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THE MAGAZINE OF THE INTERNATIONAL UNION FOR CONSERVATION OF NATURE

Saving biodiversity

APLUS

An economic approach

CARDS



Why invest? How much?

Who pays?

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Paper

Photographs

Contents



10

14

16

17

18

19

20

Your space Feedback on <i>World Conservation</i>	.3
State of play IUCN's Chief Economist Joshua Bishop describes the emerging economic approach to biodiversity conservation	4

WHY INVEST	
Money talks Evidence is mounting of the economic benefits of saving nature	6
Mind the gap	

HOW & WHERE

The debate

If an extra \$US 100 billion became available for conservation, how would you spend it? Leading environmental economists and conservation specialists outline their priorities

WHO PAYS

Raising the bar

Dr Andrew Seidl describes some of the methods of generating greater funding for nature conservation

Informed decisions.

Rainforest Alliance President Tensie Whelan describes how consumer purchasing power can be harnessed to benefit biodiversity

Multi-tasking

Efforts to reduce deforestation under the climate change agenda could generate biodiversity benefits

Smart finance

Peter Carter of the European Investment Bank explains the role banks can play in safeguarding biodiversity

Cashing in

Some nature conservation organizations are developing commercial enterprises that generate funds for conservation

A small price to pay.

Industry is starting to value ecosystem services

LOOKING AHEAD

From the field

Some examples of the work under way by IUCN regional offices on ecosystem valuation and investment

Moving the mindset

Juan Marco Alvarez outlines what's needed to make the transition to a green world economy

Off the shelf

A selection of publications related to economics and conservation

21

23

22

Your space

Dear friends of World Conservation

In the editorial *The Road to Copenhagen* in your October 2009 issue, you suggest that REDD (Reducing Emissions from Deforestation and forest Degradation) can "simultaneously reduce emissions, slow global warming and provide a range of benefits for people and biodiversity". The statement is made that REDD is "a win-win opportunity that the world cannot afford to pass up".

We consider REDD to be an interesting and important mechanism both for reducing global carbon emissions and for narrowing the gap between those who carry the costs of avoiding deforestation and those who benefit from the environmental services that sound ecosystems provide. Nevertheless, we suggest that framing REDD using the rhetoric of win-win is problematic as there are always unintended consequences in decisions and mechanisms like this. There is also the danger that if REDD is not able to deliver on its promises, the already high expectations on what REDD can deliver will be negatively impacted to the detriment of REDD. Instead, we suggest that being explicit about some of the trade-offs embedded within REDD schemes would allow for better mitigation of the potential negative implications. Focusing on trade-offs allows for a more sober appraisal of REDD and its possibilities and limitations in particular contexts and cases.

Among the trade-offs involved in REDD (not REDD-plus) is that of providing benefits only to those sites which are under the threat of deforestation. The increasing focus on benefits of trees and forests in terms of carbon mitigation may cause the redirection of funds that were previously available to sites that, although under effective management and protecting important social and ecological values, are not under a high potential for deforestation. Secondly, the possibility of leakages (increased deforestation in sites not covered by REDD programmes) is well known and widely discussed, and has by no means been solved. Thirdly, REDD may have important social implications-some surely positive, but some possibly negative, including exclusion of those without formal tenure or legal rights. Fourthly, REDD will have significant transaction costs (not to mention opportunity costs) that must be considered against the benefits received. To bring home this last point, we might want to consider the fate of REDD programmes if and when technological means of sequestering carbon, currently being developed, become widely available and cost-effective. Ideally, these would complement REDD, but there is also the possibility that such technologies would make REDD outdated. After all, REDD ultimately relies on the willingness to pay of developed countries, and this may change if there are 'cheaper' carbon sequestration alternatives, possibly putting into question the preservation of forests that will have been assigned a value based primarily on their carbon sequestration potential.

We do not present these issues to make a case against REDD. Indeed, if intelligently designed and implemented, REDD can contribute considerably to biodiversity conservation and climate change mitigation. We do feel, however, that it is important to emphasize limitations as well as benefits. After all, to be successful, REDD and related programmes will have to be around for a long, long time. More explicit acknowledgement of trade-offs now may increase the ability of all concerned to improve, adapt and work together in the years ahead.

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www.tradeoffs.org

World Conservation welcomes your feedback

We'd like the magazine to stimulate debate, so please let us know what you think. Do you disagree with an article? Does it miss the point? What are you or your organization doing? Send your comments to **worldconservation@iucn.org**

World Conservation is available online. You can post comments on individual articles at www.iucn.org/worldconservation

State of play

IUCN's Chief Economist, Dr Joshua Bishop, introduces this issue by describing the emerging economic approach to biodiversity conservation.

ecent articles by several leading conservation organizations and researchers suggest that we are failing to stem the loss of biodiversity. Calls for renewed efforts, a new set of biodiversity targets and increased funding are to be expected, but also beg the question of whether new approaches to conservation are needed to avoid future disappointment. In this issue, we look at emerging economic approaches to nature conservation. These new approaches pay more attention to costs including opportunity costs (the trade-offs or costs of foregone development opportunity) and seek to make the beneficiaries of conservation pay for the services they enjoy while also rewarding nature's stewards. An economic approach involves harnessing market forces to support conservation, ecosystem restoration and the sustainable use of biological resources, as a complement to traditional approaches to protecting nature.

Economic perspectives on nature are not new but have gained new impetus from a study entitled *The Economics of Ecosystems and Biodiversity* (TEEB)—an international initiative that is drawing attention to the economic benefits of biodiversity, the costs of biodiversity loss and ecosystem degradation, and the potential economic responses. With a focus on major stakeholder groups, including scientists but also national and international policy makers, local government, the business community and private citizens, TEEB aims to provide robust evidence of when, where and how saving nature makes economic sense.

Meanwhile, the international political and economic landscape is changing fast. Some economies are on the verge of bankruptcy, while others expand with little thought to environmental constraints. For those countries seeking to reduce public expenditure and debt, there is an opportunity to show how protecting biodiversity and saving money can go together, for example by reform or removal of environmentally-harmful subsidies. For rapidly growing economies, notably in Asia, TEEB and related initiatives can help policy makers reduce the adverse environmental impacts of growth, for example through the introduction of economic policies that 'internalize' environmental costs in investment, production and consumption decisions.

Recent decades have seen a proliferation of economic approaches to conserving nature (some of which are described on page 15), along with emergence of new markets for green products and services. We read compelling statistics on the economic value of biodiversity and ecosystems and we increasingly hear that biodiversity is beginning to be seen by business as an opportunity as well as a risk. Some companies have realized that they depend on ecosystem services and are integrating ecosystem values into their business operations. Companies large and small are making money from conserving biodiversity while also helping to safeguard it; consumers are beginning to exercise their power for change by making more responsible purchasing choices; and development projects are coming under ever greater environmental scrutiny from potential investors. At the same time, there are exciting prospects to



conserve vast swathes of forest by mobilizing carbon finance to Reduce Emissions from Deforestation and forest Degradation (REDD), with enormous potential benefits for biodiversity but also risks that need to be managed.

The potential for increased private investment in nature is clearly huge. However, we need to be realistic about how quickly such approaches can be scaled up and replicated, especially in the developing world. While there have been some significant successes, on a global scale the pace of biodiversity loss is still accelerating, not declining. Disasters like the Deepwater Horizon oil spill in the Gulf of Mexico remind us that the risks to biodiversity and ecosystems are all too rarely considered when resource development decisions are



made. BP has promised to clean up the oil and help the affected communities, in this case, but ultimately the bill for careless management of natural capital will be borne by future generations, in the form of diminished ecosystem services and livelihoods.

It should be obvious that we cannot treat natural capital as inexhaustible.

Environmentalists have repeatedly asserted that our economic system is unsustainable. Evidence to support such claims is growing daily and the conservation community has also become more practical and more persuasive in pointing the way to a greener economy. One example is the Green Economy Initiative, launched by the United Nations Environment Programme, which offers guidance for governments to rethink their economic development strategies. Another example is the Green Economy Coalition, of which IUCN is a founding member, which unites a range of stakeholders, from labour unions to environmental NGOs to business associations, with the aim of developing a shared roadmap for a Green Economy. Change is also apparent in official arenas, such as the Organization for Economic Cooperation and Development (OECD), which is pioneering the concept of Green Growth

It should be obvious that we cannot treat natural capital as inexhaustible. Laying the foundations for sustainable economic growth must therefore include re-investing in the environment and maintaining nature's capacity to provide crucial ecosystem services. This is not only important for the long term, but also to secure the livelihoods of those who depend on a healthy environment today.

And if significant new funding for conservation does materialize, whether from public or private sources, how should it be spent to best effect? Read the views and priorities of leading environmentalists and experts from the conservation community and join the debate at:

www.iucn.org/worldconservation.

For more information on TEEB visit **www.teebweb.org**

Money talks

It may be early days in the quest to put a price tag on nature's services but the evidence available already of the economic benefits of conservation should convince any hardened investor.



he relationship between biodiversity and human welfare is increasingly being understood in economic terms. There are stark warnings that the costs of inaction in relation to environmental protection are far greater than the costs of taking prompt action to avoid environmental degradation we simply cannot afford *not* to invest in nature conservation.

The environmental community has long known that ecosystem degradation is affecting our health, making us more vulnerable to climate change impacts, and threatening our food and raw material supplies. But the arguments it uses have not been convincing enough-the state of the natural world is deteriorating year after year. Realizing that they must back up their rhetoric with hard facts, conservationists are arming themselves with a growing body of evidence that shows the economic benefits of protecting nature. Statistics and case studies that prove how conservation action can save national economies billions of dollars each year are starting to resonate with government and business alike.

Untapped wealth

An underlying reason for ecosystem degradation is that conventional definitions of infrastructure, and the bulk of investment in it, have not viewed ecosystems as important and productive components. There is little recognition, for instance, of how important wetlands are for wastewater purification and treatment, how coral reefs and mangroves defend coastlines against floods and storms, or how forests protect water supplies.

"When investments are made, the accounts rarely tally up the economic benefits that ecosystem services provide, or recognize that their conservation yields tangible economic returns. At the same time, the economic costs and lost opportunities resulting from ecosystem degradation are not considered when land use alternatives are weighed against each other," says Lucy Emerton of the Environment Management Group.

Studies by IUCN and its partners have yielded some compelling statistics. In Lao PDR, biodiversity-related goods and services contribute more than 75% of per capita GDP, 90% of employment, 60% of foreign exchange earnings and a third of government revenues. Yet national economic indicators and development statistics rarely reflect these broader values.

Coral reefs support the richest marine biodiversity in the world but also provide food, storm protection, jobs, recreation and other sources of income for more than 500 million people. The economic losses that would be incurred should coral reefs cease to exist are enormous, and yet this is precisely the forecast under business-as-usual climate projections. In the Maldives, for instance, constructing seawalls, breakwaters and other structures to replace the benefits provided for free by coral reefs would cost between US\$ 1.6 and 2.7 billion. And it would be even more expensive to pay for the damage to towns, villages, hotels and local industries that could follow coral reef degradation.

In Mtanza Msona village in Tanzania (where more than a third of the population live below the poverty line), woodland and wetland resources are worth almost eight times as much as all other sources of farm and offfarm production for the poorest households in the village. The value of plant-based medicines is almost 15 times as high as purchased drugs and 'modern' treatment, and the wide range of wild foods harvested is worth more than 14 times as much as households' annual expenditures on food from the market.

A new water economy

Protecting watersheds provides many of the world's megacities with freshwater—and saves billions of dollars. From the basins above Quito, Ecuador, to the Volta River of West Africa and the reforested basins of China, environmentalists are showing decision makers that investment in watershed conservation can often pay higher, longer and more diverse dividends than short-term, traditional approaches to water supply.

"Many of the world's big cities have understood that protecting their catchment areas makes economic sense. Rather than chopping down the forests or draining their marshlands, they are keeping them healthy and saving billions of dollars by not having to pay for costly infrastructure to store water, clean it or bring it from elsewhere," says Mark Smith, Head of IUCN's Water Programme.

A recent study by the World Bank found that every US\$ 1 invested in the conservation of the Upper Tuul catchment would generate around US\$ 15 in water benefits and associated ecosystem services for downstream Ulaanbaatar, in Mongolia.

Reliable income

Protecting the oceans through marine protected areas can provide higher and more reliable income, through tourism and well-managed fisheries, than is derived from continued uncontrolled exploitation. Fishermen near the Kulape-Batu-Batu Marine Protected Area, in the Philippine Tawi-Tawi province, were able to increase their income by about 20% only one year after the establishment of the Kulape-Batu-Batu marine sanctuary. Marine protected areas also attract tourism, another important source of income from marine conservation. Since all fishing was banned in the British Lundy Island 'No Take' zone, a small marine protected area, tourism has picked up significantlythe business of the area's tour operator, for example, has doubled since 2003.

When investments are made, the accounts rarely tally up the economic benefits that ecosystem services provide.

"Failing to invest in ecosystems as assets is not only short-sighted in economic terms, but may ultimately undermine cost-effective, equitable and sustainable development for all," says Lucy Emerton.

While the economic evidence for investing in nature accumulates, there are some who disagree with the approach of assigning a monetary value to nature and its services. They believe that as human activity is the root cause of the biodiversity crisis, we should fix the problem whether it makes financial sense or not; that we have a duty to future generations. Others believe we should save biodiversity simply because it exists and has done for millennia. Each view may have its merits but one thing is certain—it is cheaper to act sooner rather than later.

Mind the gap

How much money is currently being spent globally on biodiversity conservation, how much more is needed, and for what?

www.ith biodiversity declining at an alarming rate, despite political commitments to halt or slow its loss, it is clear that the effort and funds currently devoted to conservation are insufficient. But how much is actually being invested and how effectively in terms of conservation results? With renewed calls for massive increases in conservation funding, a question rarely asked is what is the most costeffective way to conserve biodiversity?

Recent studies indicate that globally, about US\$ 7-10 billion is invested every year in biodiversity conservation. A significant portion of this amount is directed towards protected areas. But recent growth in the number and size of protected areas has not been matched by increased resources and many are not effectively managed. Estimates of how much more is needed to secure the existing protected area estate vary greatly, let alone how much is required to conserve 'enough' biodiversity to safeguard its (and our own) future. Effectively managing the existing protected area network has been estimated to cost around US\$ 14 billion per year and the cost of investing in an 'ideal' global protected area network-if expanded to cover 15% of land and 30% of marine areas-has been estimated at up to US\$ 45 billion per year.

Estimates of the funding gap to achieve the three global objectives of the Convention on Biological Diversity (CBD) range from US\$ 10 to 50 billion per year. The CBD itself is calling for a ten-fold increase in capacity (human resources and financing) by 2020 to implement the Convention and there are proposals from the environmental community to raise the bar even further. IUCN has called on OECD countries to contribute at least 0.3% of their GDP to international biodiversity assistance, in addition to the 0.7% target for international development assistance. At today's prices that's about US\$ 120 billion per year. For comparison, annual spending on subsidies to agriculture in the US, European Union and Japan is about US\$ 220 billion per year. Reducing subsidies for activities that harm biodiversity is therefore one of the most cost-effective ways to slow environmental decline. More generally, it is usually much cheaper to avoid degradation than to pay for ecological restoration, although restoration is often a good investment too.

Looking beyond protected areas as a way to conserve biodiversity, there are many





established and emerging areas of financing for biodiversity conservation. Evidence is growing that incentive-based policies can achieve environmental objectives at a lower economic cost than conventional regulatory approaches. These include biodiversity offsets and BioBanking, conservation tax incentives, bio-carbon finance including REDD-plus (Reducing Emissions from Deforestation and forest Degradation), and certification and eco-labeling schemes. Funding from these and other market-based schemes may well exceed total public spending on protected areas, although assessing their environmental benefit remains a challenge.

A recent report by Forest Trends, an IUCN Member, focused on a range of schemes designed to reduce development impacts on biodiversity, a practice known as compensatory mitigation. These markets were found to have a global size of at least US\$ 1.8–2.9 billion per year. The impact of this market includes at least 86,000 hectares of land placed under some sort of conservation management or permanent legal protection each year.

Evidence is growing that incentive-based policies can achieve environmental objectives at a lower economic cost than conventional regulatory approaches.

Nature-based tourism, which includes eco-tourism, adventure tourism and tourism in natural areas, is a more established approach that is growing significantly with potential benefits for biodiversity, if carried out sustainably. "Colombia has seen a 45% increase in nature tourism in the last three years and demand for sustainable tourism is reported to be growing rapidly," explains sustainable tourism specialist, Andrew Drumm.

Data from Latin America and the Caribbean show a strong correlation between tourism demand and biodiversity with between two-thirds and three-quarters of all international tourists (Peru 73%; Argentina 60% and Costa Rica 65–75%) visiting at least one protected natural area. In Ecuador,

protected area tourism generates 95% of all self-generated revenues for the park system. Studies in Peru and Ecuador show significant potential to increase the economic benefits from protected area tourism for biodiversity conservation and local communities. However, the sustainability of tourism's economic benefits is threatened by a lack of investment in protected area management.

"Nature tourism, especially eco-tourism, is the major contributor to park system revenues across Latin America and the Caribbean and African countries such as South Africa and Tanzania. Despite this, there is significant potential for tourism to contribute much more to closing the funding gap for biodiversity conservation. In countries like the UK and US, there are growing numbers of tourists motivated to contribute financially to the conservation of the natural destinations they visit," adds Mr Drumm.

The world as a whole is not short of funds, despite the current economic recession in many countries. What is lacking is the motivation for increased private investment in biodiversity. If even a small proportion of private capital flows, international trade and national economic output could be harnessed for biodiversity business, the resulting contribution to conservation would be enormous.

The debate

If there was an extra \$US 100 billion per year to spend on biodiversity conservation, what would be the most cost-effective way to use it? We asked leading environmental economists and conservation specialists.

The economists

Pablo Gutman is Director of Environmental Economics at the World Wildlife Fund, Washington D.C.

First, we should change the wording in the question to investing, not spending. Nature and their stewards would pay back many times that investment, through improved flow of ecosystem services and improved quality of life for all.

Second, we should celebrate. An extra US\$ 100 billion per year for nature conservation would be 10 times what the world invested in it in recent years, and would give a definitive and positive answer to the nagging question of the late great environmental economist David Pearce, "Do we really care about biodiversity?"

Third, we should reassure society that US\$ 100 billion per year is not too much, considering that comprehensive conservation and the adoption of sustainable agriculture practices worldwide may require some US\$ 300 billion per year.

Fourth, my list of the most cost-effective way to use the extra US\$ 100 billion is as follows:

Invest 30% to 40% of it in traditional biodiversity conservation. This should be enough to support a representative worldwide system of terrestrial and marine protected areas to halt humaninduced biodiversity losses. Why? Because once a species is gone, it is gone forever.

Invest the rest of it in the economy of ecosystem services such as payments for ecosystem services, and enlarged markets and price premiums for sustainable agriculture products. Why? Because in the long run, nature conservation cannot be achieved if confined to protected areas; what we need is nothing short of a new rural-urban compact where cities acknowledge and pay for environmental sustainability. Paul J. Ferraro is Professor of Economics at the Andrew Young School of Policy Studies, Georgia State University, USA.

Although US\$ 100 billion sounds substantial, it won't go far unless we can target it cost-effectively. Unfortunately, we know little about what works, under what conditions and at what cost. So instead of focusing on what and where the money should be invested, I believe it is best to focus on how it should be invested.

First, investment should be done through rigorous, large-scale experimentation aimed at estimating the impacts of the most popular classes of conservation interventions. These interventions include land acquisition and enforcement, incentives, devolution and decentralization of ecosystem management to more local institutions, social marketing, and technological innovation such as improved cookstoves (to reduce the amount of wood used for fuel). They also include poverty alleviation and economic growth through redistribution of income, agricultural reform and industrialization. Experiments designed to test the most popular conservation practices can produce a clearer picture of the relative effectiveness of investments.

Second, non-experimental investments should be done through competitive performance contracting in which funders dictate the performance measures, and the suppliers, including governments, individuals, firms and communities dictate the means. For example, if a government or donor wishes to reduce wildlife poaching, they can set a menu of performance targets and rewards and then local institutions or private landowners decide the best means to achieve those targets (with, if needed, external technical assistance). Competitive performance contracting pushes potential suppliers to innovate and provides conservation outcomes at least cost, while yielding more precise estimates of global conservation financial needs.

In the first 20 years, I would allocate 45% of the money to support experimentation. Implementers should be rewarded based on the quality of what can be learned rather than conservation outcomes. Another 45% should be allocated through myriad ecosystembased auctions that procure performance contracts for avoided ecosystem conversion, changes in animal or plant abundance, or habitat restoration (the poor may need institutional support to participate). I would spend the remaining 10% on continuing efforts to build 'Noah's Ark': insurance through targeted *ex situ* genetic and species preservation in case *in situ* progress proves too slow.

Until we know more, we should invest in low- and middle-income nations where the costs of conservation are lowest and the ability to substitute physical for natural capital is weakest, as well as in high-income nations where institutions are strongest and monetary values for nature and ecosystem services are highest.

Sven Wunder is Principal Economist with the Center for International Forestry Research.

Biodiversity loss is mainly the result of innate human pressures, whether directly, such as habitat conversion and over-exploitation, or indirectly, such as climate change. Conservation actions therefore, firstly, need to be knowledge-based: which parts of diverse landscapes do we need to protect, for what environmental services, using what tools, and with how much money? There is no global panacea for conservation; solutions have to be customized to specific threats and opportunities. Only if natural and social sciences (including economics) are integrated can we dose our interventions appropriately.

Secondly, economic conservation incentives are still underexploited worldwide, in a world ruled by economics. Payments for environmental services, environmental taxes, and lobbying for abolishment of perverse subsidies are all powerful lines of action worthy of much more support. We need to know more about how to directly pay (or charge) people on the ground so that they change behaviour. Only by mainstreaming the environment into society's broader decision-making processes can conservation succeed. And if we cleverly merge some biodiversity funding with climate-change mitigation money such as for REDD—Reduced Emissions from Deforestation and forest Degradation, conservation resources can multiply. Developing the right incentives is usually far more important than quantifying nebulous economic values of biodiversity.

Thirdly, however, not everywhere can we directly pay economic agents for conservation, and expect it to work; environmental assets often *de facto* exhibit unclear property and access rights. This is especially true in developing countries' agricultural frontiers, where the biggest battles over biodiversity are fought. When pressures come from multiple anthropogenic sources in areas with low governance, eventually no effective conservation without 'fences' is possible: national parks, land purchased for private reserves, sustainable use areas, protected indigenous lands, and improved law enforcement are all things we need more of. Predominantly, they are not substitutes, but complements to economic conservation incentives.

Ultimately, with the right knowledge we can compose intelligent mixes of sticks, carrots and institutional capacities for proconservation change. We need to simultaneously strengthen these strategic components, although our composition of investment portfolios will vary according to places and scenarios.

Stefano Pagiola is an Economist with the Sustainable Development Department of the World Bank's Latin America and Caribbean Region.

Agriculture is the human activity that affects the largest proportion of the earth's surface. Its expansion and intensification are considered to be major contributors to loss of habitat and biodiversity worldwide. Agricultural landscapes, however, can contain considerable biodiversity; indeed, biodiversity often plays a crucial role in agricultural production. Effectively conserving biodiversity therefore requires more than just securing protected areas (PAs), important though that is. It also requires protecting the buffer zones of PAs and the corridors that connect them, as well as preserving biodiversity within agricultural landscapes.

Preserving biodiversity in agricultural landscapes requires understanding, and working with, the incentives and constraints faced by farmers and ranchers. Many benefits of biodiversity are either externalities or public goods, so individual farmers have little incentive to take them into consideration when making landuse decisions. Although some biodiversity-rich land uses can be very profitable for farmers, this profitability can be vulnerable to price changes. Sustainably improving biodiversity conservation in production landscapes will usually require external support. Should additional funding be available for biodiversity conservation, at least some should be devoted to this task.

Fortunately, recent experience has shown that it is possible to significantly increase biodiversity in agricultural landscapes with appropriate instruments. Of the many instruments that have emerged in recent years, the most promising are payments for environmental services (PES) in which land users are paid directly for actions that protect or enhance biodiversity on their land. Although short-term payments may be sufficient in some cases, in most cases long-term payments will be required. Securing appropriate long-term financing for such payments has thus been a major challenge, as, unlike the case of water or carbon services, there are few direct beneficiaries that might be induced to pay for the services they receive.

The conservationists

Nikita (Nik) Lopoukhine is Chair of IUCN's World Commission on Protected Areas and former Director General of Parks Canada.

Over the past couple of decades, the world has built up an incredible estate of protected areas. Many drivers are behind this dramatic transformation of land and water use. But, the fundamental reason is biodiversity conservation. Protected areas are the primary tool for conserving *in situ* biodiversity. Indicative of their importance in this role is that over 80% of the Red Listed species occur in protected areas. Protected areas provide the habitat critical to the survival of a species.

Protected areas amount to almost 14% of terrestrial area. But, on the marine side, we are still below 1% representation. Meanwhile marine ecosystems are being transformed through unsustainable fishing practices and other uses. The result is an alteration of the structure and function of many marine ecosystems and at a dramatic rate. Hence the first priority of investment must be to bolster the extent of marine protection. Near-shore and High Seas protection must be a priority. Terrestrial expansion in underrepresented biomes and ecosystems is also a priority.

However, creation of a protected area is in itself not enough. To be effective, we need more and better trained personnel with a robust budget. It is only through enhanced capacity that one can work towards the integration of stakeholders in management decisions and ensure their compliance with the protection regime. Furthermore, investment is needed in 'Connectivity Conservation' that links protected areas and facilitates wildlife movement, as a means of buffeting the growing effects of climate change.

While tool development such as rapid assessment of biodiversity, management effectiveness and knowledge dissemination through publications and the Web are good investments, it is beginning to be very clear that investment in education and training is as significant, if not more so. One important option is to develop scholarships and other institutional incentives to encourage the training of protected area personnel. *—* Simon Stuart is Chair of IUCN's Species Survival Commission.

Why does biodiversity continue to decline? Simply because the political will is lacking to pay for saving it, even though the TEEB study - The Economid Ecosystems and Biodiversity has shown that the costs of finaction are far greater than the costs of action. The current level of international assistance for biodiversity has been estimated at a startlingly low figure of US\$ 2 billion per year. The draft of the new Convention on Biological Diversity strategic plan calls for a ten-fold increase in international biodiversity assistance by 2020. IUCN has gone further and is calling for each OECD country to contribute at least 0.3% of GDP to international biodiversity assistance, in addition to the 0.7% already committed for international development assistance. At today's prices that is US\$ 120 billion per year. Economists will argue about what the correct number is to secure a future for biodiversity and ourselves, but all will probably agree that it is between one and two orders of magnitude higher than what is being spent now.

But we have a problem in our own ranks. As conservationists, we are used to thinking small. We fear that the sorts of figures I cite here are not politically realistic (plenty of people tell us so), and so we set our sights way too low, and then wonder why conservation goals become ever more elusive. Recently, colleagues and I published a paper calling for a US\$ 60 million investment over five years in expanding the IUCN Red List so that it can serve as a "Barometer of Life" for the world. We received an interesting response stating that this is too much money, and that it could be better spent on other activities. The fascinating thing is that these people thought that US\$ 60 million was a lot of money; we thought that it was a small amount, as indeed it is compared to the US\$ 120 billion needed per year. As long as we continue to suffer from a monumental lack of ambition in the conservation movement, we shall have, at best, isolated local successes against a backdrop of continuing deterioration. We have to break out of our traditional mindset if we are to succeed.

So, if we had an extra US\$ 100 billion per year, what should it be spent on? Of course, there are many things, but fundamentally such funding must be prioritised to combating the pressures on biodiversity: habitat degradation, unsustainable use, invasive species, climate change and pollution—and the things that drive all of these, such as unsustainable lifestyles, poverty and perverse subsidies. Much of the money would need to go to building capacity in tropical countries so that pressures can be addressed locally as well as globally. Increasing the global response to the pressures on biodiversity is, of course, not just about money, but much of the lack of political will usually comes down to money. This is the challenge that we as conservationists must overcome if there is to be a future for biodiversity.

Piet Wiet is Chair of IUCN's Commission on Ecosystem Management.

US\$ 100 billion every year for conservation? We have it in our hands already, but we let it slip away.

The societal value of goods and services nature provides us with accounts for hundreds of billions of dollars, year after year. And we give it away. We give it away to the greed of entrepreneurs that cut down rainforests for hamburger farms, for soap or for biofuel.

We allow age-old management systems of drylands to be destroyed, converting the nomad's grazing lands into modern farms that are not adapted to local conditions. We allow mangroves to be converted for shrimp farming, so that fish can no longer breed there and coastal protection is gone. We pollute, we deplete and we leave the bill to our grandchildren.

We need to safeguard the production of ecosystem services, to safeguard nature and man. That requires effort from all of us.

The IUCN Red List of Threatened Species[™] has proven to be an effective instrument to raise awareness, to adapt policies and legislation. We must now come forward with a Red List of Ecosystems so that we can convince governments where essential ecosystem products and services needed for our survival are under threat and require protection. We need communication and education on this, legislation, governance and so on.

We must strengthen the resilience of ecosystems and the management of systems against outside threats and changes. We need to give responsibility to those people who directly depend on the functioning of these ecosystems, who often have ancient management traditions based on a profound knowledge of their environment. We need to build capacity among ecosystem managers to cope with modern challenges. We need to promote, develop and test new techniques so as to ensure linkages across ecosystem boundaries.

We need to restore and may even have to rebuild ecosystems, where clean water and air are delivered, where pollinators thrive, where soil fertility is recycled. The values are there. Don't let them continue to be squandered. *(P)*

Do you agree with what's being said?

What do you think is the best way to spend US\$ 100 billion on nature conservation? Join the debate, moderated by IUCN's leading economists, at **www.iucn.org/worldconservation**

Raising the bar

There are many ways to generate more support for conservation, some well established, others only just emerging. Dr Andrew Seidl explains.



or decades, biodiversity conservation has relied on 'conventional' sources of funding, largely governments, NGOs and private philanthropy. But reversing biodiversity loss cannot be done by governments and NGOs alone, it is clear we need to broaden the base of support. One option is to harness the market forces that are often blamed for biodiversity loss. Achieving this requires working with the business community to identify where there is money to be made from sound environmental practices and showing how biodiversity conservation can be a viable business proposition.

Among both the environmental and business communities, there is a growing recognition of the potential to conserve biodiversity on a commercial basis. As public awareness of the biodiversity crisis grows, an increasing number of companies are integrating biodiversity concerns into their operations while others are capitalizing on new markets for green products. Traditionally, the environmental community has focused on identifying and quantifying the damages done to the environment by the private sector. It has followed up with policy recommendations to clean up polluting industries to reduce the ecological footprint of production and require industry to take the full costs of production into account. Increasingly, biodiversity is viewed in a more positive light, creating opportunity for business, improved livelihoods for people, and incentives for stewardship of nature. By getting the prices right, incorporating full costs into the business balance sheet and searching for new opportunities for identifying and capturing biodiversity values, biodiversity conservation and business can be incentive compatible.

Low-hanging fruit

Conservation finance calls for fiscal responsibility. One vast pot of potential conservation finance lies in the billions of dollars that are tied up in environmentally harmful or 'perverse' subsidies-government fiscal policies that give an advantage to some consumers or producers, but also create unintended incentives to damage the environment. These include agricultural subsidies that destroy forests and deplete water supplies, or fossil fuel subsidies that contribute to climate change. If countries followed the example of New Zealand and greatly reduced their agricultural subsidies, the global footprint of agriculture would be reduced and taxpayers would have billions of dollars of savings to reallocate to other priorities.

Carrots and sticks

Unfettered markets fail to reflect both biodiversity costs and benefits to society. Policies and regulations including environmental taxes, fees and fines that require business and consumers to reduce their environmental footprint are essential to address the costs, but do not create positive incentives for the benefits of biodiversity conservation.

The best solution is to avoid biodiversity loss due to business practice. However, as a second best solution to unavoidable (or very high cost avoidance) biodiversity loss, biodiversity offsets are attracting growing interest in many countries and with many businesses as a way of assigning and accepting responsibility for biodiversity loss by private developers and public sector development, and generating funds for conservation and restoration. Offsets are conservation activities, either regulatory or voluntary, that aim to compensate for the unavoidable harm to biodiversity caused by development projects. Offsets are not just about rehabilitating sites, they can include creating new protected areas, removing invasive species, or creating buffer zones around urban activity. Habitat banking is viewed as a way to pay for future biodiversity offsets. But some conservationists caution that offsets could be used by industry and governments to allow developments to go ahead that are too damaging. As a result, the lack of widely-agreed and credible standards for biodiversity offsets presents the most pressing current challenge to their broader adoption.

Paying a true price

Another area of conservation finance that is gaining ground is Payment for Ecosystem Services (PES). This is based on the idea that natural ecosystems such as forests and wetlands are valuable components of development infrastructure. The cost of providing such valuable attributes of societal well-being should be borne by society at large, not only those who provide for their stewardship. Rather, local stewardship should be remunerated by those who benefit from the ecosystem services. PES schemes pay for a service (or land uses likely to secure that service) and can be local, national or international (IPES). Two prominent examples of IPES are the Clean Development Mechanism (CDM) that operates under the Kyoto Protocol and REDD (Reducing Emissions from Deforestation and forest Degradation) that are being developed as part of the post-2012 climate regime.

Green markets

Increasingly, companies see profitable opportunities from sowing and capturing nature's services. Sectors such as nature-based tourism, natural health products, and organic or 'eco-agriculture' are experiencing healthy growth and represent significant potential for biodiversity conservation. The growth rate of sustainable or certified products is three to four times greater than the market average. Markets for biodiversity-friendly goods can stimulate the uptake of new production and processing methods that are cleaner and more sustainable but governments need to provide economic incentives to encourage their growth or bridge loans against high future biodiversity value to encourage more comprehensive changes in production practices. Although green business opportunities are becoming increasingly mainstream, it does not take a genius to predict that poverty-reducing innovations and investment in alternative fuels, water-efficiency and biodiversity business loom large as growth industries for the future.

Fast forward

With a multitude of market mechanisms for conservation either already available or in the pipeline, there remains a gap in international biodiversity finance. In response, proposals are being developed for a Green Development Mechanism (GDM), which would enable the private sector to play a greater role in biodiversity conservation.

"Like the Kyoto Protocol's Clean Development Mechanism, a Green Development Mechanism could enable the supply of an environment service—in this case, biodiversity-protected areas, and in so doing, allow companies and consumers to 'buy' certified biodiversity protection," explains Francis Vorhies who is coordinating the GDM 2010 Initiative.

In July 2010 the study *The Economics of Ecosystems and Biodiversity* (TEEB) will publish its report for the business community. This will be a major landmark, providing practical guidance on how business can reduce biodiversity risks but also realize the many new and profitable opportunities created by including biodiversity considerations in mainstream business practices.

Some companies are beginning to undertake economic valuations of ecosystems and incorporate them into their operations, thanks to initiatives such as the World Business Council for Sustainable Development's (WBCSD) Ecosystem Valuation Initiative (EVI), in which IUCN is a partner. These initiatives aim to show that there is a robust business case for sustainable resource management, across a range of business sectors.

Building support for reducing ecosystem degradation and halting biodiversity loss means we need more information and a wider understanding of the benefits of ecosystem services, as well as the full costs of ecosystem and biodiversity conservation.

Dr Andrew Seidl is Head of IUCN's Global Economics and Environment Programme.

Informed decisions

How can ordinary people contribute to biodiversity conservation through their purchasing power?

onsumers are becoming more discerning; they want to know that the products they buy are sourced ethically and sustainably. And a growing number of businesses are committing to meet higher standards set by environmental and social certification programmes. For this they need guidance on how to source their materials in more responsible ways.

Tensie Whelan is President of the Rainforest Alliance, which works to conserve biodiversity and ensure sustainable livelihoods by transforming land-use practices, business practices and consumer behaviour. She explains how environmental certification can make a positive impact on biodiversity and how the average 'person in the street' can make a difference.

"The environmental challenges facing our world can seem so daunting, and we tend to assume that there's little that we as individuals can do. But certification gives us all a voice. Whether we're stocking up on daily household items such as paper, coffee or fruit, or considering special purchases like furniture, flooring or tropical vacations, we do have a say in how these goods and services are produced," says Ms Whelan.

For example, by choosing products that feature the Rainforest Alliance CertifiedTM seal, consumers can contribute to a more environmentally sustainable and socially just world. The seal is awarded to farms and forests

that conserve natural resources and ensures that workers, their families and communities are well treated.

The Rainforest Alliance and its partners work not only with foresters, farmers and tourism operators, but also with the companies that trade in certified goods and services. Businesses that commit to sustainability learn that their efforts are more than just a marketing tool; they're a vital part of running a successful enterprise. Sustainability helps to conserve biodiversity in and around certified



farms and forests, it helps to ensure a longterm supply of raw materials, it often leads to more efficient management and it opens up new markets— all of which can help to bolster a company's bottom line.

"Take Finca Buenos Aires in Guatemala. Planted more than a century ago above the ruins of a Mayan city, the 182-acre, familyowned coffee farm provides habitat for deer, wild boar, wildcats, armadillos and 65 bird species. It supports nearly 150 tree species, has an on-site nursery and provides a buffer zone for a neighbouring forest reserve," says Ms Whelan. "And because the farm is Rainforest Alliance Certified, Kraft Foods pays farmer Felipe Guzmán a premium of 10% above the market price for his coffee, providing him with an economic incentive to maintain his agro-forest."

"Individuals, communities and businesses around the globe are working to ensure that the needs of today can be met without compromising our collective future. If every time we reach for a bag of coffee, a bunch of bananas or a ream of paper, we check to make sure that it features the Rainforest Alliance Certified seal, each one of us has the power to help turn this vision into a reality."

www.rainforest-alliance.org

Is it really green?

With the proliferation of eco-labelling and environmental certification schemes, how can we ensure that they are delivering on their promises?

The ISEAL Alliance, the global association for social and environmental standards is on the case. It is working to strengthen the effectiveness and impact of both established and emerging voluntary standards systems. It also works with companies, non-profits and governments to support their use of such standards. Several of ISEAL's member organizations, including the Rainforest Alliance, and those dealing with organic agriculture explicitly cover biodiversity conservation and how to incorporate it into their supply chains.

ISEAL develops a code of good practice to assess the impacts of standards systems which involves methods to measure their impact against a range of indicators, including biodiversity.

"Over time, we hope this will lead to changes in the standards systems and improved performance on biodiversity and other aspects of sustainability," says Wiebke Herding, ISEAL's Communications Manager.

ISEAL is also working on a 'scaling up' initiative, trying to increase the uptake of credible standards systems. "As part of this we're mapping our members' coverage of sectors and sustainability criteria to identify gaps and overlaps. This will help standards systems to better position themselves in the market and ultimately consumers in deciding where they place their priorities," adds Ms Herding.

www.isealalliance.org

Multi-tasking

Biodiversity could benefit from funding being directed towards efforts to reduce deforestation under the climate change agenda.

www ith deforestation representing one of the largest sources of global greenhouse gas (GHG) emissions, opportunities to reduce climate change by Reducing Emissions from Deforestation and forest Degradation (REDD), especially in developing countries, have risen to the top of the international climate policy agenda.

To maximize its effectiveness, REDD needs to be broadened to include the restoration of degraded forests, enhancement of carbon stocks and sustainable management of forests, alongside conservation. This is known as 'REDD-plus' and offers multiple environmental and social benefits including biodiversity conservation and ecosystem restoration.

A study published by IUCN, The Cost of REDD: Evidence from Brazil and Indonesia, confirms that forest communities, the environment and businesses can all benefit from REDD-plus. The study looks closely at the financial profitability of activities that cause deforestation, such as beef and soybean production in the Amazon, and compares these costs to those of other climate mitigation options, such as energy efficiency or carbon capture and storage. Available data suggests that the costs of REDD lie within a range of US\$ 2-10 per ton CO₂e (CO₂ equivalent), depending on the profitability of crop production on forest land, which includes opportunity, implementation and transaction costs.

"Compared to the cost of cutting industrial GHG emissions, which can exceed US\$ 50 per ton CO₂e in many countries, REDD provides opportunities to reduce emissions at much lower cost," explains Nathalie Olsen, of IUCN's Economics and Environment Programme and co-author of the study. "But a lack of information at the local level is proving a stumbling block to attracting greater financial and political commitment."

Compensating governments and landowners for the 'opportunity costs' of safeguarding forests is likely to be the largest single cost component of any REDD scheme. The opportunity cost of forest conservation refers to the income that is sacrificed as a result of not logging (or logging more sustainably) or not converting land to agriculture. For REDD to be equitable as well as efficient, the rights of local and indigenous people must be properly addressed including through a clear definition of property rights and transparent



benefit-sharing arrangements. While this may increase transaction costs, it is essential in order for REDD to be effective.

The IUCN study focused on Brazil and Indonesia as two of the largest GHG emitters. Brazil is responsible for around half of annual global deforestation, most of it taking place in the Amazon. Indonesia is the third largest emitter of GHGs with most of its emissions due to deforestation, forest degradation and forest fires. The study found that in both countries, the financial returns on agriculture and livestock production on recently deforested land are often so low that REDD payments would be attractive to many landholders. In Brazil, at current carbon prices, carbon sequestration can compete with ranching, the most prevalent land use in the Amazon. As roughly 80% of recently deforested land is used for ranching, the scope for achieving cost-effective reductions in CO₂ emissions through avoided deforestation seems promising.

"REDD-plus offers a cost-effective way to help meet greenhouse gas emissions reduction targets whilst making a significant contribution to biodiversity conservation," says Nathalie Olsen. "When forests are conserved for carbon storage, benefits can flow to ecosystem service provision, biodiversity and opportunities for local communities. However, what we need for REDD-plus implementation is a legal and institutional framework to be put in place, and for that we need concerted action at the international level."

The Cost of REDD: Evidence from Brazil and Indonesia is available at www.iucn.org

For more articles on REDD finance, see the latest issue of arbor*vitae*, produced by IUCN's Forest Conservation Programme: www.iucn.org/forest

Smart finance

Peter Carter of the European Investment Bank explains the role banks can play in safeguarding biodiversity.

he conservation and sustainable use of biodiversity is a challenge for the financial and business communities for several reasons. First, banks and companies generally have a poor understanding of biodiversity and why it is important. Second, they do not necessarily understand the reasons why biodiversity can be an opportunity as well as a source of risk. Third, the currency of finance and business is money but many biodiversity attributes are difficult to translate into a monetary value, let alone one that reflects the worth and opportunity of biodiversity to society as a whole. Biodiversity is at least partly a public good and therefore difficult to value accurately or to charge for its conservation and use. Fourth, the regulatory framework is often weak, and the incentives and a sufficient degree of certainty for longterm investment do not exist.

The European Investment Bank (EIB) is addressing biodiversity-related challenges using a number of approaches. As with climate change, biodiversity is treated as a cross-cutting issue and is mainstreamed into the Bank's core operations. EIB, with its philosophy 'to do no harm', aims to apply the European Union (EU) Treaty principles of precaution and the 'polluter pays'. All projects considered for Bank financing are screened for any possible negative effect on biodiversity. Where the effects are expected to be significant, the project promoter is required to take appropriate measures to avoid, minimize or mitigate such effects. Where negative effects remain, the promoter is encouraged to use biodiversity offsets, and the Bank supports the practical application of this approach in a number of developing countries where it finances projects.

Within the EU—the focus of Bank activity—the EIB gives particular importance to the protection of Natura 2000 sites, and aims to verify compliance with the EU Nature (Habitats and Birds) Directives. Where practical and feasible, the Bank also requires that the principles and standards that underpin EU biodiversity policy are applied to projects that it finances in the rest of the world. Sometimes, however, a project is unsupportable for biodiversity reasons. In particular, the EIB will not finance projects in critical habitats, defined with reference to the IUCN Red List of Threatened Species and EU law.

But it is not enough to act defensively, to simply safeguard what biodiversity remains. As recent EU policy statements have made clear, it is also important to restore degraded ecosystems and the biodiversity which underpins them—to 'do some good'.

The EIB, in trying to identify and finance so-called biodiversity projects, has learnt a number of lessons. First, it is necessary to deploy 'smart' finance. Conventional debt and equity finance may not be enough. Concessional finance may be required and the Bank has experimented with interest rate subsidies, risk sharing and other financial 'products' to bring down the cost of capital to better reflect the 'public good' aspect of biodiversity.

Second, biodiversity gains may be generated on the back of more advanced initiatives in related fields, for instance by Reducing Emissions from Deforestation and forest Degradation (REDD), where biodiversity is expected to benefit from improved forest conservation and sustainable management. In fact, it should be possible to generate significant biodiversity benefits in any natural resource-based investment.

Third, since the institutions associated with biodiversity are often weak, it may be necessary for banks to supply technical assistance for the promoter itself or more generally for capacity-building purposes, as well as financing. For instance, the European Commission in partnership with the EIB and others is providing technical assistance in several new EU Member States to help develop 'bankable' small- and medium-sized enterprises that have strong biodiversity attributes, such as eco-tourism, sustainable forestry and organic farming.

Since the key to environmental finance is the identification and 'monetization' of ecosystem services, the EIB welcomes the path-breaking study *The Economics of Ecosystems and Biodiversity* (TEEB) and is sponsoring related research in a number of European universities. The results will contribute to a better understanding of biodiversity as a business proposition. They will also help to design and deploy improved institutional and policy frameworks and market-based instruments that generate greater incentives for private sector participation in the protection and sustainable use of biodiversity.

Peter Carter is Head of EIB's Environment and Social Office.

The European Investment Bank was created by the Treaty of Rome in 1958 as the long-term lending bank of the European Union.

www.eib.org



Cashing in

With companies capitalizing on markets for natural products and services, some nature conservation organizations are also developing commercial enterprises that generate funds for conservation.

ature conservation is starting to be seen as a viable business proposition also by conservation organizations, and we're seeing momentum building in the world of biodiversity business," says Giulia Carbone of IUCN's Business and Biodiversity Programme.

Biodiversity businesses are defined as commercial enterprises that generate profits through activities which conserve biodiversity, use biological resources sustainably, and share the benefits arising from this use equitably.

"Many organizations, including IUCN Members, are tapping into the growing demand for responsible products and services," Carbone adds. "Businesses are growing across a range of sectors, from the more traditional eco-tourism operations to natural ingredients that support the growing wellness industry to 'knowledge products', such as wildlife field guides. Many of these are delivering positive results for both business and biodiversity."

One example is the Asia Network for Sustainable Agriculture and Bioresources (ANSAB) which created Himalayan BioTrade Private Limited (HBTL), a consortium of community-based enterprises that markets non timber forest products nationally and internationally. Key products are essential oils, handmade paper and medicinal and aromatic plants from Nepal. Essential oils and handmade paper have the greatest international demand, particularly by the cosmetics industry. HBTL targets the supply chains of multinational companies that are committed to sustainability and are willing to pay more for sustainably-sourced natural products. So far, it has engaged with Aveda, S & D Aroma and Altromercato which have provided local enterprises with business expertise. Thanks to HBTL, more than 80,000 hectares of forest and pasture have come under improved management through community forestry, while enterprise creation has benefited more than 15,000 households.

In the Greater Mekong Region, WWF and the Swedish retailer IKEA are developing a model for sustainable rattan production and commercialization that has the potential to boost rural development and forest conservation in the region. Rattan, found in forests throughout the region is used for a variety of purposes, including furniture making. Village communities in Lao PDR, Cambodia and Viet Nam rely heavily on the rattan trade, with sales accounting for up to 50% of cash income in rural areas. The rattan trade is also an important source of foreign exchange earnings for countries in this region. But more than 90% of rattan processed in the Greater Mekong originates from natural forests and is being unsustainably harvested. The WWF-IKEA Sustainable Rattan Harvesting and Production Programme aims to give communities, governments and industry an economic reason to conserve forests, and IKEA, which sources much of its rattan from the area wants to ensure a continued resource. WWF has helped create 'village enterprises' for harvesting, producing and marketing rattan in a sustainable and more commercially viable way. It has also helped to set up rattan nurseries to reduce the dependence on wild rattan. In Lao PDR, these plantations generate US\$ 500 per year per hectare.

Many organizations, including IUCN Members, are tapping into the growing demand for responsible products and services.

The Flower Valley Conservation Trust, established in 1999, through a project with Fauna and Flora International (FFI) promotes the sustainable use of Cape Floral Kingdom fynbos flower products in the retail flower market. Wild flower harvesting has been a major source of traditional livelihood and employment in South Africa's Western Cape region for decades but the region has been affected by the systematic removal of commercially-valuable species such as the King Protea and land conversion to agriculture. Through the engagement of scientists, sustainable harvest levels were defined for commercial varieties, to reduce risk to businesses while maximizing gains from the region's natural capital. The King Protea and other species are sold to retailers in Europe such as Marks & Spencer and South African retailers including Pick 'n Pay, a nationwide retailer that, like Marks & Spencer, is interested in securing a sustainable supply as well as helping with the development of the industry.



These are just some of the examples outlined in IUCN's *The Time for Biodiversity Business* report, funded by the French Government together with a *Guide to Enterprise Development for Conservation Organizations*. Earlier this year, IUCN, in cooperation with the IUCN National Committee of the Netherlands, held a training workshop in the Mekong region to build the tourism-related business skills of conservation organizations that are working on tourism projects as part of their conservation programmes. **www.iucn.org/business**

www.ansab.org www.panda.org/greatermekong.org www.flowervalley.org.za

A small price to pay

Companies are starting to see the business sense of incorporating ecosystem service values into their operations.

All businesses have an impact on ecosystems and depend on their services in some way. Securing a license to operate will increasingly require companies to develop ways of measuring, managing and mitigating their ecological impacts, and a number of them are showing the way.

Aggregate Industries UK, a subsidiary of Holcim, restores ecosystems as part of its quarrying operations. In support of a request to extend an existing quarry in North Yorkshire, the company proposed creating a mix of wetlands for wildlife habitat as well as an artificial lake for recreation, following the extraction of sand and gravel from land currently used for agriculture. Ecosystem valuation was undertaken to assess the types and scale of economic benefits associated with wetland restoration. The study showed that the value of biodiversity benefits that would be generated by the proposed wetlands $(f_{1,1}, 1, 4 \text{ million})$, the recreational benefits of the lake (£350,000) and increased flood storage capacity of the overall area (£224,000) would deliver net benefits to the local community of about $f_{1.1}$ million. The value of carbon sequestration in these wetlands was found to be relatively small, while the marginal benefits associated with wetlands far exceeded the current benefits derived from agricultural production. The study also showed that the

costs of ecosystem restoration and aftercare are small compared to the economic benefits of wetland restoration and the financial returns from sand and gravel extraction. This shows that compensation for adverse environmental impacts is not only an important means for companies to maintain their license to operate, but can deliver overall improvements in ecosystem services at modest expense.

Rio Tinto has a policy goal of Net Positive Impact (NPI) on biodiversity in its operations. The company aims to achieve NPI by combining state-of-the-art avoidance, mitigation and ecosystem restoration with biodiversity offsets and other conservation actions. In Madagascar, the company is considering as part of its offset strategy supporting the conservation of approximately 60,000 hectares of lowland rainforest, to compensate in part for the unavoidable residual impacts of its mining operations in the region. In this case, the area to be conserved and the resulting biodiversity benefits are thought to contribute to a strategy for biodiversity offsets that will meet and possibly exceed the conservation gains required to compensate for the residual impact of the mining operation. A study was commissioned to estimate the monetary value of these biodiversity benefits. The study examined the costs of conservation, including both up-front investment as well



as maintenance costs of protected areas, together with the opportunity costs that local people bear when they lose access to land that had historically provided food and cash income in lean periods as well as a resource for agricultural expansion. The ecosystem benefits considered included wildlife habitat, hydrological regulation and carbon storage, as well as potential eco-tourism and bioprospecting. The preliminary findings suggest that there are significant economic benefits associated with conservation. However, while many of these benefits accrue globally (such as wildlife habitat or carbon storage), the costs of conservation are mainly borne by local communities whose access to forest resources is restricted. The study underscored the need for, and the potential scale of, compensation of local populations, for example through Payments for Ecosystem Services. More generally, the analysis showed how the economic value of natural assets can be included in business and environmental decision making.

Aggregate Industries and Rio Tinto are two of 15 companies which are pioneering the use of ecosystem valuation in the corporate sector. The success these companies have in using information about the value of the ecosystem services will illustrate to other companies the advantages of properly accounting for all costs and benefits for improved and more sustainable decision making. "Consumers are demanding the greening of production, and companies who are able to show how they invest in natural capital will reap significant advantages in the market place," says Nathalie Olsen of IUCN's Economics and Environment Programme.

Building on an Ecosystem Services Review that was launched by the World Resources Institute and the World Business Council for Sustainable Development (WBCSD) in 2008, the WBCSD is launching the Ecosystem Valuation Initiative (EVI) in which IUCN is playing a key role, to guide companies on how to account for ecosystem costs and benefits.

www.wbcsd.org

From the field

A round-up of some of the work underway by IUCN regional offices on ecosystem valuation and investment.

limate change is already affecting people who live on islands and in low lying areas. In small island countries such as in the Pacific, many people rely on healthy ecosystems to provide flood control. But when landscapes are altered, such as by draining mangrove wetlands for farmland, or clearing forests to make way for agriculture on steep slopes, normal ecosystem functions are disrupted and the risk of flooding increases. In 2009, Fiji suffered from extreme flooding which seriously affected the island's sugarcane belt and all those who depend on it.

A study by IUCN Oceania on the economic costs of the floods showed that the vulnerability of local communities is determined not only by the nature and intensity of the hazards, but also by factors such as the condition of local ecosystems, the nature of the farm production system and the health of the industry. The damage caused by the flooding to both farming and urban communities was the result of a complex interaction of physical, geographic, economic and human development characteristics.

Economic losses in the sugar belt alone, the study reported, was almost \$FJ 24 million, costs borne by the farming families, sugar processors and the government. The study estimated that almost 50% of the floodaffected farmers would, at least in the short term, fall into poverty, while at least 25% of them would be unable to meet their basic nutritional needs.

"Many sugarcane farming families in the short run had to choose between feeding their families or paying for bus fares for children to go to school," says Dr Padma Narsey Lal, Chief Technical Adviser at IUCN's Oceania Regional Office. "The Fijian sugarcane industry suffered major losses from the floods when it could ill afford to bear them, having recently seen the last of the reductions in the European Union import price subsidy under the Cotonou, and its predecessor, Lome Agreement."

In Burkina Faso, economic valuation is under way to improve rural development policy in Sourou Valley. This is one of the country's most important wetlands but is also under great pressure for agriculture.

A lack of information on the full economic value of this ecosystem could lead to the misuse of natural resources in the region. Until now, much attention has been given to agricultural production on the



premise that this will increase food security among local communities and in Burkina Faso as a whole. But more than 20 years after significant investment began, the expected 'green revolution' has not materialized. Yet communities still rely on other ecosystem goods and services for their livelihood and income. In an effort to demonstrate the broader range of benefits provided by this wetland ecosystem, IUCN conducted an economic valuation of Sourou Valley's natural resource base.

The area was estimated to have a total annual value of about €15 million, of which timber for fuelwood and housing accounted for 37%; non timber forest products 21%; pasture resources 18%; fishery and river transport 10% each; crop production 3%; and tourism 1%. The study revealed that crop production is not the region's major economic benefit, despite the level of investment since 1970.

"Field surveys also revealed that current agricultural practices are threatening ecosystem services such as flood control and climate regulation which may compromise the Valley's other economic values. These results call for greater caution in rural development policies in the absence of full economic information," says Jacques Somda, Programme Coordinator at IUCN's Central and West Africa Regional Office.

The Laguna Lachuá National Park in northern Guatemala and the 55 communities

around the lagoon catchment area make up the Lachuá Eco Region which supports rich biodiversity. The majority of the people here are indigenous Maya-Q'eqchí. In Lachuá, IUCN helped establish an alliance of local stakeholders and organizations, FUNDALACHUA. The alliance is promoting the conservation of natural resources in the Eco region through projects on reforestation, forest management, local handicrafts and tourism, all aimed at diversifying income sources in the region.

"We are now building on the achievements of the FUNDALACHUA to tap new markets for ecosystem services, particularly by accounting for the region's carbon values," explains José-Arturo Santos of IUCN's Regional Office for Meso America. "In the coming years, carbon could represent an additional income source for the local population, while also helping the national government to develop policies to Reduce Emissions from Deforestation and forest Degradation (REDD)."

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Moving the mindset

Juan Marco Alvarez outlines the shift in thinking needed to make the transition to a green world economy.

n this International Year of Biodiversity, increasing awareness and general appreciation of the tremendous value of nature is absolutely critical. The results of *The Economics of Ecosystems and Biodiversity* (TEEB) study later this year will be a major milestone and will contribute to the enormous challenge of demonstrating how our natural environment is central to human well-being and prosperity. And although this study is expected to catalyze positive action, there is still much to be done.

Economic development is all too often carried out with a limited focus on shortterm gains. The eternal quest for optimal and immediate economic productivity has prevented decision makers from seeing the bigger picture. This bigger picture is one of a planet with a limited amount of natural resources and a growing and hungry human population. It is also one of an increasingly unpredictable and unregulated global climate, declining biological diversity, and rapidly decreasing water resources. Unless significant changes are made to the way that society interacts with and manages the natural resource base upon which it depends, our global economy will inevitably collapse.

But the bigger picture should not be seen as one of desperation and hopelessness. It's also one of many opportunities and widespread prosperity. The extensive disregard and lack of appreciation of ecosystem values can also be seen as an investment opportunity waiting to be captured. As shown by the many projects and initiatives described in this issue, investing in natural capital can pay remarkable dividends. Investors, entrepreneurs, managers and shareholders all have a huge stake in ensuring that our planet's ecosystems are able to continue to provide society with the many goods and services on which we all depend. Many businesses already recognize that their bottom line depends on the sustainability of the environment in which they operate. And as more resources are consumed and this dependency becomes increasingly prominent, more will follow the path of achieving broader efficiencies, including activities that deal with the decoupling of natural resources and economic growth.

Fundamentally, investing in our environment means investing in our quality of life. It means moving out of a mindset whereby value is only measured in quantitative terms. It involves a transition to a global economy which recognizes that income generation is a means to an end, not an end in itself. The ultimate objective is to improve the quality of life for all and to ensure the long-term sustainability of human enterprise. Clearly, conserving biodiversity is central to this endeavour. Biodiversity's contribution to human wellbeing and prosperity is immeasurable; it ranges from inspiring technological innovation to supporting the delivery of critical ecosystem goods and services such as clean air, food, water and protection against natural disasters.

The time has come to act once and for all. It is now up to our leaders and decision makers to implement the policies needed to mainstream environmental values. This might take the form of new and innovative financing mechanisms for capturing the value of biodiversity and ecosystem services, such as the Green Development Mechanism or the GEF Earth Fund. As well, it is now up to business to engage in conservation efforts and to work with others to develop robust standards to ensure that they reduce their environmental impact. It is now up to all citizens around the world not only to push their leaders, but to change and adapt their consumption habits according to the limits of our rapidly degrading biosphere.

Humbled by the scope and urgency of the challenge at hand, yet invigorated by the opportunities to engage with partners to find the solutions needed, IUCN is committed to making the transition to a green economy the headline of the 21st century. This work is being developed and coordinated through the IUCN thematic network on 'Greening the World Economy', which aims to unite and coordinate ongoing efforts amongst IUCN Members, Commissions, Secretariat and relevant partners.

Juan Marco Alvarez is Director of IUCN's Economy and Environmental Governance Group and Head of the Business and Biodiversity Programme.

For more information visit www.iucn.org/ what/tpas/greeneconomy/ or send an email to greeneconomy@iucn.org

Strength in numbers

The Green Economy Coalition (GEC) is an alliance of organizations dedicated to accelerating the transition to a more sustainable global economy. IUCN and several of its members are supporting the establishment of this broad network which also includes trade unions, development organizations, as well as businesses and consumer groups. The Coalition aims to foster a common understanding of green economy issues and to promote learning, creativity and innovation across all sectors of society.

"We have been living beyond our means, with crises in climate, energy, food, water, poverty, jobs and finance all linked to unsustainable economic activity," says Green Economy Coalition Programme Director Sally Jeanrenaud.

"The Green Economy Coalition offers creative solutions to multiple global problems by linking people, the planet and prosperity. Reaching across multiple sectors of activity and engaging stakeholders across the world, it provides an inclusive and well-informed platform from which the transition to a green economy can be debated and planned."

The coalition has produced a Core Script which outlines a vision for the future, assesses the main challenges, and draws a roadmap for action. Later this year, the GEC will prepare its fourth consecutive high-level communiqué for the G20 Summit of World Leaders, articulating how decision makers can support the transition to a green economy. While staying active in international fora, the GEC is also facilitating a series of regional dialogues, with two events scheduled for later this year in India and Brazil.

www.greeneconomycoalition.org

Off the shelf

A selection of publications related to economics and conservation.



THE ECONOMICS OF ECOSYSTEMS AND BIODIVERSITY: REPORT FOR BUSINESS

Edited by Joshua Bishop, Nicolas Bertrand, William Evison, Sean Gilbert, Linda Hwang, Mikkel Kallesoe, Cornis van der Lugt, Francis Vorhies

This landmark report provides practical

guidance on how business can reduce biodiversity risks but also realize the many new and profitable opportunities created by including biodiversity considerations in mainstream business practices. Illustrated with examples from a range of companies, sectors and regions, the report sets out the economic case for integrating biodiversity and ecosystems (B&E) in business. Other aspects covered include the changing preferences of consumers for biodiversity-friendly products and services, the status, trends and drivers of B&E decline, and an overview of the impacts and dependency of major business sectors on B&E.

www.teebweb.org

ISBN 978-3-9813410-1-0, 2010



MARKETS AND INCENTIVES IN LIVELIHOODS AND LANDSCAPES STRATEGY: USING ECONOMIC AND FINANCIAL TOOLS TO SUSTAIN FOREST LIVELIHOODS AND LANDSCAPES

Edited by Lucy Emerton, Kristy Faccer, David Huberman

The Livelihoods and Landscapes Strategy aims to influence the ways in which forests are managed and used. It intends to generate real improvements in the livelihoods of rural poor, enhance biodiversity conservation and ensure a sustainable supply of forest goods and services. This publication aims to identify how economic and financial tools can be used to support more sustainable forest use and management, whilst increasing the incomes and livelihood security of the rural poor.

ISBN 978-2-8317-1220-8, 2009



CONSERVATION FOR A NEW ERA

Edited by Jeffrey A. McNeely and Susan A. Mainka

Conservation for a New Era outlines the critical issues of the 21st century, developed from the results of the 2008 IUCN World Conservation Congress and highlights the

solutions to be found through investing in nature. This book is essential reading for governments, businesses and decision makers. It provides a snapshot of the current situation, split into 21 easy-to-read sections, as well as a roadmap for future response.

ISBN 978-2-8317-1178-2, 2009



THE WEALTH OF NATURE: ECOSYSTEM SERVICES, BIODIVERSITY, AND HUMAN WELL-BEING

Edited by Jeffrey A. McNeely, Russell A. Mittermeier, Thomas M. Brooks, Frederick Boltz, Neville Ash. Foreword by Julia Marton-Lefèvre

What makes our planet's natural treasures worth saving, and why should we care? With hundreds of stunning full-colour photographs and more than 20 essays from some of the world's most respected scientists, this latest publication in the CEMEX Conservation Book Series aims to provide some of these answers. *The Wealth of Nature* offers a detailed explanation of the various ecosystem services that support and regulate all natural processes on Earth. It provides cultural context for how these services are vital for our existence and why their futures – and ours – are at risk and maps out the state of our global resources and the choices that lay before us.

ISBN 978-0-9841686-0-6, 2009



THE FINANCIAL COSTS OF REDD: EVIDENCE FROM BRAZIL AND INDONESIA

Nathalie Olsen, Joshua Bishop

This study reviews the financial costs of abating greenhouse gas emissions through Reducing Emissions from Deforestation and forest Degradation (REDD)

written from the perspective of an institutional investor seeking cost-effective climate mitigation options. A review of empirical data from Brazil and Indonesia suggests that REDD may, in many areas, provide a cost-effective climate mitigation option.

ISBN 978-2-8317-1206-2, 2009

The IUCN Forest Conservation Programme Newsletter

arborvitae

Arborvitae covers the most important issues currently affecting how forest resources are used and governed.

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