

PERSPECTIVES

Newsletter of the North-South Centre
No. 2 | November 2010

“History will recall that it was in Nagoya that a new global alliance to protect life on earth was established.” Ahmed Djoghla, Executive Secretary, Convention on Biological Diversity, 2010

Editorial

The International Year of Biodiversity is nearly over. Policy-makers and environmentalists all around the world are pleased with the outcome of the 10th meeting of the Conference of the Parties of the Convention on Biological Diversity (CBD) having taken place from 18 to 29 October 2010. During this meeting in Nagoya, Japan, the Parties to the CBD have achieved the most far reaching agreement on the protection of biodiversity of the last decades (see news-flash on page 7).

It has been a long way since the initial negotiations of the CBD in preparation of the Earth Summit in Rio de Janeiro in 1992. At that time, one of the most fundamental changes in the perception of biodiversity was replacing the concept of “common heritage of mankind” by “national sovereignty” on genetic resources. Subsequently, the CBD has defined “access and benefit sharing” (ABS) as one of its three main objectives, beside the conservation and sustainable use of biodiversity.

Since then, ABS has been one of the most contentious issues in the CBD implementation and negotiation process. It turned out to be far from easy to find appropriate approaches for compensating the millennia of breeding efforts of local populations in creating the wealth of crop varieties and breeds of domestic animals, as well as rewarding their knowledge of medicinal plants. It is even more difficult to quantify or to monetarise the ecosystem services of biodiversity, let alone its intrinsic value – if this is desirable at all. Nevertheless, the CBD agreements are a good basis for continued research on the ecological, economic and social conditions for the conservation and sustainable use of biodiversity.

In this issue of “Perspectives” you will find some of the diverse contributions of our members to safeguarding biodiversity.

*Barbara Becker, Managing Director
of the North-South Centre*

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Focus

Society's responsibility to nature

In this International Year of Biodiversity, progress on halting biodiversity loss has been poor. Meeting this objective requires society as a whole to recognise the inherent value of Nature, not as an economic commodity but as an ethical responsibility.

Do we, as a society, value biodiversity? It is particularly apt to reflect upon this question in this current International Year of Biodiversity, as designated by the United Nations. This designation is perhaps a fig leaf for our abject failure to meet the '2010 Biodiversity Target', which sought to "achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contri-

but ion to poverty alleviation and to the benefit of all life on Earth" (COP 6 Decision VI/26.11). Yet our failure to slow biodiversity loss might simply reflect societal priorities across the globe: We might not love Nature sufficiently to save her. Of course many people give their hearts and souls working to conserve species and ecosystems for the good of wider society, but is there any realistic long-term chance of success

if society as a whole cares little for such efforts?

Do we value biodiversity?

We might begin to get an answer by various detailed socioeconomic analyses, but I prefer a simpler approach to reflect society's priorities – the distribution of annual global expenditure. Estimates of annual global expenditure on biodiversity vary depending on



The dams in the Kafue river in the Zambezi Basin changed the hydrology and vegetation composition in the Kafue flats floodplains. This might have contributed to the dramatic decrease of the endemic Kafue Lechwe antelopes.

Peter J. Edwards has been Full Professor of Plant Ecology at the ETH Zurich since 1993, and is Head of the Department of Environmental Sciences.

www.plantecology.ethz.ch

In another light ...

How can the value of biodiversity be expressed? Jaboury Ghazoul and Peter J. Edwards argue the (monetary) value of biodiversity and ecosystems from an ethical and scientific perspective.

One of the most fruitful scientific collaborations of the past 20 years has been that between ecologists and economists. We all depend upon ecological processes that maintain the fertility of the soil, provide clean air and water, combat pests and diseases and help regulate the climate and ecologists are showing in ever greater detail the role that biodiversity plays in maintaining them. Working with ecologists, economists are developing methods to assign a monetary value to these processes, which they refer to as ecosystem services. Indeed, when the financial value of a natural ecosystem is quantified in this way, the results can be quite surprising; a wetland, for example, can be worth more than US\$ 100 000 per hectare, simply because of its role in trapping pollutants and purifying water.

For some conservationists, this process

of valuation seems arbitrary and unpalatable, and they would argue that the issues at stake are too important for economics. However, the economic valuation of ecosystems is a powerful way to demonstrate – in terms that decision-makers can understand – our essential dependence upon biological diversity. Even so, there are things that economics cannot do. We should not pretend that we can estimate the value of every species; nor can we use economic analysis to capture the intrinsic or moral value of a species to exist. Perhaps the most practical way forward is to focus the effort upon the overall value of ecosystems. Helping to preserve the integrity of ecosystem services is often the most effective way to preserve the diversity of species they contain.

Peter J. Edwards

Encounters with nature, particularly when we are young, are formative experiences that shape our future values. Here, two of the author's children are absorbed by a common hawker dragonfly *Aeshna juncea* encountered during a walk in the Scottish Highlands.



what is included as 'conservation', but my own figure (which is among the highest) is US\$14 billion. This sounds impressive, until we consider that annual global expenditure on make-up and cosmetics is US\$18 billion, perfume US\$15 billion, and ocean cruises US\$14 billion. On this basis, society values conservation about as much as it values perfume or ocean cruises. The US\$14 billion spent on conservation pales into insignificance compared to the over US\$700 billion annual US defence budget or, for that matter, the multiple-trillion dollar bail out for the global banking system. Despite the publicity afforded to environmental concerns, and to biodiversity conservation specifically, global expenditure on conservation and natural ecosystem protection is pitiful compared to other societal 'priorities'.

Why do we value biodiversity?

Why does society place more emphasis on bailing out the global banking system when the repercussions for failing to bail out the global natural system are likely to be far more severe and lasting? This question leads us to another: Why do we value biodiversity? I offer one answer, though there are several. We value biodiversity, and Nature as a whole, because it is deeply ingrained in our psyche and culture. We can choose to dissociate ourselves from Nature, and many people do, but in so doing we redefine and reshape our cultural interests and values. There is nothing necessarily wrong with that, so long as we accept that the values we associate with Nature will necessarily be diminished. But if this were to happen then we would lose a key feature of what makes us human – our

moral responsibility. We humans, uniquely among creatures, have a sense of recognition of what we ought to do, and this is particularly apparent in our respect and stewardship of the environment. Life's complexity is born out of three billion years of evolution, and the wondrous result merits, in my view, a recognition of our moral responsibility to respect and conserve life's beauty and complexity.

What do I advocate?

Our modern lifestyles increasingly dissociate us from Nature. This is eroding our ability to appreciate Nature's wonders, diminishing the associated moral obligation to conserve Nature's diversity, and undermining societal will to raise conservation in society's priorities. Direct engagement with Nature enhances our appreciation of it and the awareness of what we are losing. We all express fascination with the natural world upon being exposed to it.

So what do I advocate? We should, as conservationists and concerned scientists, continue to imbue ourselves with this sense of wonder through direct engagement with Nature. More urgently, we need to communicate

Life's wonder to our colleagues and friends, to our brothers and sisters, and particularly to our children whose formative experiences early in life will shape their future environmental perspectives and responsibilities. Only by directly engaging with Nature are people, and society as a whole, likely to recognise the value of what we are losing. If we don't, then biodiversity will be lost because society does not care enough. But perhaps if society does not care such loss will not, by definition, matter.

Jaboury Ghazoul

Jaboury Ghazoul has been full Professor of Ecosystem Management at the ETH Zurich since 2005.

www.ecology.ethz.ch

Portrait

Devesh Rustagi – From pre-doc to post-doc with the North-South Centre

Devesh Rustagi is a post-doc at the Chair of Environmental Policy and Economics at the ETH Zurich. He uses behavioural experiments to examine the role of diffuse and leader-based sanctioning institutions for forest commons management in Ethiopia.



Devesh Rustagi is a post-doc at the ETH Zurich. His work focuses on the interaction between human behaviour and economic incentives, and how this affects economic outcomes. He mainly draws insights from behavioural experiments, and has performed field work in India, Tanzania, and Ethiopia. In 2010, he was awarded the 1st prize for excellent and policy relevant research by the KfW Entwicklungsbank. His recent work (with Stefanie Engel and Michael Kosfeld) was published in *Science* 330, 961 (2010), doi: 10.1126/science.1193649.

www.pepe.ethz.ch

Devesh Rustagi, you are currently doing your post-doc research as part of a North-South Centre programme funded by the Swiss Agency for Development and Cooperation. Could you give us a short summary of your previous career steps and the role of the ETH Zurich in this respect?

Devesh Rustagi: I did my PhD from the ETH Zurich in 2009 under the joint supervision of Stefanie Engel and Michael Kosfeld. My doctoral study was partially funded by the North-South Centre of the ETH Zurich. In this respect, the ETH Zurich contributed not only academically but also financially in my career.

The United Nations declared 2010 to be the International Year of Biodiversity. How does the management of forest commons that you have been studying in Ethiopia relate to biodiversity?

The forest commons under study form a buffer zone to the Bale Mountains National Park. Besides being a part of the Afro-montane 'biodiversity hotspot', the park itself is a renowned centre of endemism, housing species found nowhere else in the world. Ensuring successful forest management in the area, therefore, implies not only a reduction in human pressure on the park, but also habitat expansion for wildlife and human livelihood sustenance.

In what way could your research contribute to safeguarding biodiversity, in particular to conserving the remaining wild coffee stands? Who do you target with your research findings?

It is now well acknowledged that designing robust institutions for community-based conservation is a major challenge. My research aims at testing the importance of decentralised institutions through controlled experimental set-ups that involve behavioural experiments with actual resource users to identify institutions that are most likely to be both conservation effective and cost efficient. Because of this innovative approach, our findings are useful for academicians, international agencies, policy-makers as well as farmers.

Do you see a possibility to satisfy both, the needs of the local people and safeguarding biodiversity? What do you consider as trade-offs and how could it be minimised?

Based on my field experience, my answer is, in principal, yes! Be it tigers in India, or elephants in Tanzania, or baboons in Ethiopia: I haven't come across any community as yet that denies the right to exist to this 'popular' biodiversity. But, at the same time major losses are attributed to such wildlife. Together with indigenous mechanisms, transfer of conservation benefits, for instance via payments for environmental services, might be an option. But, in my view there is no one general answer and the trade-offs must be examined in the context of the problem and the biodiversity concerned.

In your view, what would be the most important steps to take in order to reduce biodiversity losses?

One of the key steps would be to ensure that conservation policies recognise heterogeneity in human behaviour. So far, such policies have focused exclusively on material incentives that no doubt are important. However, as our research suggests, non-monetary incentives, like conditional cooperation (individual cooperation is conditional on the cooperation of others) play a critical role in conservation success. Conservation policies need to take this into account and offer incentives that foster conditional cooperation, for instance, through appropriate punishment institutions. Moreover, knowledge of the underlying distribution of behaviours in the target group can help policy-makers tailor institutions to achieve success. Randomised field experiments can be instrumental in furthering this goal.

Research

Using models to assess biodiversity risks from climate change

Biodiversity is generally understood as the biological diversity at the ecosystem, species, and genetic level. Despite the fact that biodiversity is much talked about, it is difficult to assess and only models allow to learn about possible future courses of development and the risks for biodiversity.

Biodiversity is considered to be at considerable risks from many pressures. Thereof climate change is only one and the mix of pressures varies depending on circumstances such as type and intensity of land use, pollution levels, or geographical disconnection of habitats. Consequently, in some ecosystems biodiversity losses may be predominantly caused by land-use changes, in others climate change may gradually become the more dominant factor. Ecosystems are key to biodiversity, regardless whether we focus on the diversity of ecosystems within a landscape, the conservation of particular threatened species, or the gene pools. To appreciate the proper value of biodiversity at all three levels, we must not forget that it has steadily grown over millions of years of evolution.

Models needed

Future climate change is neither approachable by observation nor experimentation. Only model projections allow exploring possible fates of climate and ecosystems. However, not even state-of-the-art climate models nor modelled relationships between biodiversity, ecosystems, and climate are sufficient to learn what may lay ahead for biodiversity. What we also need are assumptions about future behaviour of humankind: How large will the human population become? What types of energy will be used by what efficiency and by what carbon intensity? Using consistent and plausible assumptions on all these aspects allows prescribing scenarios of future greenhouse gas emissions. Since no unique course of humankind's future development stands out, an entire set of scenarios results, all used to drive climate models. Once the climate model results are computed, we have to bridge the gap between global

climate and the local climate scenarios that are relevant for ecosystems and biodiversity. Only when these bioclimatic scenarios are available, can we use the ecological models to assess future climate change impacts on any given ecosystem. There exist many different types of ecological models to assess biodiversity that can be used individually or in combination. Some of these models attempt to mimic the behaviour of entire ecosystems; others are based on the specific characteristics of the involved species. In all cases quantitative assessment becomes possible, mostly in terms of number of species that can survive in some region or that are possibly threatened.

Lessons learned

The majority of species are not ubiquitous and many are endemic to a single ecosystem. Biodiversity is also not distributed evenly over the globe, but tends to amass in hotspots. Therefore, to get a more general view many estimates are needed, where each focuses on the specificity of

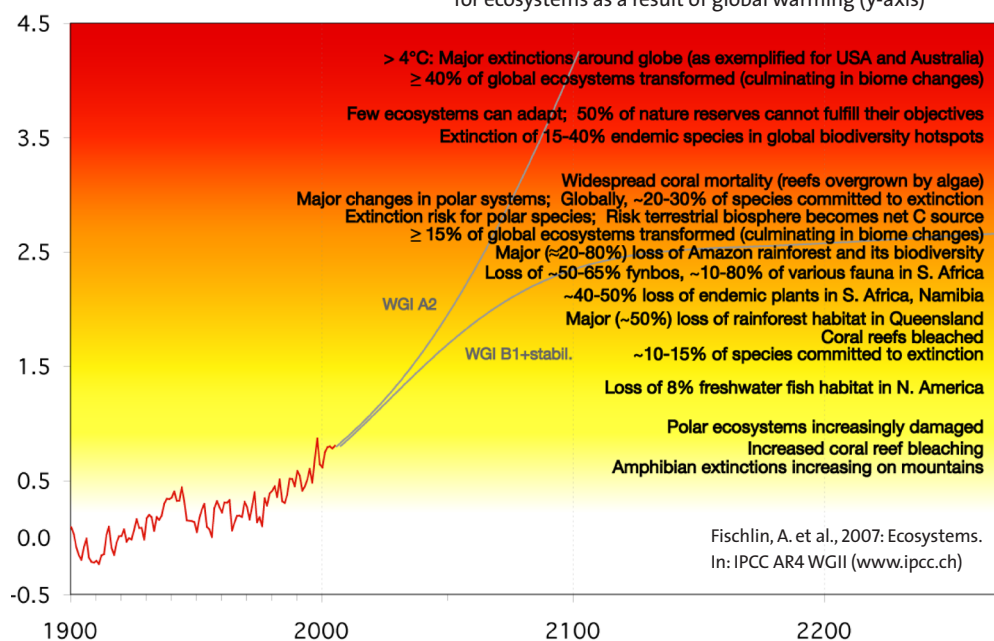
ecosystems or species and then is up-scaled to make the findings comparable in terms of a degree of global warming. As our contribution to the Fourth Assessment Report of the IPCC, we made such a meta-analysis and compiled all then available quantitative extinction risk estimates: Roughly 20 to 30% of higher plant and animal species were found to be at an increasing and significant risk of extinction when global temperatures further rise by 1.5 to 2.5°C. Thus, unless we curb it, climate change may well be another and significant nail in the coffin of biodiversity.

Andreas Fischlin

Andreas Fischlin is Professor for Terrestrial Systems Ecology since 1989. As Coordinating Lead Author of the fourth assessment report "Climate Change 2007" of the IPCC Andreas Fischlin is co-recipient of the Nobel Peace Prize 2007.

www.sysyecol.ethz.ch

Compilation of risks (red) and opportunities (light yellow) for ecosystems as a result of global warming (y-axis)



Portfolio

Sustainable solutions for urban housing

This summer, 18 students from the ETH Zurich and 36 of their Ethiopian counterparts worked together in Addis Ababa for three weeks, generating solutions for sustainable urban housing.

Within the next 15 years, Ethiopia will be confronted with an additional 45 million people, along with the basic needs of food, water, safety, and shelter in not yet existing – or already overstressed – urban settlements. To address these challenges, innovative approaches are desperately needed.

Together with the Ethiopian Institute of Architecture, Building Construction



Sustainable Urban Dwelling Unit (SUDU) under construction – building with low cost material, local resources and the capacity of daily labourers.

The ETHiopia Urban Laboratory Summer School was jointly carried out by ETH Sustainability, the Department of Architecture – particularly the BLOCK Research Group – and the North-South Centre of the ETH Zurich, together with the EiABC.

www.sustainability.ethz.ch

and City Development (EiABC), the ETH Zurich initiated the ETHiopia Urban Laboratory Summer School, with the goal of spreading knowledge and finding solutions related to sustainable urban housing.

During the first week, local and external experts gave lectures on the broader themes of architecture and construction, water and sanitation, and entrepreneurship. In the ensuing two weeks, the students – all future architects, environmental engineers, scientists or economists – worked on practical tasks. These case studies were related to the Sustainable Urban Dwelling Unit (SUDU), a two-story, low-cost house built with local materials and local labour, which serves as a research prototype for urban housing solutions in Ethiopia and other developing nations. The architecture students worked on the SUDU construction site, while the environmental engineers and scientists proposed a design for a wastewater treatment plant for the SUDU and the entrepreneurs drafted a business plan for loam bricks, a major component of the SUDU.

During the three-week course, students from Ethiopia and the ETH Zurich sought to understand the current trends and future problems regarding the housing needs of a developing country, while generating the tools and ideas to help to solve them. The final presentations illustrated that these students – regardless of their backgrounds – gained knowledge and skills that will help them to find sustainable solutions for the future demands of their pursuits in urban design.

Publications

Flues, F., Michaelowa, A., Michaelowa, K., 2010: What determines UN approval of greenhouse gas emission reduction projects in developing countries? An analysis of decision-making on the CDM Executive Board. *Public Choice*, 145 (1-2): 1-24.

Koh, L.P., Ghazoul, J., 2010: A spatially-explicit scenario analysis for reconciling agricultural expansion, forest protection, and carbon conservation in Indonesia. *PNAS*, 107: 11140-11144.

Krank, S., Wallbaum, H., Grêt-Regamey, A., 2010: Constraints to implementation of sustainability indicator systems in five Asian cities. *Local Environment*, 15(8): 731-742.

Kueffer, C., Schumacher, E., Dietz, H., Fleischmann, K., Edwards, P.J., 2010: Managing successional trajectories in alien-dominated, novel ecosystems by facilitating seedling regeneration: A case study. *Biological Conservation*, 143: 1792-1802.

Marquardt, S., Beck, S.G., Encinas, F.D., Alzérreca, H., Kreuzer, M., Mayer, A.C., 2010: Plant species selection by free-ranging cattle in southern Bolivian tropical montane forests. *Journal of Tropical Ecology*, 26: 583-593.

McDonald, B.A., 2010: How can we achieve durable disease resistance in agricultural ecosystems? *New Phytologist*, 185: 3-5.

Zeugin, F., Potvin, C., Jansa, J., Scherer-Lorenzen, M., 2010: Is tree diversity an important driver for phosphorus and nitrogen acquisition of a young tropical plantation? *Forest Ecology and Management*, 260(9): 1424-1433.

Newsflash

Nagoya Biodiversity Summit: A new era of living in harmony with Nature

“The outcome of this meeting is the result of hard work, the willingness to compromise, and a concern for the future of our planet.” *Ryu Matsumoto, Minister of the Environment, Japan*

On 29 October 2010, the 193 Parties to the Convention on Biological Diversity and their partners closed the Nagoya Biodiversity Summit by adopting historic decisions that will ensure that the ecosystems of the planet will continue to sustain human well-being into the future.

The strategic plan of the Convention on Biological Diversity includes 20

headline targets that – among others things – address the underlying causes of biodiversity loss, reduce the pressures on biodiversity, and enhance the benefits provided by biodiversity.

Financial support for the strategic plan will be provided under the framework of the resource mobilisation strategy. This strategy will determine the way forward to a substantial increase to

current levels of official development assistance in support of biodiversity.

Finally, the parties adopted the historic agreement “Nagoya Protocol”, a new international protocol on access to and benefits from the use of the genetic resources of the planet. The protocol is expected to enter into force by 2012.

www.cbd.int

Announcements

North-South Forum – Green Economy: Development opportunity or latest buzzword? The next North-South Forum jointly organised by the NCCR North-South and the North-South Centre, will discuss the meaning and significance of a Green Economy, debating the measures that must be taken to achieve the goals of this UN initiative while simultaneously responding to the needs of developing countries. **Berne, 25 November 2010.**
www.northsouth.ethz.ch

Launch of the Centre for Development and Environment (CDE) at the University of Bern Sustainable development research has been given a boost in Bern with the official inauguration of the CDE. No longer part of the Institute of Geography, CDE is now an interdisciplinary centre of the University of Bern and has been given a new, extended mandate.
www.cde.unibe.ch

Call for papers: *Information Systems Journal* – Theorising development and technological change This special issue of the *Information Systems Journal* focuses on technology related change in the context of developing countries, and for developing countries. **Deadline for paper submission is 28 February 2011.**
www.isj-editors.org/?p=300

Call for nominations: Justus von Liebig Award for World Nutrition 2011 Individuals who have made preeminent contributions to the improvement of world food supply, the mitigation of under- and malnourishment, or the improvement of rural livelihood while preserving natural resources are eligible to be nominated. **Deadline for submission of nominations is 30 April 2011.**
www.stiftung-fiat-panis.de

Aiducation International

“Scholarships through Aiducation will build the future skilled leadership the poorest countries so critically need.”
Paul Collier, Centre for the Study of African Economies, Oxford University

ETH postgraduates founded the social start-up Aiducation International to give bright and needy students in developing countries access to education.

Investing in high potentials is associated with a substantial leverage effect. The scholars are future high achievers, empowered to positively influence the social, economic, and political development of their countries. Your donation makes a sustainable difference.

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Spotlight

Evaluation – Research for development at the ETH Zurich

Is there a continued need of a North-South Centre at the ETH Zurich? How valid is our strategy as basis for future activities? These are two key questions of the external evaluation of the North-South Centre, conducted by Joachim von Braun in April 2010.

In April 2010, the North-South Centre underwent an external evaluation, commissioned by the School Board. The principle reviewer was Joachim von Braun, former Director General of IFPRI, the International Food Policy Research Institute in Washington DC. His main conclusion was:

“The North-South Centre is a valuable asset of the ETH Zurich. Its added value in research lies in the considerable networking capital, in its potential to mobilise resources, and in the outcomes of its research partnerships. It should be given due recognition, visibility and resources. As the global science system advances and expands rapidly in the

developing world, a stronger North-South Centre at the ETH Zurich can also be recommended from an ETH’s self-interest perspective.”

The evaluation was based on terms of reference prepared by the School Board. They built on the self-evaluation report prepared by the management of the North-South Centre. During the visit of J. v. Braun, several members of the North-South Centre presented their activities, covering our topics, instruments and types of collaboration.

The report contains specific conclusions and recommendations on our constituency and institutional set-up and the implementation of our strategy,

as well as general ones on our recognition, external and internal visibility, research, teaching, and resources.

Our response to the School Board is a strategic analysis of the evaluation related to the networking capital, strategic competence, visibility, thematic scope, and external environment. In addition, we address all conclusions and recommendations in detail. However, six of them are directed to the School Board and therefore beyond our competence to respond. In late August 2010, we discussed the evaluation with the Vice-President of Research of the ETH Zurich Roland Siegwart. The next step will be a formal decision of the School Board on the follow-up.



Household interview, Bandhavgarh National Park boundary, India



Preference ranking of different land types with a focus group, Madagascar



Working on bacteria isolated from camel milk products, Kenya



Farmers contributing in the data collection, Syria

Impressum

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