums for women, providing appropriate training in financial and organizational management; promoting equal access to land and other productive assets, etc.

⁷⁷ FAO and CCFAS (2013). Gender and Climate Change research in Agriculture and Food Security for Rural Development.

⁷⁸ Chattopadhyay and Duflo, (2004).

Mitigate the diverse forms of marginalization found in rural areas

Rural areas are heterogeneous. Socioeconomic marginalization in these areas can be due to many factors – ethnicity, caste, language, isolation, physical disabilities, indigenous status, behavior, levels of poverty, etc. Sustainable development requires increasing and transforming the distribution of opportunities, providing access to resources, and allowing both men and women (including from marginalized groups) to have equal participation in decision-making, which will shape their own lives and contribute to improving their local communities.

FECOFUN in **Nepal** has instituted gender representation requirements, mandating that 50 percent of key CFUG committee positions be held by women. This mandate has contributed to the establishment of norms in the context of community forestry, and in some cases, CFUGs have even created all-women committees. Less outside pressure is required now to assure inclusion.

Apply systems approaches for socio-economic inclusion

Marginalization can affect many aspects of the rural production system. Small steps on improved socioeconomic inclusion can create and contribute to positive feedback loops. Participatory stakeholder planning and management approaches are now well accepted as integral to sustainable, inclusive development. Even more “systemic” variations on this, such as “interactive planning,” go back as far as the early 1980s.⁷⁹

More recently, the System-wide Collaborative Action for Livelihoods and the Environment (**SCALE™**) methodology⁸⁰ has been used in settings as diverse as the medicinal and aromatic plant sector in **Morocco**;⁸¹ dairy farming in **Kenya**;⁸² sustainable tourism development in the **Dominican Republic**, **Ethiopia**, and **Uganda**;⁸³ fisheries in Cambodia, Honduras, and Mozambique; education in **Egypt**; and health in **Madagascar** and **Mali**.⁸⁴

P6. Promote Checks and Balances, as well as Equitable Institutional Relationships

Groups, communities, civil society, the private sector, and governments all have unique and necessary roles in rural development. They need to work together to enhance the chances of successful rural development, including by strengthening institutional relationships and assuring healthy participation and checks and balances. However, in many instances, local people and their organizations are at a disadvantage in dealing with powerful interests, both public and private. Results from leveling the playing field – for example, empowering communities to negotiate with the government more or less as equals – have been encouraging.

79 Ackoff (1981), pp. 51–75; Ackoff (1999), pp. 97–128.

80 See AED (2004). Online training at <http://lms.rmportal.net/course/category.php?id=52>

81 See USAID (2006).

82 See USAID (2007).

83 For more information, see Global Sustainable Tourism Alliance at: <http://rmportal.net/library/collections/gsta>. Online training is available at: <http://lms.rmportal.net/course/category.php?id=48>.

84 See FHI360 (2012). Online training on sustainable community fisheries management is also coming soon at: <http://lms.rmportal.net>.

The **Brazil** case shows that, with support, indigenous groups can obtain recognition and negotiate for additional rights in their territories. In **Namibia** support from CSOs have allowed local people to achieve legal recognition and negotiate with both the government (wildlife quotas) and the private sector (ecotourism activities).

Create or modify forums for the discussion of rural issues

Several countries are attempting to form platforms at the local level so that the various stakeholders regarding certain resources can meet and discuss their needs, visions, and objectives. In many common property situations, it is evident that communication is essential for better management and control of free riders. Providing these forums is an important step toward better management.

Facilitate conflict management as an opportunity to learn

Consensus that is “forced” or too easily achieved may hide differences. Different groups are likely to disagree about issues of substance such as natural resource management. This disagreement, if handled appropriately and openly, presents learning opportunities in which diverse viewpoints enrich debates and foster new ideas. Support to non-formal conflict management processes can help diffuse conflicts and maximize learning from them.⁸⁵ In many cases, resilient rural development means accommodating multiple interests and working in a pluralistic environment with often differing and conflicting perspectives on objectives and other fundamental issues. Approaches and techniques to handling these situations include conflict management, negotiation, mediation, collaborative management, and building social capital, among others.⁸⁶

Recognize and promote links among “nested enterprises”⁸⁷

Communities and rural resource groups rarely, if ever, exist and operate in isolation. A myriad of necessary interactions with various socioeconomic levels are critical to success. Promoting healthy relationships with other related organizations is key.

Help develop and enforce graduated sanctions⁸⁸

The development of rule systems is critical to success for all types of natural resource management. For example, the exclusion of free riders from a common property resource is needed to avoid the pitfalls of open access regimes. To make rules real, they must be enforced and violators sanctioned. Experience shows that sanctions that are in proportion to the severity of the offenses are perceived as fairer and likely to be more effective.

85 See Peterson et al. (2004). Also FAO (Pluralism and Sustainable Forestry and Rural Development).

86 See FAO (1999).

87 See Ostrom (1990).

88 See Ostrom (1990).

P7. Strengthen Public and Private Institutions for Delivery of Technical and Intermediary Services

Rural groups and communities benefit from access to a range of intermediary services – from financial services to extension advice – from a range of types of service providers. Strengthening these institutions to provide critical, appropriate, and high-quality services is critical.

Work with skilled local partners

In many countries, NGOs and the private sector have the capacity to support local development and bring particular skills to the table. Finding these local partners and using their unique strengths is mutually beneficial and builds capacity at several necessary levels. NACSO, a community support organization in Namibia, is a good example of a platform for coordination of and collaboration among a range of service providers.

Help build social capital and promote cohesive communities

Cohesive communities are a strong indicator of the potential success of community-based natural resource programs.⁸⁹ Social capital – the social networks, contacts, and connections within and among groups, as well as trust and reciprocity – have very real economic benefits and gains in productivity. Two types of social capital – bonding within groups and bridging among groups – should be nurtured to facilitate success.⁹⁰

Facilitate farmer-to-farmer and group approaches

Most farmers learn new ideas from other farmers, not from organized extension services. These processes can be optimized and adapted. Group approaches facilitate learning and promote economies of scale. Farmer field schools are a good example of this approach and have been used around the world.⁹¹

Promote new approaches to organizing knowledge support

Development is knowledge intensive. The constraints to knowledge generation, availability, and accessibility have diminished rapidly in the past decade. Findings and experience from Latin America can be tracked down by those working in Africa. Problems encountered in Asia may have been solved by those living in Eastern Europe. The hardware and software of communication and knowledge management should be harnessed for local development and exploration.

Strive for cost-effectiveness in service delivery

Local communities' ability to pay is often greater than claimed. To the extent possible, services should be provided on a cost-sharing and cost-recovery basis. This not only encourages financial sustainability but also helps improve quality and promote accountability. Services can also be contracted out to the private sector or privatized.

⁸⁹ See Waylen et al. (2010).

⁹⁰ For more on social capital, see Robert Putnam's (1993) *Making Democracy Work*.

⁹¹ For more on farmer field schools, see www.fao.org/nr/land/sustainable-land-management/farmer-field-school/en.

Further Reading: POWER

- **Development as Freedom** (1999) by Nobel Prize winner Amartya Sen is a classic description of both the fundamental and instrumental value of governance and rights in the development process.
- **Governing the Commons** (1990) by Elinor Ostrom is a seminal work on common property management and beyond by another Nobel Prize winner.
- **Making Democracy Work** (1993) by Robert Putnam explores importance and nature of social capital and its fundamental impact on governance and democracy.
- **A Theory of Justice** (1971) by John Rawls is important as it raises the question of fairness, distributional justice, differential benefit, and empowerment of the least advantaged people that is consistent with their well-being and access to positions of privilege and not blocked by discrimination.
- **Democratic Decentralization through a Natural Resource Lens** (2005) edited by Jesse Ribot and Anne M. Larson provides insight into the role of decentralization in managing natural resources.
- **Communities and the Environment: Ethnicity, Gender, and the State in Community-Based Conservation** (2001) edited by Arun Agrawal and Clark Gibson deals with the important issues of gender and the relationship among the state, private sector, and community in managing the environment.
- **Adaptive Collaborative Approaches in Natural Resource Governance: Rethinking Participation, Learning and Innovation** (2013) edited by Hemant R. Ojha, Andy Hall, and Rasheed Sulaiman V, covers important aspects of adaptive approaches and the importance of learning.
- **Voluntary Guidelines On The Responsible Governance Of Tenure Of Land, Fisheries And Forests In The Context Of National Food Security** (2012) by Food And Agriculture Organization of the United Nations.

NWP in Action: NAMIBIA – Resilient Natural Resource-Based Development

Namibia’s community wildlife conservancy program was featured in NWP1 (at which point 15 conservancies had been established). Indications then were that that an integrative approach could lead to triple bottom-line benefits across the environment, economic, and governance sectors. These trends have amplified since 2002, and the conservancy approach is now a national-level program. As of March 2013, 79 conservancies have been formed (see **Figure 8**), covering about 18% of the country.

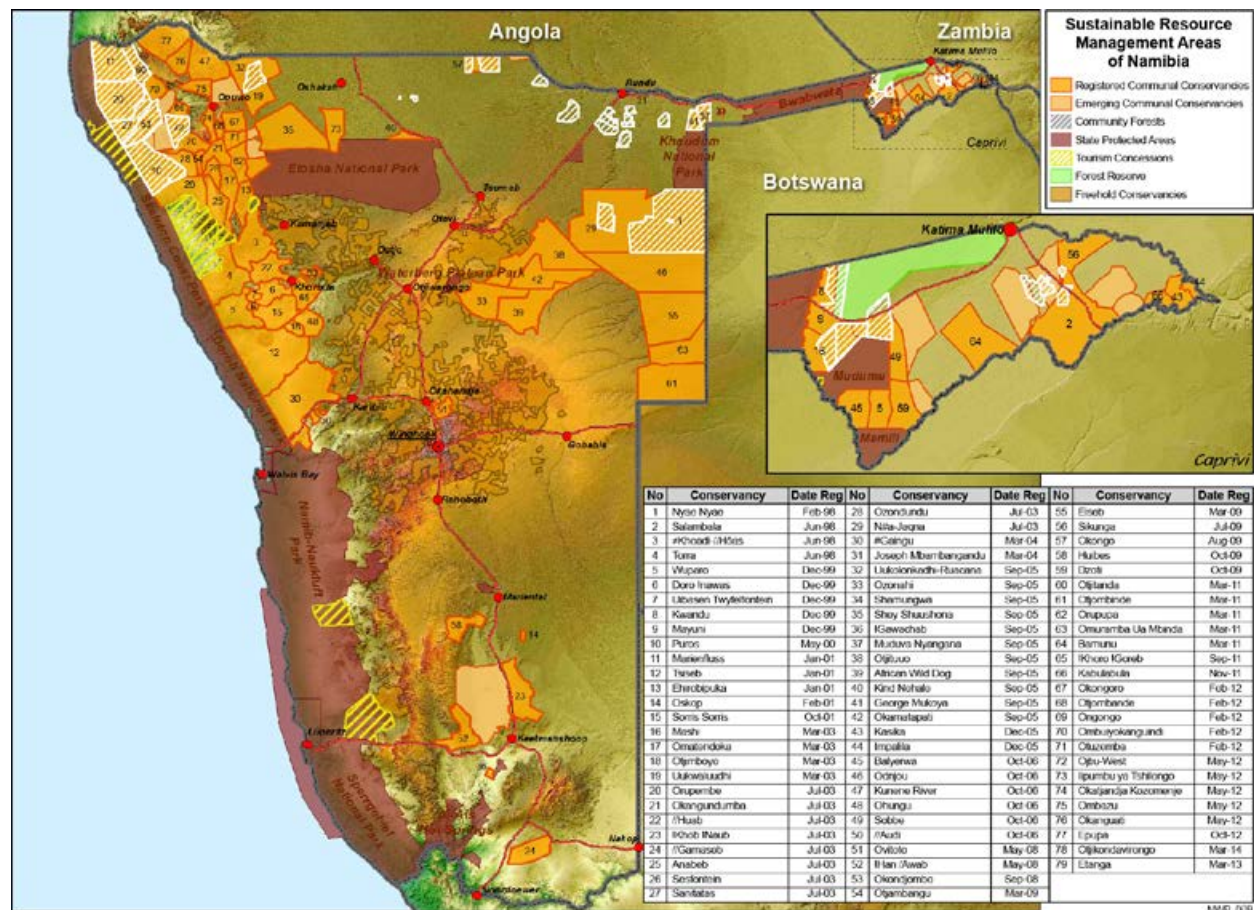


Figure 8. Map of Community Wildlife Conservancies and other Sustainable Resource Management Areas in Namibia as of March 2013

Source: NACSO, 2013b.

Upon gaining independence in 1990, Namibia’s new leaders worked to provide black communal area residents with the same rights over wildlife and tourism that had been enjoyed by white freehold farmers under South African rule. In 1996 the government enacted legislation to establish communal area “conservancies.” Conservancies empower local, organized communities to manage wildlife and other resources such as natural products and scenic areas, for both consumptive and non-consumptive uses. The national legislation requires that conservancies maintain defined boundaries and a benefit distribution plan, and develop organizations that meet certain requirements of representation and operation (number of meetings, etc.). The conservancies have shown that empowering communities and providing economic incentives can lead to better environmental management as well as development.

By undertaking such activities as herding, harvesting plant products, cropping, and fishing, rural communities have been using and managing their environment for generations. Rural livelihoods have now been diversified through a variety of new uses, such as photographic tourism, trophy hunting, sport fishing, craft production, and harvesting of indigenous plant products (such as devil's claw, a small plant reputed for its anti-arthritis properties) for niche markets. Wildlife populations fluctuate annually, but generally increased substantially in the early years after a conservancy is established, and then continue to increase more gradually, or remain reasonably stable (NACSO 2006, 2013a). The resulting benefits are illustrated by **Figure 9** (with more details in Annex 3.3). Key to this development has been the involvement of the private sector and joint venture partnerships, as well as a strong and active NGO community that is dedicated to an integrated approach.

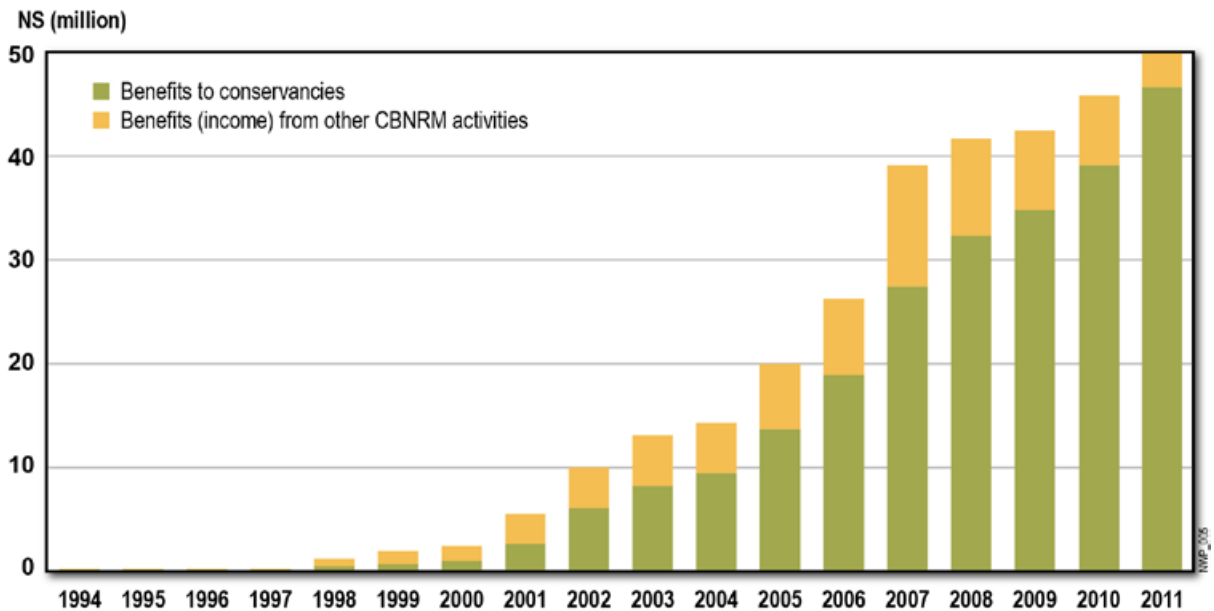


Figure 9. Direct Benefits from Namibia’s Overall CBNRM Program Grew from Nothing in 1994 to N\$50 Million in 2011 (~US\$4.5 Million)

The revenues are shown in two categories: benefits in conservancies, and benefits from other CBNRM activities outside of conservancies (NACSO, 2013a).

The conservancy legislation provides secure legal rights over wildlife and tourism (embodied in the legislation and not subject to less secure administrative decree). This empowers communities to make decisions about issues that affect them and provides an enabling environment for economic growth. Improved governance has come from conservancies revising their structures to create more localized sub-units and revising their constitutions through participatory processes. Women play a variety of significant roles in managing conservancies in terms of permanent jobs, committee memberships, and financial responsibilities. The majority of conservancies are members of regional conservancy forums that are established to advocate on behalf of members’ interests. The conservancies have mastered use of a monitoring tool for regular assessment of natural resource status. Armed with this information, conservancies have been able to negotiate hunting quotas with the Wildlife Department.

In Namibia, conservancies are having a national, transformational impact. They contribute to economic and social well-being in ways that build resiliency in a harsh environment. Nationally significant areas and populations are included in the program. A largely successful program has developed with long-term support from USAID (15 years), other donors, and NGOs – both local and international.

For more information see the case study in **Annex 3.3**.

SYSTEMS PRINCIPLES AND ACTIONS



SYSTEMS PRINCIPLES

- S1.** Promote systems approaches
- S2.** Do no harm
- S3.** Enhance resilience of the ecological (N), economic (W), and sociopolitical (P) subsystems
- S4.** Use adaptive management and experiential learning
- S5.** Build capacity and strengthen institutions at all levels

Ecosystems, natural resources, and rural production systems are complex systems that interact with equally complex social, economic, and political systems. The approach to the management of these systems needs to be adaptive and integrated. Complex systems are characterized by uncertainty and outcomes that are hard to predict (see **Systems Characteristics** text box). This characteristic influences the types of knowledge management that are useful.⁹² Subsystems are constantly acting and reacting to what the other entities are doing. In some instances, the control of such a system is highly dispersed and decentralized. The overall behavior of the system is the result of a huge number of decisions made every moment by many individual agents. NWP is an evolving effort to develop a practical and integrated systems framework for the complex and interlinked aspects of rural development.

SI. Promote Systems Approaches

The nature of these interlocking sets of systems requires approaches that reflect this reality. A number of approaches have been developed that recognize and deal with the complexity of the systems and subsystems of rural development.

Integrate the use of the NWP principles

The NWP2 principles presented here need to be used together and simultaneously – to the degree practical. One characteristic of systems is that they have and develop properties that the individual components do not have. That is what the saying that “the whole is greater than the sum of the parts” means. Because systems elements are mutually reinforcing, the outcome is rarely a zero-sum game; it can be negative when the systems are poorly integrated (even though some stakeholders or elements benefit, others lose even more) or positive when well integrated. This may run counter to some approaches that claim that win/win situations are rare and tradeoffs pervasive. The four cases presented in Annexes 3.1–3.4 show that integrated approaches can work for a greater good.

⁹² See Holling, Gunderson, and Light (1995) for more on adaptive management.

Understand the holistic and dynamic nature of rural production systems and what influences them

Rural producers manage a portfolio of assets – financial, human, social, physical, and natural – in a dynamic way and in a dynamic setting to achieve their goals. Outcomes are mediated by institutions, policies, rights frameworks, and other elements. Understanding these systems and their context enables development of approaches that can enhance their productivity and sustainability.⁹³

Systems Characteristics⁹⁴

- **Stocks, flows, and dynamic equilibrium.** A *stock* is the sum or memory of the history of changing *flows* within the system. If the sum of inflows exceeds the sum of outflows, the stock level will rise. If the sum of outflows exceeds the sum of inflows, the stock level will fall. If the sum of outflows equals the sum of inflows, the stock level will not change; it will be held in *dynamic equilibrium*.
- **Feedback loops.** A *feedback loop* is a closed chain of causal connections from a stock, through a set of decisions or rules or physical laws or actions that depend on the level of the stock, and back again through a flow to change the stock. *Balancing feedback loops* are equilibrating or goal-seeking structures in systems and are both sources of stability and sources of resistance to change. *Reinforcing feedback loops* are self-enhancing, leading to exponential growth or to runaway collapses over time.
- **Shifting dominance, delays, and oscillations.** Complex behaviors of systems often arise as the relative strengths of feedback loops shift, causing first one loop and then another to dominate behavior. A delay in a balancing feedback loop makes a system likely to oscillate. Changing the length of a delay may make a large change in the behavior of a system.
- **Scenarios and testing models.** System dynamics models explore possible futures and ask “what if” questions. Model utility depends, not on whether its driving scenarios are realistic (as no one can know that for sure), but on whether it responds with a realistic pattern of behavior.
- **Constraints on systems.** In physical, exponentially growing systems, there must be at least one reinforcing loop driving the growth and at least one balancing loop constraining the growth, because no system can grow forever in a finite environment. Nonrenewable resources are stock limited. Renewable resources are flow limited.
- **Resilience, self-organization, and hierarchy.** Limits to resilience always exist. Systems need to be managed not only for productivity or stability, but also for resilience. Systems often have the property of self-organization – the ability to structure themselves; to create new structure; and to learn, diversify, and “complexify.” Hierarchical systems evolve from the bottom up. The purpose of the upper layers of the hierarchy is to serve the purposes of the lower layers.
- **Source of system surprises.** Many relationships in systems are nonlinear. There are no separate systems. The world is a continuum. Where to draw a boundary around a system depends on the purpose of the discussion. At any given time, the input that is most important to a system is the one that is most limiting. Any physical entity with multiple inputs and outputs is surrounded by layers of limits. A quantity growing exponentially toward a limit reaches that limit in a surprisingly short time. When there are long delays in feedback loops, some sort of foresight is essential. The bounded rationality of each actor in a system may not lead to decisions that further the welfare of the system as a whole.

Practice participatory action research

Participatory action research involves concerned stakeholders in a common process to find solutions to concrete problems. Given the uncertainty of the environment, both physical and socioeconomic, joint

⁹³ See Carney (1998).

⁹⁴ Adapted from Meadows (2008).

problem solving among stakeholders is needed for overcoming obstacles to rural development. A field-level participatory action research orientation can help set up processes to address key problems or obstacles, thereby leveraging local “solution holders.”⁹⁵

Encourage local planning

In many instances, local groups and communities are not perceived as being capable of adequate levels of planning. However, not only do local planning capacities exist, built on centuries of experience, but exogenous plans will fail if not useful to and understandable by the implementers on the ground. Local planning capability that is inclusive of women and marginalized groups needs to be recognized and reinforced.

S2. Do No Harm

Although in some cases it may be difficult to achieve win/win/win scenarios across Nature, Wealth, and Power subsystems or positive outcomes across the “triple bottom line,” it is critical to try to avoid negative results in any one of the dimensions. Scenarios may include “settling” for the status quo in one of the dimensions, but they should not include permanent loss of natural capital, impoverishment of local resource users, or their loss of rights. Many will want to compromise this way, but being too quick to compromise can preempt the search for necessary, creative positive-sum solutions. Despite widespread doubt and even ridicule, more and more industries are showing that zero emissions is not only possible, it can benefit the bottom line.⁹⁶ But it takes determination and perseverance.

Resource transfers and implicit ethical messages should support productive development⁹⁷

Natural resource management and rural production take place in a socio-political context and become part of that context. Interventions impact the balances of power and can exacerbate problems. Program managers, particularly outsiders, need to be sensitive to the potential unintended impacts of their interventions. Hiring practices, investments with certain groups, etc. can all have an impact.

Under community forestry in **Nepal** and wildlife management in **Namibia**, efforts were undertaken to assure the participation of women, the disadvantaged, and the vulnerable in program decision-making and benefit-sharing.

Avoid “problem displacement” or “leakage”

Displacement, as defined below, is a symptom of classic system dynamics feedback. For instance, the exclusion of free riders from community forests may increase pressure on forests elsewhere as they move to find other resources to exploit. Some level of displacement may be unavoidable, but efforts should be undertaken to recognize and avoid this as much as possible.

95 See Kondon, Pain, and Kesby (2008).

96 Senge et al. (2008).

97 See Mary Anderson (1999).

Displacement (aka “leakage” or “slippage”) refers to a phenomenon in which local attempts to improve natural resource management – particularly by restricting the number of users or uses – may shift an overharvesting problem to adjacent areas and/or other resources. Across a larger area, this could result in a “zero-sum game”; this is a major issue in REDD+, for instance. Managers and stakeholders need to monitor these risks.

Mexico’s national payment for hydrological services program battled displacement in its early years. Landowners got paid to stop deforestation in one parcel,⁹⁸ but some then would accelerate it on another. This is the reason the concept of “nested REDD+” (nested accounting systems across jurisdictional levels, from projects to states or regions and then to national levels) has emerged as necessary for REDD+ to be viable in reducing forest emissions via carbon markets.⁹⁹ However, international leakage is still a concern and nested REDD+ also runs the risk of becoming overly burdensome, as the Clean Development Mechanism’s forest carbon program’s requirements were in the past decade.

S3. Enhance Resilience of the Ecological (N), Economic (W), and Sociopolitical (P) Subsystems

In the development context, resilience can be defined “as the ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth.”¹⁰⁰ Such shocks may start from biophysical sources (Nature, e.g., climate change, weather disasters, or disease epidemics), economic sources (Wealth, e.g., financial bubbles, currency devaluations, or unemployment), social sources (Power, e.g., wars, genocides, migrations, Facebook, or Twitter), or as increasingly seen, from many combinations thereof. Shocks and stresses sometimes strip people of assets and drive them into poverty traps from which it is very difficult to get out. However, it is not sufficient that people simply recover; they must be able to come back stronger and with more vigorous development.

A system is not resilient to perturbation unless each of its subsystems is resilient, because destabilization of one subsystem can bring the rest crashing down. Tightly coupled systems respond more quickly to perturbations, but the response itself may be destabilizing and disastrous.¹⁰¹ As human population and economic activity have grown to the point where they expropriate a large proportion of the planet’s overall primary production and cycling of critical biogeochemicals¹⁰² and as local and national economies become ever more tightly tied to the global economy, our ecological, economic, and social systems are becoming increasingly coupled.¹⁰³ This is partly why GCC is such a serious triple threat.

Encourage appropriate diversification

Diversity can be a characteristic of robust systems. Many local resource managers already deal with risk through diversification. However, diversification needs to be promoted, not as a goal or for its own sake, but for its contribution to resilient development.

98 Alix-Garcia, Shapiro, and Sims (2010).

99 Chagas, Streck, O’Sullivan, Olander, and Seifert-Granzin (2011).

100 This definition comes from the new 2012 USAID resilience policy. For more on resilience, see www.usaid.gov/resilience.

101 Perrow (1984), p. 92.

102 Carbon and nitrogen (which combine with oxygen to form greenhouse gases) and phosphorus (which is likely to become a significant limiting factor for global food production soon). Kwok (2013).

103 Vitousek, Ehrlich, Ehrlich, and Matson (1986); Vitousek et al. (1997); Vitousek, Mooney, Lubchenco, and Melillo (1997).

Asian agroforestry home gardens are very diverse – having a range of useful perennial and annual plants that use different amounts of light, water, nutrients, etc. This helps spread the risk and is more resilient than a simpler system.

Promote micro-macro and rural-urban links

Multi-scale links help build resilience. Communities have informal and formal links to regional and national centers, and linked actors are more likely to mitigate and recover from shocks. Building and strengthening these links can be an important part of a resilience strategy. This has been a traditional resilience strategy of many nomadic pastoralists, who would exchange some of their wealth (livestock) with distant relatives, so that if a drought struck one area, they would have a reserve elsewhere on which to base their recovery.

Encourage broad partnerships

Broad, varied, and intensive partnerships tend to reinforce the robustness of local communities and groups. Outside organizations often have narrow mandates and short attention spans. A community's overreliance on a single partner can increase its vulnerability.

Bangladesh's co-managed forests are attracting private sector firms interested in joint ventures. The Surui people in **Brazil** formed partnerships with both Brazilian and international NGOs, Google, national government agencies, USAID, etc. The West Gate Conservancy in **Kenya** has a range of partners from the local private sector to organizations focused on protection of a single species. This range gives the conservancy some flexibility in dealing with shocks.

Improve abilities to address and reduce risk

The ability to identify, assess, and reduce risk should be systematic in its approach and organizationally integrated to avoid (prevention) or limit (mitigation and preparedness) the adverse impacts of hazards within the broad context of sustainable development. Capacity needs to be built at all levels to integrate this approach.

Promote early warning systems and safety nets

Early warning systems monitor a few key variables and can provide timely information for local, regional, and national planning and adaptation. Local communities also have their own systems for monitoring change and anticipating problems and adjusting livelihood systems. Providing safety nets for the poor and vulnerable is also needed so that they can quickly replace assets that they may lose during a shock or otherwise compensate within their portfolio.

FEWS NET is a Famine Early Warning Systems Network for parts of Africa that monitors a number of key variables such as rainfall, vegetation, and commodity prices. It has a significant history in providing these services to and alerting governments and donors to potential problems such as the need for food aid in a timely manner to save lives and prevent suffering. See www.fews.net.

Promote conflict management capabilities

Conflicts happen, either in the “normal” course of the pursuit of livelihoods or exacerbated by climate and other kinds of shocks. Building upon local conflict management techniques and experiences and providing training in conflict management can help communities respond in productive ways to conflicts and shocks and helps build their resilience.¹⁰⁴

S4. Use Adaptive Management and Experiential Learning

Management of uncertain complex systems requires *adaptive management* and is knowledge intensive.¹⁰⁵ The field of *adaptive management* in NRM has grown significantly in the past 20 years. It emphasizes learning, rather than “blueprints” (or learning by doing, rather than following prescriptions); accepts mistakes as part of the experimental process; and comprises an inclusive process of consultations using a wide range of tools to generate knowledge to keep pace with ecosystem and socioeconomic change.¹⁰⁶ This approach to management has shown promise in the pluralistic and dynamic settings that characterize much of the developing world today.¹⁰⁷ There are new methodologies and new technologies to help optimize the use of knowledge for management.

Strengthen knowledge management and create a learning environment

An exciting new array of technologies and techniques has been developed in the past 10 years to improve knowledge management and dissemination. Efforts need to be made to make these tools and techniques available and useful to the primary natural resource manager on the ground – often the small farmer. Political/economic instability combined with “normal” natural shocks and increased unpredictability from climate change requires an open learning approach in which feedback is recognized and integrated as it happens.

Implement monitoring and feedback systems as essential for good management and planning

Monitoring and feedback are critical if adaptations are to be made that reflect the dynamic systems approach. Many programs put much emphasis on planning and not enough on monitoring. The different types of monitoring, such as performance and ecological monitoring, need to be clarified and have appropriate approaches. Monitoring should be of sufficient depth to capture information needed for adaptive management and social learning. Ensure establishment of thorough community monitoring and patrolling systems.

Use experiential and adult learning techniques

Site visits to understand better the lessons from successful cases of NWP approaches are extremely important in the spread of best practices. There has been a revolution in the understanding of how adult (including women) learning works and how to train, not just for specific skills, but also for transformation.¹⁰⁸

104 For more on conflict management see www.fao.org/forestry/conflict/en.

105 See Oglethorpe (2002) for more information on adaptive management.

106 Holling, Gunderson, and Light (1995).

107 See *Pluralism and Sustainable Forestry and Rural Development* (FAO 1999).

108 See, for example, Hope and Timmel (1984).

S5. Build Capacity and Strengthen Institutions at All Levels

Organizations and institutions must build the capacity to learn from each other and from individuals. Capacity building should be forward looking and empower accountable and representative organizations.

Enhance local technical knowledge and capacity

Centuries of experience have often provided local people with a wealth of knowledge about the resource base and how to manage it sustainably. This knowledge is sometimes neglected and can appear unsystematic. Building on this knowledge and increasing its effectiveness through synergies with “modern” methods and techniques not only adds to the knowledge base but does so in a way that encourages local learning.

Build business skills, especially of local resource managers

Capacity needs to be built at all levels, in all disciplines. However, the fact that local organizations and households are also enterprises, small businesses, and private sector actors is sometimes overlooked. They often lack business skills in such areas as market analysis, basic cost-benefit calculations, value-chain functioning, contract negotiation, and enforcement.

Provide legal support to weak local institutions and their federations, if necessary, and increase knowledge of rights and responsibilities

In some cases, favorable legal and policy frameworks exist to support local management of resources and decentralized development. However, local communities sometimes do not know their rights and/or other actors such as the government administration stack the deck in their own favor. In such cases, providing legal support to local communities can help them assert their rights.¹⁰⁹ When the legal and policy framework is unfavorable, legal advice can be useful in developing new proposals for legislation and regulations and also in discovering whether other legal frameworks exist that could be useful. For instance, if sector legislation seems inappropriate for the creation of organizations, many countries have separate legislation of associations that might be used.

In Kenya, several community forestry associations with the support of CSOs recently brought legal action against the Kenya Forest Service because they felt that it had not respected the spirit of co-management. Whether successful or not, the suit will help everyone understand better the rights and responsibilities of communities.

Emphasize organizational learning and development, and build strong community-based organizations and local leadership

Strong organizations are key to resilience, development, and adaptation. Local organizations need to be independent and interact with other stakeholders as peers. Organizations should not be supported solely to achieve outsiders’ goals, but as multifaceted tools for local empowerment and development that may be used by local communities in ways unexpected by outsiders. Local leadership and leadership skills can be built, just as they are in developed country organizations, but in ways that are sensitive to local existing leadership dynamics – and it must include women, for equity, efficiency, and effectiveness.

¹⁰⁹ For example, see www.usp.ac.fj/index.php?id=13270.

The community wildlife conservancy program in **Namibia** has found a way to build local leadership based on capacity, while at the same time involving traditional authorities. Meanwhile in some conservancies in northern **Kenya**, organizational strengthening has not only been applied to the management of wildlife, but also to herding and livestock, with positive effects.

Further Reading: SYSTEMS THINKING, SYSTEMS PLANNING, SYSTEMS PRACTICE

- **Thinking in Systems: A Primer** by Donella H. Meadows (2008) is a concise look at multilevel problem solving through the use of systems thinking.
- **Do No Harm: How Aid Can Support Peace – or War** by Mary Anderson (1999) discusses how to implement development programs in ways that do not exacerbate differences and conflicts.
- **Compass and Gyroscope: Integrating Science and Politics for the Environment** by Kai Lee (1993) presents means for integrating science and politics through civic science (compass) and bounded conflict (gyroscope).
- **Barriers and Bridges to the Renewal of Ecosystems and Institutions** by C. S. Holling, Lance H. Gunderson, and Stephen S. Light (1995) is one of the first volumes to discuss adaptive management in concrete terms and its various dimensions.
- **Participatory Action Research Approaches and Methods: Connecting People, Participation and Place** by Sara Louise Kindon, Rachel Pain, and Mike Kesby (2008) captures these developments, exploring the justification, theorization, practice, and implications of participatory action research.
- **The Necessary Revolution: How Individuals and Organizations are Working Together to Create a Sustainable World** by Peter Senge, Bryan Smith, Nina Kruschwitz, Joe Laur, and Sara Schley (2008) offers a fairly comprehensive survey of the issues involved in sustainable development from one of the pioneers of organizational learning and systems thinking, and his colleagues.
- **Ackoff's Best: His Classic Writings on Management** by Russell L. Ackoff (1999) is a compendium of the major contributions of one of the 20th century's leaders in the practical application of systems theory to management, strategic planning, and development planning. "Interactive planning" was his preferred name for the approach he and his colleagues at the Wharton School used in a wide variety of settings.

NWP in Action: BANGLADESH – Managing Wetlands, Fisheries, and Forests for Inclusive Development

Bangladesh contains vast areas of globally and locally important wetlands that are critical to millions as a source of water, food (fish protein), and other environmental goods and services. The Sundarbans of southwestern Bangladesh is the largest remaining contiguous mangrove ecosystem in the world. Additionally, much of the rest of the country is a floodplain, subdivided by dikes, which both control river floods, to some degree, and inhibit drainage, which in turn creates wetlands that can be productive for both fisheries and rice.

In the past, access to and management of these wetlands was controlled by the government, often through fishing leases to private operators from outside the local community. However, in the past 15 years, greater efforts have been made to involve local communities through "co-management" approaches, with USAID assistance through a series of projects (Managing Aquatic Resources through Community Husbandry (MACH, 1998-2008), Tropical Forest Resources Co-Management aka Nishorgo (2003-08), and Integrated

Protected Areas Co-Management (IPAC, 2008-13). Co-management involves an agreement between the government and local communities and sets out roles and responsibilities of both communities and the state. They usually do not confer actual property rights but can provide local communities with a sense of tenure security and empowerment for management. These arrangements hope to involve the local poor more actively, both to improve management of the resource and also to improve local livelihoods.



Figure 10. Co-Management of Wetlands in Bangladesh has Contributed to Sustainable Fishing Practices

The co-management model aimed to put in place new governance regimes that would increase the power of local stakeholders, sometimes previously excluded, with incentives to manage the resource sustainably. Four new types of institutions were created at the village, wetland, and local government levels, as well as one village-level federation. The institutions' members were trained in technical subjects (wetland conservation and forest restoration techniques), financial management (accounts, financial audits and record-keeping), good governance practices (secret ballot elections, holding regular board-based meetings, and encouraging the participation of women) and other key skills. By 2007 some of these federations were officially registered and recognized and had the authority to manage microcredit funds.¹¹⁰ The institutions provided platforms where different interests groups (including poor fishing families, landowners and local businessmen) could come together and reach agreements on wetlands management.

Management plans were set up to regulate when and where fishing could take place, ban harmful practices, and commit to improvement activities, such as digging corridors between water bodies. The allocation of community leases to local institutions has given people a sense of ownership and provided incentives to improve management of the resource.

¹¹⁰ Winrock International, Bangladesh Centre for Advanced Studies, Center for Natural Resources Studies, and CARITAS, Bangladesh (2007).

Between 1999 and 2006, fish catches in project villages rose by 140 percent, local consumption went up by 52 percent, and average daily household incomes increased by 33 percent.¹¹¹ Measurements of fish catch increases at the Hail Haor wetland have generated a marginal production increase at that site of \$4.2 million per year,¹¹² which resulted in an increase in average daily incomes by a third to \$1.31.¹¹³ Fish productivity in wetlands continued on a long-term trajectory of improvement under co-management through 2011 (see **Figure 11**).

Not only did an integrated co-management approach combining Nature, Wealth, and Power components lead to positive environmental and economic outcomes, but local people – even some of the most marginalized – were empowered and took a greater role in local affairs. An evaluation reported, “The project has been notably successful in improving the social standing of poor fishermen, traditionally near the bottom of the social ladder.”¹¹⁴

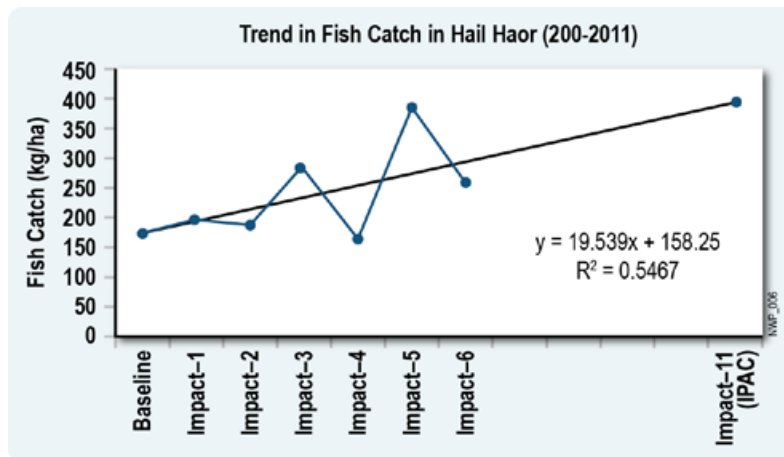


Figure 11. Fish Catch Trends in Hail Haor

¹¹¹ Winrock et al. (2007): 10, 12, 32; Whitford et al. (2006), p. 7.

¹¹² Thompson (2012). Please note that all dollar amounts in this report are U.S. dollars, unless otherwise indicated.

¹¹³ Winrock et al. (2007).

¹¹⁴ World Resources Institute et al. (2008).

CONCLUSIONS

NWP2 is an attempt to broaden and deepen the framework of NWP, in order to make it more globally relevant and to move beyond narrow perspectives on natural resources and small-scale projects. Annex 1 provides a master list of all the principles and action items. Annex 2 provides some candidate tools, and Annex 3 provides more details on four cases that will hopefully be useful and/or inspire readers to implement the principles we have described, as they refine their practice of rural development. There are also ideas and tools proposed for policy makers, advocates, program designers and project implementers. The goal is to improve the performance of the rural sector to enable it to respond to the critical global, regional and local challenges that it, and the world, face.

In **Nature** terms (natural resources + ecosystem services + biodiversity = natural capital), productivity must be increased wherever possible, but in ways that are sustainable, optimizing the cycling of inputs, and building resilience against climatic and market shocks. Efforts also have to be made to safeguard existing natural capital and restore productivity of degraded systems. The approach recognizes that biophysical sciences and technologies are fundamental to success. Concepts of sustainable yield and “leakage” are useful in developing sustainable production systems. But biophysical competence is not enough; there are issues, such as equity of resource access and distribution (property rights, etc.) and setting of other societal objectives, where socioeconomic understanding and interventions are at least as relevant.

Natural capital has been systematically undervalued and externalities ignored. The **Wealth** perspective requires better accounting and valuation of natural capital in order to better inform investment strategies. It also requires better frameworks and incentives to align public and private interests and to improve the returns to those who manage, use, and stand to lose the most from resources. Markets need to be strengthened, including the role of the small rural producers in them. Growth can be both good and bad; the real goal is sustainable and resilient development, assuming everyone is empowered enough to determine what that means for themselves.¹¹⁵

The governance and social dimensions (**Power**) of rural production systems have still been perhaps the most overlooked. For millions of the world’s poor, natural resources have both a fundamental and instrumental value. They are the foundation of their struggle for empowerment. Fair, clear, and secure procedural and resource property rights for rural people need to be ensured, and the principles of subsidiarity, accountability, and representation need to be applied more universally. The tendency for rural poor people to be disadvantaged vis-a-vis local resources must be reversed.

The **Systems approach** figures prominently in the NWP framework. This reflects the complex nature of the socio-ecosystems that constitute rural production systems. Even what at first seem to be fairly simple and linear value chains are webs of systems embedded in larger systems, which need to be managed as such. This reality requires adaptive management, monitoring of feedback loops, enhancing resilience, doing no irreversible harm, institutional learning, and capacity building across the *Nature, Wealth, and Power* spectrum. The approach emphasizes learning at all levels, which requires the abilities to recognize mistakes and adapt to them.

Figure 12 from NWP1 illustrates the “triple bottom line” that is sought by the NWP framework.

¹¹⁵ Russell Ackoff’s definition of development is “to increase ones’ ability and desire to satisfy one’s own needs and legitimate desires, and those of others. (A legitimate desire is one that, when satisfied, does not impede the development of anyone else.)” Ackoff (1999), p. 44.

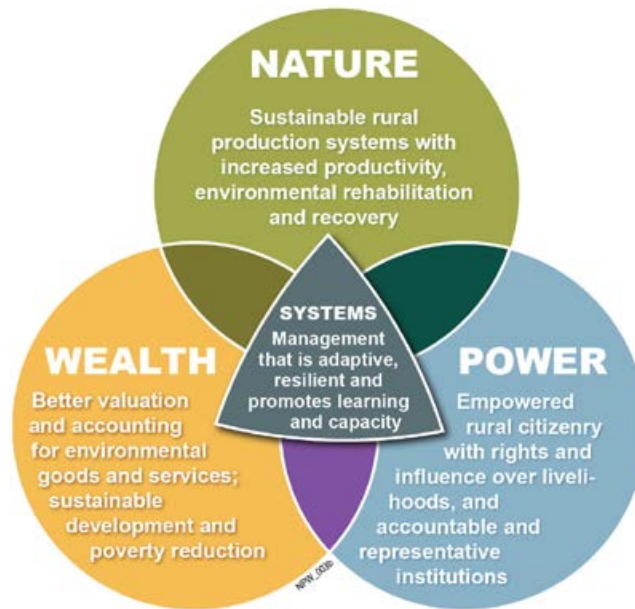


Figure 12. The Goals of NWP

There has always been a need for the integration of economic, environmental, and governance perspectives of rural development. However, given the nature of present-day environmental and developmental challenges, perhaps the recognition of this need is growing.¹¹⁶ One recent observer of the environmental and developmental challenge of climate change clearly described the limits of natural science’s abilities to deal with pressing distributional issues (How are the costs of climate change to be distributed? Who will suffer the most and what can be done about it?) and demonstrated quite clearly the need to integrate various perspectives. He personified these perspectives as those of Adam Smith (wealth), Aldo Leopold (nature), and John Rawls (power).¹¹⁷ Although other personalities could be chosen, these three represent the three different perspectives well.

The application of adaptive management and a systems approach is not always easy, although the case studies presented here and in the annexes show that it is possible in more situations than may be thought. Integrated approaches that encompass environmental sustainability and productivity, economic growth and development, and equitable distribution and fairness are not luxuries, but necessities as we move forward. Although individuals may not have the breadth to cover all the aspects of an integrated approach, they need to know enough to advocate for such an approach and to seek out the relevant expertise.

Official development assistance is falling relative to private sector investment or direct foreign investment, and governments are becoming “minority stakeholders” in the development enterprise, but they remain key actors in the political economy. Information and communication technologies are being combined into new systems of knowledge management that are leveling the knowledge playing field. Numerous other trends are emerging.¹¹⁸ As the development context evolves and centers of power and investment shift, it becomes more difficult for a single public or private actor to “direct” what is happening. Although we cannot direct these

¹¹⁶ See, for example, the theme of the 19th International Symposium on Society and Resource Management in 2013 was “a time for integration.”

¹¹⁷ From the presentation of Chris Fields at ISSRM 2013. <http://www.issrm2013.iasnr.org/>.

¹¹⁸ Shaikh, Asif (2010). “Diplomacy, Development, and Remaking American Leadership for the 21st Century.” A Carnegie Economic Strategy Roundtable, The Carnegie Endowment for International Peace, presentation at Airlie House.

trends, we can and should certainly influence how sustainable, efficient, equitable, and effective they will be. Clever leveraging – technological, financial, and political – is needed to steer trends in optimal directions.

NWP can be used throughout the program cycle, including design, implementation, monitoring, and evaluation. It is a statement of lessons learned from more than 30 years of natural resource-based development at the national, regional and local levels. NWP's aim is to contribute to development practice and help generate an integrated view of rural development and practical “best bets” for implementers, decision makers, and policy makers. Nature, Wealth, and Power form a flexible and “user-friendly” framework with which to look at the relationship among sound natural resource management, development and poverty alleviation, and empowerment and enfranchisement.

Rural development is an evolving process. Incremental improvements are possible. Steps, however small, are needed immediately and with the broader picture in mind. Building a rural renaissance depends on choices and actions by millions of individuals in developing countries. The policies and decisions are within reach.

There are billions of real individuals in real villages struggling daily to make better lives for themselves and their families. Many of these people have very little influence over the factors that determine livelihoods and, in some cases, have less influence than their parents did. If poverty is to be eradicated, the environment well managed, and citizens (not subjects) developed, this will have to change. These people are the frontline actors of development – prepared to continue to struggle, and ready to grow and develop as the conditions around them allow. This is not optional. It is one of the obligatory challenges of our time.

BIBLIOGRAPHY

Note: To facilitate use, some citations are preceded by a letter that indicates the work's main emphasis: S = systems, N = nature/technical, W = wealth/economics and P = power/governance.

- Abasse, T., C. Guero, and T. Rinaudo. 2009. "Community Mobilisation for Improved Livelihoods through Tree Crop Management in Niger." *GeoJournal* 74: 377–89.
- S Academy for Educational Development (AED). 2004. *Going to SCALE*. Washington, D.C. Available at: <http://rmportal.net/library/content/usaidscalecollection/scalematerials/scalepublications/going-to-scale-2013-system-wide-collaborative-action-for-livelihoods-and-the-environment-english/view>
Online training at <http://lms.rmportal.net/course/category.php?id=52>
- P Acemoglu, Daron, and James Robinson. 2012. *Why Nations Fail: The Origins of Power, Prosperity and Poverty*. New York: Crown Business.
- Acharya, K. P. 2002. "Twenty-Four Years of Community Forestry in Nepal." *International Forestry Review* 4(2): 149–56.
- P Acharya, K. P., J. Adhikari, and D. R. Khanal. 2008. "Forest Tenure Regimes and Their Impact on Livelihoods in Nepal." *Journal of Forest and Livelihood* 7(1): 6–18.
- S Ackoff, Russell L. 1974. *Redesigning the Future: A Systems Approach to Societal Problems*. New York: John Wiley & Sons.
- S Ackoff, Russell L. 1981. *Creating the Corporate Future*. New York: John Wiley & Sons.
- S Ackoff, Russell L. 1999. *Ackoff's Best: His Classic Writings on Management*. New York: John Wiley & Sons.
- ACT Brasil (Equipe de Conservação da Amazônia). 2009. The Ethno-Environmental Management Plan for the Sete de Setembro Indigenous Reserve. Brasília, Brazil.
- P ACT Brasil (Equipe de Conservação da Amazônia). 2010. Free, Prior, and Informed Consent Surui Carbon Project (Consentimento Livre, Prévio e Informado Projeto Surui Carbono). Brasília, Brazil. Available at: www.forest-trends.org/documents/files/doc_2693.pdf
- ACT Brasil (Equipe de Conservação da Amazônia) and Forest Trends. 2010. "Surui Carbono" (Surui Carbon Project Brochure). Available at: <http://rmportal.net/library/content/translinks/translinks-2010-forest-trends/brazil-surui-carbon-fund-english-and-portuguese/view>
- W Adhikari, B., F. Williams, and J. C. Lovett. 2007. "Local Benefits from Community Forests in the Middle Hills of Nepal." *Forest Policy and Economics* 9(5): 464–78.
- P Agrawal, Arun. 2005. *Environmentality*. Durham, NC: Duke University Press.
- P Agrawal, Arun. 2007. "Forests, Governance, and Sustainability: Common Property Theory and its Contributions." *International Journal of the Commons* 1 (1): pp. 111–36.

- P Agrawal, Arun, and Clark C. Gibson (Eds.). 2001. *Communities and the Environment: Ethnicity, Gender, and the State in Community-Based Conservation*. New Brunswick: Rutgers the State University of New Jersey.
- W Alix-Garcia, J. M., E. N. Shapiro, and K. R. E. Sims. 2010. Impacts of Payments for Ecosystem Services on Deforestation in Mexico: Preliminary Lessons for REDD. Tenure Brief No. 11. Madison, WI: Land Tenure Center, University of Wisconsin. Available at: <http://minds.wisconsin.edu/handle/1793/46748>
- Anderson, J., C. Benjamin, B. Campbell, and D. Tiveau. 2006. "Forests, Poverty and Equity in Africa: New Perspectives on Policy and Practice." *International Forestry Review* 8(1): 44–53.
- S Anderson J., J. Clement, and L. V. Crowder. 1998. "Accommodating Multiple Interests in Forestry Concepts Emerging from Pluralism." *Unasylva* 49(194): 3–10.
- S Anderson, Mary B. 1999. *Do No Harm: How Aid Can Support Peace – or War*. Boulder, CO: Lynne Rienner Publishers.
- App, Brian, Alfons Wagahe Mosimane, Tim Resch, and Doreen Robinson. 2008. "USAID Support to the Community-Based Natural Resource Management Program in Namibia: LIFE Program Review." Biodiversity Analysis and Technical Support (BATS) Program, USAID/AFR/SD. Accessed 8-12-13 at: http://pdf.usaid.gov/pdf_docs/PDACL549.pdf
- Appleton, Albert F. 2002. "How New York City Used an Ecosystem Services Strategy Carried out through an Urban-Rural Partnership to Preserve the Pristine Quality of Its Drinking Water and Save Billions of Dollars and What Lessons It Teaches about Using Ecosystem Services." Presentation at November 2002 Katoomba Group Tokyo Meeting.
- Arnold, J. E. M. 2001. *Forests and People: 25 years of Community Forestry*. Rome: FAO.
- Arun, K. C. 2004. "Extraction of NTFPs from the Community Forest: Analysis of Benefit Distribution Pattern in Household Level." *Journal of Forest and Livelihood* 4(1): 39–43.
- N Baland, Jean-Marie, and Jean-Philippe Platteau. 1996. *Halting Degradation of Natural Resources: Is There a Role for Rural Communities?* Rome: FAO.
- Bampton, J. F. R., M. R. Banjade, and A. Ebregt. 2008. "Collaborative Forest Management in Nepal's Terai: Policy, Practice, and Contestations." In H. Ojha25692569. N. Timsina, C. Kumar, B. Belcher, and M. Banjade, (Eds.), *Communities, Forests, and Governance: Policy and Institutional Innovations from Nepal*. New Delhi: Adroit.
- Bangladesh. 2010. *Bangladesh Country Investment Plan: A Road Map towards Investment in Agriculture, Food Security, and Nutrition*. Approved version following the Bangladesh Food Security Investment Forum, May 26–27, 2010.
- W Barnes, J. I. 2013. Economic Analysis of Land-Use Policies for Livestock, Wildlife, and Disease Management in Caprivi, Namibia, with Potential Wider Implications for Regional Transfrontier Conservation Areas. Technical report to the Wildlife Conservation Society's AHEAD Program and the World Wildlife Fund. Bronx, NY: Wildlife Conservation Society. Available at: www.wcs-ahead.org/kaza/ahead_wwf_caprivi_analysis_final_030613.pdf

- N Barrow, Edmund G. C. 1996. *The Drylands of Africa: Local Participation in Tree Management*. Nairobi: Initiatives Publishers.
- N Bationo, A., and A. Buerkert. 2001. "Soil Organic Carbon Management for Sustainable Land Use in Sudano-Sahelian West Africa." *Nutrient Cycling in Agroecosystems*, 61: 131–42.
- Baur, Erick, Roan McNab, Victor Ramos, Samantha Strindberg, and Lovett Williams Jr. 2008. "Community-based Ocellated Turkey (*Meleagris ocellata*) Sport Hunting in the Petén, Guatemala." TransLinks Case Study, October 2008, 68 pp. Wildlife Conservation Society and USAID. http://rmpportal.net/library/content/translinks/translinks-2008/wildlife-conservation-society/TurkeySportHuntingGuatemala_CaseStudy_WCS_2008.pdf/view
- Baur, Erick, Roan McNab, Lovett Williams Jr., Victor Ramos, Jeremy Radachowsky, and Manuel Guariguata. 2012. "Multiple forest use through commercial sport hunting: lessons from a community-based model from the Petén, Guatemala." *Forest Ecology and Management*, 268: 112-120. Elsevier.
- W Bennett, Jeff. 2009. "Advancing Ex-Post Impact Assessment of Environmental and Social Impacts of CGIAR Research." Paper submitted to the Standing Panel on Impact Assessment (SPIA) of the CGIAR Science Council.
- Borrini-Feyerabend, G., Farvar, M. T., Nguinguiri, J. C. & Ndangang, V. A. (2007). *Co-management of Natural Resources: Organizing, Negotiating and Learning-by-Doing*. GTZ and IUCN, Kasperek Verlag, Heidelberg. http://www.conservation-development.net/rsFiles/Datei/CoManagement_English_Auflage2.pdf.
- N Boudreaux, Karol. 2010. Community Conservation in Namibia: Devolution as a Tool for the Legal Empowerment of the Poor. Working paper. Mercatus Center. Fairfax, VA: George Mason University. <http://mercatus.org/publication/community-conservation-namibia>
- Boudreaux, Karol and Fred Nelson. 2011. Community Conservation in Namibia: Empowering the Poor with Property Rights. *iea Economic Affairs*, 31: 17–24 (June 2011). doi: 10.1111/j.1468-0270.2011.02096.x <http://onlinelibrary.wiley.com/doi/10.1111/j.1468-0270.2011.02096.x/full>
- P Brechin, S. R., P. R. Wilshusen, C. L. Fortwangler, and P. C. West. 2003. *Contested Nature: Promoting International Biodiversity with Social Justice in the 21st Century*. Albany, NY: State University of New York Press.
- N Breman, H., B. Fofana, and A. Mando. 2007. "The Lesson of Drenthe's "Essen" Soil Nutrient Depletion in Sub-Saharan Africa and Management Strategies for Soil Replenishment." In A. K. Braimoh and P. L. G. Vlek, 2007, *Land Use and Soil Resources*, Houten, Netherlands: Springer Media B.V., pp. 145–66.
- Brown, Jessica, and Neil Bird. 2011. *Sustainable Natural Resource Management in Namibia: Successful Community-Based Wildlife Conservation*. London: Overseas Development Institute.
- S Campbell, B. M., and J. A. Sayer (Eds.). 2003. *Integrated Natural Resource Management: Linking Productivity, the Environment and Development*. Wallingford, Oxfordshire, UK: CABI Publishing.
- S Carney, Diana (Ed.). 1998. *Sustainable Rural Livelihoods What Contribution Can We Make?* London: Department for International Development.

- Carter, J., B. Pokharel, and R. Rai Parajuli. 2011. *Two Decades of Community Forestry in Nepal: What Have We Learned?* Kathmandu, Nepal: Nepal Swiss Community Forestry Project.
- N Cassidy, D., G. Thomson, and J. Barnes. 2013. *Establishing Priorities through Use of a Multi-Criteria Decision Analysis for a Commodity-Based Trade Approach to Beef Exports from the East Caprivi Region of Namibia*. Report to USAID/Southern Africa Sanitary and Phytosanitary Support (SPS) Program for Regional Trade in Southern Africa. Available at: www.wcs-ahead.org/kaza/mcda_review_cbt_appendixes_final.pdf
- Central Bureau of Statistics (CBS). 2002. *Statistical Pocket Book Nepal*. Kathmandu, Nepal: Ramshah Path.
- Chagas, T., C. Streck, R. O’Sullivan, J. Olander, and J. Seifert-Granzin. 2011. “Nested Approaches to REDD+.” *Forest Trends & Climate Focus*. Washington, D.C.
<http://rportal.net/library/content/translinks/final-document-nested-approaches-to-redd/view>
- Chapagain, N., and M. R. Banjade. 2009. *Community Forestry as an Effective Institutional Platform for Local Development: Experience from the Koshi Hills*. Kathmandu, Nepal: ForestAction Nepal and Livelihoods and Forestry Program.
- W Chapagain, B., R. Subedi, and B. Rana. 2009. *Beyond Elite Capture: Community Forestry Contributes to Pro-Poor Livelihoods in Nepal*. Discussion paper. Photocopy. Livelihoods and Forestry Program, Kathmandu, Nepal.
- P Chattopadhyay, R., and E. Duflo. 2004. “Women as Policy Makers: Evidence from a Randomized Policy Experience in India.” *Econometrica* 72(5): 1409–43.
- N Chiras, Daniel, and John Reganold. 2010. *Natural Resource Conservation: Management for Sustainable Future*. London: Benjamin Cummings/Pearson.
- Child, Brian (Ed.). 2004. *Parks in Transition: Biodiversity, Rural Development and the Bottom Line*. London: Earthscan.
- W Clements, T., A. John, K. Nielsen, D. An, S. Tan, and E. J. Milner-Gulland. 2009. “Payments for Biodiversity Conservation in the Context of Weak Institutions: Comparison of Three Programs from Cambodia.” *Ecological Economics* 69(6): 1283–91. Available along with more detailed papers at: http://rportal.net/library/content/translinks/translinks-2009/wildlife-conservation-society/casestudy_paymentsforbiodiversityconservationcambodia.pdf/view
- S Colby, Michael E. 1990. *Ecology, Economics, and Social Systems*. Ph.D. dissertation, Wharton School of Business, University of Pennsylvania, Philadelphia.
- S Colby, Michael E. 1991. “Environmental Management in Development: The Evolution of Paradigms.” *Ecological Economics* 3(3): 181–273. Spanish version: *El Trimestre Economico* 63(3): 589–615.
- P Colfer, Carol. 2005a. *The Complex Forest: Communities, Uncertainty, and Adaptive Management*. Washington D.C.: Resources for the Future Press.
- P Colfer, Carol (Ed.). 2005b. *The Equitable Forest: Diversity, Community, and Resource Management*. Washington D.C.: Center for International Forestry Research (CIFOR) and Resources for the Future.

- P Colfer, Carol, and D. Capistrano. 2005. *The Politics of Decentralization Forests, Power, and People*. London: Earthscan.
- Community Markets for Conservation (COMACO). 2009. Community Markets for Conservation (COMOCO) Brochure. Washington, D.C.: Wildlife Conservation Society. Available at: http://rmpportal.net/library/content/translinks/translinks-2009/wildlife-conservation-society/brochure_wfencommunitymarketsforconservation.pdf/view
- W Dev, O. P., N. P. Yadav, O. Springate-Baginski, and J. Soussan. 2003. "Impacts of Community Forestry on Livelihoods in the Middle Hills of Nepal." *Journal of Forest and Livelihood* 3: 64–67.
- Division of Land Board Tenure and Advise, Operational Manual for Communal Land Boards, (second edition). Windhoek, Namibia, Ministry of Lands and Resettlement, 2006.
- P Dutta, Uptal, Philip DeCosse, and Ram A. Sharma. 2005. "The Pace, Nature and Logic of Empowerment at Co-Management Sites." Chapter 5 in: P. J. DeCosse, P. M. Thompson, I. U. Ahmad, R. A. Sharma, and A. H. Mazumder (Eds.), *Protected Area Co-Management: Where People and Poverty Intersect: Lessons from Nishorgo in Bangladesh*. pp. 73–84. Washington, D.C.: USAID and Government of Bangladesh.
- Easterly, W. 2002. *The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics*. Cambridge, MA: MIT Press.
- P Edmunds, David, and Eva Wollenberg (Eds.). 2004. *Local Forest Management: The Impacts of Devolution Policies*. New York: Earthscan.
- W El Serafy, Salah. 2013. *Macroeconomics and the Environment: Essays on Green Accounting*. Cheltenham, UK: Edward Elgar Publishing.
- P Fairhead, James, and Melissa Leach. 1996. *Misreading the African Landscape: Society and Ecology in a Forest-Savanna Mosaic*. Cambridge, UK: Cambridge University Press.
- N Felker, P. 1978. *Acacia Albida: State of the Art*. Study conducted for USAID. Riverside, CA: University of California.
- FHI360. 2012. From SCALE to SCALE 2.0: Accomplishments and the Future. Available at: <http://rmpportal.net/library/content/usaidscalecollection/scale-materials/scale-publications/from-scale-to-scale-2.0/view>. Online training on SCALE is available at <http://lms.rmpportal.net/course/>. Online training on sustainable community fisheries management is also going online as NWP is going to press at <http://lms.rmpportal.net/>
- S Fisher, R., R. Prabhu, and C. McDougal (Eds.). 2007. *Adaptive Collaborative Management of Community Forests in Asia: Experiences from Nepal, Indonesia and the Philippines*. Bogor, Indonesia: Center for International Forestry Research.
- S Food and Agriculture Organization (FAO). 1999. *Pluralism and Sustainable Forestry and Rural Development: Proceedings of an International Workshop*. Rome, Italy.

- P Food and Agriculture Organization (FAO). 2011. *State of Food and Agriculture 2010–2011: Women in Agriculture: Closing the Gender Gap for Development*. Rome, Italy.
- Food and Agriculture Organization (FAO). 2013a. *Climate-Smart Agriculture Sourcebook*. Rome, Italy.
- P Food and Agriculture Organization (FAO). 2013b. *Gender and Climate Change Research in Agriculture and Food Security for Rural Development*, FAO Rome.
- Forest Trends. 2013. “Amazonian People First to Earn Carbon Credits after Proving They Saved Endangered Rainforest.” Press release. Washington, D.C.
- Freudenberger, Karen. 2010. *Paradise Lost? Lessons from 25 Years of USAID Environment Programs in Madagascar*. Final report. Prepared by the International Resources Group with the support of USAID. Washington, D.C. Available at: <http://rmpportal.net/news/news-usaid-rmp-featured-stories/paradise-lost-madagascar/view>
- Fuglesang, Andreaz. 1982. *About Understanding: Ideas and Observations on Cross-Cultural Communication*. New York: Dag Hammarskjold Foundation.
- N Garnett, T, M. C. Appleby, A. Balmford, I. J. Bateman, T. G. Benton, P. Bloomer, B. Burlingame, M. Dawkins, L. Dolan, D. Fraser, M. Herrero, I. Hoffmann, P. Smith, P. K. Thornton, C. Toulmin, S. J. Vermeulen, and H. C. J. Godfray. 2013. “Sustainable Intensification in Agriculture: Premises and Policies.” *Science* 341(6141): 33–34.
- N Garrity, D. P., F. K. Akinnifesi, O. C. Ajayi, S. G. Weldesemayat, J. G. Mowo, A. Kalinganire, M. Larwanou, and J. Bayala. 2010. “Evergreen Agriculture: a Robust Approach to Sustainable Food Security in Africa.” *Food Security* 2: 197–214.
- N Giraud, Pierre-Noel, and Denis Loyer. 2006. *Natural Capital and Sustainable Development in Africa*. Working Paper 33. Paris: Agence Française de Développement.
- Giri, K., and H. R. Ojha. 2011. *How Does Techno-Bureaucracy Impede Livelihood Innovations in Community Forestry?* Kathmandu, Nepal: ForestAction.
- Godfray, C. J., J. R. Beddington, I. R. Crute, L. Haddad, D. Lawrence, J. F. Muir, J. Pretty, S. Robinson, S. M. Thomas, and C. Toulmin. 2010. “Food Security: the Challenge of Feeding 9 Billion People.” *Science* 327: 812.
- Government of Bangladesh. 2005. *The Poverty Reduction Strategy Paper (PRSP)*. <http://www.imf.org/external/pubs/ft/scr/2005/cr05410.pdf>
- Government of Bangladesh. 2010. *Bangladesh Country Investment Plan: A Road Map towards investment in agriculture, food security and nutrition*. 14 June 2010. https://www.gafspfund.org/sites/gafspfund.org/files/Documents/BangladeshCIP_ARoadMap.pdf
- Government of Namibia. 1996. “National Conservation Amendment Act.” *Government Gazette of the Republic of Namibia*, Windhoek, Namibia.
- P Griffiths, Tom, and Libby Robin (Eds.). 1997. *Ecology and Empire: Environmental History of Settler Societies*. Pietermaritzburg: Keele University Press.

- S Gunderson, Lance; Holling, C.S, and Light, Stephen. 2013. *Barriers and Bridges to the Renewal of Regional Ecosystems: To the Renewal of Ecosystems and Institutions*. New York, Columbia University Press.
- Gurung, H. 1996. "Ethnic Demography of Nepal." Paper presented at the Nepal Foundation for Advanced Studies Conference, January 10, 1996, Kathmandu, Nepal.
- Heermans, John, and Jonathan Otto. 1999. *Whose Woods These Are: Community-Based Forest Management in Africa*. Washington, D.C.: USAID.
- P Hope, Anne and Sally Timmel (Eds.). 1984. *Training for Transformation: A Handbook for Community Workers*. Book 1–3. Bourton on Dunsmore, Rugby, UK: Practical Action Publishing.
- Instituto Socioambiental and Forest Trends. 2010. *Avoided Deforestation (REDD) and Indigenous Peoples: Experiences, Challenges and Opportunities in the Amazon Context*. São Paulo, Brasil.
- International Resources Group. 2008. *Integrated Protected Area Co-Management (IPAC)*. First Annual Progress Report. USAID/Bangladesh, Dhaka.
- W Iversen, V., B. Chhetry, P. Francis, M. Gurung, G. Kaffe, A. Pain, and J. Seely. 2006. "High-Value Forests, Hidden Economies, and Elite Capture: Evidence from Forest User Groups in Nepal's Terai." *Ecological Economics* 58: 93–107.
- W Jindal, R., J. Kerr, T. Dillaha, and M. Colby. 2007. *USAID PES Sourcebook: Lessons and Best Practices for Pro-Poor Payment for Ecosystem Services*. Prepared for USAID by the SANREM and BASIS CRSPs at Virginia Tech and the University of Wisconsin at Madison. Blacksburg, VA: Virginia Tech. Available at: www.oired.vt.edu/sanremcrsp/professionals/research-themes/pes/sourcebook
- W Jones, B. T. B., Davis, A., Diez, L., and R. W. Diggle. 2013. *Community-Based Natural Resource Management (CBNRM) and Reducing Poverty in Namibia*. In: Roe, D., Elliot, J., Sandbrook, C., and M. Walpole. (eds). *Biodiversity Conservation and Poverty Alleviation: Exploring the Evidence for a Link*. John Wiley and Sons, Chichester, UK. pp 191-205.
- W Jones, B. T. B. 2004. *CBNRM, Poverty Reduction and Sustainable Livelihoods: Developing Criteria for Evaluating the Contribution of CBNRM to Poverty Reduction and Alleviation in Southern Africa*. Commons Southern Africa Occasional Paper Series No. 7. Harare, Zimbabwe, and Capetown, South Africa: Centre for Applied Social Sciences, University of Zimbabwe, and Programme for Land and Agrarian Studies, School of Government, University of the Western Cape.
- Kandel, P. 2010. *Forest Resource Assessment in Nepal: An Assessment of Data Needs*. Kathmandu, Nepal: Forest Resource Assessment Nepal Project.
- P Kanel, K. R., and D. Acharya. 2008. "Re-Inventing Forestry Agencies: Institutional Innovations to Support Community Forestry in Nepal." In P. Durst, C. Brown, J. Broadhead, R. Suzuki, R. Leslie, and A. Inoguchi. (Eds.), *Reinventing Forestry Agencies: Experiences of Institutional Restructuring in Asia and the Pacific*. Bangkok, Thailand: Food and Agricultural Organization of the United Nations.
- S Kindon, S., R. Pain, and M/ Kesby (Eds.). 2008. *Participatory Action Research Approaches and Methods: Connecting People, Participation and Place*. Florence, KY: Routledge.

- W Koontz, Ann. 2008. *The Conservation Marketing Equation: a Manual for Conservation and Development Professionals*. Washington, D.C.: EnterpriseWorks/VITA and USAID. English and Arabic versions available at: http://rmpportal.net/library/content/translinks/translinks-2008/enterpriseworks-vita-relief-international/ConservationMarketingEquation_Manual_EWV_2008.pdf/view
- N Kwok, Roberta. 2013. "Salvage Job: With Fertilizer Prices Skyrocketing, Scientists Scramble to Recover Phosphorus from Waste." *Science News* 183(4): 20. Available at: www.sciencenews.org/view/feature/id/348109/description/Salvage_Job
- P Lastarria-Cornhiel, S., Z Barahona, and L. Orti, 2008. "The Women of Isoso: Livelihoods, Governance and Natural Resources in the Gran Chaco, Bolivia." *TransLinks Case Study*, USAID WCS and LTC. http://rmpportal.net/library/content/translinks/translinks-2008/wildlife-conservation-society/WomenOfIsosoBolivia_CaseStudy_WCS_2008.pdf/view
- P Lawry, Steven and Rebecca McLain. 2012. *Devolution of Forest Rights and Sustainable Forest Management: Learning from Two Decades of Implementation*. Paper prepared for presentation at the World Bank Conference on Land and Poverty, April 23–26, 2012.
- S Lee, Kai N. 1993. *Compass and Gyroscope: Integrating Science and Politics for the Environment*. Washington, D.C.: Island Press.
- Leisher, C., Peter Van Beukering, and Lea M. Scherl. 2007. *Nature's Investment Bank: How Marine Protected Areas Contribute to Poverty Reduction*. Arlington, VA: The Nature Conservancy.
- Leisher, C., M. Sanjayan, Jill Blockhus, and Andreas Kontoleon. 2010. "Does Conserving Biodiversity Work to Reduce Poverty?" *Linking Biodiversity Conservation and Poverty Alleviation: A State of Knowledge Review*. Arlington, VA: The Nature Conservancy.
- W Lewis, Roy R. 2003. *Mangrove Restoration—Costs and Benefits of Successful Ecological Restoration: Proceedings of the Mangrove Valuation Workshop, University Sains Malaysia, Penang, April 4–8, 2001*. Stockholm: Beijer International Institute of Ecological Economics.
- Lewis, Roy R. 2005. "Ecological Engineering for Successful Management and Restoration of Mangrove Forests." *Ecological Engineering* 24 (4): 403–18.
- Luintel, H., H. R. Ojha, and B. Rana. 2009. *Community Forestry in Nepal: A Synthesis of Innovative Practices*. Kathmandu, Nepal: Forest Resource Assessment Nepal Project.
- Luintel, H., and N. Timsina. 2008. *Is Forestry Decentralization Effective in Empowering Women's Agency?* Kathmandu, Nepal: ForestAction.
- P Lynch, Owen, and Emily Harwell. 2002. *Whose Resources? Whose Common Good? Toward a New Paradigm of Environmental Justice and National Interest in Indonesia*. Washington, D.C.: CIEL.
- N Marenya and Barrett. 2009a. "Soil quality and fertilizer use rates among smallholder farmers in western Kenya." *Agricultural Economics* 40(5): 561–72.

- N Marenya and Barrett. 2009b. "State-Conditional Fertilizer Yield Response on Western Kenyan Farms." *American Journal of Agricultural Economics* 91(4): 991–1006.
- Mazumder, A. H., and P. M. Thompson. 2005. "Genesis of the Forest Co-Management Experiment." Chapter 3 in: P. J. DeCosse, P. M. Thompson, I. U. Ahmad, R. A. Sharma, and A. H. Mazumder (Eds.), *Protected Area Co-Management: Where People and Poverty Intersect: Lessons from Nishorgo in Bangladesh*. Pp. 29–34. Washington, D.C.: USAID and Government of Bangladesh.
- McClanahan, T., M. Marnane, J. Cinner, and W. Kiene, 2006. "A Comparison of Marine Protected Areas and Alternative Approaches to Coral-Reef Management," *Current Biology* 16 (14): 1408–13.
- S Meadows, Donella. 2008. *Thinking in Systems: A Primer*. White River Junction, VT: Chelsea Green Publishing.
- P Meinzen-Dick, R., A. Knox, F. Place, and B. Swallow. 2002. *Innovation in Natural Resource Management: The Role of Property Rights and Collective Action in Developing Countries*. Baltimore: Johns Hopkins University Press.
- N Millennium Ecosystem Assessment. 2005. *Millennium Ecosystem Assessment: Ecosystems and Human Well-Being: Synthesis*. Washington, D.C.: Island Press/World Resources Institute. Available at: www.millenniumassessment.org/documents/document.356.aspx.pdf
- S Miller, James Grier. 1978. *Living Systems*. New York: McGraw-Hill.
- Ministry of Forests and Soil Conservation. 1995. *Forest Act 1993 and Forest Rules and Regulations 1995*. Kathmandu, Nepal: Government of Nepal.
- Ministry of Forests and Soil Conservation. 2008. "Community Forestry: Conserving Forests, Sustaining Livelihoods, Strengthening Democracy." In H. Ojha, N. Timsina, C. Kumar, B. Belcher, and M. Banjade (Eds.), *Communities, Forests, and Governance: Policy and Institutional Innovations from Nepal*. New Delhi: Adroit.
- Ministry of Forests and Soil Conservation. 2009. *Nepal Forestry Outlook Study*. Working Paper No. APFSOS II/WP/2009/05. Asia-Pacific Forestry Sector Outlook Study II. Bangkok, Thailand: Food and Agriculture Organization of the United Nations.
- P Mogoi J., E. Obonyo, P. Ongugo, V. Oeba, and E. Mwangi. 2012. "Communities, Property Rights and Forest Decentralisation in Kenya: Early Lessons from Participatory Forestry Management." *Conservation and Society* 10: 182–94. Available at: www.conservationandsociety.org/text.asp?2012/10/2/182/97490
- P Moore, Henrietta and Megan Vaughan. 1994. *Cutting Down Trees: Gender, Nutrition, and Agricultural Change in the Northern Province of Zambia. 1890–1990*. Portsmouth, NH: Heinemann.
- W Moreno, Jaime Garcia, 2010. *Cost-Effectiveness of Maintaining and Restoring Wetlands as an Adaptation Measure against Climate Change*. Wageningen, Netherlands: Wetlands International.
- N Mortimore, Michael, and Francis Gichuki. 1994. *More People, Less Erosion: Environmental Recovery in Kenya*. Wiley.
- N Mortimore, Michael, 1998. *Roots in the African Dust Sustaining the Drylands*. Cambridge, UK: Cambridge University Press.

- P Murphree, Marshall. (n.d.). *Communities as Resource Management Institutions*. Gatekeeper Series No. 36, London: International Institute for Environment and Development (IIED).
- NACSO (Namibian Association of CBNRM Support Organisations). 2006. *Namibia's Communal Conservancies: A Review of Progress and Challenges in 2005*. Windhoek, Namibia. Accessed 8-12-13 at: http://www.nacso.org.na/SOC_2005/index.php
- NACSO. 2013a. *Namibia's Communal Conservancies: A Review of Progress and Challenges in 2011*. Windhoek, Namibia. Accessed 8-12-13 at: http://www.nacso.org.na/SOC_2011/index.php
- NACSO. 2013b. *Map of Sustainable Resource Management Areas of Namibia*. Accessed 8-11-13 at: <http://www.nacso.org.na/dwnlds/refs/Communal%20conservancies%20map%20with%20image%20A4.jpg>
- NACSO. 2013c. *Game Counts in North-West Namibia (June 2012)*. Accessed 8-11-13 at: http://www.nacso.org.na/dwnlds/refs/NW_game_count_poster_2012.pdf
- NACSO. 2013d. *Game Counts in Bwabwata & Caprivi (Dry Season 2012)*. <http://www.nacso.org.na/dwnlds/refs/Caprivi%20game%20count%20poster%202012.pdf>
- P Naughton-Treves, L and C. Day, eds. 2012. "Lessons about Land Tenure, Forest Governance and REDD+: Cases from Africa, Asia and Latin America." Land Tenure Center, University of Wisconsin @ Madison, and USAID (TransLinks). <http://rmportal.net/library/content/translinks/2011/land-tenure-center/ltfc-mgmt-workshop/lessons-on-land-tenure-governance-and-redd--case-studies-from-africa-asia-and-latin-america/view>
- W Neumann, Roderick, and E. Hirsch. 2000. *Commercialization of Non-Timber Forest Products: Review and Analysis of Research*. Jakarta, Indonesia: CIFOR.
- Obidzinski, Krystof, Rubeta Andriani, Heru Komarudin, and Agus Andrianto. 2012. "Environmental and Social Impacts of Oil Palm Plantations and Their Implications for Biofuel Production in Indonesia." *Ecology and Society* 17(1): 25.
- S Oglethorpe, James (Ed.). 2002. *Adaptive Management from Theory to Practice*. Gland, Switzerland: IUCN Sustainable Use Initiative.
- Ojha, H., L. Persha, and A. Chhatre. 2009. *Community Forestry in Nepal: A Policy Innovation for Local Livelihoods*. IFPRI Discussion Paper 00913. Washington, D.C.: International Food Policy Research Institute.
- Ojha, H. 2011. *Nepal's Climate Change Policies and Plans: Local Communities' Perspective*. Environment and Climate Series 2011/1. Lalitpur, Nepal: HELVETAS Swiss Intercooperation Nepal and Rights and Resources Initiative.
- N Ojha, H., A. Hall, and R. Sulaiman V. 2013. *Adaptive Collaboration Approaches in Natural Resource Governance: Rethinking Participation, Learning and Innovation*. New York: Routledge.
- Organisation for Economic Co-operation and Development (OECD). 2010. *Paying for Biodiversity: Enhancing the Cost-Effectiveness of Payments for Ecosystem Services*. Paris: OECD.

- P Ostrom, Elinor. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. (Political Economy of Institutions and Decisions). Cambridge, UK: Cambridge University Press.
- Patel, Hetu, Sara Nelson, Jesus Palacios, Alison Zander, and Helen Crowley. 2009. "TransLinks Case Study – Elephant Pepper: Establishing Conservation-Focused Business." Wildlife Conservation Society and USAID. http://rmportal.net/library/content/translinks/translinks-2009/wildlife-conservation-society/casestudy_elephantpepperconservationfocusedbusiness.pdf/view, http://rmportal.net/library/content/translinks/translinks-2009/wildlife-conservation-society/brochure_wfenelephantpepper.pdf/view, www.elephantpepper.com
- S Perrow, Charles. 1984. *Normal Accidents: Living with High-Risk Technologies*. New York: Basic Books.
- P Peterson, M. Nils, Stacey A. Allison, Markus J. Peterson, Tarla Rai Peterson, and Roel R. Lopez. 2004. "Tale of Two Species: Habitat Conservation Plans as Bounded Conflict." *Journal of Wildlife Management* 68(4):743–61.
- W Place, F. and J. N. Binam. 2013. *Economic Impacts of Farmer-Managed Natural Regeneration in the Sahel*. End-of-Project Technical Report for Free University Amsterdam and IFAD. Nairobi, Kenya: World Agroforestry Centre.
- Pokharel B. K., Anupama Mahat, and Sarah Byrne. n.d. "Institutions Matter the Most!: Effect of Community Forestry on Forest Cover Change in Nepal." PowerPoint.
- Pokharel, B. K., G. R. Dahal, and S. Byrne. 2009. *Nepal Country Report on Forest Governance and Climate Change*. Kathmandu, Nepal: Swiss Intercooperation.
- P Putnam, Robert D. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.
- Radachowsky, Jeremy, Victor Ramos, Roan McNab, Erick Bauer, and Nikolay Kazakov. 2011. *Forest Concessions in the Maya Biosphere Reserve, Guatemala: A Decade Later*. *Forest Ecology and Management* (2011), doi:10.1016/j.foreco.2011.08.043. Also at <http://rmportal.net/groups/cbnrm/cbnrm-literature-for-review-discussion/forest-concessions-in-the-maya-biosphere-reserve-guatemala-a-decade-later/view>
- P Rawls, John. 1971. *A Theory of Justice*. Cambridge, MA: Harvard University Press.
- S Reed, David. 2001. *Economic Change, Governance, and Natural Resource Wealth: The Political Economy of Change in Southern Africa*. London: Earthscan.
- Reed, David. 2006. *Escaping Poverty's Grasp: The Environmental Foundations of Poverty Reduction*. London: Earthscan.
- N Reij, Chris, Gray Tappan, and Melinda Smale. 2009. *Agroenvironmental Transformation in the Sahel: Another Kind of "Green Revolution"*. Discussion Paper 00914 (November). Washington, D.C.: International Food Policy Research Institute.
- N Reij, Chris, and Ann Waters-Bayer. 2001. *Farmer Innovation in Africa: A Source of Inspiration for Agricultural Development*. London: Earthscan.

- P Ribot, Jesse, and Anne Larson (Eds.). 2005. *Democratic Decentralization through a Natural Resource Lens*. London: Routledge.
- Richards, M. and S. Panfil, 2011, *Social and Biodiversity Impact Assessment (SBIA) Manual for REDD+ Projects Core Guidance for Project Proponents*, Forest Trends, Conservation International. <http://rmpportal.net/library/content/translinks/2011/forest-trends/manuel-sur-l2019evaluation-des-impacts-sociaux-et-sur-la-biodiversite-eisb-pour-les-projets-de-redd-premiere-partie-2013-directives-de-base-a-l2019intention-des-initiateurs-de-projets/view>
- Rinaudo, T. and S. Yaou. 2008. *Agricultural Development Recommendations*. Agriculture Task Force Report. World Vision: Federal Way, WA.
- P Robbins, Paul. 2004. *Political Ecology Critical Introductions to Geography*. Oxford, UK: Blackwell.
- Roe, Dilys, Fred Nelson, Chris Sandbrook (Eds.). 2009. *Community Management of Natural Resources in Africa: Impacts, Experiences and Future Directions*. London: IIED.
- Roe, Dilys, James Mayers, Maryanne Grieg-Gran, Ashish Kothari, Christo Fabricius, and Ross Hughes. 2000. *Evaluating Eden: Exploring the Myths and Realities of Community-Based Wildlife Management*. London: IIED.
- W Sachs, Jeffrey. 2005. *The End of Poverty: Economic Possibilities for Our Time*. New York: The Penguin Press.
- S Sagasti, Francisco, and Michael Colby. 1993. "Eco-Development and Perspectives on Global Change from Developing Countries." In Choucri, Nazli (Ed.). *Global Accord: Environmental Challenges and International Responses*. Cambridge, MA: MIT Press.
- Saigal, Sushil, Hema Arora, and S. S. Rizvi. 2002. *The New Foresters: The Role of Private Enterprise in the Indian Forest Sector*. London: IIED.
- W Salem, Marwa E., and D. Evan Mercer. 2012. "The Economic Value of Mangroves: A Meta-Analysis." *Sustainability* 4(3): 359–83.
- Satyal Pravat, P. 2004. *Country Profile Report: Forestry Sector in Nepal*. Cambridge, UK: Forests Monitor.
- S Savory, Allan and Jody Butterfield. 1999. *Holistic Management: A New Framework for Decision Making*. Washington, D.C.: Island Press.
- Scherr, Sara, Andy White, and David Kaimowitz. 2004. *A New Agenda for Forest Conservation and Poverty Reduction: Making Markets Work for Low-Income Producers*. Washington, D.C.: Forest Trends.
- P Scott, James. 1998. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven, CT: Yale University Press.
- P Sen, Amartya. 1999. *Development as Freedom*. Oxford: Oxford University Press.

- S Senge, P., B. Smith, N. Kruschwitz, J. Laur, and S. Schley. 2008. *The Necessary Revolution: How Individuals and Organizations Are Working Together to Create a Sustainable World*. New York: Doubleday.
- Shongwe, Nicky and Steve Osofsky, 2008. *As the Fences Come Down: Emerging Concerns in Transfrontier Conservation Areas—The Great Limpopo Transfrontier Conservation Area and a Proposed Conceptual Framework for Progress*. Washington, D.C.: Wildlife Conservation Society. Available at: www.wcs-ahead.org/documents/asthefencescomedown.pdf
- P Shrestha, K. K., and P. McManus. 2008. “The Politics of Community Participation in Natural Resource Management: Lessons from Community Forestry in Nepal.” *Australia Forestry* 71: 135–46.
- P Shrestha, R., S. L. Shrestha, S. G. Acharya, and S. Adhikari. 2009. *Improving Community Level Governance: Adaptive Learning and Action in Community Forest User Groups*. Kathmandu, Nepal: ForestAction Nepal and Livelihoods and Forestry Program.
- P Singh, B. K., and D. P. Chapagain. 2006. “Trends in Forest Ownership, Forest Resources Tenure and Institutional Arrangements: Are They Contributing to Better Forest Management and Poverty Reduction? Community and Leasehold Forestry for the Poor: Nepal Case Study.” In *Understanding Forest Tenure in South and Southeast Asia*. FAO Forestry Policy and Institutions Working Paper 14: 115–51. Rome, Italy: Food and Agriculture Organization of the United Nations.
- Sirleaf, Ellen Johnson (President of the Republic of Liberia). 2012. *The Importance of Natural Capital to Development*. Plenary Address at the “Summit for Sustainability in Africa,” Gaborone, Botswana, May 24, 2012. Available at: www.emansion.gov.lr/doc/The-Importance-of-Natural-Capital-to-Development.pdf
- Southern African Development Community (SADC). 2012. *Phakalane Declaration on the Adoption of Non-Geographic Approaches for Management of Foot and Mouth Disease: Resolution by the Southern African Development Community Calling for Adoption of Commodity-Based Trade and Other Non-Geographic Approaches for Foot and Mouth Disease Management as Additional Regional Standards for Trade in Animal Products*. Gabarone. Available at: www.wcs-ahead.org/phakalane_declaration.html
- W Stern, Nicholas. 2007. *The Stern Review on the Economics of Climate Change*. Cambridge, UK: Cambridge University Press.
- W Stern, Nicholas. 2013. “Economic Growth, Poverty Reduction, and Managing Climate Change.” Presentation at International Monetary Fund/World Resources Institute, April 2. Available at: www.imf.org/external/np/fad/environ/pdf/040213.pdf
- N Tappan, G., and M. McGahuey. 2007. “Tracking Environmental Dynamics and Agricultural Intensification in Southern Mali.” *Agricultural Systems* 94: 38–51.
- W TEEB [The Economics of Ecosystems and Biodiversity]. 2008. *The Economics of Ecosystems and Biodiversity: An Interim Report*. European Communities. Cambridge, UK: Banson Productions. Available at: <http://ec.europa.eu/mwg-internal/de5fs23hu73ds/progress?id=FI37qtzOIo>
- Thompson, Paul M., 2012. “Impact Assessment of Co-Management on Protected Area Conservation in Bangladesh.” Report of the USAID Integrated Protected Area Co Management Project (IPAC).

- Toudou, A., C. Reij, A. Tahirou, L. Mahamane, G. Tappan, and Y. Boubacar. 2006. Impacts des Investissements dans la Gestion des Ressources Naturelles (GRN) au Niger: Rapport de Synthèse. Centre Régional d'Enseignement Spécialisé en Agriculture (CRESA). Niamey, Niger.
- P Toulmin, Camilla, and Julian Quan (Eds.). 2000. *Evolving Land Rights, Policy and Tenure in Africa*. Department for International Development/IIED/Natural Resources Institute.
- N United Nations Development Programme (UNDP). 2012a. *Community-Based Adaptation to Climate Change through Coastal Afforestation in Bangladesh: Key Results and Outputs*. Available at: <http://www.undp-alm.org/projects/ldcf-cba-bangladesh/expected-key-results>
- United Nations Development Programme (UNDP). 2012b. *The Power of Local Action: Lessons Learned from 10 Years of the Equator Prize*. New York, NY.
- United Nations Environment Programme (UNEP). n.d. *AFRICA ENVIRONMENT OUTLOOK: Past, Present, and Future Perspectives*. Nairobi, Kenya. Available at: <http://www.unep.org/dewa/Africa/publications/AEO-1/aeo-1report.asp>
- USAID. 2002. *Nature, Wealth, and Power: Emerging Best Practice for Revitalizing Rural Africa*. Washington D.C. Available at: <http://rmportal.net/library/content/nature-wealth-and-power-emerging-best-practice-for-revitalizing-rural-africa/view#>
- USAID. 2006. *Transforming the Moroccan Medicinal and Aromatic Plant Sector to Compete in the New Global Economy*. Washington, D.C. Available at: <http://rmportal.net/library/content/usaids-scale-collection/scale-materials/scale-publications/transforming-the-moroccan-medicinal-and-aromatic-plant-sector-to-compete-in-the-new-global-economy-1/view>
- USAID. 2007. *Transforming the Kenyan Dairy Feeds System to Improve Farmer Productivity and Livelihoods*. Washington, D.C.: Available at: <http://rmportal.net/library/content/usaids-scale-collection/scale-materials/scale-publications/transforming-the-kenyan-dairy-feeds-system-to-improve-farmer-productivity-and-livelihoods/view>
- USAID. 2012. *Building Resilience to Recurrent Crisis—USAID Policy and Program Guidance*. 25 pp., Dec. 2012, Washington, D.C. http://www.usaid.gov/sites/default/files/documents/1870/USAID_ResiliencePolicyGuidanceDocument.pdf and <http://www.usaid.gov/resilience>
- USAID. 2013. “Research shows improved fertilizer application increases rice and vegetable production.” Press Release 3-28-13, USAID/Bangladesh, Dhaka. <http://www.usaid.gov/bangladesh/press-releases/research-shows-improved-fertilizer-application-increases-rice-and>
- P Veit, P. et al. 2008. *On Whose Behalf? Legislative Representation and the Environment in Africa*. Washington, D.C.: World Resources Institute. Available at: http://pdf.wri.org/on_whose_behalf.pdf
- N Vitousek, P. M., H. A. Mooney, J. Lubchenco, and J. M. Melillo. 1997. “Human Domination of Earth’s Ecosystems.” *Science* 277: 494–99.
- N Vitousek, P. M., J. D. Aber, R. W. Howarth, G. E. Likens, P. A. Matson, D. W. Schindler, W. H. Schlesinger, and D. G. Tilman. 1997. “Human Alteration of the Global Nitrogen Cycle: Sources and Consequences.” *Ecological Applications* 7: 737–50.

- N Vitousek, P. M., P. R. Ehrlich, A. H. Ehrlich, and P. A. Matson. 1986. "Human Appropriation of the Products of Photosynthesis." *BioScience* 36: 368–73.
- N Volkmann, Wiebke, Colin Nott, Ekkehard Kuelbs, Judith Isele, Sally Wood, Anna Davis, et al. 2011. *Community-Based Rangeland and Livestock Management Reader: New Possibilities for Restoring Grassland and Prosperity to Rural Areas*, 2nd Edition. Ministry of Agriculture, Water and Forestry. Oshakati, Namibia: GOPA Worldwide Consultants. <http://rmpportal.net/news/news-usaid-rmp-featured-stories/art-featured-stories-folder/community-based-rangeland-livestock-management-reader-2nd-edition/view>
- P Waylen, Kerry A., Anke Fischer, Philip J. K. McGowan, Simon, J. Thirgood, and E. J. Milner-Gulland. 2010. The Effect of Local Cultural Context on Community-Based Conservation Interventions: Evaluating Ecological, Economic, Attitudinal and Behavioural Outcomes. Systematic Review No. 80. Aberdeen, UK: Collaboration for Environmental Evidence.
- P Wilkie, David and Paul Cowles. 2013. Guidelines for Assessing the Strengths and Weaknesses of Natural Resource Governance in Landscapes and Seascapes. USAID. www.frameweb.org/scapesgovtool.htm
- W Winrock International. 2011. Payment for Forest Environmental Services: A Case Study on Pilot Implementation in Lam Dong Province Vietnam from 2006–2010. Washington, D.C.
- Winrock International, Bangladesh Centre for Advanced Studies, Center for Natural Resources Studies, and CARITAS Bangladesh. 2007. Management of Aquatic Ecosystem through Community Husbandry (MACH-I). Washington, D.C.: USAID.
- Winrock International. 2005. Management of Aquatic Ecosystems through Community Husbandry (MACH-II) Annual Report USAID/Bangladesh. Dhaka.
- S Wollenberg, E., D. Edmunds, L. Buck, J. Fox, and S. Brodt (Eds.). 2001. Social Learning in Community Forests. Bogor, Indonesia: CIFOR and the East West Center.
- S Wollenberg, E. J. Anderson and C. Lopez. 2005. Though All Things Differ: Pluralism as a Basis for Cooperation in Forests. Bogor, Indonesia: CIFOR. Available at: http://www.cifor.org/publications/pdf_files/Books/BWollenberg0501.pdf
- N Wopereis, M. C. S., A. Mando, and B. Vanlauwe. 2008. Agroecological Principles of Integrated Soil Fertility Management: A Guide with Special Reference to Sub-Saharan Africa. Muscle Shoals, AL: International Center for Soil Fertility and Agricultural Development.
- World Bank. 2000. Can Africa Claim the 21st Century? Washington, D.C.
- World Bank. 2006. Where Is the Wealth of Nations? Measuring Capital for the 21st Century. Washington, D.C.
- World Bank. 2009. Country Experience with Petroleum Revenue Funds – Part 2. Petroleum Sector Briefing Note #15, March 2009, Washington DC. <http://documents.worldbank.org/curated/en/2009/03/10409732/world-bank-cambodia-oil-gas-special-supplement-country-experience-petroleum-revenue-funds-part-2>
- World Bank. 2010a. Climate-Smart Agriculture: A Call to Action. Washington, D.C.

World Bank. 2010b. Environmental, Economic, and Social Impacts of Oil Palm in Indonesia: A Synthesis of Opportunities and Challenges. Discussion paper. Washington, D.C.

World Bank. 2010c. Turning it Around: Greening Ethiopia's Great Rift Valley. Washington, D.C. Available at: <http://www.worldbank.org/en/news/feature/2010/03/12/greening-ethiopia-rift-valley>

World Resources Institute in collaboration with United Nations Development Programme, United Nations Environment Programme, and World Bank. 2005. *World Resources 2005: The Wealth of the Poor—Managing Ecosystems to Fight Poverty*. Washington, D.C.

World Resources Institute; Department of Resource Surveys and Remote Sensing, Ministry of Environment and Natural Resources, Kenya; Central Bureau of Statistics, Ministry of Planning and National Development, Kenya; and International Livestock Research Institute. 2007. *Nature's Benefits in Kenya: An Atlas of Ecosystems and Human Well-Being*. Washington D.C. and Nairobi: World Resources Institute. Available at: www.wri.org/publication/natures-benefits-in-kenya

World Resources Institute in collaboration with United Nations Development Programme, United Nations Environment Programme, and World Bank. 2008. *World Resources 2008: Roots of Resilience – Growing the Wealth of the Poor*. Washington, D.C.

Wyckoff-Baird, Barbara. 2005. *Growth Rings: Communities and Trees*. Aspen, CO: Aspen Institute.

Yamba, B. 2006. Rapport d'Étude sur le Foncier, les Institutions Locales et l'Évolution de la Pauvreté. Etudes Sahéliennes (March).

Yamba, B., M. Larwanou, A. Hassane, and C. Reij. 2005. *The Sahel Study: Niger Pilot Study Report*. Washington, D.C.: International Resources Group.

ANNEX I.

MASTER LIST OF PRINCIPLES AND ACTIONS

Below are listed the Principles and Actions identified under NWP. This reference may be useful as a general guide and informal checklist in design, implementation and monitoring of rural development programs.

NATURE Principles and Actions

N1. Safeguard natural capital's productive capacities

- Maintain sustainable yield levels for renewable resources
- Consider the reversibility of actions and avoid those that undermine the ability of natural capital to continue to produce
- Negotiate clear limits and boundaries, partitioning land and water use when appropriate
- Encourage conditions that favor intensification over conversion of natural area for agriculture
- Assure mechanisms for the regulation of natural resource use

N2. Encourage restoration of degraded or “low-potential” lands and other natural capital

- Recognize that restorative measures may require time and short-term sacrifice or support
- Plan for the fact that, as restoration continues and productivity rises, so will competition
- Re-evaluate traditional views on the causes of degradation

N3. Promote sustainable practices and systems that increase natural capital's productivity

- Promote sustainable intensification
- Promote renewable resource management systems that optimize the use of growing space and time
- Act locally, but promote an ecosystem/landscape vision

N4. Promote climate- and socioeconomically-resilient rural production systems

- Promote climate-smart agriculture
- Recognize and support diversified livelihoods

N5. Strengthen the use of monitoring, science, and technology in agriculture and resource management

- Strengthen the role of science and technology and evidence-based decision making in rural production systems
- Increase collaboration of scientists and technicians with local people
- Increase rigorous monitoring, data collection and analysis particularly by resource users
- Collect and use information more effectively
- Take stock of impacts and lessons from past investments

WEALTH Principles and Actions

W1. Strengthen natural capital accounting, valuation, and analytic tools to improve decisions

- Track harvest and regeneration rates of all marketed natural resources
- Re-invigorate international efforts to reform the U.N. System of National Accounts
- Improve accounting and transparency of revenues from natural resource harvests
- Invest in estimating natural capital's non-marketed benefits
- Apply extended cost-benefit and cost-effectiveness analysis tools

W2. Invest revenues from resource extraction into creation of new assets and incomes

- Reallocate revenues from extractive or resource-depleting harvests
- Plan and invest at national, regional, local, and micro levels

W3. Create frameworks and incentives to improve alignment of public and private interests

- Encourage an enabling environment
- Internalize costs of pollution, water, carbon, biodiversity, and other environmental services
- Promote NRM solutions that make financial sense and foster economic opportunity
- Develop systems of conditional payments for ecosystem services (PES)

W4. Strengthen markets and the role of rural producers in competitive but non-extractive natural resource value chains

- Focus on changing tomorrow's economy
- Emphasize transparency and financial sustainability
- Promote establishment of robust rural producer groups and federations
- Create systems that facilitate market participation
- Promote local value added and processing
- Help build competitive rural markets and value chains
- Promote and/or facilitate joint ventures
- Promote and fund local credit schemes

W5. Plan for the equitable and efficient distribution of costs and meaningful benefits

- Ensure coverage of transaction and opportunity costs
- Aim for meaningful incremental benefits to stimulate permanent behavior change
- Plan early for the equitable distribution of costs and benefits
- Support resilient income-assurance strategies

POWER Principles and Actions

P1. Strengthen inclusive rural land and natural resource tenure systems, and procedural rights

- Encourage and protect clear resource tenure and property rights systems for smallholders
- Plan for how changing production requirements interact with land tenure systems
- Foster clear, stable, legitimate and democratic common property management
- Assure that rights include the basic procedural rights of access to information, decision making, and recourse
- Promote understanding of procedural and property rights
- Assure rights of association, speech, movement, and access to government institutions
- Strengthen natural resource legislation and implementing regulations

P2. Decentralize powers and responsibilities to representative and accountable authorities

- Transfer discretionary decisions before or along with obligations
- Encourage experiments with transfer of power and responsibility.
- Make transfers of rights secure
- Transfer powers even before capacity is demonstrated
- Shift the role of central state authorities from command and control toward technical support and legal oversight

P3. Improve broadly based representation and continuous rural input on resource decisions

- Build and strengthen independent organizations that represent rural views and establish active networks and platforms for advocacy and learning
- Encourage inclusive national-level debate to guide restructuring of natural resource governance
- Establish a holistic and integrated rural policy and legislative framework

P4. Promote simpler standards

- Make procedures simple, straightforward, and understandable
- Keep legal frameworks and organizations no more complex than necessary
- Encourage the establishment of minimum standards

P5. Integrate and empower women and marginalized groups to participate in management, decisions, and benefits

- Analyze gender roles and their impacts on rural production systems
- Assure that women and marginalized groups participate in all development activities
- Assess diversity of and mitigate marginalization in rural areas
- Apply systems approaches for socioeconomic inclusion

P6. Promote checks and balances, as well as equitable institutional relationships

- Create or modify forums for the discussion of rural issues
- Facilitate conflict management as an opportunity to learn
- Recognize and promote links between “nested enterprises”
- Help develop and enforce graduated sanctions

P7. Strengthen public and private institutions for delivery of technical and intermediary services

- Work with skilled local partners
- Help build social capital and promote cohesive communities
- Facilitate farmer-to-farmer and group approaches
- Promote new approaches to organizing knowledge support
- Strive for cost-effectiveness in service delivery

SYSTEMS Principles and Actions

S1. Promote systems approaches

- Integrate the use of the NWP principles
- Understand the holistic and dynamic nature of rural production systems and what influences them
- Practice participatory action research
- Encourage local planning

S2. Do no harm

- Resource transfers and implicit ethical messages should support productive development
- Make sure that interventions are not extractive
- Avoid “problem displacement” or leakage

S3. Enhance resilience of the ecological (N), economic (W), and sociopolitical (P) subsystems

- Encourage appropriate diversification
- Promote micro-macro and rural-urban links
- Encourage broad partnerships
- Improve abilities to address and reduce risk
- Promote early warning systems and safety nets
- Promote conflict management capabilities

S4. Use adaptive management and experiential learning

- Strengthen knowledge management and create a learning environment
- Implement monitoring and feedback systems as essential for good management and planning
- Use experiential and adult learning techniques

S5. Build capacity and strengthen institutions at all levels

- Enhance local technical knowledge and capacity
- Build business skills, especially of local resource managers
- Provide legal support to weak local institutions and federations, if necessary, and increase knowledge of rights and responsibilities
- Emphasize organizational learning and development, build strong community-based organizations and local leadership

ANNEX 2.

TOWARD AN NWP TOOLBOX

There is no “NWP Toolbox” yet. Some tools for specific applications were developed by the *TransLinks* program (*Promoting Transformation by Linking Nature, Wealth, and Power*) (<http://rmpportal.net/library/content/translinks/tools>), for example planning for a PES system, assessing and marketing new natural products, social & biodiversity impact assessment for REDD+ projects. In addition, a number of other tools are already available that are more or less appropriate for NWP. Although it is difficult to come up with specific criteria for what constitutes an “appropriate NWP tool,” the following definition might be helpful:

An “NWP tool” is a methodology for the analysis, design, implementation, or evaluation of rural development that, while it may concentrate on a particular dimension of NWP, recognizes that the other dimensions are needed for success. An “NWP tool” encourages systems thinking, integrated implementation, and explicit consideration of the NWP dimensions.

Specific tools need to be used within the broader context of the NWP Framework. The use of a specific tool without the broader context may in fact be counterproductive in the long run. This may have been the case, for example, in the past, where technical tools were used to increase productivity without taking into account markets or tenure.

With this in mind we have tried to develop a (non-comprehensive and non-tested – caveat emptor!) list of tools that seem promising for an NWP approach and from an NWP perspective. More work will eventually have to be done on this “toolbox.” These tools come from a variety of sources, regions, projects, programs, and activities.

We have organized the tools into four categories: Nature, Wealth, Power, and Cross-Cutting. Clearly, in some cases, **several tools would have to be used in combination** to represent an integrated NWP approach. Guidance for this is beyond the scope of this paper, but USAID anticipates further work on development of the NWP Toolbox and guidance on its use.

Nature Tools

Tool	Description and reference where available
Wula Nafaa – approaches for community-based forest management plans and conventions	Simplified management plans and local conventions for use at the local level: http://senegal.usaid.gov/en/node/137
U.S. Forest Service – guidance and development materials for forest inventory and planning	Very technical; may not be suited to the developing world: http://srsfia2.fs.fed.us/program_information/June%202013 – The%20Inventory.pdf FIA Library: Field Guides, Methods, and Procedures: www.fia.fs.fed.us/library/field-guides-methods-proc/
Watershed management	www.fs.fed.us/publications/watershed/ Watershed Condition Framework: http://www.fs.fed.us/publications/watershed/Watershed_Condition_Framework.pdf Watershed Classification Guide: http://www.fs.fed.us/publications/watershed/watershed_classification_guide.pdf
Livestock Management for Rangeland Restoration	Volkman, Wiebke, Colin Nott, Ekkehard Kuelbs, Judith Isele, Sally Wood, Anna Davis, et al. 2011. <i>Community-Based Rangeland and Livestock Management Reader: New Possibilities for Restoring Grassland and Prosperity to Rural Areas Ministry of Agriculture, Water and Forestry, 2nd Edition</i> . Oshakati, Namibia: GOPA Worldwide Consultants. http://rmportal.net/news/news-usaid-rmp-featured-stories/art-featured-stories-folder/community-based-rangeland-livestock-management-reader-2nd-edition/view

Wealth Tools

Tool	Description and reference where available
The Conservation Marketing Equation: A Manual for Conservation and Development Professionals – Ann Koontz, EnterpriseWorks/VITA (Available in English and Arabic)	The Conservation Marketing Equation manual is designed as a decision support tool to be used by an individual or project team whose goal is to better understand product development and marketing that promotes conservation and social equity. As a decision support tool, the manual is intended to assist conservation and development professionals in choosing business opportunities (products or services) that conserve biodiversity while reducing poverty for marginalized rural people. www.enterpriseworks.org/display.cfm?id=5&sub=23&cont=46 or http://rmportal.net/library/content/translinks/translinks-2008/enterpriseworks-vita-relief-international/ConservationMarketingEquation_Manual_EWV_2008.pdf/view http://rmportal.net/library/content/translinks/2011/enterpriseworks-vita-relief-international/the-conservation-marketing-equation-a-manual-for-conservation-and-development-professionals-arabic/view

Tool	Description and reference where available
<p><i>Payments for Ecosystem Services: Getting Started, A Primer</i> – Forest Trends, the Katoomba Group, and United Nations Environment Programme</p> <p>(Available in English, Spanish, Portuguese, and Vietnamese)</p>	<p>This primer forms part of the activities implemented within the Global Strategy for the Millennium Ecosystem Assessment Follow-Up and offers a starting point from which to assess the potential for payments for environmental services in specific communities around the world. Specifically, this primer describes the opportunities and risks of PES schemes for rural community residents in order to enable accurate feasibility assessments for applying these new market-based mechanisms, steps to developing PES projects, and resources for additional reference and reading.</p> <p>www.unep.org/publications/search/pub_details_s.asp?ID=3996 or http://rmportal.net/library/content/translinks/translinks-2008/forest-trends/PESPrimer_Report_KatoombaForestTrends_2008.pdf/view</p>
<p>Wildlife-Friendly™ Enterprise Certification System</p>	<p><i>What Does Wildlife Friendly Do?</i> (Video): www.wildlifefriendly.org</p> <p>Conservation Certification and Product Branding: The Case of Wildlife Friendly Certification: http://rmportal.net/library/content/translinks/translinks-2010/wildlife-conservation-society/eco-labeling-and-market-based-financing-of-wildlife-conservation/view</p>
<p><i>Payments for Ecosystem Services: Getting Started in Marine and Coastal Ecosystems, A Primer</i> – Forest Trends and the Katoomba Group</p> <p>(Available in English, Spanish)</p>	<p>A manual compiled by Forest Trend and the Katoomba Group explaining what payments for ecosystem services are and how PES deals work in the marine environment. The primer is divided into three sections: the first reviews basic PES concepts, the second section details a step-by-step approach to developing “marine PES deals,” and the third section outlines opportunities, risks, and ideal conditions for poverty reduction.</p> <p>www.forest-trends.org/publication_details.php?publicationID=2374 or http://rmportal.net/library/content/translinks/translinks-2010/forest-trends/Manual_MarinePESPrimer.pdf/view</p>
<p><i>WCS REDD Project Development Guide</i> – Wildlife Conservation Society</p> <p>Available in English, French, and Portuguese:</p>	<p>This document provides guidance on key questions to ask when assessing the feasibility of developing a REDD project and key steps for developing a successful REDD project. It draws on information presented at a REDD workshop hosted by the TransLinks program of the Wildlife Conservation Society in Lima, Peru, September 10–12, 2008.</p> <p>http://rmportal.net/library/content/translinks/translinks-2009/wildlife-conservation-society/manual_reddprojectdevelopmentguide.pdf/view</p>
<p><i>Social and Biodiversity Impact Analysis of REDD Manuals</i> (by CCBA, Forest Trends, Fauna & Flora International, Rainforest Alliance)</p> <p>(Parts available in English, French, Spanish)</p>	<p>Publication details and two locations for its download: www.forest-trends.org/publication_details.php?publicationID=2981 or http://rmportal.net/library/content/translinks/2011/forest-trends/social-and-biodiversity-impact-assessment-sbia-manual-for-redd-projects-part-1-version-2-2013-core-guidance-for-project-proponents/view</p>

Tool	Description and reference where available
<i>The Threshold of Sustainability for Tourism within Protected Areas: A Quick Guide for Protected Area Practitioners</i> – The Nature Conservancy (Available in English, Spanish, French)	The <i>Quick Guide</i> , in the style of the series under the Programme of Work on Protected Areas of the Convention on Biological Diversity, introduces a tourism management framework called the “threshold of sustainability.” It is designed to enable managers to take rapid action to mitigate the most critical threats related to tourism, while beginning to lay a solid financial foundation for tourism within protected areas. http://rmportal.net/library/collections/gsta/tncs-threshold-of-sustainability-a-quick-guide-english-l/view
<i>Sustainable Tourism Online Learning Program</i> – Global Sustainable Tourism Alliance	A set of nine online modules developed to help better understand how tourism can be developed sustainably. Topics covered include achieving sustainable goals, tourism project development, destination management, etc. http://lms.rmportal.net/course/category.php?id=48
<i>Empowering Municipalities Through Local Economic Development (EM-LED) Project (also known as the Baladiyat Program)</i> – Cluster Development Plan Overview – Relief International and International Resources Group	The Cluster Development Plan is a tool for engaging local partners in planning and implementing local economic development. They are intended to catalyze analysis and action and help build a strategic, holistic vision for local subsector development (e.g., olive oil, tourism, dairy, non-timber forest products). The plans are framed as “action-research,” combining consultations, planning, action, reflection, and expansion. www.ebaladiyat.com/en/Default.aspx?pageid=221
<i>Integrating Very Poor Producers into Value Chains: Field Guide</i> – World Vision and FHI360	Intended to provide the field-level practitioner with tools and applications to reach very poor households. The intended outcome is to have greater market engagement for very poor households through enterprise development activities. http://microlinks.kdid.org/library/integrating-very-poor-producers-value-chains-field-guide
Forest Connect – International Institute for Environment and Development (IIED)	IIED formed the international network Forest Connect to support sustainable small forest enterprises to prevent deforestation, etc. www.iied.org/forest-connect

Power Tools

Tool	Description and reference where available
<i>Conflict Assessment Framework</i> – USAID	This document describes the revised conflict assessment framework (CAF 2.0), which was developed and applied by the Conflict Management and Mitigation office in support of its technical leadership agenda. Its purpose is to inform USAID staff and development partners who will be undertaking and using conflict assessments in the course of their work.
<i>Conducting a DG Assessment: A Framework for Strategy Development</i> – USAID	This document provides a framework for constructing donor – in particular USAID – democracy and governance (DG) strategies. The framework guides a political analysis of the country, leads to program choices, and incorporates what researchers and practitioners have learned from comparative experience. http://dg.usaidallnet.gov/dgpubs/document_details.php?document_key=1040
<i>Land Tenure, Property Rights, and Resource Governance</i> – USAID	This portal has its own set of practical tools for analysis, intervention sequencing, addressing gender, conflict environments, etc. http://usaidlandtenure.net

Tool	Description and reference where available
<p><i>How to Guide to Conflict Sensitivity – Conflict Sensitivity Consortium</i></p>	<p>This “how-to” guide draws on consortium experience to illustrate real examples of applying conflict sensitivity. It aims to provide practical advice suitable for anyone aiming to improve conflict sensitivity, whether in the field of development, humanitarian aid, or peace-building work. It aims to provide practical, user-friendly information for people who are focusing at project or organization wide level, whether aiming for best practice or just starting out on the journey toward conflict sensitivity.</p> <p>www.conflictsensitivity.org/content/how-guide</p>
<p><i>The Do No Harm Handbook (The Framework for Analyzing the Impact of Assistance on Conflict) – Collaborative for Development Action, Inc.</i></p>	<p>This framework provides a tool for mapping the interactions of assistance and conflict and can be used to plan, monitor, and evaluate both humanitarian and development assistance programs. It is a descriptive tool that (1) identifies the categories of information that have been found through experience to be important for understanding how assistance affects conflict, (2) organizes these categories into a visual layout that highlights their actual and potential relationships, and (3) helps us predict the impacts of different programming decisions.</p> <p>http://www.phibetaiota.net/2013/07/handbook-the-do-no-harm-handbook-the-framework-for-analyzing-the-impact-of-assistance-on-conflict/</p>
<p><i>BRIDGE & Gender Mainstreaming A Guide for Program Staff – Mercy Corps</i></p>	<p>Section I: “Gender Mainstreaming – Key Concepts” highlights key gender terms and concepts and provides a framework for the integration of gender into the various stages of the program cycle. Section II – “Gender Checklists in BRIDGE Program Areas” is organized according to sector or program area and provides practical guidance for gender mainstreaming. Each checklist highlights the main “gender issues” in the sector, the potential gender dimension in the area of operation, guiding questions, and possible entry points to address these issues.</p> <p>www.mercycorps.org/fordevelopmentprofessionals/bridgeampgendermainstreamingguide/23235</p>
<p><i>Memory Checks for Programme and Project: Household Food Security and Gender – International Fund for Agricultural Development</i></p>	<p>This document is broken down into two main sections: “Part I – The Basics” is for all team members and project staff to read and use. It contains the “Summary of Issues to Address in Design,” a set of questions related to household food security and gender that need to be answered in designing a project, program, or activity. Part 2 contains six “thematic reminders,” reference materials to be used selectively by different team members according to their areas of specialization.</p> <p>www.ifad.org/pub/memory/e/mem.htm</p>
<p><i>Gender and Land Rights Database – FAO of the United Nations</i></p>	<p>This online database provides easy access to up-to-date information on gender and land rights. Users can view full country reports, search by topic, or do a comparative analysis of gender and land rights for two or more countries.</p> <p>www.fao.org/gender/landrights/en/</p>
<p><i>Power, Politics, and Change: How International Actors Assess Local Context – International Peace Institute</i></p>	<p>The International Peace Institute undertook a project called <i>Understanding Local Context</i> that aims to evaluate the conceptual frameworks, processes, and uses of assessment tools developed by major multilateral and bilateral actors in order to inform work in conflict-affected and otherwise fragile environments. This report presents findings and general observations from the first phase of <i>Understanding Local Context</i>.</p> <p>www.ipinst.org/publication/policy-papers/detail/294-power-politics-and-change-how-international-actors-assess-local-context.html</p>

Tool	Description and reference where available
<p><i>Assessment of Co-Management Organizations (CMOs) – Integrated Protected Area Co-Management (IPAC) Project</i></p>	<p>This report is the first addressing IPAC Performance Indicator 21 “Number of protected area management units with improved performance and capacity for co-management,” but is also intended to have a wider use in guiding IPAC team members in the sites in their work to strengthen the capacity of CMOs to ensure they sustain themselves in the long term and also to give feedback to the respective CMOs and encourage self-assessment and peer pressure.</p> <p>http://srsfia2.fs.fed.us/program_information/June%202013 – The%20Inventory.pdf</p>
<p>Power Tools: for Policy Influence in Natural Resource Management – “Stakeholder Power Analysis,” “Legal literacy camps,” etc.</p>	<p>Power Tools provides “how-to” ideas that marginalized people and their allies can use to have a greater positive influence on natural resources policy. This website presents:</p> <p>26 power tools based on experience from around the world – Start on the Guide to the Tools page.</p> <p>Discussion of power tools in theory and practice – See the “What is a Power Tool?” and the “Strengths and Limits of Tools in Practice” pages, plus individual tools.</p> <p>Related research on policy tools in action – Look at “Related Research” pages</p> <p>A directory of the many other websites that contain policy tool resources – Consult “Directory of Tools Links” page.</p> <p>www.policy-powertools.org</p>
<p><i>EITI Results Framework – Extractive Industries Transparency Initiative</i></p>	<p>the global extractive industries transparency initiative (eiti), established in 2003, promotes and supports improved governance in resource-rich countries through the full publication and verification of company payments and government revenues from oil, gas, and mining. monitoring and evaluating the results and impact of an eiti program is an important way of ensuring that the adopted eiti program stays on track and ultimately begins to deliver the expected outcomes. this results framework is intended to help eiti countries to measure results and outcomes of eiti programs over time, using agreed performance indicators.</p> <p>http://web.worldbank.org/wbsite/external/topics/extogmcl_extextindtraini/0,,contentmdk:21753706~menupk:4974076~pagepk:64168445~pipk:64168309~thesitepk:3634715,00.html</p>
<p><i>SCAPES Governance Assessment Tool (presented at CBNRM Workshop, Washington DC, Jan. 2013.)</i></p>	<p>Guidelines for Assessing the Strengths and Weaknesses of Natural Resource Governance in Landscapes and Seascapes.</p> <p>www.frameweb.org/scapesgovtool.htm</p>

ANNEX 3.

DETAILED CASE STUDIES

Annex 3.1 Country Level Transformation from the Grass Roots in Nepal

Annex 3.2 Landscape Level Improvements in the Sahel

Annex 3.3 Resilient Natural Resource-Based Development in Namibia

Annex 3.4 Co-Management of Forests and Wetlands for More Inclusive Development in Bangladesh

ANNEX 3.1

COUNTRY LEVEL TRANSFORMATION FROM THE GRASS ROOTS IN NEPAL

Overview

Nepal is a small landlocked country in Asia with a surface area of 147,818 km² and a population of about 24 million. Nepal's total forest area of 5.8 million hectares is distributed across three major geographic regions: the mountains, mid-hills, and plains (Terai). Its forest ecosystems vary with altitude, which ranges from near sea level in the Terai to the highest point on earth – Mount Everest. The high-altitude mountains have alpine and temperate forests, while broadleaf species are prevalent in the mid-hills, and tropical and subtropical forests dominate the Terai. Overall, the mid-hills represent about 48% of Nepal's forest area; the Terai accounts for nearly 25%; and the rest is distributed across the high mountains of the Himalayas.

Nepal's forests are broadly divided by ownership into national and private forests. Government forests are further divided on the basis of management objectives and management rights into (1) government-managed, (2) community, (3) leasehold, (4) religious, and (5) protected forests. Local communities or user groups manage community, leasehold, and religious forests; whereas government agencies directly administer government-managed and protected forests.

The forestry sector in Nepal is often touted as an example of Community Based [Natural Resource *or* Forest] Management (CBNRM *or* CBFM), as the Government of Nepal adopted a community forestry approach starting in the 1970s to address serious forest degradation. Since then, community forestry has evolved into one of the major components of Nepal's forest development strategy. Over 17,000 local community forest user groups (CFUGs) restore and conserve the forests with support from the government and donor agencies. Although pre-dating NWP1, the development of CBNRM in Nepal's forestry sector used many NWP principles, as discussed below. There appears to be a major difference in the success of community forestry in the hills and mountains (~75% of Nepal's remaining forests), compared to the plains (~25%).

NWP Principles Used in Community Forestry in Nepal

Strengthening procedural rights for rural people

The community forestry concept has been institutionalized through the Forest Act (1993), Forest Regulations (1995), and Forestry Sector Policy (2000). These legal instruments have legitimized the concept of the CFUG as an independent, autonomous, and self-governing institution; with the responsibility to protect, manage, and use any patch of national forest with a defined forest boundary and user group membership (see **Table 3.1.1**).

The legislative reforms set forth relatively clear and transparent guidelines for creating CFUGs. They are formed democratically and registered at the district forest office (DFO). CFUGs, as well as leasehold groups, work with the DFO to create an operational plan that defines the rights of the users to a particular forest, and

the distribution of benefits. Only when the DFO approves the operational plan are forest management rights granted to the CFUG or leaseholders.

Promoting local land-use planning and appropriate resource tenure

The operational plan is an important tool used in both community and leasehold forestry. It describes the rights and responsibilities of the users, and the harvesting and management plan for forests. For management purposes, forests are divided into four to eight blocks, and management activities are planned accordingly. The plan specifically describes what can be collected and harvested and when; how the users contribute; how benefits are distributed; and specific management prescriptions such as protection, thinning, weeding, and planting.

Appropriate distribution of environmental authority and functions

Community forestry policies represented a significant policy shift in Nepal’s forest management away from centralized, revenue-oriented forest management, toward decentralized management intended to reduce poverty and fulfill the needs of the local community, while sustaining the forest resources. To incorporate community forestry into Nepal’s forestry sector, the government forestry authority had to refashion itself to be a facilitator of community institutions, instead of its traditional policing role. The role of DFOs was expanded to work with local CFUGs and make decisions about granting management rights to user groups. Prior legislation hindered CFUG creation because approval at the national level was required (Table 3.1.1).

Table 3.1.1. CFUG Rights per the Forest Act (1993) and Forest Regulations (1995)

1. Right to Self-Governance
Communities have rights to form a community forest user group (CFUG) as per their willingness, capacity, and customary rights.
Community forest boundaries will not be restricted to existing administrative or political boundaries.
Government can dismantle the CFUG if the latter is found to engage in large scale deforestation, but it is the duty of the government to econstitute the CFUG.
CFUGs can elect, select or change their executive committee membership anytime.
CFUGs can punish members who break their rules.
CFUGs can amend or revise their constitution anytime.
2. Right to Forest Management and Utilization
There is no limit to the forest area that can be handed over to communities.
CFUGs can make optimal use of their forest by growing cash crops together with forest crops.
CFUGs can mortgage their standing forest products with financial institutions to obtain loans.
CFUGs can utilize their funds for any purpose (but 25% of income from forest must be spent in forest development)
CFUGs can freely fix prices and market their forest produce
CFUGs can establish enterprises and make profits
CFUGs can seek support from any organization
CFUGs can raise funds by various forestry and non-forestry means with all income going to group funds with no requirement for sharing financial revenues with government.
CFUGs can invest in areas, persons or development activities according to the decision of CFUG assembly.

Source: Excerpted from Table 2 in Pokharel et al. (2009): p. 8.

Investing in rural organizations as long-term building blocks of rural development, and building capacity and investing in human resources

Community forestry legislation encourages communities to organize democratically and empowers CFUGs to raise money from forest management, which is then reinvested for community development and forest rehabilitation. CFUG revenues come from a variety of sources, including fees collected from members or outsiders in exchange for permission to collect forest products. An important tool in community forestry legislation is the stipulation that **25% of CFUG revenues must be reinvested into rehabilitating their forests**, while surplus funds may be used for any kind of community development work. This policy simultaneously improves nature (forest quality), and wealth (especially the livelihoods of community members). Significant efforts have been made in the past 30 years to strengthen the capacity of stakeholders at all levels, especially the CFUGs. Management, governance, and technical training have been provided.

Local resource users and managers have secure access to the means of production and the benefits of their NRM investment

The long-term commitment of the government to handing over forest management rights to CFUGs and leasehold groups instills a sense of ownership, and encourages groups to plan for the future and invest in their forests. CFUGs are granted management rights to community forests for periods of five years, extendable indefinitely for periods of an additional five to 10 years, with satisfactory performance. Individual members benefit from secure access to forest products, which are allocated according to agreed-on specifications in the group's operational plan.

Provisions for leasehold forestry have also led to a strong sense of ownership and security of access to forest products. Leasehold forestry specifically targets the poorest and marginal households, with the intention of raising incomes and improving living conditions, while restoring degraded forests. Small leasehold groups, with memberships ranging from five to 20 households, have exclusive management rights over three to 20 ha of forest, for a 40-year lease period, with the potential for another 40-year extension.

Improving rural representation, facilitating organizational development, and amplifying rural voices in public decision making

Today, community forestry is the second largest forest management regime after government-managed forest. According to Nepal's Department of Forests, about 35% of Nepal's population is involved in community forestry management. To date, **17,685 CFUGs** have been formed. Management rights to 1,652,654 ha of national forests – roughly 25% of potential forest areas – have been handed over to CFUGs, and 2,177,858 households have benefited.¹¹⁹ **Table 3.1.2** provides a glimpse of progress on inclusion of disadvantaged groups in CFUG management.

Although user groups play an important role in managing forests, they have also been central to promoting inclusion and grassroots democracy, throughout Nepal. This aspect was given a boost in the 1990s, with the formation of a network of user groups established to represent local interests at the national level. The Federation of Community Forestry Users (FECOFUN) is a nationwide network that emerged as a key player in forest-sector policy debates, and brought civil-society perspectives into the policy-making process that were previously overlooked and unheard.

¹¹⁹ <http://dof.gov.np/division/community-forest-division/community-forestry>

Table 3.1.2. Representation of Ethnic People in Executive Committees of CFUGs

Caste/Ethnicity	% of national population	% of CFUG representation in 2003	% of CFUG representation in 2008
Dalits	12.3 ^a	6	12
Ethnic minorities	29.9 ^b	32	44
Muslims	3.6	0	1
Women		21	36
Poor		31	52

Source: Ojha, Persha, and Chhatre (2009). Note: a. Chapagain, Subedi, and Rana (2009); b. Gurung (1996); CBS (Central Bureau of Statistics 2002).

Impacts on Nature, Wealth, and Power

Impacts on Nature

Slowing of forest degradation

National level, long-term, and updated data on the state of Nepal's forests is not available. The rate of overall forest area decrease was about 1.7% a year from 1978 to 1994. A more recent study from 20 Terai districts revealed that forest area was decreasing at a significantly slower annual rate of 0.06%, between 1990 and 2000.¹²⁰ **Figure 3.1.1** gives an anecdotal sense of the evolution of forest cover in one 150 km² area in the mid-hill Dolakha District of northeastern Nepal, between 1990 and 2010.

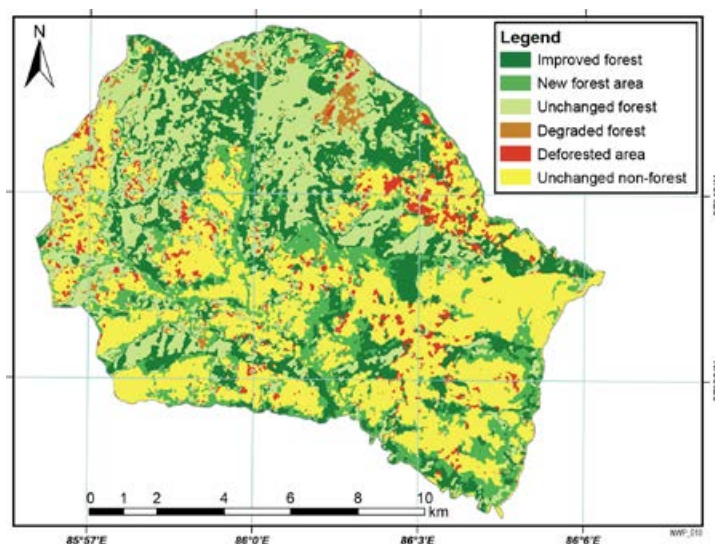


Figure 3.1.1. Forest cover change in Bhimeshwar cluster between 1990 and 2010.

Source: Carter, Pokharel, and Parajuli, 2011.

Improved forest coverage in community forestry areas

However, case study evidence suggests that effective community management, particularly in the mid-hills region, has generally increased forest cover and quality in community forests. Macro-level studies and visual

¹²⁰ Kandel (2010).

interpretations suggest that Nepal's forest coverage and condition is significantly improving in community forests; whereas national forests have noticeably degraded.¹²¹ Pokharel, Mahat, and Byrne state, "There are many case studies that show that community based local institutions are the most effective vehicle for reversing the rate of deforestation and degradation. However, a comprehensive study to analyze the causal relationship between community based institutions and forest cover change is necessary."¹²² **Figure 3.1.2** shows the improvement in forest cover at one hill site between 1989 and 2010.

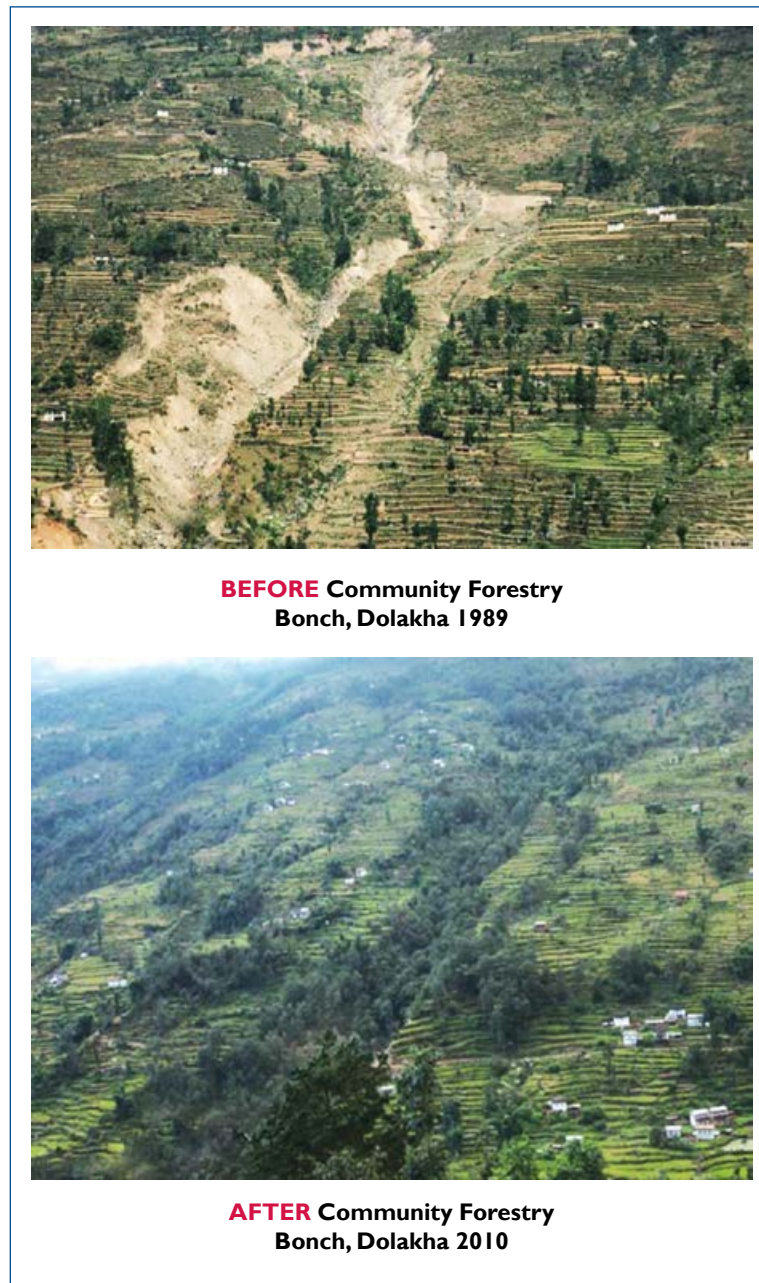


Figure 3.1.2. Comparison of the mountains and forest of the Boncha, Dolakha area of Nepal before (1989) and after (2010) implementation of community forestry

Source: Carter, Pokharel, and Parajuli, 2011.

¹²¹ Carter, Pokharel, and Parajuli (2011).

¹²² Pokharel, Mahat, and Byrne (n.d.), PowerPoint presentation, slide 37.

Impacts on Wealth

Secure access to forest products

Nepal is predominantly an agrarian society. Forestry is an integral part of agriculture and rural livelihoods, and fuel wood is the principal source of rural energy. Nontimber forest products (NTFPs) have become a source of income for rural poor,¹²³ medicine for primary health care, and revenue for the government. Community and leasehold forestry provide users with an enhanced supply of wild edibles used by the poor, increased availability of forest products to farmers, and more reliable product supply.

Increased household incomes

Community and leasehold forestry account for improvements in livelihoods through increased employment opportunities. Households are able to diversify their livelihood strategy more than before, by undertaking forest-based income-generating activities.¹²⁴ A study of one CFUG found that forestry products from community forestry accounted for 20%–25% of mean household income for 50 households surveyed, regardless of wealth class. That equated to an annual community forestry–based income ranging from Nepal rupees (NR) 20,496 (\$265) in the wealthiest households to NR11,815 (\$152) in the poorest households, where forest products accounted for a 6% greater contribution to overall income than earnings from agriculture and livestock.¹²⁵ See **Table 3.1.3** for additional data on changes in well-being.

Table 3.1.3. Changes in well-being status for 2,700 households from 26 CFUGs in the Koshi Hills, Nepal (2002-2008)

Caste	No change			Positive Change			Negative Change		
	VP-VP	P-P	Oth-Oth	VP-P	VP-Oth	P-Oth	P-VP	Oth-P	Oth-VP
Dalit	58%	43%	100%	29%	13%	51%	6%	0%	0%
Ethnic minorities	53%	67%	100%	36%	11%	32%	1%	0%	0%
Advantaged castes	55%	59%	100%	36%	7%	39%	1%	0%	0%
Total	56%	61%	100%	35%	9%	37%	1%	0%	0%

Note: VP=Very poor, P=Poor, Oth=Others. Source: Chapagain and Banjade (2009).

Interpretation: All well-off people (“Other”) remained well-off. Some Poor-but-Advantaged Caste members improved while none were hurt. More than half of disadvantaged group members stayed within their category of poverty, but over a third did improve, while only a small number got poorer.

Sustainable community organizations

CFUGs in Nepal are becoming more self-sufficient in that they are able to cover the majority of their costs from their forest income. Since community forestry began about 30 years ago, the level of donor and government contributions has decreased; whereas involvement of NGOs and user group networks has expanded. On average, user groups currently cover a little more than 70% of their own operation costs, while donors and government contribute about 15% each – indicating that sustainability is not yet achieved.

¹²³ See *TransLinks* video at: <http://rmportal.net/library/content/translinks>; *Wildlife Friendly™ Enterprise* brochure of Himalayan Bio Trade, http://rmportal.net/library/content/translinks/translinks-2009/wildlife-conservation-society/brochure_wfenhimalayanbiotradepvtltd.pdf/view; and PES/REDD+ project development case study for Dolakha (De Gryze & Durschinger (2009) http://rmportal.net/library/content/translinks/translinks-2009/enterprise-works-vita-relief-international/casestudy_forestcarbonprojectsnepal.pdf/view.

¹²⁴ Ojha, Persha, and Chhatre (2009).

¹²⁵ Ojha, Persha, and Chhatre (2009).

CFUG incomes are derived from the sale of forest products, membership fees, and fines from rule violators, but annual incomes vary widely. CFUGs in the Terai earn the most on average (NR90,500 or \$1,169, $n=916$), followed by those in the middle hills (NR9,100 or \$118, $n=9,353$), and the mountains (NR4,100 or \$53, $n=2,456$). Generated income is primarily used for maintaining the community forests, strengthening the CFUG's institutional capacity, and the remaining balance is accumulated in the CFUG's fund, which is used for community development projects. Community investments have included improving irrigation canals, expanding water-distribution systems, supplementing teacher's salaries, providing small loans for community members, and building schools or other public buildings.

Impacts on Power

Increased community rights to forest management

With the advent of community-based forestry, CFUGs have become effective and powerful institutions for the conservation and management of national forests. From the early 1990s through 2003 the number of user groups grew from a few hundred to about 13,000. Today there are over 17,000. Although user groups play an important role in managing forests, they have also been central to promoting social inclusion and grassroots democracy throughout Nepal. In the most successful cases, community forestry has contributed to increasing self-governance skills and democratic processes of community-based groups. Political changes since the 1970s have allowed local people to claim rights over forests as active political agents, rather than as passive recipients of government services.

Increased political representation of forest users

FECOFUN is a formal network of CFUGs from all over Nepal. FECOFUN works to link CFUGs in order to strengthen the role of users in policy-making. Since its inception in July 1995, FECOFUN has grown into a social movement representing about 8.5 million people. The organization is working to support CFUGs and address some of the inequality and under-representation issues, including of women, within some CFUGs.

FECOFUN has launched advocacy campaigns to pressure the government to implement community forestry policy as well as lobbying campaigns with political leaders and NGOs. FECOFUN has opposed previous attempts made by the government to restrict the rights and responsibilities of forest users, built alliances with forestry field projects and international NGOs, and provided networking and support to CFUGs.

Additionally, FECOFUN has instituted gender representation requirements, mandating that women hold 50% of key CFUG committee positions. Women actually comprise about 25 percent of executive committee positions within CFUGs.¹²⁶ However, women are still not equally represented. Although not always perfect in application, the organization has contributed to the establishment of gender norms in the context of community forestry. Women are included on committees, and some CFUGs have even created all-women committees. One small study of the minutes of assemblies and meetings of CFUGs indicated that women's representation on their executive committees increased from 16% at formation to 36% by 2008.¹²⁷ However, the degree to which this shows gender participation and representation, and national level progress remains unclear.

¹²⁶ Ojha, Persha, and Chhatre (2009).

¹²⁷ Luintel and Timsina (2008).

Impact on other Programming

CFUGs provide the strongest entry point for development service providers in a range of sectors. They are one of the most stable institutions in rural areas. During times of political instability, they have often offered the only local form of democratic governance. Particularly in rural areas, they are the institutions most capable of facilitating food security and climate change initiatives, at local levels.

Agriculture and food security

Community forestry began primarily as a means for forest conservation and rehabilitation. However, there has been an increasing demand for adapting community forestry to better address community needs and livelihoods while restoring forest area. Forests contribute to food security by providing grazing land for livestock and access to forest edibles. Agriculture and food security programs can (1) use the local capacity

and organization of CFUGs as a platform for reaching rural communities and (2) incorporate food security into CFUG priorities by encouraging forestry programs to focus more on pro-poor, livelihood development strategies.

According to USAID/Nepal's Feed the Future's plan, its programming uses the platform of community forestry to foster biodiversity conservation through management planning and zoning practices within community forests; sustainable, certified NTFP production and value-added processing; and policy advocacy. It focuses on reducing poverty by allocating leasehold forestry plots to poor families to enable them to increase income from forest products and livestock. This program holds great potential for addressing the related problems of environmental management, food security, and income generation for poor and disadvantaged groups.

Climate change

Nepal serves as a model for how community forestry could provide the foundation for linking climate change mitigation and adaptation efforts. Nepal was selected in 2011 to participate in the first phase of the UN Reduced Emissions from Deforestation and Forest Degradation (REDD+) project, based on its success with community forestry. In the CFUG structure, local resource agents facilitate forestry activities and relevant training. The implementation framework for Nepal's climate change program engages these same individuals to provide community-level support and awareness building on REDD+ readiness and implementation.

However, the role of forests in climate change mitigation through REDD+ could lead to a reduction in the sustainable harvest of forest products by local users, and ultimately a reduction in their incomes. Some forest users are suspicious that REDD+ may lead to attempts to recentralize forest control. It is, therefore, important to plan climate change programming so that it strengthens community rights to forests and increases the benefits that accrue from them.

Challenges and Shortcomings – TERA I CFUG Context

The results of community forestry in Nepal vary widely. The success of CFUGs in the mid-hills region is contrasted by little success in the Terai. In sum, four important differences appear to explain the poorer results of the CFUG strategy in the Terai:

- (1) large size and heterogeneity of user groups,
- (2) accessibility of forests,

(3) value of forest resources, and

(4) focus of community forestry on conservation sometimes hinders wealth-creation opportunities.

The mountain and hill regions are characterized by isolation, small and homogeneous CFUGs, and lower-value forests. Community forestry policy is inconsistently implemented in the Terai due to conflicts among communities, political parties, and government agencies. Additionally, the predominance of hardwood species, easy access, and ready cross-border markets make the commercial value of Terai forests high.

(1) Size

CFUGs in the Terai average of 3.6 times the membership of hill CFUGs.

(2) Accessibility

In many cases, selection of forest user group members has been based on residency within a political boundary and proximity to the forest in question. Yet, throughout Nepal, traditional users have not necessarily resided near the forests they use. The proximity to forests criteria for selecting CFUGs has excluded marginalized traditional users, primarily ethnic minorities who live in the southern part of the region, while including recent settlers. This has resulted in conflict when traditional users try to obtain products from their forests. In the Terai, most members of CFUGs tend to be well-off villagers (predominantly hill migrants). They are more active and better informed about community forests, and are the first to gain control over and monopolize use of community forests.

(3a) Refusal to turn over high-value forests to communities creates conflict

The high value of some timber species in the Terai means that opportunity costs associated with maintaining forests in the Terai are higher than in other parts of the country. The high values encourage external interests, as well as those of the community elites. These external interests become barriers to effective community forestry management practices in the region. In some instances, DFOs have denied approval of Terai CFUG operational plans to prevent community forestry management in high-value forests. The government has ordered a number of logging bans, which curbs CFUG decision-making rights and imposes taxes on logging incomes.

(3b) Hijacking by elites of CFUGs and revenues from profitable forests undermines legitimacy and equity of distribution of benefits

Although the forest sector policy has tried to define accessibility to forests and to their products by linking access with collectively recognized traditional use rights, the policy has failed to define clear criteria and indicators. This has caused problems of exclusion and hijacking of control of CFUGs by elites, particularly in the large, culturally heterogeneous CFUGs of the Terai.

In principle, the CFUG's general assembly directs or guides the executive committee in running the forests, and should evaluate and monitor the committee's work. In practice, the executive committee often controls the user group and mandates the ways forests are used without considering the true needs of the users.

(4) **Focus of community forestry on conservation hinders wealth-creation opportunities**

The strict regulations imposed by community forestry operational management plans, in the Terai (see 3a), can impinge on livelihoods and may disproportionately affect vulnerable groups, especially if they are excluded from the decision-making process. Disadvantaged groups such as Dalits (the lowest caste, also known as untouchables) and Kamis (blacksmith class) rely heavily on forest products and are often underrepresented in Terai CFUGs. Their lack of representation and the protection focus of CFUG operation plans often mean that their forest product needs are not met.

NWP Synergies

The prevalence of CFUGs and the improvement to community forests in Nepal's hills and mountains attests to the success of incorporating many principles of NWP in NRM programs. The relationship between CFUGs and the DFOs is important to the program. Nepal's forest legislation delineated clear steps for becoming a CFUG. That, in turn, encouraged groups to organize democratically, agree on an equitable balance of conservation (nature) and household needs (wealth), and commit to an operational plan.

Community forestry in Nepal illustrates the vital importance of “getting the governance right,” or providing the poor with the rights and capacity to own and manage their natural resources. By elevating communities to the role of custodians, managers, and beneficiaries, and by supporting this effort with a strong legal and regulatory framework and robust civil-society networks, Nepal has strengthened the contribution of communities to both local development efforts and to the country's national development discourse.

Community and leasehold forestry policy, and institutional innovations also contribute to improved welfare and livelihood security in Nepal. This is through two distinct pathways: (1) directly through increased household access to forest food products, and (2) indirectly through positive impacts on household incomes, employment and entrepreneurial opportunities, livelihood diversification, and broader community development activities that are made possible through the community forestry program.

Lessons Learned for NWP and Nepal

Diverse practices should be allowed to emerge

A major concept behind CFUG success is that people's access to the forest, and their involvement in decision-making, directly affects distribution of goods and benefits and, therefore, livelihoods. However, the use and conservation of the forests is simultaneously a matter of physical change, values, power relationships, and sociocultural understandings that are specific to each location – so the policy framework must be flexible enough to be implemented in different regions and contexts.

Learning through experience is the key to success

Nepal's approach to community forestry has had decades to mature. Community forestry has evolved into a complex institutional network that requires actors to work collectively. Collaborative learning has allowed for continuous improvements in Nepal's model of community forestry.

A strong civil society network is critical to community forestry success

CFUGs and FECOFUN have played a central role in influencing the development of community forestry. FECOFUN, in particular, has safeguarded community rights and ensured the autonomy of CFUGs from regressive government actions and intrusive private interests.

Open and responsive attitudes of government officials are key to a collaborative learning process

The open and responsive attitude of government officials was partly responsible for the development of community forestry in Nepal, and was followed by the gradual development and institutionalization of a multi-stakeholder process of collaboration. Today, it has evolved into a complex governance regime for forest-dependent communities, and is no longer a single government program or foreign aid-driven activity.

Conclusions and Recommendations

With over three decades of operational innovation, legislative developments, and evolving practice, Nepal's community forestry program has demonstrated success in terms of enhancing access to forest products, improving livelihood opportunities, and strengthening local organizational capacity. However, implementation of community forestry still faces challenges of inequality, hijacking by elites of CFUG control, and underuse of forests for livelihood benefits for the poor – particularly in the Terai region.

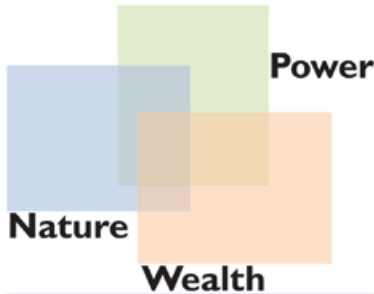
To address some of these issues, community forestry policy should continue to evolve from its protection-oriented approach toward a more need-based, intensive forest management approach that can better use production capacity of the forest and fulfill the diverse needs of the communities without degrading forest condition. This could bring more equity in the distribution of benefits within CFUGs but will require more effective extension and capacity building to enhance technical capacities.

To achieve the goals outlined by the government and FECOFUN, including reducing discrimination, will require the participation of women and other disadvantaged groups in the decision-making process. In particular, in the Terai, implementation of community forestry must enable the participation of traditional and distant users of community forests to mitigate conflict and meet the needs of all users.

Furthermore, community forestry policy needs revision to make it more flexible to contextual factors. In locations where forests continue to be central to livelihood systems, meeting the community's needs on a sustainable basis should continue to be the principal objective of community forestry management. In places where traditional forest-based subsistence livelihood systems are evolving toward commercial agriculture or other strategies, community forest management should consider using the forest as a source of income generation through commercial forestry and/or use of other forest products and services. Such services would include promoting ecotourism, carbon trading under REDD+, or charging fees to municipalities for clean water provided from community forests (PES/PWS).



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Himalayan Bio Trade Pvt. Ltd.
(www.himalayanbiotrade.com)

HBTL promotes responsible resource management that protects endangered species and maximizes benefits to the communities, while producing the highest quality natural products.

Certified Wildlife Friendly™ Products

HBTL products are sold in domestic and international markets as natural products, sustainably harvested from community managed forests and processed by community-owned enterprises. HBTL products include:

Handmade paper products: Handmade paper products are produced from wild-crafted Lokta bark, a perennial shrub that grows in the understory of the high altitude Himalayan forests. HBTL's handmade paper products include; paper sheets - both natural color and dyed; file/folders; journals/notebooks; wrapping paper; stationery; lampshades; shopping bags; boxes; and visiting cards/business cards.

Essential oils: Oils obtained by steam distillation from various plants including Abies oil, Anthopogon oil, Artemisia oil, Calamus oil, Jatamansi oil, Juniper berry, Juniper needle, Valerian oil, and Zanthoxylum oil.

Other Products: Natural fiber products, Himalayan Nettle and Hemp fiber products; Non-volatile (fixed) oils such as Butternut oil, Dhatelo oil, Seabuckthorn seed oil, and Herbs for a variety of uses including tea blends.

The products are Certified Wildlife Friendly™ and have Forest Stewardship Council (FSC) certification. International buyers include the Aveda Corporation, S&D Aroma UK, S&D Aroma India, CTM Altromerccato Italy and others.

Conservation Challenge

Local communities are highly dependent on the forests for subsistence needs (housing timber, fuel wood, fodder), and the collection of non-timber forest products (NTFPs) that are sold to obtain cash income. About 42 thousand tons of over 100 NTFPs are harvested annually. Nearly all are harvested



**Wildlife Friendly Enterprise Network:
Himalayan Bio Trade Pvt. Ltd. (HBTL)**

and crafted by the poorest of the poor in the remotest mountains, where 57% of the population lives below the poverty line (\$59 annually in Nepal). NTFP harvest is often the only source of cash in these highland communities. Lack of forest protection and subsequent clearing of forest has led to massive soil erosion and landslides as well as significant habitat loss for threatened and endangered wildlife. Illegal trade in animal products across the border to Tibet poses a great threat to much of the wildlife of the region.

Context and Business Model

Nepal has a rich community forestry program that is taking responsibility for stopping deforestation and rehabilitating degraded forest lands. The Certified Wildlife Friendly products are sourced from NTFPs that are collected from the wild by community forest user groups (CFUGs) in the districts of Dolakha and Bajhang. These districts are found in the upper temperate forest zone at an altitude between 1800m and 3300m. In the Dolakha District just over half the area is forested and a third is agricultural and pasture land.



Key species in the forests of Bajhang and Dolakha include the Grey Wolf, Himalayan Tahr Leopard, Musk Deer, Pangolin, Red Panda and the Wild Yak. These districts also border on the habitat of the endangered snow leopard.

Himalayan Bio Trade Pvt. Ltd. (HBTL), a natural products trading company based in Katmandu, was formed in 2000 to facilitate consolidation of products from remote CFUG enterprises and market high quality natural products that promote biodiversity conservation and fair trade. HBTL is a producer owned company that works with community groups to facilitate community based enterprise start-up, suitable technology transfer, product design, quality control and buy-back guarantees with fair prices. HBTL has an agreement with the community-based forest enterprises (CBFEs) to source NTFP products. The CBFEs in turn have agreements with the Community Forest User Groups (CFUG) to supply the NTFPs. CFUGs are village groups that obtain legal tenure over forest areas from the Nepal government, and devise forest management plans that allow for sustainable use, while protecting overall forest biodiversity. It is noteworthy that the CFUGs in Bajhang and Dolakha, the community enterprises, and HBTL were the first in the world to be awarded a group FSC certification for NTFPs.



Impact and Monitoring

There are 7,500 households with about 40,000 people in the community forest user groups (CFUGs) who are the managers and users of community forests from which the Certified Wildlife Friendly™ products are sourced. The community forests offer protected habitat and migratory corridors for key wildlife including the endangered species (IUCN listed) such as the Musk Deer and Pheasant. Over the past ten years a significant portion of degraded lands have been reforested and overall the area of forested land has increased. Daily patrols walk the forest areas and over the past 10 to 15 years, with the increased area of habitat, the community members report increased numbers of wildlife which they now actively protect against wildlife trade. Community members also restrict outsiders from going up to the higher elevations to poach other endangered species, including the snow leopard.

Promoting and marketing of the HBTL community produced and certified natural products, derived from the NTFPs, has greatly benefited marginalized community groups, helping them to fight poverty and improve their standard of living. The profits generated by the trading of community produced products are distributed to the community shareholders on an equitable basis. There has been significant job creation at different stages of the supply chain and in 2008 over \$1.5 million in revenue was generated for the forest communities.

CFUGs conduct monitoring of the impact of their activities and the activities of the community based enterprises. CFUGs, FECOFUN (the Federation of Nepal's CFUGs), local communities and the District Forest Office are all involved in monitoring the forest with a particular focus on wildlife poaching along with overall condition of the habitat in the CFUG areas. The community members report seeing wildlife on a regular basis and consolidate the sightings in bi-annual reporting. FSC certification evaluates the harvesting plans and overall natural resource management of the areas, including impact on wildlife. FSC audits the groups annually to verify that the sustainable harvest protocols are being followed and to assess forest condition, which includes biodiversity/wildlife condition.

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NEPAL Case Study References

- Carter, J., B. Pokharel, and R. Rai Parajuli (2011). *Two Decades of Community Forestry in Nepal: What Have We Learned?* Kathmandu, Nepal: Nepal Swiss Community Forestry Project.
- CBS (Nepal Central Bureau of Statistics). 2002. *Statistical pocket book*. Kathmandu, Nepal: Ramshah Path.
- Chapagain, N., and M. R. Banjade. 2009. *Community Forestry as an Effective Institutional Platform for Local Development: Experience from the Koshi Hills*. Kathmandu, Nepal: ForestAction Nepal and Livelihoods and Forestry Program.
- Chapagain, B., R. Subedi, and B. Rana. 2009. *Beyond Elite Capture: Community Forestry Contributes to Pro-Poor Livelihoods in Nepal*. Discussion paper. Photocopy. Livelihoods and Forestry Program, Kathmandu, Nepal.
- De Gryze, Steven and Durschinger, Leslie, 2009. "Payment for Ecosystem Services: Developing Forest Carbon Projects in Nepal." EnterpriseWorks/VITA and Terra Global Capital for USAID/TransLinks. http://rmpportal.net/library/content/translinks/translinks-2009/enterprise-works-vita-relief-international/casestudy_forestcarbonprojectsnepal.pdf/view
- Gurung, H. 1996. "Ethnic Demography of Nepal." Paper presented at the Nepal Foundation for Advanced Studies Conference, January 10, 1996, Kathmandu, Nepal.
- Kandel, P. 2010. *Forest Resource Assessment in Nepal: An Assessment of Data Needs*. Kathmandu, Nepal: Forest Resource Assessment Nepal Project.
- Kanel, K. R., and D. Acharya. 2008. "Re-Inventing Forestry Agencies: Institutional Innovations to Support Community Forestry in Nepal." In P. Durst, C. Brown, J. Broadhead, R. Suzuki, R. Leslie, and A. Inoguchi. (Eds.), *Reinventing Forestry Agencies: Experiences of Institutional Restructuring in Asia and the Pacific*. Bangkok, Thailand: Food and Agricultural Organization of the United Nations.
- Luintel, H., H. R. Ojha, and B. Rana. 2009. *Community Forestry in Nepal: A Synthesis of Innovative Practices*. Kathmandu, Nepal: Forest Resource Assessment Nepal Project.
- Luintel, H., and N. Timsina. 2008. *Is Forestry Decentralization Effective in Empowering Women's Agency?* Kathmandu, Nepal: ForestAction.
- Ojha, H., L. Persha, and A. Chhatre. 2009. *Community Forestry in Nepal: A Policy Innovation for Local Livelihoods*. IFPRI Discussion Paper 00913. Washington, D.C.: International Food Policy Research Institute.
- Ojha, H. 2011. *Nepal's Climate Change Policies and Plans: Local Communities' Perspective*. Environment and Climate Series 2011/1. Lalitpur, Nepal: HELVETAS Swiss Intercooperation Nepal and Rights and Resources Initiative.
- Pokharel, B. K., G. R. Dahal, and S. Byrne. 2009. *Nepal Country Report on Forest Governance and Climate Change*. Kathmandu, Nepal: Swiss Intercooperation.
- Pokharel B. K., Anupama Mahat, and Sarah Byrne. n.d. "Institutions Matter the Most!: Effect of Community Forestry on Forest Cover Change in Nepal." PowerPoint.
- TransLinks video <http://rmpportal.net/library/content/translinks>
- WCS (2009). Wildlife Friendly™ Enterprise brochure of Himalayan Bio Trade. Wildlife Conservation Society. http://rmpportal.net/library/content/translinks/translinks-2009/wildlife-conservation-society/brochure_wfenhimalayanbiotradeptltd.pdf/view

ANNEX 3.2

LANDSCAPE LEVEL IMPROVEMENTS IN THE SAHEL

By the early 1980s, Niger's rural population had already suffered a decade of drought that had killed more than 100,000 people across the Sahel and made hundreds of thousands dependent on food aid. Niger's farmers' problems were compounded by high population pressures, which left them with little or no fallow—their means of recharging their soil's productivity. These conditions reduced yields and forced farmers to move into more marginal lands and/or sell their productive assets in order to feed their families. In addition to food shortages, conflicts between herders and farmers had become more common as farmers moved into corridors used by herders to move their herds from one seasonal pasture to another and to watering points. Relationships between herders and farmers went from being synergistic to confrontational; conflicts were documented as among the highest and most severe in Niger. Declining crop yields put additional pressure on trees as they became sources of revenue to make up for the food shortfall. Wood scarcity led to illegal cutting and further conflict. In addition, the elimination of the perennial ground cover left young millet plants exposed to the sand-blasting effects of the wind. Farmers reported having to plant two or three times, further reducing yield potential. The deterioration of the land's productive capacity widened the economic inequalities between large and small landholders. Many small farmers were forced to make their living by providing labor for larger landholders, others had to leave the village: some to search for work elsewhere, others permanently.

By 2005, however, significant parts of Niger had reversed these declines. The country had 5.0 million hectares of farmland that had more tree cover than 20 years before, while experiencing even greater population pressure. This was particularly true in the Maradi and Zinder regions, areas with the country's highest population density (see **Figures 3.2.1 and 3.2.2**). Yields were up¹²⁸ and, while droughts still occurred, people were much more adept at coping with them.¹²⁹ In some areas, conflicts were down both in number and severity.¹³⁰ This transformation of the agricultural landscape affected a third of Niger's arable lands and was much more widespread than anyone had imagined. This case study will tell the story of how this transformation occurred by providing, first, an overview of events in Niger since the 1970s (still evolving) and, second, a focus on how this transformation unrolled in Dan Saga, a farming village in the Aguié Department in the Maradi Region. This region is one of the most densely populated in Niger and, in the 1980s, had one of the highest rates of conflict in the country, both in number and severity.¹³¹

128 Place and Binam (2013).

129 Abasse, Guero, and Rinaudo (2009).

130 Yamba (2006).

131 Toudou, Reij, Tahirou, Mahamane, Tappan, and Boubacar (2006).

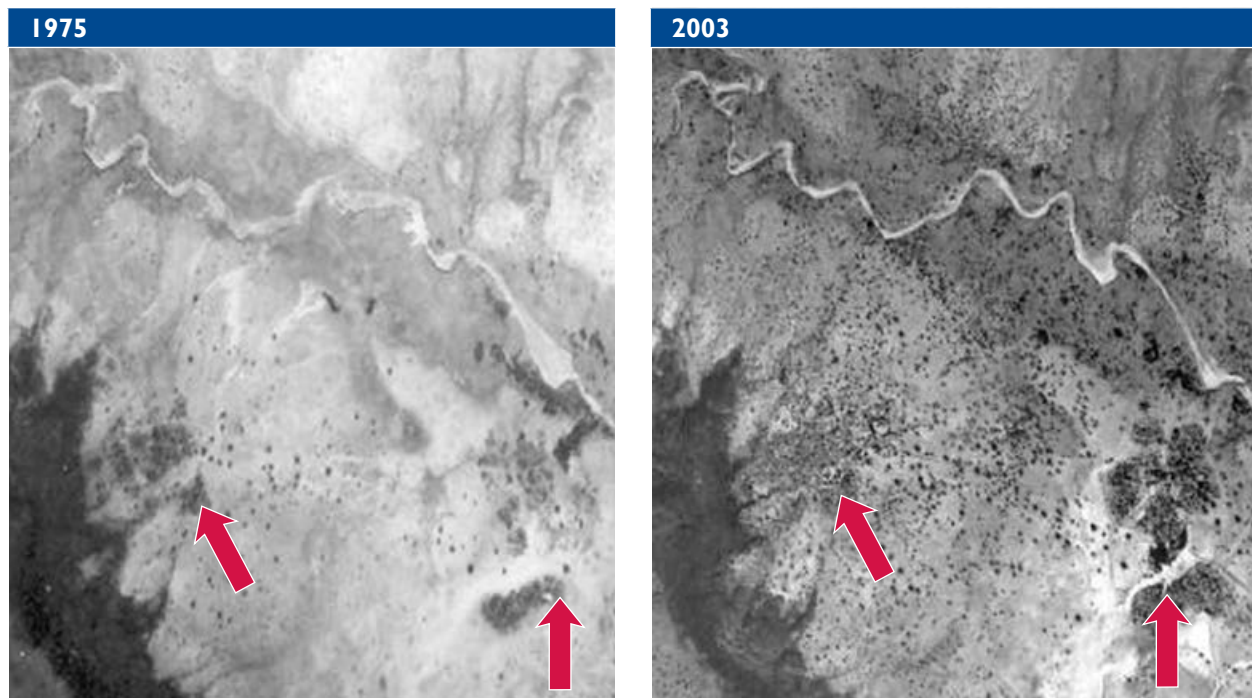


Figure 3.2.1. More People, More Trees (Galma, Niger)

The red arrows point to settlements. The two photos compare tree and population densities in 1975 and 2003 in Galma (Arrondissement de Madaoua), Niger. Both tree and population densities increased.

Source: Gray Tappan, U.S. Geological Survey.

During the 1970s, massive amounts of aid flowed to the Sahel to try to stem the effects of a catastrophic drought that lasted from the early 1970s into the 1980s. The United Nations Environmental Programme (UNEP) called the drought “one of the worst on record.”¹³² There was a particular concern about the loss of trees and other vegetative cover. Trees were not only the main source of fuel for the majority of Sahelians, but they also protected the soil. It was felt that the large-scale loss of trees would aggravate the vicious cycle in which most Sahelians found themselves. In the mid-1970s, journalists and development institutions were writing that within a generation, no living tree would occur within 40 km of any large city in the Sahel. Many large-scale tree-planting campaigns were launched to provide future fuelwood supplies and protect what remained of natural forests. Most of the campaigns were based on “fast-growing exotics” that were raised in project-run nurseries and transplanted into plantations. To protect the young trees from free-roaming livestock, the plantations typically had a wire fence around the perimeter. Most of this work was done through donor-funded projects using “food for work.”

However, drought was not the only reason for broad-scale loss of perennial ground cover. It was also related to conventional wisdom concerning agriculture and to Niger’s Forest Code. In the 1970s farmers were encouraged to practice “clean agriculture.” They were advised to cut out ground cover and burn crop residues. In addition, the Nigerien Forest Service had the authority to fine anyone cutting trees, even on their own land. This law was enforced rigorously, to the extent that it created tension between the Forest Service and the rural population. Consequently, to keep a clean field and avoid fines by the Forest Service, farmers

¹³² UNEP (n.d.).

annually cleared trees from their fields before they were large enough for the Forest Service to notice. Except for a few select species, much of the countryside was often cleared annually of trees and bushes.

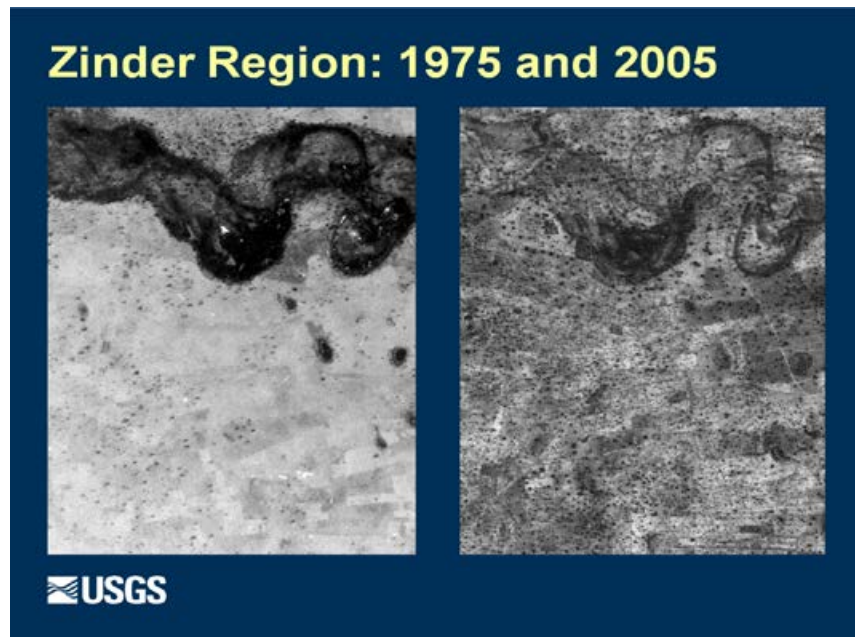


Figure 3.2.2. More Trees (Zinder region, Niger)

Source: Gray Tappan, U.S. Geological Survey.

In response to this crisis of deforestation, declining crop yields, and food insecurity, Serving-in-Mission (SIM), a faith-based organization, began promoting “farmer-managed natural regeneration” (FMNR), an agro-silvi-pastoral system for restoring native tree species from stumps that had been left in the ground after original land-clearing efforts (see **Figures 3.2.3, 3.2.4, and 3.2.5**)¹³³. FMNR bypassed the needs for nurseries and establishment of fenced plantations to protect trees. It also violated the notions of “clean fields” and the need for “fast-growing exotics” to save the environment, and was initially met with limited enthusiasm and interest. However, a series of events occurred that changed peoples’ perceptions:

- Radio announcements reporting on the outcomes of an international meeting in Maradi reinforced the idea that linkages exist between drought and deforestation, and seeded the idea that people could react to drought in a positive way.¹³⁴
- A catastrophic drought occurred in 1984 that focused peoples’ attention on finding ways to cope with drought.
- SIM agreed to provide food for work to affected communities and included “natural regeneration” as a technology.
- The Forest Service officials in Maradi agreed to “relax” the ban on tree cutting and allow farmers to manage the field trees so that they would not compete with crops for light.

¹³³ Place and Binam (2013).

¹³⁴ Please and Binam (2013).



Figure 3.2.3. Farmer-Managed Natural Regeneration-Piliostigma Regeneration and Rock Lines

Photo: Chris Reij

Farmer-Managed Natural Regeneration (FMNR) is a form of agroforestry where farmers encourage field trees to sprout and grow from established root systems, as shown in this photo. Just before the rains, the farmer will prune back most of the top story thereby reducing the trees' competition for light. The cuttings will serve as fuel or construction wood. In this photo, the farmer has also built rock lines to slow run-off of rainwater. This species (*Piliostigma reticulata*) also provides high-quality browse. Having secure tenure and use rights over the trees is critical to a farmer making these investments.



Figure 3.2.4. Farmer-Managed Natural Regeneration-Diversification and Resilience

Photo: Chris Reij

Mr. Ousséni Kindo is a farmer innovator who raises productivity through FMNR and water harvesting. FMNR also strengthens his resilience to climatic and market shocks. In years of bad droughts when his annual crop yields are very low, Mr. Kindo sells tree products such as fuelwood, animal feed, food, etc. with which to purchase food and pay for other necessities. According to Chris Reij, a specialist on Sahelian natural resources management with the World Resources Institute, "since Mr. Kindo began restoring degraded land in 1985, he has never been food insecure."



Figure 3.2.5. Faidherbia and Millet Field During Dry Season

Photo: Chris Reij

Faidherbia albida trees in a millet field in the Droum area of Niger during the dry season. All the trees in this field are less than 15 years old, meaning that the field may have been barren before that time and that something happened to encourage the farmer to maintain young trees at this density. *Faidherbia* drops its leaves during the rainy season instead of the dry season, and therefore competes very little with crops for the sunlight needed for growth.

Farmers who adopted FMNR produced multiple benefits: in addition to increased grain yields, farmers harvested fuelwood, browse, foods, and other products, some of which they consumed, and others that they sold. (Subsequent researchers reported that in addition to the tangible benefits, many farmers who had felt helpless in the face of successive droughts were empowered by being able to do something in response to drought.)¹³⁵

After the 1984 drought-induced emergency ended, SIM stopped participating in the food delivery program, but continued to support farmers practicing FMNR by providing technical assistance and farmer-to-farmer visits. Although the end of the food-for-work program led some farmers to abandon FMNR (and even cut the trees that they had managed while receiving food for work), many others continued – including some who had never received food but had seen FMNR’s benefits on their peers’ fields. Indeed, this “proof of concept” was one the most important products of SIM’s participation in the food-for-work program.

In light of FMNR’s multiple benefits, the agreement made by the Forest Service in Maradi and Zinder to allow farmers to harvest and manage trees in their own fields continued. This removed a major policy constraint to the spread of FMNR, which allowed more farmers and NGOs to further demonstrate FMNR’s benefits. The “exception-to-the-rule” approach taken by the Forest Service demonstrated the advantage of testing promising interpretations of the code *before* there was a formal change in the code. It could be argued that had the Government of Niger insisted on the formal change of the Forestry Code before allowing SIM to test FMNR at scale, FMNR’s benefits would still be largely unknown and its use limited to a few pilots.

¹³⁵ Please see Tony Rinaudo on the initiation of FMNR in the presentation “Against the Odds: Reversing Desertification in Arid and Semiarid Lands,” at the Tenth International Permaculture Conference (September 2011) in Amman, Jordan. (www.youtube.com/watch?v=Dm-qlyvdZ_A). WRI (2008) provides additional detail on FMNR (www.wri.org/publication/world-resources-2008-roots-of-resilience).

A team of researchers led by Place and Binam studied the benefits of FMNR in the past 30 years. They conducted studies across the Sahel, including 480 household surveys in Niger, and prepared the report “Economic Impacts of Farmer-Managed Natural Regeneration in the Sahel.”¹³⁶ They found that FMNR increased grain yields in Niger (average 393 kg/ha) by 29–36 percent. In addition to the yield increases from FMNR itself, Place and Binam found that those who used fertilizer in tandem with FMNR could get equivalent results from smaller amounts of fertilizer than were needed previously to get the same gains from just fertilizer.¹³⁷ (Because agroforestry systems in the Sahel typically have higher soil organic matter levels than non-agroforestry systems,¹³⁸ and higher organic matter levels are highly correlated with fertilizer-use efficiency, FMNR’s effects are logical.) The authors also reported that field trees produced other valuable products that were consumed or sold. These included fuelwood, browse, construction material, food, and pharmacopeia. The authors found that agroforestry products made up nearly 19 percent of household income – less than income from grain (58 percent), but more than livestock (12 percent). They also noted that FMNR, by providing products that were less vulnerable to drought, strengthened peoples’ resilience. (Yamba also reported that FMNR farmers coped better during the 2005 droughts than non-adopters.¹³⁹)

Although FMNR has spread to nearly 5.0 million hectares in Niger and hundreds of thousands more hectares in Burkina Faso, Mali, and Senegal, large numbers of still other farmers know about it but have yet to adopt it. Place and Binam noted a number of biophysical, socioeconomic, and technical barriers that may explain some of the residual resistance:

The important factors were uncontrolled cutting of trees by outsiders, animal damage, lack of land, the long dry season, and lack of tree germplasm in the soil. Farmers also noted institutional and policy constraints whereby many farmers continued to cite the unreasonable Forest Codes as a limiting factor, and heavy-handedness on the part of the forest officers.¹⁴⁰

Experience in the Village of Dan Saga

The following account from Dan Saga Village provides a ground-level look at a village that has benefited from FMNR in many ways, but that also went through a lot to build its current capacity.

In 1980 Dan Saga’s millet fields were barren, far different from the wooded parkland that it had been 30 years before.¹⁴¹ But, today Dan Saga has become a model for herder/farmer conflict management and FMNR. The trees, which grew from existing stumps and frequently numbered more than 100 per hectare, have provided multiple benefits, including the following:

- Increased crop yields attributable to increased soil fertility, improved soil organic matter, and reduced wind damage
- Increased provision of high-quality browse from leaves and pods that provide sources of revenue from both animal fattening and the sale of surplus browse
- Increased supplies of fuelwood that are sold through woodcutters’ associations or harvested by landholders for fuel

¹³⁶ Place and Binam (2013).

¹³⁷ Bationo and Buerkert (2001).

¹³⁸ Felker (1978).

¹³⁹ Yamba (2006).

¹⁴⁰ Place and Binam (2013), p. 71.

¹⁴¹ Rinaudo and Yaou (2008).

- Strengthened resilience due to a more diverse farm operation, including species that had disappeared and returned following improved management¹⁴²
- Restoration of “degraded lands,” brought back into production by improved management
- Improved natural resource governance at a village-landscape scale with a common understanding and respect for rules brought about by consultation and dialogue among various interest groups that reduced the amount and severity of violence¹⁴³

This transformation included two fundamental changes in the rural economy in the region. Both depended on consultative processes that included the participation of rural populations in establishing and implementing natural resource management rules. One was at the landscape level where herder-farmer conflicts were reduced by bringing representatives of the groups together to address points of conflict and establish a process for resolving future conflicts. The other was the extension of FMNR through a process that conveyed authority and responsibility for tree management from the state to local farmers, promoted locally negotiated management rules, and established fuelwood enterprises.

In 1992 Government of Niger authorities formed a commission composed of government technical staff and traditional leaders of farming and herding groups in the region. It solicited feedback from these various groups and took action to address priorities and resolve points of conflict. The commission, with assistance from a local International Fund for Agricultural Development (IFAD) project, re-established and marked livestock corridors, rehabilitated pastures, and marked water points. These actions led to the following:

A significant reduction of conflicts. The negotiated agreements led to the legal recognition of important corridors and their rehabilitation. Studies showed that the numbers fell from between 70 to 100 incidents before the intervention to about 10, with a drop in severity.

The establishment of a system of consultation and dialogue with rural communities in order to negotiate resolutions to common problems. This system led to agreements negotiated among villages and communities to manage commonly held pastoral lands. These agreements represented an evolution from thinking only in terms of the village to thinking about the larger “landscape.”¹⁴⁴

To increase productivity and reduce degradation, the IFAD project supported FMNR pilots in the area,¹⁴⁵ including at Dan Saga. But the IFAD project faced suspicion and resistance:

*In the beginning, we didn't want trees, they were imposed on us; we thought that the State was creating a trap to better punish those who hazarded to cut wood. In reality, if the trees survived, it was because we feared the authorities; but, today, we are proud to say that the presence of trees has really changed our environment.*¹⁴⁶

The project selected Dan Saga Village as an FMNR demonstration site because some farmers at Dan Saga had already adapted it. The demonstration showed that fields with 100–150 well-managed trees per hectare increased productivity as well as providing regular sources of fuelwood and browse. This demonstration contributed to a widespread change in perception about the potential of on-farm tree management to increase crop productivity and generate benefits from fuelwood and browse production.

¹⁴² Yamba (2006).

¹⁴³ Yamba (2006).

¹⁴⁴ Yamba (2006).

¹⁴⁵ Between 1990 and 2000, the Aguié jurisdiction was changed from an arrondissement to a department.

¹⁴⁶ Yamba (2006), p. 24.

To accompany FMNR, the project supported the establishment of Community-Based Organizations (CBOs). In addition to providing training in organizational management, the project provided adult literacy training. While strengthening the capacity of CBOs to function, these skills also helped villagers to communicate more effectively with each other and with government offices and development partners (e.g., NGOs).¹⁴⁷ A key CBO in the case of Dan Saga was the Agroforestry Surveillance Committee, which was established to protect trees in farmers' fields and enforce other land management rules established by the village.¹⁴⁸ Committee members were issued badges and uniforms, and had the authority to stop people who were illegally cutting, and take them to the village leader who would impose standardized fines. If the village leader could not resolve a conflict, the committee used its funds from fines and other activities to pay for fuel so that the Forest Service to come and intervene.

The increased security that came with the establishment of commonly recognized rules, and the rights to enforce those rules, encouraged Dan Saga villagers to join their peers from seven nearby villages to form a woodcutters' association to market wood collectively. "With increased confidence in their committees and the dramatic increase in wood available for home use and sale, villagers established rural wood markets, aiming to increase local control and reduce exploitation by middlemen."¹⁴⁹ The wood came from farmers' fields, not common areas, and was harvested in a manner that balanced wood production with soil fertility and other services (e.g., browse production). Representatives of each village governed the woodcutter's association, which was run by a paid manager and volunteer treasurer and controller. The cooperative was legally recognized, as were the rights of members to harvest trees from their fields. The cooperative sold into well-established markets. The farmers received 80 percent of the price of the wood, with the remaining 20% divided among the association, the manager, and a tax payment that was split between the state and a community development fund.¹⁵⁰ Income increments were estimated to range from \$46 to \$92; some farmers made substantially more.¹⁵¹ Given the area's average annual income of \$200 per person, this amount was significant, particularly in the dry season when food stocks were low.

"Through the adoption of Farmer Managed Natural Regeneration (FMNR) and with the formation of 53 village committees, some 170 villages in Dan Saga now sustainably manage their natural resources base. 130,000 hectares of farmland are now being managed under FMNR and once treeless fields are covered with 103 to 122 trees per hectare."¹⁵²

The stakeholders comprised farmers, herders, men and women, researchers, and staff from Aguié departmental and government services and an International Fund for Agriculture Development Project.

These initiatives produced important additional benefits including greater collaboration between rural villages and outside partners as equals. For example, Dan Saga currently works with Niger's National Agricultural Research Institute to test various seed varieties and has organized a crop diversification committee that encourages a diversified approach to seed sources. They work to test and demonstrate new varieties and to sell improved seed to farmers.¹⁵³ More recently, Dan Saga farmers were reportedly experimenting with the

147 The demonstrated impacts of adult literacy increased peoples' awareness of its importance and increased demand, particularly for women who saw it as a way to break gender frontiers and isolation (Yamba 2006).

148 Professor Abasse Tougiani (personal communication, July 2012) had interviewed members of the Dan Saga Agroforestry Surveillance Committee.

149 Rinaudo and Yaou (2008), p. 23.

150 Professor Abasse Tougiani, personal communication (July 2012) and Rinaudo and Yaou (2008).

151 Rinaudo and Yaou (2008).

152 Rinaudo and Yaou (2008).

153 Yamba (2006).

best ways to use fertilizers with FMNR.¹⁵⁴ A final co-benefit was a gradual replacement of the long-standing adversarial relationship between the Forest Service and rural communities with a true partnership.

The Sahel case illustrates a number of NWP principles. It clearly shows that strengthened local institutions with the power to identify boundaries and impose sanctions are critical for success. These organizations, facilitated and joined by the state, form a continuous platform for dialogue and input into decision-making. The alignment of private (personal economic gain) and public interests (environmental recovery) leads to win-win situations. Simple yet effective NRM techniques, implemented by thousands of individuals and groups, can have landscape-level impacts. Equitable partnerships – public, private, and civil society – are also key to structural change. The integration of NWP principles helps lead to better environmental, economic, and governance outcomes in the area.

¹⁵⁴ Chris Reij, personal communication (2013).

SAHEL Case Study References

- Abasse, T., C. Guero, and T. Rinaudo. 2009. "Community Mobilisation for Improved Livelihoods through Tree Crop Management in Niger." *GeoJournal* 74: 377–89.
- Bationo, A., and A. Buerkert. 2001. "Soil Organic Carbon Management for Sustainable Land Use in Sudano-Sahelian West Africa." *Nutrient Cycling in Agroecosystems* 61: 131–42.
- Fairhead, James, and Melissa Leach. 1996. *Misreading the African Landscape Society and Ecology in a Forest-Savanna Mosaic*. Cambridge University Press, Cambridge, UK.
- Felker, P. 1978. *Acacia Albida: State of the Art*. Study conducted for USAID. Riverside, CA: University of California.
- Garrity, D. P., F. K. Akinnifesi, O. C. Ajayi, S. G. Weldesemayat, J. G. Mowo, A. Kalinganire, M. Larwanou, and J. Bayala. 2010. "Evergreen Agriculture: a Robust Approach to Sustainable Food Security in Africa." *Food Security* 2: 197–214.
- Giraud, Pierre-Noel, and Denis Loyer. 2006. *Natural Capital and Sustainable Development in Africa*. Working Paper 33. Paris: Agence Française de Développement.
- Place, F. and J. N. Binam. 2013. *Economic Impacts of Farmer-Managed Natural Regeneration in the Sabel*. End-of-Project Technical Report for Free University Amsterdam and IFAD. Nairobi, Kenya: World Agroforestry Centre.
- Reij, Chris, Gray Tappan, and Melinda Smale. 2009. *Agroenvironmental Transformation in the Sabel: Another Kind of "Green Revolution"*. Discussion Paper 00914 (November). Washington, D.C.: International Food Policy Research Institute.
- Reij, Chris, and Ann Waters-Bayer. 2001. *Farmer Innovation in Africa: A Source of Inspiration for Agricultural Development*. London: Earthscan.
- Rinaudo, T. and S. Yaou. 2008. *Agricultural Development Recommendations*. Agriculture Task Force Report. World Vision: Federal Way, WA.
- Tappan, G., and M. McGahuey. 2007. "Tracking Environmental Dynamics and Agricultural Intensification in Southern Mali." *Agricultural Systems* 94: 38–51.
- Toudou, A., C. Reij, A. Tahirou, L. Mahamane, G. Tappan, and Y. Boubacar. 2006. *Impacts des Investissements dans la Gestion des Ressources Naturelles (GRN) au Niger: Rapport de Synthèse*. Centre Régional d'Enseignement Spécialisé en Agriculture (CRESA). Niamey, Niger.
- United Nations Environment Programme (UNEP). n.d. *Africa Environment Outlook: Past, Present, and Future Perspectives*. Nairobi, Kenya. Available at: www.unep.org/dewa/Africa/publications/AEO-1/056.htm
- Wopereis, M. C. S., A. Mando, and B. Vanlauwe. 2008. *Agroecological Principles of Integrated Soil Fertility Management: A Guide with Special Reference to Sub-Saharan Africa*. Muscle Shoals, AL: International Center for Soil Fertility and Agricultural Development.
- World Resources Institute (WRI) in collaboration with United Nations Development Programme, United Nations Environment Programme, and World Bank. 2008. *World Resources 2008: Roots of Resilience – Growing the Wealth of the Poor*. Washington, DC.
- Yamba, B. 2006. Rapport d'Étude sur le Foncier, les Institutions Locales et l'Évolution de la Pauvreté. *Études Sahéliennes* (March).
- Yamba, B., M. Larwanou, A. Hassane, and C. Reij. 2005. *The Sabel Study: Niger Pilot Study Report*. Washington, D.C.: International Resources Group.

ANNEX 3.3

RESILIENT NATURAL RESOURCE– BASED DEVELOPMENT IN NAMIBIA

The Namibia **community wildlife conservancy** program was one of the main cases used in NWP1 (2002) as both an inspiration for the framework and as an example. As of then, 15 conservancies had been established, and were earning just over N\$6 million (about \$658,000) per year. This integrative approach was showing that it could lead to triple bottom-line benefits across the environment, economic, and governance sectors. These trends have indeed amplified since 2002, and the community conservancy approach is now a national-level program, covering about 18% of Namibia's land area. As of **March 2013, 79 conservancies** had been formed (**Figure 3.3.1**), despite a decline in donor funding.¹⁵⁵ The main sources of income for conservancies during 2011 were trophy hunting and joint venture tourism. Other activities that contributed to income were live game sales, harvesting of veld products, campsites, crafts, other forms of hunting, and game meat production.

In recent years, Namibia has also expanded the resources covered by the community management approach and started **13 community forests**. With support from the Millennium Challenge Account Namibia (MCA-N), it is now promoting **community based rangeland and livestock management (CBRLM)** across most of the country, and is beginning to work on water and fisheries. Namibia's conservancy and CBNRM movement has had national-level impacts on the environment, poverty and empowerment.

Description of the Case

Namibia's conservancy success story needs to be understood within a geographical and historical context. Namibia accounts for three percent of the land area of Africa, but only hosts 0.2 percent of the human population (2007 estimate at 2,055,080 persons). After Mongolia, Namibia is the least densely populated country in the world (2.5 persons per km²).¹⁵⁶ Most of the country is arid.

The country endured several stages of colonization until its formal independence in 1990. Before 1990, Namibia had been a German colony since 1884. However, after World War I, the League of Nations placed South West Africa (as Namibia was then called) under the administration of the Government of South Africa. South Africa introduced *apartheid* and administered South West Africa as a fifth province of South Africa. From the 1960s to the liberation movement, The South West Africa Peoples' Organization (SWAPO) fought a guerrilla war against South African rule. A ceasefire was negotiated in 1988, and South West Africa became independent Namibia in 1990.

CBNRM had been pioneered in Namibia by local NGOs in the early 1980s (before independence), with a community game guard system to combat wildlife poaching in the northwestern Kunene region. Independence afforded an opportunity to provide black communal area residents with the same rights over wildlife and tourism enjoyed under South African rule by white freehold farmers since 1968.¹⁵⁷

¹⁵⁵ USAID invested approximately \$40 million in the Living in a Finite Environment (LIFE) program from 1992 to 2008, matched by contributions by the Government of Namibia, World Wildlife Fund, EU, and UNEP (App et al. (2008); Boudreaux & Nelson (2011)).

¹⁵⁶ App, et al. (2008), p. 1.

¹⁵⁷ Boudreaux and Nelson (2011).

Formal government involvement in CBNRM began after independence in 1990, with a series of socio-ecological surveys in communal areas where wildlife still remained, leading to the introduction of the communal area conservancy legislation in 1996.¹⁵⁸

A conservancy is a common property resource management institution for the management of wildlife (both consumptive and non-consumptive uses) and associated natural resources, such as non-timber, forest products, and scenic areas. To form a conservancy, a community must have a representative committee, a legal constitution, defined boundaries, and a defined membership. The registration of the first four conservancies occurred in 1998. Once registered by the government, a conservancy gains use rights over wildlife and may enter into agreements with private-sector tourism operators for the development of tourism facilities, such as lodges and camps on their land. Conservancies add wildlife and tourism as additional land uses and livelihood opportunities in rural areas. Members carry on their existing livelihood activities; such as livestock and crop farming. Meanwhile, conservancies often set aside specific areas of their land for wildlife and tourism. The Namibian government has continued to show a commitment to the promotion of community-based natural resource management (CBNRM) through the devolution of rights over additional natural resources to rural communities.

Location

At the end of 2012, there were 77 communal area conservancies across most regions of the country, covering 146,312 km² or 17.8% of Namibia's land surface of 825,000 km². This area, together with the 16.7% covered by state protected areas, 0.8% by tourism concessions, a small area of community forests that does not overlap with conservancies, and another 6.1% covered by freehold conservancies, means that **41.5% of Namibia's land surface is used for sustainable NRM and biodiversity objectives**. By March 2013 there were 79 conservancies (see **Figure 3.3.1**).

¹⁵⁸ Government of Namibia (1996).

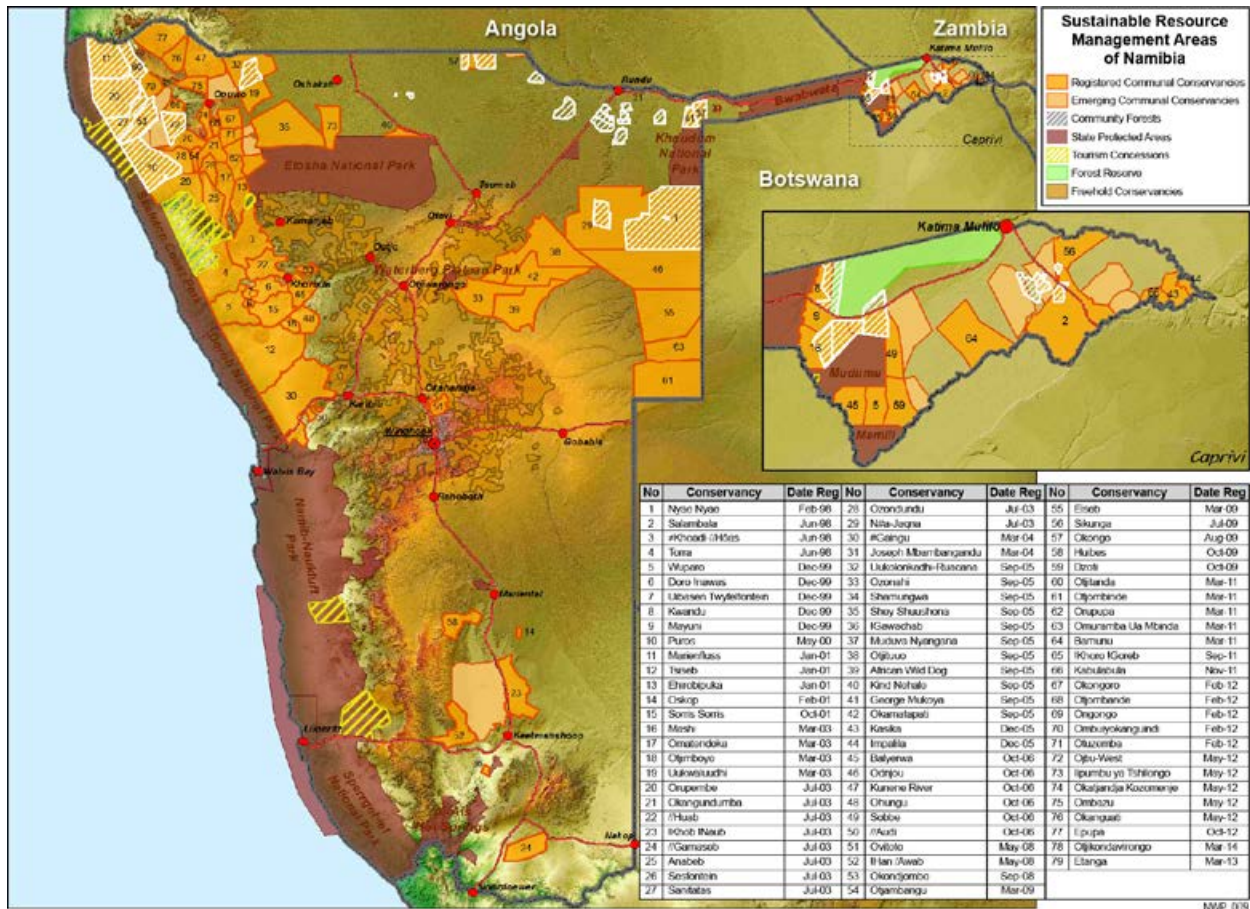


Figure 3.3.1. Land in Namibia under sustainable use and biodiversity conservation objectives as of March 2013 (conservancies are orange, national parks brown, etc.)

Source: NACSO, 2013b.

Description of Impacts

Impact on Nature

By undertaking such activities as herding, harvesting plant products, cropping, and fishing, rural communities have been using and managing their environment for generations. Rural livelihoods have now been diversified through a variety of new uses, such as photographic tourism, trophy hunting, sport fishing, craft production, and harvesting of indigenous plant products (such as devil's claw, a small plant reputed for its anti-arthritis properties) for niche markets. Wildlife populations have generally increased substantially from the early 1980s to 2012.¹⁵⁹ After a rapid rise following establishment of a conservancy (Figure 3.3.2), numbers continue to increase more gradually, and eventually stabilize, as seen in Figure 3.3.3 which covers the past decade in northwestern Namibia.

¹⁵⁹ NACSO (2010), p. 17. Also see NACSO (2006, 2013a, 2013c, 2013d).

Impact on Wealth

Total annual financial benefits generated by conservancies increased from nothing in 1994 to almost N\$50 million in 2011 (approximately US\$4.5 million in 2011). Another N\$1.14 million was generated in nonfinancial benefits such as game meat production or other contributions such as computers, education materials, etc. (see **Figure 3.3.4** below). Of the financial benefits, N\$1.49 million went to households in the form of wages or conservancy dividend cash payments. Although income data for community forests in 2011 is incomplete, the average total income to community forests from 2008 to 2010 was N\$544,666 per year.¹⁶⁰

In 2011, at least 26 conservancies covered all their own costs and 30 conservancies had established financial sustainability plans with the aim of making them self-sustaining. Those conservancies that do not generate enough income to cover all their own costs receive only small external subsidies to cover some basic operational costs.

NACSO estimates that the net national income (NNI) that can be attributed to the overall CBNRM program is approximately 6.3 times that earned directly within communities (N\$313 million), and the cumulative addition to NNI over the years of the program has amounted to over **N\$2.4 billion**, plus approximately **N\$413 million** in natural capital appreciation from 1990-2011 from increased wildlife populations in just the North West conservancies (where the best data are available).¹⁶¹ This N\$2.8+B (not including increases in wildlife stocks from regions other than the northwest) compares favorably to the total investment in the program from 1990-2011 of N\$1.2 billion. NACSO estimates the economic internal rate of return (EIRR) to be 21%, with a net present value (NPV) of approximately N\$451 million.

¹⁶⁰ NACSO (2013a), p.13.

¹⁶¹ NACSO (2013a), pp. 42-44.

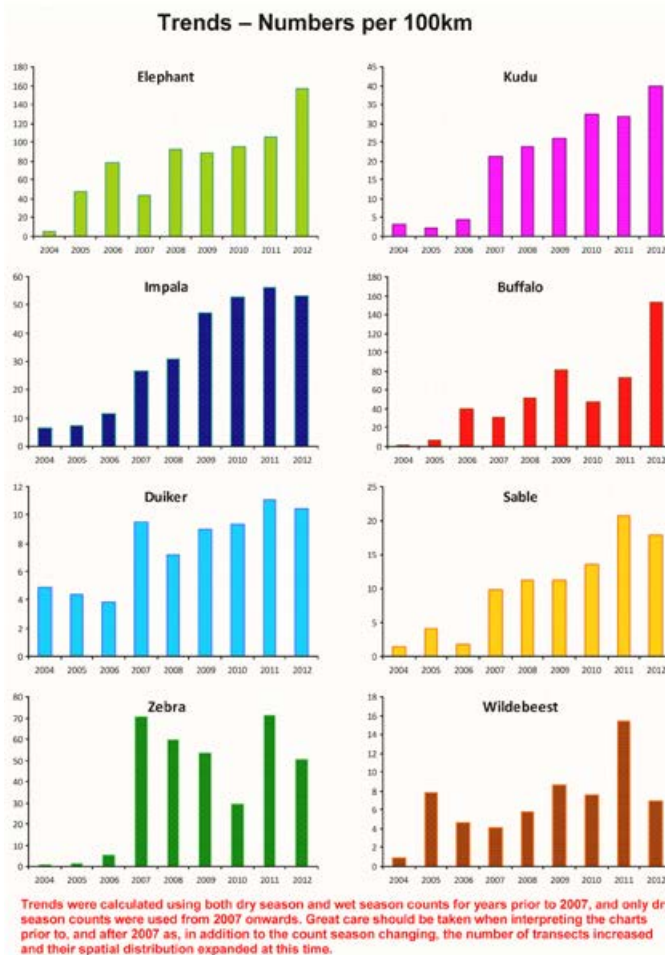


Figure 3.3.2. Wildlife counts in Bwabwata and Caprivi 2004-12.

Source: NACSO, 2013d. The focus in these graphs should really be on the 2007-2012 numbers, as the data from before 2007 came from a different methodology. Screenshot from: http://www.nacso.org.na/downloads/refs/Caprivi_game_count_poster_2012.pdf (accessed 8-12-13).

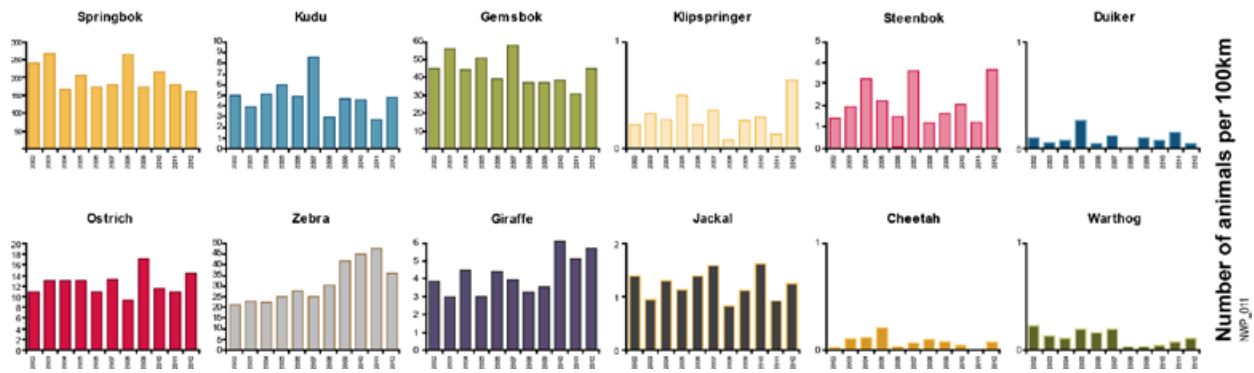


Figure 3.3.3. Trends for key wildlife populations in North West Namibia, 2002-12. Wildlife populations of these older conservancies appear to be stabilizing

Source: NACSO, 2013c. http://www.nacso.org.na/dwnlds/refs/NW_game_count_poster_2012.pdf (accessed 8-12-13).

In 2011, total employment generated by the program included 1,512 full time and 11, 223 part time jobs. Tourism establishments in conservancies generated 696 permanent jobs and 1,608 part time jobs, with about half going to women. Trophy hunting added another 155 full time and 66 part time jobs. Conservancies themselves generated a total of 665 permanent jobs. A further 847 part-time or temporary jobs were generated by conservancies, and tourism and hunting activities within conservancies. Additionally, harvesting of natural products, including thatching grass, provided 24 full time and 2,464 part time jobs in conservancies.¹⁶²

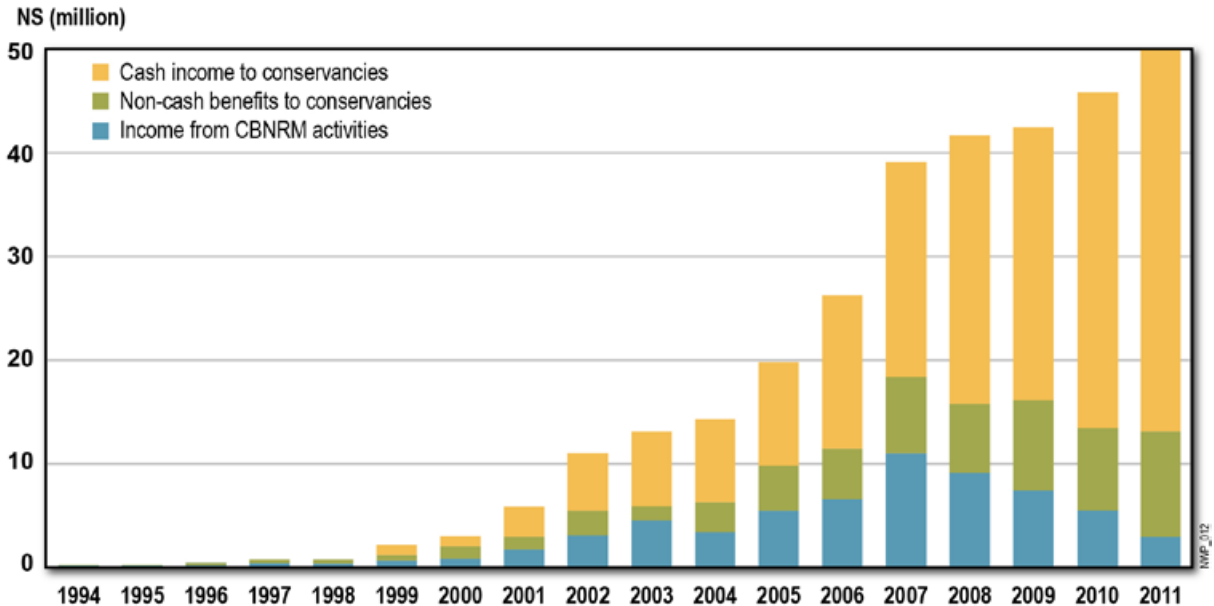


Figure 3.3.4. Income to conservancies from all sources in 2011

Source: NACSO, 2013a. See also www.nacso.org.na/index.php.

¹⁶² NACSO (2013a), p.13.

However, one analysis suggests that CBNRM in Namibia does not make a major contribution to poverty reduction in rural areas, except for those people who gain permanent employment.¹⁶³ These people can move more or less permanently above the poverty line. CBNRM does nevertheless contribute to poverty alleviation by diversifying livelihoods, and providing a range of intangible benefits for many more people.

Impact on Power

The conservancy legislation provides secure legal rights over wildlife and tourism. This empowers communities to make decisions about issues that affect them, and provides an enabling environment for economic growth in remote rural areas. The conservancies themselves represent an experiment in rural democracy, in which communities elect representatives and call them to account through annual general meetings and elections. Although some committees have abused their power, they have usually been removed by conservancy members. Improved governance has come from conservancies revising their structures to create more localized subunits and revising their constitutions through participatory processes. Women comprised an average of 33% of conservancy management committees' membership in 2011; four chairpersons were female, and 33 of 66 conservancies (50%) had women running the day-to-day management of finances. Women held 22% of the 665 permanent jobs generated by conservancies. Forty-nine conservancies were members of regional conservancy forums established for advocacy on behalf of members' interests.¹⁶⁴

The management of conservancy revenues has been quite transparent. Financial management is one of the most important governance aspects of conservancies. In 2011, a sustained effort by NACSO was placed on building skills for managing conservancy finances and improving governance. With financial support from the United States Millennium Challenge Corporation and the MCA-N, 11 training modules for governance were developed by the government and NACSO. These covered key issues such as annual general meetings, constitution development and revision, benefit distribution, and financial management. Training courses using these modules were given by NACSO to clusters of conservancies. In addition to the training, support organizations also provided follow-up technical assistance. One of the main aims is to ensure that members approve financial statements and budgets at annual general meetings.

Additional Impacts

A number of conservancies use some of their funds (exact figures are unavailable) for a range of social benefits, including school bursaries, water installations, cash for school development, soup kitchens for the elderly, contributions to traditional authorities, and, in some cases, support for families affected by HIV/AIDS. During 2011, N\$6.56 million (about \$600,000) worth of household game meat from various forms of hunting was distributed to households within conservancies. Additional amounts went to local schools and the elderly.

Impact on Agriculture and Food Security

In Torra Conservancy, meat was rated the most significant benefit community members received in 2011. Households received relatively large quantities of meat, sometimes a whole springbok carcass. Where meat is distributed in sufficient quantities, it is an important factor in nutrition in the conservancies. In most cases, meat distribution takes place during the dry winter months, a period of high food insecurity in many households when options for supplementing diets are limited. In addition, several conservancies have initiated **community-based rangeland and livestock management** (CBRLM) activities to reverse the declining productivity of Namibia's grasslands, now being promoted in nine of Namibia's twelve regions by

¹⁶³ Jones (2004).

¹⁶⁴ NACSO (2013a), p. 80.

the MCA-N initiative and the Ministry of Agriculture, Water and Forestry (MAWF).¹⁶⁵ Other conservancies in higher rainfall areas are supporting the promotion of **conservation agriculture**. Both types of activities improve soil conservation, and promote sustainable and more climate-resilient forms of agriculture, as well as contributing to increased food security.

Impact on Climate Change and Climate Change Programming

Conservancies and their activities are recognized under Namibia's National Policy on Climate Change (2011). Under the policy's "**Strategy 4.5 Biodiversity and Ecosystem Services**," the government will, among other actions, "encourage involvement of local communities in conservation and sustainable use of biodiversity through provision of conservancies." As alluded to above, under "**Strategy 4.3 Agriculture**," the government will, among other actions, "promote and encourage **conservation agriculture**" and "promote **sustainable management of rangelands and pastures** through preparation and implementation of integrated rangeland management plans." Diversification of livelihoods, sustainable range management, and sustainable crop cultivation can all help communities adapt to climate change, while connectivity between conservancies and protected areas can assist in adaptation for biodiversity conservation.

Impacts on other Resources and/or National Policy

The conservancy approach has now been adopted by the water and forestry sectors, in which sectoral legislation provides for communities to receive rights over forests and forest products. It also provides the right to form water user associations and committees to manage water use and provision on communal lands. In April 2006, the Cabinet approved the following statements regarding land reform: "In the medium term, sectoral policies on natural resources management, water, land, forestry and agriculture must be revised to give decision-making and management authority to resource-users at a local level" and "Community-based policies on resource management are expanded beyond wildlife and tourism to incorporate other natural resources like water, land and land-based economic activities."¹⁶⁶ Some analysts, however, see incomplete devolution of management and use rights, and land tenure insecurity, as continuing to inhibit the achievement of the CBNRM approach's true potential in Namibia.¹⁶⁷ The Ministry of Lands and Resettlement has recently become interested in the concept of community group rights over land. Consultants working for this ministry are targeting conservancies to pilot such an approach. Many conservancies are now acquiring community forest status and vice versa.

Tools used in Operationalization of NWP Principles

- **Management-oriented monitoring system (MOMS)** – developed for natural resource monitoring in conservancies. A system based on daily reporting by game guards and others that enables data to be aggregated monthly and annually, to help show trends in wildlife numbers, human-wildlife conflict incidents, status of grazing, etc.
- **Governance dashboard** – developed as a participatory approach for conservancy members to assess their own conservancy's governance in terms of committee accountability, good financial management, transparency in decision-making, etc.
- **Constitution revision** – a systematized approach to helping conservancies revise their constitutions through a participatory process intended to strengthen governance and committee accountability.

¹⁶⁵ NACSO (2013a), p. 50. Also see Volkman (2011).

¹⁶⁶ Namibia National Land Tenure Policy (2008). Namibian Cabinet made decision on April 11, 2006. Division of Land Board Tenure and Advise, Operational Manual for Communal Land Boards, (second edition). Windhoek, Namibia, Ministry of Lands

¹⁶⁷ Boudreaux and Nelson (2011).

- **Joint venture management dashboard** – a systematized approach for tourism lodge-operators in joint ventures with conservancies to provide financial data to conservancy management committees in a useful and understandable form. Such dashboards help to institutionalize the provision of appropriate data by the private sector to the conservancy management committee. It ensures the committee receives the data it needs to assess the results of the joint venture.

Next Steps

The success of the Namibian program in assisting the recovery and growth of wildlife populations has resulted, not unexpectedly, in some tradeoffs that need to be managed. The number of human-wildlife conflict incidents rose in 2010, with a total of 7,738 incidents reported, countrywide, in conservancies. The majority of cases involved livestock losses to predators, most of which occurred in the Kunene Region. However, elephants also damaged water installations in the northwest, and were responsible for considerable damage to crops in Caprivi Region. Elephant numbers have increased in Caprivi partly because of increased tolerance by residents through the activities of conservancies. However, more intensive efforts to reduce human-wildlife conflict in Caprivi, and to increase household benefits to compensate for crop losses are required. Alternative approaches, such as damage prevention and income enhancement through the use of *Certified Wildlife Friendly*TM “**elephant pepper**” (originally developed in Zimbabwe, but now with a presence in seven African countries, including Namibia), may help improve community attitudes toward elephants.¹⁶⁸

The CBNRM approach has so far been based on provision of resource and not land rights, leaving conservancies vulnerable to government and traditional authorities allocating land for other purposes (however, see below regarding new developments on land tenure).

Lessons Learned for the NWP Framework

The development of the Namibian CBNRM program preceded and contributed to conceptualization of the NWP paradigm. NWP has drawn on lessons learned from the Namibian program, which for many years used the metaphor of the three-legged African pot supported by natural resource management, institutions, and economic benefits. At the same time, the Namibian program has subsequently benefited from the analysis and principles of NWP. This section discusses the mutual lessons learned.

Strong Confirmations

In the Namibian CBNRM program, **wealth** (economic benefit) is created through the sustainable use of **nature** (natural resources). Continued benefit can only be achieved if the resources are managed appropriately. **Power** (authority and control over land and resources) is viewed as a key enabling condition for sustainable use. Without the authority to make decisions regarding use and access to resources, there is little incentive to use the resources sustainably.

The Namibian program confirms that providing rights over resources and the opportunity to benefit from their sustainable use can lead to positive conservation outcomes on a large (national) scale. In many conservancies, the financial benefit to households is low, but poaching is also fairly rare and there seems to be a commitment to conservation. More research is needed, however, to understand how the different incentives work. In Caprivi, one conservancy is deliberately keeping an elephant corridor between protected areas in

¹⁶⁸ Patel et al. (2009).

Namibia and Zambia free from settlement and crop fields. This is because of the benefit the conservancy gets from trophy hunting.

Specific Lessons

- The support of nearly 15 years of core funding from USAID provided time for the program to experiment, evolve, and overcome initial challenges, which was crucial in leading to the current success. Community capacity building, institutional development, and establishment of good governance in community-based organizations all take time and a considerable level of persistent and consistent technical support.
- As lessons are learned the approach becomes more efficient and effective. Future achievements that are built on the lessons learned to date should accelerate. However, there is a limit to the expansion of conservancies and the recovery of wildlife populations. A realistic understanding of the sustainability of the program needs to be developed and pursued. Over time, conservancies will develop sufficient capacity to run their affairs in terms of their institutions, governance, and dealings with the private sector. However, it is unrealistic to expect that they will develop sufficient technical capacity to handle all aspects of natural resource management. While many of the services could be provided on a fee-per-service basis (especially as local capacity is built), conservancies will still require ongoing technical and extension support; preferably from the government, but potentially also from NGOs. Also, while not all conservancies have the same income-generating potential, some of these might be important for connectivity or have high biodiversity priority apart from the conservation of large mammals (e.g., the conservation of endemic plants, reptiles, etc.). Such conservancies might require a more direct payment-for-ecosystem-services approach, to help sustain them financially.
- Good governance often increases in relation to the size of the conservancy's income. Members demand more accountability and involvement in decision making when income is sufficient to provide significant benefits.
- Perhaps most interesting at this point is the extension of the CBNRM approach into other resources such as forests, water, rangeland restoration, livestock management, and fisheries.
- And crucially, the addition of improved land tenure security and resource rights, to make it worthwhile for communities to invest in their full suite of land and natural resources.

Factors in Successful Scale-Up

USAID's and WWF's sustained commitments were clearly significant factors in the program's success. Namibia's geography limits opportunities for alternatives to the types of resource management being used, but it is also a factor in limiting the human population to a size compatible with those approaches. Wildlife and tourism, as land uses, have been more acceptable in Namibia. This is because much of the country is arid or semiarid, thus limiting crop farming. Extensive livestock farming is much more compatible with wildlife and tourism, as demonstrated by the many freehold livestock farmers in Namibia who also have wildlife on their land, and carry out various forms of wildlife-based tourism, including trophy hunting (which also provided important precedent and evidence of the viability of the approach). Scale-up took place in part because legislation provided enough opportunity for communities to decide they want to have rights over wildlife. Communities see the benefits accruing for others that already have rights, and some communities also see conservancies as a means to gain more security over their land. At the same time, government officials and NGOs have encouraged conservancy formation, which in some cases was probably inappropriate because of very low wildlife numbers and few tourist attractions. In some of these cases, it would have been better to start with a community forest, and in others to have focused on rangeland and

water management. Now these are being pursued, with assistance from the MCA-N. The high level of government and NGO technical support to conservancies has also assisted scale-up.

Conclusions

In Namibia, the conservancies have gone beyond expanding areas managed for wildlife and other natural resources. The movement has brought new sets of natural resources into production and has boosted the productivity of these natural resources. Furthermore, Namibian conservancies serve as a model of NWP, as its success has unlocked the economic potential of wildlife, land, and tourism in communal areas. The conservancies have lifted its people out of poverty by diversifying livelihoods and building local empowerment and skills. It has also promoted local democracy, by providing its communities with income they can use for their development objectives – ultimately keeping their communities’ economic growth sustainable. While it has its limits, the Conservancy movement has transformed communal and “marginal areas” in Namibia.

NAMIBIA Case References

- App, Brian, Alfons Wagah Mosimane, Tim Resch, and Doreen Robinson. 2008. “USAID Support to the Community-Based Natural Resource Management Program in Namibia: LIFE Program Review.” Biodiversity Analysis and Technical Support (BATS) Program, USAID/AFR/SD. Accessed 8-12-13 at: http://pdf.usaid.gov/pdf_docs/PDACL549.pdf
- Boudreaux, Karol. 2010. *Community Conservation in Namibia: Devolution as a Tool for the Legal Empowerment of the Poor*. Working paper. Mercatus Center. Fairfax, VA: George Mason University. <http://mercatus.org/sites/default/files/publication/wp1064-community-conservation-in-namibia.pdf>
- Boudreaux, Karol and Fred Nelson. 2011. Community Conservation in Namibia: Empowering the Poor with Property Rights. *iea Economic Affairs*, 31: 17–24 (June 2011). doi: 10.1111/j.1468-0270.2011.02096.x <http://onlinelibrary.wiley.com/doi/10.1111/j.1468-0270.2011.02096.x/full> accessed 8-12-13.
- M. Wubbe, Draft Roadmap for the Land Registration of the Communal Areas 2009-2013 (v0.3). Windhoek, Namibia, Ministry of Lands and Resettlement, 2008. Government of Namibia. 1996. “National Conservation Amendment Act.” *Government Gazette of the Republic of Namibia*, Windhoek, Namibia.
- Jones, B. T. B. 2004. *CBNRM, Poverty Reduction and Sustainable Livelihoods: Developing Criteria for Evaluating the Contribution of CBNRM to Poverty Reduction and Alleviation in Southern Africa*. Commons Southern Africa Occasional Paper Series No. 7. Harare, Zimbabwe, and Capetown, South Africa: Centre for Applied Social Sciences, University of Zimbabwe, and Programme for Land and Agrarian Studies, School of Government, University of the Western Cape.
- Jones, B. T. B., Davis, A., Diez, L., and R. W. Diggle. 2013. Community-Based Natural Resource Management (CBNRM) and Reducing Poverty in Namibia. In: Roe, D., Elliot, J., Sandbrook, C., and M. Walpole. (eds). *Biodiversity Conservation and Poverty Alleviation: Exploring the Evidence for a Link*. John Wiley and Sons, Chichester, UK. pp 191-205.
- NACSO (Namibian Association of CBNRM Support Organisations). 2006. *Namibia’s Communal Conservancies: A Review of Progress and Challenges in 2005*. Windhoek, Namibia. Accessed 8-12-13 at: http://www.nacso.org.na/SOC_2005/index.php

- NACSO. 2013a. *Namibia's Communal Conservancies: A Review of Progress and Challenges in 2011*. Windhoek, Namibia. Accessed 8-12-13 at: http://www.nacso.org.na/SOC_2011/index.php
- NACSO. 2013b. Map of Sustainable Resource Management Areas of Namibia. Accessed 8-11-13 at: <http://www.nacso.org.na/dwnlds/refs/Communal%20conservancies%20map%20with%20image%20A4.jpg>
- NACSO. 2013c. Game Counts in North-West Namibia (June 2012). Accessed 8-11-13 at: http://www.nacso.org.na/dwnlds/refs/NW_game_count_poster_2012.pdf
- NACSO. 2013d. Game Counts in Bwabwata & Caprivi (Dry Season 2012). <http://www.nacso.org.na/dwnlds/refs/Caprivi%20game%20count%20poster%202012.pdf>
- Namibia National Land Tenure Policy. 2008 – from footnote 167 on p. 112.
- Patel, Hetu, Sara Nelson, Jesus Palacios, Alison Zander, and Helen Crowley. 2009. “TransLinks Case Study– Elephant Pepper: Establishing Conservation-Focused Business.” Wildlife Conservation Society and USAID. http://rmportal.net/library/content/translinks/translinks-2009/wildlife-conservation-society/casestudy_elephantpepperconservationfocusedbusiness.pdf/view, http://rmportal.net/library/content/translinks/translinks-2009/wildlife-conservation-society/brochure_wfenelephantpepper.pdf/view, www.elephantpepper.com
- USAID. N.D. “USAID Country Profile-Property Rights and Resource Governance: Namibia.” 19 pp. https://s3.amazonaws.com/landesa_production/resource/1350/USAID_Land-Tenure-Namibia-Profile-2010.pdf?AWSAccessKeyId=AKIAICR3ICC22CMP7DPA&Expires=1380737493&Signature=88BIxrDeFeHAAaU0T0AvoECX3P0%3D
- Volkman, Wiebke, Colin Nott, Ekkehard Kuelbs, Judith Isele, Sally Wood, Anna Davis et al. 2011. *Community-Based Rangeland and Livestock Management: New Possibilities for Restoring Grassland and Prosperity to Rural Areas* Ministry of Agriculture, Water and Forestry, 2nd Edition. Oshakati, Namibia: GOPA Worldwide Consultants.

ANNEX 3.4

CO-MANAGEMENT OF FORESTS AND WETLANDS FOR MORE INCLUSIVE DEVELOPMENT IN BANGLADESH

Context

In the forty years from liberation in 1971 to 2011, Bangladesh's population grew from 71 to 162 million while its Gross Domestic Product (GDP, in constant prices) grew four-fold, in a country roughly the size of Louisiana.¹⁶⁹ These demographic and economic trends put intense pressure on the natural resource base of the country, particularly on the wetlands and forests. In terms of wetlands Bangladesh has the third largest freshwater fish yields in the world.

The Government of Bangladesh (GoB) has recognized the impact of the changes of resource availability on the poor. The 2005 Bangladesh Poverty Reduction Strategy Paper (PRSP) highlighted the importance of the public commons (including land, open water in wetlands, forests, and other resources) as “sources for livelihoods for the poor, including the hardcore poor” and noted that “some 80 percent of the population depends, to some extent, on the utilization of these resources or on processing the resulting products.” The PRSP goes on to note that the “public commons may be one of the most important safety nets available to the poor, particularly in the rural areas, provided these are managed in a sustainable manner.”¹⁷⁰

The Government's concern for management of the commons, and especially wetlands and forests, grew, in part, not only because of the decline of those resources, but because of the seemingly intractable management and governance problems driving that decline. Poor governance and corruption played a central role in forest and wetland loss, and contributed to Bangladesh's being ranked lowest of all countries in Transparency International's corruption index for five consecutive years (2001 through 2005). There has been some improvement, in 2012 Bangladesh ranked 144th out of 174 countries – but corruption remains an issue. At the local level, neighboring populations of ethnic minorities, fisherfolk, or small households, were scarcely taken into consideration in resource management decisions as more powerful actors drove management decisions.

In the PRSP, and in other documents, the GoB and its partners recognized the clear link between the availability, management and productivity of natural resources (Nature); the critical livelihood benefits necessary to support pro-poor economic growth (Wealth); and the governance constraints and challenges that mediated access and benefits, and were closely associated with the loss and decline of those resources (Power).

¹⁶⁹ Population data from World Bank/OECD statistics. Initial results from the 2011 Census data estimated 142 million, but these figures are in dispute. GDP measured in constant US\$2000: it was \$17.8 billion in 1971 and grew to \$88.5 billion in 2011. GDP source is World Bank, World Development Indicators database (www.data.worldbank.org).

¹⁷⁰ Government of Bangladesh (2005). The Poverty Reduction Strategy Paper (PRSP), p 179. <http://www.imf.org/external/pubs/ft/scr/2005/cr05410.pdf>.

Activities and Sites

In response to the above challenges, the GoB, with support from USAID and other organizations, carried out a number of natural resource *co-management*¹⁷¹ activities over the last 15 years. The programs of the past 10 years were built in large part upon *Nature, Wealth, and Power* principles (NWP1). They were aimed at increasing the participation of rural communities in the management of local natural resources, and at increasing the benefits that accrued to these communities from better management. They included the following:

- The USAID-supported *Managing Aquatic Resources through Community Husbandry* (MACH) program (1998-2008), demonstrated the viability of wetlands co-management for fisheries at three large wetland systems totaling about 25,000 ha in the wet season.
- The USAID-supported *Tropical Forest Resources Co-Management* program (2003-2008), also known as the *Nisborgo Support Project*, aimed to apply a similar approach to forestry, at five pilot sites within the national park system managed by the Forest Department (FD).
- In 2008-2013, expansion of both wetland aquaculture and forest co-management was supported under USAID's *Integrated Protected Areas Co-Management* (IPAC) project.
- Working with the Department of the Environment, the United Nations Environment Programme/Global Environment Facility (UNEP/GEF) supported the *Coastal and Wetland Biodiversity Management Project* to develop a co-management approach for four pilot Ecologically Critical Areas (ECA) defined under the 1995 Bangladesh Environmental Conservation Act.
- The Arannayk Foundation has financed initiatives to expand co-management in particular at the site of the proposed *Inani National Park* near Cox's Bazaar in the east of the country.
- International Union for Conservation of Nature (IUCN)/Bangladesh initiated a co-management activity in the *Bandarban District* of the Chittagong Hill Tracts.

Presently co-management – in a multitude of forms and applications – has become a widely used approach for managing the public commons across Bangladesh (see **Figure 3.4.1**). This case study examines the impacts of co-management on forests and wetlands on the generation and distribution of benefits, and the sharing of authority and responsibility.

171 “Co-management – a situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources.” Borrini-Feyerabend, et al. (2007).

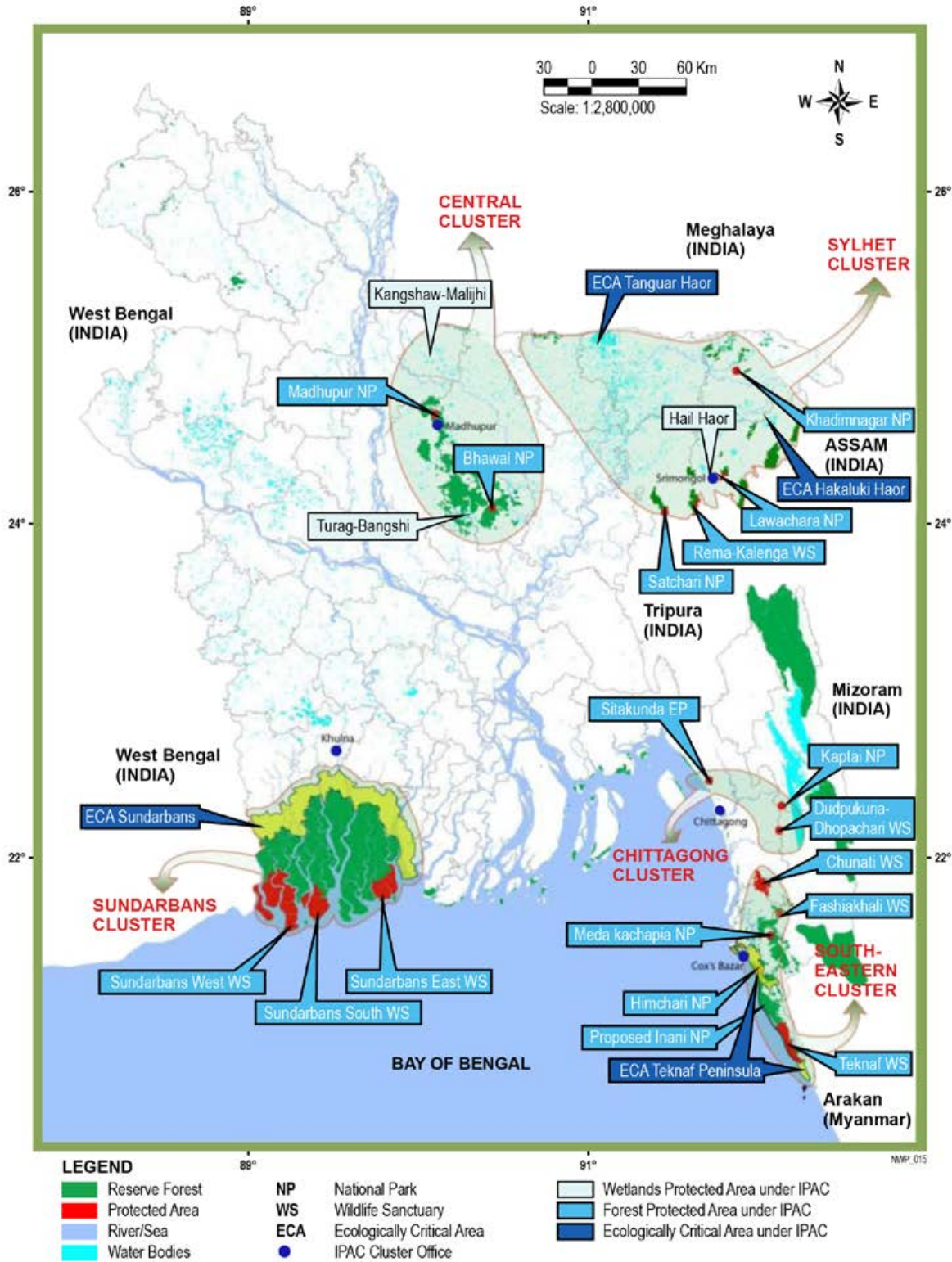


Figure 3.4.1. Selection of public commons wetlands and forests now under co-management with assistance from USAID IPAC project in Bangladesh

Source: International Resources Group, 2010. *Integrated Protected Area Co-Management*, USAID.

Impacts of Natural Resource Co-Management

Key GoB agencies have adopted co-management as a model for managing key natural resources. Through a Government Order, the Forest Department indicated that 29 designated protected areas (PA) will be co-managed. By putting a halt on awarding private leases for open waters (that would have otherwise marginalized local participation in management decisions), the GoB demonstrated its awareness that co-management approaches can be effective for managing public wetlands. Impacts under the categories of Nature, Wealth, and Power are assessed below.¹⁷²

Impacts on Nature

In those wetland and forest sites, where co-management was piloted, there have been demonstrated and measurable improvements in the natural resource base. Thompson (2012) concludes that: “The evidence available indicates that there have been positive outcomes; unlike the general trend for continued degradation and loss of biodiversity in areas not employing co-management, this degradation has been halted by co-management and instead biodiversity is being restored from improved protection and management under co-management.”¹⁷³

For forest areas, a monitoring protocol, based on indicator bird species, was developed in 2004 to measure short-term changes in forest habitat quality. The data generated could be easily measured, understood and used by local populations, allowing the co-management partners to participate in monitoring. **Figure 3.4.2** shows the compiled annual transect data for 2005 through 2008 for two representative sites, one in the northeast of the country and another in the southeast.

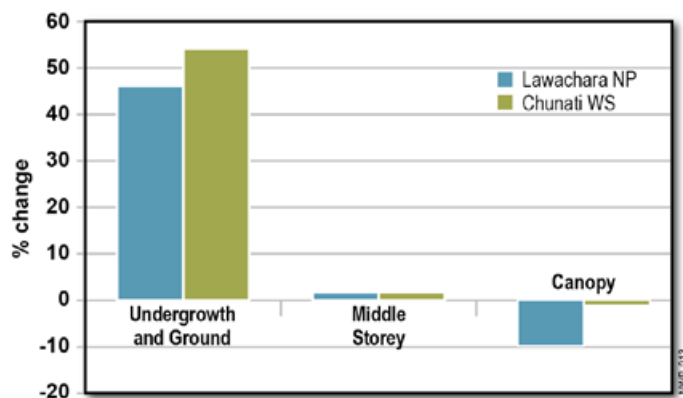


Figure 3.4.2. Changes in indicator bird populations, 2005–08

Source: Thompson, 2012.

¹⁷² Impacts were reviewed and summarized in Thompson (2012) for select wetland and forest sites, and also in the IPAC-supported State of Bangladesh's Protected Areas (2010), as well as the IPAC Fish Catch Monitoring Report (2012).

¹⁷³ Thompson (2012), p. 1.

The impacts of co-management on wetland quality and productivity have been measured over a longer period. This is primarily because MACH pilots were initiated well ahead of forest co-management. In one area where the wetland co-management model had been applied, fish productivity appears to have improved, albeit not highly significantly (see **Figure 3.4.3**).

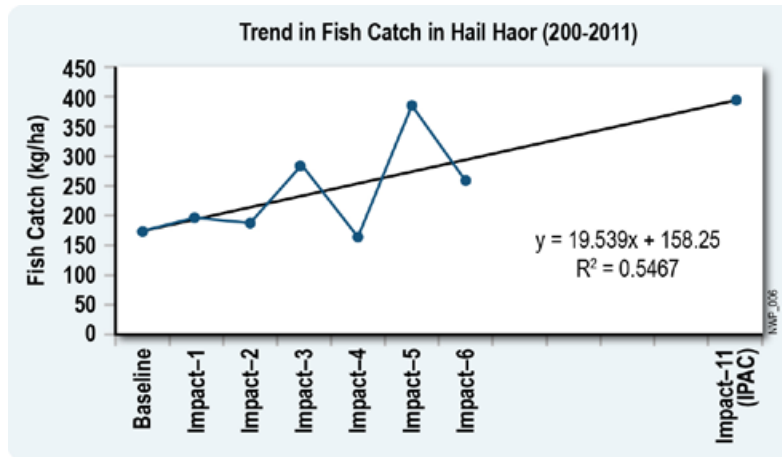


Figure 3.4.3. Fish catch trend in Hail Haor, 2000 – 2011

Source: IPAC Fish Catch Report, 2012.

Impacts on Wealth

While co-management of forests and wetlands produced some biophysical improvements, co-management’s impacts on livelihoods have been a more complex story. In co-managed parks, where investments were made in tourist services, visitor growth and expenditures in and around the parks were noticeable. For example, at the small (1,250 hectare) Lawachara National Park, visitor numbers increased by nearly 20,000 people per year (compounded), creating new livelihood opportunities in and around the Park (see **Figure 3.4.4**). Thompson (2012) estimated 2011 visitor spending associated with Lawachara National Park to be US\$ 1.2 million, with an estimated one-third of that amount spent locally.

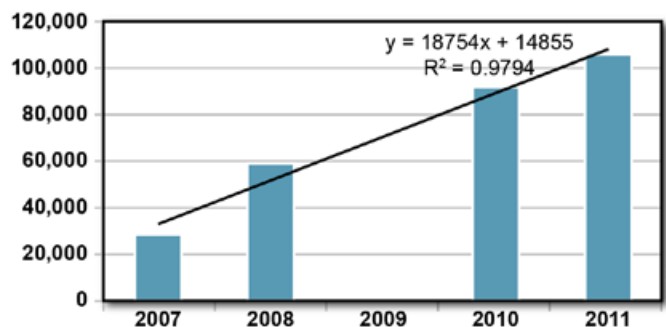


Figure 3.4.4. Visitor Numbers for Lawachara National Park 2007 – 2011

Source: Thompson, 2012.

An official Government Order allowed – for the first time – for co-management organizations to receive 50% of entry fees from tourists in forested PAs. Also, new bed and breakfast type (B&B) hotels owned by co-managers (called Nishorgo Eco-Cottages) have gained national and global exposure (in Lonely Planet

and Brandt's guides), while generating income and exposure for the co-management process. The successes of these B&B networks, as well as trained local Eco-Guides around co-managed sites, are now increasingly recognized by national and regional tour operators.

In addition to investments made by the co-managers, other private sector interests plan to make investments in tourism near the Park, including the construction of a five-star hotel next to the Park.

However, while livelihood opportunities from nature tourism have grown, the same cannot be said for livelihood improvements generated from forest co-management. The plan aimed to protect core zones while increasing revenue opportunities for local populations who, among other co-management activities, patrolled public forests to protect them. While some benefits have accrued from co-management, the scale of those benefits has not met expectations. The shortfall has been partially attributed to the reluctance of the Forest Department to allow direct community management of – and rights over – blocks of public forest lands, no matter how degraded.

In contrast to forest co-management, wealth benefits from wetland co-management were significant. Those benefits were direct (increased fish productivity) and almost immediate. Measurements of fish catch increases at the Hail Haor wetland indicated a marginal production increase at that site worth US\$4.2 million per year. This resulted in an estimated annual income increase of \$192/year per fishing household.¹⁷⁴ Panel surveys, conducted amongst wetland co-management participants in 2006, demonstrated statistically significant increases of fish consumption for both poorer and better off households in the area, and consequent nutrition benefits (Winrock, 2005, referenced in Thompson 2012).

Impacts on Power

Given the potential high productivity of natural resources in Bangladesh – in both wetlands and forests – it was clear to the concerned government departments and other partners that wealth could be created if resource management could be improved. The most difficult challenge was perceived to be changing the power relations that determine resource access and use. At both wetlands and forests sites, the co-management model has aimed to put in place a new governing regime that would increase the power of a group of stakeholders with incentives to manage the resource sustainably rather than over-consume it.

In wetland areas, neighboring Resource Management Organizations (RMO) and their constituent community-based organizations (CBO) were granted “long-term” leases (10 years) to water bodies that would serve as critical sanctuaries within larger wetland areas – areas that would not be drained out and emptied of fish in the dry season, and would thus provide natural feeder stock for subsequent years. The participating communities had the clear right in those leases to exclude non-participating fisherfolk or others from the sanctuary areas, and took necessary steps to protect the resources through patrolling and protection. This was a significant shift of rights and power to co-managing organizations, compared to the pre-intervention situation, when wetland use and allocation was determined by local private elites and government authorities.

However, the shift in wetland power relations was not to be permanent. The community leases were only for 10 years, and in 2012 many of these leases were scheduled to expire at co-managed sites around the country, including MACH/IPAC sites. Not surprisingly, a quiet push was made by vested interests throughout the country to shift community wetland leases back to private individual ownership, either through intimidation of Co-Management Organizations (CMO), or through corrupt deals with the Government officials with authority to change lease ownership. In late 2012, the issue rose to the level of the Prime Minister's office, and a general order was issued freezing all leasehold changes for community wetland leases. The high level

¹⁷⁴ Thompson (2012).

discussions reflected the value of these wetland areas to private economic interests, as well as a glaring gap in the policy framework to protect community rights over the longer term. Unfortunately, some water bodies were nonetheless grabbed by elites for at least one year. The RMOs brought a legal case and obtained a high court injunction preventing competitive leasing out of some of the larger water bodies they had controlled. This did not give them exclusive interim rights. A fresh government (Ministry of Fisheries and Livestock) initiative is in process, and a Ministry of Land decision on reserving these water bodies again for the RMOs for six years is pending. Hence, wetlands tenure is still uncertain.

The situation was different in co-managed forest areas. There, the national rights framework for co-management has been codified and formalized, but there remains a reticence to transfer significant rights in practice at the local level. The national rights framework for co-management has been codified primarily through two Government Orders (formalizing co-management bodies and the entry fee sharing process), as well as a revised Wildlife Act that gives further legitimacy to the new model of management. Additional policy documents, including Government-approved Management Plans, further strengthen the rights framework for forest co-management organizations to benefit from their protected areas.

In spite of the rights framework for forests, CMOs remain reticent to demand their rights—for example, to social forestry opportunities, or more rapid access to their share of entry fee revenues. In addition, within the organizations, rights for ethnic minorities and women have been slow to emerge.¹⁷⁵ This appears to be related to a slow pace of change within the Forest Department. With wetlands there has been no physical, historic presence of the government. The situation is different on forest lands, where in many cases the Forest Department physically resides on the target resource, and has often done so for over a hundred years. The new holders of use rights hesitate to challenge the status quo on forest lands in light of this long history.

Although reticence has been the norm across the forest lands, there have been important and telling examples in which co-managers have spoken out. This has perhaps been most evident at Chunati Wildlife Sanctuary, the site of a large-scale forest clearing in 1990 (when the Sanctuary was first declared), followed by long-standing distrust between the local community and the Department. At this site, where conflict was the strongest in the past, community members have been most ready to challenge the department and take leadership in both managing and benefitting from the resource.

Co-management organizations now exist throughout the country for wetlands and forests. However, the process for organizational formation and recognition of CMOs remains time-consuming and complicated. For protected forests, the Government has allowed CMOs to form for all PAs within the system—but that formation was assisted by a donor project, and it would have been difficult for many of those communities to navigate and complete the institutional recognition process without support of project staff. For forest PAs, however, there is a fixed and limited number of sites at which forest PA co-management can take place (since there are only 28 forest PAs now within the country's system). Sites still remaining for co-management include the Sundarbans Sanctuaries and Reserve Forests. Most other forest PAs are now under a co-managed structure.

In wetlands, the scope for co-management to expand to most of the country is much larger (open access wetlands exist throughout the country, on a scale much larger than the forest Protected Area system), but the constraints to recognition are more significant. The process for declaring wetland sanctuaries within open access wetlands has only been completed a handful of times. While CBOs can form and register quite quickly and at low cost, those CBOs are not likely to be granted even short-term leases for significant wetland areas, without strong support of the Government, projects or NGOs. This is not so much because they cannot execute the sustainable management role, but because the CBOs have little political status and

¹⁷⁵ Dutta, DeCosse, and Sharma (2005).

power compared to the lease-granting authorities (particularly, the Ministry of Lands and the Union and District governments), along with their allies. The roles being taken up by the CMOs (CBOs for Forestry co-management) are roles that the Forestry Department could not in any case execute, for simple lack of staff. Bangladesh is not seeing a process of transfer of responsibilities to the community so much as the communities filling a vacuum left by a weakened Department.

Impact on Agriculture and Food Security Policies and Programs

Recent documents, such as the 2010 Country Investment Plan for agriculture, food security, and nutrition have highlighted the linkage between food security and agriculture.¹⁷⁶ These policy documents recognize the importance of strengthening access rights. However, some donor programs largely de-couple food security from environmental governance by highlighting two separate and distinct program and priority areas for food security and nutrition, and climate resilience.

Impact on Climate Change Policies and Programs

While climate change policies are varied, two high-profile environment and adaptation programs have raised the profile of co-management with Bangladeshi policy makers and the public. In 2012, the Ministry of Environment and Forests was awarded the Earth Care Award, sponsored by the Times of India, for leading the “Community Based Adaptation to Climate Change through Coastal Afforestation in Bangladesh” project. The project’s component programs highlight the central role of co-management and governance.¹⁷⁷ In 2012 a Wangari Maathai Honorable Mention award was given to Kurshida Begum of the Teknaf Forest Co-Management Committee for her work helping women in her village form a community patrol group alongside Forest Department guards to protect the forests and biodiversity from illegal logging and poaching. This award has further highlighted the link between co-management and its importance to conservation and climate change.

Lessons for the NWP Framework

The NWP framework has played various roles in program and project design in wetlands and forests in Bangladesh. The framework was released well after initiation of the start of wetlands co-management work (under MACH-I), but caught the attention of the USAID Mission in planning stages for the forest co-management program. The NWP framework was used explicitly in planning for the Nishorgo project, and then applied in a similarly explicit approach in the IPAC project, which expands work in both forests and wetlands.

The NWP framework allows for diverse approaches and solutions, from market-driven livelihoods to technical resource management, to complex governance changes. USAID’s evaluations of its co-management projects (Nishorgo and IPAC) highlighted the complex logic behind the approaches, and the need for many skills to make co-management work. In particular, these two evaluations highlighted the need to simultaneously implement policy and institutional changes at national levels, while supporting complex social changes at the local level, in order for the approach to work. Success requires shifts in power and policy that require clout that often neither communities nor local NGOs are likely to possess.

Execution of NWP-influenced initiatives in Bangladesh highlighted the different temporal dimensions that distinguish nature, wealth, and power. The co-managed forests at Chunati were visibly recovered after only

¹⁷⁶ Government of Bangladesh (2010).

¹⁷⁷ See UNDP (2012a).

three years of co-management implementation, and after seven years, were visibly transformed. The change in wetland resources was even more rapid. Economic changes were also rapid and visible, evident not least in the rapid growth of nature tourism. But changes in power relations, and in perceived authorities of the communities, has taken much longer than resource and economic changes.

The strongest confirmation of the NWP framework is the value of combining procedural/policy changes with local resource management initiatives and capacity building. Co-management projects in Bangladesh could not have succeeded at the local level without simultaneously changing processes for local governance and policies about governance/natural resources management.

A number of tools were developed to complete the NWP approach and make it more “implementable.” These include, for example, community engagement in monitoring the following: indicator bird selection for cultural/ethnological reasons; involvement of Bird Clubs, Scouts, local Eco-Guides; communication and behavioral change strategies for trying to create national/regional momentum for change; CMO scoring mechanisms; and capacity building/development and grants programs for CMOs, NGOs, and larger Bangladeshi institutions.

Observations/Conclusions

At the early stages of design of the forest co-management project, with the Forest Department, most members of the Department objected to the idea of sharing any authority with communities. Those supporting the project were in a small minority within the Department or the Ministry of the Environment.¹⁷⁸ For those that supported co-management, the leading argument had little to do with the benefits of community participation to the communities, or the benefits to the environment. Rather, advocates for the approach within the Department argued on the grounds of power. The Department was powerless against local commercial and political interests – they argued – as evidenced by the rapid loss of forests within the PA system. If the Department did not create and support a new center of allied power – to be located within co-management committees – it would lose the forests entirely, and it would risk the PAs being transferred to another authority. In the end, co-management for the FD became a way of transferring authority in order to save its own authority. Because of entrenched interests at local/national levels, there is still a long way to go. In the case of wetlands, the situation with community leases shows that persistence and vigilance is still required, and back-sliding is always possible. However, the momentum is evident and co-management will potentially remain a central feature of resource management planning and climate planning.

¹⁷⁸ See Mazumder and Thompson (2005).

BANGLADESH Case References

- Borrini-Feyerabend, G., Farvar, M. T., Nguinguiri, J. C. & Ndangang, V. A. 2007. *Co-management of Natural Resources: Organizing, Negotiating and Learning-by-Doing*. GTZ and IUCN, Kasperek Verlag, Heidelberg. http://www.conservation-development.net/rsFiles/Datei/CoManagement_English_Auflage2.pdf
- Dutta, Uptal, Philip DeCosse, and Ram A. Sharma. 2005. "The Pace, Nature and Logic of Empowerment at Co-Management Sites." Chapter 5 in: P. J. DeCosse, P. M. Thompson, I. U. Ahmad, R. A. Sharma, and A. H. Mazumder (Eds.), *Protected Area Co-Management: Where People and Poverty Intersect: Lessons from Nishorgo in Bangladesh*. pp. 73–84. Washington, D.C. USAID and Government of Bangladesh.
- Government of Bangladesh. 2005. The Poverty Reduction Strategy Paper (PRSP). <http://www.imf.org/external/pubs/ft/scr/2005/cr05410.pdf>
- Government of Bangladesh. 2010. Bangladesh Country Investment Plan: A Road Map towards investment in agriculture, food security and nutrition. 14 June 2010. <http://www.gafspfund.org/sites/gafspfund.org/files/Documents/BangladeshCountryInvPlan.pdf>
- International Resources Group. 2012. Integrated Protected Area Co-Management (IPAC) Fish Catch Monitoring Report (2012).
- International Resources Group. 2010. Integrated Protected Area Co-Management (IPAC) Annual Report 2010-2011. USAID. Thompson, Paul M., 2012. "Impact Assessment of Co-Management on Protected Area Conservation in Bangladesh." Report of the USAID Integrated Protected Area Co Management Project (IPAC).
- Mazumder, A. H., and P. M. Thompson. 2005. *Genesis of the Forest Co-Management Experiment*. Chapter 3 in: P. J. DeCosse, P. M. Thompson, I. U. Ahmad, R. A. Sharma, and A. H. Mazumder (Eds.), *Protected Area Co-Management: Where People and Poverty Intersect: Lessons from Nishorgo in Bangladesh*. Pp. 29–34. Washington, D.C.: USAID and Government of Bangladesh
- Thompson, Paul M., 2012. "Impact Assessment of Co-Management on Protected Area Conservation in Bangladesh." Report of the USAID Integrated Protected Area Co Management Project (IPAC).
- United Nations Development Programme (UNDP). 2012a. *Community-Based Adaptation to Climate Change through Coastal Afforestation in Bangladesh: Key Results and Outputs*. Available at: <http://www.undp-alm.org/projects/ldcf-cba-bangladesh/expected-key-results>
- Winrock International. 2005. Management of Aquatic Ecosystems through Community Husbandry (MACH-II) Annual Report USAID/Bangladesh. Dhaka.



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