

# THE LIMA 2014 DECLARATION ON BIODIVERSITY AND CLIMATE CHANGE FROM SCIENCE TO POLICY-MAKERS, FOR SUSTAINABLE DEVELOPMENT

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From 27 to 28 of November 2014, on the margins of the twentieth Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), an international group of scientists, invited by the Ministry of the Environment of Peru, the National Council for Science and Technology and the Secretariat of the Convention on Biological Diversity (CBD), with the support of the Inter-American Institute for Global Change Research (IAI) and the German Cooperation for Development (GIZ), met together to analyze the results of their recent research and to discuss with policy-makers about the implications of this work for action on biodiversity and climate change at national, regional and global levels.

## **Findings:**

The scientific findings relate to understanding firstly *the nature of the threat* - the impacts of climate change on biodiversity, how biodiversity influences the vulnerability or resilience of ecosystems to climate change, techniques to assess extinction risks across species and communities, how human activities may exacerbate the impacts of climate change and the technologies available to measure and report these changes. Secondly, the findings also address *solutions* that enhance carbon stocks, conserve biodiversity and improve human well-being through ecosystem restoration, community-level approaches to conservation, incentives to promote sustainable land-use practices and coherent policy frameworks.

Specifically, the work presented at the conference demonstrated that:

- Biodiversity can enhance the resilience of ecosystem structure to environmental changes, such as prolonged drought.
- However, biodiversity is changing across many different taxonomic groups and biomes, including mountains, oceans and forests, as a result of a wide range of recent environmental changes such as increasing temperature, and increased frequencies of extreme floods and droughts.
- Environmental changes and ecosystem disruption, including the loss of biodiversity, have often been shown to increase the risk to people from zoonotic and other emerging diseases, as well as from wildlife species that present dangers for humans, livestock and agriculture.
- Direct human activities, such as hunting, can exacerbate the effects of climate change on biodiversity.
- Effective sustainable management requires understanding both the ecological and socio-economic dimensions of the problem and requires coherent policies at all levels of government.
- Possible solutions include community-based projects that provide economic or other benefits, carefully designed restoration projects, and/or appropriate incentives to support ecologically sustainable land-use practices.

## **Recommendations for future research:**

In terms of recommendations for future research, the symposium identified the need for:

- a) multidisciplinary research on the links among biodiversity climate change, and the socio-economic factors
- b) research on the resilience of ecosystem services such as carbon storage and food resources with changing biodiversity under climate change;

- c) improved methods to predict the vulnerability of species and communities to climate change; and
- d) evidence-based recommendations on the characteristics of conservation projects that successfully promote enhanced carbon stocks, conserve biodiversity and improve human well-being.

To achieve these research goals, there is a need to:

- a) support long-term, field-based, monitoring of natural and human-influenced landscapes along critical ecotones and key environmental gradients;
- b) support the development and uptake of new technologies that provide relevant environmental data over large spatial and fine temporal scales, and analytical methods to model and predict the response of biodiversity to climate change and tools to allow a rapid exchange of data and results among scientists and policy-makers; and
- c) develop assessments and scenarios that fully integrate drivers and impacts of climate change and biodiversity loss, and related response actions. This includes scenarios to meet all internationally-agreed sustainable development goals, including goals for climate, biodiversity, food security and poverty reduction.

There is also an important need to further strengthen the capacity of research where it is most needed; in particular, more research is needed from developing countries.

### **Recommendations for policy-makers:**

#### ***Reducing impacts and vulnerability***

Biodiversity and ecosystems, including forests, oceans and mountains, are already impacted by climate change and these impacts are projected to grow, depending on the scenario. Urgent global action to reduce emissions is therefore essential to limit loss of biodiversity and related ecosystem services.

At the same time, there is a need to address other synergistic drivers, such as land use changes, overexploitation, pollution, and invasive species. Usually, these drivers are more tractable and can be addressed at local, national and regional scales and over shorter periods.

In particular there is a need to take action to avoid passing risk thresholds or “tipping points” (e.g. forest/savanna transitions, ocean acidification, coral bleaching), in particular, those that would have potentially catastrophic impacts on human well-being.

For example, in the face of ocean acidification, coral bleaching and sea level rise that threaten the survival of coral reefs, it is possible to take local, national and regional action to reduce land-based sedimentation and pollution, overfishing and unsustainable coastal development, at the same time as contributing to global efforts to reduce emissions. Similarly in the face of droughts within Amazon forests, and associated increases in fire frequency, it is possible to increase the resilience of these ecosystems by protecting and restoring forest areas and reducing forest degradation.

#### ***Adapting to climate change impacts***

Ecosystems can be managed to limit climate change impacts on biodiversity and to help people adapt to the adverse effects of climate change. Therefore, ecosystem-based approaches should be integrated into relevant strategies – including adaptation strategies and plans – and implemented. Such ecosystem-based approaches for adaptation include sustainable management, conservation and restoration of terrestrial and marine ecosystems, as part of an overall adaptation strategy that takes into account the multiple social, economic and cultural co-benefits for local communities.

### ***Contributing to the mitigation of climate change***

Ecosystems can be managed in a way that increases carbon sequestration and decreases carbon emissions. Such ecosystem management activities should be implemented, including:

- the protection of natural forests, natural grasslands and peatlands,
- the sustainable management of forests considering the use of native communities of forest species in reforestation activities,
- sustainable wetland management, restoration of degraded wetlands and natural grasslands,
- optimization of fisheries management with an ecosystem approach,
- conservation of mangroves, salt marshes and seagrass beds,
- sustainable agricultural practices and soil management.

### ***Avoiding negative impacts of climate change mitigation and adaptation activities on biodiversity and ecosystems***

In planning and implementing effective climate change mitigation and adaptation activities, including the use of renewable energies and economic incentive measures, the impacts on biodiversity and the provision of ecosystem services, and related social and cultural aspects, should be taken into account with a view to avoiding or minimizing such impacts. Conversion of areas of particular importance for biodiversity or the provision of essential ecosystem services should be avoided.

In particular, action on climate change needs to fully take into account land use and land-use change in order to avoid perverse outcomes such as the loss of forests and other natural ecosystems and the associated loss of carbon stocks, biodiversity and ecosystem services.

There is a need and opportunity to make full use of the potential for the conservation and restoration of ecosystems to contribute to climate mitigation and adaptation.

### **Conclusions and way forward**

The symposium was held following the publication of the IPCC's 5<sup>th</sup> Assessment report and the fourth edition of the Global Biodiversity Outlook (GBO-4) with the aim to assess the current state of scientific knowledge on biodiversity and climate change, identify potential areas for collaboration and forward recommendations to delegates at the 20<sup>th</sup> session of the Conference of the Parties to the UNFCCC (COP 20).

The 5<sup>th</sup> assessment report confirmed that it is extremely likely (95% to 100% probability), that human influence has been the dominant cause of the observed warming of the atmosphere and the ocean since the mid-20<sup>th</sup> century. The report documented both observed impacts of climate change on biodiversity and human well-being, as well as and projected impacts according to a number of scenarios. It also set out options for mitigation actions. It is clear that keeping climate change within two degrees Celsius will require very stringent mitigation actions.

However, the GBO-4 shows that it is possible to limit climate change, protect biodiversity and attain food security. This will require political coherence: a clear policy and legal framework, incentives, compliance, monitoring and public support.

We believe that this information is extremely relevant to countries to draw strategies for adaptation to climate change, and to the conservation and sustainable use of biodiversity. We therefore encourage governments to communicate this information effectively within countries, and also to

promote exchange of information and explore collaborations that provide opportunities for mutual learning.

In turn, we, the scientists engaged in this declaration, realize that science has to make timely contributions to policy-makers to foster responses to cope with climate change, sustainable development, and human well-being.

In particular, scientists and policy-makers recognize that these agendas should be a priority for implementation within Peru. With its high level of biodiversity and substantial carbon stocks, as well as the wide-ranging predicted impacts of climate change, Peru is uniquely placed to lead and benefit from research in this field. These efforts should build on the substantial human and institutional capacity across academic, civil society and government sectors that span the full range of marine and terrestrial biomes.

This is a special endeavor to create synergies among research communities and policy-makers and we are grateful to the government of Peru for this opportunity to promote the needed dialogue; The CBD secretariat, international cooperation agencies, such as the GIZ, and inter-governmental scientific research organizations such as the Inter-American Institute for Global Change Research (IAI) are ready to expand the networking and linkages among disciplines, as well as between the science and policy sectors, and truly hope that the dialogue will be taken as a useful example.

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