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Author: NORRIS, SCOTT

Source: BioScience, 56(12) : 960-965

Published By: American Institute of Biological Sciences

URL: [https://doi.org/10.1641/0006-3568\(2006\)56\[960:MD\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2006)56[960:MD]2.0.CO;2)

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Madagascar Defiant

SCOTT NORRIS

Conservationists have long proclaimed the economic value of biodiversity and the services it provides. The point may be proved in Madagascar, where a determined president and an international conservation coalition are struggling to transform a country noted for its past environmental mismanagement into a new role model for green development.

Rainer Dolch knows that the tens of thousands of young trees in his organization's care are only the beginning of a beginning. The seedlings, representing over a hundred species native to Madagascar, have been diligently tended in simple village nurseries for months and now are ready for planting. With luck and continued care the trees will help form a new forest on land that was cleared years ago. Blocks of restored habitat will reconnect larger protected areas north and south, while adjacent tracts will be reserved for sustainable plantations, forest gardens, and farms. All of that will be good for the lemurs and other threatened species of the Andasibe region, and good for the rural farmers, too. Such is the hope.

The Andasibe-Mantadia Biodiversity Corridor, as the project is named, also has a grander, longer-term component. Payments for the new forest's capacity to soak up carbon dioxide (CO₂) will be generated through the World Bank's Bio-Carbon Fund, under the carbon trading provisions of the Kyoto Protocol. Conservation International is fronting much of the initial investment money, paying



President Marc Ravalomanana of Madagascar addresses the opening session of Conservation International's global symposium in June in Antananarivo. Ravalomanana has pledged to triple Madagascar's total protected area by 2008, asserting that the country's unique biodiversity is essential to sustainable development and poverty reduction. Photograph: © 2006 Sterling Zumbunn/Conservation International.

for the forest planting and the development of sustainable livelihood projects. Dolch's group, Mitsinjo—a Malagasy word that translates roughly as “caring for the future”—is one of several partnering nongovernmental organizations (NGOs) tasked with implementing the project on the ground.

Mitsinjo is well named in a country whose future was long neglected. Twenty years ago, Britain's Prince Philip described Madagascar as a nation committing ecological suicide. It was an apt assessment. The country seemed to be set on transforming its last remaining forests to ash and dumping its fertile but eroding soils into the Indian Ocean. Today Madagascar, one of the crown jewels of Earth's biodiversity, has lost over 90 percent of its original forest cover. At the same time, its growing and mostly rural population remains dependent on the products and ecosystem services—such as clean water and soil stabilization—that the remaining forests provide. It's easy to extend the deforestation curve out another generation and see a chaos of mass extinction and human tragedy just a few decades away.

But much has changed in the past 20 years—and particularly in the past 5. A major conservation symposium took place here last June in the capital city of Antananarivo, and it too was well named: “Defying Nature’s End: The African Context.” The conference began with an impassioned speech by Madagascar’s environmentally minded president, Marc Ravalomanana, and ended with delegates standing united behind a blueprint for integrating biodiversity protection and poverty alleviation in Africa. Here in the land of lemurs, chameleons, and baobab trees, a vast new reserve system pledged in 2003 is now becoming a reality. With it have come increased international support and funding, a new regional planning process focused on community resource management, and a shared determination on the part of the government and NGOs to try out new ideas—like paying for biodiversity protection through carbon sequestration.

Frank Hawkins, Conservation International’s vice president for Africa and Madagascar, says efforts like the Andasibe corridor and a second major carbon-for-conservation project farther north in Makira have required a major investment both in time and dollars. But the potential payoff is large. “We’re trying to push this new market-based mechanism [of carbon trading] into a format for delivering local conservation and development benefits,” Hawkins says. “It’s important to demonstrate clearly what the world is willing to pay for biodiversity conservation. And it’s vital to develop a range of approaches for bringing the benefits of biodiversity protection to the people living closest to it.”

For the expatriate German biologist Dolch and his Malagasy coworkers, explaining the benefits of international carbon trading to rural practitioners of slash-and-burn agriculture is not easy. But the need for alternatives to continued deforestation is becoming clear to almost everyone. “It’s more comprehensible to them that planting trees and protecting the plantations will be rewarded by the development of more efficient forms of agriculture and finally lead to economic returns in the form of higher and more diverse yields,” Dolch says. “It helps that



The new Makira and Ankeniheny-Zahamena conservation sites contain more than half of the known population of a number of threatened lemur species, including the diademed sifaka.

Photograph: © 2005 Russell A. Mittermeier/Conservation International.

older villagers remember that yields were considerably higher when forest cover in the region was still relatively intact.”

The Durban Vision

Many view Madagascar as the hottest of the Earth’s biodiversity hotspots—a place whose unique evolutionary legacy is now severely threatened. Over 80 percent of the country’s plant and animal species are endemic, found nowhere else. Most famous are the lemurs, distant primate cousins of apes and humans, of which over 90 species have been identified. Although less than 10 percent of the island’s original forests remain intact, Madagascar continues to yield previously unknown species on a regular basis—three new species of mouse lemur were added in 2006. But until now, Madagascar’s biological riches have done little to allay the country’s human poverty. Deforestation has slowed but still continues, as poor farmers practice slash-and-burn methods of rice production. Over two-thirds of the popu-

lation of 17 million is rural; 13 million people live on less than one dollar a day.

Despite the biological uniqueness of Madagascar, just 20 years ago its conservation program was virtually nonexistent. Important reserves received little or no funding; erosion and deforestation were out of control. The country’s vast central plateau was and remains an ecological ruin, largely devoid of life and the capacity for much regeneration. Remaining forests are distributed in a ring around the island’s periphery, larger and wetter in the north and east, drier and more fragmented in the south and west. Despite the shrinking forest cover, parts of the country remain extremely remote; the biodiversity of large areas has still scarcely been surveyed.

Some changes in Madagascar’s environmental outlook have come slowly and others overnight. An important milestone was the launch of Africa’s first National Environmental Action Plan (NEAP) in 1991. This ambitious long-term effort, now in its third and final phase, has brought major international support for protecting biologically critical areas and improved the country’s capacity for managing resources and slowing environmental degradation. From the beginning, pioneering projects supported by the US Agency for International Development (USAID) focused on integrating conservation and economic development objectives. “But in the early 1990s,” says longtime USAID Madagascar representative Lisa Gaylord, “we didn’t have a very good understanding of how it should be done.”

The pace of change accelerated greatly when self-made millionaire and former Antananarivo mayor Marc Ravalomanana came to power in 2002, following a disputed 2001 presidential election. An ambitious head of state with a businesslike approach to leadership, Ravalomanana has made economic development and governmental reform top priorities. His boldest and most far-reaching move, however, came at the World Parks Congress in Durban, South Africa, in September 2003. There, Ravalomanana unveiled a plan to more than triple the country’s total protected area, from 1.7 million hectares to 6 million



Rice, growing in the central highlands fields behind this farmer, is central to Malagasy diet and culture—Madagascar has the highest per capita rice consumption in the world—but its production is a major driver of deforestation and watershed deterioration. Conservationists say more efficient rice production and greater crop diversity are essential to protecting biodiversity and improving human welfare. Photograph: © 1993 Haroldo Castro/Conservation International.

hectares, by 2008. The “Durban Vision,” as it has come to be known, was immediately seen as a once-in-a-lifetime opportunity by the global conservation community.

Of course there were skeptics who noted that it is far easier to declare a vision than to enact one. But Ravalomanana’s government quickly showed that the Durban Vision went well beyond rhetoric. In the weeks and months following the announcement, an implementation team was established, including representatives of some 35 Malagasy and international organizations and government agencies. And Ravalomanana issued a temporary decree banning virtually all extractive use—including mining and timber harvesting—from “sensitive zones,” pending resolution of the process for designating new reserves. “Essentially,” says Conservation International’s David Knox, “these sensitive zones comprised all of the remaining forests in Madagascar.”

Implementation of the Durban Vision has been a multifaceted process, involving identification and prioritization of potential reserve sites, designation of legal status, and development of sustainable

livelihood strategies. Much of the technical work has been guided by the major environmental actors on the scene: international NGOs such as Conservation International, World Wildlife Fund (WWF), and Wildlife Conservation Society (WCS), working in close collaboration with local NGOs, government ministries, and development assistance organizations such as the World Bank and USAID. Knox says it has been a remarkably open and effective coalition, with minimal disagreements about priorities.

One of the most important developments has been the establishment of a conservation trust fund for reserve management. Over \$30 million of a targeted \$50 million endowment has already been raised, through contributions from international organizations and foreign governments and through “debt-for-nature” swaps. Madagascar has received substantial debt relief under the World Bank’s Heavily Indebted Poor Countries initiative, and Ravalomanana has declared that a portion will go to conservation. “Madagascar’s commitment to allocate 8 percent of the sums resulting from cancellation of its external debt to

finance its system of protected areas is unprecedented,” says Melissa Moye, director of the WWF’s Center for Conservation Finance.

At the same time, implementation of the Durban Vision has merged with the NEAP focus on community resource management. Durban Vision reserves are established under a new legal authority that provides a range of management options, from strictly protected areas off limits to almost all activities (including tourism) to zones where varying types of sustainable use are allowed. The designation process requires extensive input and involvement from local communities, which are taking advantage of laws allowing them to assume management responsibility for protected and multiple-use areas. “The new conservation sites provide an incentive for communities to band together and to integrate management rules for these areas into a more coherent regional vision,” says Hawkins. “This has had great resonance across the country.”

At least in some areas, the process has made the new reserves a source of local pride as well as potential economic benefit. Such support is critical if the reserves are to succeed in offering significant biodiversity protection. Gaylord says the new approach marks a significant scaling up of integrated conservation and development efforts, from isolated projects to regional land-use planning. “The planning process is just as important as the reserves themselves,” she says. “What has happened over the last three years is very, very encouraging.”

Madagascar Naturally

With over one million hectares of new reserve areas declared in 2005 and another million slated for 2006, the Malagasy government remains on track for meeting Durban Vision goals by 2008. Once achieved, a full 10 percent of the country and over 60 percent of its remaining forests will be under some form of protective management. One of the stars of the new reserve system is Makira, the country’s largest contiguous block of lowland rainforest. Long considered a top priority for protected status, the

337,000-hectare Makira forest provides connectivity with Masoala National Park and other reserve areas in the northeast. The entire region harbors a large percentage of Madagascar's floral diversity and hundreds of endemic animals, including the Madagascar serpent eagle, a species feared to be extinct until re-discovered in 1988.

Even before receiving protection under the Durban Vision process in 2005, Makira was a site of concentrated NGO activity and integrated conservation and development efforts. Leading the way since 2002 has been the WCS-led Makira Forest Project, a government-NGO partnership focused on slowing deforestation, improving crop yields, and developing new sources of income for the 150,000 people living in the region. Additional funding for Makira forest protection is coming through Conservation International's Conservation Carbon Program. Though not eligible for trading as officially credited carbon under the Kyoto Protocol, Makira is attracting voluntary investment from parties interested in offsetting their own CO₂ emissions by helping finance forest conservation. Among the investors are the music groups Pearl Jam and the Dixie Chicks, who offset emissions associated with their 2006 tours with support for the Makira forest.

Among other Durban Vision reserves is the Ankeniheny-Zahamena corridor, a huge swath (over 500,000 hectares) of forest and important sanctuary for the indri and black-and-white ruffed lemur. Three smaller reserves—Daraina, Menabe, and Anjozorobe—are located in areas championed by Madagascar's premier environmental NGO, Fanamby. Menabe and Daraina hold the last remaining populations of several critically endangered species. The fragmented forests of Daraina, for example, are the last holdout of one of the world's most threatened primates, the golden-crowned sifaka. Prior to the reserve designation, a highly publicized film co-produced by Conservation International and Fanamby drew national attention to the plight of the sifaka and the Daraina forests, which are under growing pressure from gold mining.



In the forests of northern and eastern Madagascar, strategies ranging from community resource management to carbon sequestration are being mobilized to conserve rainforest. The indri, largest of the lemurs, is one of many species that will benefit. Photograph: © 2005 Russell A. Mittermeier/Conservation International.

Most of the new conservation sites are situated in areas where forest protection may offer benefits extending well beyond the local area. The potential for such benefits, in fact, provided much of the economic rationale behind the Durban initiative. An influential World Bank study of Madagascar's (pre-Durban) reserve network found that protected areas are economic assets for the country, owing to the combined value of outside funding for biodiversity protection, ecotourism revenues, and maintenance of watershed services. In many areas, healthy forests are thought to reduce sedimentation and help ensure a steady supply of water for agriculture and municipal use. While less than a third of Madagascar's total rice production is from tavy (slash-and-burn) agriculture, the resulting deforestation reduces productivity in nonforest areas, where the majority of rice farming occurs. In fact, according to the World Bank study, the largest group to benefit directly from forest reserves are downstream rice farmers.

More productive and diverse use of existing arable land could offset pressures to clear forests as the population grows. Hawkins notes that Madagascar has enormous potential for agricultural

expansion in areas that were deforested long ago, well away from areas where biodiversity remains concentrated. Even problematic activities such as mining, he says, may offer conservation opportunities. Interest in tapping Madagascar's extensive mineral resources is growing, but so far that activity has largely been held in check by the Durban Vision process. Trade-offs may lie ahead, with mineral development in some areas helping to fund conservation projects elsewhere.

The potential synergies of conservation and development are captured in a second, more diffuse "vision" Ravalomanana has put forth, a kind of mission statement for national development he calls "Madagascar Naturellement," or Madagascar Naturally. It's a clever bit of branding, alluding both to biodiversity and to other resources and qualities that make the country a "natural" choice for donor support and outside investment. Madagascar Naturally envisions protection of the environment together with an expanding resource-based economy. Growth will be driven not only by ecotourism and other "green" development but also by increased agricultural efficiency, mineral development, and value-added processing of natural products.



Madagascar's biodiversity is not restricted to its forests. The country's coral reefs and coastal waters contain some of the highest concentrations of marine species in the Indian Ocean, including the sponge-eating hawksbill turtle. Some of the country's coral reefs have experienced massive bleaching caused by rising sea temperatures, but others have proved more resilient and are a high priority for protected status.

Photograph: © 2006 Sterling Zumbrunn/Conservation International.

The vision is backed by a new Madagascar action plan (MAP) that sets Durban Vision goals for protected areas firmly within a broader context of improved governance and expanding economic development. The MAP includes ambitious 2012 targets for improvements in a number of areas, including government accountability, health and family planning, education, infrastructure, agricultural production, and poverty reduction. Progress in all of these areas is directly linked to improved biodiversity protection. It's an appealing package for donors and investors of all stripes, and support continues to flow in.

For now, however, the fact remains that reserves cannot succeed if local people are left without alternative livelihoods. Conservation efforts must provide a direct or indirect source of income for at least a portion of the rural population. Many protected areas are zoned for biodiversity protection and sustainable use, offering a range of opportunities from employment in reserve management to revenue-generating activities such as sustainable harvesting and ecotourism. But realizing this potential with any consistency remains the most problematic aspect of Durban Vision implementation,

a problem that community management and regional planning have only partially addressed.

Ultimately, nature-based tourism may offer the greatest promise as a sustainable driver of biodiversity protection. Madagascar has been attracting tourists in steadily growing numbers over the past decade, despite the relatively high cost of traveling to the country and the still rudimentary facilities in many areas. Conservationists distinguish between large-scale tourism that is nature based and ecotourism on a smaller scale that directly benefits local communities. Held in check primarily by the country's limited infrastructure, neither has yet lived up to very high initial expectations. But with the new reserves and Madagascar Naturally, a more aggressive national strategy is emerging for the promotion and development of nature-based tourism.

"Ecotourism will work when the money directly benefits the local communities," says Dolch. Mitsinjo, for example, manages an ecotourism concession at the Analamazaotra Reserve that employs 36 people, either directly or as freelance guides. Surplus tourism revenues support a training program for boosting agricultural efficiency and a microcredit system that supplies small farmers' groups with seed and poultry. Similar local-scale projects and initiatives have sprung up in and around protected areas across the country, many in just the past few years.

Defying Nature's End

"People who think that development and conservation cannot go hand-in-hand are wrong," said President Ravalomanana in his opening speech to the June symposium "Defying Nature's End: The African Context." His words set the tone for the five-day conference, which was attended by some 350 delegates, including government officials, other African leaders, and representatives of local and international conservation groups and relief organizations. Hawkins, who helped organize the symposium, says the event was intended as a showcase for the kind of approach Madagascar and a few other African countries are now taking to managing their biodiversity to support economic development and poverty reduction.

Ravalomanana's fervent call for leadership in realizing the long-deferred dream of sustainable development was echoed by representatives of other African nations. The governments of Equatorial Guinea and Liberia announced significant new reserve and funding commitments for biodiversity protection. In working sessions, delegates discussed the nuts and bolts of achieving human health and development goals through investment in biodiversity and ecosystem

Visit these Web sites for more information:

- www.wildmadagascar.org
- www.biodiversityhotspots.org/xp/Hotspots/madagascar/conservation.xml
- <http://carbonfinance.org>
- www.zeroextinction.org
- www.conservation.org/xp/CIWEB/regions/africa/

services. New and emerging strategies such as carbon sequestration and biodiversity offsets were highlighted.

In one plenary session, Carlos Manuel Rodríguez, former Costa Rican environmental minister and head of Conservation International's program in Central America, described his country's government-administered Payment for Environmental Services program, through which private landowners are paid to restore and preserve intact forests and healthy watersheds. Rodríguez stressed that while the Costa Rican experience does not provide a simple recipe that can be repeated elsewhere, it offers important lessons. "We need to understand that payment for environmental services is not the objective, it is the mechanism to achieve a higher objective," Rodríguez said. "Many countries want to stop deforestation and protect biodiversity, but they don't build the social and political process necessary [to accomplish these goals]. This has to be a national process, not just one more project or institutional policy from the ministry of the environment."

The call for nature-based development and human-oriented conservation was codified in a statement of shared princi-

ples produced by conference delegates, called the "Madagascar Declaration" (for a link to the document, see www.conservation.org/declaration). Katrina Brandon, a development specialist and technical advisor to Conservation International, helped draft an initial text that was pored over and revised by over 60 representatives of both the conservation and the development communities. "The hope was to produce a visionary document showing that the environment is the basis and foundation for development, and providing a united action agenda for the conservation and donor communities," Brandon said.

Whether or not such unity can help Madagascar carry out a Costa Rican-style transformation in Africa remains to be seen, but both the potential and the precedent clearly exist. "Madagascar's actions are highly reminiscent of actions taken by Costa Rica 25 years ago," says Brandon, who notes that in 1980 Costa Rica had among the highest rates of deforestation, population growth, and per capita debt in the world. The country's nature tourism-driven economy is now prospering, and forests are expanding rather than shrinking. As in Madagascar today, she says, the turnaround began

with protected area expansion accompanied by policy reforms that supported the development of dedicated financing mechanisms, regional-scale planning and management, heightened NGO involvement, and strategies for capturing revenues from biodiversity-based products and services.

Rodríguez says the commitment of Madagascar's political leadership "is a major, major asset." In Costa Rica, developing green tourism and weaving the Payment for Environmental Services program into national economic policy also required a clear legal and legislative framework, sound economic justification, and a strong administrative capacity. "When we talk about doing something similar in Africa, we need to understand all of these elements," he adds, noting that each country must find its own way. "Our job is to show that there are some very successful cases out there. It is now possible for policymakers to see conservation less as a responsibility and more as a means of economic development and poverty alleviation."

Scott Norris (e-mail: snorris@nasw.org) is a freelance science writer based in Albuquerque, New Mexico.

