



# **Conservation & Sustainable Development**

**International Programs**

*Strategic Framework 2011-2020*

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# Conservation & Sustainable Development

## *Strategic Framework 2011-2020*

*“I believe that the great part of miseries of mankind are brought upon them by false estimates they have made of the value of things.”*

Benjamin Franklin, 1706-1790

### **I. Executive Summary**

Conserving ecosystems is one of the most compelling environmental challenges of the 21<sup>st</sup> century. Ecosystems and their biodiversity underpin human well-being. They provide food and water; regulate floods, drought, land degradation, and disease; support soil formation and pollination; and offer opportunities for recreation, spiritual renewal, and religious sustenance. Productive ecosystems, with their array of services, also provide people and communities with resources and options they can use as insurance in the face of natural disasters or social upheaval. Conserving ecosystems and securing their benefits for human well-being is also an increasingly important dimension of peace. Managing ecosystems sustainably thus responds to all three themes within MacArthur’s International Program strategy, particularly *Managing Environmental Change and Resource Scarcity* and *Protecting and Providing Opportunity for Vulnerable Populations*.

Despite their critical importance, ecosystems and biodiversity suffer acute and accelerating damage. In the last century, we lost 35 percent of our mangroves, 40 percent of our forests and 50 percent of our wetlands. Sixty percent of the ecosystem services we all depend upon – the benefits we derive from nature – have been degraded in 50 years. These losses are having direct economic repercussions that societies systematically underestimate.

A comprehensive external evaluation of the Foundation’s biodiversity conservation grantmaking from 2000-2010 was completed in July 2010. The findings of the evaluation team were encouraging, noting significant successes in many areas, as well as uneven performance in others. Based on the findings and recommendations of the evaluation; insight from a series of “white papers” exploring emerging issues; informal consultations with key partners; and feedback following the September 2010 retreat by the Foundation’s Board of Directors, we have designed a new 10-year Conservation & Sustainable Development strategic framework. It continues our focus on conserving ecosystems and biodiversity, but emphasizes making the value of healthy ecosystems more visible to economies and societies. Our goal is to move ecosystem conservation from the periphery to the center of development agendas.

Our theory of change is that an understanding of the benefits ecosystems provide to humans is necessary, but insufficient to spur effective conservation responses at the appropriate scales. To

close the gap that exists between simple concern and effective action, sufficient incentives must be created for societies to slow current trends of ecosystem degradation and service loss and eventually reverse them.

If our grant portfolios are well designed and targeted, then we believe key actors – communities, governments, businesses – will change their behaviors in ways that reduce pressure on ecosystems, including, for example, reflecting the contribution of ecosystems to economic growth and food/water security in national development strategies. These changes, outlined in the strategy, would benefit millions of people, particularly the rural poor, and prevent, mitigate, or reduce conflicts within and between states over natural resources.

Our theory of change will be tested by awarding grants that pursue four objectives: 1) Understand and respond to increased environmental pressures from development and climate change impacts; 2) Create and expand incentives to conserve ecosystems; 3) Assist the rural poor in managing their resources for multiple benefits; and 4) Build capacity to respond to global drivers of ecosystem decline. The first three of these will be applied primarily through grant portfolios targeting specific regions, and land and seascapes within them while the fourth is designed to address global drivers of ecosystem loss and is not tied to specific geographies. However, grant portfolios under the fourth objective will complement and reinforce the others.

We also redesigned the program, including our geographic priorities, to maximize the impact of our own investments and leverage the investment of others. We will prioritize regions that hold unique biodiversity as well as vulnerable ecosystems that play a critical role in sustaining human well-being. We will focus on three major geographic regions. Coastal marine grantmaking will be a theme with a global scope, although the initial emphasis will be building on past successes in the Caribbean, Madagascar, and Melanesia. A core emphasis of the coastal marine portfolio will be documenting and disseminating best practices and lessons learned as a means for scaling up impact. This has proved to be a dramatically successful approach in Melanesia. Finally, policy grants will target four global issues, replacing our *ad hoc* Research & Development initiative.

The regional priorities are based on their potential to produce multiple ecosystem benefits relevant to human well-being. We prioritized regions with higher biodiversity, freshwater service, and carbon storage values. We were also mindful of MacArthur's legacies in the regions, prioritizing where we have a history of supporting conservation and strong foundations upon which to build. The Great Lakes of East Central Africa and the Greater Mekong and its Headwaters emerged when we prioritized areas with high human population densities (on the assumption that conservation investments in these regions will have the potential to benefit the largest numbers of people) and lower percentages of remaining habitat (assuming ecosystems in these regions are the most threatened and where human populations that depend upon the

benefits they provide are most vulnerable). The Watersheds of the Andes are a priority because of their remarkable biodiversity values (the highest of all regions analyzed), but also because of the region's comparatively lower population density and higher percentage of remaining habitat.

Our 2000-2010 strategy supported marine conservation in Melanesia, Madagascar, and the Insular Caribbean, focusing largely on community-based management of coastal marine resources. The external evaluation identified our efforts to build a network of Locally Managed Marine Areas (LMMAs) in Melanesia to be a particularly convincing success. CSD will build upon this accomplishment and amplify it globally with a cross-regional emphasis on coastal marine grantmaking that seeks specifically to scale up the LMMA model. The central objective will be to improve the productivity and reliability of the services that the ocean provides to coastal communities by conserving marine and coastal biodiversity through sustainable fisheries management and maintaining essential habitats. The strategy will initially focus on the geographies where we have established marine portfolios, but will seek to identify new areas where an LMMA approach could be effective. In addition to building resilient networks of managed marine areas, we will emphasize an ecosystem-based, whole-catchment approach that addresses land use upstream and, when appropriate, use of marine resources further out to sea.

We will continue to allocate funds toward issues that advance biodiversity conservation at the global scale and reinforce regional portfolio objectives. Priorities are being informed by the series of white papers commissioned from external experts. We highlight four priorities that we judge to be urgent and unfilled niches where the Foundation can provide leadership for the broader conservation and donor community. These are: 1) climate change mitigation and adaptation; 2) understanding and influencing China's natural resource use and consumption patterns, particularly in Africa, Latin America, Asia, and the Pacific; 3) integrating environmental and social considerations into commodities markets, such as carbon, timber, oil palm, cotton, and soy; and 4) responding to overexploitation and/or illegal use of marine fisheries.

We will forego grantmaking in the Himalayas, Madagascar, Melanesia, and the Caribbean, except when it fits our coastal marine and global issue priorities. The strategy therefore reduces the number of regions in which we will invest from 8 to 4: the Great Lakes of East Central Africa; the Greater Mekong and its Headwaters; and the Watersheds of the Andes, plus a coastal marine program that will build upon our Locally Managed Marine Area successes through grants in the Caribbean, Madagascar and Melanesia. Comparing the 8 focal regions in the 2000-2010 strategy with these 4 geographic priorities, we estimate that our total area of interest is reduced from approximately 13 million km<sup>2</sup> to 5.6 million km<sup>2</sup>, a decrease of 57 percent. Our budget projections indicate an average increase in investment of 90 percent per region over the next ten years when compared with the 2000-2010 strategy. Pursuing opportunities to expand the coastal marine program beyond the Caribbean, Madagascar and Melanesia will be considered, and may

include a modest expansion of our currently delineated coastal geographies. As in the 2000-2010 strategy, we will select landscapes and sites within these large areas of interest for concentrated investment.

The significant reduction in area globally allows us to expand the boundaries of the three priority regions – Great Lakes of East Central Africa; the Greater Mekong and its Headwaters; and the Watersheds of the Andes – to encompass entire watersheds and river basins, while significantly increasing our total budget per region. This decision follows an external evaluation recommendation (p. 5):

“...we suggest a gradual shift towards encouraging grantees to study methods and build capacity to increase impacts on decision making at larger spatial scales, including landscapes, seascapes and large river basins.”

The reduction in the number and total area covered in our geographic priorities also allows us to expand the policy-oriented work necessary to address global drivers of ecosystem decline.

Finally, CSD will pursue a more rigorous and systematic approach to assessment under the new strategy, including the identification of strategic targets and related indicators for the positive change in the state of biodiversity/ecosystems we seek, the pressures we hope to influence, and the responses supported by our grants for each element of our strategy. This approach will allow us to assess the validity of our theory of change and also complement national government efforts to report their own progress to targets agreed in the Convention on Biological Diversity and other agreements.

## **II. Rationale for Investment**

Conserving ecosystems is one of the most compelling environmental challenges of the 21<sup>st</sup> century. Ecosystems and their biodiversity underpin human well-being. They provide food and water; regulate floods, drought, land degradation, and disease; support soil formation and pollination; and offer opportunities for recreation, spiritual renewal, and religious sustenance.

What does this mean in practical terms? Consider two examples:

- More than 75 percent of the world’s accessible fresh water comes from forested watersheds and one-third of the world’s largest cities depend upon forests for their water supply.
- Although covering just 1.2 percent of the world’s continental shelves, coral reefs are home to millions of species, including more than a quarter of all marine fish species. In developing countries, some 30 million fishers in coastal and island communities are

reliant on reef-based resources as their primary source of food, income, and livelihood; together with their dependents, this amounts to some 135 to 150 million people.

Productive ecosystems, with their array of services, also provide people and communities with resources and options they can use as insurance in the face of natural disasters or social upheaval. While well-managed ecosystems reduce risks and vulnerability, poorly managed systems can exacerbate them by increasing risks of flood, drought, crop failure, or disease. Poorer people in developing countries are disproportionately dependent on nature and tend to be the first to suffer as ecosystems erode.

Conserving ecosystems and securing their benefits for human well-being is also an increasingly important dimension of peace. Environmental security is central to national security, comprising the dynamics and interconnections among the natural resource base, the social fabric of the state, and the economic engine for local and regional stability. Managing ecosystems sustainably thus responds to all three themes within MacArthur's International Program strategy, particularly *Managing Environmental Change and Resource Scarcity* and *Protecting and Providing Opportunity for Vulnerable Populations*.<sup>1</sup>

Despite their critical importance, damage to ecosystems and biodiversity is acute and accelerating. In the last century, we lost 35 percent of our mangroves, 40 percent of our forests and 50 percent of our wetlands. Sixty percent of the ecosystem services we all depend upon – the benefits we derive from nature – have been degraded in 50 years. Eighty percent of our fisheries are fully or overexploited. Species loss is 100 to 1,000 times greater than in geological times and will get worse with climate change. These losses in the natural world are having direct economic repercussions that societies systematically underestimate.

MacArthur has supported efforts to conserve nature for three decades. From 2000-2010, the Conservation & Sustainable Development (CSD) strategy prioritized eight biodiversity hotspots<sup>2</sup> for grantmaking. We emphasized the conservation of threatened species and the habitat they require by encouraging the creation of specific areas for conservation – protected areas. Grants typically focused on threats at the site level rather than pressures, such as infrastructure development and climate change, which can only be dealt with at regional or global scales, though grants began to respond to these pressures toward the end of the decade. In 2006, the strategy was modified to respond to the issue of climate change, particularly the importance of

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<sup>1</sup> The Foundation's International Programs (formerly the Program on Global Security and Sustainability) works on three themes: Preventing Conflict and Sustaining Peace; Managing Environmental Change and Resource Scarcity; and Protecting and Providing Opportunity for Vulnerable Populations.

<sup>2</sup> Biodiversity hotspots are regions recognized for exceptional levels of species endemism and substantial habitat loss. To qualify as a hotspot, a region must meet two strict criteria: it must contain at least 1,500 species of vascular plants (> 0.5 percent of the world's total) as endemics, and it has to have lost at least 70 percent of its original habitat.

adaptation. We made a series of grants designed to better illuminate the relationships between climate change and CSD's conservation goals.

A comprehensive external evaluation of this period of grantmaking was completed in July 2010.<sup>3</sup> Major findings from the evaluation on the approach and results of our grantmaking during this period included the following:

- Protecting biodiversity is and will remain a vitally important conservation target for the foreseeable future.
- CSD's overall strategy and approach are sound. The 2000 Strategy for grantmaking in biodiversity hotspots justified an approach that was already well established and for which the Foundation has become renowned.
- Site-specific grants and portfolios reflect appropriate and well-judged responses to diverse on-the-ground realities and opportunities, given the resources available.
- CSD's sustained support for people and institutions, as opposed to short-term projects, differentiates the Foundation from other donors.
- In multiple hotspots CSD grants have significantly advanced the innovative and effective engagement of local people and organizations, especially in (a) managing protected areas, (b) conserving marine biodiversity, and (c) enforcing environmental laws.
- Capacity building grants to local civil society organizations have helped transform the institutional landscape of conservation in several countries.
- Wisely selected R&D grants have helped grantees focus on the biodiversity implications of climate change adaptation rather than mitigation.
- Insufficient attention has been paid either to (a) systematic learning and feedback from the diverse experiences of CSD grantees or (b) reflection to what CSD grants have achieved or contributed.

The evaluation team also made several recommendations about how the Foundation should approach future biodiversity conservation grantmaking, including:

- The main thrust of the CSD grants should continue, with future priorities building on the Foundation's areas of excellence and carefully-acquired brand while continuing to prioritize biodiversity hotspots. Clusters of grants around targeted locations or themes have shown potential and should be expanded. A substantially increased emphasis on the analysis and dissemination of lessons from experience should amplify CSD's impact.
- Major and urgent threats to biodiversity include the expansion of large infrastructure projects and the illegal trade in wildlife and other natural products, both driven largely by

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<sup>3</sup> Michael Wells *et al*, Independent Evaluation of Conservation and Sustainable Development Grants (2000-2009) for the MacArthur Foundation, July 21, 2010.



the expanding influence of China and other Asian countries. These factors threaten to undermine the Foundation's investments to date, although the Foundation alone cannot hope to address them.

- Within selected hotspots we suggest a gradual shift toward encouraging grantees to study methods and build capacity to increase impacts on decision making at larger spatial scales, including landscapes, seascapes, and large river basins. This will require interaction with a wider range of development actors and sectors, possibly using expertise in climate change adaptation as an entry point.
- Many organizations have planned or launched climate change programs as significant resources start to flow into this area. We recommend CSD stay focused on explicit links between international biodiversity conservation and climate change adaptation within larger-scale land and water management initiatives.
- CSD management should be charged with monitoring, periodically assessing and reporting on the performance of the hotspot and R&D grant portfolios.

Based on the findings and recommendations of the external evaluation; insight from a series of “white papers” exploring emerging issues in our field (see Appendix 1); informal consultations with key partners; and feedback following the September 2010 retreat by the Foundation's Board of Directors, we have designed a new 10-year strategic framework. It continues our focus on conserving ecosystems and biodiversity, but emphasizes making the value of healthy ecosystems more visible to economies and societies. Our goal is to move ecosystem conservation from the periphery to the center of development agendas. Under the new strategy, grant portfolios will seek to illuminate the importance of ecosystems to human development and better equip key actors – governments, business, or communities – to strike a more sustainable balance among competing objectives: ecosystem health; food and water security; resilience to climate change; and economic development. Ultimately, we want societies to act as good stewards of the environment out of self-interest, not just as a way of acting “responsibly.” Strengthening the economic justification for conservation does not suggest that moral and ethical considerations are unimportant. The intrinsic value of nature to humanity and our responsibility to ensure its persistence for future generations are beliefs that will continue to inform our work. Absent clear understanding of the economic implications of biodiversity loss, however, political will to conserve threatened ecosystems will never be sufficient to succeed at the scale needed to prevent collapse.

We are not alone in seeking to move ecosystems and biodiversity from the margins to the center of international, national, and local development priorities. The importance to humanity of biodiversity and ecosystem functions was confirmed by a succession of authoritative studies. Two are particularly noteworthy: the *2005 Millennium Ecosystem Assessment* highlighted the value of ecosystem services, and the recently released report on *The Economics of Ecosystems and Biodiversity* (TEEB) that argues "a landscape of market failures" has occurred because the

services of nature have nearly always been provided for free, and so not valued until they were gone.<sup>4</sup> The United Nations recently launched the *International Science-Policy Platform on Biodiversity and Ecosystem Services* (IPBES) to act as the science-policy interface for biodiversity and ecosystem services, similar to the Intergovernmental Panel on Climate Change (IPCC). Several of our key conservation NGO partners have also re-oriented their programs to reflect this new approach. Conservation International (CI) having done so most recently and most dramatically. However, among private foundations, just the Gordon and Betty Moore Foundation and the Packard Foundation are significant supporters of biodiversity conservation. The Margaret A. Cargill Foundation will become one soon. None currently combine our global scope and long-term commitment to issues and organizations. As the external evaluators put it, “CSD has no direct competitors in its niche. [It] exhibits a combination of strengths that few, if any, other international donors can match.”

### III. Strategy

Our strategy is the product of a collaborative effort by every member of the CSD team. It has been informed by the external evaluation, white papers, and informal consultations with leaders in the conservation and development communities. These helped us understand our past contributions more clearly, as well as where we fell short. They also helped us appreciate the changes in context that have occurred since the last CSD strategy was developed in 2000. We were particularly struck by the looming pressures on ecosystems driven by increasing demand for food, energy, and water, and global climate change. We also saw opportunities in a growing recognition that the planet’s resources are finite and a realization in many countries and among many influential actors that economies rely on nature, and without healthy and productive ecosystems, economic development and vibrant societies cannot be sustained.

Based on these insights, we began by articulating a theory of change that reflects our analysis of the connections between the impact we seek and investments we could make. This led us to define four objectives around which grants will be made to test our theory of change. Finally, we redesigned our program and budget structure, including our geographic priorities, to maximize the impact of our own investments and leverage the work of others.

What is different about this new strategy? Instead of focusing narrowly on biodiversity hotspots, we will prioritize regions that hold unique biodiversity as well as vulnerable ecosystems that play a critical role in sustaining human well-being. Within these regions, we will stress work in areas that are used by humans for food and other resources, yet are ecologically important (see Appendix 2). Our past work has paid much more attention to strengthening protected areas where biodiversity conservation was the most important management objective. Policy research will be a higher priority than in the past, particularly at the global level where we will aim to

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<sup>4</sup> [www.millenniumassessment.org](http://www.millenniumassessment.org), [www.teebweb.org](http://www.teebweb.org)

influence key drivers of pressure on ecosystems. We will leverage our investments more aggressively by identifying opportunities where persuading a handful of key actors to change their behavior will have a significant impact on policy or financing for our priority issues. CSD staff will more rigorously and systematically analyze the results achieved through our grant portfolios and improve the practice of others by sharing these lessons.

Other elements of our approach will not change. We will continue to make long-term commitments to geographic priorities, key issues, and organizations with the potential to have significant impact. We will maintain predictable grant cycles and bring forward portfolios of grants for approval comprising coordinated investments in geographies and themes. Making mutually supportive grants simultaneously creates beneficial “portfolio effects”, maximizing the collective impact of our grants and opportunities to capture lessons learned. Each of these elements of our long-standing approach to grantmaking was endorsed by the external evaluation.

## A. Theory of Change

Our theory of change is that an understanding of the benefits ecosystems provide to humans is necessary, but insufficient to spur effective conservation responses at the appropriate scales. To close the gap that exists between simple concern and effective action, sufficient incentives must be created for societies to slow current trends of ecosystem degradation and service loss and eventually reverse them.

Four major assumptions underpin this hypothesis:

- Ecosystems and the ecological processes that produce benefits for society can be understood sufficiently to value and then manage for them.
- Some ecosystem benefits – both economic and non-economic – are sufficiently valuable to be prioritized by society in resource use decisions.
- Sustainable management of natural resources contributes to preventing, mitigating, and/or resolving environmental and social conflicts.
- Some drivers of ecosystem loss are linked to global trends and responses to them are best addressed at a global scale.

Our theory of change is predicated on a logic model (Figure 1) that presumes our grant portfolios will:

- Describe the importance of ecosystems to sustainable economic growth persuasively to key decision makers;
- Illustrate ways to generate positive incentives for environmental stewardship;
- Strengthen resource use rights of local communities and Indigenous Peoples who manage many of the ecosystems that provide benefits to others in society;

- Contribute to testing and evaluating policies that distribute the costs and benefits of ecosystem management efficiently and more equitably among the users and providers of ecosystem services; and
- Monitor the status / trends in the health of ecosystems and pressures on them with scientific rigor and share this information with a broad audience.

**Figure 1: Theory of Change Logic Model**



If these portfolio responses are well designed and targeted, then we believe it is likely key actors – communities, governments, and businesses – will change their behaviors in ways that reduce pressure on ecosystems, including:

- Reflecting the contribution of ecosystems to economic growth and food/water security in national development strategies, particularly investment in agriculture and infrastructure, and national accounting systems;
- Developing and implementing policies that support widespread adoption of conservation incentive programs, such as payments (or compensation) for ecosystem services (PES);
- Safeguarding sites of particular importance for biodiversity more effectively using decentralized and/or traditional natural resource management; and
- Increasing financing for protected area systems, sustainable forestry programs, fisheries management, and ecosystem-based adaptation to climate change through creative, fair mechanisms.

If these changes occur, our hypothesis will be validated and we expect to achieve the following long-term outcome:

Ecosystem degradation is prevented or reduced and ecosystem benefits are sustained in high-biodiversity land and/or seascapes in at least three regions around the world.<sup>5</sup>

This will benefit many millions of people, particularly the rural poor and prevent, mitigate, or reduce conflicts within and between states over natural resources. Through our assessment process, we will periodically draw conclusions about the extent to which our theory of change holds true based upon how our grant portfolios are affecting key trends or appear likely to do so in the future. We will then revise our strategy as appropriate and adjust our portfolio responses to sharpen our approach.

We also recognize the dramatic impact a number of potential climate “tipping points” would have on ecosystems and biodiversity conservation and by extension our strategy. These include the melting of arctic sea-ice and associated sea level rise, collapse of the Indian summer monsoon, and the die back of the Amazon rain forests. If it became clear that the planet was approaching any of these thresholds and abrupt changes are likely, we would revisit the viability and orientation of our approach and portfolios.

## **B. Implementation**

We will implement our strategy by pursuing four objectives. The first three objectives will be applied primarily through grant portfolios targeting specific regions, and land and seascapes within them. The fourth is designed to address global drivers of ecosystem loss and is not tied to specific geographies. We do, however, expect grant portfolios under the fourth objective to complement and reinforce the other three.

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<sup>5</sup> A *landscape* is a large, spatially varied geographic area characterized by diverse interacting patches or ecosystems, ranging from relatively natural terrestrial and aquatic systems such as forests, grasslands, and lakes to human-dominated environments including agricultural and urban settings. Landscape-scale conservation seeks to achieve impact on competing objectives through multiple interventions over very large areas. It provides a basis for interventions that result in the whole landscape having higher value for both the economy and biodiversity than the sum of its parts.

## 1. Objectives

### a) *Understand and respond to increased environmental pressures from development and climate change impacts.*

Investment and infrastructure underpin economic development in the developing world, not incremental changes in subsistence livelihood practices. They are also the major drivers of environmental change. Increased investment in agriculture for food and biofuels is a particular concern. Agriculture will need to supply 70 percent more food for a growing and increasingly wealthy human population by 2050, as well as perhaps a 90 percent increase in oil crops for renewable fuels by 2018. Over the past 300 years, agriculture has been responsible for significant damage to ecosystems and biodiversity: Some 43 percent of the world's land surface has been converted to agriculture, 60 percent of vertebrate species are threatened by it and there are further impacts from herbicide, pesticide, and fertilizer use. Under this objective we will pay particular attention to opportunities for increasing the productivity of existing agricultural land and fisheries while maintaining their biodiversity values. More specifically, we will consider investments in biotechnology, better practices, innovations in water use, fertilizer, and pesticides, minimizing post-harvest waste, and managing degraded land. Investment would depend upon regional contexts and opportunities to complement and leverage the work of others. Through this work, we will be engaging more actively in the debate about solutions to global food and freshwater crises in high biodiversity land and seascapes.

#### **IMPACT EXAMPLE**

##### **Transboundary co-management of a production landscape in Costa Rica and Panama**

The Gandoca–Manzanillo National Wildlife Refuge on Costa Rica's Caribbean coast connects with Panama's San Pondsak National Wildlife Refuge. This 10,000-hectare refuge is co-managed by local communities, non-governmental organizations (NGOs) and government agencies. Small farm agro-ecosystems are integral to regional biodiversity conservation. More than 300 farmers hold secure land titles in the refuge's buffer zone. A regional small farmers' cooperative supports over 1,500 small farmers. It is Central America's largest volume organic producer and exporter, generating 15–60 percent increases in small-farmer revenue. Conservation-based carbon offset schemes are being developed to provide additional revenue for stewardship-focused farming.

*Source: Sara J. Sherr and Jeffrey A. MacNeely, "Biodiversity conservation and agricultural sustainability: towards a new paradigm of 'ecoagriculture' landscapes", Phil. Trans. R. Soc. B 12 February 2008 vol. 363 no. 1491 477-494.*

Grants linked to this objective will emphasize policy research and analysis. We will finance efforts to understand and analyze “tradeoffs” of resource use choices and encourage policies and plans that optimize development and sustain ecological processes in production landscapes, including the use of biodiversity and ecosystems as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change. These approaches enable conservationists

to work with stakeholders to explore options and identify conservation scenarios that maximize benefits and minimize costs to local economies and thus have broad support among the people most directly concerned.

*b) Create and expand incentives to conserve ecosystems.*

Societies enjoy enormous benefits from nature's multiple and complex values. Forests store carbon and provide clean and regulated water for human consumption, irrigation and maintenance of aquatic ecosystems. Wetlands purify water and offer protection against floods. Mangroves protect coasts and their populations by reducing the damage caused by storms and tsunamis. Coral reefs provide breeding grounds for fish, leisure, and learning for tourists and scientists. The list of benefits provided by nature is vast. Yet species are still being lost and nearly two thirds of ecosystem services have been degraded in just 50 years.

The cost of these losses is felt on the ground but can go unnoticed at national and international level because the true value of nature is missing from decisions, indicators, accounting systems, and prices in the market. Ecosystem services are a useful concept to make these benefits more explicit. They form a key building block of our new strategy.

Conservation practitioners are beginning to demonstrate the value of ecosystems as capital assets, communicate the vital roles these assets play in supporting human well-being, and open new revenue streams to fund conservation. Our grants will emphasize quantifying the value of nature and creating mechanisms that transform the theoretical economic values of ecosystem services (e.g. water, carbon, bio-commerce, and aesthetic services) into actual revenue streams for the government institutions and communities that provide them. Projects will include a mix of field interventions and policy analysis. Often projects will include site-scale payment for ecosystem services efforts linked to a broader effort to create an enabling policy framework for scaling up based on the experiences generated by the pilot project.

**IMPACT EXAMPLE**

**Value for money: natural solutions for water filtration and treatment**

Cities like Rio de Janeiro, Johannesburg, Tokyo, Melbourne, New York, and Jakarta all rely on protected areas to provide residents with drinking water. They are not alone – a third of the world's 100 largest cities draw a substantial proportion of their drinking water from forest protected areas. Forests, wetlands, and protected areas with dedicated management actions often provide clean water at a much lower cost than man-made substitutes like water treatment plants:

In New York, payments to landowners to manage their properties for water purification services in the Catskills watershed (\$1-1.5 billion) were assessed at **significantly less** than the estimated cost of a filtration plant (\$6-8 billion plus \$300-500 million/year operating costs).

New York City taxpayers' water bills went up by 9 percent instead of doubling.

*Source: The Economics of Ecosystems and Biodiversity: TEEB for National and International Policy Makers, 2010.*

c) *Assist the rural poor in managing their resources for multiple benefits.*

Protected areas designed to protect threatened and charismatic species will always be a central element to any comprehensive biodiversity conservation strategy, yet we know the vast majority of biodiversity occurs outside protected areas and is unlikely to ever be included within a formal protected area. More flexible, adaptive, and integrative approaches have a higher likelihood of achieving biodiversity conservation goals than approaches that focus on establishing as many protected areas as possible to block development.

While protected areas remain vitally important, it is becoming clear that we have to explore additional conservation options. The fate of much biodiversity will depend upon land and seascape mosaics with a range of management modalities and objectives. Many areas important to biodiversity will be under decentralized management regimes driven by communities and local civil society. Our experience shows that we can embed networks of these Community Conserved Areas (CCAs) within large conservation landscapes. CCAs are managed by local communities in ways that improve their lives, support unique cultural values and traditions, and benefit biodiversity. Grants will pay particular attention to assisting vulnerable and disadvantaged groups, particularly Indigenous Peoples, ethnic minorities, and women, in securing and managing their traditional resources. Projects will emphasize interventions designed to safeguard sites with high-biodiversity values in ways that reinforce traditional management and food security. We will also seek out ways to amplify the impact of the site-based work by documenting and disseminating best practices and lessons learned.

**IMPACT EXAMPLE**

**Community Conserved Areas**

The Awá indigenous people are settled on both sides of the eastern boundary between Ecuador and Colombia in a region of unusually high biodiversity. The 120,000-hectare Awá Communal Settlement Forest Reserve, declared in 1988, is where the Awá communities practice sustainable forest management and protect the territory. A reserve core zone of 17,000 hectares, containing a high diversity of endemic species, was designated by the communities as a *Life Reserve*, where human activities are strictly regulated.

*Source: Parks, Vol 16 No 1. World Commission on Protected Areas of IUCN. 2006.*

Under this objective, as part of an expanded marine focus we will seek to integrate terrestrial and marine conservation through “ridge to reef” approaches<sup>6</sup> and will be designed to scale up our work on locally managed marine areas (LMMAs). The LMMA approach features a network of marine conservation efforts firmly rooted in local communities that develop and implement their own management plans, usually involving catch limits, no-take zones, and improved fishing

<sup>6</sup> Ridge to reef conservation refers to an integrated approach to watershed and coastal management that seeks to address unsustainable fishing and land-use practices across elevational gradients and at the scale at which ecological and social processes are operating. Expanding and improving ridge to reef conservation in the Pacific was a priority recommendation of the climate change vulnerability assessment for Melanesia.



gear. Initially, we will emphasize expanding our current marine activities in the Caribbean, Melanesia, and Madagascar into the Greater Caribbean and Mesoamerica, Western Pacific, and Indian Ocean.

*d) Build capacity to respond to global drivers of ecosystem decline.*

In considering our future work, we identified four main drivers of ecosystem decline globally: increasing demand for food, energy, and water, and global climate change.

Agriculture will need to produce much more food to meet the demands of a growing and increasingly wealthy human population in the coming decades. The biggest environmental impact of agriculture is arguably on water. Of all human activities, food production is both the single largest user and polluter of water. Water scarcity is now common in many parts of the planet, and scarcity is increasing at alarming rates. More than a dozen major rivers are dry for at least part of the year with devastating impacts on downstream communities, biodiversity, and food production. A billion people currently lack adequate water. By 2025, that number is projected to increase, with 2.8 billion people in 48 countries facing water scarcity. And, by 2050, an estimated 7 billion people in 60 countries are expected to face water scarcity if we do not find effective ways to address local water issues in areas where this resource is in short supply. Lack of water in an increasing number of places most likely poses a more urgent, short-term threat to people and biodiversity alike than climate change. But the two are not unrelated – by all estimates climate change will accentuate water scarcity and related issues.

Climate change affects both individual species and ecosystems. Species respond to climate change according to their climate tolerances and abilities to disperse into a new location; alter their phenology (e. g. breeding date); and/or adapt to shifting food sources. In a world of fragmented ecosystems, the ability of species to respond to climate change is compromised and the prospect of mass extinctions, especially among highly specialized or climate sensitive species such as amphibians, is real. As species go extinct, ecosystems become more fragile, although what level of pressure pushes a degraded ecosystem to collapse is uncertain. We can be confident however that increased fragility means reduced resilience and, eventually, a decline in productivity. Climate change has already degraded land and decreased agricultural yields and increased the acidity of oceans, compromising marine fisheries. Where healthy ecosystems are a principal source of food and clean water, reduced productivity means critical resources will be scarcer. Human well-being will be increasingly at risk and, as a result, regions with histories of conflict will face new sources of instability and unrest.

Our response to these drivers is embedded in regional portfolios. However, we also see a need (and an opportunity) to respond to these drivers of ecosystem decline at a global scale. In selecting these global issues, we have identified opportunities with high-leverage potential. Leverage includes opportunities to partner with other donors that share our interests, but also

where changes in behavior among a limited number of actors could have a dramatic impact on these four drivers, including within our priority regions. The four global issues we intend to pursue are:

- Continuing to improve the science, policies, and technical capacity required for ecosystem-based adaptation to the effects of climate change and promoting forest conservation and management as a way to reduce greenhouse gas emissions from deforestation;
- Understanding and influencing China’s natural resource use and consumption patterns, particularly in Africa, Latin America, and Asia, and the Pacific;
- Integrating environmental and social considerations into commodities markets, such as carbon, timber, oil palm, cotton, and soy; and
- Responding to overexploitation and/or illegal use of marine fisheries.

## 2. Program Structure & Priorities

The final step in developing a new strategic framework was aligning our program and budget structure with the theory of change and the four objectives we will implement to test it. Form has followed function. More specifically, we rebuilt our structure to address three key questions:

- How do we target our work more effectively to maximize our impact for ecosystems and human well-being in priority geographies?
- How do we amplify our impact in coastal marine ecosystems even as we reduce our overall geographic scope?
- How do we increase investment in global policy research and have an impact on global drivers of pressure on ecosystems with our modest resources?

The result is a new structure focused on three major geographic regions, instead of eight hotspots. Coastal marine grantmaking will be a theme with a global scope, although the initial emphasis will be building on past successes in the Caribbean, Madagascar, and Melanesia. A core emphasis of the coastal marine portfolio will be documenting and disseminating best practices and lessons learned as a means for scaling up impact. This has proved to be a dramatically successful approach in Melanesia. Finally, policy grants will target four global issues, replacing our ad hoc Research & Development initiative.

### a) Regions

Our proposed regional priorities are based on their potential to produce multiple ecosystem benefits relevant to human well-being. More specifically, we used the best available global

datasets<sup>7</sup> to compare 34 regions containing globally significant biodiversity using the following criteria:

### **Biodiversity**

The number of plant and vertebrate species occurring in and endemic to each region.

### **Freshwater services**

An estimate of clean water delivered by natural habitats to downstream beneficiaries in terms of human population on a cubic meter per hectare per year basis. The data and methodology we used to make these estimates is a work in progress, but nevertheless provide our current best estimates of the freshwater service values from each region. They account for spatial variation in precipitation, the ability of natural habitats to provide clean water downstream, the presence of downstream human populations (demand), and the hydrological flows that link upstream habitats to downstream populations.

### **Carbon storage**

The carbon storage estimates for each region are based on a global map of biomass carbon stored in above and belowground living vegetation. Despite limitations in the global map of biomass carbon, the data is the only globally consistent dataset on vegetation biomass carbon. We used an estimate of carbon stocks for all land cover types, including agriculture, expressed in tons of carbon stored per hectare.

### **Human population density**

The number of people per square kilometer.

### **Remaining habitat**

The percentage of natural habitat remaining of the original extent.

Our analysis leads us to recommend future CSD work focused on the following major regions:

- The Great Lakes of East Central Africa
- The Greater Mekong and its Headwaters
- The Watersheds of the Andes
- Coastal Marine (cross-regional)

We prioritized terrestrial regions with higher biodiversity, freshwater service, and carbon storage values. We were also mindful of MacArthur's legacies in our eight focal regions<sup>8</sup>, prioritizing

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<sup>7</sup> Will Turner and Frank Larsen, Estimates of Carbon, Freshwater Flows, and Biodiversity in the Biodiversity Hotspots, May 10, 2010.

where we have a history of supporting conservation and strong foundations upon which to build. The Great Lakes of East Central Africa and the Greater Mekong and its Headwaters emerged when we prioritized areas with high human population densities (on the assumption that conservation investments in these regions will have the potential to benefit the largest numbers of people) and lower percentages of remaining habitat (assuming ecosystems in these regions are the most threatened and where human populations that depend upon the benefits they provide are most vulnerable). The Watersheds of the Andes are a priority because of their remarkable biodiversity values (the highest of all regions analyzed), but also because of the region's comparatively lower human population density and higher percentage of remaining habitat. Each region includes some of the world's most biodiverse and threatened tropical forests.

A fourth portfolio of grants will focus cross-regionally on coastal marine systems. This strategy will encompass a broader geographic focus than our other three regions, but will concentrate explicitly on scaling up the Locally Managed Marine Areas (LMMA) model. The LMMA approach is effective for conserving biodiversity and improving the livelihoods and food security of coastal communities, and thus serves as an ecosystem-based model that compliments our strategic objectives, as well as our three terrestrial regions. Grantmaking will initially focus on the geographies where we have established marine portfolios, but will seek to identify new areas where an LMMA approach could be effective.

This regional portfolio provides us opportunities to work in different contexts. In two regions, pressures on ecosystems are greater as are the opportunity costs of conservation, but the potential for our investment in conserving ecosystems to improve the lives of the greatest number of people is also higher. In the third, pressures are lower (although still significant) and the opportunity for important conservation gains more certain. Finally, in an oft-overlooked coastal strand environment, there is a promising opportunity to test and expand community-based conservation interventions in diverse socio-cultural settings.

### **(1) The Great Lakes of East and Central Africa**

The Great Lakes of east and central Africa is one of the continent's most important regions for biodiversity conservation. Key features of this region include the lakes and associated basins as well as the headwaters and basin of the Nile River. These basins are important sources of food, energy, drinking and irrigation water, shelter, and transport for people in the region.

The Nile River is the longest river in the world (4,145 miles), and its major source is Lake Victoria. The Ruvyironza River in Burundi, which is one of the upper branches of the Akagera River, is regarded as the most remote headstream of the Nile. The Nile and its tributaries run through 10 countries (Burundi, DRC, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania,

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<sup>8</sup> CSD prioritized eight geographic regions under the 2000-2010 strategy, including The Northern Andes, Southern Andes, Insular Caribbean, Albertine Rift, Madagascar, The Eastern Himalayas, The Lower Mekong, and Melanesia.

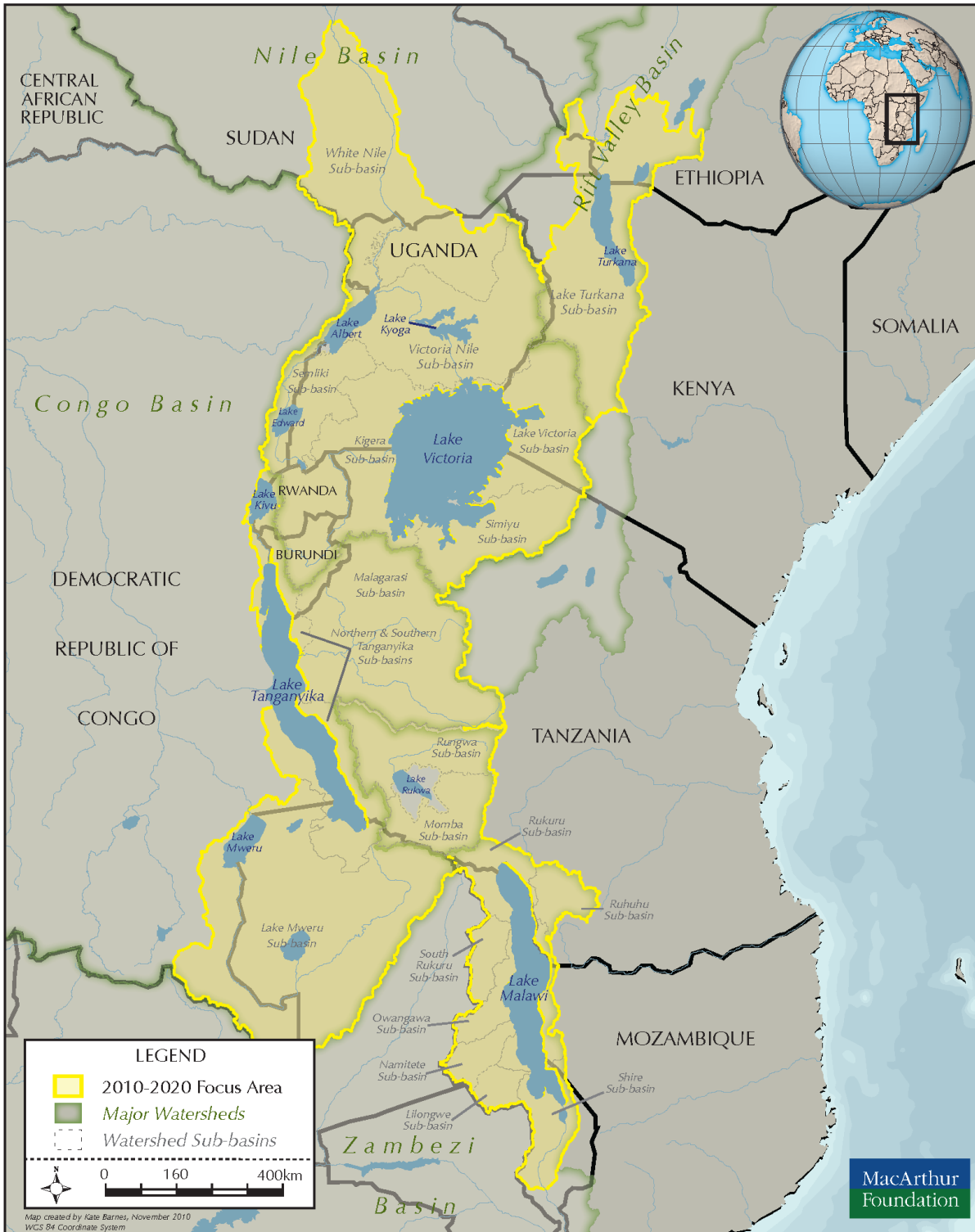
and Uganda). The river basin has an area of more than 1.2-million-square miles and covers about 10 percent of the African continent. Approximately 160 million people depend on the Nile River for their livelihoods, and about 300 million people live within the 10 basin countries. Within the next 25 years, the region's population is expected to double, adding to the demand for water, which is already exacerbated by the growth of the region's industries and agriculture, constant droughts, and impacts of climate change. Apart from Kenya and Egypt, all of the basin countries are among the world's 50 poorest nations, making their populations even more vulnerable to famine and disease.

Freshwater ecoregions that have been prioritized as globally outstanding and highly threatened include lakes Albert, Edward, George, Kivu, Tanganyika, and Victoria. The region also has a rich network of wetlands, many of which are designated as Ramsar sites (wetlands of international importance). Lake Victoria, bounded by Kenya, Tanzania, and Uganda, is the world's largest tropical lake and the second largest freshwater lake in the world and is important for endemic cichlid fish. Lake Tanganyika is the second deepest in the world and has a high level of species diversity for animals and plants, as well as high levels of endemism for various taxa such as fish, shrimp, crabs, and mollusks. Key watershed protection and catchment areas include highland forests rich in biodiversity, such as the Rwenzori Mountains and Nyungwe.

The future CSD strategy for this region will be targeted to address a range of threats to key ecosystems and the services they provide, with particular attention to the predicted impacts of climate change and the implementation of climate change adaptation strategies. Climate assessments in the region have highlighted the need to pay attention to the conservation of ecosystems that will remain strongholds for biodiversity and the provision of important ecosystem services (such as fresh water), as well as the need to address regional food security for a large and growing population under increasingly adverse climate conditions. The Great Lakes region is also a priority for a cross-cutting initiative by the International Programs emphasizing environmental security. The CSD strategy will thus contribute toward the overall goals of this initiative.

Future geographical areas of focus for CSD within the region will be selected based on a number of values at the national and regional level, including ecosystem services such as provisioning of water, food, and energy; carbon sequestration; and biodiversity. These areas will include agricultural, fisheries, and livestock production landscapes around important lakes, rivers, wetlands, and water catchment areas.

**Figure 2: Map of the Great Lakes of East and Central Africa Region**



## (2) Greater Mekong and its Headwaters

The Mekong Basin's biodiversity is globally important and locally precious. The Basin is home to more than 1,100 species of freshwater fish, including the endemic Mekong giant catfish, and other iconic species such as the Irrawaddy Dolphin, Asian Giant Softshell Turtle and the White-shouldered Ibis. The Mekong also supports the world's most productive inland fishery, underpinning the economies of the lower Mekong countries<sup>9</sup> and providing livelihoods and food security for 60 million people.

The Mekong region is undergoing a massive transformation through the Asian Development Bank's Greater Mekong Subregion (GMS) plan. Initiated in 1992, the plan seeks to promote economic cooperation among the six countries of the region (Cambodia, Laos, Myanmar, Thailand, Vietnam, and China) through infrastructure projects enabling the development and sharing of resources and the free flow of goods and services. Projects include construction and expansion of existing roads, hydropower dams for energy transmission, rail, and port construction. Resource development is focused on mining and agricultural products for export.

The Greater Mekong region is also threatened by climate change, which will profoundly affect its biodiversity, economies, and people. Shifting precipitation patterns and warmer temperatures will likely reduce the productivity of agriculture and fisheries, as well as alter the region's hydrology, ecosystem composition, structure, and function. These changes, in turn, will also exacerbate other pressures such as habitat loss, unsustainable management, and hydropower development on the region's ecosystems. Changes in water availability will likely affect food security as well as the locations where crops can be cultivated. Extreme climate events will also likely increase in frequency and intensity. These factors, combined with sea level rise and saltwater intrusion, may induce mass migrations of people from low-lying and coastal areas.

Our 2000-2010 strategy was limited to just three countries of the Mekong region: Cambodia, Laos, and Vietnam. It emphasized conserving sites with concentrations of globally threatened species, usually through the creation and improved management of protected areas. Priority sites were typically high in unique biodiversity and often nationally significant for carbon storage, but only important for food security and water provisioning to the communities that lived there. The new strategy will aim to optimize hydropower supply, water, and sediment provisioning, and ecosystem services, such as fisheries, for the well-being of people in the Greater Mekong region. A central objective will be to prevent dam construction on the main stream of the Mekong River. We will promote coordinated decisions by the Mekong riparian states on the siting, design, and operations of existing and prospective dams on the Mekong's tributaries.

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<sup>9</sup> Cambodia, Laos, Thailand, and Vietnam.

We will invest in the conservation of components of ecosystems that are essential for agricultural production and fisheries, as well as wildlife. These ecosystems are globally significant for biodiversity but also regionally important for water security and nationally important for food security. The strategy will encompass more countries, including China.

The proposed strategy is ambitious, even more so than the current one. CSD alone cannot hope to have a significant impact given the scale and scope of the challenges, and so the strategy will be designed with the explicit aim of leveraging the investment of others. We will partner with other foundations.



**Figure 3: Map of the Greater Mekong and its Headwaters Region**



### (3) Watersheds of the Andes

The Tropical Andes has been called the "global epicenter of biodiversity" and is recognized as one of the richest genetic reservoirs on the planet. It is home to at least 1,500 unique terrestrial vertebrates and contains about a sixth of all plant life in less than 1 percent of the world's land area. It is the major source for South America's 30 percent contribution to the planet's available fresh water and has 90 percent of the world's tropical glaciers. Watersheds on the Andes' western coastal flank stretch toward the Pacific Ocean and support another globally recognized biodiversity hotspot, the Tumbes-Chocó of Ecuador and Colombia. Its eastern slope forms the headwaters for eight of the 13 major tributaries of the Amazon Basin. The Amazon rainforest represents 50 percent of the remaining tropical forest in the world, and is therefore one of the most important sinks for converting atmospheric carbon dioxide into solid carbon. Fortunately, a robust array of social, legal, and political enabling conditions for conservation is rapidly evolving, though unevenly, across the region. In summary, Andean countries are positioned to sustainably manage these unique ecosystems to meet the food, water, and cultural needs of their 80 million people, and to contribute to the global effort at confronting climate change.

A quarter of the original vegetation in the Andes and Chocó regions remains, with a higher percent in neighboring western Amazon. However, a significant landscape reordering is underway. Over 70 percent of the Peruvian Amazon is covered by petroleum concessions. Mineral and energy mining has expanded dramatically in Colombia, Ecuador, and Peru. Industrial agriculture has converted large forests to soybean and palm oil cultivation in Bolivia and Ecuador, respectively. Unsustainable timber extraction remains a significant contributor to South America's overall 7 percent deforestation rate, the highest in the world. Driving this and future economic development is IIRSA<sup>10</sup>, a well-funded initiative to connect production areas to regional and global (particularly Asian) markets through a web of roads, waterways, hydroelectric networks, and shipping infrastructure. IIRSA is transforming the landscape in ways never before seen and posing major challenges to Andean ecosystems and rural societies.

Many of the region's most biologically diverse ecosystems are located within vast indigenous territories. For example, native peoples represent only 2 percent of the total population of Colombia, yet they inhabit 30 million hectares, almost one-third of the entire nation. Though legal tenure of ancestral territories has expanded in most Andean countries, conflict over use and access to the minerals, biodiversity, carbon, timber, and water on these lands remain unsettled in many places, posing questions of long-term protection. These areas are not likely to become parks, nor should they. Instead responsibility for conservation of biodiversity, ecosystem services, and traditional cultures here will be up to residents and their allies.

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<sup>10</sup> "IIRSA" is the Spanish acronym for the Initiative for the Integration of Regional Infrastructure in South America. It is a bold initiative of 12 South American countries to promote the development of transportation, energy and communications infrastructure and provide incentives to increase exports of primary materials.

Rural Andean society's reliance on ecosystem goods and services is seriously threatened not only by unclear ownership and poorly managed land-use practices but also by climate change, and the synergistic interactions between the two. For example, nearly 40 percent of the storage capacity of tropical glaciers has disappeared in the past four decades, reducing stream flows to extreme levels. This, in concert with shifting precipitation patterns, is impacting the location and productivity of agriculture and freshwater fisheries. Potato cultivation has moved steadily up slope into high altitude grasslands, or *paramo*. The advancing frontier undermines the *paramo*'s biodiversity value as well as its function as the hydrological sponge of the Andes, which soaks up water in periods of abundance and then slowly releases it to downstream users. A consequence is that agriculture, hydropower, mining, fishing, and households increasingly compete for diminishing water supplies. Nature's needs are rarely considered in this allocation.

Our 2000-2010 strategy focused on improving protected area planning and management throughout the Tropical Andean nations of Colombia, Ecuador, Peru, and Bolivia. We emphasized building connectivity among fragmented upland and riparian forests, supporting biodiversity research, strengthening regional and national environmental legislation and policy frameworks, improving technical expertise, and expanding civil society participation in decentralized decision-making processes. The 2010 evaluation concluded that the Andean grant portfolios were well balanced and highly regarded in the region, but stated that new strategies and approaches are now required to address emerging threats related to resource extraction and infrastructure development. The region is increasingly being linked to the rest of the world as a producer of industrial goods and primary commodities.

The new Andean strategy will invest in research, policy and practice that explicitly advance the association between sustainable rural livelihoods and prudent stewardship of diverse ecosystems. It would be operationalized in moderate sized Andean watersheds where social and environmental pressures on vulnerable communities are compounded by impacts of climate change, exploitation of mineral and energy resources, and expansion of infrastructure.

Figure 4: Map of the Watersheds of the Andes Region



Target watersheds would be selected based on experience of the past 10 years, by the relative presence of technical knowledge, environmental policies, political commitment, and civil society, and by leveraging opportunities with other donors and influential partners. Approximately 80 percent of the budget would be reserved for a few selected watersheds, with the balance supporting regional or national scale work that contributes to the goals in the priority watersheds.

The strategy's policy ramifications would be scaled up through collaboration with regional think tanks, law and policy NGOs, and indigenous organizations. Special partnership would be explored with the Commission of Andean Nations around our joint interest in biodiversity, climate change, and water and food security. Leveraging other donors will be important since our investment, though significant, will be insufficient to reach the stated objectives alone.

#### **(4) Coastal Marine**

Oceans cover nearly three-quarters of the Earth's surface and host 230,000 identified species, with an estimated 1 million remaining to be discovered. Much of the ocean's known biodiversity exists in coastal areas, including coral reefs, estuaries, marshes, lagoons, mangroves, sea grass beds, and deltas. The biodiversity that underpins healthy marine and coastal systems provides a variety of services to human beings, such as food, fuelwood, energy resources, protection from storm surge, nutrient regulation, carbon sequestration, detoxification of polluted waters, and amenity services such as tourism and recreation.

Nearly half of the planet's people live within 200 kilometers of the coastline and populations in coastal areas are growing faster than those in non-coastal areas. Human pressures on coastal resources are compromising many of the ecosystem services crucial to the well-being of coastal economies and peoples. Marine fisheries have been severely depleted globally and the burden of catch losses falls hardest on the world's poor. Further, illegal and destructive fishing undermine restoration efforts. Coastlines are being altered or degraded for resource extraction, development, and aquaculture. This loss of this habitat reduces fish spawning, leads to erosion and flooding, reduces water quality, and increases health risks.

Climate change poses additional threats to the services provided by marine and coastal systems. The elevated concentration of atmospheric carbon is decreasing the ocean's pH, producing more acidic seawater, which compromises the shell-forming base of the marine food chain. Warming sea surface temperatures fuel stronger hurricanes and typhoons and alter the health, abundance, and distribution of marine species. Melting glaciers and sea ice is causing the sea to rise and shifting our coastlines. Strengthening resilience — the capacity to cope with environmental change — of coastal communities and systems is essential.

CSD's 2000-2010 strategy supported marine conservation in Melanesia, Madagascar, and the Insular Caribbean, and focused largely on community-based protected area management. The LMMA approach, which was advanced in Melanesia, features a network of marine conservation efforts rooted in local communities that develop and implement their own management plans, usually involving catch limits, no-take zones, and improved fishing gear. While the strategy anticipated work at 10-30 sites, the popularity of the LMMA concept far exceeded all expectations and there are an estimated 600 LMMAs in Melanesia and neighboring island nations. A similar approach was applied in Madagascar, which likewise supported strong community engagement in marine area management. The external evaluation confirmed that the LMMA approach is effective for conserving biodiversity<sup>11</sup>, and improving the livelihoods and food security of coastal communities. The evaluators found that, "the reasons for this extraordinary takeoff and replication across such a vast area within such politically and culturally diverse societies are still being debated. But the paradigm for marine conservation in the region has now been shifted towards locally-driven approaches. NGO and academic grantees and their governments have recognized the effectiveness of local management and begun delegating authority to local bodies. "

CSD will build upon this success and amplify it globally with a cross-regional emphasis on coastal marine grantmaking that seeks specifically to scale up the LMMA model. The central objective will be to improve the productivity and reliability of the services that the ocean provides to coastal communities by conserving marine and coastal biodiversity through sustainable fisheries management and maintaining essential habitats. The strategy will initially focus on the geographies where we have established marine portfolios, but will seek to identify new areas where an LMMA approach could be effective. In addition to building resilient networks of managed marine areas, we will place emphasis on promoting an ecosystem-based, whole-catchment approach that addresses land use upstream and, when appropriate, use of marine resources further out to sea. Effective management interventions could include several simultaneous interventions, as well as more refined valuation of habitats and services. Grants will encourage replication through documenting and disseminating best practices and lessons learned and by building and sustaining community and civil society networks.

## *b) Global Issues*

We have traditionally allocated a portion of the CSD budget for grants that address issues relevant to our priority regions, but that are best viewed from a global, as opposed to national or landscape-scale perspective. Such work has included improving the science and policy framework required for ecosystem-based adaptation to climate change and better understanding the often overly simplified relationship between conservation and development goals.

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<sup>11</sup> Additional research on biodiversity benefits has been recommended by outside evaluators and was supported through MacArthur's March 2010 grants package.

We plan to continue to allocate a portion of our budget toward issues that advance biodiversity conservation at the global scale and that reinforce regional portfolio objectives. Priorities for this element are being informed by the series of white papers commissioned from external experts. We will also contribute to one or more of the International Program’s three priority themes, particularly “managing environmental change and resource scarcity.” We highlight four priorities here that we judge to be urgent and unfilled niches where the Foundation can provide leadership for the broader conservation and donor community.

## **(1) Climate Change Mitigation and Adaptation**

Global climate change is now widely recognized as having far-reaching consequences for the world’s economies, societies, and ecosystems.<sup>12</sup> These impacts will accelerate and intensify as temperature, precipitation, and extreme weather events continue to veer from the patterns we have come to think of as normal. Many of the world’s centers of biodiversity are particularly vulnerable, placing conservation accomplishments and future plans, as well as livelihoods of communities that rely on natural resources, in jeopardy.<sup>13</sup>

Our involvement in climate change emerged from a consultation with scientists and policy experts in 2004 that identified this as a significant emerging threat to biodiversity. It further noted that most donors at that time were concerned with offsetting the effects of climate change and that MacArthur should instead support learning how to adapt to climate disruption already underway. A five-year interim strategy was formulated in 2006 with the purpose of developing experimental approaches to grantmaking in the then controversial field.<sup>14</sup>

Over this period we have funded biodiversity vulnerability assessments in our eight focal regions, efforts to strengthen the scientific foundation of the field, development of new tools and technologies, and work that enabled conservation actors to make informed policy and management decisions. With the conclusion of the interim strategy in 2010 a total of 51 climate-related grants have been made in Africa, Asia, Latin America and globally, totaling \$18.8 million. The 2010 CSD evaluation noted that a key impact of MacArthur’s investment “has been

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<sup>12</sup> It affects individual organisms, populations, species distributions, and ecosystem composition and function both directly (increases in temperature and changes in precipitation, changes in sea level and storm surges) and indirectly (changes in the intensity and frequency of disturbances such as wildfires, storms). Warmer regional temperatures affect the timing of reproduction in animals and plants, migration of animals, the length of the growing season, species distributions and population sizes, and the frequency of pest and disease outbreaks. Habitats of many species will likely move toward the poles or upward in elevation from their current locations. Climate change impact poses a particular risk for species that are already vulnerable, such as those with limited ranges, restricted habitat requirements, and/or small populations. This includes endemic mountain species and biota restricted to islands, peninsulas, or coastal areas, including coral reefs. In response to climate change, human use of lands and water will also change and this, in turn, will greatly affect the ability of organisms to respond to climate change via migration.

<sup>13</sup> A mega-drought, likely of much greater intensity than the last one in 2005, has been declared in the western Amazon Basin. The Rio Negro, the largest Amazonian tributary is at its lowest level since 1902. Shrinking waterways are affecting all who depend on the river, from soy farmers to indigenous fisherman. Many people have been stranded without river transport, and some are running out of food. Fish and other wildlife are stressed as natural habitats degrade and the water warms.

<sup>14</sup> This was an area few foundations were considering, in part because adapting to a changing climate had been viewed as capitulation. Improved understanding of the amount of greenhouse gases already in the atmospheric pipeline and its confirmed future impact on biodiversity eventually forced most in the conservation field to rethink that position.

to build climate change adaptation expertise among the grantees.” The report felt support that advanced climate technology and tools was especially significant, noting in particular that a \$1.8 million grant to the Carnegie Institution for remote sensing forest types and conditions is “widely heralded as a game changer...with immediate major applications in land use and biodiversity conservation across tropical ecosystems worldwide.” More broadly, our climate portfolio has significantly raised the profile of climate adaptation in policy making and in design of field practices within the conservation community.

The 2000-2010 strategy also contributed to climate change mitigation by supporting effective management of forests, wetlands, and coastal ecosystems where carbon is sequestered and stored. The purpose of the investments was to conserve uniquely threatened biodiversity, but the climate change mitigation benefits are notable. Since 2000, CSD made over \$70 million in grants in Asia, Africa, and Latin America with the goal of conserving tropical forests.

Climate change mitigation and adaptation are both priorities for investment under the new strategy. In developing our strategy, we observed that the two issues are often viewed as mutually exclusive in ways that are not useful, (i.e. a program can pursue one or the other). Both are necessary, and they reinforce each other at a strategic level – more effective mitigation efforts mean less adaption will be required – and at the tactical level – investments in ecosystem based adaptation, such as effectively managing watershed forests and mangroves, can have mitigation benefits through carbon sequestration and storage.

Our new conservation strategy will reflect and extend our body of work in climate change adaptation, largely through the design of the regional program investment plans. However, we can also play an important role in advancing effective adaptation applications that meet the needs of nature and society at a global scale. Although policy makers, scientists, funders, and practitioners are expanding adaptation measures, these efforts remain largely *ad-hoc*, sporadic, and disconnected. A more networked and shared approach to developing and adopting climate change adaptation strategies is called for, particularly in the most vulnerable and diverse areas in the developing world. Specifically, we could contribute to building capacity, accelerating the application of existing knowledge, creating additional adaptation options and resources, and ensuring that ecosystem-based adaptation action is centered on sound science and a strategic policy framework.

Grants would connect scholars in the scientific community, ecosystem management practitioners, and decision makers to strengthen local, national, regional, and global climate adaptation policy initiatives. Other grants would link adaptation and ecosystem management networks of institutions, consortia, and thematic groups and diffuse information generated around the globe. This work would initially focus on supporting adaptation in the developing world, but may evolve to include institutions and networks in developed countries so that information and experience is more widely exchanged.



Reducing Emissions from Deforestation and Degradation (REDD), particularly the agreement that was reached in Cancun to incorporate conservation into REDD more fully (known as REDD+) is an opportunity we will pursue through grants. The World Bank and UN, as well as several bilateral donors, particularly Norway, are making significant investments in national REDD+ programs. The niche for MacArthur to make a significant contribution to national REDD+ development is not as clear as it is for ecosystem based adaptation, but we will seek out opportunities to make contributions at the regional and global levels in a more concerted manner. More specifically, we will prioritize consideration of investments: (1) at specific sites where REDD+ may be critical for long term financing of management activities; (2) on key issues where research is required, such as reducing emissions from degraded land through improved agricultural practices, and/or (3) through the strategic deployment of new technologies that enhance the efficacy of REDD+.

MacArthur has rarely made grants to analyze and reform U. S. policy that might intersect with our conservation objectives. Climate change may become so intractable and globalized, however, that ignoring how the United States engages on the issue and with the rest of the world may undermine the value of much of our site-based grantmaking in climate change adaptation. Thus, this strand of global policy grantmaking may include efforts at understanding national security and international stability concerns through a climate lens, or looking at alternative means of framing a U. S. role in the international climate dialogue that accommodates the current financial and political environment in the country.

## **(2) Understanding and influencing China’s natural resource use and consumption patterns, particularly in Africa, Latin America, Asia, and the Pacific**

China’s rapid economic growth is shaping the global economy and geopolitical realities. China accounts for about a fifth of the world's population, yet it consumes more than half of the world's pork, half of its cement, a third of its steel and over a quarter of its aluminum. It is spending 35 times as much on imports of soy and crude oil as it did in 1999, and 23 times as much importing copper. In fact, China consumed over four-fifths of the increase in the world's copper supply since 2000.

The development benefits from Chinese investment are real and significant, particularly in Africa.<sup>15</sup> But the risks are also real. The resource use and consumption patterns underpinning China’s rise will determine the future health of the planet’s oceans, forests, and climate. And in recent years CSD’s work in Latin America, Africa, Asia, and the Pacific has increasingly faced new challenges driven by a demand for timber, minerals, energy, and fisheries from China. For example, in the Lower Mekong, China is a major investor in agribusiness, hydropower, and mining. Chinese mining companies are active in copper mining in Vietnam and bauxite mining

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<sup>15</sup> Chinese investments in Africa are larger than the World Bank’s and in Latin America are larger than the Inter-American Development Bank’s.

in Laos and Cambodia. The Sinohydro Corporation, the largest hydropower dam building company in China, is developing numerous hydropower projects in both Laos and Cambodia. And the China Southern Power Grid Co. Ltd. is either active or exploring opportunities in all three countries. Most of the Chinese projects are designed and implemented by Chinese companies and backed by the Export-Import Bank (Exim Bank) of China. The Exim Bank is a government bank under direct leadership of the State Council, acting both in China and overseas.

In Africa, China's trade has grown exponentially over the past decade, increasing from \$18.6 billion to \$106.8 billion (474 percent) between 2003 and 2008 and making China the continent's third largest trading partner. China's exports to Africa largely comprise manufactured goods, notably electrical appliances, textiles, machinery, and vehicles. Imports from Africa comprise largely raw materials, such as oil, ores, wood, tobacco, and cotton.<sup>16</sup> Oil and petroleum products have come to increasingly dominate the trade profile, particularly since 2000, and in 2006 China procured 32 percent of its oil from Africa.<sup>17</sup> Countries such as Sudan and Angola are important exporters of oil to China, but there is growing interest in oil exploration and production in other countries such as Uganda and DRC by several Chinese national oil companies. Although Africa is not the major supplier of timber products to China, timber exports from Africa to China have grown significantly in recent years. For example, most of the exported timber from the Congo basin went to Europe a decade ago, but China has become a major destination and now 60 percent of Africa's timber exports are to China. In countries such as the DRC, China's investments are concentrated mainly in the mineral extraction sector. In January 2008 the Exim Bank and the DRC signed a loan agreement worth about \$5 billion (later increased to \$9 billion), providing Chinese firms with rights to mine millions of tons of copper and cobalt in exchange for \$6 billion worth of extensive infrastructure development, including the construction of railways, roads, housing, and hospitals.<sup>18</sup>

China's economic ventures in Latin America have attracted less attention than in Asia and Africa, but are no less significant to the region. Chinese firms have invested at least \$25 billion since 2005, primarily seeking resources, markets, or production efficiencies. Most are through novel financial agreements in the metals, energy, and real estate sectors. For example, a "strategic alliance" was signed with Venezuela in 2009 that delivers 600,000 barrels of oil per day to China, in return for Chinese investment in Venezuelan mining and energy production. A Chinese consortium has invested \$2 billion to upgrade the Peruvian Tacna port facility and another \$8 billion for a new highway and rail links from Tacna to the El Mutun mineral field in eastern Bolivia. China's Exim Bank is financing 85 percent of the construction and equipment of

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<sup>16</sup> The Forum on China-Africa Cooperation (FOCAC), A briefing paper by the Centre for Chinese Studies, University of Stellenbosch for World Wide Fund for Nature (WWF) By Johanna Jansson, August 2009

<sup>17</sup> Are African Governments Ready for China? Martyn Davies and Johanna Jansson, Economic Injustice May 2009, Vol 2 No. 4 Open Society Initiative for Southern Africa

<sup>18</sup> Country Forecast Select, The Economist Intelligence Unit Ltd, September 9<sup>th</sup> 2010

the Coca Codo Sinclair hydroelectric dam project in the foothills of the Ecuadorean Andes through a \$1.68 billion loan. The dam will be constructed by the Sinohydro Corp, the world's largest builder of hydropower plants. In September of 2010, the Chongching Company quietly invested \$300 million in soy production land in Brazil. Overall, Latine American exports to China grew by 370 percent between 2000 and 2007, mostly in oil, soy, copper, iron ore, and forest products, while manufacturing imports from China grew by 420 percent.

These trends have important implications for humanity's ecological footprint and the challenge of how to feed, house, clothe and transport a world of 9 billion people in a way that conserves our planet for future generations. In order to ensure that we shift global consumption of natural resources and production of commodities to a more sustainable trajectory, we must look for systemic solutions and levers capable of enacting change at the largest scale. In developing our new strategy, we identified China, a country with one fifth of the world's population and the second largest economy, as an important lever for global change with regards to ecosystem conservation and climate change. It is the largest importer of tropical timber and the second largest importer of industrial pulp, paper, and palm oil. China's demand for soy is equal to the entire increase in Latin American production over the last decade, a trend that is directly linked to its growing livestock production (China accounts for a third of global livestock). The largest drivers of deforestation globally are livestock, pulp and paper, soy, palm oil, and timber. China's development path will determine the future of the planet's tropical forests.

Failing to address China's global impact on biodiversity now, like climate change, risks undermining 20 years of Foundation investment in conservation. The recently concluded external evaluation noted that, "While grantmaking *within* China continues to appear both challenging and worthwhile, our evaluation has highlighted China's extraordinary and growing impact beyond its national boundaries as a potentially more important focus." Grappling with the global impact of China's economic growth on biodiversity and climate change outside its borders is something few bilateral or multilateral donors have attempted, and no foundations currently focus on this issue.

### **(3) Integrating environmental and social considerations into commodities markets, such as carbon, timber, oil palm, cotton, and soy**

For the past 50 years, food, timber, and biofuel production has expanded into new areas by converting natural habitat for production at the rate of 0.4 percent per year. For the last decade, however, as some of the key developing country economies have expanded (notably China, India, Brazil, Russia, and Indonesia) we have been converting natural habitat for production at the rate of 0.6 percent per year. In short we have been speeding up the conversion of natural habitat and the loss of biodiversity precisely when one might assume we would have been able to increase the intensity of production by ways other than simply expanding it. Seventy percent of

the terrestrial part of the planet that can be used for food, fuel, and fiber production is already taken.

If we assume the business as usual case for expanding into natural habitat, there will be very little natural habitat left by 2050. And yet, we know that global demand for food, biofuel, and forest products will increase. By 2050, we will have 3 billion more people with 2.9 times as much income, consuming twice as much. In fact, the research suggests that in developing countries incomes are likely to increase more than five-fold by 2050. This will add considerable strain to the precarious balance between people and nature that already exists in those countries. Moreover, by 2050, more people will live in cities (more than are alive today). If they behave like urban residents today, they will depend on others for virtually all their food.

Through our global policy grantmaking, we will finance work with some of the largest US and European corporations, to promote better practices and reduce the most significant impacts of commodity production on the planet's water, air, soil, and biological diversity. Leverage will come through grants that encourage the private sector to conduct supply chain assessments, improve production practices and adopt performance-based standards for commodities such as cotton, sugar, soy and palm oil, including fair trade/sustainable production certification.

We will support multi-stakeholder roundtable processes, such as the Roundtables on Responsible Soy and Sustainable Oil Palm. These processes are producing commodity production standards based on better management practices with a focus on reducing the key adverse impacts. Roundtable participants represent all aspects of the supply chain, from producers and buyers to multilaterals, non-governmental organizations, and other actors involved with agriculture or aquaculture.

We will also support efforts to:

#### **IMPACT EXAMPLE**

##### **Cargill Collaborates with WWF to Assess Palm Oil Suppliers**

One of the leading global palm oil producers, Cargill is collaborating with WWF to assess progress amongst their Indonesian palm oil suppliers to implement the principles and criteria established by the Roundtable on Sustainable Palm Oil (RSPO). RSPO criteria include: making management documents are publicly available, except where prevented by commercial confidentiality; complying with all applicable local, national and ratified international laws and regulations; and identifying whether threatened species and high conservation value habitat will be impacted by a plantation and accounting for any potential impact in management plans and operations. The assessment will focus on key areas including land permitting, environmental and social practices. Cargill will then work with suppliers to adopt and implement solutions to improve sustainable palm production practices.

Cargill has a goal of buying 60 percent of its total crude palm oil from RSPO members by the end of 2010. They actively encourage their suppliers to join the RSPO and attain RSPO certification.

*Source: "WWF AGREE TO HELP PALM OIL ASSESSMENT",  
<http://www.goallover.org/wwf-agree-to-help-palm-oil-assessment/9370>*

- Analyze where and how to best restore degraded land – Restoration ecology, both to return native cover and productive landscapes, is an increasingly important conservation and development approach. We will encourage rehabilitating degraded or underperforming lands instead of expanding into new areas to farm.
- Catalyze efforts to reduce waste – Globally we waste as much as 30-40 percent of all food produced. We will identify and inform policies and encourage financing that will reduce post-harvest losses and food waste.
- Develop carbon markets for agricultural land – Whether in the soil or perennial crops or trees, carbon makes agriculture more sustainable. We will join others to support the creation of carbon markets for food producers.
- Advance fair trade and sustainable production certification – By following established standards that protect their environment and add premium value to their products in a global marketplace, local communities are lifting themselves out of poverty. We will work to expand the market share of fair trade labeling of agricultural products, and sustainably certified tourism, timber, and fisheries so that becomes a much more important revenue stream to communities in centers of biodiversity.

#### **(4) Responding to overexploitation and/or illegal use of marine fisheries**

The overexploitation and/or illegal use of marine fisheries is one of the greatest current and future threats to marine services. It occurs at local, national, and international scales, and has led to the overexploitation of 80 percent of assessed fish stocks globally. Widespread overfishing is due, in part, to an overcapitalized industrial-scale fishing fleet: large, highly mobile, mechanized vessels equipped with advanced technology, enabling the capture of a massive quantity of fish. Fishing capacity is now estimated to be as much as 2.5 times what is needed to harvest the sustainable yield<sup>19</sup> from the world’s fisheries. The fishing gear used by most industrial fleets is largely indiscriminant and contributes to significant volumes of bycatch<sup>20</sup> and discards. For example, the global shrimp trawl fishery discards, on average, 1.6 pounds of bycatch for every pound of shrimp that is landed.

Within the last three decades fish harvests in the global north have declined, leading industrialized fleets to migrate south, where they are largely targeting the national waters of developing countries. Effective management of coastal fisheries in these regions now often requires management intervention at local and national scales. The issue of scale in marine

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<sup>19</sup> The sustainable yield of natural capital is the amount that can be extracted without reducing the base of ecological capital itself. This yield usually varies over time with the needs of the ecosystem to maintain itself, (e.g. a fishery that has recently suffered disease will require more of its own ecological yield to sustain and re-establish a mature population. While doing so, the sustainable yield may be much less than average.)

<sup>20</sup> Bycatch, the unintended capture of species in fishing gear, is a global problem. Marine birds follow behind fleets and are hooked and drown when they pursue baited fishing lines. Sea turtles and marine mammals drown when they pursue baited lines, or are captures in purse seines and trawls. Gear modifications to deter capture of unintended species are available, but are not universally mandated and enforced.

systems is complex because of the vastness of marine space and the upstream and downstream connections that impact ecosystem health, both physically and socioeconomically. When fisheries solutions are designed and implemented at only one scale, they can result in, for example, a community developing and implementing a successful site-based program whose success may be compromised or limited by external factors, such as illegal, unregulated, and unreported fishing (IUU)<sup>21</sup> fishing, or overcapacity of the industrial fleet. As stocks decline, artisanal fishers resort to more destructive fishing techniques such as reef bombing or the use of cyanide poison, or the use of trawl nets with a bycatch that is equally as destructive, if differently composed, as that taken in deeper waters.

Limitations in a country's institutional capacity for fisheries policy and governance are manifested in weak management, monitoring, and enforcement, and a lack of coordination across scales and among stakeholders. Inequitable fishing agreements allow developed country fleets to overfish developing country waters, while IUU fishing threatens fisheries and community economic stability with relative impunity. A lack of political will or capacity to enforce science-based management enables non-compliance.

CSD's 2010-2020 strategy includes an increased emphasis on coastal marine conservation that seeks specifically to scale up the locally managed marine areas model. This is a necessary and sound approach to protecting coastal fisheries and habitat, but does not sufficiently address the external pressure posed by industrial fishing fleets. MacArthur, alone, does not have sufficient resources to comprehensively tackle the drivers of IUU fishing, which occur from within and outside individual fisheries, and across multiple scales. CSD commissioned a white paper to help identify areas where MacArthur's support could compliment the LMMA initiative, fill existing and anticipated gaps, and leverage additional investment.

Through our policy grantmaking, we will:

- Leverage Success in Key Geographies to Address External Issues – We will build on the approaches that have been taken in our focal areas, where there is existing capacity and infrastructure and a proven track record, to restore and protect fisheries from external factors. Grants will support large-scale national and multi-country efforts to improve coastal governance and fisheries management. This will reduce IUU fishing, and the impact of foreign fleets.
- Implement Best Practice Models, Develop and Pilot Next Practices – There is room for

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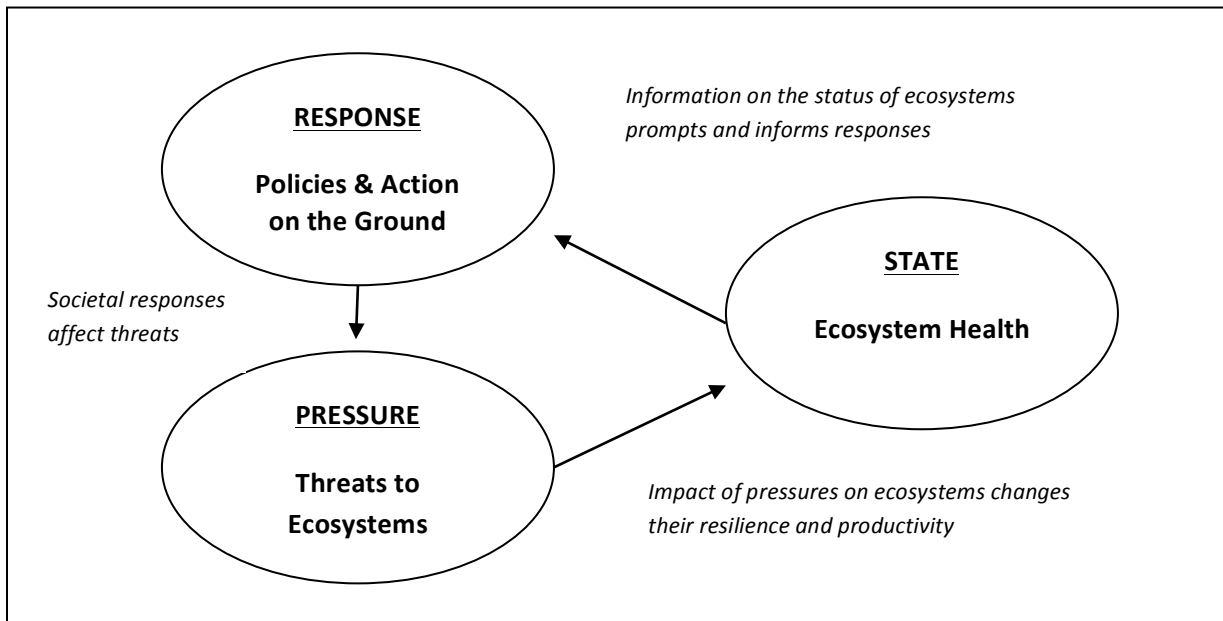
<sup>21</sup> Illegal fishing refers to activities conducted by national or foreign vessels in waters under the jurisdiction of a State, without the permission of that State, or in infringement of the conservation and management measures adopted by the State. Unreported fishing refers to fishing activities that have not been reported or have been misreported to the relevant national authority. Unregulated fishing refers to fishing activities that are conducted by vessels without nationality or by those flying the flag of a State not party to the management authority, or in a manner that is not consistent with or disregards the conservation and management measures of that organization.

developing and honing best practice models and piloting of new approaches and next practices, especially for market-based solutions. Our focus on site-based work could allow for the development of models that integrate science, incentivize compliance, and support enforcement across scales. This could potentially include sharing lessons or supporting the development of new tools and solutions in areas such as sustainable supply chain efforts, technology transfer, sustainable aquaculture, PES, and blue carbon.

#### IV. Assessment

CSD will pursue a more rigorous and systematic approach to assessment under the new strategy. While continuing to fulfill our obligations to monitor the programmatic and financial performance of individual grants, we will respond to the findings of the external evaluation, particularly its recommendation that program officers strengthen their ability to “carry out additional monitoring activities themselves at a strategic portfolio level.” Our approach to assessment is built upon our logic model that articulates the relationship between the pressures human societies put on ecosystems and the resulting status of biodiversity, and responses financed through our grant portfolios designed to ease or prevent negative impacts resulting from the pressures (Figure 5).

**Figure 5: Assessment Model**



We will identify strategic targets and related indicators for the positive change in the state of biodiversity / ecosystems we seek; the pressures we hope to influence; and the responses


supported by our grants for each element of our strategy (our proposed structure for articulating global targets and indicators are attached as Appendix 3). This approach will allow us to assess the validity of our theory of change. It will also complement national government efforts to report their own progress to targets agreed in the Convention on Biological Diversity, UNFCCC, and Millennium Development Goal 7.

We will evaluate progress every three years as part of our planned portfolio cycles to identify major trends in the state of and prospects for biodiversity conservation. Grant resources would likely be needed to acquire, analyze, and synthesize relevant data for this purpose. We will use this information to judge the extent to which our theory of change holds true and how activities supported by the Foundation are affecting key trends or appear likely to do so in future. The results will be presented to the board and senior management in a simple “dashboard” format with an accompanying narrative report that describes our conclusions regarding the contributions our portfolios have made, the lessons learned, and the implications for future grantmaking. The table below illustrates how this dashboard summary might be structured to communicate key information about the larger trends in the Greater Mekong and how our conservation responses relate to these trends.




**Table 1. Example Dashboard Assessment Summary Format**


**Status of Ecosystems**

	<p>Flooded forest cover around the Tonle Sap and the Central Section of the Mekong</p>	<p>The extent of flooded forest cover in areas targeted for grantmaking declined by X percent. While disappointing, our initial analysis suggests this is a reduction in the rate of loss.</p>
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**Pressures on Ecosystems**

	<p>Size and number of economic land concessions in key biodiversity areas</p>	<p>Land concessions for rubber and biofuel crops continue to be a key threat to the watersheds of the Mekong and its tributaries. X were granted since 2010 covering X hectares. Fortunately few of these are yet active and several were cancelled as a result of interventions by grantees.</p>
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**Conservation Responses**

	<p>Increased effectiveness of fish sanctuaries in the Tonle Sap and Central Section of the Mekong</p>	<p>Management plans were created for 8 of the 15 fish sanctuaries in the areas targeted for grantmaking. Initial analysis suggests communities are experiencing an increase in their catch relative to the time spent fishing. Provincial governments have committed personnel and allocated budget to support implementation of the management plans.</p>
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**V. Budget**

## VI. Appendices

### A. Appendix 1: Index of Commissioned White Papers

This strategy has benefitted from a large number of informal consultations with leading conservation and development thinkers. Various papers -- such as Sutherland *et al.*, 2009a, Sutherland *et al.* 2009b, Fleishman *et al.* in press -- have stimulated our thinking. Our selection of emerging issues that we predict will influence the health of ecosystems over the next decade is our own. The subjects of the white papers we commissioned are not necessarily new, but the impact of the issues they address may be more significant in the coming decades than in the past. We have chosen to frame the new strategy around several of these issues, while others will provide important context for our grantmaking.

#### *Freshwater*

By: Dr. Tracy Farrell and Jamie Pittock

#### *Agriculture and Biodiversity*

By: Dr. Allison Rosser and Dr. Jon Hutton

#### *Marine Fisheries*

By: Tegan Churcher Hoffman & Associates

#### *Health and Biodiversity*

By: Dr. Judy Mills, Dr. Aaron Bernstein, and Dr. Anila Jacobs

#### *Gender, Poverty and Biodiversity*

By: Dr. Jamie Bechtel

#### *Culture and Conservation*

By: Dr. Mark Infield and Arthur Mugisha

#### *China's Impact on Global Biodiversity*

By: Dr. Jason Clay


#### *Indigenous Peoples and Conservation*

By: Dr. Janis Alcorn

#### *Monitoring Social Impacts of Conservation*

By: Emma Brigham

## B. Appendix 2: Shift in Focus

Land and Seascape Use Typology	2000–2010	SHIFT in FOCUS	2011–2020
<p><b>Land and coasts where biodiversity conservation is the primary use objective</b></p> <p><i>There are some sites of critical biodiversity importance, where management must be focused primarily on biodiversity conservation objectives. For most of the protected areas created and financed with CSD support, biodiversity conservation is the clear goal, but conservation management delivers important co-benefits, such as access to non-timber forest products and fisheries.</i></p>	<p><b>Principal focus of grantmaking</b></p>		<p><i>Not a focus of grantmaking, although the size / status of such areas will continue to be a key metric of success and therefore may be included in grants designed to monitor impact (we want to see the size and management effectiveness of these sites remain stable)</i></p>
<p><b>Multi-benefit land use and coastal management with biodiversity in mind</b></p> <p><i>This includes productive land and seascapes (e.g. agriculture, fisheries, and forestry) and traditional territories, that are managed to provide other cultural and ecosystem services, and sympathetically for wildlife.</i></p>	<p><b>Secondary focus of grantmaking (increased in recent years)</b></p>		<p><b>Principal focus of grantmaking</b></p>
<p><b>Land and coasts primarily managed for other uses but not actively detrimental to biodiversity</b></p> <p><i>This includes land and coastal areas managed primarily for production (e.g. farming, aquaculture) but not to the detriment of biodiversity.</i></p>	<p><b>Not a focus for grantmaking</b></p>		
<p><b>Land and coastal areas wholly managed for a single productive service</b></p> <p><i>In a highly modified and varied landscape, with so many pressures on land, it is inevitable that some land will be required to provide just one productive service (e.g. palm oil plantations, mining) to the detriment of others.</i></p>	<p><b>Not a focus for grantmaking</b></p>		<p><b>Not a focus for grantmaking, although the size / status of such areas will be a key metric of success and therefore may be included in grants designed to monitor impact (we want to see limited expansion)</b></p>

## C. Appendix 3: Global Targets and Indicators

### Status of Ecosystems

Outcome	Targets	Indicators
Ecosystem degradation is prevented or reduced and ecosystem benefits are sustained in high biodiversity land and/or seascapes in at least three regions around the world		

### Pressures on Ecosystems

Impact		
The contribution of ecosystems to economic growth and food/water security is reflected in national development strategies, particularly investment in agriculture and infrastructure, and national accounting systems		
Policies that support wide spread adoption of conservation incentive programs, such as payments (or compensation) for ecosystem services (PES) are developed and implemented		
Priority sites are safeguarded more effectively using decentralized and/or traditional natural resource management		
Financing for protected area systems, sustainable forestry programs, fisheries management, and ecosystem based adaptation to climate change is increased through creative, fair mechanisms		

## Conservation Responses

<b>Investments</b>		
Describe the importance of ecosystems to sustainable economic growth persuasively to key decision makers		
Illustrate ways to generate positive incentives for environmental stewardship		
Strengthen resource use rights of local communities and Indigenous Peoples who manage many of the ecosystems that provide benefits to others in society		
Contribute to testing and evaluating policies that distribute the costs and benefits of ecosystem management efficiently and more equitably among the users and providers of ecosystem services		
Monitor the status / trends in the health of ecosystems and pressures on them with scientific rigor and share this information with a broad audience		

**D. Appendix 4: Ten Year Budget Forecast (2010-2020)**