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The challenge

Conserving Nature—our life support system

- While the global economic crisis certainly warrants the political attention it is receiving, another crisis is escalating, the effects of which could far outstrip the current financial losses: the global decline of the earth's natural capital.

Healthy biodiversity and ecosystems are the true foundation of all economies, yet they are under attack by the same economic forces that ultimately depend on them. Economies can eventually recover, but the loss of biodiversity is irreversible and the impacts of ecosystem degradation are likely to undermine economic recovery.

Biodiversity affects nearly every aspect of human well-being and development. Ecosystems such as forests, wetlands and river basins, if allowed to function naturally, provide streams of benefits to people. These 'ecosystem services' include food, timber and medicines, regular supplies of fresh water, maintaining a healthy climate, pollinating crops, preventing soil erosion and controlling diseases. Healthy ecosystems minimize the impacts of extreme natural events and allow affected communities to recover more quickly. The Economics of Ecosystems and Biodiversity study put an average price tag of US\$ 33 trillion a year on these fundamental services which are largely taken for granted because they are free. That is nearly twice the value of the global GNP of US\$18 trillion. Society as a whole— individual, households, businesses, and governments—depends on ecosystem services but has become so far removed from nature that most people, including policy makers, are unaware of this dependence.

Biodiversity supports much of the energy systems, especially in developing countries where firewood and charcoal are by far the most important sources of energy used for cooking and heating. Biofuels are becoming increasingly important in providing energy security, potentially helping to address the problems of climate change, and providing new sources of income to poor farmers. Biodiversity also provides an effective way to store the carbon produced by burning fossil fuels. Millions of tons of carbon are absorbed every year by plankton, soils and forests.

Human health depends on healthy biodiversity. More than half of our modern pharmaceuticals originated from wild plants or animals while medicinal plants continue to provide the main source of health care in many developing countries. In the U.S. alone, the turnover for drugs derived from genetic resources was between US\$ 75 billion and US\$ 150 billion in 1997. According to the World Health Organization (WHO), the demand for medicinal plants is likely to increase from the current US\$14 billion a year to US\$5 trillion in 2050.

Some 40% of world trade is based on biological products or processes including fisheries, timber and food products. The increasing dependence of many countries on imports of food and other biological resources underlines the important contribution biodiversity makes to economies.

Biodiversity is linked to national security. Conflicts over water, fisheries and other shared resources are increasing in many parts of the world and natural resources help feed some conflicts. Civil conflicts are being fought in tropical forests and illegal harvesting of timber and other natural resources provides income that enables insurgent groups to purchase arms or corrupt governments to finance repression. Better resource management can contribute to peaceful relationships among nations. The massive movement of people competing for shrinking natural resources in the face of climate change will further destabilize fragile States.

How many warnings are needed?

Despite the growing knowledge of how nature provides societies' life support systems, environmental degradation is rampant. The world is not reacting to the alarm bells that have been ringing with ever greater urgency for many years.

Almost 40% of the world's species assessed through the IUCN Red List are threatened with extinction; 70% of the world's fisheries are depleted or over-exploited and still, fishing industries intensify their efforts, plundering new species and new areas. The collapse of the cod fishery in Canada is a stark reminder of the impacts of unsustainable harvest on people and economies. The first sale value of marine fisheries was globally valued at US\$ 70 billion in 2002, while local scale fishing provides a critical source of protein for the poor.

Nearly every aspect of human development is unsustainable. Demand for fresh water exceeds supply in more and more countries, leading in some cases to conflict over dwindling resources. Through burgeoning levels of waste and industrial pollution, air and water quality continues to decrease, even if the problem may seem far away from Washington, as the 'workshop of the world' has moved to East Asia. Consumption increases but the world seems unwilling to recognize, let alone to invest, in maintaining natural capital.

Climate change is altering weather patterns and contributing to the increasing frequency and strength of extreme weather events. What was the impact of hurricane Katrina on the U.S. economy? What was the cost of reconstruction associated with the massive fires in California last summer? What will be the cost of losing cultural heritage from inundation of Pacific islands? What will be the cost of technology to try to maintain liveable conditions as temperate areas become hotter?

In their bid to stimulate economic recovery and create new employment, governments around the world are using public financial resources to invest in infrastructure such as roads and airports. In many cases, these investments could further damage the environment. Infrastructure spending should address issues of waste and energy efficiency and the potential impacts on ecosystems.

Nature can be viewed as a 'trust fund'. There is a choice to spend it all now, use the current stock sustainably (at its current rate of return) or increase future opportunities through investment. There is no 'natural reserve bank' or 'natural treasury' which will bail the world out of the environmental debt crisis. The necessary actions will not be easy or quick, but the longer we wait, the harder it will be to climb out. As Sir Nicholas Stern has shown with respect to climate change, every year that serious action is postponed results in more unavoidable damage and increased costs of adaptation.

The opportunity

The current economic meltdown can become a catalyst for a new and very real, green economy. It offers an unprecedented opportunity to rethink the global economic model. The U.S., with a renewed commitment and energy to make its contribution once again towards a better world, is ideally placed to lead by example, in putting

environmental restoration at the heart of economic recovery and biodiversity conservation at the forefront of efforts to halt climate change.

Many governments still worry that if they set tough standards to control carbon emissions, their industry and agriculture will become uncompetitive, a fear that leads to a foot-dragging “you go first” attitude that is blocking progress. A positive intervention by the U.S. could provide the vital impetus that moves the current climate negotiations beyond the national interests which lie at the heart of the current impasse. The logjam should not be difficult to break if the U.S. helps industrialized countries agree on the principle of equitable entitlement to the planet’s common resources. Caps on emissions and sharing of energy-efficient technologies are in everyone’s interests, rich and poor.

U.S. corporations have invented remarkable products that have been the source of material well-being for hundreds of millions around the world, but for too long have used unsustainable production systems. Methods of production and consumption must change, but that does not mean going back to the Stone Age. An average citizen of Switzerland, whose per capita GDP is higher than that of the U.S., emits one third of the CO₂ of an American. And in other societies and cultures, a full and happy life can be had for one third of what the Swiss consume.

Climate change, which is triggering environmental, social and economic disruptions, should be elevated as a top priority. But conservation of biodiversity needs just as much attention, and just as urgently. The U.S. interests in conserving its natural resources and achieving energy independence, clearly align with the global common good in every sphere: in the oceans, by halting the rapid decline of fish stocks and increasing acidification; on land, by regenerating the health of our soils, forests and rivers; and in the atmosphere by reducing the massive emission of pollutants from our wasteful industries, construction, agriculture and transport.

Conservation of nature and natural resources is often perceived as an obstacle to development when in reality, conserving forests, watersheds and coastlines can bring enormous savings to national governments. Investing in green infrastructure secures the continuous flow of ecosystem services and is far cheaper than traditional ‘built infrastructure’ such as flood barriers and water filtration plants.

Green infrastructure = green jobs

The concept of green infrastructure, which originated in the U.S., highlights the importance of the natural environment in decisions about land use and emphasizes the ‘life support’ functions provided by the natural environment. Examples include clean water and healthy soils, functions such as recreation and providing shade and shelter in and around urban areas. The U.S. Environmental Protection Agency (EPA) has extended the concept to the management of storm water runoff at the local level through the use of natural systems or engineered systems that mimic natural systems. At a larger scale, the preservation and restoration of ecosystems such as forests, floodplains and wetlands are critical components of green storm water infrastructure.

Millions of new jobs could be created by ‘greening’ development. Last week, the German government announced that strong growth in Germany’s renewable energy sector along with increased state spending for environment protection could help shorten the country’s worst post-war recession. The number of jobs in renewable energies will triple by 2020 and hit 900,000 by 2030.

Putting nature at the centre of the fight against climate change

For several years, the world has been investing in technology and engineering to fight climate change. Technology is a vitally important part of efforts to tackle climate change, but we must be careful not to put all of our eggs in a ‘techno-fix’ basket. Some technologies will work; others won’t; others will be economically unviable. And yet, whether for mitigation or adaptation measures to climate change, conserving nature is the safety net we should never lose.

A well managed reef in the Indian Ocean or the Caribbean will be more resistant to rising temperatures and will help to keep fisheries healthy. The key role played by forests and other ecosystems like peatlands in absorbing CO₂ and therefore, in reducing emissions is well known. Greater support should therefore be given to the REDD protocol (Reducing Emissions from Deforestation and Degradation) being put in place through the United Nations Framework Convention on Climate Change (UNFCCC) and a financial mechanism in which conserving biodiversity allows countries to reduce their emissions. Properly applied, initiatives like REDD can produce better managed forests that deliver goods for people. A well-managed forest in Ghana brings benefits to the people living in the area, but it also helps to regulate the climate for the rest of the planet. This type of approach makes sense from both a development perspective and an environmental one.

The U.S. has a clear role to play in promoting international cooperation to achieve conservation goals. It is one of only five countries that has not ratified the Convention on Biological Diversity (CBD). IUCN recommends that the U.S. ratifies the CBD, possibly as part of a package of widely-accepted treaties such as the United Nations Convention on the Law of the Sea and the Convention on Migratory Species.

IUCN also wishes to see an increased U.S. Federal role in conserving biodiversity and maintaining or increasing the ability of ecosystems to mitigate and adapt to climate change. IUCN urges the U.S. to strengthen its environmental policies and practices by fully implementing and enforcing existing laws such as the National Environmental Policy Act, the National Forest Management Act and the Endangered Species Act.

The way forward

The knowledge and the tools are at our disposal to restore the global environment and create a world that uses its natural resources sustainably. There are still some gaps in knowledge that must be filled but the problems are identified and so are the solutions.

The first step is to acknowledge the magnitude of our ecological debts. Clear standards and accounting rules are needed for measuring and reporting the depreciation of natural capital, at all levels from individual businesses to entire countries. Recent advances in technology, including remote sensing and internet connectivity, make this kind of measurement and reporting easier than ever before.

The next steps will be harder. In short, there is a need to rebuild our natural capital stocks. This will require wide-ranging reform of public policy, starting with reductions in 'perverse' subsidies, such as the US\$ 300 billion per year that the world's governments hand out to the petroleum industry. Subsidies to agriculture, forestry, mining, road-building also need to be reformed to create clear economic mechanisms that reward nature conservation and penalize environmental destruction.

Conserving biodiversity and ecosystems must be done by addressing the underlying forces that are eroding them, particularly development and consumption. For conservation to be successful, a flexible approach is needed, diagnosing first and adapting specific solutions in changing contexts. Policy makers at all levels must better integrate sound science and demonstrated practice into their decisions.

Years of experience 'on the ground' have shown us the need to root conservation at the local level. It is only by working with communities, by giving them the knowledge and empowering them to use the tools available to them, that any conservation work will be possible. Influencing governance arrangements simultaneously from the local to global level is key to effecting wider change and building public support for environmental protection.

Harnessing the power of the private sector

Businesses and consumers must start to pay the real economic value for ecosystem goods and services. Following the UK-led Review of the Economics of Climate Change, IUCN is working with its partners on The Economics of Ecosystems

and Biodiversity study which will provide tools for the true value of nature's services to be accounted for in decision making and integrated into national economic measures.

The priority should be to engage the business sectors in which change is most important and urgent, due to the scale of their negative impacts on the environment and social equity. These include 'large footprint' industries such as mining, oil and gas, construction, automobile and energy which have a large impact on biodiversity through their operations. On the other hand, biodiversity-dependent industries such as agriculture, fisheries, forestry, food retailing and aquaculture must all be encouraged to reduce their negative impacts.

Given the vast amounts of capital that financial services, banks, and insurance companies control, the leveraging potential for projects that conserve rather than damage biodiversity is enormous. The development of green enterprises whose activities generate conservation benefits should be encouraged. These include renewable energy, sustainable and organic agriculture, nature-based tourism and ethical trade.

The business case for conserving nature is strong and getting stronger. A recent report published by IUCN and Shell International Limited calls for policy reforms to increase the commercial rewards for conserving biodiversity, increased penalties for biodiversity loss and better information on the biodiversity performance of business. A key challenge facing all businesses wanting to become more sustainable in their practices is the lack of accepted indicators to measure positive and negative contributions to biodiversity conservation. Markets for organic agriculture and sustainably-harvested timber are growing at double-digit rates. Another major area of growth is the demand for climate mitigation services such as the protection of forests and wetlands to absorb carbon dioxide. Bioprospecting—the search for new compounds, genes and organisms in the wild, is also a biodiversity business on the rise.

Paying a true price

Payments for Ecosystem Services schemes reward those whose land provides these services with subsidies or market payments from those who benefit from them. It is an innovative approach to sustainable financing for conservation and highlights the critical importance of natural capital to the global economy.

In the U.S., companies or individuals can buy environmental credits from Wetland Mitigation Banks to pay for degradation of wetland ecosystems due to agriculture or development activities. More than 400 banks had been approved by September 2005, almost three quarters of them sponsored by private entities, while in 2006 the trade of wetland bank credits reached US\$ 350 million.

In France, the Vittel mineral water company (Nestlé Waters) was concerned about nitrate contamination caused by agricultural intensification so it began to pay farmers within its catchment to make their practices more sustainable. A key element of success was that Vittel gained the farmers' trust and maintained their income levels by providing them with sufficiently large payments. It also financed any required technological changes, meaning that farmers were not out of pocket. The company worked with farmers to identify suitable alternative practices and mutually-acceptable incentives.

The tools for environmental management are increasingly sophisticated and do not require massive increases in public spending. Market-based approaches such as tradable permits for sulphur dioxide, wetland mitigation banking, feed-in tariffs for renewable energy, waste deposit schemes and resource user fees, have shown that businesses will reduce their ecological footprint and invest in environmental protection, if the right incentives are put in place.

Leading the way in restoring our oceans

The oceans drive weather patterns, generate 70% of atmospheric oxygen, absorb most of the planet's carbon dioxide, are the ultimate reservoir for replenishment of fresh water to land and contain a wealth of biodiversity that keeps the

earth's ecosystem services functioning. Marine ecosystems such as wetlands, coral reefs, mangroves and sea grass beds provide food and livelihood for millions of people and can protect communities from extreme weather events.

However as with the terrestrial environment, our oceans face a barrage of threats, one of the biggest being over-exploitation of marine resources. Oil spills, agricultural run-off, harmful chemical and medical substances and plastic debris are just part of a long list of pollutants generated by modern society that end up in the sea.

The U.S. has the largest ocean area under its jurisdiction of any country and has traditionally been a leader in global ocean diplomacy. It now has the opportunity to renew its stewardship of ocean resources and resume its leadership in international marine affairs.

Marine ecosystems often extend across political or jurisdictional boundaries. It therefore follows that they must be managed using a broader framework. For larger systems, for example at the level of a sea or significant portion of it, such agreements might take the form of 'regional ocean management agreements.' Smaller spaces might require agreement among States or provinces, such as the case of Chesapeake Bay.

The goal of applying the ecosystem approach to marine management by 2010 is incorporated in the Johannesburg Plan of Implementation of the World Summit on Sustainable Development, adopted in 2002. Establishing this goal represented a culmination of global thinking developed in various international processes including the UN Food and Agricultural Guidelines on Marine Ecosystems and extensive work by the Conference of Parties to the Convention on Biological Diversity. Governments have collectively recognized the need to consider the full range of activities and processes affecting marine ecosystems in making decisions about the nature and extent of human activities.

Achievement of this goal is not an easy task. Progress, however, has been steady and widespread. Asia-Pacific Economic Cooperation (APEC) members and the Arctic Council have taken important collective steps. The Global Environment Facility, the World Bank, participating countries and other donors are funding 16 large marine ecosystem projects in Africa, Asia, Latin America and Eastern Europe at a multi-year level of US\$1.8 billion. In the U.S., the National Oceanic and Atmospheric Administration has adopted ecosystem-based management as one of its principal strategic goals.

Marine Protected Areas (MPAs) are an important tool in implementing the ecosystem approach. When effectively designed and managed these areas can deliver many ecological and socio-economic benefits as well as build the resilience of marine ecosystems in the face of increasing global pressures such as climate change.

Improved coordination and implementation of land-based pollution programs, in alignment with other sectoral policies, and oil spill prevention measures are required to avoid nutrient overload and hazardous impacts. We need to improve fisheries management if we are to sustain healthy fish stocks and economically-viable fishing industries. Destructive fishing practices must be eliminated and bycatch drastically reduced. The development, strengthening and implementation of international and national policies are also needed to address declines in vulnerable and declining marine species.

Despite the role of the oceans and coasts play in supporting our economic well-being, they remain poorly understood. Core funding for ocean science and research is necessary to expand our knowledge and allow us to continually adapt our management strategies for maximum effectiveness. Traditional approaches to coastal and marine management should be re-assessed and vulnerability studies need to consider new demands on marine ecosystems and their productivity.

In the last few years, the importance of marine biological resources that exist beyond the limits of national jurisdiction—the high seas—as well as on the threats to these important resources have increasingly been highlighted. There is a need to capitalize on this growing awareness and find ways to reduce the multiple threats to marine biodiversity in these areas in ways that are consistent with international law. Broadest possible participation in the United Nations Convention on the Law of the Sea would ease this process.

Working together

There are many other important steps needed to boost biodiversity conservation at the international level. There is a need to make all data on biodiversity and ecosystems easily accessible to all who need it, including industry. This means solving data proprietary issues. All relevant institutions need to be encouraged to share their data, even though they may have invested significant resources in compiling the information. A sustainable, self-financing, business model for open access needs to be developed and implemented. Financial support must be provided to developing countries, which arguably have the greatest need for access to biodiversity data.

The world is looking to the U.S. with great expectations in relation to the environment. Of course, one nation alone cannot change the world but it can have an enormous influence. Much is possible, but only by mustering the political will at all levels to face and confront environmental challenges. The environmental community is heartened by the positive steps taken in the early days of the new U.S. Administration, particularly towards putting science at the foundation of policy development and natural resource management. IUCN, like other science-based conservation organizations, stands ready to help the U.S. and other nations achieve the ambitious but achievable goal of global sustainability.

IUCN—International Union for Conservation of Nature

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In addition to the U.S. State Department, IUCN has six U.S. government agency members including the Environmental Protection Agency, the Fish and Wildlife Service and the National Oceanic and Atmospheric Administration. Working on behalf of more than 1,000 member organizations, both government and non governmental, IUCN is a unique environmental democracy operating at all levels from the villages of Central Africa to the United Nations' General Assembly. By mobilizing knowledge and expertise from all regions of the world, IUCN's powerful machinery is best able to convert policy into practice, allowing key decisions at higher levels to be informed by field information and expertise, and in turn, applying policy lessons at the ground level.