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Biosphere Reserves –
inspiring action for Agenda 2030



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inspiring action for Agenda 2030

Preface

In September 2015, at the UN summit in New York, leaders of the world adopted “The 2030 Agenda for Sustainable Development”. The Agenda provides new impetus and orientation for the world to shift onto a sustainable and resilient path. Its 17 Sustainable Development Goals (SDGs) balance the economic, social and environmental dimensions of sustainable development. They aim to stimulate action over the next 15 years in areas that are of critical importance to the planet and to humanity.

Given their importance for sustainability and human well-being, it is not surprising that biodiversity and healthy ecosystems, including aquatic and terrestrial wildlife and genetic resources, feature prominently in the goals and targets of the 2030 Agenda such as those relating to poverty eradication, food security and sustainable agriculture, sustainable water management, economic growth, cities and human settlements, sustainable consumption and production, and effective, accountable and inclusive institutions.

Protecting biodiversity is an integral part of German development cooperation. Since 2013, the German government has been making half a billion euros available each

year for the protection and sustainable use of forests and other ecosystems worldwide. These areas provide vital services and play a key role in reducing poverty and achieving sustainable development.

The German Federal Ministry for Economic Cooperation and Development (BMZ) therefore pursues an integrated approach that combines nature conservation and the sustainable use of natural resources. With this approach, Germany has long been supporting partner countries in establishing and managing protected areas. At present, Germany provides support to more than 350 protected areas in over 40 countries, a total area as big as France and Germany put together.

Balancing conservation and sustainable use of biodiversity is also central to the “Man and the Biosphere” (MAB) programme of the United Nations Educational, Scientific and Cultural Organization (UNESCO). The UNESCO biosphere reserves were designed as model regions for sustainable development whose inhabitants are supported in the pursuit of environmentally sound livelihoods and thus in developing sustainable societies and economies. Since their



inception, they have generated a wealth of experiences and lessons, some of which are described in this brochure. Now it is time to let these experiences inspire societies, governments, the private sector and rural and urban communities to take action on the SDGs.

In German development cooperation, the UNESCO biosphere reserves are seen as an ideal instrument to support partner countries in their efforts towards conservation and sustainable use of their biodiversity and to identify sustainable pathways for devel-

opment. This brochure portrays some of the work being done in biosphere reserves and showcases exemplary projects.

ULRIKE HAUPT
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Development

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What are biosphere reserves?

The earth's crust and atmosphere form the biosphere, which is capable of supporting life. Biosphere reserves are there to protect the environment and the organisms living in it in certain areas. This is achieved by safeguarding biodiversity and developing sustainable forms of using land and natural resources, to the mutual benefit of humans and nature.

Biosphere reserves are broad-scale natural and cultural landscapes that are recognised by UNESCO under the Man and the Biosphere Program (MAB). They offer viable examples of the compatibility of nature conservation, protection of cultural diversity and local economic development. MAB has been running for 40 years, and now, over 600 biosphere reserves in 120 countries including 15 transboundary sites form a World Network of Biosphere Reserves. The Network supports the exchange of experience and transferable knowledge of how ecosystems function, consequences of human interventions, and the success of conservation and development measures.

The three fundamental functions of biosphere reserves are:

✓ **conservation:** safeguarding ecosystems and landscapes along with their genetic diversity. A biosphere reserve maintains the dynamics of

- natural ecosystems (largely unaffected by human interventions) and
- near natural habitats (cultural landscapes with traditional land-uses)
- ✓ **development:** ensuring that economic and human development within biosphere reserves is socio-culturally and environmentally sustainable by
 - implementing exemplary approaches towards environmentally sound land use with the local population
 - tailoring development goals to environmental and socioeconomic conditions and
 - supporting opportunities for sustainable development appropriate to the area
- ✓ **logistic support:** fostering environmental education and training as well as research and environmental monitoring by offering
 - settings parts of which are permanently protected, making them ideal for ecosystems research
 - opportunities to develop locally suited solutions meeting the requirements of the natural environment as well as the local population.

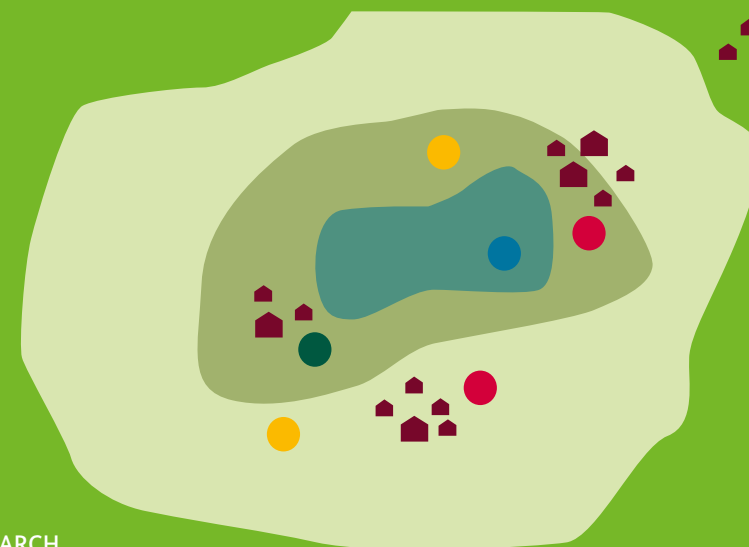
A biosphere reserve consists of different landscape sections, each with its own conservation, management and development functions, graded according to the intensity of human activities:

- In the core area, often a national park, nature's dynamic processes can take their course without human intervention.
- The buffer zone surrounding the core is usually altered or influenced by human use, but provides habitats for animal and

plant species characteristic of the landscape. This is achieved by managing land use to serve biodiversity conservation.

- In the transitional zone environmentally and socially sustainable forms of production and consumption are pioneered.

BIOSPHERE RESERVES ARE COMPOSED OF THREE ZONES, EACH OF WHICH FULFILLS DIFFERENT FUNCTIONS.



● RESEARCH

● MONITORING

● EDUCATION

● TOURISM

■ CORE AREA

■ BUFFER ZONE

■ TRANSITION AREA

Why support biosphere reserves?

→ **BECAUSE THEY**

show us how to balance nature conservation with economic development

→ **BECAUSE THEY**

help to deliver ecosystem services such as providing clean drinking water or maintaining a stable microclimate for agriculture

→ **BECAUSE THEY**

protect cultural diversity by supporting local and indigenous forms of production and consumption

→ **BECAUSE THEY**

allow us to study ecosystems and look at how they work in a protected environment

→ **BECAUSE THEY**

teach us how human intervention affects ecosystems and habitats and vice versa

→ **BECAUSE THEY**

can contribute to peace-building, especially across borders

→ **BECAUSE THEY**

ecologically connect areas important for biodiversity in the landscape

→ **BECAUSE THEY**

suggest themselves as areas to practise organic agriculture and ecologically adapted forest management

→ **BECAUSE THEY**

serve as a learning ground for regional, national and international exchange to promote sustainable development

→ **BECAUSE THEY**

link cultural and biological diversity for the benefit of nature and people

The contribution of German development cooperation

Rich biodiversity and healthy ecosystems are the foundation of human existence and wellbeing. We need them to safeguard future development options. Functioning ecosystems provide a wide range of services that are critical to human life and livelihoods, such as clean water, fertile soil and maintaining of microclimates. Biodiversity is therefore a crucial issue for German development cooperation. Since 2013, the German Federal Government has spent more than 500 million euros annually on supporting the protection and sustainable use of forests and other ecosystems.

As part of this effort, the German Federal Ministry for Economic Cooperation and Development (BMZ) assists its partner countries in the establishment and further development of biosphere reserves. It is currently working with 16 countries on four continents, supporting a total of 24 UNESCO biosphere reserves including two transboundary reserves. Assistance to biosphere reserves often is embedded into larger programmes on protected areas or on rural development. Financial and technical cooperation complement each other, providing infrastructure, equipment and sustainable financing mechanisms as well as technical advice, organisational support and capacity development.

Support is particularly aimed at putting effective mechanisms in place to balance conservation goals with the development interests of the local and indigenous communities. Success crucially depends on the involvement of the local population right from the planning stages to the long-term management of an area as biosphere reserve.

Promoting the development of value chains based on local sustainably grown or harvested products generates additional employment and sources of income. This reduces poverty among the rural population. The private sector is an important partner in efforts to develop business opportunities while harnessing the value of biodiversity.

An economic valuation of the ecosystem services supplied by the strictly protected areas to their sustainably used surroundings can be instrumental in enhancing buy-in from communities and local governments. Another important aspect of Germany's development cooperation approach is to encourage consultations and agreements among the various government institutions having a mandate over the different areas in a biosphere reserve.



Yasuni Biosphere Reserve, Ecuador

WORLDWIDE COMMITMENT

Biosphere Reserves supported by the German Federal Ministry for Economic Cooperation and Development (BMZ)¹

LATIN AMERICA AND CARIBBEAN

	BIOSPHERE RESERVES	AREA IN KM ²
Brazil	Central Amazon	208.599
Dominican Republic	Jarangua-Bahoruco-Enriquillo	4.767
Ecuador	Archipiélago de Colón (Galápagos)	147.618
Ecuador	Podocarpus – El Cóndor	11.400
Ecuador	Sumaco	9.312
Ecuador	Yasuni	16.820 (27.404) *
Guatemala	Maya	21.129
Haiti	La Selle	3.772
Honduras	Río Plátano	8.000
Mexico	Región de Calakmul	13.717
Mexico	Sierra Gorda	3.782
Nicaragua	Bosawas	21.815
Peru	Huascarán	11.558
Peru	Noroeste	2.314
El Salvador, Honduras, Guatemala	Trifinio Fraternidad Transboundary Biosphere Reserve	1.198

* proposed extension

EUROPE

Albania, Macedonia

BIOSPHERE RESERVES

Ohrid-Prespa Transboundary Biosphere Reserve

AREA IN KM²

4.462

ASIA

Indonesia
Yemen

BIOSPHERE RESERVES

Lore Lindu
Socotra Archipelago

AREA IN KM²

21.829

26.816

AFRICA

Benin
Côte d'Ivoire
Côte d'Ivoire
Madagascar
Tanzania
South Africa

BIOSPHERE RESERVES

Pendjari
Taï
Comoé
Mananara Nord
Serengeti Ngorongoro
Kruger to Canyons

AREA IN KM²

5.750

6.200

11.500

1.400

23.051

24.747

¹ ongoing projects as of July 2015. Source: Updated information based on "Committed to Biodiversity", BMZ/BMUB (2014); and UNESCO MAB Programme Directory of the World Network of Biosphere Reserves.



COMOÉ BIOSPHERE RESERVE, CÔTE D'IVOIRE

Regaining momentum - for the rural economy and for biodiversity conservation

Situated in the north of Côte d'Ivoire, and featuring both savannah and forest ecosystems, the Comoé Biosphere Reserve boasts a high level of biodiversity and provides a stable microclimate for local agricultural production. Together with surrounding areas that could eventually constitute a buffer zone, its core area, Comoé National Park, stretches across three regional administrative units, Bounkani, Hambol and Tchologo. The region was severely affected

by nine years of political crisis and armed conflict, and its core area suffered substantial degradation of natural resources as well as an intensification of poaching.

Importantly, now that the conflict is over, the Ivorian Agency for Protected Areas (OIPR) needs to strengthen its capacities to manage Comoé National Park and its buffer zone. German technical and financial cooperation is supporting the agency in its

Hemiscus Sp. and other rare and endemic species offer great potential for scientific discovery.





efforts, which involve the (re-) establishment of necessary infrastructure and procurement of equipment. Management staff and park rangers have been trained to use state-of-the-art tools for bio-monitoring and to keep track of poaching activities and the dynamics of legal as well as illegal land occupation. Next on the agenda is an intensive training on aerial wildlife count enabling OIPR staff to carry out an inventory of large and medium-sized animals in the area.

It is equally important for economic development to gain momentum again in the transition zone in order to secure local livelihoods. The programme is focusing on the cashew, onion, corn and pork sectors. An ongoing economic study of agricultural enterprises is assessing the profitability of crops and of conventional as opposed to improved farming practices and marketing methods. Based on its results, farmers and extension services will have better options to sustainably raise incomes among rural households.

Crucial for the success of the biosphere reserve is that the Ivorian government, via OIPR, and the locally elected representatives from the regional authority of Bounkani share the vision of turning the Comoé region into an area of sustainable development. To achieve this, stakeholders have agreed to continue to improve the zoning of the reserve so that the area can perform its functions of biodiversity conservation, economic and social development, promotion of research, including indigenous knowledge, as well as training and environmental education of the public.

Committed to biosphere reserves



Biosphere reserves are what Dr Djafarou Tiomoko Ali's life seems to be revolving around. A national from Benin, Dr Tiomoko Ali is currently coordinator of the German-Ivorian Programme *Development of biodiversity and economy in the area of Tai and Comoé* for the Comoé region. He brings a wealth of experience with him. For twelve years, he served as coordinator of the Pendjari Biosphere Reserve in his home country of Benin, also in the context of a German cooperation project. A four-year regional UNESCO-MAB project funded by UNEP-GEF on capacity building permitted him to hand on his knowledge to five other biosphere

reserves in West Africa and exchange lessons learned. In 2015, he co-authored the Management Manual for UNESCO Biosphere Reserves in Africa, published by the German Commission for UNESCO. Dr Tiomoko Ali's appointment as a member of the International Advisory Committee of the UNESCO Man and Biosphere (MAB) Programme therefore came as no surprise. "Biosphere Reserves are the model regions for sustainable development. It's what motivates me to work on this issue," Dr Tiomoko Ali succinctly sums up his commitment.

Q DR DJAFAROU TIOMOKO ALI, WHAT IS YOUR ROLE AS AN ADVISER IN A BIOSPHERE RESERVE CONTEXT?

A I advise the OIPR staff on matters concerning zoning, changes and periodic reviews of Comoé biosphere reserve as well as its development, operation and monitoring in accordance with the Seville Strategy Framework of the World Network of Biosphere Reserves.

Q HOW DO OIPR ACTIVITIES IN A BIOSPHERE RESERVE CONTEXT DIFFER FROM MANAGING A NATIONAL PARK? WHAT ARE THE MAIN CHALLENGES?

A OIPR has a key role to play in ensuring the legal and sustainable use of natural resources in the buffer zone. Defining the limits and extent of the buffer zone remains a major challenge, and so does

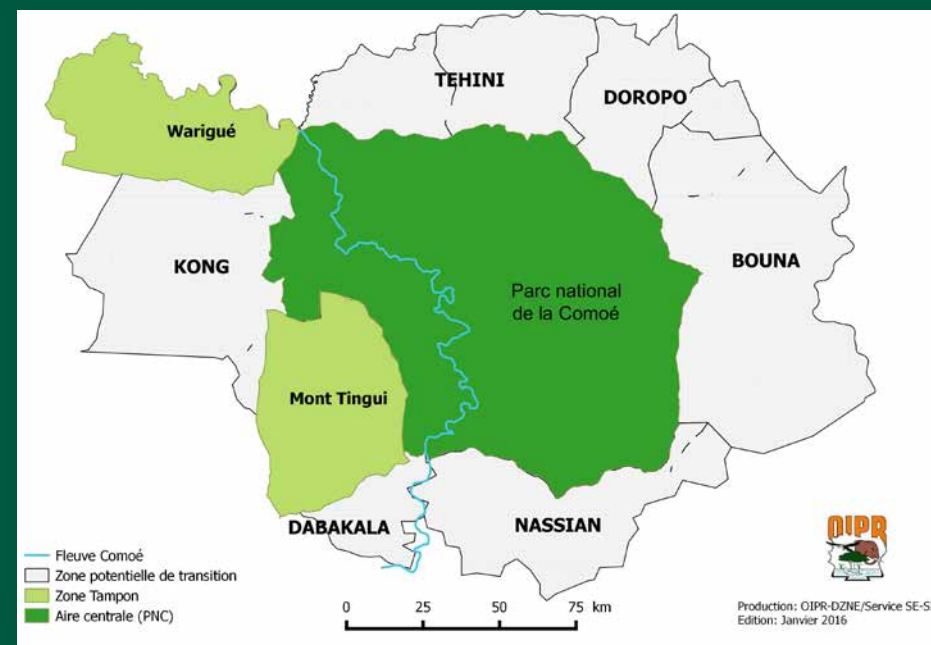
maintaining controlled access to its natural resources.

Q HOW DOES INTERACTION BETWEEN THE DIFFERENT ZONES AND ORGANISATIONAL MANDATES WORK IN PRACTICE?

A OIPR participates in designing development strategy plans for the Bounkani region. Similarly, representatives from the regional authority of Bounkani sit on the *Comité de Gestion Local*, the local management board of the reserve. This way, the strictly protected areas become an integral part of the landscape.

Q WHAT CONTRIBUTION DO YOU EXPECT FROM AN ASSESSMENT OF ECOSYSTEM SERVICES?

A Stakeholders in the Comoé region have identified a number of ecosystem services relevant for human well-being supplied by the biosphere reserve such as provision of honey, fish and medicinal plants, and pollination, for example, of cashew. Further investigation and valuation is needed. The goal is to build a stronger case for the biosphere reserve and its services and to demonstrate the importance of the protection of its ecosystems.





GRAN PAJATÉN BIOSPHERE RESERVE, PERU

Local initiatives and people's interest: key factors for setting up a new biosphere reserve

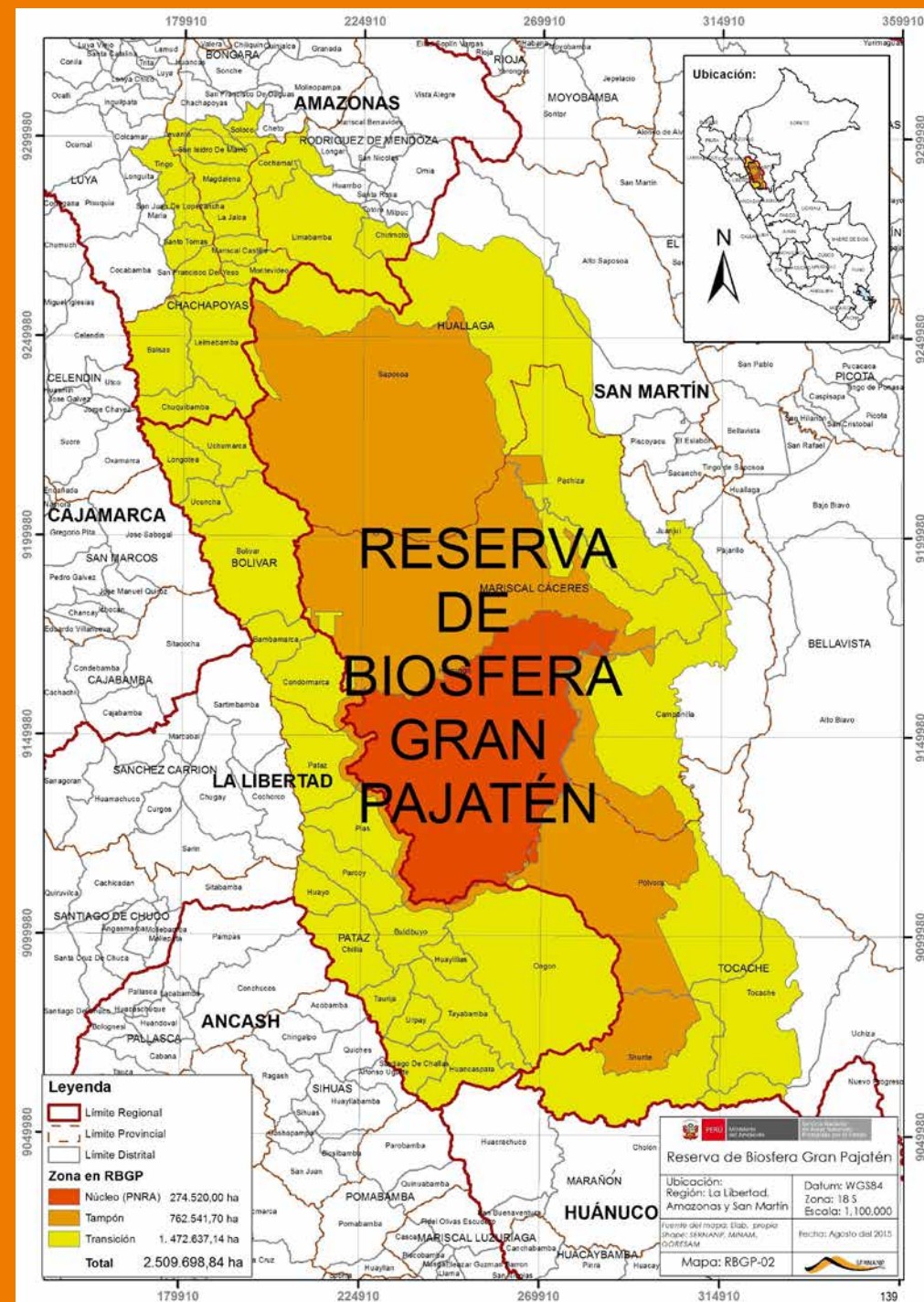
For many years, Germany has been supporting Peru's system of protected areas, for instance by financing infrastructure in national parks and improving the administration and financing of protected areas and buffer zones. Germany's main partner is the National Service for Protected Areas (SERNANP), which is also the focal point for the country's four biosphere reserves. SERNANP has just submitted a proposal to the MAB Programme for a fifth biosphere reserve, Gran Pajatén, with Rio Abiseo National Park as its core zone.

The main factor driving the preparation of the proposed biosphere reserve was a technical committee in charge of the field work made up of different institutions either linked to the national park or to other agencies in the buffer zone. However, the initial interest and impetus to form the committee had come from local stakeholders involved in conservation and sustainable production initiatives. "Had this not been the case, nothing would have been achieved," explains Pedro Gamboa, Director of SERNANP. The technical committee then helped with familiarising more

local actors such as producer groups and local governments with the proposal, its underlying land management model and the benefits the proposed biosphere reserve could bring.

For instance, an academic study had demonstrated the relation between income from cocoa production and forest coverage. As the rate of water infiltration depends on forest coverage, cocoa crops closer to the national park have a higher annual yield than those further away. Such studies highlight the fundamental role of biodiversity conservation in production processes. "The link between the ecosystem services supplied by the core zone and the economic interests of the beneficiaries mainly located in the buffer zone is what we really want to make the entire population inside a biosphere reserve aware of," comments Pedro Gamboa.

The German-Peruvian cooperation project *ProAmbiente* provided advisory services to the technical committee and supported the consultations with local stakeholders and authorities to discuss and approve the proposal.



A management model that strengthens partnerships




Pedro Gamboa, Director of Peru's National Service for Protected Areas SERNANP

function in synergy. In that context, we have improved our relationship and work with our major allies: local populations.


WHAT ARE THE SPECIFIC CHALLENGES?

 Issues like coordination between different institutions (local, sub-national and national as well as international cooperation, private sector and society as a whole) can be a headache. And we need innovative ideas to help producers and resource managers secure markets for their products. In this field, we are in the process of consolidating existing partnerships with local universities, research and training institutes as well as strengthening private sector participation.


WHAT ARE THE MAIN LESSONS THAT BIOSPHERE RESERVES CAN PROVIDE AS MODEL REGIONS FOR SUSTAINABLE DEVELOPMENT?

 The working model of biosphere reserves has helped to reinforce our approach in land use planning, in which we develop our activities mainly within the protected area while taking the larger landscape into account as a strategy for land management with an integral vision. Our protected areas have a role to play like any other area with a specific category of use in the wider territory, and together they must


WHICH SPECIAL OPPORTUNITIES ARISE?

 Our assets include our great biological diversity, local ancestral knowledge and the willingness to work hand in hand with local and sub-national governments. In recent years, interest has grown in assessing the value of our food and culinary products our biodiversity provides. This is a wonderful opportunity to strengthen ties between biological and cultural diversity. They are like two sides of the same coin, and are the main characteristic of our country.


HOW DO BIOSPHERE RESERVES HELP TO MAKE THE ECONOMIC ASPIRATIONS OF LOCAL COMMUNITIES COMPATIBLE WITH CONSERVATION OF BIODIVERSITY?

 I think they're a great opportunity in this respect. For instance, we are starting to use the distinction of Biosphere Reserve to promote products as "nature-friendly". We have some examples of producers' associations that now understand and comprehend this process, orienting their work to specialised market niches not seeking mass production items but handmade, organic, nature-friendly products. In short, we have producers who respect nature.

HOW CAN LESSONS BE TRANSFERRED ELSEWHERE?

 We have applied the same approach in protected areas, in which sustainable use is part of the management regime, like Pacaya-Samiria National Reserve. The local resource manager groups who use native species such as the Amazonian fish *arawana* or a river turtle named *taricaya* follow management plans which require, for instance, creating artificial beaches for the turtles and having a closed period for fishing. This helps to maintain people's local food supply, provide products to the market and repopulate the species in question.

IN WHAT WAYS DOES YOUR ROLE AS A PROTECTED AREA AGENCY DIFFER BETWEEN A BIOSPHERE RESERVE AND OTHER PROTECTED AREAS SUCH AS NATIONAL PARKS?

 Of course, the management of a national park is quite different from that of a biosphere reserve. However, it is clear that there, too, our work must involve the buffer zone, which is where the problems and illegal activities originate from and find their way into the protected area. But also inside protected areas, management plans include an inner zoning for different sustainable uses of the land and resources with varying levels of restrictions. In Peru, in several cases, people were living inside national parks long before they were established, which is why the use of natural resources has to be monitored case by case, even for parks with indirect use category.

Granting rights of use inside protected areas involves the participation of authorities at different levels. The case of Pacaya-Samiria National Reserve, for example, has allowed us to coordinate closely with resource management groups, the Regional Bureau of Production, the Regional Bureau of Environment and Natural Resources and even the Loreto Region Office of Planning and Budgeting.

So there are similarities and transferable lessons. In fact, SERNANP is in the process of applying the biosphere reserve management model, with minor adjustments, throughout its entire state protected area system. In my opinion, this management model is one of the most important contributions to realising and strengthening partnerships and our work with local authorities and neighbours.



MAYA BIOSPHERE RESERVE, GUATEMALA | REGIÓN DE CALAKMUL, MEXICO

Inclusive planning processes and cross-border cooperation in the Selva Maya

Situated in the border region between Belize, Guatemala and southeast Mexico, Selva Maya is the most extensive area of tropical forest north of the Amazon and habitat to many threatened animal and plant species. Water and other ecosystem services it provides to the three countries are becoming increasingly important.

Covering a total of almost 30,000 km², two biosphere reserves, Maya in Guatemala, and bordering it to the North, Región de Calakmul in Mexico, are at the heart of the Selva Maya. The advancing agricultural frontier, driven mainly by large-scale livestock raising, is putting increasing pressure on the forest. Other threats include fires, illegal logging and illegal trade in plants and animals, as well as expansion of oil exploitation, leading to degradation and fragmentation of the ecosystem. The key challenge is to find ways to harmonise different land use and economic interests while protecting biodiversity. This is the focus of the trilateral Programme *Conservation and sustainable use of the Selva Maya* which is implemented jointly by the Central American Commission on Environment and

Development and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

One approach to address this challenge was the participatory development of a masterplan for the buffer zone of the Maya biosphere reserve coordinated by the Guatemalan National Protected Area Agency (CONAP) and subsequently integrated into the updated overall strategic plan of the reserve. Unlike with previous planning processes CONAP this time involved the ministries of planning and of agriculture as well as a number of NGOs. This has raised acceptance of the plan and enhanced the image of the protected area agency among other stakeholders, an important aspect given that the reserve covers more than a tenth of Guatemala's total land area. The plan enhances coherence among different government agencies involved in land use.

Cross-border cooperation is another 'must' to achieve long-term conservation for the Selva Maya. The protected areas making up the core zones of the biosphere reserves on either side of the border face the same challenges but lack the legal framework



Cross-border collaboration: park rangers from the Maya and Calakmul Biosphere Reserves at a planning meeting

to cooperate. Efforts to protect them are parallel rather than coordinated. Change has come about with a trilateral exchange of park rangers and technical staff initiated by the programme. With specific trainings in its wake park rangers have improved their capacities and developed common strategies to combat illegal hunting, fires and illegal logging. Another spin-off is a joint monitor-

ing programme for key species in specific threatened areas. To boost environmental governance and cooperation at an institutional level the three countries have set up a Strategic Coordination Group consisting of their respective protected area agencies.



SIERRA GORDA BIOSPHERE RESERVE, MEXICO

Spreading the word

The Ecological Corridor of the Sierra Madre Oriental in Mexico stretches across five federal states from San Luis Potosí to Veracruz. Covering an area larger than Switzerland, it was conceived to eventually link up several conservation areas in the region. How can people become more aware of the eco-system services their environment provides? And how can environmental education best be provided in this vast area?

Secondary school colleges in the Sierra Gorda biosphere reserve, which forms part of the eco-corridor, already introduced programmes on the environment in their curricula in 2005. They are now running the project ECOCHAVOS, which stands for “eco youngsters”. It seeks to involve young people in practical conservation measures familiarising them with the role of ecosystems and biodiversity. The youths then spread the word among

their parents and other people living in the region, acting as “environmental ambassadors”. Supported by Mexico’s National Commission of Natural Protected Areas (CONANP), the Volkswagen company and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), ECOCHAVOS aims

“I was really surprised about the quality and the scope of the projects.

The students can help us to reach our conservation goals on community level.”

Victor Alvarado, Minister of Environment of Veracruz, said when a 15-year-old told him about how they had teamed up to monitor and save an endangered crocodile species in the wetlands behind their village, and immediately offered additional support.

to get a total of 10,000 youths, also in other parts of the corridor, to participate in environmental protection and biodiversity conservation over a three-year period.

“GIZ input above all focuses on enhancing the quality of the education activities,” German technical cooperation official Richard Modley explains. “ECOCHAVOS isn’t just about collecting garbage. Young people will soon notice if a measure is merely symbolic or if it really serves a purpose.” The project trains pupils to understand how everything is connected in an ecosystem – water, forests, wildlife, food, fresh air, biodiversity – and then to take meaningful

action. Every six months, the ECOCHAVOS groups gather at regional level and exchange their best practices.

In the eco-corridor of Sierra Madre, the ECOCHAVOS initiative gives the Ger-

man-Mexican cooperation project a welcome inter-generational dimension. “These young people ask the right questions, even though they may be uncomfortable, and they have a genuine interest to look 50 years ahead,” Modley comments.



Learning about nature and taking action - youngsters of the ECOCHAVOS initiative.



YASUNI BIOSPHERE RESERVE, ECUADOR

Forest shade for cocoa trees



The Yasuní biosphere reserve in the Northern Amazon region of Ecuador is one of the world's most species-rich areas and also has extraordinary cultural diversity. However, illegal hunting and deforestation along the access roads to the oilfields has resulted in massive degradation in some areas. The German-Ecuadorian Project *Conservation of Biodiversity, Forests, and Mitigation and Adaptation to Climate Change* seeks to support the local population in contributing to the protection and sustainable development of Yasuní biosphere reserve.

"Inevitably, conflicts do arise when a biosphere reserve is set up," says Project Manager Karin von Loebenstein. "People may see their livelihoods in jeopardy at first.

But they recognise the advantages once things are put into concrete terms involving the local communities in the management decisions of the area." One of the ways sustainable production and conservation are balanced in Yasuní is to combine agriculture with forestry. Ecuador is an important cocoa-growing country, and in the biosphere reserve, various ancestral varieties are planted into mixed agricultural farms together with manioc, banana and other food crops. Timber trees left in these farms and little patches of forest provide shade that coffee and cocoa thrive in.

Initial processing steps such as cocoa fermentation and transformation into different chocolate products are also carried out locally, creating value added. In those communities which enjoy substantial tourism, the cocoa is turned into bars of chocolate in a Yasuní wrapping. In one of the villages, 3,000 bars were sold to tourists in 2015.

Local tree species provide ingredients for medicine and quality timber. In the "Trees for Your Pension" scheme that is run in some of the communities, families plant high-quality timber trees in their farms that yield a good income after about 15-20 years, which contributes to afforestation and provides social benefits.

A harvest of cocoa beans - turned into chocolate bars by a women cooperative.



It all depends on partners taking the reins



Karin von Loebenstein, you have worked in German development cooperation for more than 30 years and advised partners on protected area policy and management in Africa and Latin America. You supported the biosphere reserve Bosawas in Nicaragua for a number of years, and at present, you're coordinator of the German-Ecuadorian Project *Conservation of Biodiversity, Forests, and Mitigation and Adaptation to Climate Change in the northern Amazon*, including Yasuní Biosphere Reserve.

WHY DO GERMAN DEVELOPMENT EXPERTS REGARD BIOSPHERE RESERVES AS AN IDEAL CONCEPT FOR BIODIVERSITY CONSERVATION?

Biosphere reserves bear a huge potential to make nature conservation sustainable thanks to their integrated approach focusing on protected areas while involving communities living in their vicinity right from the start. This isn't simple, though. Often, conservation organisations set their priorities in protection targets, and local communities only come in later. At first, people therefore fear they won't be allowed to hunt or gather forest products or will be subject to other restrictions. In Yasuní, for example, the response was great once the development activities got underway.

WHAT ARE THE CRUCIAL SUCCESS FACTORS OF YOUR WORK?

Working in line with institutions relevant for conservation and development and with the local population and identifying potentials to improve the use and protection of biodiversity is what counts. We are in an advisory role, and our partners

both at government and at local level have to take the reins and make a substantial contribution for a project to be sustainable and successful for them. We must adapt to local rhythms and be aware that changes take time.

WHO ARE THE PEOPLE YOU WORK WITH IN THE YASUNÍ PROJECT?

Apart from communities and government institutions, we also cooperate with various NGOs, such as the Wildlife Conservation Society, who do scientific research and training for conservation and offer additional expertise to the project. Universities are heavily engaged in research in Yasuní National Park, in the biosphere's core zone and also in the rest of the biosphere reserve as well.

WHAT DO YOU ENJOY MOST ABOUT YOUR WORK?

Experiencing how even a small impulse can change things. Take the chocolate bars in Yasuní. The locals handled most of this on their own, while the project merely helped with a bit of equipment and training to get a good quality of the chocolate and to support the management of the women group, who produced the bars.

I enjoy working for conservation with colleagues from all over the world, the people in the villages, and also the government officials. It is often challenging and occasionally, the reality of conservation can be a bit disheartening. So seeing things work out is all the more rewarding.





KIEN GIANG BIOSPHERE RESERVE, VIETNAM

Mangroves to protect the coast and its fisheries

The coastal province of Kien Giang in the Mekong Delta, Vietnam, was recognised as a Biosphere Reserve by UNESCO in 2006. It contains one of the country's last remaining peat swamp forest areas, in U Minh Thuong National Park, a top priority site for wetland conservation. The rich fisheries in the region are an important source of food, although they have been threatened by overfishing. Furthermore, the Melaleuca forest in the Park's core zone provides vital ecosystem services such as maintaining soil and water quality in the buffer zone of the biosphere reserve. Kien Giang's 200 km coastline contains a mangrove belt that is essential for mitigating the effects of climate change.

The German Vietnamese Kien Giang Biosphere Reserve Project, which was co-financed by the Australian government, supported provincial agencies to develop mechanisms to effectively manage and protect the area, thus making the Biosphere Reserve operational. One of the management approaches was the establishment of marine protected areas and no-take zones in the mangrove belt enabling fish populations to regenerate. Together with the introduction of catch quotas and their

enforcement, these measures helped to make fisheries more sustainable and raise local incomes.

Another key area of activity was the rehabilitation of mangrove forests. Whereas only two species of mangrove were known to occur in the area in the past, with the help of the project, a further 27 were identified. Now, forest administration staff are using nine different species, so that more resilient mangrove forests can grow for coastal conservation. Also, a different design of Melaleuca fences has been developed to effectively protect newly planted mangroves and allow for natural re-establishment. Vietnam's Department of Agriculture and Rural Development is now applying this design in sediment and deposition building for flood control measures also elsewhere.

The next generation - mangrove seedlings and their future caretakers.





Learning from each other – worldwide



Experts of German development cooperation in a stimulating exchange with representatives of the biosphere reserve South-east Rügen during a seminar co-organised by the Federal Agency for Nature Conservation (BfN), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and KfW Development Bank.

The biosphere reserve concept developed by the UNESCO MAB Programme is implemented with the same objective and the same guiding principles all over the world. This is an ideal situation to cross-fertilise ideas and solutions through mutual exchange and joint learning. The World Net-

work of Biosphere Reserves fosters such an exchange between the individual reserves. German development cooperation supports mutual learning through study tours, partnerships and trainings between biosphere reserves in different partner countries and also with biosphere reserves in Germany.

Inspiring action for Agenda 2030

As this brochure's examples show, both in terms of lessons and inspiration, biosphere reserves indeed have a lot to offer on how sustainable pathways of development, as set out in the Agenda 2030, can be created.

One crucial element is to build on and strengthen local initiatives such as the cocoa growers and chocolate manufacturers in Yasuní. As natural resource managers, entrepreneurs and knowledge-bearers, local and indigenous communities are integral to the concept of balancing production and consumption with conservation needs. Moreover, involving young people is key, as can be seen in Sierra Gorda.

Good coordination between authorities with different mandates at various levels poses one of the biggest challenges. Where investments are being made in enhanced collaboration, such as in the local management councils in Comoé or in the multi-stakeholder planning process in the Maya biosphere reserve, results are promising. Joint practical initiatives across borders, as in the Selva Maya, help pave the way for improved institutional cooperation.

Huge potential lies in identifying, assessing and harnessing the ecosystem services which the zones with no or only limited human intervention provide for economic development in their surrounding landscapes.

Huascarán Biosphere Reserve, Peru



Whether it is higher water infiltration rates, as in Gran Pajatén, or protection of fish nurseries in Kien Giang, these services help us understand the significance of biodiversity for our development and well-being and to take appropriate action.

Biosphere reserves fulfil their role as “open-air labs” and provide motivation to achieve the Sustainable Development Goals. This applies particularly to areas such as food security and sustainable agriculture (Goal 2), sustainable water management (Goal 6), sustainable production and consumption (Goal 12), climate change action

(Goal 13) and conservation and sustainable use of biodiversity (Goals 14 and 15). But it also involves other areas such as poverty eradication (Goal 1), education (Goal 4), and partnerships and cooperation (Goal 17).

“To make tangible contributions to Agenda 2030, innovations and solutions from biosphere reserves need to be replicated and scaled-up elsewhere,” Dr Tiomoko Ali sums up. “And they need to be shared with national level decision-makers with a view to including them in national development agendas.”

“The Huascarán Biosphere Reserve is an outstanding example regarding food security and nutrition improvement. Here, a rural community has recovered 111 native potato varieties. Nowadays, these native potatoes are used first to feed local families and second for sale in a very special market niche. This community has understood the importance of regaining part of its cultural heritage, and is now committed to the conservation of its natural surroundings to ensure a reliable water supply from the glaciers to irrigate its crops within the biosphere reserve.

“All this forms a virtuous circle in which resources are utilised, an economic future is built, the community’s heritage is preserved and care is taken of the protected areas, which in turn provide ecosystem services such as water.”

Pedro Gamboa, Director of SERNANP, Peru

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