Celebrating 25 Years of Action for Biodiversity



25 YEARS | Convention on Biological Diversity
SAFEGUARDING LIFE ON EARTH

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Generation of content for the country pages
The contents on the country pages were generated from submissions from Parties to the Convention on Biological Diversity, as well as from information contained in the national reports submitted to the Secretariat. The process that was undertaken for this is outlined below:

Notification (2017–144) (www.cbd.int/doc/notifications/2017/ntf-2017-144-cbd-en.pdf) was issued on 21 December 2017, inviting Parties to submit case studies of their national achievements and successes under the Convention on Biological Diversity for inclusion in a commemorative publication for the 25th anniversary of the entry into force of the Convention.

A follow up call for submissions was sent via email on 16 February to all National Focal points, reminding them to send the case studies no later than 2 April 2018.

Notification (2018–052) (www.cbd.int/doc/notifications/2018/ntf-2018-052-case-studies-en.pdf) was issued on 5 June 2018 requesting Parties that have not yet submitted their information to do so no later than 21 June 2018. The Notification also stated that the Secretariat reserved the right to use information found in the National Report in the event that a case study was not submitted.

Accordingly, the Secretariat drafted text for the outstanding cases studies based on information contained in the National Reports. These case studies were sent to National Focal points by email on 4 September 2018 with a request for a reply by 10 September 2018. Absent a reply, the cases were published as is.

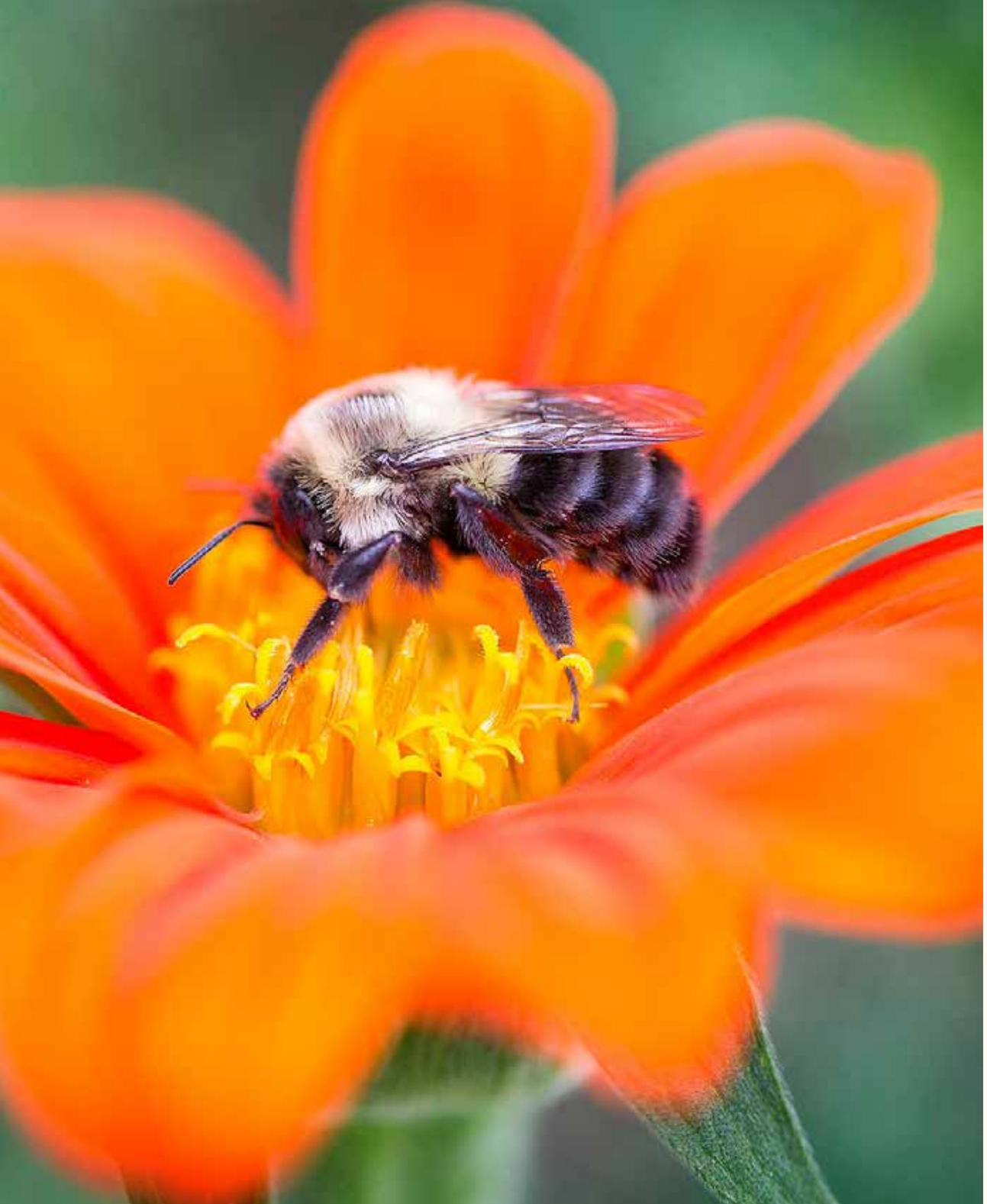
Contents

Foreword from António Guterres, United Nations Secretary General 1
Foreword from Erik Solheim, Executive Director of UN Environment 3
Foreword from Dr. Cristiana Pașca Palmer, Executive Secretary of the Convention on Biological Diversity 5
Foreword from Naoko Ishii, CEO and Chairperson of the Global Environment Facility (GEF) 9
Introduction from Her Excellency Dame Ivy Dumont 13
Introduction from Mr. László Sólymos 17
Introduction from Dr. Harsh Vardhan 19
Introduction from Enrique Peña Nieto 23
Introduction from Dr. Yasmine Fouad 25
Quotations from the Executives 28
The GEF — Targeting the main causes of biodiversity loss 33

COUNTRY PROFILES

Afghanistan 44
Albania 45
Algeria 46
Andorra 47
Angola 48
Antigua and Barbuda 49
Argentina 50
Armenia 51
Australia 52
Austria 53
Azerbaijan 54
Bahamas 55
Bahrain 56
Bangladesh 57
Barbados 58
Belarus 59
Belgium 60
Belize 61
Benin 62
Bhutan 63
Bolivia (Plurinational State of) 64
Bosnia and Herzegovina 65
Botswana 66
Brazil 67
Brunei Darussalam 68
Bulgaria 69
Burkina Faso 70
Burundi 71
Cabo Verde 72
Cambodia 73
Cameroon 74
Canada 75
Central African Republic 76
Chad 77
Chile 78
China 79
Colombia 80
Comoros 81
Congo 82
Cook Islands 83
Costa Rica 84
Côte d'Ivoire 85

Croatia 86
Cuba 87
Cyprus 88
Czech Republic 89
Democratic People's Republic of Korea 90
Democratic Republic of the Congo 91
Denmark 92
Djibouti 93
Dominica 94
Dominican Republic 95
Ecuador 96
Egypt 97
El Salvador 98
Equatorial Guinea 99
Eritrea 100
Estonia 101
Eswatini 102
Ethiopia 103
European Union 104
Fiji 105
Finland 106
France 107
Gabon 108
Gambia (the) 109
Georgia 110
Germany 111
Ghana 112
Greece 113
Grenada 114
Guatemala 115
Guinea 116
Guinea-Bissau 117
Guyana 118
Haiti 119
Honduras 120
Hungary 121
Iceland 122
India 123
Indonesia 124
Iran 125
Iraq 126
Ireland 127
Israel 128
Italy 129
Jamaica 130
Japan 131
Jordan 132
Kazakhstan 133
Kenya 134
Kiribati 135
Kuwait 136
Kyrgyzstan 137
Lao People's Democratic Republic 138
Latvia 139
Lebanon 140
Lesotho 141
Liberia 142
Libya 143
Liechtenstein 144
Lithuania 145
Luxembourg 146
Madagascar 147
Malawi 148
Malaysia 149
Maldives 150
Mali 151
Malta 152
Marshall Islands 153
Mauritania 154
Mauritius 155
Mexico 156
Micronesia (Federated States of) 157
Monaco 158
Mongolia 159
Montenegro 160
Morocco 161
Mozambique 162
Myanmar 163
Namibia 164
Nauru 165
Nepal 166
Netherlands 167
New Zealand 168
Nicaragua 169
Niger 170
Nigeria 171
Niue 172
Norway 173
Oman 174
Pakistan 175
Palau 176
Palestine 177
Panama 178
Papua New Guinea 179
Paraguay 180
Peru 181
Philippines 182
Poland 183
Portugal 184
Qatar 185
Republic of Korea 186
Republic of Moldova 187
Romania 188
Russian Federation 189
Rwanda 190
Saint Kitts and Nevis 191
Saint Lucia 192
St. Vincent and the Grenadines 193
Samoa 194
San Marino 195
Sao Tome and Principe 196
Saudi Arabia 197
Senegal 198
Serbia 199
Seychelles 200
Sierra Leone 201
Singapore 202
Slovakia 203
Slovenia 204
Solomon Islands 205
Somalia 206
South Africa 207
South Sudan 208
Spain 209
Sri Lanka 210
Sudan 211
Suriname 212
Sweden 213
Switzerland 214
Syrian Arab Republic 215
Tajikistan 216
Thailand 217
The former Yugoslav Republic of Macedonia 218
Timor-Leste 219
Togo 220
Tonga 221
Trinidad and Tobago 222
Tunisia 223
Turkey 224
Turkmenistan 225
Tuvalu 226
Uganda 227
Ukraine 228
United Arab Emirates 229
United Kingdom 230
United Republic of Tanzania 231
Uruguay 232
Uzbekistan 233
Vanuatu 234
Venezuela (Bolivarian Republic of) 235
Viet Nam 236
Yemen 237
Zambia 238
Zimbabwe 239





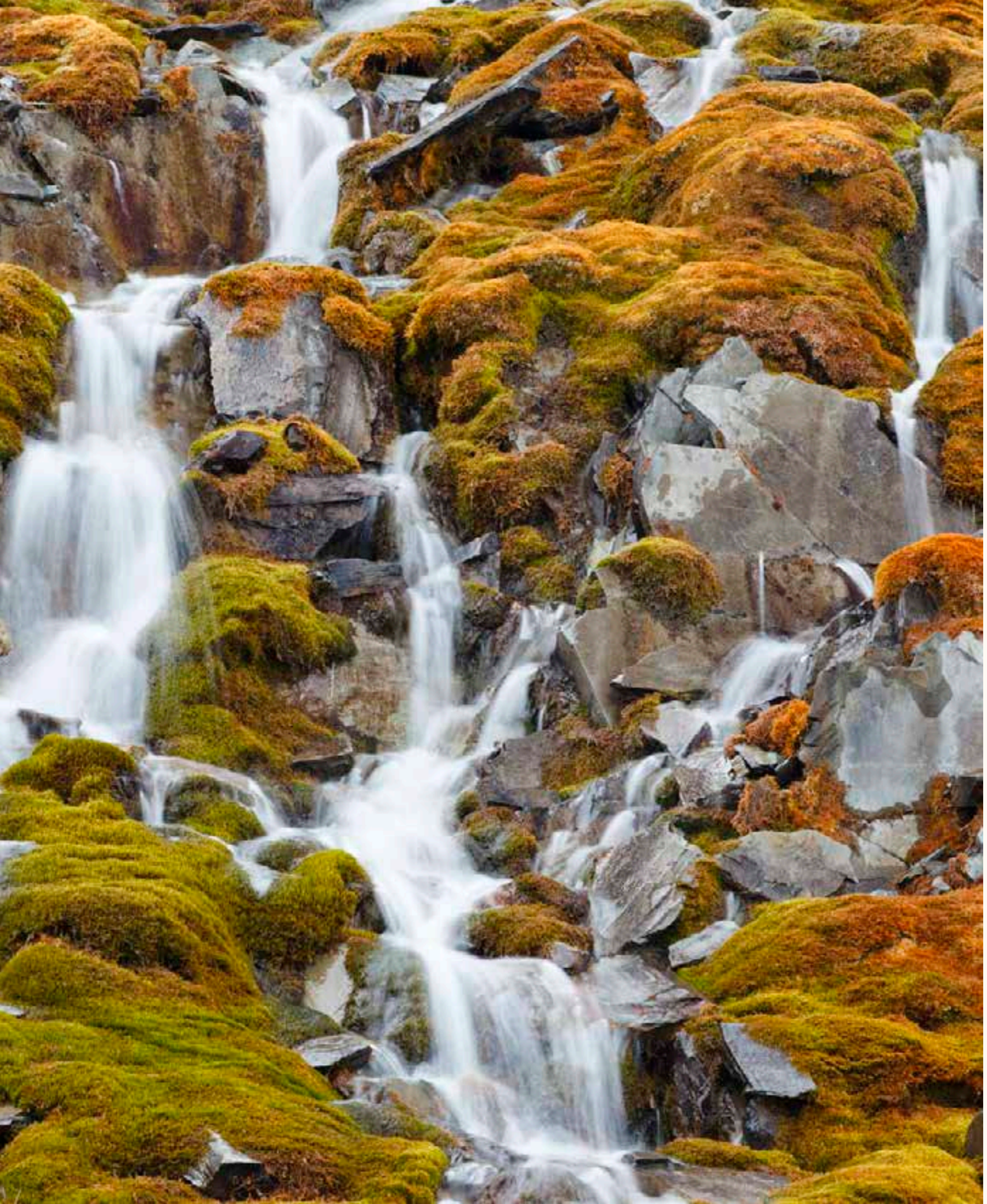
25 years of action for biodiversity

The rich variety of life on Earth is essential for the welfare and prosperity of people today and for generations to come. That is why, 25 years ago, the world's nations agreed on the Convention for Biological Diversity. The Convention has three goals: the global conservation of biodiversity, its sustainable use and the equitable sharing of its benefits. Achieving these objectives is integral to meet our goals for sustainable development.

Protecting and restoring ecosystems and ensuring access to ecosystem services are necessary for the eradication of extreme poverty and hunger. Reducing deforestation and land degradation and enhancing carbon stocks in forests, drylands, rangelands and croplands are needed for mitigating climate change. And protecting the biodiversity of forests and watersheds supports clean and plentiful water supplies.

These are just some of the benefits of biodiversity. Yet, despite this understanding, biodiversity loss continues around the globe. The answer is to intensify efforts and build on successes.
This year, Parties to the Convention will begin work on a new action plan to ensure that, by 2050, biodiversity is valued, conserved, restored and wisely used for the benefit of all people. The entire world needs to join this effort. I urge governments, businesses and people everywhere to act to protect the nature that sustains us. Our collective future depends on it.

António Guterres
United Nations Secretary-General





25 years of success

The remote peninsula of Huon in Papua New Guinea is only accessible by foot or by air. The indigenous community there owns the local forests and manages the community conservation area, the first of its kind in the country. The local community has led a number of efforts to provide sustainable livelihoods, and to protect the region's rich habitats. They partner with the private sector and business, and the government on livelihood projects. Farmers have substantially increased incomes, and they've protected numerous species including the Matschie kangaroo. Examples like this are a testament to the success of 25 years of the Convention on Biological Diversity.

The Convention on Biological Diversity has been a landmark in our efforts to protect nature. We now have better science to guide us in our conservation efforts. We can now ensure that everyone benefits from the gifts of the planet, especially those people that depend on them the most. We now have numerous national biodiversity strategies and action plans to protect our biodiversity. And perhaps the biggest achievement of the Convention on Biological Diversity is that we no longer see biodiversity conservation as a barrier to development. We can have development, and take care of planet earth, with the same policies.

The Global Development Agenda aims to leave no one behind to bring everyone out of extreme poverty. But if we don't protect and value biodiversity, we will not achieve this goal. UN Environment has been so proud to support this Convention over the years. Warmest of congratulations to all people that made this convention such a success — thank you for all your efforts. And we will be with you for the next steps in Sharm-el-Sheikh this year, and leading up to making the Beijing conference in 2020 an astonishing success.

The efforts of the convention are absolutely critical to making sure that both people and planet live in harmony, and thrive in the centuries to come. Congratulations again on 25 years.

Erik Solheim
Executive Director of UN Environment





25 Years of Action for Biodiversity

The year was 1993. Nelson Mandela and F.W. de Klerk were awarded the Nobel Peace Prize. The United Nations General Assembly voted unanimously to appoint a United Nations High Commissioner for Human Rights. The world was shaping a new story for the future of humanity and sustainability. And with this, the entire Planet and our wellbeing.

Part of the story, which filled with hope and high expectations during this time, also revolved around the entry into force of the Convention on Biological Diversity, connecting humanity with nature, and politically recognizing this through a legally-binding framework. We were optimistic and committed towards a sustainable relationship with nature.

Since that year, Parties, along with a diverse group of stakeholders, have undertaken national, regional and global actions to live up to those expectations and achieve the three objectives of the Convention: conserving biological diversity; using it sustainably; and sharing — fairly and equitably — the benefits arising from using genetic resources.

25 year later, we can look back and take pride in the achievements of the Convention. The difference it has made to advance global action to safeguard biodiversity and contribute to all life's well-being on our common planet.

Around the globe, countries are on track to achieve the agreed-upon levels of protected areas — 17 per cent of land, and 10 per cent of coastal and marine areas.

The Convention has also led the way by including Indigenous People and Local Communities in its negotiation processes, through the provisions enacted under Article 8(j) on Traditional Knowledge, Innovations and Practices.

In the last 25 years, two supplementary Protocols have been negotiated and entered into force. One addresses the question of biodiversity and Living Modified Organisms, and the other provides guidance on access to genetic resources and the fair and equitable sharing of the benefits from their use. Both of these provide strong tools that are also flexible and adaptable for national circumstances.

Over the last decades, Governments have carried out important processes to develop and implement National Biodiversity Strategies and Action Plans, and strategically advance the vision and objectives of the Convention. In most cases, the development of these Plans has been done through a participatory multi-stakeholder process.

Overall, biodiversity continues to gain traction as an important policy subject. But more importantly, also as an essential factor for all life on this Earth, including our own. The incorporation of biodiversity into the Sustainable Development Goals is a sign that the role of biodiversity as the foundation for sustainable development is understood and valued. The Paris Climate Agreement recognizes the importance of biodiversity as an element of climate change mitigation and adaptation. And at the 73th United Nations General Assembly in New York in 2018 we heard many Presidents underscore the importance of biodiversity and launch new initiatives to promote public and private solutions for safeguarding our most important resource — life on the Planet.

The world is increasingly paying attention to nature's role and its multiple values and benefits to people.

However, despite these successes, biodiversity continues to decline. Recent reports of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) have warned us of the dangerous consequence of biodiversity loss for the people and the proper functioning of the planet's systems. The World Economic Forum, in its 2018 Global Risk Report also recognizes that ecosystem damage and biodiversity loss are critical likely risks.

Biodiversity loss is a threat to the entire globe. Given the interdependency of the planet's biological system, moreover, loss in any one area impacts the health of the entire system. Such loss is a social, political, and economic security of all societies. That is why we must take common action to protect all life on our shared Planet.

This is where the Convention on Biological Diversity steps in: the 196 Parties to the Convention have the power to make a difference.

The world needs to move towards a more sustainable relationship with nature. Our current economic model is rooted in unsustainable consumption and production patterns, and neglects to incorporate the costs of losing the natural capital that underpins our very existence. In order to change that, and to enable the much-needed shift towards an economy within ecological boundaries, we need to be bold and innovative.

Given that biodiversity and our natural ecosystems provide the essential infrastructure supporting human development and life on the planet, it is essential that biodiversity be placed at the center of all economic and social projects, as well as at the heart of the political decision-making processes. We cannot halt the biodiversity crisis by working in isolation, cocooned in specialized bubbles that do not interact with each other. The complexity of the interdependencies between human, social, and economic systems, and the natural Earth's systems requires interconnected measures and solutions.

As we come to the end of the first 25 years of action under the Convention, the global community has a unique window of opportunity to define the post-2020 global biodiversity framework and to design a New Deal for Humanity and our relationship to Nature.

We will need bold commitments and determination, multidimensional approaches, and inclusive processes to ensure that such a New Deal will be effective. And the New Deal must safeguard the well-being of nature from all relevant angles — policy, political, economic, social, scientific, and cultural.

I strongly believe that together, as one global community 'United for Nature', we can transform the way we relate with biodiversity. We see many positive signs that change is happening: decision-makers in governments, businesses, and communities are increasingly awakening to the fact that nature is the foundation of our societies and our economies.

As we move towards the next decades of work under the Convention, let us remember our shared Vision: "By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people."

Together, we can shape a New Deal between Humanity and Nature and make this a reality as we write history over the next 25 years.

Dr. Cristiana Paşca Palmer
UN Assistant Secretary-General, Executive Secretary of the Convention on Biological Diversity





Biodiversity — the variety of life on Earth — is a critical global common that we all must safeguard

The 25th Anniversary of the UN Convention on Biological Diversity (CBD) is an opportunity to celebrate how far we have come, and to reflect on what more needs to be done to achieve the objectives of the Convention and its Protocols--to conserve biodiversity, use it sustainably, and share its benefits equitably.

I want to recognize the huge effort made by countries under the CBD to dramatically expand the coverage of protected areas both on land and in our oceans during the past 25 years. We would be in much worse shape today in the absence these actions. Many biomes of significant global importance, from the marine protected areas in Asia to the forests of the Amazon and the Congo Basin, have benefitted immensely.

The Global Environment Facility (GEF) has been a financial mechanism for the CBD since 1996, and I am proud of the contribution that the GEF, in collaboration with the CBD and other partners, has made to help enable this progress. Since we started, the GEF has provided more than US$4.6 billion to support efforts to protect biodiversity through the implementation of more than 1,962 projects in over 155 countries.

At the same time, it is clear that our progress is not enough. We are still losing biodiversity at alarming rates, and we are not on track to reach many of the 2020 Aichi Targets. We must recognize that our efforts have not been equal to the scale and speed of the forces that are driving biodiversity loss.

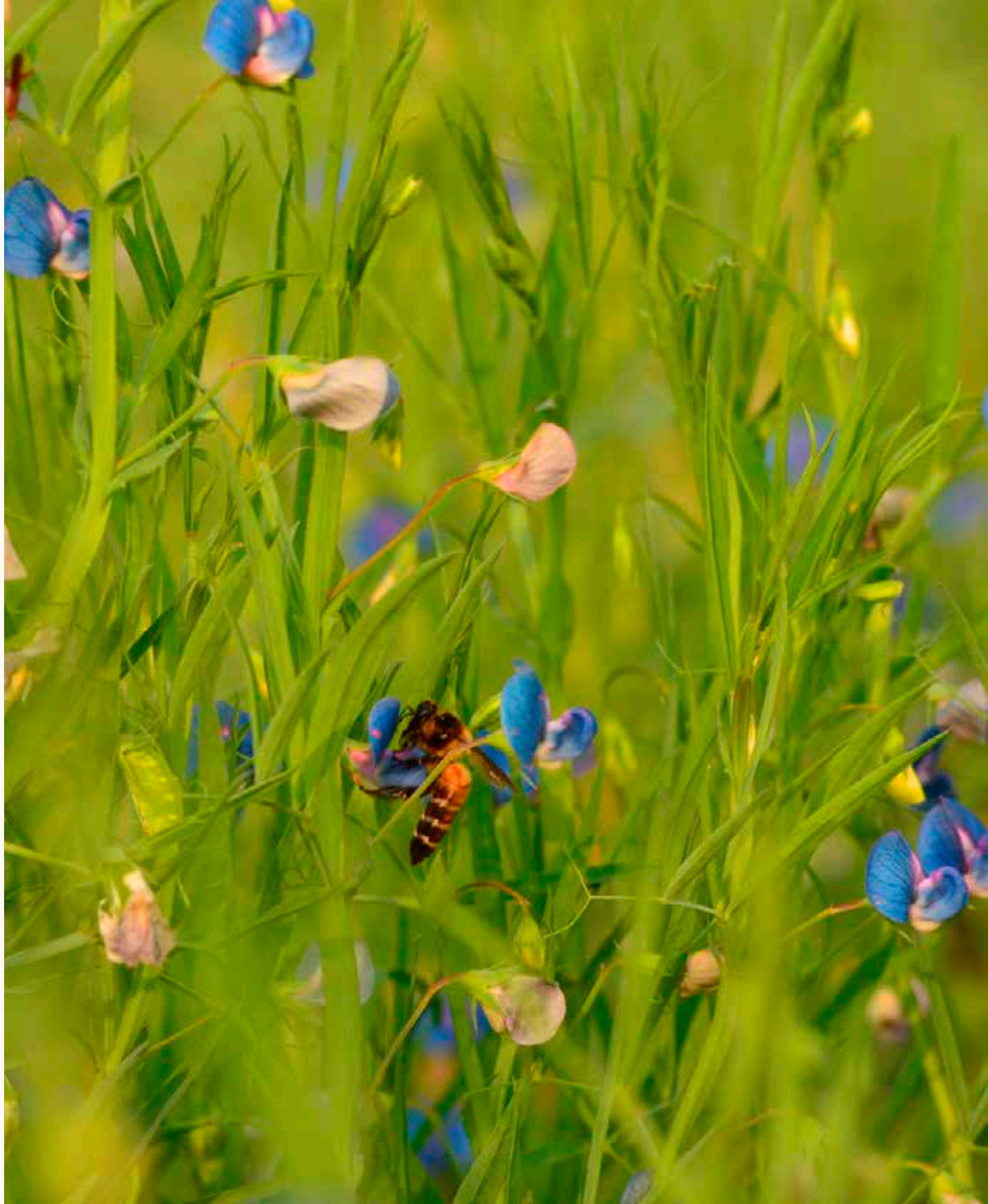
Two years from now, in 2020, CBD COP15 will be held in China, to agree new targets for biodiversity protection. Given the scale of the challenge before us, it is vital that the world be positioned to deliver on a set of targets that are both ambitious and meaningful.

We need a new deal for nature that requires a significant transformation of our key economic systems--in our food, energy, urban, and production and consumption systems. Only an integrated approach to changing the way we manage and use our land, water and forests will help secure globally important biodiversity.

In our current investment cycle, GEF-7, we plan to work on just that: Our new strategy increases by almost 50% the targets for the protection of biodiversity and valuable ecosystems. The strategy focuses on achieving the three objectives of the 2011-2020 Strategic Plan for Biodiversity, which are (i) To mainstream biodiversity across sectors as well as landscapes and seascapes; (ii) Address direct drivers to protect habitats and species and, (iii) Further develop biodiversity policy and institutional frameworks. Our strategy emphasizes impact programs directly seeking to address the major drivers of environmental degradation and deliver multiple benefits by working with broad coalitions of stakeholders, including governments, private sector, science and civil society.

The GEF looks forward to continuing to work with the CBD and all our partners to ensure a sustainable future for all life on Earth.

Naoko Ishii
CEO and Chairperson of the Global Environment Facility (GEF)







On the Silver Jubilee for the Convention on Biological Diversity (CBD), I reflect on my experience as the Chairperson of the first Conference of The Parties (COP) of the CBD. As the Minister responsible for Environmental Matters in The Bahamas, the Prime Minister of the Bahamas, The Rt. Honorable Hubert Alexander Ingraham, entrusted me with the honor of organizing and chairing COP1, November 28th to December 9th, 1994, in our beautiful capital, Nassau, The Bahamas.

Having played had a role in the initial process more than two decades ago, I continue to have a profound sense of pride in CBD's accomplishments. The journey from the adoption of the Rio Convention to the CBD COP1, although not easy, was possible with the support of the Conference Secretary and of highly capable personnel of Bahamian Government Ministries and Agencies.

One of the greatest challenges faced was the mechanism for electronic transmittal of the Conference documents in the required UN languages. In 1994 our telecommunications engineers thought it was impossible as the internet was in its infancy in The Bahamas. However, in addition to her assistance with the management of the budget and constructing the program for the conference, Conference Secretary, Angela Cropper, calling upon, her knowledge and experiences, helped tremendously in overcoming these hurdles, working countless hours alongside technicians and engineers to "make the impossible, possible."

By fostering an understanding among the Parties, the CBD, over the ensuing years has made remarkable strides to make the best decisions for positive global impact, emphasizing that biodiversity is more than plant and animal conservation and protection; that it also embodies the need for fresh air, food security, clean water, access to medicine and shelter and the imperative to protect our environment. Since signing onto the Convention in 1994, The Bahamas has achieved remarkable success toward conserving and promoting the sustainable use of our marine resources; taken actions to combat desertification, reduce pollution and mitigate the adverse effects of climate change nationally and regionally, and promoted sustainable development.

Serving as Chairperson for the first COP of the CBD was an exciting, memorable and noteworthy accomplishment for our small island state. The Conference was an historic moment for The Bahamas as we ably hosted to such a significant event. As a result of the work done to

prepare for the Conference; two notable results were achieved: 1. The Bahamas developed a Conference Manual that outlined national protocols and procedures for planning future similar conferences; and 2. The Bahamas Environment, Science and Technology (BEST) Commission was Commissioned to carry forward the Rio Conventions and the Decisions taken at COP1.

On the occasion of celebrating CBD's 25th anniversary, I endorse the sentiments of former U.N Secretary-General, Ban Ki-moon, that biodiversity is "essential for the welfare of current and future generations". The Bahamas, as one of the Small Island Developing State (SIDS), committed itself at COP1 and continues to advance this commitment.

I am pleased to wish the organization, its members individually, and its management and staff continued relevance and success.

Her Excellency Dame Ivy Dumont







Do you know the most effective way of, within the space of a couple of months, making the entire government aware of the complexity of the biodiversity concept? Invite the CBD COP to hold a meeting in your country.

My country that, in 2018 celebrates the same 25th anniversary as the Convention on Biological Diversity, was privileged to host the IV meeting of the CBD COP in 1998, at the time when the unforgettable Calestous Juma was the CBD Executive Secretary. It was a fascinating period when, between 4 and 15 May, Bratislava, a small Slovak capital city, became the symbolic capital city of biodiversity for a time. Visited by thousands of participants from at least 172 delegations, who were Parties to the Convention at CBD COP 4, including environmental ministers or their representatives, and Bratislava, usually quiet, tested the capacity of the then rather scarce accommodation in the city and its surroundings.

Meeting for the first time in eighteen months, delegates to the COP had a broad agenda that paved way for biodiversity actions in the third millennium. Among 19 decisions adopted, most notable achievements included adoption of work programmes for several key ecosystems: forest ecosystems, marine and coastal ecosystems and for inland water ecosystems. The later one was focused, inter alia, on collaborative effort leading to the first global assessment of inland water biodiversity.

Another important result of the COP 4 was the establishment of the open ended Ad hoc working group mandated to aid implementation of Article 8(j) and related provisions of the Convention, including advising on the application and development of legal and other appropriate forms of protection for the knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity; The respective decision also called for the widest possible representation from indigenous and local communities at the group and in national delegations at the CBD meetings.

The meeting dealt with the first national reports, touched on the functioning of the Convention bodies and set main themes for the next three cop meetings. Overall, the Bratislava meeting launched the transition from a focus on start-up activities to a longer-term action plan.

Mr. László Sólymos





Protection of environment is an article of faith for us. Hosting of CoP–11 to CBD in Hyderabad in October 2012 was a reinforcement of India's commitment for conserving our rich biodiversity for ourselves and for our future generations. Because one must care about a world one will not see.

With a strong institutional, legal and policy framework on biodiversity, India has made sustained efforts for conserving the biodiversity heritage, recognizing its critical linkage with livelihood security of millions of people. It was an honour to host the prestigious global event on biodiversity, which provided an opportunity for India to consolidate, scale-up and showcase her strengths on biodiversity and stimulated country-wide awareness.

Positioning of the Science Express Biodiversity Special (SEBS), an innovative mobile exhibition mounted on a specially designed train travelling across India, as the Brand Ambassador of CoP-11 was one of the highlights. Following its resounding success in creating large-scale awareness, SEBS was continued during India's Presidency, showcasing the wide array of biodiversity in India and the conservation measures adopted thereof. With over six million visitors, Science Express became the largest, longest-running and most-visited mobile science exhibition in India.

CoP-11 was held at a time, when the entire world was reeling under severe economic downturn, and with a critical unfinished agenda inherited from previous CoP relating to resource mobilization for biodiversity to be addressed. India as the CoP President facilitated consensus building through strategic thinking, painstaking efforts and spearheading of diplomatic parleys, which led to the adoption of the most important decision of CoP–11, of doubling the total biodiversity-related international financial resource flows to developing countries by 2015 and at least maintaining this level until 2020. Considering how crucial investment is for biodiversity, setting targets on biodiversity resource mobilization was a landmark achievement, more so in the face of financial downturn, testifying to India's ingenuity and capacity to build bridges and far-sighted strategic planning.

Some other issues on which significant progress was made during CoP–11 that triggered momentum in support of the Strategic Plan for Biodiversity 2011–2020 include: launching of new activities on ecosystem restoration backed by the Hyderabad Call for Concerted Action; progress in describing ecologically and biologically significant marine areas contributing to debates in the UN General Assembly on this issue; and mapping out more clearly how biodiversity contributes to poverty eradication and sustainable development.

In the year when another important and high-profile global event on environment namely Rio+20 was held, CoP-11 decision on resource mobilization was widely hailed as a more significant outcome attributed to India's leadership, than even Rio+20. The UN General Assembly too in its 67th session adopted a resolution with extensive reference to the significant outcomes of CoP–11.

Continuing to guide and steer the process post-CoP–11 during her two year Presidency, India was instrumental in achievement of the first Aichi biodiversity target (Target 16) by expediting requisite number of ratifications of Nagoya Protocol, by June 2014 much before the target date of 2015. Recognizing the stellar leadership role played by India in facilitating entry into force of Nagoya Protocol, India was invited to preside over its historic first Meeting of Parties held concurrently with CoP–12 in Pyeongchang in October 2014.

Taking further lead towards operationalisation of Nagoya Protocol, India became the first country to publish Internationally Recognised Certificate of Compliance under the Protocol in October 2014, and continues to be way ahead of other countries on the matter to date. In respect of another Aichi target 11, India with over 20 per cent of its geographical area under biodiversity conservation, has surpassed the global target of 17 per cent of terrestrial area based conservation.

India has brought out pictorial books titled 'Hosting of CoP–11 by India: A Pictorial Presentation', and 'A Panoramic view of India's Presidency of CoP to CBD 2012–2014', for the first time by any host country.

As one of the few countries where forest cover is on the rise, India under the able leadership of Prime Minister Mr. Modi, has embarked upon ambitious actions in areas of afforestation, low carbon strategies, energy efficiency, planned urban development, adaptation, marine and coastal ecosystems, Himalayan Region etc. Some recent path-breaking initiatives taken by India in this regard include: anchoring International Solar Alliance, 2030 Nationally Determined Contributions including through creating carbon sink of 2.5 to 3 billion tonnes of carbon dioxide equivalent by 2030, voluntarily reducing the emissions intensity of GDP by 20 to 25 per cent over 2005 levels by 2020, Namami Gange Initiative for revival of river Ganga, ensuring 'more crop per drop' in agriculture, working towards electrifying every house-hold, launch of world's largest government funded health scheme, plan to draw 175 gigawatts of energy from renewable sources by 2022, and introducing Soil Health Card scheme for enhancing agricultural production in a sustainable manner. All of these innovative initiatives contribute significantly to biodiversity enhancement.

The lasting legacy of CoP–11 thus continues, not only in the form of commemorative Pylon and Botanic Garden in Hyderabad, and adoption of CoP–11 logo and slogan as the new logo and slogan of my Ministry ('Prakriti rakshati rakshita' in Sanskrit, meaning 'Nature Protects if She is Protected'); but more importantly through pursuing our traditional practices for a sustainable lifestyle.

Not surprisingly, National Geographic's Greendex Report of 2014, that assesses environmental sustainability of consumer choice, ranked India at the top for its greenest consumption pattern, which is a testimony of India's culture and ethos of living in complete harmony with nature.

Dr. Harsh Vardhan







Mexico is determined to promote sustainable economic growth that ensures the preservation of ecosystems for future generations. This requires political will, technical innovation and decisive action, but also close international cooperation.

For decades, economic activity that did not take full account of its environmental impact has been the cause of complex problems, such as climate change, loss of biodiversity, progress in desertification, pollution of the seas and exponential growth of solid and dangerous waste. The wellbeing of humanity and the evolution of economies and society depend upon the responsible management of our environment. Recognizing that the world's natural resources are limited will prevent humanity from crossing ecological barriers and thresholds that could undermine or even reverse the achievements of development.

To address environmental challenges we must strengthen national and multilateral legal and institutional frameworks for the conservation of our natural wealth and ensure the right of our communities to a healthy ecosystem.

Mexico held the United Nations Conference on Biodiversity, convinced of the importance of safeguarding the world's natural wealth, but equally sure that protection and conservation can contribute to the development of communities and help us combat poverty and social inequality.

To this summit we invite Ministers of Environment, as well as those responsible for issues of agriculture, forestry, fisheries and tourism. To all of them I recognize the adoption of the Cancún Declaration on integration for the conservation and sustainable use of biodiversity for wellbeing. This document will allow the productive sectors of each country to incorporate biodiversity and allow protection criteria in their decision-making.

Achieving greater wellbeing for humanity depends on our collective capacity to realize concrete objectives in terms of conservation, sustainable management and restoration of natural ecosystems. Mexico has a strong commitment to the international community to protect natural wealth, increase its value and ensure a better quality of life for our children.

Enrique Peña Nieto





Biological diversity is the foundation for our livelihoods and sustainable development. Since ancient times, humankind, living in harmony with nature, has benefited in a multitude of ways from biological resources. Biodiversity provides basic needs such as food, energy and medicine, other essential services, recreational and cultural benefits, and helps us in reducing the risks from climate change and natural disasters.

However, the progress of human civilization followed by the advancement of technology, population growth, industrialization and urbanization has accelerated the decline and extinction of species as well as the degradation of ecosystems. The losses are due to a range of pressures driven by a range of socio-economic drivers. Climate change and land degradation will act synergistically with other threats having serious consequences for biodiversity.

Recognizing the danger of global biodiversity loss, the international community developed the Convention on Biological Diversity (CBD) in time for the Rio Earth Summit in 1992. It is now one of the world's most important multilateral environmental agreement together with the UNFCCC and UNCBD acting as a key tool for sustainable development. In the twenty-five years since its entry into force, governments have elaborated a complete suite of policy tools for the protection of biodiversity. Egypt is not only a Party to the Convention, but also to the Cartagena and Nagoya Protocols, all crucial instruments for supporting sustainable development processes.

Egypt is honored to mark this 25th anniversary of the entry into force of the Convention especially with the contribution of Dr. Mostafa Kamal Tolba, Former Executive Director of UNEP to the birth of the three Rio Conventions. We are glad that this anniversary coincides with our hosting of the 2018 United Nations Biodiversity Conference comprising the 14th Meeting of the Conference of the Parties to the Convention (COP 14), the 9th meeting of the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety and the 3rd meeting of the Conference of the Parties serving as the meeting of the Parties to the Nagoya protocol on Access and Benefit Sharing, as well as the high level segment of these meetings in November 2018.



These meetings come at a crucial time. We need to take stock of the status of the implementation of the Strategic Plan for Biodiversity 2011–2020 and its Aichi Biodiversity Targets. We need to chart the course for the road ahead for the Convention and its Protocols for the remaining years of the current Strategic Plans and set the stage for the development of the post 2020 global biodiversity framework.

The last 25 years of action under the Convention on Biological Diversity have resulted in a global network of protected areas, new protocols to protect biodiversity and share the benefits from the use of genetic resources, and a host of programs and initiatives that have made a difference for life on Earth.

The next 25 years will be crucial for life on earth and for human well-being. Humanity will need to chart a course of action that leads to a future of live in harmony with nature. Bold efforts from all stakeholders are promptly needed to act collaboratively to sustainably manage all our natural resources. The Convention on Biological Diversity provides the forum and basis for this consensus.

Dr. Yasmine Fouad,



"I encourage all governments to take the necessary steps to deliver on the policies and actions that will build a world where humanity lives in harmony with nature. The entire world needs to join this effort so that, individually and collectively, we can take the measures needed to protect the nature that sustains us."

António Guterres,
UN Secretary General



"By fostering an understanding among the Parties, the CBD, over the ensuing years has made remarkable strides to make the best decisions for positive global impact, emphasizing that biodiversity is more than plant and animal conservation and protection; that it also embodies the need for fresh air, food security, clean water, access to medicine and shelter and the imperative to protect our environment."

Dame Ivy Dumont,
Governor-General of the Bahamas
COP 1, 28 Nov–9 Dec 1994 – Nassau, Bahamas



"COP-3 took place in the context of the United Nation's five-year review of progress made towards the realization of the goals of Agenda 21, and the growing recognition of the centrality of biodiversity to sustainable development."

Her Excellency Ms. Maria Julia Alsongaray
COP 3, 4–15 November 1996 – Buenos Aires, Argentina



"As biodiversity and ecosystems provide the essential infrastructure supporting life on Earth and human development, it should come naturally that considerations about biodiversity are placed at the centre of economic and social assessments, as well as political decision-making."

Dr. Cristiana Paşca Palmer,
UN Assistant Secretary-General, Executive Secretary of the Convention on Biological Diversity



"If COP-1 set in place the basic structures for the implementation of the Convention, COP-2 truly initiated the process. After three ballots, Parties agreed to designate the permanent location of the Secretariat as Montreal, Canada."

His Excellency Mr. Sarwono Kusumaatmadja
COP 2, 6–17 November 1995 – Jakarta, Indonesia



"Do you know what is the most effective way of making the entire government aware of the complexity of the biodiversity concept? Invite the CBD COP to meet in your country. It was a fascinating period, 4–15 May 1998, when Bratislava, the small Slovak capital city, became for a moment the symbolic capital of biodiversity. Overall, the Bratislava meeting launched the transition from a focus on start-up activities to a longer-term action plan. The fourth meeting of the Conference of the Parties to the Convention on Biological Diversity set the agenda for the third millennium."

His Excellency Mr. Jozef Zlocha
Minister of the Environment of Slovakia
COP 4, 4–15 May 1998 – Bratislava, Slovakia



"Biodiversity is a vital resource for socioeconomic development and for the long-term wellbeing of communities."

His Excellency Mr. Daniel Toroitich Arap Moi
President of Kenya
COP 5, 15–26 May 2000 – Nairobi, Kenya



"COP-7's agenda gave Parties an opportunity to live up to one of the CBD's most significant challenges: respond with concrete measures to the outcomes of the 2002 World Summit on Sustainable Development (WSSD), including the target of significantly reducing biodiversity loss by 2010, and show that the CBD is the most appropriate and efficient policy framework to address biodiversity."

His Excellency Mr. Dato' Seri Law Hieng Ding
Minister of Science, Technology and the Environment for Malaysia
COP 7, 9–20 February 2004 – Kuala Lumpur, Malaysia



"The preservation of biological diversity is a matter to which the German Government — and I personally — attach great importance."

Her Excellency Ms. Angela Merkel
Chancellor of Germany
COP 9, 19–30 May 2008 – Bonn, Germany



"In the course of our future work we should never forget to remind ourselves about the question: can we answer to our children and grandchildren that we made a stand for biodiversity and that we went beyond our differences in order to make a difference."

His Excellency Mr. Hans Hoogeveen
Vice-Minister for Agriculture, Netherlands
COP 6, 7–19 April 2002 – The Hague, Netherlands



"Biodiversity is our planet's greatest treasure and that opposition to benefit-sharing is a threat to life on earth."

His Excellency Mr. Luis Inácio Lula da Silva
President of Brazil
COP 8, 20–31 March 2006 – Curtiba Brazil



"This was a critical time for measures to protect biodiversity, and called for new realistic global targets and for the establishment of an international ABS regime."

His Excellency Mr. Ryu Matsumoto
Minister of the Environment of Japan
COP 10, 8–29 October 2010 – Nagoya, Japan





"Friends, Humankind should understand the importance of preserving biodiversity. The diversity of life forms on Earth is the culmination of millions of years of the productive genius of nature. It is nature's insurance against extreme events that may disturb the delicate balance of life on this planet."

His Excellency Mr. Manmohan Singh
Prime Minister of India
COP 11, 8–19 October 2012 – Hyderabad, India



"Mexico has a firm commitment with the international community to protect the natural wealth, increase its value and ensure a better quality of life for our children."

His Excellency Mr. Enrique Peña Nieto
President of Mexico
COP 13, 4–17 December 2016 – Cancun, Mexico



"As the president and host country of COP 12, the Republic of Korea will continue to take a leadership role in the conservation and sustainable use of the global biodiversity. In the process of its economic development, the nation was able to turn its bare mountains into dense forests. Based on such experience, Korea will fulfill its bridging role between developed and developing countries in the global efforts to conserve biodiversity."

His Excellency Mr. Yoon Seong-kyu
Minister of Environment of the Republic of Korea
COP 12, 6–17 October 2014 – Pyeongchang, South Korea



"We need to take stock of the status of the implementation of the Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets. We need to chart the course for the road ahead for the Convention and its Protocols for the remaining years of the current Strategic Plans and set the stage for the development of the post 2020 global biodiversity framework."

Dr. Yasmine Fouad,
Minister of Environment, Arab Republic of Egypt
COP 14, 17–29 November 2018 – Sharm el-Sheikh, Egypt

Previous Executive Secretaries



Angela Cropper
1993–1995



Dr. Calestous Juma
1995–1998



Dr. Hamdallah Zedan
1998–2006



Dr. Ahmed Djoghlaf
2006–2012



Dr. Braulio Ferreira de Souza Dias
2012–2016



The GEF
Targeting the main causes of biodiversity loss

The Global Environment Facility (GEF) provides financial resources for developing countries and countries with economies in transition to implement the Convention on Biological Diversity (CBD). Through its current strategic plan, the GEF aims to help maintain globally significant biodiversity and the ecosystem goods and services that it provides to society. To date, the GEF has invested over US$ 4.6 billion to conserve and sustainably use global biodiversity. This investment has leveraged over US$ 12 billion in additional funds, supporting 1,692 projects in more than 155 countries. A few of these projects are highlighted in the following pages.



Vietnam — Community action protects marine biodiversity and livelihoods

A community-led initiative in the Cham Islands of Vietnam is protecting a local land crab, while preserving local livelihoods

The islands are part of a marine reserve home to 277 species of coral, 270 of fish and 97 of mollusc. Less than a decade ago, large black-backed land crabs (Gecarcoidea Ialandii) were being overharvested as delicacies for tourists. Government attempt to suspend catching and selling of the crabs failed to solve the problem. With support from the GEF, a community group devised a way to manage the crabs sustainably, setting an annual quota of 10,000 crabs.

Studies at Vietnamese universities have shown that community-imposed restrictions are conserving three-quarters of the islands' crabs each year. As a result, the population of crabs is now growing. At the same time, prices have more than quadrupled since the scheme was introduced.
The crab is seen as a "bridge" species that connects the islands' forests with the ocean. It is also a biological indicator of the health of both habitats, and its recovery has improved both. This, in turn, has increased ecotourism and supported local livelihoods.



East Africa — A flying fox takes a giant leap towards recovery

With support from the GEF, conservation groups have helped a rare bat species in East Africa turn away from the brink of extinction

By the 1990s, the Pemba flying fox (Pteropus voeltzkowi), a species of fruit bat with a wingspan of five-and-a-half feet, was at risk of disappearing. Endemic to Pemba Island, a small landmass in the Zanzibar archipelago of Tanzania, the species was hunted and eaten widely throughout the island. By the 1990s, 95 per cent of its forest habitat had been destroyed, and its reproductive rates had dropped to an all-time low.

Flora & Fauna International and its local partner, the Department of Commercial Crops, Fruits and Forestry, collaborated on emergency intervention measures. Thanks to these efforts, the Pemba flying fox has taken a dramatic turn from the edge of extinction. By 2010, surveys reported that the bat had fully recovered to somewhere between 22,000 and 35,600 individuals. Consequently, the species was downgraded to Vulnerable on the International Union for Conservation of Nature (IUCN)'s Red List of Threatened Species.™

As part of its work, FFI helped reduce the threat to bats from hunting, set up two new forest reserves to safeguard the bat's habitat, raised awareness of the need for conservation throughout Pemba's communities and helped develop the island's ecotourism potential.



Belarus — Restoring peatlands to conserve biodiversity

After a failed experiment had disastrous results for biodiversity, Belarus has helped pioneer an approach to restoring degraded peatlands

Between 1960 and 1980, Belarus drained 1 million ha of natural mires for agriculture, 300,000 ha for forestry and another 286,000 ha for peat mining. After extracting peat, it tried unsuccessfully to cultivate agriculture on damaged peatlands. Although the lands were generally abandoned, the mires continued to be drained, leaving them vulnerable to fire. Indeed, in 1999 and 2002, large-scale peat fires caused heavy damage to the environment and the economy.

Building on the results of a pilot study by the Government of Belarus, the GEF and the United Nations Development Programme funded a project to combat land degradation, ensure conservation of globally valuable biodiversity and mitigate climate change. The project successfully researched and tested various practical approaches to restore the hydrological regime at 12 disturbed peatlands. It is now common practice to re-wet abandoned peat.

By 2016, about 50,000 ha of drained peatlands had been restored through various international and national projects supported by the GEF and other partners. Belarus plans to restore 15 per cent of its damaged peatlands, which is about 500,000 ha, by 2030.



Brazil — Protecting the rain forest mitigates climate change

A GEF-supported project in Brazil has protected nearly 70 million ha of rainforest, reducing both deforestation and CO2 emissions

Creating parks and protected areas is one of the most effective conservation strategies to protect biodiversity. Protected areas provide habitat for many species, but they also provide essential goods and ecosystem services for human wellbeing. For example, many protected areas act as natural reservoirs for agriculturally important biodiversity, including wild crop relatives, pollinators and pest control.

Through two phases, the Amazon Region Protected Areas project in Brazil created 37.5 million ha of new protected areas, established sustainable development centers and consolidated 32 million ha of existing areas. In so doing, the project will save more than 1.1 billion tons of CO2 emissions. It received the inaugural Development Impact Honors award from the U.S. Department of the Treasury in 2012 for helping Brazil achieve a four-year decline in deforestation rates.

GEF support for establishment and management of protected area systems and associated buffer zones and biological corridors has arguably been its greatest achievement. Supporting the management of protected areas is a sound investment in biodiversity conservation and sustainable use. Moreover, it provides significant additional economic and environmental benefits beyond the existence value of biodiversity.



Protecting Mali's elephants

Wildlife in or near conflict zones is particularly vulnerable to poaching. Armed groups can take advantage of the political instability and fragile state of law and order to engage in wildlife crime. Species such as elephants and rhinos can quickly become currency to fund armed conflict due to the enormous value commanded by ivory and rhino horn in illegal markets.

The situation in Mali was particularly dire. Mali's elephants are Africa's northernmost herd, adapted to survive in harsh desert conditions. But they were being slaughtered in staggering numbers as ivory traffickers took advantage of a security vacuum in the region. By early 2016, the situation had deteriorated so dramatically that it was possible that all of the country's elephants could be wiped out by the end of the decade.

The GEF is working to meet the challenge of elephant conservation in northern Mali. The GEF's objective is to protect Mali's elephants in key sites and enhance the livelihoods of the local communities that live along the migration route to reduce human-elephant conflict by, for example, strengthening the legislative framework and national capacity to address wildlife crime, and protecting elephants from poaching and securing seasonal migration routes and key habitat.



Sustainable management of Madagascar's marine resources

Conservationists have long recognized the global importance of Madagascar's terrestrial biodiversity. Recently, however, scientific research has clearly shown that Madagascar has highly diverse marine ecosystems and species as well. Levels of coral diversity, for example, are the highest in the Western Indian Ocean and only surpassed globally by the Coral Triangle. Furthermore, Madagascar is at the heart of the Agulhas and Somali Currents Large Marine Ecosystems and undoubtedly influences the richness and productivity of this great system.

Conserving Madagascar's marine biodiversity is an economic as well as an ecological imperative. Fish stocks support local livelihoods, and also represent an important sector within the national economy. To protect Madagascar's marine resources from threats that include habitat destruction and unsustainable fishing practices, the president of Madagascar committed to tripling the number of marine protected areas.

The GEF project "Expanding and Consolidating Madagascar's Marine Protected Areas Network" is working to fulfill this commitment and strengthen the management of the country's Marine Protected Areas and fisheries resources. The program will provide the first fully integrated biodiversity and fisheries strategies in Madagascar, identifying effective mechanisms to integrate the two approaches in a given seascape, with marine protected areas and locally managed marine areas providing improved biodiversity health that supports well-managed local fisheries.



Integrated ridge-to-reef management of the Mesoamerican Reef

The Mesoamerican Reef Ecoregion, shared by Belize, Guatemala, Honduras, and Mexico, includes the world's largest transboundary barrier reef, spanning more than 1,000 km of coast and covering an area of 464,263 km^2 of ocean, coasts, and watersheds draining into the Caribbean. Globally important habitats and ecosystems make the ecoregion a biodiversity hotspot; it is considered one of richest ecoregions and most diverse coral reefs in the Western Atlantic, boasting cloud and tropical forests, large rivers, karstic hydrogeological systems, fertile lowlands, coastal wetlands, lagoons, mangrove forests, seagrass beds, and coral reefs. The ecoregion provides livelihoods to communities, and contributes to the national economies of the four countries through agricultural commodities, shrimp aquaculture, commercial fishing, and a rapidly growing tourism sector, sustaining more than 12 million people.

These landscapes face numerous threats: tourism and broader development are driving mangrove clearance, leading to sedimentation; overfishing and climate change are negatively affecting the health of the region's coral ecosystems. The GEF-funded project, "Integrated Ridge to Reef Management of the Mesoamerican Reef," helps Belize, Guatemala, Honduras, and Mexico conserve their freshwater, coastal, and marine resources at a regional level. In addition, the project supports active engagement with private sector actors, including Coca Cola, to strengthen water funds. Through the project, improved management will be in place for 1,699,512 ha of watersheds and 157,800 ha of coastal and marine ecosystems.



Giant pandas

The GEF began working to conserve Giant Pandas in China in 1995. Today, national surveys indicate that the decline in the panda population has stopped, and in fact their number has begun to rise. A recent survey estimated the range-wide population as 1,864 adult Giant Pandas, and that at least one distinct population, in the Minshan Mountains, includes more than 400 mature individuals. Forest protection and reforestation in China has increased forest cover over the past decade, leading to an 11.8% increase in forest occupied by pandas and a 6.3% increase in suitable forests that are not yet occupied.

GEF's efforts have contributed significantly to enhancing the habitats of the panda. Two projects, the Nature Reserve Management Project and the Sustainable Forest Development Project, both conducted with the Government of China and the World Bank, introduced science-based monitoring, results-based management planning, and participatory approaches with adjacent communities, and provided capacity building for staff from the national nature reserve management office in Beijing to a dozen national-level nature reserves, several of which subsequently became models for the country.



Shepherding back biodiversity

South Africa's agricultural sector is responsible for devastating impacts on the environment. Many farmers leave their livestock to graze unattended in large camps, sometimes for months at a time. While the costs are low to the farmers, this system has significant negative impacts on the health of South Africa's land, especially in arid areas. The vegetation is put under stress, as the animals graze only the most palatable plants and leave no time for it to recover. The system also leaves livestock vulnerable to predators, so many South African farmers use traps or poisons, or hunt down predators with rifles or packs of dogs.

The GEF-funded Shepherding Back Biodiversity project aims to mainstream biodiversity conservation on some 50,000 ha of agriculturally productive landscapes while simultaneously increasing their production, security, and resilience. Using shepherds is one of the wildlife-friendly livestock farming methods the project is trying to promote. The shepherds guide livestock to appropriate grazing sites and moving them to new pastures when the time is right. They are trained to monitor the condition of the most palatable plants, avoid overgrazing and degradation of the natural vegetation, and provide the land with appropriate rest and recovery.

Country Profiles

Afghanistan

NEPA assessments indicate a 7 per cent rise in public awareness of the environment and biodiversity throughout the country. Promotion through respected religious scholars and educational institutions has had a particularly positive impact

Afghanistan is one of the world's most significant centres of study of the origin and development of crop plants, with numerous local landraces of wheat and other crops currently in use by farmers. Three of the Global 200 ecoregions are in Afghanistan, all of which are in the mountainous regions of the northeast. Within these, 38 per cent of land area is endangered while 61 per cent is classified as vulnerable, and only 1 per cent stable. The most threatened ecoregions are located in an arc around the country's mountain areas and consist of both open and closed woodlands covering approximately 49,124 km^2 or 8 per cent of the country. Closed forest is now represented by only 3 per cent of its original forest cover representing 0.25 per cent of the country's area. Recent satellite imagery suggests that open woodland throughout much of the country might now be seriously threatened as a viable ecosystem.

Nine local breeds of sheep are found in Afghanistan, along with eight breeds of cattle, and seven of goat. Species numbers are estimated at 137–150 mammal, 428–515 bird, 92–112 reptile, 6–8 amphibian, 101–139 fish, 245 butterfly, and 3,500–4,000 native vascular plant.

Development of national parks and a snow leopard ecosystem protection plan

The National Environmental Protection Agency (NEPA) is updating the National Biodiversity Action Plan, which will include alignment with the 2020 Aichi Biodiversity Targets. This includes the establishment and management of Afghanistan's first National Park, situated in Band-e-Amir, Bamyan Province, which provides conservation education. Promoting community livelihoods in and around Band-e-Amir's 14 surrounding villages has been a key strategy in reducing the pressures of desertification and shrub collection.

The Wakhan District in Badakhshan Province, one of Afghanistan's foremost natural landscapes, providing habitat for at least 17 species of mammals, ungulates and birds, was declared as the country's second National Park, with provision to protect the majority of its habitats and landscapes.

For Afghanistan's biodiversity conservation, there are extensive courses on forestry, land, geosciences, and water issues. As of 2014 there are 80 agricultural colleges with vocational environmental, horticultural, forestry, and land management curricula, training over 10,000 young natural resource management professionals.

Biodiversity conservation and implementation of the CBD have been taken seriously by the Afghanistan government and many citizens intuitively recognize the importance of biodiversity, with good progress made on awareness raising across the country at both government and community levels.

A national snow leopard ecosystem protection priority plan has been developed in tandem with the promotion of nature-based tourism, the building of 34 communal predator-proof corrals and 688 household corrals to safeguard livestock and reduce human wildlife conflict. Two male and two female snow leopards were captured in three different valleys of the Hindu Kush mountains and fitted with GPS collars set with a timed system that automatically removed the collar after 13 months. Captures were without incident and the data from four dropped collars was retrieved. There is no evidence that radio-collaring affected the behaviour of the tagged animals. The study provided 13,370 location points for analysis.



Image: wildlife conservation society

Afghanistan snow leopard camera-trap picture from the Wakhan Corridor

Albania

With over 5,200 ha of natural forest and woodland over 200 years old, Albania's highlands sustain ecosystems that are not only important for biodiversity, but have also become a growing tourist attraction

Albania's territory is divided into three habitats of coastal, sub-mountainous, and mountainous zones. Forest and pastures show a high diversity of Mediterranean shrubs. Along the coastline there are various ecosystems such as lakes, wetlands, sand dunes, river deltas and forests. Coastal lagoons and lakes are important areas for wintering migratory birds. However, Albania is home to 91 threatened ornithofauna species and is of critical importance to some of them, such as the Pelecanus crispus, Phalacrocorax pygmeus, and Acipenser sturio. The country is the native land of 30 species of crop, 9 autochthonous breeds of goats and 5 breeds of sheep.

Managing lesgislation for protecting biological and landscape diversity

Albania has passed a law to safeguard the preservation, administration, management and use of protected areas and their natural and biological resources. This facilitates the conditions for the development of environmental tourism, as well as the education of the general public, for direct or indirect economic benefit to the local population, through the public and private sectors. The law regulates the protection of six categories of protected areas within the country. The categorization of areas and the status and level of protection for each is based on criteria given by the World Centre of Nature Conservation (IUCN).

The implementation of strategies for nature and biodiversity has helped Albania achieve the targets of the Intersectoral Environmental Strategy (2007–2013) and the National Biodiversity Strategy and Action of 2000. This framework has contributed to the extension of protected areas, which currently stand at 460,021 ha. The IUCN Red List of Fauna and Flora has been completed and updated with the provision of a legal basis for protection. Single species action plans have been elaborated for six species and habitats. Ten management plans for protected areas, especially for national parks, have been elaborated and implemented, while ten more plans are being drafted. The management plans have drastically improved the status of conservation for threatened species and their habitats.

Albania has been, and continues to be, a participant in European and regional initiatives related to the CBD, especially in the PAN-European Strategy on Biological and Landscape Diversity (PESBLD). The main objectives for implementing the CBD and PEBLDS are the protection and improvement of biological and landscape diversity; the incorporation of principles and policies required for sustainable biodiversity use and management; and promotion of sustainable development for present and future generations.

Future targets for Albania include: ensuring full approximation and implementation of the EU acquis in the field of nature protection by 2020; and restoring at least 15 per cent of degraded areas through conservation and restoration activities — in line with Aichi targets — to be achieved through the implementation of management plans for protected areas and through the implementation of single species action plans for species and habitats.



Image: Jimbo on flickr

The sustaining ecoystems of Albania's unique highlands

Algeria

Algeria is home to nearly 700 endemic species

Algeria is the largest country in Africa, covering an area of 2,381,741 km². With a coast that runs along the Mediterranean Sea and a territory that stretches south to the Sahara desert, the country holds a great variety of ecosystems and habitats, ranging from coastal and marine to forest and mountain, as well as steppe and desert ecosystems. This has allowed the development of a rich diversity of approximately 16,000 recorded species. In order to preserve its biodiversity, the country has created a large number of protected areas covering 44 per cent of national territory, including 11 national parks, five natural reserves and 50 humid zones classified under the Ramsar convention.

The expansion of protected areas

One of the most significant achievements of biodiversity protection in Algeria over the past few decades has been the multiplication of protected areas throughout the country. Having covered 22 per cent of national territory in 2009, the areas have now increased to cover 44 per cent of the country's surface. This achievement goes well beyond Aichi Target 11, which aims for the conservation of 17 per cent of terrestrial and inland water areas through the establishment of protected areas.



Image: Bou Abdellah

Taghit, Algeria

Algeria's protected areas include 11 national parks, three coastal parks, five mountain parks, one steppe park, and two desert parks, as well as five natural reserves, five cultural parks, four hunting reserves, and 50 Ramsar sites. Among these, seven of the national parks — El Kala, Djurdjura, Chréa, Taza, Gouraya, Belezma and Tlemcen — have been classified as biosphere reserves under the UNESCO MAB network (Man and Biosphere Programme). These protected areas represent the cornerstone of the country's conservation as they integrate the majority of the country's ecosystems, and it has been estimated that approximately 80 per cent of Algeria's biological diversity is represented in the current protected areas.

To ensure better management of the protected areas, the country has passed a law to secure sustainable development throughout the country along with a master plan for each of the national parks, defining long-term orientations and objectives and determining the means required for implementation. The protected areas are administered by public administrative bodies.

The creation of 25 new terrestrial protected areas is planned to take place over the following decades, including 11 biosphere reserves. These projects will oversee ecological regions that shelter critically endangered habitats and species. The aim is to reach a network of protected areas covering 50 per cent of the national territory by 2030, in order to ensure the protection of representative samples of the entire biodiversity of Algeria.

Andorra

35.7 per cent of the area of Andorra is part of a protected natural area

Located to the west of the Pyrenees massif in southern Europe, Andorra is a landlocked country composed of steep mountains which, in recent decades, have experienced a general loss of biodiversity in the valleys due to urbanization. However, the affected area is only 1.8 per cent of the national territory where 60 per cent of the population lives. In the rest of the country, biodiversity is maintained or even increased due to the decrease in anthropogenic pressure on the natural environment. The natural spaces have nearly reached 17,000 ha, (over 35 per cent of the territory) and all benefit from protection. As a result, Andorra has reached and exceeded Aichi's objective 11.

Defineing a national network of spaces of interest coherent with neighbouring countries

In recent years, Andorra has concentrated much of its efforts to manage biodiversity in the setting up of protected natural areas, with the establishment of two areas of municipal governance in the the valleys of Sorteny and Comapedrosa. Another site, the Madriu-Perafita-Claror Valley, has been added to the world heritage list by UNESCO as a cultural landscape, and is protected at national level. These sites cover over 10,000 ha, approximately 23 per cent of the territory.

All of these protected areas have significant ecological value because of their great diversity of ecosystems as well as the genetic and biological specificity of certain species that live there, many of which are endemic to the Pyrenean arc.

Local conditions have produced a rich mosaic of habitats, covered with vegetation typical of the subalpine biogeographical stages of 1,800–2,400m such as Black pine (Pinus uncinata) and deciduous groves near streams (Betula, Corylus, Salix). The Alpine stage of above 2,400m has typical mountain plants of (Genista, Calluna, Rhodondendron, Juniperus) and the herbaceous acidophilic communities of gespet and large grasses (Festuca, Agrostis, Nardos). The glacial origin of these spaces determines the location of high mountain wetlands such as streams, lakes and peatlands, with significant biodiversity that has signalled their inclusion on the Ramsar Convention's list of wetlands of international importance.

The natural landscape also shows traces of ancient use by man such as traditional agriculture and iron extraction.

Andorra therefore demonstrates an excellent result for Aichi strategic goal C — to improve the state of biodiversity by safeguarding ecosystems, species and genetic diversity and, more specifically, for objective 11 that requires, by 2020, at least 17 per cent of land and inland waters and 10 per cent of marine and coastal areas are maintained through environmentally friendly networks

Protected areas within Andorra are bordered by protected areas in France and Spain, which largely ensures their ecological connectivity — 34 per cent of the length of the border with Andorra's neighbouring countries links protected natural areas, in particular natural parks and Natura 2000 Sites. In this way, Andorra has defined a national network of spaces of interest coherent with neighbouring countries.

In addition, trilateral cooperation agreements have been signed with Spain and France to work together on topics related to wildlife, specifically bear and wolf in the Pyrenees, and for the reintroduction of some threatened and extinct fauna populations.



Ministeri de Medi Ambient, Agricultura i Sostenibilitat, Govern d'Andorra

Parc Naturel de la Vallée de Sorteny

Angola

Angola is home to five different species of sea turtle.
There is also an annual 4 month fishing ban to ensure the sustainability of the industry and that the fish have a chance to replenish

With over 50 per cent of Angola's population living in rural areas, the daily survival of each person is influenced by the quality of biodiversity. Virtually all activities carried out in rural areas — agriculture, livestock, artisanal fisheries, livelihood, hunting, house construction — depend on it. Angola has nine national parks and four wildlife reserves totaling 156,909 km² (13 per cent of the total land area). The Angolan territory has a forest area of 53 million ha (43 per cent of the total area), a hydrographic network of 47 basins, and a coastline of approximately 1,650 km.

The National Biodiversity Strategies and Action Plan

Angola's current biodiversity framework is summarized in 10 strategic goals set out in the National Biodiversity Strategies and Action Plan (NBSAP 2014–2020). The country has been particularly successful in strategic goal 2 — Increase the representation of biomes and ecosystems of Angola in the areas of environmental protection. The creation of three national parks — Maiombe, Luiana and Mavinga — increased the areas of protected land by 86,000 km².

Also, a rehabilitation effort was made for the regional park of Chimaravela by increasing management and supervision infrastructures there. To further increase the amount of biomes and ecosystems in the support of biodiversity, the NBSAP encourages farmers to apportion 1 per cent of their agricultural land to the growing of trees.

The link between development, industry and the environment has been strengthened by the new NBSAP goals. Previously, many sectors were not identified with the strategy because they considered conservation to be a unique and exclusive mandate of the Ministry of Environment. In response to this, the NBSAP 2014–2020 attempts to integrate all economic sectors that have an influence on biodiversity, and to identify biodiversity conservation actions within the framework of their activities and make adequate allocation of funds when drafting the proposal of their annual budget. In the light of this, all projects require environmental licenses, ahead of all other licenses. At the end of any given project or development, a process of study and assessment of the possible negative consequences for biodiversity and related mitigation measures take place, in addition to consultation with the local communities involved in the project.

In Angola, public-private partnerships have been successful with regard to biodiversity conservation. Many companies operating within the country fund conservation actions for the benefit of endangered species. Such actions include the Palanca Project and the Kitabanga Project. Many companies have become sensitive to the necessity of these obligations. Efforts made by the government, citizens and businesses to change perceptions towards conservation have culminated in a great increase of protected areas and conservation projects. In just two years from 2012 to 2014, Angola doubled its protected land area from 6.6 per cent to 12.53 per cent of the total, approximating157,000 km².

Specific conservation projects have taken place for the protection of several species including sea turtles (of which there are five species in Angola), mountain zebras, hyenas, gorillas and chimpanzees.



Jorge Sá Pinheiro on Unsplash

Viewpoint of the Moon, Belas, Angola

Antigua and Barbuda

Hawksbills play a key environmental role by eating sponges which helps keep coral reefs healthy

The private Caribbean island of Jumby Bay off the north coast of Antigua and Barbuda is the site of the world's longest running research programme for critically endangered hawksbill turtles. Next year will mark the 30th anniversary of the study, funded entirely by Jumby Bay's homeowners. It has collated more data on this species of turtle than any other project, and the area is now one of the few places in the world where their numbers are increasing.

The island where endangered Hawksbill turtles thrive

The last three decades have seen almost 450 hawksbills tagged for monitoring purposes and, over that period, the number of those nesting there has increased three-fold. Every turtle laying eggs on the island's Pasture Beach is identified thanks to meticulous hourly patrols by researchers and volunteers every night for the duration of the five-and-a-half-month annual nesting season.

Dr. Seth Stapleton of the University of Minnesota who is overseeing the work, said 2014 had been a record year with nearly 90 hawksbills spotted."When the project started there were about 30 individuals nesting per season. What's even more remarkable is that we are continuing to see some of the same turtles that were first tagged in the late 1980s returning to nest here. They were originally tagged when they were probably 15 to 20 years old, and a few are still reproducing decades later."

Long hunted for their beautiful brown and gold shells — used to make everything from sunglasses to jewellery — the population of hawksbills worldwide has declined by 80 per cent in the last 200 years. They have been listed as critically endangered since 1996.

Although the trade is now banned, they still face horrendous odds with only one in 1,000 hatchlings making it to adulthood due to omnipresent marine predators.

Exacerbating matters further is hawksbills' late maturation; they do not usually begin to reproduce until they are at least 15 years old.

Dr. Stapleton said that the Jumby Bay study had been integral to providing fundamental information about hawksbills.

"Many details we now take for granted were learned there. For example, that they don't nest every year; they nest four or five times in one year, laying around 150 eggs each time and then skip a year or two," he explained. "But there's still so much we don't know, such as how long they live. My ballpark guess would be 50 to 60."

Because turtles are tagged when in their so-called 'nesting trance' — a daze-like state during the egg-laying process when they are oblivious to their surroundings and unable to move quickly — most of the data gathered is about adult females.

Researchers are now taking genetic tissue from the hatchlings to compile information about the males, too.

Plans for the upcoming year also include deploying three satellite transmitters to track hawksbills' movements by GPS.

Ashton Williams, of Antigua's Environmental Awareness Group has remarked that a small number of turtles were still poached for their meat on the mainland. But Donna Cook, the resort's spokeswoman, has pointed out that: "The island is one of the few places on earth where turtles are completely safe."



Tom Fisk

Hawksbill turtle, found in tropical waters around the world



Argentina

The Argentine Sea is an area adjacent to the Southern Ocean. These two areas represent one of the last well-preserved marine systems in the world

Argentina has one of the largest numbers of ecoregions in the world (Lean et al 1990), comprising a significant geographical and environmental complexity — a great variety of landscapes and climates and a diversity of ecosystems and species — within a land area of 3.7 million km². The country also has the highest number of vascular plant species in the world.

Argentina's high degree of biodiversity is the source of a large variety of environmental goods and services. The conservation and use of biodiversity in a sustainable manner is a way to maintain the stability of the ecosystems from which Argentineans obtain essential resources for human development.

Sustainable production: organic certification

Argentina has made significant improvements in the field of biodiversity conservation as well as in sustainable production, partly due to work carried out by the National Service of Health and Agri-Food Quality to coordinate ecological products.

Organic agricultural production is encouraged throughout the country, particularly in regions with adequate environmental and socio-economic conditions.

In accordance with Argentinean law, 'organic' is understood as any agricultural production where collection, capture and hunting practices are sustainable. It also means that the production does not involve the use of chemical products, which may have a toxic effect on human health. Additionally, organic producers have to provide healthy crops, maintain or increase the fertility of soils and biological diversity, conserve water resources and preserve or intensify the biological cycle of soils to supply nutrients for plant and animal life. These practices provide natural systems, plant crops and livestock with conditions that allow them to express the basic characteristics of their innate behaviour.

Organic production offers a wide range of benefits, among which are an increase in soil fertility and greater capacity for humidity retention; the reduction of the risks of erosion and desertification; the avoidance of ground and water contamination by synthetic pesticides; an increase of agricultural genetic resources; an increase in the diversity of species in and around the farms where organic production is practiced; and natural pest control and conservation of pollinating species.

During 2013, the volume of exports of organic products increased by 6 per cent per year, reaching 148,000 tons. This number represent the second highest value ever recorded.

In addition, the harvested organic land area grew by 10 per cent in 2013 compared to 2012, reaching 65,555 ha above the average of the previous five years. This trend shows that, from 1995 to 2013, organic production grew between 8 and 12 per cent per year. This growing trend in the development of organic production is beneficial to the conservation and sustainable use of biodiversity and the ecosystem services derived from it.

Dirección de Asuntos Ambientales (DIGMA), Ministerio de Relaciones Exteriores y Culto

Chilto tomato, produced mainly by small-scale farmers for biodiversity-based production

Armenia



Armenia is considered a global conservation centre of wild wheat (Triticum), rye (Secale), barley (Hordeum) and aegilops (Aegilops). From Armenia, many species have been disseminated throughout the world

Due to its complex relief and altitudinal and zonal alternation, Armenia has six types of climate and ten landscape zones from semi-desert areas to snow covered highlands. With the country's location at the intersection of three biogeographical provinces, the diversity of climatic conditions and active geological processes have resulted in the formation of diverse ecosystems and a rich biodiversity with a high level of endemism. Though comparatively small (30,000 km²), the country is home to approximately 3,800 species of vascular plant, 428 species of soil and water algae, 399 species of moss, 4207 species of fungi, 464 species of lichen, 549 species of vertebrate and about 17,200 species of invertebrate, many of which are considered endemic. Armenia has one of the highest densities of vascular plants in the world with approximately 107 species per 1000 km².

Ecoregional conservation programme in the Southern Caucasus region

A project to establish protected areas in Armenia's Javakhq (Ashotsk) Region (2007–2014) was implemented by the Ministry of Nature Protection and WWF as a part of the Caucasus Initiative launched by the German Federal Ministry of Economic Cooperation and Development (BMZ). The project promotes transboundary cooperation between Armenia and Georgia for the conservation of the unique biodiversity of the Caucasus Ecoregion, in particular the Javakheti-Shirak plateau in Armenia. The project also aimed to enhance sustainable rural development in the northern Shirak region through the establishment of the Arpi Lake National Park and the implementation of a support zone programme.

Another project, to develop the protected area system of Armenia (2011–2014), was set up to conserve globally significant biodiversity in the country as well as to catalyze the expansion of sanctuaries, promote the ecosystems within Armenia's current protected area system, and enable active conservation of biodiversity. The project focused on two main issues: the rationalization of the protected areas system through improving the regulatory and institutional framework for the establishment and functioning of sanctuaries; and institutional capacity building by piloting a number of management tools for specially protected nature areas (SPNA), which are mainly absent from Armenia's current SPNA management system. The main outcomes of the project include the improvement of legislation; the development of methodological guidelines on "Establishment of institutional relations for clarification of the roles and responsibilities in the sanctuary management system"; the implementation of works on mapping; a study and description of the boundaries for establishment of the planned Khustup and Gnishik protected areas as well as expansion of the existing Zangezur Sanctuary; the establishment of the Khustup Sanctuary and expansion of the Zangezur Sanctuary; the development of management and business plans for the Gnishik Protected Landscape; and the development of the state and local educational programmes for sanctuary managers and local communities and training.



Image: Roland Yeghiazaryan on Unsplash

Ughtasar Lake, Armenia



Australia

Skullbone Plains is a nationally significant sub-alpine refuge for endangered animals and ecosystems and forms a crucial link with nearby conservation reserves

The National Reserve System is Australia's network of protected areas on public, private and Indigenous land. Following a period of acquisitions and substantial growth over two decades, it consists of over 10,000 properties over 150 million ha covering more than 19 per cent of Australia's landmass. Skullbone Plains, a 1,647 hectare property adjoining the Tasmanian Wilderness World Heritage Area, has benefited from the system's growth. This environment of old-growth forests near pristine wetlands and rare moss beds in the heart of Tasmania's central highlands provides habitat for several rare and endangered species.

A snapshot of biodiversity

Skullbone Plains is a former forestry property that is now protected forever by the Tasmanian Land Conservancy as part of Australia's National Reserve System – the nation's most secure way of protecting native habitat. The property was purchased in 2011 with just over one million dollars from the Australian Government's Caring for our Country initiative and generous private donations from the Australian community.

The site is a remarkable mix of open valleys, old-growth forests, woodlands, wetlands, bogs, moorlands, heathfields and grasslands. Extensive eucalypt woodlands cover much of the reserve, providing habitat for top predators including the Tasmanian wedge-tail eagle, the white-bellied sea eagle, the pure-white grey goshawk and the Tasmanian masked owl. These raptors are all declining in Tasmania and have very little habitat protected elsewhere in formal reserves.

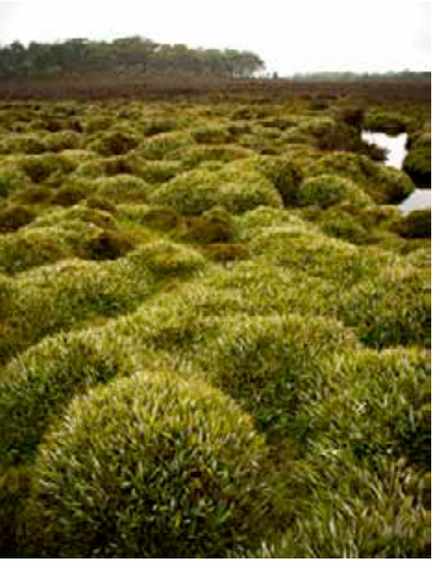
The diverse ecosystems are home to four nationally threatened species. Endangered grassland paper daisies dot the highland poa grassland and grassy sedgeland and the Tasmanian devil and spotted tail quoll roam the forests, grasslands and heath.

Near-pristine streams, free of the predatory introduced brown trout, support one of Australia's oldest freshwater fish, the nationally endangered Clarence galaxias. The streams flow through one of the property's most prized environments, the richest sphagnum moss beds in Tasmania - almost 100 ha of threatened alpine sphagnum bogs and fens. The spaghnum moss beds on Skullbone Plains contain fascinating standing wave structures unknown anywhere else on earth.

Rich grasslands dominate the property and are interspersed with flowering herb fields, wetlands and moorlands, providing stunning views to complement the ancient glacial landscape.

Skullbone Plains is a nationally significant sub-alpine refuge for endangered animals and ecosystems but equally importantly, it forms a crucial link with the adjoining Tasmanian Wilderness World Heritage Area, the Walls of Jerusalem National Park and other conservation reserves. Together they provide large, contiguous corridors of protected areas that will help species adapt to climate change and make them more resilient to other threats.

As part of its management programme, the Tasmanian Land Conservancy is carrying out extensive surveys to get a detailed picture of the animals and plants that live there. This information continues to provide an important baseline to help manage biodiversity and ensure Skullbone Plains is managed forever as a world-class nature reserve.





Images: Matt Newton

Skullbone Plains, Tasmania



Austria

Most animals in Austria are insects, of which there are approximately 37,000 species

Despite its small size (83,853 km²), Austria has an exceptionally diverse landscape, climate and, consequently, biodiversity. Here, the Alpine, Continental and Pannonian biogeographic regions converge, underneath which are three major landscape divisions: the Alps; the Granite and Gneiss Highlands of the Bohemian Massif; and the forelands and basins. Natural landscapes and semi-natural cultural landscapes — together highly significant for the maintenance of biodiversity — cover over one-third of national territory. Austria is rich in species and habitats, with approximately 3,000 indigenous vascular plant species, 8,000 lower plants, 10,000 fungi and 46,000 animal species.

National communication and biodiversity awareness

Over the past decade Austria has been successful at raising biodiversity awareness. The campaign "vielfaltleben" was launched in 2009 by the Ministry of Agriculture, Forestry, Environment and Water Management in cooperation with many partner organisations — in particular nature and environment NGOs — and has grown ever since.

Some 50 species protection projects have been implemented across Austria, contributing to the improvement of the status of more than 500 threatened species and their habitats, for example restoring habitats for amphibians in the March-Thaya-floodplains and establishing aeries for saker falcons.

A national network of local governments has been established to contribute to the conservation of biodiversity. To date, more than 140 municipalities which are members of the vielfaltleben network have been addressing over 600,000 residents. According to information from the Austrian Naturschutzbund, a total of 5 million people have been reached by means of the campaign.

A Biodiversity Week is being organized every year in cooperation with more than 100 partners, staging more than 200 events on biodiversity across Austria. Many other events have been carried out to strengthen biodiversity awareness.

The National Parks Austria campaign and strategy propose to increase the public's presence in the parks. So far, National Parks have usually been presented at a regional level, but 4,500 visitors have been counted on the Days of Species Diversity held in Austria's National Parks, in cooperation with the German GEO magazine. Approximately 74,000 students visited the National Parks in 2008 and more than half a million visitors were counted in information centres and at exhibitions.

The campaign has the three main communication objectives: to significantly increase the general public and decision makers' awareness of "National Parks Austria" as a national brand; to strengthen the positive image of the Austrian national parks; and to extend the tools for awareness raising for National Parks Austria.

Through its activities, the Austrian National Rural Network, "Netzwerk Land", supports the goals and key topics of rural development and, since 2009, more than 100 events have been organized in its name.



Image: Jace Grandinetti on Unsplash

Austrian valley



Azerbaijan

Over a 30-year period, total sturgeon catches in the Caspian Sea have declined dramatically from 27,000 tonnes to less than 1,000 tonnes

Azerbaijan is situated at the juncture of several biogeographical areas — the Eastern Palearctic, the Turan, the Mediterranean, Asia Minor, and the Middle East — and contains species of European, Central Asian and Mediterranean origin. The country forms an integral part of the Caucasus Ecoregion, one with an exceptional range of biodiversity. Azerbaijan also shares the largest inland body of water in the world, the Caspian Sea, the biological diversity of which makes the region particularly significant. The country can be divided into the following five broad ecosystem complexes — forest; freshwater, wetland and swamp; grassland and semi-desert; high mountain; and marine and coastal.

Biodiversity and the fishing sector in the Caspian Sea

The National Caspian Action Plan identifies the key marine and coastal habitats requiring focused conservation actions in Azerbaijan's territorial waters of the Caspian Sea. The total number of species in the Caspian Sea Region is estimated to be between 1,800 and 2,000, incorporating various groups of plants and animals. The number of endemic fish species is very high, and includes one lamprey species, 11 herring species, 24 species of Caspian gobies and five anadromous sturgeon species, all of which are fished commercially. The Caspian seal is the only resident endemic mammal.

The International Commission on Aquatic Resources of the Caspian Sea regulates fisheries by defining the total allowable catch and distributing the catch quota of major commercial fish species (sturgeon, sprat, seals) between Iran, Kazakhstan, Russia, Azerbaijan and Turkmenistan. The main threats to biodiversity in the Caspian are over-fishing of sturgeon and other commercial fish species; poorly maintained water distribution systems; pollution and ineffective waste management.

In support of the State Programme for the Socio-Economic Development of the Regions of the Azerbaijan Republic (2009–2013), specific measures have been implemented for the treatment of wastewater, the construction of water supplies and the rehabilitation of the Caspian Sea environment and its coastal territories.

The effectiveness of initiatives to mainstream biodiversity into the country's strategies, plans and programmes of relevant production sectors has historically been limited. However, the recent adoption of the national development plan, "Azerbaijan 2020: Outlook for the future" has enabled a framework for improving the mainstreaming of biodiversity into key production sectors. The plan specifically identifies the measures that are required to protect biodiversity, eliminate the pollution of the sea and its basin, and protect marine and freshwater ecosystems.

The main priority of the fishing sector for the Caspian littoral states is to develop sustainable fisheries and aquaculture, and to strictly regulate the fishing of sturgeon. In support of this, Azerbaijan has prepared a new version of its law on fishing that seeks to enforce a sustainably developed and managed fishery and aquaculture industry. Currently there are 12 fish breeding enterprises focusing on raising juvenile fish that are important for commercial and environmental fishing, mainly carp, salmon and sturgeon. In 2012, nearly 66 million juvenile fish were bred and released into the Caspian and associated water basins, by these enterprises.

Azerbaijan has also ratified the Framework Convention for the Protection of the Marine Environment of the Caspian Sea.



Image: @NASA on Unsplash

Satellite View of the Caspian Sea



Bahamas

Wetlands comprise 40 per cent of the land area in The Bahamas and range from narrow fringes of trees along the coast, to extensive shallow wetlands, and to large tidal creek systems.

The islands of the The Bahamas constitute one of the most extensive archipelagos of the world, comprising a chain of more than 700 islands, cays, and rocks, spread over approximately 260,000 km² of the Atlantic Ocean. The Bahamas lies east of Florida and extends south-east about 750 miles to within 50 miles of Cuba and Haiti. The total land area is approximately 14,000 km². The Bahamas is home to many marine and terrestrial species, making it an area significantly rich in biological resources. The islands are surrounded by shallow and sheltered waters, with the largest body of coral reefs and other marine organisms in the Atlantic/Caribbean region, constituting the main focus of the country's tourism industry.

Mainstreaming biodiversity

Ecosystems and biodiversity are affected by agriculture, fisheries, forestry and tourism. In an effort to minimize the impacts on biodiversity, an agriculture sector plan aims to ensure longterm development and conservation of the national agricultural resources as well as the protection of the country's future capacity to produce.

Aspects of the plan include conservation and protection of water resources through the development of an agricultural sector water policy, and training in good agricultural practices; protection of agricultural land through the development of a land evaluation system; and land zone maps and preservation of agricultural biodiversity by establishing an ornamental research and development programme, for instance, to study Invasive Alien Species (IAS). The plan should assist in the sustainable expansion of agricultural products in order to provide food locally at a competitive price. It also calls for the construction of a diagnostic laboratory to protect the health, welfare and food and safety of agricultural animals. Threats such as IAS, diseases, land conversion and water pollution should be reduced if the plan is successfully implemented.

The marine resources sector plan is based on "the conservation and sustainable use of fisheries resources and the marine environment for the benefit of current and future generations of all Bahamians". Some of the main aspects of the plan are to develop a data collection system to provide necessary biological, economic and social data for assessment and management for all major species/fisheries; maintain and restore populations of marine species at levels that can produce the optimal sustainable yield by promoting efforts to reduce lionfish in The Bahamas, and by introducing a certification process for crawfish fisherman; and to preserve rare or fragile ecosystems as well as habitats and other ecologically sensitive areas by designating and policing protected areas.

The Forestry Act, 2010 provides protection to wetlands, water reserves, endemic flora and fauna and protected trees. It establishes a legal framework for the longterm sustainable management of forests, a governmental forestry agency and a permanent forest estate.

A tourism sector plan has sought to diversify the product while safeguarding the health of the ecosystems which underpin the industry. For instance, pump out facilities for wastewater and containment facilities for hazardous and solid waste have been installed at marinas participating in the Blue Flag Programme, resulting in the protection of the coastal environment from pollution.



Thomas Hawk on flickr

Bahamas

Bahrain

The Hawar Islands are home to the largest breeding colony of Socotra Cormorant, a bird species native to the Persain Gulf. Bahrain also hosts the largest oyster bed in the region which became a UNESCO World Heritage Site in 2012

The Kingdom of Bahrain is an archipelago consisting of more than 84 islands which are situated in the middle of the southern coast of the Arabian Gulf. Its land mass covers an area of 769 km² while its surrounding regional waters have a total area of 7,497 km². It has an arid climate with rare rainfall. While being small and arid, Bahrain hosts diverse biotic ecosystems that are of high regional and international importance, including the wetlands of Tubli Bay and Hawar Islands. Bahrain has a total of seven protected areas, and has identified 1,361 different species in its relatively small total area.

Strengthening the protection of World Heritage Sites and increasing protected land areas

In order to practice and preserve biodiversity in the Kingdom of Bahrain, an Ecosystem Based Approach (EBA) has been implemented into national strategies, planning and legislation. Between 2012 and 2014, a project to include EBAs in legislation, was implemented by the Supreme Council of the Environment along with the Ministry of Culture in collaboration with UNEP. The project aimed to strengthen environmental protection of Bahrain's UNESCO certified World Heritage Sites — the Najwat and Hayr Bul Thamah, Hayr Shtayyeh, and Hayr Bu Am'amah.

These cultural sites and surrounding ecosystems are important natural and economic areas for the country. It is estimated that these ecosystems contribute over US$ 3.4 billion annually. The EBA in the promotion of biodiversity was made to convince decision makers and the public of the importance of conserving and preserving the coastal and marine environments as an economic case. By engaging civil society in this project, several programmes were initiated to maintain and preserve biodiversity in these areas. Examples included awareness raising and beach clean ups by local society groups such as schools and municipal councils.

Several NGOs have conducted surveys and workshops on the protection of marine habitats; the identification of shark species; conservation and rehabilitation of injured sea turtles; and the implementation of a programme to tag and study the local bird population. Also, the Ministry of Works, Municiple Affairs and Urban Planning conducted a project of cultivating and planting mangrove seedlings, a local coastal vegetation, successfully planting 1,500 new mangroves.

Finally, the Directorate of Fisheries has begun a project to replenish national fish stocks by using artificial reef units, resulting in the deployment of approximately 2,500 units in 6 key locations. These initiatives resulted in an increase of nearly 17 per cent of protected land areas from 2010. There has also been a positive move towards achieving the UN Sustainable Development Goal 15 target of restoring at least 15 per cent of degraded ecosystems, in particular through stabilizing the loss of biodiversity in the Hawar Islands, Al Areen Nature Reserve, Dohat Arad and Mashtan Island.

The recent integration of biodiversity action plans and strategies within national policies has included the creation of the Directorate of Biodiversity, as well as efforts towards increasing the amount of participation from civil society, local NGOs and youth groups.



Hani Bader

Bahrain

Bangladesh

Bangladesh supports rich cetacean diversity in its fresh and marine waters

Bangladesh shares a border with India to the west and north, India and Myanmar to the east, and the Bay of Bengal to the south. With a total area of 147,570 km², the country lies on the Ganges-Brahmaputra-Meghna river system delta — one of the largest river systems of the world. The north-east and south-east portions of the country are hilly, with some hills rising over 1,000 m above mean sea level. Bangladesh is very rich in biodiversity, with approximately 80 per cent floodplain, 12 per cent hills, and 8 per cent terrace or uplifted blocks. following the 2012 and 2014 decisions of the International Arbitral Tribunal, Bangladesh has 118,813 km² of marine area. The rich genetic diversity in crops, livestock, fish, trees and wildlife directly and indirectly support the lives and livelihoods of the people of the country by supplying a wide range of provisional, regulatory and cultural services.

Managing the ecologically critical areas

Since 2010, Bangladesh has increased its protected areas of marine, ecologically critically endangered, botanical gardens, and national parks. A total of 21 protected areas (PAs) — seven National Parks, 12 Wildlife Sanctuaries, a Marine PA and a Special Biodiversity Conservation Area — have been declared by the government to conserve wildlife and their habitats.

The total area of the 20 newly added forest PAs is approximately 34,000 ha. All 38 forest PAs now cover over 10 per cent of the total forest area which is 1.8 per cent of the area of the country. The two Marine Protected Areas together comprise 243,600 ha, just over 2 per cent of the 11,881,300 ha of Bangladesh's total ecologically critical areas (ECAs). The total area of ECAs managed by the Department of the Environment is 384,529 ha or about 2.6 per cent of the country. The Bangladesh Forest Department administers botanical gardens, safari parks and several eco-parks, all harbouring a diverse community of flora and fauna.

A notable national achievement is the declaration of Nijhum Dweep island as a National Park. Located within the Hatiya upazila in Noakhali district, at the confluence of the Meghna estuary on the Bay of Bengal, the park is home to the world's largest population of Indian Skimmer as well as 76 migratory bird species. Nijhum Dweep also lies within the Important Bird and Biodiversity Area of the Ganges-Brahmaputra and Meghna delta.

A total of 152 plant species representing 55 families have been recorded on the island. Among these, 66 are tree species, 15 are shrubs, 58 are herbs and 13 are climbers. The island has been divided into several zones based on common vegetation types and, since 1971, trees such as Keora, Baen and Gewa have been planted. In a recent study, six species of amphibians and 22 species of reptile were recorded including five species of turtle (three of sea turtle), seven species of lizard, and ten species of snake A total of 193 species of bird (76 migratory), 17 species of mammal, 61 species of invertebrate and 14 fish samples were also recorded. The current estimation of the spotted deer population on Nijhum Dweep was less than 2,000.

The island is at the crossroads of two global migratory birds' flyways: the East-Asia-Australasia and the Central Asia. More than half a dozen globally threatened migratory birds winter on the island, including the spoon-billed sandpiper and the Asian dowitcher.



Image: Hasin Hayder on Unsplash

Tahirpur, Bangladesh

Barbados

Barbados has seven Important Bird Areas covering approximately 185 ha (0.1 per cent of total land area) including marine areas

Barbados is the most easterly island in the Eastern Caribbean chain. 34 km long and 23 km wide, it has a total land area of approximately 432 km². Approximately 86 per cent of the island is a karst topography rising in a series of limestone terraces towards the centre of the island. There are no permanent rivers. The Scotland District comprises 14 per cent of the land area in the northeast of the island and is made of sedimentary deposits such as sands, shales and clays. These layers are profoundly folded and faulted, resulting in frequent land slippage.

The transformation of a quarry to a natural reserve

Walker's Quarry has been in operation on Barbados for over 50 years. The silica sand found in abundance there is primarily used in making concrete for the building and construction sector. However, as the lifespan of the quarry is coming to an end, the owners have focused their attention on transforming the area into Walker's Reserve with the aim of restoring biodiverse health and climatological resilience to the land in the area. The key objectives of the reserve include:

- Returning extracted areas of the quarry to ecological health
- Cultivating a mixed-use permaculture site providing food, fibre, medicine and livelihood
- Mitigating, by design, potential ongoing environmental impacts that might have otherwise been caused by the extraction operation such as soil erosion, landslides, and further ecological degradation
- Providing habitat to threatened and endangered migratory birds and endemic species to the Lesser Antilles
- Protecting the endangered leatherback turtle habitat
- Inspiring ecological and agricultural tourism for the Scotland District of Barbados
- Providing meaningful livelihood opportunities for residents of Saint Andrew and neighbouring parishes
- Striving to help stabilize the climate through reforestation and regenerative land use
- Providing a gene bank of rare and useful plants for the island.

Walker's Reserve uses a permaculture design to restore the natural ecological functions of the quarry by introducing various perennial food systems. The project began its implementation in 2015 and is expected to run over a five-year period, resulting in the planting of 100 different species in 12 different planting patterns with approximately 52 different planting plots. Revegetation will be mainly of native species, especially those known to grow in the area.

To date, through the project, several plant species have been established including fat pork (Chrysobalanus icaco); cashew (Anacardium occidentale); khus-khus grass (Vetiveria zizanoides); agave (Agave Rigida Var. Sisalana/Agave barbadensis); various legumes; coconut (Cocus Nucifera); almond (Terminalia catappa) and loofah (Luffa aegyptiaca or Luffa acutangula).



Image: Joe Ross on flickr

Barbados green monkey found in numbers across the island

Belarus

To date, the Republic of Belarus is the only country-Party to the Nagoya Protocol on Access to Genetic Resources to have established a National Coordination Center on Access to Genetic Resources and Benefit-sharing

Since its ratification of the Convention on Biological Diversity (CBD), the Republic of Belarus has established effective mechanisms to achieve the global goals relating to biological diversity. The government has adopted strategic and policy documents and allocated budget financing to bring them into effect.

The Interdepartmental Council for the Implementation of the CBD functions as a platform for debate on biodiversity-related issues involving of representatives of various state bodies, academia and civil society. Biodiversity is tracked through an inventory of flora and fauna and monitoring of ecosystems.

Specially protected natural areas and biosafety considerations

The Republic of Belarus has adopted a strategy for the conservation and sustainable use of biological diversity; a national strategy for the development of the system of specially protected natural areas to 1 January 2030; and a scheme for rational allocation of specially protected natural areas of national significance to 1 January 2025. Policy documents also cover the sustainable use of peatlands. By 2018, 8.72 per cent of the country's territory comprised specially protected natural areas (compared to 7.6 per cent in 2000).

Management plans for specially protected natural areas include restrictions on land and water use, logging, and construction of industrial enterprises and other hazardous facilities. Protection measures include reed mowing and controlled livestock grazing. Rare natural landscapes and biotopes enjoy a special protection regime, covering 1,453 wild animal habitats and 1 758 wild plant habitats.

Under action plans for animals and plants threatened with global extinction, the number of bison has risen to 1,779 individuals in 2018 from 468 in 2000, while work has begun on on restoring aquatic warbler populations to their natural habitat.

The country has several dozen collections of genetic resources, 10 of which are recognized as a national treasure, including the Republican DNA Bank.

Invasive alien species are receiving close attention thanks to the identification of 13 species of wild animals and nine species of wild plants.

The 863,000 ha of marshes in the Republic of Belarus have an important role in maintaining a favourable regional hydrological regime. Over the past 10 years, restoration has taken place in 5.9 per cent of the country's marshes.

To date, the Republic of Belarus is the only country-Party to the Nagoya Protocol on Access to Genetic Resources to have established a National Coordination Center on Access to Genetic Resources and Benefit-sharing. In 2017, the Republic of Belarus transferred genetic resources pursuant to the Nagoya Protocol's requirements.

With a view of implementing the Cartagena Protocol on Biosafety, the National Coordination Biosafety Center was established in Belarus, giving rise to a law on safety in genetic engineering activity.



thewaspfactory74 on thewaspfactory74 on flickr

A young European Bison (Bison bonasus) enjoying the warmth of early spring.



Belgium

In Belgium it is publically accepted that everybody can and should act for biodiversity in order to preserve beauty and ecosystem services for the wellbeing of our generation, our children and grandchildren

Belgium has made significant efforts to reach the Convention on Biological Diversity goals, and is presently implementing a wide range of actions in order to achieve the Aichi biodiversity targets. An important concern from the beginning was informing, educating and raising awareness on the importance of biodiversity and the various ways to contribute to its conservation as well as its sustainable and fair use.

Communication, education and public awareness

Being mandated as the National Focal Point to the Convention on Biological Diversity as well as for the Clearing House Mechanism (CHM), the Royal Belgian Institute of Natural Sciences launched the Belgian version of the information exchange website in 1996, the second European and the fifth country worldwide to do so. Through the CEBioS project funded by the Belgian Development Cooperation, it also supports 34 countries in maintaining their CHM in various ways.

The project offers web hosting of National CHMs and organizes capacity building workshops for managers of the National CHMs of partner countries. These workshops teach how to make best use of the CHM. Each year a project call is issued to assist partner countries to further develop their CHM, publicize it and involve stakeholders. The call is also intended for South-South cooperation projects: Morocco has assisted other Arab speaking countries to develop their national CHMs, Benin is assisting Togo and Gabon. The 13th Conference of the Parties (2016) acknowledged this activity by awarding it a prize for the work being undertaken. Seven of the partner countries that benefitted from the project also received a prize or an award for the quality of their CHMs.

In the context of the 2010 International Biodiversity Year, communication, education and public awareness efforts were upscaled and harmonised, culminating in the information and engagement campaign "I give life to my planet". Within a few years, more than 20,000 citizens engaged to undertake more than 100,000 biodiversity actions.The campaign launched a booklet: *366 Ideas for Biodiversity*, containing concrete actions that can be performed individually or in a group. Over 200,000 copies have been distributed, mostly to families and schools. A folder containing a subset of 52 actions has been translated into the six UN languages and all official languages of the EU.

In the same way, a biodiversity actions suggestion tool for businesses is being developed, enabling companies to engage more easily with biodiversity efforts, reducing their impacts and making their infrastructure, purchases and processes more sustainable.

Also, a business and biodiversity strategy has been launched: #BeBiodiversity with the objective of informing businesses and helping them to take voluntary steps to preserve biodiversity and ecosystem services, as well as to give consumers the means to choose more biodiversity-friendly products and producers. The campaign towards consumers includes a website and several videos that explain the link between consumption and threats to biodiversity. These videos will be followed by a campaign targeting businesses and promoting the mainstreaming of biodiversity in their activities.

Focusing on a similar audience, concrete actions have been organised to enhance cooperation with the private sector such as the establishment of a Green Deal for B@B; and with the health sector such as the training of nature coaches, and promoting wellness through the enjoyment of nature and forests



Royal Belgian Institute of Natural Sciences (RBINS)

Taking action for biodiversity in Belgium



Belize

Belize retains over 61 per cent of its natural, intact forest cover

Belize is a very small country with a rich endowment of natural resources of global importance. It is founded on a wealth of biodiversity, from the first days of the logging industry to today's reliance on a healthy, natural resource-based tourism industry; the primary productivity sectors of fishing, agriculture, and forestry; and ecosystem services that provide water security, tropical storm and flood protection, non-timber forest products and hydroelectric power. Belize retains much of its high biodiversity due to a low human footprint.

Managing marine and costal biodiversity

Over the last five years, there has been a gradual increase of recognition of the importance of the environment in Belize's national development, in its adaptation mechanisms for climate change, and the need for cross sectoral integration of the environment into mainstream policies and planning. Several environmental resource management policies and plans have been developed, and have either been endorsed or are awaiting endorsement, aiming at success for the future of Belize's biodiversity.

Plans have been developed in marine and costal biodiversity, with a series of complementary management strategies instituted to address issues identified in the marine environment, and allowing Belize to largely avoid the catastrophic collapse of fish stocks. Through its Fisheries Department, Belize has been piloting managed access under its Sustainable Fisheries Initiative in collaboration with protected area managers, fishermen and environmental organizations. The target is the implementation of rights-based managed access as part of a national fisheries management policy, to address overfishing and unregulated and illegal fishing, leading to restoration and recovery of the industry, and protection of the health of Belize's marine ecosystem.

Rights-based managed access is currently being successfully piloted in two of the marine protected areas — Port Honduras and Glover's Reef Marine Reserves — with a national roll-out to include the territorial waters through the establishment of nine fishing zones over the next five years. This is being launched in conjunction with the Economic Alternatives and Fisheries Diversification Plan (2014–2019), developed to guide implementation of international investments into those coastal communities most tightly linked to the declining fisheries resources. In 2011/12, Belize revised and modernized its Fisheries Act of 1948, aligning it with the needs of the traditional fishing industry supported by the coastal waters. It includes provisions for fisheries management planning, including species protection, and covers different types of fishing; the role of a fisheries advisory board (or council),; the role of cooperatives; monitoring; control and surveillance; jurisdiction and evidence issues; and offences and effective penalties.

In support of improved management of the marine resources and strengthening resilience to climate change, a national project is working to expand replenishment zones to meet the 10 per cent national target for no-take areas in the marine environment. The Fisheries Department will also be addressing surveillance, enforcement and management issues in freshwater bodies and rivers, identified as under-represented within the National Protected Areas System.



Image: Maegan Luckiesh on Unsplash

Caye Caulker off the coast of Belize



Benin

Benin is home to approximately 2,940 sacred forests

Situated in West Africa, Benin's territory spans 114,763km² and is delimited to the north by the Niger River and to the south by the Atlantic Ocean. The country features three principal zones: the mountainous region in the northwest, the country's water source where the Ouémé, Pendjari and Mékrou Rivers originate; the plateau region between the coastal plain and the Lonkli Kétou transversal; and the coastal zone in the south that contains lakes and lagoons. There is an important forest cover spanning approximately 47 per cent of the national territory. The network of protected areas comprises 58 classified forests and almost 3,000 sacred forest stands.

Promotion of organic cotton around protected areas

Benin is one of the three main producers of cotton in West Africa, with cotton production remaining a pillar of the economy, representing 70 per cent of export revenues. But conventional farming of cotton, which is the predominant method, is harmful to biodiversity as it relies on intensive use of pesticides and chemical fertilizers. Consequently, several ha of forest ecosystems, even in protected areas, are endangered because of these conventional agricultural practices. This is the case, for example, in the classified forests of Trois Rivières, Ouénou-Benou and Alibon in the north, and Abomey and Agoua in central Benin.

In order to reduce ecological disturbances due to this form of agriculture, integrated and organic approaches have been developed in parallel with conventional agriculture. Today, organic agricultural practices are being implemented across the country, contributing to the preservation of the diversity of animal and plant species and ecosystems.

For the promotion of organic cotton, the Organisation of Benin for the Promotion of Organic Agriculture (OBEPAB) has intervened in Djidja, Setto, Glazoué, Kandi and Sinendé to develop certified organic cotton. Moreover, the Village Association for the Management of Fauna Reserves (AVIGREF) has set up actions in Pendjari to develop the organic cotton, Alafia.

Thanks to recommendations made through the practices of organic agriculture, the water, soil, savannah and forest ecosystems have been preserved in the above mentioned cotton production zones. In the Pendjari National Park, for example, the water, soil and plants have been preserved since the 2007–2008 campaign due to the promotion of the Alafia organic cotton in the Pendjari Biosphere Reserve. Likewise, the tributaries of the Alibori, Ouémé and Zou rivers that flow close to the areas of production are protected.

Within the context of organic agriculture, certain animal species are considered as beneficial to farmers and, as such, are systematically preserved. These include the ladybug, mantis, hoverfly, wasp, ant, earwig, cricket, as well as spiders and bees. For wetlands surrounding organic production zones, fishing resources have benefitted from the neutrality of organic inputs. Likewise, soil-based organisms such as worms and other microorganisms are preserved through organic agricultural inputs.



Rudi Verspoor on flickr

Kota Falls, Benin



Bhutan

Bhutan is well known for its rich forests and vegetation, with the entire forest area of the country protected and covering 60 per cent of the land. Bhutan reportedly has 800 to 900 species of butterfly

The Kingdom of Bhutan is a landlocked country with an area of 38,394 km² situated on the southern slope of the Eastern Himalaya, bordering China to its north and India to its south, east and west. Bhutan is well known for its rich forests and vegetation and today forests cover 60 per cent of the land. There are over 5,600 species of seed of which 94 per cent are native species and about 105 species are endemic to Bhutan. Close to 200 species of mammals live in the country, including 27 globally threatened species. Around 700 species of birds are found in Bhutan, 18 of which are globally threatened. The country is rich in agricultural diversity, having more than 100 species of agricultural crops. Bhutan has a proactive approach to modern development characterized by an emphasis on environmental preservation, and more recently the pursuit and promotion of Gross National Happiness as an alternative to modern development

Sustainable development, biodiversity and national happiness

Economic growth continues to remain a major challenge in Bhutan, a country seeking to promote a green and self-reliant economy sustained by an information technology society and guided by the philosophy of Gross National Happiness. Some of the strategies are to harness and add value to natural resources in a sustainable manner and to reduce dependency on fossil fuel especially in the field of transport. Bhutan seeks to ensure that forest resources and biodiversity are managed sustainably and equitably, so as to produce a wide range of social, economic and environmental benefits and services for all citizens while maintaining 60 per cent of the land as forest, contributing to Gross National Happiness.

The intention of national policy objectives have a number of important characteristics, among which are that: at least 60 per cent of forest area is protected across the country; the unique character of Bhutan's landscape and the integrity and biological diversity of its associated natural environment should be preserved; a holistic and integrated area-based approach should be adopted to plan for and manage forests to optimize benefits to society; priority is to be given to indirect benefits from forests such as a reliable supply of high quality water for domestic use, irrigation and hydro-power, income from carefully targeted ecotourism and environmental services; forests are to be used as a platform to contribute towards rural poverty reduction by balancing conservation and development objectives, and focusing on channeling benefits to the poor; forest management is to be more people-centred and responsive to the expectations of civil society; and organizational roles and institutional mandates should be clarified and operational mechanisms streamlined to ensure effective coordination and integration.

The Five Year Plan of 2014–2018 is the main development planning framework, with its underlying objective to achieve self-reliance and inclusive green socio-economic development. It recognizes conservation of the natural environment as a means to sustainable economic development and improvement of resilience to natural disasters.

Four National Key Result Areas have been identified to contribute to the overall achievement of national goals: sustainable and equitable socio-economic development; preservation and promotion of culture; conservation and sustainable utilization of environment; promotion of good governance.



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Landscape in Trongsa, Bhutan

Bolivia (Plurinational State of)

On average, the Yungas region concentrates 35 per cent of the diversity and represents only 4 per cent of the national territory

Bolivia is among fifteen countries worldwide boasting the greatest biodiversity, thanks to its altitudinal gradient that oscillates between 90 and 6,542 m. It represents 0.2 per cent of the world's surface and houses around 40 per cent of the world's biological diversity recorded so far. This is recognized in the political constitution of the Plurinational State of Bolivia as a strategic resource for the 'Living Well' of the population. At species level, Bolivia is among the eleven countries with the greatest richness of plant and species, and among the ten countries with the greatest diversity of birds and mammals. It occupies the fourth place worldwide in butterfly wealth. In addition, it is among the thirteen countries with the greatest wealth of amphibian species and among eleven with the greatest diversity of freshwater fish, where 6 per cent of all known species are represented.

Framework of Mother Earth and Integral Development to 'Live Well'

Bolivia has implemented the law of "Mother Earth and Integral Development to Live Well", which has been approved as a framework law and is constituted in a way that will give birth to specific legal norms, for instance in the forest, water, environment, mining, and hydrocarbon sectors. The law defines 'Living Well' as the civilizing and cultural horizon alternative to capitalism, which means the construction of a new environmental, social, cultural and economic order based on, and emerging from, the historical vision of indigenous peoples.

In 2013, a supreme decree was approved to regulate the functioning of the Plurinational Authority of Mother Earth and its operating mechanisms. One of these mechanisms seeks to promote the integral management and sustainable use of the forests and life systems of Mother Earth, together with the conservation, protection and restoration of life systems, biodiversity and environmental functions, in a context of mitigation and adaptation to climate change. The mechanism operates from the ascription of territorial initiatives that implement the integral and sustainable management of forests and Mother Earth.

Various programmes and projects have been implemented that promote the integral management of the territory where the biodiversity component is fundamental. Among these are the National Bioculture Programme; Andean Vertical Ecosystem Programme; and the Biodiversity Conservation Project through the Sustainable Management of Forests by local actors. It is now evident that a new type of forest resources planning instrument has been generated.

The implementation of Comprehensive Forest and Land Management Plans consists of the zoning of territorial space as well as ordered programming for the execution of activities — forest, agricultural, agroforestry, silvopastoral, ecotourism, preservation of environmental functions, and management of water resources — to be developed by communities.

The master plan of the National System of Protected Areas was approved in 2012 and defines the main areas of management. Under this political framework, the system is set to expand in area, mainly from the creation of new subnational areas Protected areas currently account for 23 per cent of national territory and constitute a sample of the great biological and cultural diversity of the country.



Image: Pedro Szekely on flickr

Flamingoes on Laguna Colorada, a shallow salt lake in the southwest of the altiplano of Bolivia

Bosnia and Herzegovina

All freshwater gravitates towards the Black Sea and Adriatic Sea Basins, and it is estimated that 113 species and subspecies of freshwater fish (Osteicthyes) and 5 species of Agnatha from 70 genera and 27 families inhabit them

The country's surface area amounts to 51,200 km², with 12.2 km² being sea area. To the north there is access to the Sava River and to the south, in Neum, to the Adriatic Sea. According to its geographical position, Bosnia and Herzegovina belongs to the Adriatic and Black Sea Basin, but it is primarily a mountainous country covered in forest. The average altitude is 500 m, with the highest peak being the Maglić Mountain at 2,387 m. Of its total land surface area, 42 per cent consists of mountains, 24 per cent of hills, 29 per cent of karst areas and 5 per cent of lowlands. The country is rich in water resources in the Balkan Peninsula as there are many surface and groundwater watercourses. Although relatively small there are many variations of the three main climates — continental, Mediterranean and southern — due to the diversified topography, flora and geographic location.

Public awareness campaign on protection of biodiversity in Livanjsko Polje

A UNDP KARST project entitled "Public Awareness Campaign on Protection of Biodiversity in Livanjsko Polje" was set up to: provide information and increase public participation in processes such as the conservation of biological diversity and its integration in the development of a spatial plan; raise public awareness on preserving the value of peatlands and their sustainable utilization; and facilitate adequate cross-border water management for Croatia and Bosnia and Herzegovina.

Implemented in Tomislavgrad, Livno and Bosansko Grahovo, the five main campaign activities were:

- The development of promotional materials such as basic information on the importance of eco-tourism for the local community, and lists of local endangered, rare and endemic animal and plant species; well-known artists; local producers with authentic home-made products such as honey, medicinal herbs, cheese, wine, and handicrafts; and NGOs dealing with activities such as fishing, hunting, mountaineering, paragliding, and bicycling.
- Four information sessions for a wider audience on topics such as spatial planning and raising public awareness for biodiversity protection; climate change; the development of ecotourism; and improving living conditions.
- Training for media representatives
- A study tour with media representatives who were introduced to the values and potentials of Livanjsko Polje such as the rich flora and fauna, gastronomy and tourism, and the region's cultural and historical monuments.
- Training for municipality representatives to emphasize the important elements of Livanjsko Polje such as water management and possible cross-border impacts on Croatia; the development of the spatial plan including protection of peatlands and biodiversity; analysis and use of maps developed with GIS software through the KARST project; protected areas and potential for development of ecotourism.

The results of the campaign are reflected in the volume of promotional materials, the number of participants in information-sharing sessions, and the number of reports published or broadcast in various media including websites, scientific journals, radio and television channels.



Image: Mašić Ermin

Bosnia and Herzegovina

Botswana

Exports of live animals and trophies have decreased sharply since 2009 and are now close to zero thanks to stricter regulation

Botswana incorporates seven global ecoregions, all with different levels of diversity, resource value and protection status. The dryland ecosystems cover most of Botswana's surface area and can be divided into four sub-areas: the Kalahari Xeric Savanna, the Kalahari Acacia-Baikiaea Woodlands, the Southern African Bushveld and the Zambezian Halophilic. Game resources are valuable throughout the country, but most valuable in Ngamiland, the centre of wildlife-based tourism. Ngamiland contains the Okavango Delta, a Zambezian flooded grassland ecoregion. Chobe National Park, comprising mainly Zambezian and Mopane woodlands, and Zambezian Baikiaea woodlands as ecoregions, account for the majority of park visitors in Botswana.

Status and trends in biodiversity

In Botswana, the number of recorded mammals has increased from 147 to 157; amphibians from 34 to 44; and invertebrate records have improved from a total absence of species lists to lists for 10 taxa.

The mammal fauna of Botswana comprises 157 species, 43 of which are large mammals. As of 2010, there are 587 bird species recorded including 25 that are globally threatened and a further eight regarded as nationally threatened. None of the avifauna species in Botswana are endemic and there are only two near-endemics: the slaty egret, which has approximately 85 per cent of its global population in the Okavango Delta; and the short-clawed lark, which has more than 90 per cent of its global population in south-eastern Botswana. The country also hosts large populations of regionally vulnerable species such as the white-headed vulture (Trigonoceps occipitalis), lappet-faced vulture (Aegypius tracheliotus, formerly Torgos tracheliotus), martial eagle (Polemaetus bellicosus) and lesser kestrel (Falco naumanni). These species are widespread in Botswana, and are less threatened than elsewhere in southern Africa. Large proportions of the southern African populations of wattled crane (Bugeranus carunculatus) occur in northern Botswana.

A new Flamingo Sanctuary has been proposed in the Makgadikgadi Pan providing critical protection for flamingo breeding site. Also wildlife management areas in Kgalagadi District have land board approval. These changes have increased the protection status of the Kalahari xeric savanna and Zambezian halophytics ecoregions.

Botswana's main area of biodiversity — the Okavango Delta is in the process of being awarded World Heritage Site status, which will reinforce the conservation efforts currently being implemented under the Ramsar Convention and national protected area obligations.

Botswana has recognised the importance of the activities under all of the Multilateral Environmental Agreements (MEAs) to which it is party. There is an MEA committee that meets regularly, and this facilitates coordination of conservation activities. An important formal step has been the ratification of the Nagoya Protocol. It is important also to mention the role of nonstate partners — in particular Birdlife Botswana, and Kalahari Conservation Society — which play a fundamental role in ensuring broader stakeholder participation in biodiversity conservation, as well as pursuing biodiversity objectives within their own organisations.



Image: Unsplash, Author: Andy Brunner

Wildlife in East Ngamiland, Botswana

Brazil

The two archipelagos are unique in their geological origin, which provides a high degree of endemism and a rich marine and insular biodiversity

In March, 2018 Brazil established two new marine protected areas. The intention is to ensure marine biodiversity conservation and to deter the collapse of fisheries stocks in the protected areas, which are covered by two Presidential Decrees. Previously, only 1.5 per cent of significant marine areas enjoyed protection. Now, that figure is 26.3 per cent, representing a great advance for biological diversity as well as for sustainability. The new areas have also enabled Brazil to exceed Aichi Target 11, that is to have at least 10 per cent of coastal and marine areas under protected areas by 2020.

Marine protection for endangered species

The sites are situated in two large mosaics of marine protected areas including a sustainable-use area, Área de Proteção Ambiental, corresponding to IUCN international category V; and a full-protection area, Monumento Natural, equivalent to the IUCN international category III.

These areas are in the two most remote regions under Brazil's national jurisdiction: the Archipelago of São Pedro and São Paulo, in the central part of the equatorial Atlantic Ocean, 1,010 km north-east of Natal (Rio Grande do Norte State) and the Archipelago of Trindade and Martim Vaz in the South Atlantic Ocean, 1,000 km east of Vitória (Espírito Santo State). The two archipelagos are unique in their geological origin, which provides a high degree of endemism and a rich marine and insular biodiversity.

The Archipelago of Trindade and Martim Vaz has one of the highest rates of species diversity of the Atlantic islands and many deep-sea species are found around the oceanic islands of the chain. The São Pedro and São Paulo Archipelago (ASPSP) is the smallest and most isolated tropical archipelago in the world. Its rocky islets are located on the Mid-Atlantic Ocean Ridge, the longest mountain range in the world. Mainly due to its geographic isolation, the ASPSP presents a high concentration of endemic species as well as those threatened with extinction, including corals, sea turtles and bottle-nosed dolphin. New species are still being discovered today in the region.

Brazil encouraged public participation in the process of declaring the new protected areas, with input from civil society, academics and the fisheries sector. The Chico Mendes Institute for Biodiversity Conservation and the Brazilian Navy manage both sites, which enjoy support for the conservation of ecosystems, endemic species and those species threatened with extinction. There is a focus on implementation of two objectives of the Convention on Biological Diversity (conservation and sustainable use) and Goal 14 of the Sustainable Development Goals. The total marine protected area is now higher than Aichi Biodiversity Target 11 due to the establishment of these new protected areas.



Image: João Luiz Gasparini

Part of Trindade Island

Brunei Darussalam

The sandy coastline of Brunei provides suitable nesting sites for marine turtles. Of the seven known species in the world, the hawksbill, green turtle, olive ridley and giant leatherback are recorded as nesting or frequenting Brunei shores

Brunei Darussalam has a diverse ecosystem and is considered among the countries with a high forest cover. The natural vegetation is tropical evergreen rain forests. The Global Forest Resource Assessment 2010 has estimated Brunei forest cover to be around 75 per cent, composed primarily of old growth forests. The country has seven distinguishable forest types: mangrove, beach-type, freshwater swamp, peat swamp, 'kerangas', mixed-dipterocarp and montane. The forest landscapes are evident from their floral composition, forest formations, soil conditions and micro-environment. The national forest reserves constitute 41 per cent of the country's total land area and are protected by law. The forest structures and composition remain intact and are of national importance in terms of biological composition, uniqueness of landscape, production, recreation, and other special uses.

Improving the scientific knowledge base

Brunei has worked successfully on enhancing local knowledge and creating a scientific base for managing the country's natural resources and environment. A number of field expeditions to include flora and fauna identification have been continuously implemented to update existing biodiversity information. Joint collaborations between the government and international academic institutions are ongoing in developing local expertise in environmental and natural resource management. The recent establishment of the Brunei Tropical Biodiversity Centre and the Brunei Agro Technology Park has facilitated research and innovation in support of biodiversity conservation and management.

The country's existing forestry laws, rules and regulations have highlighted the importance of sustainable and multiple use of forest and associated resources. The country is also fully committed to achieving Sustainable Forest Management and is now in the process of certification to ensure that forestry activities are within acceptable norms and standards.

The Belait Peatswamp Biodiversity Action Plan will implement reforestation in degraded forest areas with sago planting at Kuala Balai. The plan also calls for the development of a centre of excellence in peatland research, which is supported by the Ministry of Industry and Primary Resources (MIPR).

Brunei Darussalam has opened its doors to greater collaboration in order to conduct biodiversity research in the country. International academic and research institutions are welcome to enter into agreement with relevant government agencies in exploring and studying the rich biological composition of the country's natural environment. The recent establishment of the Brunei Tropical Biodiversity Centre serves as a structural venue to facilitate studies and related researches.

The government has long recognized the importance of strengthening the institutional capacities for biological diversity management. It has acknowledged the importance of close coordination and a holistic approach to resource management that places the relevant sectors such as forestry, agriculture, fisheries, tourism and industry under one umbrella organization. This organization, the MIPR, is continuously strengthening its structure to respond to the challenges of natural resource management.



Roberto Lopez on Unsplash

Marine turtle

Bulgaria

Bulgaria has over 1,000 legally designated protected areas

Bulgaria is one the richest biodiversity countries in Europe. It encompasses parts of the Alpine, Black Sea and Continental biogeographic regions. The number of Balkan and Bulgarian endemics is relatively high. Animals in Bulgaria amount to over 30,000 species from 28 types and 75 classes. Best studied are the vertebrates. The Bulgarian herpetofauna ranks third in Europe in species richness after Spain and Greece. Approximately 1,200 animal species are endemic (790 Bulgarian and 410 Balkan endemics). More than 780 cave species occur in Bulgaria of which 110 are typical troglobionts.

Achieving harmonious coexistence between people and nature

Bulgarian NGOs have implemented a large number of projects and information campaigns to promote the values of biodiversity and approaches to its conservation. These include: Life for Burgas Lakes; Conservation of Imperial Eagle and Saker Falcon in key areas of the Natura 2000 network in Bulgaria; White Stork Festival; Conservation of the wintering population of the globally threatened red-breasted goose; Bulgarian Youth Water Parliament, and many others. Moreover a large number of campaigns to promote the conservation of agrobiodiversity have been launched, such as the "BioMania 2011" campaign funded by the Rural Development Programme (RDP), with eight festivals devoted to agrobiodiversity and traditional knowledge; the festival of agro-ecological farmers, funded by RDP 2007–2013; regular festivals of organic farming; the National Exhibition of Livestock in Sliven; and the National Festival for Protection of Local Bulgarian Breeds in Kalofer.

One of the most significant acts of cooperation is that for the conservation of biodiversity and sustainable local development in the Strandja mountains. After 15 years of active work in Strandja nature park, the Bulgarian Biodiversity Foundation worked to implement a project to conserve biodiversity and sustainable local development. Funds were provided by the Financial Mechanism of the European Economic Area (Iceland, Liechtenstein and Norway) amounting to almost US$ 600,000. The project aimed to achieve a harmonious coexistence between people and nature in Strandja by demonstrating the benefits for the local people from protected areas and their active involvement in biodiversity conservation. The most important results were related to the development of environmentally sustainable businesses as well as implementation of direct conservation measures.

The project sought development of a proposal for the designation of the first post-Sevlille biosphere reserve in Bulgaria. Significant work has been done to develop joint management of the territory corresponding to the requirements of the Seville Strategy. The project was implemented by the Bulgarian Biodiversity Foundation in partnership with the Directorate of Strandja Nature park, the Bulgarian National Committee for UNESCO's Man and the Biosphere programme, and the Department of Nature Management at the Norwegian Ministry of Environment. Now, the Ministry of Environment and Water will proceed with its efforts to declare the first biosphere reserve in Bulgaria.



Alexander Videnov on Unsplash

Zasele, Bulgaria

Burkina Faso

Nearly 600 new plant species were identified in the country between 1999 and 2010

Burkina Faso is a landlocked country situated at the heart of West Africa. Covering 247,000km², the country features two phytogeographical domains: the Sahelian, characterized by steppes, and the Sudanese, with various savannah types including shrubs, trees, and grasses. The country's hydrographic network includes a significant number of waterways among the Komoé, Mouhoun, Nakanbé and Niger River basins. Almost all of the mammals characteristic of tropical savannahs are present in the country, including elephant, lion, buffalo and roan antelope.

The sacred woods of Burkina Faso

Sacred woods are protected areas in Burkina Faso and are managed according to traditional or customary rules by grassroots communities. A survey conducted on the entire national territory identified 1,206 sacred woods, 403 of which were catalogued in order to obtain a better understanding of the state and dynamics of biodiversity.

Sacred woods have been recognized as true sanctuaries of nature, and places where biodiversity thrives. The results of floristic analysis have shown a considerable diversity of plants in sacred sites, with 470 species from 284 genera and 74 families. This represents nearly 25 per cent of the national flora, against 287 species from 189 genera and 61 families in the adjacent formations, representing almost 15 per cent of national flora.

Ethno-botanical surveys carried out among the local population identified several categories of sacred wood: fetish woods, cemetery woods, fetish-cemetery woods, woods of divinities, and haunted woods. The analysis of the structure of multi-species populations and of dominant species revealed stable population structures in haunted woods, cemetery woods and fetish-cemetery woods, while population structures were degraded in fetish woods and divinities woods. It was thus established that sacred woods exemplify a local tradition that contributes to the safeguard of plant diversity.

For the local populations, these woods provide religious, socio-cultural magical and ecological functions. For many, they represent an essential intermediary in communicating with ancestors. They also protect against disasters and enemies, and bring about rain, prosperity, fertility, and can even cure certain diseases. The management of these sacred woods is subject to customary rules, principles and legislation.



Eric Montfort on flickr

Bobo-Dioulasso, Houet Province, Burkina Faso

Burundi

Burundi's ecosystems cover a total area of 27,834 km² and encompass more than 4,555 known species

Following the ratification of the Convention on Biological Diversity on 15 April 1997, Burundi established its first biodiversity strategy and Action Plan (SNPA-DB) in 2000. Since the development of SNPA-DB, one interim report and five national reports — each on the Nagoya protocol of access and fair and equitable sharing of benefits arising from the sustainable use of genetic resources — have been produced and submitted to Conference of the Parties at the CBD. In its latest report, Burundi highlighted the important reasons for the need to revise its national biodiversity strategy. The process of its revision began in May 2012 and resulted in the new National Strategy and Action Plan on Biodiversity 2013–2020.

Raising awareness of diversity risks

To implement these strategies, several interventions have been carried out, including those relating to Aichi's first objective and UN Sustainable Development Goals 2 and 15. For example, several studies have been conducted to identify the state of biodiversity and to assess the causes and consequences of biodiversity loss, highlighting the value of biodiversity and ecosystem services and their contribution to human wellbeing.

Several documents have been produced and awareness-raising actions have been carried out for stakeholders in the implementation of the Nagoya protocol and the preservation and restoration of terrestrial ecosystems.

Papers from studies on issues or threats to biodiversity and the challenges of the Nagoya protocol have been developed and awareness-raising actions for different target audiences have been conducted.

Thus, in response to the first national objective that corresponds to Aichi's first objective that states: "By 2017, all stakeholders, including decision-makers, local and indigenous communities, are aware of the value of diversity risks and infused with the measures and practices that they must take to preserve and use it durably", awareness materials have been developed and awareness-raising workshops have been organized for target groups including decision makers, and local indigenous communities.

Burundi has adopted its awareness-raising approach in four phases:

- The identification of relevant issues or threats to biodiversity
- Conducting studies to improve knowledge and deepen targeted issues or root causes of targeted threats, identify target groups, and establish evaluation indicators
- Build awareness tools
- Organize awareness workshops by target group.

Three areas of awareness have been targeted, namely the:

- Protection of biodiversity
- Conservation of protected areas
- Challenges of the Nagoya protocol and of the identified target groups, including decision-makers, researchers and local and indigenous communities, including practitioners and local government.



Torsten Pursche

Sunset over Burundi

Cabo Verde

Between 2009 and 2014, the number of operational protected areas increased from 3 to 26, of which 9 are terrestrial and 17 marine and coastal, exceeding 10 per cent of total area

Cabo Verde is an oceanic island situated in the Atlantic, off the coast of West Africa, facing the Sahara desert. The island is characterized by a dry tropical climate. The territory is isolated from permanent continental influences, and possesses a relatively rich biodiversity, typical of tropical regions, but with a relatively low number of species. The natural and cultural conditions, such as tourism and population growth, highlight the increasing importance of biodiversity conservation in the country. As well as its ecological importance, biodiversity supports all economic activities, particularly agriculture, forestry and livestock; fishing; seaside and beach tourism; water, recreational and leisure sports; and ecotourism.

Species conservation programsme in Cabo Verde

Although biodiversity still remains under strong anthropogenic pressure in Cabo Verde, mitigation measures have been implemented over the years within various conservation programmes and projects. Pressures on the marine animal diversity of endangered species has been mitigated by several actions undertaken by public institutions and NGOs.

Regarding the Cabo Verde shearwater, actions have been concentrated in Ilhéu Raso islet, home to about 75 per cent of the species population. The country has benefited from the support of national institutions and international NGOs such as WWF, RMCP, the International Foundation of Banc d'Arguin (FIBA), and the Portuguese Society for the Study of Birds (SPEA). The national NGO, Biosphere I, led a shearwater protection campaign on Ilhéu Raso islet, with the support from the military, which averted the killing of young birds. It is thought that the population of shearwater is finally recovering, estimatedin 2013, at 7,000 breeding pairs.

The national environmental authority, national research and development institutions and many NGOs have continued with specific programmes to protect certain species such as the common turtle (Careta careta), the shearwater (Calonetris edwardsi), marine mammals and sharks, especially the hammerhead shark (Sphyrna spp.), white shark (Carcharodon carcharias), and the whale shark (Rhincodon typus). These are measures aimed at alleviating the cultural pressure on marine biodiversity at all levels. The protection of sea turtles and shearwater, among others, is ensured not only by protecting the species against hunting, but also by protecting their habitats and ecological niches.

There are also programmes to increase the levels of specific, genetic and ecological biodiversity. Given the major achievements in the conservation of these species, exemplified by the common turtle, and the level of environmental awareness and population involvement, these programmes should continue to receive the full attention of national authorities and the international community. While the capture of sea turtles on beaches and in the sea still poses a threat to the conservation of the species, the situation has improved substantially in recent years, with a strong contribution from the inspection operations and awareness campaigns developed by NGOs, community associations, local authorities and DNA.

Responsiveness to the pressures is strengthened by legislation and conservation groups, with some conservation plans already approved for corals, marine mammals, seabirds and sharks, in an effort to involve all potential national and international partnerships.



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Baia das Gata,Calhau, Cabo Verde

Cambodia

Cambodia is home to more than 135 species of mammal, 599 of birds, 173 of reptiles, 72 of amphibians, 350 of moths and butterflies, 955 of fresh and marine fish and aquatic species, and more than 4,500 vascular plants

Cambodia is home to the world's largest freshwater fish and has an extensive tiger habitat. The forests rivers, grasslands and wetlands are home to many newly recorded species. The country has designated 23 protected areas covering approximately 3,273,300 ha, equal to 18 per cent of the country's area. The government's Rectangular Strategy stresses the need to maximize agricultural production as well as to ensure the sustainable use and management of natural resources and the maintainance of biodiversity.

Realising the power of community protected areas

The Kingdom of Cambodia has a comprehensive policy on protected areas that benefits not only biodiversity but local communities and the economy. Each protected area is divided into a core zone, conservation zone, sustainable use zone, and community zone. The sustainable use zone benefits from investment and is provided with management areas of high economic value for national economic development as well as management and conservation of the protected area itself, contributing to the local communities, and indigenous minorities.

The granting of economic land concessions to investment and development projects in the sustainable use zones is a mechanism to form a protection line, preventing land encroachment in the protected areas, especially in the conservation and core zones. The majority of land concessions have been granted only in surrounding zones of protected areas, that is in the sustainable use zones. The granting of economic land concessions to investment and development projects in these zones can be a protector of conservation and core zones, and the investment/development projects carried out by the private sector play a significant role in stimulating economic growth, and especially enhancing the livelihoods of the people who live in and nearby the project areas. This prevents illegal or unsustainable economic practices such as clear cutting forests in biodiversity-rich areas.

In general, biodiversity and wildlife are not seriously affected by these concessions in sustainable use zones. On the contrary, the activities have contributed to the protection and replenishment of biodiversity, acting as a flood protector. For example, in Boeung Per Wildlife Sanctuary in Kampong Thom, Preah Vihear and Siem Reap province, the local community is entitled to the development of community protected areas (CPAs) in forest covered territories — on average, a family is entitled to 5 to 10 ha of land. The local people are granted rights to use and harvest natural resources such as wood for house construction, agricultural tools, and herbal medicines, based on management plans. With involvement of the community in forest management within the CPAs, the Cambodian government will encourage and facilitate the sales of forest carbon credits with the hope of improving livelihoods and using the funds from the sales to develop infrastructure and human resources in the communities.



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Siem Reap, Cambodia



Cameroon

Current coverage of mangrove in Cameroon is about 200,000 ha. The tropical humid dense forests make up the majority of Cameroon's forests and are estimated to cover 17 million ha

Cameroon is endowed with a rich biological diversity. The diverse ecosystems are largely representative of Africa's as a whole, resulting in the reference to Cameroon as Africa in miniature. This high degree of specie, genetic and ecosystem diversity is of significant socioeconomic, scientific, and medicinal importance to its people. It underpins the economy, significantly contributing to the wellbeing of the people. The volcanic soils of the south-west and littoral regions together with the maritime influence account for luxuriant vegetation which harbours highly diversified flora and fauna and supports considerable agricultural, forestry and fishing activities. The beauty of the wildlife and landscape of the north and extreme north regions are of high touristic value.

Assessing macrofungal diversity and mycorrhizal associations within diverse ecosystems

Two case studies of fungi have been conducted in Cameroon, one from the Mbalmayo Forest Reserve and the other from Campo Rain Forest areas. The studies show that 271 distinct species of fungi belonging to 110 genera in 58 families have been recorded in while more that 125 species of ectomycorrhizal fungi were identified in the Campo Forest. The first studies in ecological diversity focused on the taxonomy of non-gilled hymenomycetes from the Mbalmayo forest reserve. The studies have contributed towards the assessment of the current macrofungal diversity within the ecosystems of the country's southern forests, and evaluate the impact of deforestation and slash-and-burn activities on fungal communities, tracking the occurrence and changes to the fungal communities through the seasonal climatic variations.

The identification of specimens using modern techniques has yielded 271 distinct species, belonging to 110 genera in 58 families. All recorded species were new to the Mbalmayo forest reserve, while 75 of the species described were new to Cameroon, with 11 new mycobiota listed.

The study of the Campo area focused on mycorrhizal associations in rain forests of south Cameroon under various disturbance regimes and stages in order to provide essential information on the roles of mycorrhizas (arbuscular mycorrhiza and ectomycorrhiza) in tree establishment and forest recovery.

More than 125 species of ectomycorrhizal fungi were identified, mainly from near pristine forests in ectomycorrhizal clumps, either near the stem base of uapaca species or those of the caesalpiniaceae, while one further fungal species was found in association with gnetum. Among the ectomycorrhizal fungi, the amanitaceae, russulaceae, boletaceae, and cantharellaceae were well represented, whereas only a few species of cortinariaceae, sclerodermataceae, gomphaceae, clavulinaceae, and hymenochaetaceae were observed within the Tropenbos Campo Programme (TCP) area.

The same ectomycorrhizal fungi and ectomycorrhizal trees also occur in Korup National Park, Cameroon, even though the soils and climate are very different to the forests of the TCP area.



jbdodane on flickr

Mount Cameroon is one of Africa's largest volcanoes at 4,040m



Canada

Protected and conserved areas provide food and habitat to native wildlife, maintain essential ecosystem services, and provide opportunities for Canadians to connect with the wilderness

Having hosted the Secretariat of the Convention on Biological Diversity (CBD) since 1996, Canada was also the first industrialized country to sign and ratify the CBD. The country's 2020 Biodiversity Goals and Targets, adopted in 2015, are a result of collaboration between national and subnational governments, as well as key stakeholders including indigenous peoples, non-governmental organizations, the private sector and individuals. Canada's accomplishments in terrestrial and marine habitat conservation and protection contribute to its commitments to reaching Aichi Target 11. Protected and conserved areas provide food and habitat to native wildlife, maintain essential ecosystem services, and provide opportunities for Canadians to connect with the wilderness.

A pioneering role

Canada is home to approximately 30 per cent of global boreal forest, 20 per cent of freshwater resources, the world's longest coastline and one of the world's largest marine territories. All ten provinces, three territories and three oceans of Canada are home to protected and conserved areas, with land conservation efforts shared among all levels of governments, indigenous peoples, and the private sector.

Canada's Target 1 of its Biodiversity Goals and Targets states that by 2020, at least 17 per cent of terrestrial areas and inland water, and 10 per cent of marine and coastal areas will be conserved. In spring 2016, the initiatives Pathway to Canada Target 1 and a five-point plan were put in place to meet these commitments.

Canada has made significant progress since the CBD entered into force by increasing the protection of lands and freshwater from 5.8 per cent in 1993 to 10.5 per cent in 2017.

The five-point plan for the marine and coastal areas of Canada has led to conservation activity in more than 6.8 per cent of Canada's coastal and marine areas. In 2017, the country dedicated respectively 10.5 per cent of its terrestrial and inland water and 7.7 per cent of its marine and coastal areas to conservation.

Other investments by the government include the Habitat Stewardship Program (HSP) for Species at Risk, Aboriginal Fund for Species at Risk, Interdepartmental Recovery Fund and Ecological Gifts Program (EGP).

The Ministry of Fisheries and Oceans Canada has developed scientific guidance and criteria for identifying area-based conservation measures in alignment with international guidance under the CBD. Proposed amendments to the Oceans Act and the Canada Petroleum Resources Act will enable the establishment of Interim Protection Marine Protected Areas. The development of partnerships with First Nations, Metis Nations and Inuit is integral to these initiatives.

Canadians are learning about their natural heritage through various initiatives such as Connecting Canadians to Nature, Learn-to-Camp, Bioblitz Canada 150 and Parks for all. Environment and Climate Change Canada has also launched an initiative, Connect Canadians to Nature, in 10 of its National Wildlife Areas.



Image: Greg Shcherpanek

Pronghorn in southern alberta

Central African Republic

The Central African Republic has established 16 protected areas that cover 11 per cent of national territory

The Central African Republic is a landlocked country straddling the Congo-Guinean domain in the south and the Sahelo-Sudanese zone in the north. Central African Republic possesses a rich diversity of ecosystems, with four main land ecosystems of dense humid forest; savannah,; dense dry forest; and steppes; along with gallery forests along the waterways. This provides the country with a diverse fauna and flora, including 3,602 species of vascular plant, 209 of mammal and 668 of bird.

The Dzanga Sangha protected area complex

Established in 1990, the Dzanga Sangha protected area complex (APDS) includes the Dzanga Sangha Special Reserve (3,359 km^2) and the Dzanga Ndoki National Park (1,220 km^2). Given the bio-ecological importance of the area with its high density of forest elephants, gorillas, chimpanzees, bongos, and forest buffalos, as well as the discovery in 2011 of new endemic species, the area has been classified as a UNESCO world heritage site.

The general objective of the APDS is to safeguard the biodiversity and ecosystems of the dense humid forests of south-western region, through the sustainable management and promotion of natural resources.

To ensure the wellbeing of the local population as well as the ecological viability of the area, the APDS has been organized according to a consensual zoning plan which establishes a spatial organization of human activities. For example, community and safari hunting, logging and agriculture occur in the multipurpose reserve, while conservation and ecotourism activities are carried out in the National Park. These constitute socioeconomic activities that employ more than 100 eco-guards, assistants, and guides for the ecotourism programme of gorilla habituation, elephant viewing, net hunting by the Baakas, gathering, dancing, and fishing.

Progress in conservation through anti-poaching, integrated development and the distribution of income from socioeconomic activities has increased the adherence of local and indigenous communities to conservation principles in the area. The APDS's main objectives include the involvement of the local populations in the management and rational exploitation of the natural recourses and the improvement of their living conditions. Because the region contains a large proportion of indigenous peoples — the Aka — the activities developed are also focused on the protection of their traditional rights to the resources of the reserve, as long as this is compatible with the conservation of the forest.

Revenues from ecotourism serve to fund the administration of the protected area, which constitutes a guarantee for long-term management. Therefore, the principle of sustainable development and of rational exploitation of biodiversity is the key element for the co-management and sustainable use of natural resources in and around these protected areas. The activities implemented in the APDS reinforce local self-promotion initiatives.



David Holt at flickr

The Dzanga-Sangha Special Reserve is protected by the Central African Republic

Chad

The freshwaters of the Chad Basin are among the most productive in Africa, currently supplying 120,000 tons of fish per annum

Located in the heart of Africa, between the 8th and 24th degrees north latitude and the 13th and 24th degrees East longitude, the country is vast. Its surface area is 1,284,000 km^2, stretching 1,700 km north to south and 1,200 km east to west. It is the twentieth largest country in the world, the fifth in Africa after Sudan, Algeria, the Democratic Republic of the Congo and Libya, and is the third largest country in sub-Saharan Africa. The population is estimated at over 11 million inhabitants with a high annual rate of non-refugee growth of the order of 3.5 per cent

Considering the potential for biodiversity resources and reintroducing the oryx

The country's climate is of a dry tropical type, characterized by the alternation of two seasons: the rainy and the dry. Droughts have been recurring since 1970. The hydrographic network has consequently suffered a significant decrease in volume. The most significant case is Lake Chad, which has lost more than 90 per cent of its water volume from 25,000 km^2 to less than 2,500 km^2 in the space of 25 years.

Despite the disturbing deterioration of its natural resources in general, and water resources in particular, Chad has still considerable potential for biodiversity resources. Its network of protected areas consists of three national parks, seven wildlife reserves, a biosphere reserve and a community pilot area — a total of over 10 per cent of the country's territorial area.

The main pressures exerted on these protected areas are: pastoral pressure, with poaching concentrated on the most emblematic species such as elephant, giraffe, and manatees; desertification; repetitive droughts; national and sectoral policies of the primary sector, playing a role in reducing conservation areas; demographic pressure; wild bush fires; ignorance and non-observance of laws; and poverty.

The reintroduction of the oryx

Faced with the extinction of the algazelle oryx in the wild in the Sahelo-saharan band, this innovative project led by the Sahara Conservation Fund (cws) aimed to identify a place and create the prerequisites for the successful reintroduction of the oryx algazelle in Chad. The animals were brought in from the United Arab Emirates

After conducting extensive studies on the best methods to use and the best location in which to reintroduce the oryx, the final choice was the 80,000 km^2 Wadi Rhymed-wadi Achim reserve in central Chad, which offers the most favourable conditions for the relocation of the large-scale antelope. Awareness-raising of government officials and rehabilitation of the reserve was undertaken through the recruitment of new guards and detailed studies of living conditions on the reserve. The conditions have been met to ensure a win-win balance between local communities, the algazelle oryx, and the flora and fauna of the desert. The first wild reintroductions were made in 2015.



David Stanley on flickr

Chad



Chile

Tourism depends almost entirely on biodiversity, which provides recreation and other services supportive of the wellbeing of local communities and visitors

The biodiversity of Chile is characterized by a relatively high endemism of species in very varied and small ecosystems, giving rise to a great wealth of marine, coastal, terrestrial and insular environments, providing habitats for around 30,000 species of plants , animals, fungi and bacteria. The central and southern part of the country is considered one of the 35 global hotspots of biodiversity by the NGO, Conservation International. Given its critical state of conservation, it has also been classified as one of the most threatened by the Global 200 initiative of WWF and the World Bank.

The fishing community caring for the biodiversity of the islands

The sector of Punta de Choros Cove (IV Region of Coquimbo), is adjacent to three islands that make up the Humboldt Penguin National Reserve — Isla Choros, Isla Damas and Isla Gaviota. The challenge of the fishermen of the cove in achieving sustainable fishing is considered in parallel with the development of the tourist potential of the area, which has a special scenic beauty and the presence of macrovertebrates such as wolves, penguins and dolphins, as well as acting as a biological corridor for the passage of cetaceans.

Two management rules have been implemented in order to achieve sustainable fishing and exploit tourism potential: the creation of a marine reserve to protect the reproductive states of the abalone and limpet species, with restricted access to their production, and an Area of Management and Exploitation of Ecological Resources (AMERB), regulated by a management plan, with the direct participation of local fishermen.

In addition, the diversification of activities has been encouraged for the realization of initiatives of micro companies for the sighting of dolphins and resident fauna. Along with this, it was necessary to resolve the conflict caused by changing the practices of the local community and fishermen, which entailed a process of socialization in the medium term through committees validated by the fishing community and constituted by community actors, to organize the exploitation activities and the tourist activity of the area.

This process began 14 years ago and now fishing quotas have been maintained for the abalone and limpet. An emerging business of dolphin and local fauna watching was also developed, necessitating an increase in local tourist infrastructure and communications. At present the populations of sea lions, dolphins, and guano birds have been maintained, as have the fishing quotas in the AMERB, which indicates that the regulated intervention shows signs of sustainability.



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Torres del Paine National Park



China

The compilation of Biodiversity Red Lists has led to enrichment of information on biological species in China and improvement of the IUCN Red List categories and criteria

The Chinese Government gives high priority to biodiversity conservation and the Biodiversity Red List of China is at the heart of the country's National Biodiversity Conservation Strategy and Action Plan (2011–2030). To understand the threat to biodiversity in China and improve the effectiveness of biodiversity conservation work, the government began the preparation of its Biodiversity Red List in 2008. The resulting Red Lists for higher plants, vertebrates and macrofungi incorporate data from more than 600 experts in relevant fields. Work so far has included an assessment to classify species according to their extinction risk, as well as examination of the reasons for threats to biodiversity of plants, vertebrates and other species. The compilation of the lists has led to enrichment of information on biological species in China and improvement of the IUCN Red List categories and criteria.

Contributing to global understanding

In 2014, the Chinese government decided to participate in the international initiative of The Economics of Ecosystems and Biodiversity (TEEB), led by the United Nations Environment Programme. Since then, the Ministry of Ecology and Environment (MEE) has developed TEEB methodologies and indicator systems for biodiversity valuation; established a number of TEEB demonstration areas; organized publicity and training activities for governmental ministers, academics, enterprise, local residents and other stakeholders; and established an international cooperation mechanism to carry out joint research on the economics of ecosystem services.

The study of these services took place in two areas: Xianju National Park in Zhejiang Province, Eastern China, which represents an important species gene pool and ecological barrier; and Jingdong Yi Autonomous County in central Yunnan Province, south-western China. The latter was chosen for its two national nature reserves which house one third of China's national species, including extremely endangered species.

Pilot programmes for the National Park System are another area of focus, with 10 pilot areas set up for establishing national parks, covering 2.27 per cent of total land area. The pilot mission will complete by the end of 2020. This initiative has made positive progress in protected areas integration, national park legislation, collective land use regulation, management system construction and community development mechanisms.

In 2011, the Chinese Government proposed its Ecological Redline Policy. A priority of this mission is to reform the administrative system for ecological protection. The Yangtze River Economic Belt is an important strategic zone for this work, which saw the delimitation of the ecological conservation redline in 15 provinces and municipalities along the Yangtze River Economic Belt and Beijing-Tianjin-Hebei Region by the end of 2017.



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Great Wall of China

Colombia

30 per cent of Colombian territory is under the figure of collective territories which have their own systems of management and governance and are of great importance for the management of biodiversity, for its extension and for the great variety of ecosystems that it encompasses

Diversity and complexity are the two words that best describe the biological heritage in Colombia. The country occupies 0.22 per cent of the world's land surface and houses more than 10 per cent of its currently known species. As a mega-diverse territory, it is classified within the group of the 14 countries that have the highest index of biodiversity on earth. This is superimposed on a political, economic and social history, equally complex and diverse. The country has five terrestrial ecoregions: Chocó biogeographic; Plains of the Caribbean; Amazon; Orinoquia and the Andean Region. There are two marine-coastal regions: Pacific Ocean and Caribbean Sea, with a maritime area equal to that of its land territory. The country contains over 300 types of continental and coastal ecosystems.

Strengthening conservation in protected areas through the Conservation Mosaic strategy

The Natural Heritage Fund through various initiatives, especially the Mosaics of Conservation Programme funded by the GEF through the World Bank and the Conservation Landscapes Programme funded by USAID, has promoted a landscape-scale conservation approach that integrates an area protected with the surrounding social and economic landscape, and strengthens local capacity and the generation of social agreements for conservation and local development.

Over the last seven years Colombia has worked on 22 conservation mosaics in various regions and ecosystems of the country. In conservation landscapes, comprehensive actions of conservation and sustainable production are promoted, generating changes in land use with less impact on biodiversity, as well as the development and application of appropriate technical solutions to local contexts. In addition, conservation landscapes necessitate the adoption of sustainable use practices, an improvement in connectivity as well as decision-making exercises on the territory and its management by its inhabitants.

In the last two years, this approach has had the additional funding of the GEF / World Bank and USAID to scale it to regions with strategic ecosystems. Namely, the Colombian Massif, where its aim is to contribute to the conservation of forests and aquifers where the most important rivers of the country are born. Colombia has worked in five mosaics in alliance with SIRAP Macizo. Likewise, from the 'Paisajes Caribe' Programme, the conservation and recovery of the dry forest and its connectivities are promoted in this region of great economic importance.

This approach allows the generation of fundamental elements, contributing to the financial sustainability of conservation management and ecosystem services. On one hand, conservation/production agreements are generated to link actions within the protected areas with those outside them and the actions of the various conservation actors, making interventions more effective. On the other hand, conservation and management strategies are developed, while promoting processes of sustainable local development that respond to the expectations of the inhabitants.

The strengthening of social capital and leadership by social organizations and community groups generates social commitment while promoting territorial roots. Also, institutional alliances facilitate coordinated management, greater synergies and the articulation and leveraging of resources. Colombia has a patrimonial fund of the Mosaics of Conservation Programme that supports, with sustainable financing, two conservation mosaics around the Galeras Flora and Fauna Sanctuary and the Las Orquídeas National Natural Park.



Alexander Schimmeck on flickr

Rio Magdalena, San Augustin

Comoros

Comoros hosts the most important breeding area for marine turtles in the Indian Ocean

The Union of the Comoros is an archipelago composed of four islands located at the northern entrance of the Mozambique Channel, between Madagascar and the east coast of Africa. The recent geological nature of the country, its geographical position and its multi-insularity have given it a rich diversity of landscapes and biodiversity. The country has four main ecosystems: coastal and marine with a variety of mangroves, coral reefs, beaches, and seagrass beds; savannah; primary rainforest; and lake. The country is one of the 20 islands or archipelagos characterized by a remarkable specific endemism on a global scale, and has been classified as a biodiversity hotspot.

The Moheli Marine Park

The Moheli Marine Park was the first site in the Comoros to be granted protection status. It includes 10 marine reserves and covers an area of approximately 40,000 ha on the Moheli Island. Its mission is to be a sanctuary for biodiversity, a space co-managed by local communities, and a conservation tool for the environment and the sustainable use of marine resources.

Marine reserves where fishing activity is prohibited have been identified in association with the communities. Elsewhere in the park, small-scale fishing using only non-destructive methods is allowed. A warden appointed by the Minister for the Environment directs day-to-day activities of the park with the support of eco-guards recruited from local villages. The guards benefit from training and supervision, and in return, ensure the dissemination of the learnings to village communities. They also have the power to establish violations of the park's regulations.

As a result of the efforts implemented within the park, there have been some remarkably encouraging outcomes of biodiversity restoration, with the rehabilitation of some 60 per cent of coral reefs in the park's zone observed. Also, an increase in the number of marine turtles (5,000) was recorded, nesting on five beaches in the zone of Itsamia in Moheli alone, against 1,235 recorded in 2010, representing an annual population growth rate of almost 25 per cent, never before observed in the global sphere.

There has also been increased awareness among the population, and especially within the youth, of the importance of biodiversity conservation. The park project has led several types of training with various participants, including training in participatory approach and co-management, the training of eco-guards, and training for the members of the Ulanga associations of the villages surrounding the park. The regional services of the Ministry of the Environment and the governorate also participated in trainings in ecology and in environmental legislation.

The Marine Parc's 12 associations have been the most significant example of the social mobilization around biodiversity in the country. This has spurred the interest of numerous partners, such as the Decentralized Cooperation Programme; the Regional Project for the Sustainable Management of Coastal Resources; the Network of protected areas of the Indian Ocean Commission, funded by the EU; France Volontaires (from the Reunion Region); and Australia.



Chamara Irugalratne on flickr

Spider

Congo

The protected areas of the country cover 13.1 per cent of national territory

Straddling the equator, the Republic of Congo is situated in Central Africa. Its territory spans 342,000 km² and borders the Atlantic on a 170 km-long coast. The vegetation of the country is divided into two main types: forest and grassland. Covering 65 per cent of national territory, the forest comprises three main massifs: the Mayombe, Chaillu, and northern Congo, composed of five forest formations. The grasslands consist of various savannah types, with grass, shrubs, and trees. Due to its position at the crossroads of the lower Guinean and Congolese domains, Congo features a rich diversity of plants, with a current register of 26,575 species

The development of sustainable management plans for forest concessions

Since 2000, in accordance with the new policy on sustainable forest management, the department in charge of forests carried out a programme for the development of management plans for forest concessions. 32 Forest Management Units (FMU), covering approximately 9,375,399 ha, are involved in a programme planned to extend to all forest concessions.

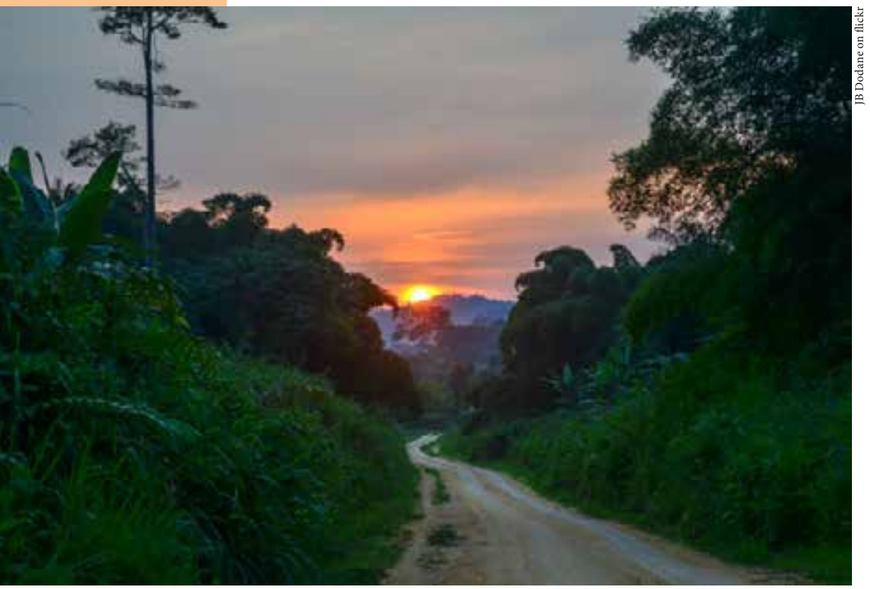
In this context, five management series were defined, delineated and mapped in each managed FMU. These are the conservation, protection, research, production, and community development series. Congolese companies, such as Congolaise Industrielle des Bois, Industrie de Transformation des Bois de la Likouala, Bois et Placages de Lopola, have begun the development of management plans, with the support of international expertise, namely consulting firms such as Forest Resources Management and Tropical Wood Environment.

The forest companies' funding of the management plans allowed the programme to be carried out in several FMUs. Currently, 2,277,648 ha have already been planned in UFA Kabo, Ngombé, Pokola and Lopola, including 1,891,610 ha which have received the forest certification FSC

Furthermore, these plans, based on the new concept of sustainable management, recommend the compilation of multi-resource inventories in order to obtain information on timber and other biological resources, as well as the state of protected areas. Socioeconomic and ecological studies are also carried out, to take into account the activities of the populations and the environmental impact of forest exploitation and other types of valorization of biological resources.

To this end, a number of forest inventories have been undertaken in recent years, particularly in the forest of northern Congo where companies are more engaged in the forest management process. In addition to these botanical survey missions, some plant communities have been characterized in central and northern Congo. All of these missions were coupled with the computerization of exsiccata from the herbarium of the Centre for Studies of Plant Resources, begun in 2008. Currently, of 26,575 computerized specimens, there are 5,137 spontaneous species, distributed among 1,627 genres and 233 families.

In the context of international cooperation, such as with the French Development Agency, an assistance project for forest companies operating in the south of the country is being carried out, in order to better involve them in the dynamic of preparation and performance of these management plans.



JB Dodane on flickr

Roads of Lekoumou province, Congo

Cook Islands

Marine resources are of particular importance to the Cook Islands and marine products are important in the diets of virtually all Cook Islanders

The status of Cook Islands forests is rated as 'good to fair' with very little change since a 1992 assessment. The country has one of the highest proportions, 62 per cent, of intact natural forests in the region and ranks third in this proportion for all Polynesian countries. This stability relates to most development having taken place on land previously cleared for agriculture, the absence of a commercial forestry industry, and significant forest areas on several islands covering Makatea (limestone outcrops) which is unsuitable for development.

Managing exploitation of ocean resources

In 2012 the Cook Islands created a shark sanctuary within its waters. The development of a policy framework for a whale sanctuary declared in 2001 is also underway. A multiple-use Marine Park, Marae Moana, was created in 2017, covering the country's entire marine jurisdiction, an area of 1.9 million km². Within the park, 324,000 km² has been earmarked for a higher level of protection with the purpose of protecting the pelagic, benthic, coral reef, coastal, and lagoon habitats of the Marae Moana. Accordingly, all seabed mineral activities and large-scale commercial fishing in the area have been prohibited, but other ecologically sustainable uses are permitted.

In addition the government has recently developed an Offshore Fisheries Policy which has sustainability as a key objective. The Cook Islands Exclusive Economic Zone (EEZ) South Pacific albacore longline fishery has become the first Chinese tuna fleet to be certified to the Marine Stewardship Council (MSC) Fisheries Standard. There is an ongoing debate about the licensing of European purse-seiners to target skipjack tuna and the use of offshore fish aggregating devices, amid concerns that stocks of species such as bigeye and yellowfin tuna, which local fishermen rely on, may be impacted.

The current long-lining fleet catches significant numbers of bigeye tuna which have been identified as overfished regionally. Inshore fisheries are not apparently overfished, particularly due to concerns of ciguatera in Rarotonga, reduced population levels, and numbers of active fishermen in other islands. There have been noticeable changes in some populations but these are considered to be due to decadal climate fluctuations rather than the impacts of harvesting. Surveys have identified overexploitation of reef invertebrates, particularly sea cucumbers on several islands. However there are mechanisms in place to address that at some sites including export bans and locally protected areas (ra'ui). The Ministry of Marine Resources is working with communities demonstrating an interest in creating further ra'ui.



Alex Anderson on flickr

Te Rua Manga (The Needle) Rarotonga



Costa Rica

Four species of sea turtle —Chelonia mydas, Dermochelys coriacea, Eretmochelys imbricata, Caretta caretta — use the black beaches of Cahuita and Puerto Viejo for nesting

Costa Rica is important internationally in terms of its biodiversity because, in a relatively small territory, it harbours a great wealth of species — approximately 3.6 per cent of the biodiversity expected for the planet, or between 13 and 14 million species. The country has an approximate record of 94,753 known species, that is, approximately 5 per cent of the biodiversity that is known around the world (about two million species known up to the year 2005), a list that increases while the process of research and identification continues in less studied sites and groups.

Improving environmental legislation

Between 2010 and 2013 environmental legislation modified some issues on the management of biodiversity. This affected wildlife law; forest law regulation; regulation of technical criteria for the identification of wetlands and their recognition as state's natural heritage; declaration of the first marine management area; and regulation of the characteristics of marine protected areas. Also, institutional administrative modifications were made such as the creation of the Vice-Ministry of Waters and Seas and the constitution of the National Commission of the Sea.

The environmental legislation impacts the state of biodiversity, with incentives and the promotion of good practices guided by the waste law, and law for the promotion of rural community tourism.

Regarding biodiversity, modifications to the regulatory and institutional framework on marine-coastal biodiversity is conspicuous as it has been lacking in previous diagnoses.

In 2012, the legislative assembly made additions to the Wildlife Conservation Law to the effect of:

- Elimination of hunting as a sport
- Modification of the definition of wildlife with the aim of covering all organisms that are located in terrestrial maritime territory
- Inclusion of ecosystems as conservation units
- Inclusion of the concept of economic evaluation of environmental damage
- Typification of other crimes against wildlife
- Homologation of concepts with other environmental laws
- Establishment of controls and monitoring of the wild populations of the country.

According to the experts on environmental legal matters, the changes implemented in Costa Rica have been relevant to improve the environmental legal framework, especially in the area of water resources and the integral management of waste and biodiversity. In some cases it has been modernized, either through the clarification of competences and the introduction of legal tools and concepts or the resolving of an existing regulatory gap.



Shawn McCready on flickr

Scarlet macaws



Côte d'Ivoire

The Ivory Coast has 31 species of aquatic reptile and 5 species of marine turtle

Situated in West Africa, the Ivory Coast is bordered in the south by the Atlantic Ocean. Its territory spans 322,562 km² and its vegetation is divided among the Guinean and Sudanese domains from the south to the north. The country is characterized by a relatively flat relief featuring plains and plateaus, and mountain ranges in the west, as well as a dense hydrographic network. The Ivorian biodiversity is rich with 17,242 known species. To protect it, the government has established 8 national parks covering 1,732,100 ha, 5 natural reserves spanning 339,630 ha, and 16 botanical reserves covering 198,418 ha.

Tackling invasive floating plants in Ivorian waterways and lakes

The Ivory Coast has had to face invasive floating plants developing in watercourses and lakes around the country. Specifically, there has been an invasion of water cabbage (Pistia striatiotes), kariba weed (Salvinia molesta), and water hyacinth (Eichhornia crassipes), species that are native to South America. The plants have come to develop over almost all continental water bodies including a hydroelectric dam lake, and have shown in seasonal coverage of almost all lagoons.

These invasive floating plants have negative environmental effects at several levels. Firstly, they have affected the local environments and habitats by hindering the penetration of sunlight, causing siltation, deoxygenation, decreasing aquatic biological diversity and increasing root-associated invertebrate fauna. Secondly, the invasive floating plants have also affected aquatic fauna by causing the disappearance of benthic species such as molluscs, crustaceans, and aquatic insects, (except for oligochaetes, gastropods and hematophagous aquatic insects) as well as the disappearance of all species of fish except catfish and phytophagous tilapia fish. Thirdly, concerning the effects on humans, these invasive floating plants constitute an impediment to water-related activities such as transport, fishing (including the loss and destruction of fishing gear), and agricultural activities; and cause nuisance due to water-related diseases.

To tackle this problem, several measures and actions were carried out to eradicate the plants. Firstly, the collection of plants was performed by manually picking them from the bodies of water. Furthermore, the Bassam inlet was opened in order to evacuate the plants towards the sea. Since they are freshwater plants, the salt from the sea water can destroy them. Additionally, actions of biological control were carried out through the introduction of phytophagous (plant-eating) insect species specialised in floating plants. The government also enhanced the surveillance of transboundary waters and enforced the rational management of invasive species.

As a result of the actions taken, there have been visible improvements of the bodies of water and a recolonization by local aquatic fauna.

jbdodane on flickr

The Comoé National Park

Croatia

After its accession to the EU, Croatia established the ecological network Natura 2000 that covers over 36 per cent of land territory, and represents the second largest ecological network in the EU in relation to Member State area

Compared to its relatively small area of 56,594 km², Croatia is endowed with exceptional richness and diversity of species and habitats. Geomorphological differences between lowland, mountain and coastal Croatia as well as the great diversity of terrestrial, marine and underground habitats have resulted in a wealth of species. The northern part of the country is characterized by lowland rivers with well-preserved willow-poplar gallery forests and common oak forests, wet grasslands and extensive marshes. The mountain karst area of the Dinaric Alps is covered with the beech and mixed beech-fir forests that represent the most westerly extensive forest complex in this part of the Europe, with significant populations of brown bear, wolf and Eurasian lynx.

Nature parks underpin the potential for regional development

Protected Areas are a Croatian success story. By the end of 2012 there were 431 protected areas in the country, classified in nine national categories and covering 8.68 per cent of the total surface of national territory (including 12.44 per cent land territory and 1.95 per cent of internal waters and territorial sea).

More than 50 per cent of area is covered by nature parks. There is an increase in their total surface at state level from 7.06 per cent in 2008 to 8.68 per cent in 2012, mostly due to protection of two new large regional parks in 2009. Eight new areas were protected between 2008 and 2013 — two regional parks, two significant landscapes, three monuments of park architecture and one nature monument. For four of these areas the boundaries and/or categories of protection have been changed.

Additionally, baseline studies have been prepared for the potential protection of 32 areas. The Mura-Drava-Danube has been declared as a transboundary biosphere reserve. The area of the Nature Park Vransko jezero has been included in the Ramsar List. Among the national protected areas there are several with international designation: one World Heritage site (Plitvička jezera National Park and, in 2017, Primeval forests of the Carpathian beech and other parts of Europe), five Ramsar sites (Crna Mlaka, Lonjsko i Mokro polje, Kopački rit, Delta Neretve and Vransko jezero), two biosphere reserves (Velebit mountain and TBR MuraDrava-Danube) and one GEOPARK Papuk.

Progress was achieved with the protection of new areas, international designations of protected areas and management planning. Given that protected areas, particularly national and nature parks, provide the core potential for regional development, investment in the preparation of projects to improve nature education facilities and infrastructure for visitors will ensure the set up of education and the raising of public awareness. This reaches the objectives of sustainable management and provides benefits to the local and regional economy by attracting inward investment and enhancing local image and quality of life. Additionally, the new framework in management of national and nature parks was the adoption of a new visual identity to further underpin their potential for regional development.



Image: Renco Kosinožić, Parks of Croatia

National Park Brijuni

Cuba

Cuba is the principal centre of evolution and speciation in the Antilles, as well as one of the most important islands worldwide for biodiversity

The distribution of species is not uniform throughout Cuban territory, since it is concentrated in the oldest and most stable regions, such as the mountainous zones of the west, centre, north-east, and south-east of the island, as well as in areas of extreme conditions such as the serpentine hills and plains, the semi-arid south-east coasts and the plains of siliceous sands of the west. The high endemism of Cuban terrestrial biodiversity is due, among other factors, to the geographical isolation given by the insularity of the Cuban archipelago, the mosaic of soils due to the complexity and geological heterogeneity, as well as latitudinal and climatic differences.

Biological diversity in sectoral plans and programmes

A National Soil Improvement and Conservation Programme has benefited an annual average of around 500,000 ha of cultivated soils. From 2000 to date, Cuba's forest index increased from 22.2 to 25.3 per cent and, at the end of 2007, the covered forest area of the country amounted to 2778.5 thousand ha, of which 427.0 thousand ha are from plantations (planted forests) and 2351.5 thousand ha are natural forests. Conservation forests, in which economic deforestation is not allowed, constitute 22 per cent of this total and are broken down by categories.

A set of criteria and indicators for sustainable forest management have been developed — five criteria with 24 indicators — including economic, environmental and social aspects, which are monitored at all levels of the system and provide information on the trends of forest management at different levels.

Forestry Management projects have been completed by 15 companies in the forestry business system, four in protected areas and 54 in forestry areas belonging to non-specialized tenants. Over a term of 10 years, management projects have been implemented on a total of 966.800 ha, representing 35 per cent of the entire forest area of the country.

Between 2000 and 2007, provincial prevention programmes against forest fires have been established at the national level.

Zones have been declared under a special regime of use and protection where certain conditions have been established for their exploitation. For instance, the use of certain fishing gear is prohibited or controlled at dams and "chinchorro" practices are banned due to their acknowledged negative effect on marine ecology and biodiversity. There is also an intention on the part of the Multi-annual Indicative Programme (MIP) to eliminate them permanently.



Tobias Nordhausen on flickr

Waterfall in the Escambray mountains



Cyprus

Protected Areas under implementation of the Habitats Directive now covers 752.26 km² of terrestrial and 130.18 km² of marine areas

Cyprus is the third largest island in the Mediterranean, situated at its north-eastern corner, being at the crossroads and communication routes of Europe, the Middle East and Asia. The island has been largely influenced by its geographic location, climatic conditions and human activities. Its position, its isolation over the centuries from the mainland and its climatic conditions have all led to the creation of a great biological diversity and a significant number of native and endemic species. As an island, Cyprus has developed a strong evolution of endemic elements, whereas surrounded by large continents, it incorporates elements of the neighbouring land masses. About 8.2 per cent of the indigenous plants of the island — 144 different taxa of flora — are endemic to Cyprus.

Protected Areas in Cyprus

Cyprus is a biodiversity hotspot area, with 42 habitat types of Annex I of the Habitats Directive, 92/43/EEC, rich in plant and animal species, with 39 species — 18 plant and 21 animal — of Annex II of the Habitats directive of which 14 are priority species. The island is also a mosaic of biotopes, with extensive natural coniferous forests and expansion of phrygana. The ecosystems consist of high forest, shrubs, traditional cultivated orchard trees and vineyards, constituting important habitats for rare plants. Biodiversity in Cyprus has not been fully assessed, but within the scope of the Natura 2000 Network, a monitor scheme has been initiated.

High forests cover approximately 17 per cent of the island, extending mainly on the Troodos and Pentadactylos ranges, whereas the lower hills are covered by shrubs, maquis, phrygana, and cultivations as well as built-up areas. The plains, like the Mesaoria plain and the coastal zones are covered by cultivations — approximately 45 per cent of the island — and settlements, with areas of natural to semi-natural vegetation types.

Protected Areas (PAs) under implementation of the Habitats Directive now cover 752.26 km² terrestrial and 130.18 km² marine areas. PAs, play a pivotal role in protecting biodiversity (habitats and species), but also in raising awareness. The Natura 2000 Network (N2K) is now being visited for leisure and/or for specific interests by an increasing number of people. In order to promote nature and its value, PAs have potential synergies that enable new generations to become familiar with such complex concepts as biodiversity, endangered species, and ecosystem balance.

The PAs are now being visited for tourism, recreation and/or for specific interests by an increasing number of both local and foreign visitors. PAs can provide ecosystem services, for example, in the Natura 2000 area, the Akamas Peninsula contributes towards GDP through tourism revenues with approximately US$ 5,750,000 per year. Natural habitats and cultivated systems, such as traditional farmland, sustain mainly the farming of goats and sheep as well as regulating and providing ecosystems services.



Image: Tom Coe on Unsplash

Lara Beach, Cyprus



Czech Republic

Nearly 80 000 species have been recorded on the Czech territory. Five glacial lakes are located in the Šumava Mountains

Due to its location on the boundaries of four biogeographical subprovinces: Hercynian, Polonian, West Carpathian, and North Pannonian, as well as its geological diversity, the Czech Republic has a relatively wide range of animal and plant species and habitats. Approximately 2,500 out of a total of 3,500 vascular plant species known in the Czech Republic are native and/or archeophytes, that is, species introduced until about the 15th century. A total of 886 species of bryophytes, 1,500 of lichen, and up to 40,000 species of fungi (about 4 000 species of macromycetes or higher fungi) have been recorded. Also documented are over 24,000 species of insect, some 8 000 species of other invertebrates, and 711 species of vertebrates.

Legal base creates positive effects for forest, ecosystem, and biodiversity

Knowledge of biodiversity in the Czech Republic is good, especially due to a long tradition of research as well as recent research activity. Thanks the country's Gazette on Forest law (the Forest Act), various positive forest, ecosystem, and biodiversity effects have taken place. The law specifies three distinct types of forest — protective (forests at extremely unfavourable sites, in high mountains and forests in the dwarf-pine vegetation zone); special purpose (forests in areas of the first degrees of water source hygienic protection, sited in protection zones for natural medicinal and table mineral waters); and forests in national parks and natural reserves.

Special purpose forests can also be those with a public interest in the improvement or protection of the environment or other qualified interests to give non-production functions higher priority than forest production functions. Productive forests are classified as neither protective nor special purpose forests. One of the provisions of the Forest Act is that a minimum proportion of soil for improving and stabilizing woody plants is required, making it a binding requirement of forestry management plans.

The Forest Act sets the minimal proportion according to the individual forest category and the economic unit (forestry management unit based on forestry typology). Due a number of factors, including legally binding regulation, reforestation/afforestation subvention programmes, subsidiary schemes and other incentive measures focused on increasing the proportion of soil for improving and stabilising woody plants, there has been a continuous increase in the proportion of broad-leaved deciduous tree species, which have increased from 12 per cent in 1950 to 26 per cent in 2012.

Forest cover has been gradually increasing over the last decade by 0.08 per cent annually and, in 2012, accounts for 26,661 km² or 33.9 per cent of the whole Czech Republic's territory. In 2012 coniferous species accounted for 73.2 per cent, deciduous broad-leaved trees for 25.6 per cent, with only 1 per cent of forest land left for clearing and logging. In 2012 the proportion of natural regeneration reached 21.8 per cent in comparison with 13.5 per cent in 2000.



Jakub Kriz on Unsplash

Mount Sněžka



Democratic People's Republic of Korea

Research in the Democratic People's Republic of Korea has shown that the cultivation of Pistia stratiotes in rivers can play an important role in improving water quality in degraded river systems. The plant is also excellent fodder for livestock

The Democratic People's Republic of Korea is located in Northeast Asia. The 122,762.338 km² of territory is characterized by many mountains, rivers and a long coastline. It is bordered by the East Sea and the West Sea, and in the north by China and Russia between the Amnok River and Tumen River. The country boasts a variety of natural landscapes with an abundance of biodiversity. 10,012 plant species have been recorded, among which the number of higher plant species is 4,426, approximately 1.6 per cent of the global number. 1,494 species of vertebrate, 8,652 of invertebrate and 866 of fish have been recorded so far.

The country's rich biodiversity is an asset for developing the national economy, including agriculture, livestock breeding, fruit farming, forestry, aquiculture, bee-farming, and herb cultivation. The biodiversity also provides benefits for human health and wellbeing, and is important for the country's culture.

Restoration of habitat for cranes and construction of a community-based protected area

The Democratic People's Republic of Korea was once a major wintering area for red-crowned cranes, whose current global population is approximately 2,700. The crane used to overwinter in several places of the middle of Korean peninsula before the 1970s, but thereafter its distribution gradually contracted to the narrow areas including the coastal areas of Ryongyon, Kangryong and Chongdan, and the estuary of the River Han in the west and Cholwon County in the east of the country. The population wintering in Cholwon County is about 850, approximately 77 per cent of the nationwide population.

The project "Restoration of Habitat for Cranes in Anbyon Plain and construction of community-based Protected Area" was begun in 2008 in cooperation with Birdlife International. The project aims at demonstrating community-based reserve management, integrating agriculture and sustainable development in the local area through the restoration of habitat for red-crowned cranes by encouraging the local people to protect them. The project site comprises 100 km² of Anbyon Plain in Kangwon Province. Anbyon Plain was established as a red-crowned crane reserve in 2010 and, in order to attract the birds, one pair of cranes as well as crane decoys were used. Favourable conditions were established, such as leaving straw in some of the fields, with watering provided. Brochures about the cranes were distributed and helped to raise awareness among the local people and students.

Activities to improve and protect the eco-environment of the local areas were successfully undertaken, including establishing the production base for new organic fertilizer in the cooperative farm, introducing organic farming and agro-forestry management in slope land, planting fast growing willows and feed grass in waterways to prevent soil erosion, and establishing watershed management. Thanks to these efforts and activities, tens of red-crowned cranes have landed in the area, one that they had previously avoided due to habitat destruction. The landing population is now increasing year by year.

Ramsar



Rason Migratory Bird Reserve, The Democratic People's Republic of Korea



Democratic Republic of the Congo

Three out of four types of great ape are present in the country — the chimpanzee, gorilla, and bonobo

Located in Central Africa, the Democratic Republic of the Congo stands among the 16 countries in the world qualified as megadiverse, as it is characterized by a high rate of endemism. Out of 50,000 known plant species in Africa, the country holds first place in local floristic species. This is the result of both the vastness of its territory (234.5 million ha) and the variety of physical and climatic conditions. Its vegetation is represented by an impressive plant complex ranging from dense forest to grass and tree savannah. Forests represent a biome that contains important habitats for biological diversity, and cover 67 per cent of the country's territory, representing 10 per cent of the world's and 47 per cent of Africa's forests.

A new legal arsenal for the environment

In the past couple of decades, the Democratic Republic of the Congo has made major advances in the country's legal arsenal concerning the management of natural resources. The country has promulgated three major laws concerning the fundamental principles of environmental management, the fundamental principles of agriculture, and the conservation of nature. These laws bring about important innovations designed to have positive repercussions on the management of biodiversity.

In particular, the law on the conservation of nature has marked a new turning point in the domain of conservation in the country. The principles underpinning this law notably promote:

- The establishment of a national system of protected areas
- The participatory management of protected areas
- The promotion and protection of traditional knowledge in the realm of conservation
- The diversification of sources of funding through, among other things, partnerships with the private sector
- The right of third parties to engage in legal proceedings
- The recognition of the repressive regime conferred upon the conservationists of protected areas and eco-guards by virtue of their status as paramilitary and judicial police officers.

The law regarding the fundamental principles of agriculture ensures that biodiversity is taken into account and is mainstreamed into the agricultural sector. It integrates the agro-ecological diversities and specificities and aims to favour the sustainable promotion of agricultural potential and space, while ensuring consideration for social and environmental aspects.

This law is a significant innovation notably because it takes account of the requirements of international instruments relating to the conservation and use of plant genetic resources as well as the protection of the environment.

Davidson Gruaer



Gorilla group moving through jungle

Denmark

The agricultural land farmed organically has increased by about four to five times in the last 18 years

Today, the vast majority of Denmark's open landscape consists of semi- or fully-cultivated land, with two-thirds of the total land area of Denmark used for agricultural purposes. Although this limits biological diversity in the country, there remains some remarkable natural areas with a rich diversity of species. Notably, Denmark's coastline is of unique natural value within Europe as it holds a major proportion of the areas of dunes, saltmarsh and shallow marine waters, of crucial importance to specialised lichens, plants, fungi and invertebrates, as well as waterbirds. Denmark's forests, which cover 14 per cent of the national territory, hold the largest number of Danish species, including those endangered. There are currently four national parks: Mols Bjerge, Skjoldungernes, Vadehavet, and Thy.

The Blue Reef Habitat Restoration Project

Reefs are very valuable marine oases, and are home to a diversity of species. In Denmark, they are protected in accordance with the Habitats Directive and are also listed as sites in the Natura 2000 designation platform.

The Blue Reef Habitat Restoration Project has restored and protected a large reef, covering almost 7 ha, at Læsø Trindel in a Natura 2000-designated area 11 km north-east of the island of Læsø in northern Kattegat. An area of about 6 ha of the pre-existing reef is now stabilised. 86,000 tons of rock were deposited on the reef during the project, which was completed in 2013. The aim was to rehabilitate the reef and provide good living conditions for creatures living in the benthic zone — the seabed-dwelling algae and fish.

The effects of the project are monitored, and conditions before and after restoration have been assessed. It is clear that restoration has generally increased biodiversity on the reef and the number of characteristic species has increased. Based on measurements made in 2007 and 2012 the estimated total biomass on the reef has increased by approximately three tons of animals and six tons of algae.

Reinstatement of the reef means that there are now more species of perennial seaweed in the algae communities than there were before restoration and there are signs of greater stability in the habitat. New species have migrated to the reef. For example, there are now large occurrences of the plumose anemone (Metridium senile), a soft coral that was not previously extant on the reef.

Shoals of cod near the reef have increased since its restoration. The number of fish more closely associated with reefs, primarily wrasses (Labridae), has also increased while numbers of flatfish have fallen in the shallow parts of the reef. No new species of fish have migrated to the reef, but the constellation of species has changed.

The results of fish investigations show that Læsø Trindel is increasingly becoming a growth area for several species of fish, such as cod and Atlantic pollock, and these tend to attract more fish from local areas that find food on the reef. Reefs are also a favourite habitat for lobster. However, as lobsters grow slowly, it is too early to determine whether restoration has been beneficial for this species. Porpoise have been observed more frequently and for longer periods since than before restoration. This is interpreted as an improvement of the reef's ecological standard.



TristanPict on flickr

Skagen, Denmark

Djibouti

The Day forest is believed to shelter over 60 per cent of the country's biodiversity

The Republic of Djibouti is characterized by a hot and arid climate. Despite this and the small surface of its territory (23,200km²), the country features a rich diversity of landscapes and species. There are three geomorphological domains: the mountain forests in the north of the country benefit from a mild microclimate and thus hold an important biodiversity; the plateaus and hills of high and medium altitude are characterized by less dense steppes; and the transition zones and low altitude zones have a biodiversity adapted to harsh climate conditions. In total, the marine and land biodiversity include 1,421 animal species and 843 plant.

Pilot project for the integrated management of the Day Forest

In the past decades, the exploitation of the Day forest for livestock has led to overgrazing. This has had negative environmental consequences, notably the disappearance of forage plants, including aerial plants, such as fig trees (Ficus Vasta). Juniper trees are also grazed as young shoots.

Between 2003 and 2006, a pilot project was carried out to create fenced off protected areas within the forest, where grazing was prohibited. The area covered 8 ha in Garab, Gala'Alé Ada and Bara'baré. The project was executed by the Ministry of Agriculture and financed by the French Cooperation.

The activities were carried out by an association from the local population in collaboration with the Regional Council of the Tadjourah district and with the technical support of the Agriculture and Livestock Departments and the CIRAD. They focused on creating the conditions to promote natural regeneration. For example, at the end of 2003, a plot of 4 ha was fenced off on the plateau of Garab, one of the three sites selected for total protection.

Two years after the start of the project, the results were very convincing and positive. Compared to the unprotected areas, these zones had regeneration rates for juniper trees that were much higher. The growth of young juniper seedlings was healthy and new seedlings were appearing. Furthermore, the development of herbaceous plants was spectacular, boasting a diversity of almost 15 forage species and a spatial coverage varying between 70 and 100 per cent depending on the site.

This experimental study demonstrated that anthropogenic action, notably overgrazing, was largely responsible for the regression of the forest. It is predicted that the extension of these types of activities to the entire forest as part of an expanded programme would most likely allow the forest to recover to its natural state over time.



Gail Hampshire on flickr

Locusts



Dominica

The national flower of Dominica, bwa kwaib (Sabinea carinalis) is endemic to the island. There are two endemic parrot species, the Amazona imperialis and Amazona arausiaca

The Commonwealth of Dominica occupies a central location along the archipelago of the Eastern Caribbean. It is the largest of the Windward Islands grouping, with an area of approximately 750 km² and an estimated population of 71,000. Volcanic in origin, with a series of complex mountain ranges, Dominica is characterized by very rugged and steep terrain. 65 per cent of its land area is covered by natural vegetation ranging from dry scrub woodland on the west coast to lush, tropical rainforest in the interior, interspersed with rivers, waterfalls and lakes. Because of these attributes, Dominica has been dubbed the "Nature Island of the Caribbean".

The Soufriere-Scottshead Marine Reserve Day

The Soufriere-Scottshead Marine Reserve (SSMR) is an expanse of the marine waters on the south of the island of Dominica and was designated a Marine Reserve in 1998. It contains a unique marine ecosystem, including the adjacent fringing coastline, and features some of the island's most remarkable coral reef systems, warm underwater sulphur vents, abrupt underwater drop-offs, ideal locations for schooling migrating coastal pelagic fish and cetacean species. This makes the site a focal point for recreation activities as well as being heavily favoured by the immediate surrounding communities as a traditional area of fishing, food security and income generation.

The protection status granted to this marine area and adjacent fringing coastline was thus an attempt to avoid conflicts between traditional users, in particular the fishermen, and new entrants in the water-sports sector of the tourism industry. It was developed to give protection to the biodiversity therein, as well as to establish zones within that marine space for designated sustainable marine related activities, allaying any possibility of the tourism activities depriving the traditional users' access to the resource.

In order to raise awareness of the importance of biodiversity protection and celebrate the existence of the Marine Reserve, the Fisheries Division and the Local Area Management Authority of the SSMR teamed up with local businesses in the area, together with the Dominica Water Sports Association, to host schools from across the island each year to observe SSMR Day.

This event allows for the promotion and appreciation of various components of the reserve, notably by having the school children interact with the reserve's various features. Most importantly, this day serves to educate participants on the rationale and importance of setting up a marine reserve in the quest to protect and manage biodiversity. A keenly contested quiz on SSMR matters among the visiting schools is an integral part of that day's activities. This has become a staple event on the calendar of all schools on the island and has been ongoing since 1992.



Rajvinder singh on Unsplash

Rosalie Bay Resort, Dominica



Dominican Republic

27 waterfalls form part of a geological fault encased within a canyon several km long, with interesting labyrinths of tunnels, caves, slides and natural pools, framed in thick tropical rainforest vegetation

Since the 1980s, the Dominican Republic has formally welcomed tourists from around world, who seek active recreation and leisure, generating the opportunity to enjoy and protect the diversity of landscapes that the country has to offer. This is now benefiting local communities with their potential to host the visitors, especially to the protected area of Llanos de Pèrez and the 27 waterfalls of Rio Damajagua.

Increasing local participation in local enterprise and ecological protection

Within the protected area of the Llanos de Pérez lies the main focus of conservation, the Damajagua river, which rises in the massif of the northern mountain chain, resulting in 27 small waterfalls. The area also has a rich riparian forest with tall trees and a high variety of fauna and significant biological diversity.

In 2005, an agreement was signed for the co-management of the protected area, shared between the Environment Ministry and the Damajagua River Life Guides Association. The guides keep their own accounts and charge a fee for their services, which then helps to fund micro-enterprises or is redistributed to partners or members.

Ten adjacent communities have benefited, with loans to micro-entrepreneurs, aqueduct construction, purchase of buses for student transport, donations for sports activities and scholarships for study, construction and maintenance of public-use infrastructures. Other more remote communities also benefit as tourists carried by tour operators, pass through different communities generating economic benefits to them.

The protected areas surrounding Damajagua have benefited from, among others, protection against indiscriminate building; a surveillance centre for the Loma Isabel de Torres natural monument; a national park protection centre; and repair of the protection centre of the Laguna Cabarete and Goleta natural monument.

The mechanism of administration of the protected area guarantee its sustainability in that it enabled a decentralization of funds, hands-on management, the popularity of the activities at both national and international levels, and the empowerment of the communities involved.

Among the main achievements are the conservation of local flora and fauna, and emphasis on the protection of the riparian forest as an object of conservation in its original state, adding value to the promotion of the site as a centre of attraction for national and foreign tourists.

The dynamization of the economic activities of the community, through sales of artisanal objects, fruit, confection and dairy products, has improved quality of life without degrading the environment, while maintaining the object of conservation, thus acting within the framework of the AICHI goal 14, in augmenting the connectivity between protected ecosystems and increased local participation.

Training for local people has facilitated diversification of knowledge in language management, accounting principles, first aid, the ecological aspects of teaching visitors about the area's vulnerability, developing microenterprises, and, above all, to love nature and recognize the importance of the conservation of biodiversity.



Party Damajagua

One of the waterfalls along the Damajagua river

Ecuador

In the last 13 years, 2,433 new plant species have been reported in Ecuador, of which 1,663 are also new to science

Ecuador is located to the north-west of Latin America, on the equatorial line, with territory in both hemispheres. It borders Colombia to the north, Peru to the south and east, and the Pacific Ocean to the west. It has an area of 256,370 km² and a population of over 14 million. The population density is 54 people/km² with a 2.3 per cent growth rate. The territory is divided into four natural regions and three continental zones: Costa (24.6 per cent of the area), Sierra (24.8 per cent) and Amazonia (47.8 per cent); and an insular region: Galápagos (2.8 per cent). In its continental territory, Ecuador has seven biomes of tropical humid forest, tropical dry forest, savannah, xerophytic scrub, montane forest, moor and mangrove.

The conservation and sustainable use of natural heritage

In line with the government proposal to reduce the deforestation rate by 50 per cent, the Socio Bosque Programme was created, with the objective to conserve forests and natural habitats throughout the national territory. The programme has been well received and has pioneered the establishment of economic incentives that promote the conservation of natural ecosystems and boost family economies in rural areas.

Based on the experience of five years of management, and framed in the National Policy of Governance of the Natural Heritage for the Society of Good Living 2013–2017, the Ministry of Environment and Water established a National Programme of Incentives for the Conservation and Sustainable Use of the Natural Heritage "Socio Bosque". The programme's main objective is to integrate incentive initiatives within a single national programme, seeking intervention in the territory, promoting an improvement in the living conditions of the inhabitants, and encouraging the concept of Good Living. The objectives are to:

- Encourage afforestation, reforestation and revegetation activities with native species in areas affected by deforestation, degradation, fragmentation, erosion, desertification, forest fires and other human activities
- Encourage the conservation and protection of native vegetation cover and of forest, shrub, and hybrid, primary and/or fragile ecosystems
- Encourage sustainable production and trade in biodiversity and non-timber forest products
- Encourage forest management focused on the four links of the wood value chain — procurement, production, processing and marketing
- Facilitate the adjudication of lands of the State Forest Patrimony, protective forests and vegetation to guarantee their conservation and/or sustainable use
- Facilitate and promote the recognition and valuation of environmental services
- Promote the application and articulation of tax incentives in force within the law.

Through this set of monetary and non-monetary incentives, managed in an integrated and complementary manner, the underlying causes of forest loss and degradation processes have been positively affected. The articulation of the programme with other governmental initiatives and sectoral public policies constitutes a challenge that in the following years the National Government should assume with greater vigour.



Chany Crystal on flickr

Red crabs

Egypt

22,000 species of flora and fauna have been identified in Egypt's diverse ecosystems

With its unique geographic location, midway between Africa and Asia, Egypt is home to a wide variety of ecosystems and terrestrial and aquatic life. Many plant and animal species in Egypt represent tropical and Mediterranean environments, some of which go back millions of years. The country has unique biodiversity that contributes to the economy and supports human wellbeing. Egypt is home to over 2,145 species, with 220 infra-specific taxa of native and naturalized vascular plants, 175 species and subspecies of moss, 13 hepatic, 111 mammal, 109 reptile, 9 amphibian, more than 1,000 fish species, 800 mollusca, 1,000 crustacean, over 325 species of coral reef, 10,000–15,000 species of insect and 2,420 of fungi.

Areas include a representative range of national habitats with high biological significance

Egypt has been successful in its efforts towards conservation of ecosystem habitats and biomes and of species diversity. The creation of protected areas (PAs) has been one of the primary means of maintaining biodiversity, expanding over the past 30 years in both number and area. By 2013, 30 PAs were established, extending over 14.6 per cent of the total land and marine areas of the country. They include a representative range of national habitats with high biological significance, and physiographic regions, along with other sites of importance.

The nationally designated protected areas system contains biodiversity hotspots, cultural heritage, geological formations, landscapes of outstanding natural beauty and Important Bird Areas. According to the WWF global classification, Egypt falls in the Palearctic biogeographical realm or ecozone and contains habitat types and ecoregions of global significance.

The PA network contains a good representation of these habitat types and ecoregions including Egypt's most important marine biodiversity hotspot, the Red Sea coral reefs. Similarly, the country's four terrestrial biodiversity hot spots — St. Katherine, Elba, wetlands, and western Mediterranean coastal desert — fall completely within existing protected areas.

The distribution of most of the endemic taxa in Egypt coincides with that of the biodiversity hotspots and are fairly covered within the existing PA network. Outside of the protected areas, complementary ex situ conservation measures were undertaken for 17 animal and plant species, resulting in the success of captive breeding for several endangered species for the first time in Egypt. These included the oryx dammah, Arabian oryx, caracal and porcupine. Cheetah were introduced for the first time in 40 years, in addition to breeding the fourth generation of Egyptian gazelle. African turtles also appeared in large numbers.

Efforts have also been undertaken to rehabilitate some endemic flora and fauna species to increase their numbers in their natural habitats and to protect them from extinction. These include the cultivation of plant species in St. Katherine PA, such as arfeja, zayteia, alloseeg, alghasah and St. Katherine thyme, with fenced areas to protect them from random grazing and other threats. Wild turtles have been rehabilitated in Zaranik PA after their discovery in an area outside the PA. Also, the reproduction of trees and plants has been managed in Wadi al Gemal PA along with wild animals such as gazelle, hyrax, hares.



Les Anderson on Unsplash

Ruins near the Great Pyramid, Egypt

El Salvador

The Montecristo national park has a high floristic diversity, with many species of bromeliads and the greatest wealth and diversity of orchids nationwide

El Salvador, despite its small territory of 21,040.79 km² maintains significant biodiversity, with good representativeness of ecosystems and species, among which are nebulous forests, submontane, páramos, seasonally saturated formations, pine forests, mangroves, ecotonal formations, backpacks, lava and bushes. The country hosts a large number of wetlands, covering an estimated area of 113,835 ha, or 5.4 per cent of the total area of the country. 59 continental and estuarine wetlands have been identified represented by mangroves, saturated forests, estuaries, intertidal lowlands, herbaceous swamps, shrub swamps, reeds and tulares, palm swamps, flood lagoons, lagoons in non-crater concavities, crater lagoons, crater lakes, natural lakes outside of craters and three reservoirs.

Consolidating the system of protected natural areas

A type of biodiversity management has been promoted over the last five years in El Salvador, with the purpose of increasing the social, environmental and economic benefits of biological diversity and ecosystem services. This, through effective, efficient and inclusive management, allows the threats to be adequately addressed and the loss of biodiversity halted, to guarantee the conservation and sustainable use of biological resources. A general objective was established to guide the protection, restoration and conservation of biodiversity, supporting the social and economic development of El Salvador, through knowledge, valuation, conservation and sustainable use of ecosystems and their services.

The National Environmental Policy, approved in 2012, became a guiding instrument to face the serious environmental degradation in the country and the growing threat posed by climate change. The policy established two major goals: to reverse environmental degradation and reduce vulnerability to climate change, and defines as one of its priority lines of action the restoration and inclusive conservation of ecosystems. With this framework, the government designed and officially launched the National Programme for the Restoration of Ecosystems and Landscapes, which aims to face the severe deterioration of biodiversity and ecosystems in a planned and aggressive manner. Specifically, the biodiversity agenda adopted during the five-year period 2009–2014 had the following five priorities:

- The updating of biodiversity and ecosystems planning, focusing on the National Biodiversity Strategy and its plan of action
- The strengthening of the political and regulatory framework, with a commitment to the National Environmental Policy and the National Policy for the Regulation of the Use of Marine Coastal Resources, as well as the preparation of the proposed general regulations of the Law of Natural Protected Areas and general regulations of the Wildlife Conservation Law
- Development of initiatives and programmes for the restoration and inclusive conservation of priority ecosystems, with a commitment to the restoration of mangroves, ecosystems in river basins, and the promotion of local self-regulation initiatives
- Follow-up to the negotiations on biodiversity in the Convention on Biological Diversity and its protocols, paying particular attention to the signing and ratification of the Nagoya protocol
- A determined impulse to consolidate the System of Protected Natural Areas.



Bernardo Peña on flickr

El Salvador

Equatorial Guinea

The island of Annobón is located about 340 km from the coast and consists of a set of volcanic cones. Its highest elevation is 650m

The Republic of Equatorial Guinea is located in the central-western part of Africa and includes an insular and a continental region. These regions enjoy autonomy for ethnic, historical and economic reasons, covering a total land area of 28,052.46 km²; while, the surface of the continental shelf is 14,710 km². The Exclusive Economic Zone covers some 314,000 km² of sea and belongs to the Atlantic-African tropical marine biogeographic region, characterized by warmer waters. On the island of Bioko there are more than 300 species of vertebrate, of which 2 per cent are endemic species and one-third belongs to the endemic subspecies. More than 60 species of terrestrial mammal have been identified, including endemic forms (28 per cent), with primates being especially notable.

Success with agricultural land and marine systems programmes

Following the loss of micro flora and soil fauna due to aggressive agricultural practices, in particular the use of fire to burn forests, an agricultural land programme has been implemented in Equatorial Guinea, bringing about important changes.

Awareness campaigns have been run on the new modalities of agricultural plantations, especially those carried out through pilot farms by two organizations: Friends of Nature for the Development of Equatorial Guinea, regarding the cultivation of vegetables in the neighbouring communities of Monte Alén National Park; and the Association for the Support of African Women, regarding model banana plantations in several communities in the Niefang district.

The government, through the Ministry of Agriculture and Forestry has adopted the National Programme for Food Security, which aims to improve the performance of native crops through non-aggressive routine techniques. This would allow the supply of national markets and significantly increase the income of the peasant population.

Through the implementation of the project to strengthen institutional, legal and individual capacities for the sustainable management of soil and forests, the following strategies have been approved: Integrated Financing Strategy for sustainable soil management; Mainstreaming and Legal strategies for the GSS. In addition, a unit for sustainable land management has been established.

Independent of the centre of Malabo, the School of Agrarian Training in Alep (Bata) has also been established, with modern equipment and a new curricular approach.

Due to insufficient control over the pollution of coastal and marine ecosystems, a marine systems programme has been established to rectify insufficient compliance with fishing regulations on closures.

The programme has made several important changes such as close coordination of the activities of the institutions of the artisanal and industrial fishing sector, which encourages the development of non-aggressive fishing practices.

In 2010, the National Plan of Action on the Coastal and Marine Ecosystems of Equatorial Guinea was adopted by the 16 countries of the Atlantic coast of the Gulf of Guinea. Thanks to the support of the United Nations Industrial Development Organization, the United Nations Environment Programme, the New African Partnership for Development, the Global Environment Facility and others.



Nathanael Stanek on flickr

Trioceros Feae



Eritrea

Eritrea is home to over 167 indigenous plant species

Eritrea is located in the Horn of Africa, north of the equator and covers an area of 124,320 km^2. It is situated along the important Red Sea oil and shipping route connecting the Mediterranean Sea with the Indian Ocean. The country shares boundaries with Sudan to the west, Ethiopia to the south, Djibouti to the south-east and the Red Sea in the east. There are around 390 islands, the prominent being the Dahlak Archipelago. Eritrea can be divided into six agro-ecological zones: moist highlands, arid highlands, subhumid highlands, moist lowlands, arid lowlands and semi-desert lands. Elevation ranges from 100m (semi-desert) to 3,000m (moist highlands). Mean annual temperature ranges from 15°C in the moist and arid highlands to 32°c in the semi-desert. Annual precipitation varies from less than 200mm in the semi-desert to 1,100mm in the sub-humid zone.

National tree planting campaign

Since the fourth CBD national report some activities have been undertaken to implement the National Biodiversity Strategies and Action Plans, including policies, strategies, laws and regulations. Among these, Eritrea has started a national tree planting campaign which involves the participation of civil society.

As continuation of the effectors in conservation and development of forest and wildlife resources of the country, the government is addressing environmental degradation through social mobilization in afforestation and soil and water conservation. School students, religious leaders, communities, individuals and various institutions are actively participating in this campaign. Religious leaders, students and other community members have been trained and sensitized to the need for tree planting and environment conservation as a key strategy to achieve food security.

The achievement of the campaign so far is encouraging. Between 2010 and 2014 a total of 7,230 ha of new plantation (more than 18 million seedlings) were established. To date, 39,230 ha of new plantation (over 98 million seedlings) have been established. In addition, 72,072 ha of land with potential for afforestation has been identified. The reforested areas are enclosed against livestock grazing with the aim of enhancing natural regeneration.

The forest ecosystem spans approximately 2,930 km^2 and includes the dense and disturbed highland forest, riverine forest, and coastal mangrove forest. There are two types of forest, namely disturbed Juniperus (coniferous) forest and dense and disturbed mixed forest. Both types of forest are found in Semenawi and Debubawi Bahri or the Green Belt, although small, highly disturbed patches of juniper groves are found at Abahane, Kohaito and Soira in the south and Rora Habab in the north.

There are several trees and shrubs important for agriculture which are used for food, animal feed, medicine, soil fertility reclamation, shelter and field fences. Most are indigenous tree and shrub species. Eritrean farmers manage in a traditional way a variety of wild species including indigenous trees and shrubs and habitats which benefit the sustainability of both agricultural and natural ecosystems.

The indigenous wild edible fruits are at risk. These species are found in very limited areas in few numbers, with 21 out of 49 species genetically threatened. The National Tree Planting Campaign has been beneficial which in turn will support Eritrea's forest resources and also protect the indigenous trees and shrubs at risk.



Image: Wikimedia Commons, Creative Commons License. Author: Hansueli Krapf

Eritrea's Landscape between Asmara and Massawa

Estonia



There are between 35,000 and 45,000 species of plant, fungi and animal in Estonia, as well as 66 protected bird sites, totalling 1,283,143 ha

Estonia's most important ecosystems in terms of species richness are forests, semi-natural communities, mires, inland bodies of water and the sea with its coastal areas. The semi-natural communities of grasslands form the natural habitat for nearly 700 plant species, creating some of the most species-rich habitats in the world. It is estimated that approximately 60,000 ha of semi-natural communities are now under protection. The proportion of mires is 5.5 per cent (240,000 ha), and 175,000 ha of mire ecosystems, mainly bogs, are under protection. The ecological status of most of the small lakes and inland waters is good, and because of national and European agreements, pollution and over fishing in the sea and coastal areas of Estonia has been mitigated.

Semi-natural communities and their maintenance

The importance of semi-natural communities lies in the preservation of biological diversity. These communities are important habitats for many types of organisms, making attractive feeding and resting areas for migratory birds. This reduces the economic damage caused by birds feeding on young crops. Coastal and floodplain meadows are very important to migratory birds. Semi-natural communities are also important feeding areas for pollinators such as bumblebees, and the success of agricultural production relies heavily on the existence and diversity of pollinators.

Natural floodplains contribute directly to human wellbeing, helping to avoid flooding during high water periods and the resulting economic damage in residential areas. Most of the Estonian meadows are semi-natural, that is, they have developed as a result of human activity such as haymaking and herding.

Estonian semi-natural communities are some of the most diverse habitats in the world, and accommodate nearly 700 plant species. Biological diversity is typical to wooded meadows (the largest number of plant species found on one cubic metre is 74) but also to alvars. In order to preserve semi-natural communities, approximately 60,000 ha have been placed under protection. In 2013, 27,000 ha of protected semi-natural communities were being properly maintained, and 3,000 ha were being restored. The country is aiming to increase the volume of properly maintained semi-natural communities to 45,000 ha by 2020; the protective measures of the remaining 15,000 ha of protected semi-natural communities need to be established by 2030.

Thanks to restoration and maintenance measures, the status of coastal and alluvial meadows has improved in recent years. But more attention needs to be paid to the restoration and maintenance of wooded meadows and alvars. The vegetation of coastal meadows, alvars, wooded meadows and floodplain meadows is being monitored over the entire area of distribution within the framework of a national programme. There are also additional species monitoring programmes for semi-natural communities. These areas have a huge aesthetic and recreational value. The Estonian natural landscapes endowed with well-cared-for semi-natural communities are attractive to tourists. By providing information about historical land use and ways of living, semi-natural communities have a high cultural value, and those bordering intensely cultivated agricultural land are important wildlife corridors for various species.



Martin Arusalu on Unsplash

Vixen returning from her hunting trip



Eswatini

Eastern Eswatini is part of the Maputaland Centre of Plant Diversity — one of the world's hotspots of floral, as well as faunal species richness and endemism

For a country with a land area of 17,364 km², Eswatini is relatively rich in biodiversity with a large diversity of plants and animals. The country's biodiversity resources have great cultural and economic significance as well as providing a wide range of direct benefits in the generation of products used for subsistence income and employment purposes. The diverse flora and fauna has a variety of recreational and aesthetic values, and the Swazi culture is deeply dependent on biological diversity both for everyday life and for various traditional ceremonies practiced annually.

Educational programmes in environmental awareness and biosafety

The National Environmental Education Programme (NEEP) is mandated by the Swaziland National Trust Commission Act to coordinate and promote environmental education in Eswatini. The NEEP has the role of promoting and supporting environmental awareness projects carried out by governmental and non-governmental organisations. Other activities include: commemorative celebration days such as World Environment Day, Wetlands day, and International Day of Biodiversity; environmental or nature conservation radio programmes broadcast through the SEA shared radio slot; the provision of an academic service to the tertiary institutions; providing access to nature reserve public facilities for biodiversity studies; training for rural communities on environmental issues and nature conservation; incorporation of indigenous knowledge systems in order to promote sustainable attitudes; functioning as a support service for both external and internal stakeholders in various departments; the incorporation of appropriate technology in environmental education; a focus on work projects involving interested and affected stakeholders; and general environmental education awareness with focus on the social, economic, political, and biophysical dimensions of Swazi inhabitants.

Following the enactment of the Biosafety Act in 2012, there is a need for increased awareness on the value of biodiversity and the risks associated with the use of living modified organisms. It is in this context that the Eswatini Environment Authority partnered with the education sector through the National Curriculum Centre and the University of Eswatini to mainstream issues of modern biotechnology and biosafety into curricula at both lower and higher education. Through this partnership, the development of a curriculum matrix exercise at lower education has been initiated and currently underway. Training materials have also been developed to support the integration of modern biotechnology and biosafety issues in the institutions of higher education.

Other exercises to raise awareness on the value of biodiversity have been undertaken by a number of institutions in the environment sector. This includes education and awareness programmes run by conservation parks; workshops conducted at community level by stakeholders in the environment sector; and environmental impact assessment exercises.



Patrik M. Loeff on flickr

Lobamba, Hhohho, Eswatini



Ethiopia

In Ethiopia, cultivated plants, domestic and wild animals, forest and rangeland plants, and microbial genetic resources are conserved in-situ in various parts of the country. This has partly been achieved through 24 community seed banks

With the objective of halting biodiversity loss and ensuring sustainable utilization, several activities have been undertaken in Ethiopia, including in-situ conservation of plants, animals and microbial genetic resources via community conservation schemes, aquatic ecosystems, protected area systems and biosphere reserves. This approach is complemented by ex-situ mechanisms using cold rooms, field gene banks and botanical gardens.

Community seed banks increase local participation in conservation of farmers' varieties

In Ethiopia, cultivated plants, domestic and wild animals, forest and range land plants, and microbial genetic resources are conserved in-situ at 24 community seed banks (CSBs) in various parts of the country. The seed banks are owned and run by 6,620 local farmers, of which almost 70 per cent are females. This has enabled conservation of 61 varieties of 34 field and horticultural crop species, chiefly enset (Ensete ventricosum), bread wheat (Tiriticum aestivum), durum wheat (Tiriticum durum), tef (Eragrostis tef), barely (Hordeum vulgare), sorghum (Sorghum bicolor), chickpea (Cicer arietinum) and coffee (Coffea arabica).

The CSBs facilitated the restoration of 49 farmers' varieties of 21 species that were lost from the locality. Currently, four additional CSBs are under construction so as to implement the conservation undertaking in extended territories.

In an effort to conserve forest and rangeland plant genetic resources, inventories and socioeconomic assessments were carried out mainly to identify potential sites for conservation. As a result, 19 forest areas were designated as in-situ sites where 1,276 woody plant species have been conserved. Nine locally vanished indigenous tree species were restored at these sites.

The Ethiopian on-farm conservation initiative aims at establishing a link between in-situ and ex-situ conservation, which are seen as complementary in a way that maximizes the retention and continued evolution of the genetic qualities of farmers' varieties. It also aims to avoid the loss of variation during rejuvenation and maintenance in formal gene banks. This means that the in-situ conservation undertakings must be part of the existing cropping system since this is a way to maintain the complex interaction of genetically diverse farmers' varieties with their associated natural environment.

Community storage of seeds has been practiced in Ethiopia for millennia to ensure availability in times of shortage. With the current approach, farmers store portions of their harvest in the CSBs and the seeds are available for retrieval when required. So far, the Ethiopian Biodiversity Institute has established and is working with 24 CSBs, which have 3,717 male and 2,902 female members and conserve 3–12 farmers' varieties. The CSBs serve as a springboard for increased local participation in the process of conservation of farmers' varieties. They are also used as a means of organizing local support for conservation, training farmers in conservation activities, building low cost storage facilities, and linking extension agents, CSBs staff, and farmers.



Rod Waddington on flickr

Tigray, Ethiopia

European Union

Transboundary cooperation of countries is necessary to tackle invasive alien species, which pose major threats to native species, habitats and ecosystems and generate annual costs estimated at over US$ 13.7 billion annually

In the European Union there are over 14,000 alien species, of which up to 15 per cent are invasive. Transboundary cooperation of countries is necessary to tackle the threats to native species, habitats and ecosystems, which generate annual costs estimated at over US$ 13.7 billion annually. The Convention on Biodiversity has triggered biodiversity-related action to this end through the recent adoption of the EU Invasive Alien Species Regulation of the European Parliament and the Council. Adopted in 2014, this law is directly applicable in all the 28 EU Member States.

The role of regulation in combating invasive alien species

The core of the Regulation is the list of relevant Invasive Alien Species (IAS). Species can be included on the list on the basis of a risk assessment and only if they fulfil a number of criteria set out by the regulation. The list currently contains 23 plant and 26 animal species and an additional 30 risk assessments are in various stages of approval in view of the second update of the list, expected in 2019.

Species on the list have to be alien to the territory of the EU, capable of establishing and spreading and likely to have significant adverse impacts on biodiversity or the related ecosystem services, or on human health or the economy. A risk assessment must demonstrate that action at the EU level is required. Moreover, the inclusion on the list should likely prevent, minimize or mitigate these adverse impacts.

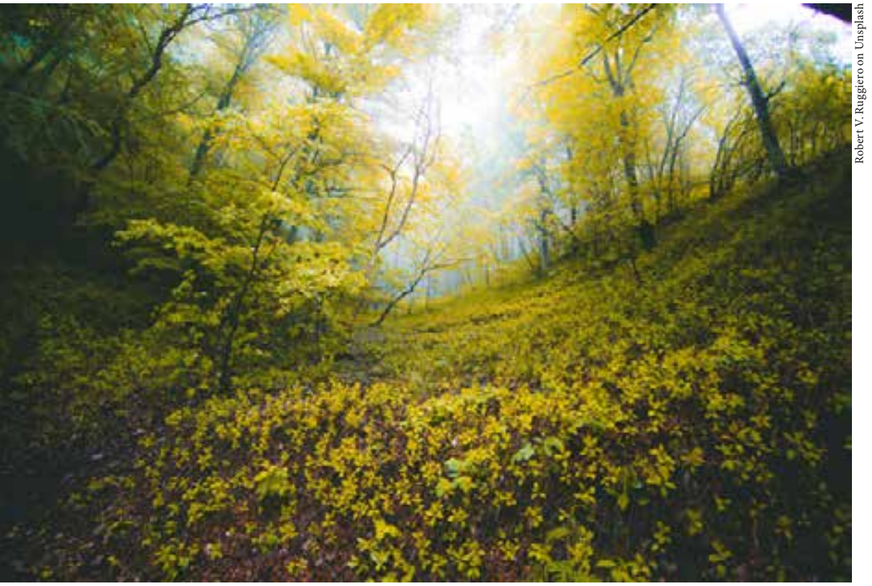
Both the European Commission and the Member States can propose species for inclusion on the Union list, based on a risk assessment. Those proposals are submitted to a Scientific Forum made up of representatives of the scientific community appointed by the Member States, which provides an opinion on whether the risk assessment is robust and fit for purpose, according to an agreed procedure

The European Alien Species Information Network facilitates the implementation of the EU policy on IAS. The EU supports implementation of this law through a range of financial instruments, such as the rural development and cohesion funds, and the EU's financial instrument for the environment, LIFE. The European Strategy on Invasive Alien Species received endorsement as recommendation No. 99 of 2003 by the Standing Committee of the Bern Convention on European Wildlife and Natural Habitats in line with Decision COP VI/23 and the annexed guiding principles on IAS.

The EU-funded project, Delivering Alien Invasive Species In Europe (DAISIE), provided a one-stop-shop for information on biological invasions in Europe. It was a pivotal instrument in developing a Europe-wide strategy that encompasses the geographical scale of the problem and unites the study of different taxa in marine, freshwater and terrestrial environments.

In 2008 the European Commission issued a communication titled Towards an EU Strategy on Invasive Species, which examined the evidence regarding the ecological, economic and social impact of invasive species in Europe, analysed the effectiveness of the current legal situation, and described four possible options for a future EU strategy.

In formulating its policy, the European Commission has sought citizens' and stakeholders' views on IAS and on the specific choices to be made when setting up dedicated legislation on invasive species.



Robert V. Ruggiero on Unsplash

Plitvice Lakes, Plitvička Jezera, Croatia

Fiji

The island of Kadavu has the highest number of endemic birds per land area in the world

Located in the South Pacific region, Fiji is an archipelagic nation that consists of more than 300 islands, including 100 that are inhabited. The two largest islands are Viti Levu and Vanua Levu and comprise over 85 per cent of the total national territory of 18,376 km². Most of the islands are volcanic. Diverse ecosystems exist in Fiji including significant areas of natural forest, mountainous terrain, and a range of coastal and marine ecosystems including extensive systems of mangrove and coral reef. The Fiji islands contain almost 40 per cent of intact forest with some of the richest natural communities of all the Oceanic Islands of the Pacific. Many species and higher taxa of flora and fauna are endemic to the country, including a plant family (Degeneriaceae), 26 palms, and three unique iguanids.

The Navakavu Clan — a success story of the Fiji Locally Managed Areas Network

The Fiji Locally Managed Marine Areas Network (FLMMA) was formed in 2000 with the goal to create the network across Fiji's 410 traditional fishing grounds or qoliqoli. It is the first country-level network to operate independently of the overall LMMA network, and has been involved in activities such as training, best practice workshops, research, site profiling and consultations throughout the country. The FLMMA has made significant contributions not only to the conservation of Fiji's natural resources but also to empowering local communities.

A particular success story involves the Institute of Applied Science (IAS), the FLMMA and the Navakavu clan (Yavusa), an indigenous community that owns traditional fishing grounds close to the Namuka Passage and entrance to the Suva Harbour. A collective decision was taken in 1999 by most of the members of three villages and two settlements of Waiqanake, Namakala, Muaivusu, Nabaka and Ucuinamono who belong to the same clan. They agreed to set aside a portion of their fishing grounds as taboo, with no fishing allowed on this marked-out area.

According to reports from the villagers of Navukavu, several species that had not been seen for over fifty years were observed once again, including several species of fish such as Colourpa colourpa as well as some species of crab, prawn and eel that were thought to be extinct. Research carried out in the area, notably by Conservation International, also reported a marked increase in biomass and in the variety of fish and their size.

The findings have also demonstrated a perceived positive relationship between conservation measures and assets. People are earning more net income from harvesting marine resources as a result of a spillover effect. There has also been improvement in local empowerment where people are taking control of entire conservation areas. This has boosted security and reduced vulnerability through increased earnings. There has also been improved cohesion as people share responsibilities and so are able to meet social obligations.

It is evident that Fiji's National Biodiversity Strategy and Action Plan has created community involvement and ownership by the clan. Networking and cooperation between stakeholders also occurred where IAS staff, NGOs and members of the clan worked together. The clan also learned to deal effectively with the challenge of poachers and non-cooperative members. The clan expressed their appreciation and excitement at the results of the project.



Vlad Karpiskiy on flickr

The Somosomo Strait is home to some of the top-ranked diving spots in the world

Finland

Biodiversity has influenced our cultural history and the identity of our nation and provides many direct and indirect benefits for our society

Finland has promoted and implemented the conservation, management and sustainable use of biodiversity for more than two decades on the basis of the principles defined in the Convention on Biological Diversity (CBD). Between 1996 and 1997 the first National Action Plan for Biodiversity in Finland was drawn up by the National Biodiversity Committee, which has brought together representatives of ministries, key business sectors, research institutes, environmental organizations, the Sámi people and other stakeholder groups. The first plan covered 1997 to 2005, and included 124 measures designed to promote the CBD goals and targets, to be implemented by 2005.

Biodiversity considerations favourably integrated into Finnish legislation

In 2006 the Finnish government adopted the new National Biodiversity Strategy and Action Plan (NBSAP) "Saving nature for people" 2006–2016. The goals were to halt the decline in biodiversity by 2010, establish favourable trends in the state of the natural environment, to effectively implement the goals set, and to strengthen Finland's role in the preservation of biodiversity globally through international cooperation. In 2012, the Finnish government approved an updated Strategy for the Conservation and Sustainable Use of Biodiversity in Finland 2012–2020, in line with the decisions made in Nagoya in 2010 including the Aichi Biodiversity Targets.

The mid-term review showed that work to implement the strategy has primarily progressed well in various administrative branches, but that considerably more effective measures are needed to succeed by 2020.

As a party to the CBD, Finland is committed to promote the conservation and sustainable use of biodiversity in activities through all sectors of society, and biodiversity considerations have been favourably integrated into new and revised Finnish legislation. The objectives of the NBSAP to preserve biodiversity and actions required have found interest in the public at large. Thanks to increased research and monitoring, much data is now available on biodiversity in Finland, enabling the establishment of both knowledge-sharing mechanisms, for instance on indicators and on the state of biodiversity in general. This in turn provides a basis for changes in the way that we act, the commitment we make and for increasing recognition of the value of biodiversity in Finland and globally. Additionally, the Finnish biodiversity communications programme and its updates have good outcomes for awareness raising and the support of decision makers of the values of biodiversity. Finland has also promoted synergies between the six biodiversity-related conventions for strengthening implementation of the biodiversity strategy and its Aichi targets more effectively.

The Cartagena Protocol on Biosafety became binding in Finland in 2004. The national level implementation has been done by the Gene Technology Act (1995). The Act includes, inter alia, provisions on the competent authorities that are the Ministry for Social Affairs and Health, the Ministry of the Environment, and the Ministry for Agriculture and Forestry. The Board for Gene Technology operates at a practical level as a supervisory body.

Finland became a State Party to the Nagoya Protocol on Access and Benefit-Sharing in 2016, when the Act for the implementation of the Nagoya Protocol to the Convention on Biological Diversity was adopted by parliament.



Inarinjarvi Luoto

Lake Inari

France

Works of the initial 2016 campaign to reduce CO_2 emissions while supporting multifunctional forest management have covered 374 ha

Sylv'ACCTES is a programme for supporting sustainable forest management in the Auvergne-Rhône-Alpes region. It constitutes a fundraising tool from public and private regional actors engaged in a climate-related economic, environmental and societal approach with the goal of reducing CO_2 emissions while supporting multifunctional forest management that conserves biodiversity.

Bugey Territorial Forestry Project supported by the Sylv'ACCTES programme

Seven pilot projects have now submitted a land-based forestry plan to the Sylv'ACCTES scientific and technical committee. Eligible projects must have a sustainable management document and be engaged in a forest management certification scheme.

Within that initiative, the Bugey and Haut-Bugey local authorities have led a reflection about the space and the role of forests in their territories. These territories have around 90,000 ha of forests, half of which are mountain mixed stands and half lowland hardwood coppice-with-standards. The objective of the local authorities (expressed in their forest charters) is to work for the production and mobilisation of timber through sustainable and climate-smart forest management.

Furthermore, other important considerations come into play with regard to local forests, such as biodiversity, landscape, and protection against natural risks. The approach proposed by Sylv'ACCTES allows prioritizing issues and identifying where the forestry emergencies are from an investment point of view that integrates the multiple functions at stake. Through a series of meetings with all forest stakeholders — timber industry, environmental NGOs, local authorities — forest managers were able to propose adapted forest management pathways. Then, the Sylv'ACCTES analysis tools were able to quantify and assess the effectiveness of the proposed management pathways in addressing the challenges of climate change mitigation, biodiversity conservation, and also economic valorization.

The main accomplishments can be summarized as follows:

The work has led to a proposed forestry management pathway for Bugey, for which the potential mitigation benefit — capacity of the forest to store atmospheric CO_2 and avoid CO_2 emission from the use of its products — and the potential biodiversity benefit — impact of the forestry objective on biodiversity — have been assessed as positive with regard to the initial situation. Works of the initial 2016 campaign have covered 374 ha.

Controls of the proper execution of the forestry works and of the management pathways described in the submitted file are conducted on a random basis. Carbon and biodiversity benefits are assessed by the scientific and technical committee of Sylv'ACCTES on the basis of proposed scenarios. Acceptance of submitted files is conditional on fulfilment of several best practice criteria such as no clearcutting and the presence of dead trees.

The prospects for improvement are to make private forest owners benefit from the programme, in order to engage them in a sustainable long-term management approach. So far, most submitted files concern forests owned by municipalities.



Sydney Gelle - Instagram Contest

Blennie

Gabon

In terms of climate, Gabon is located at the heart of the equatorial domain, with constant heat, high humidity and abundant and frequent precipitation

Gabon is located in the Gulf of Guinea, straddling the equator. Over 75 per cent is constituted by the river basin of Ogooué and nearly 85 per cent of the territory is covered by a large equatorial forest. The country is relatively flat and open on the Atlantic Ocean with a coastal basin 800 km long and 20 to 300 km wide. The territory, covers 26,7667 km² and includes three large sets of relief: old pedestals (crystalline plateaus to the north-east, mountain ranges of Chaillu, Mayombe, and crystal mountains), old sedimentary basins (plains of the Ngounié and the Nyanga, and the basins of Franceville, Okondja and Bees), and recent sedimentary basins (Batéké plateaux and the coastal basin).

The legal protection of marine diversity

Gabon has adopted a series of laws aimed at protecting fishing resources. Fishing and fish farming activities are governed by the main laws of:

- Law 16/2001, known as the Forest Code
- Law 16/93 on the Environment Code
- Law No. 9/84 establishing an exclusive economic zone of 200 nautical miles
- Decree No. 62/PR/MEFPE, regulating fishing
- Establishment of an economic fisheries observatory
- Fisheries code in the process of adoption.

In addition, measures relating to other species such as sardinella and shrimps were taken by the Council of Ministers. Also notable are:

- The creation of marine parks: Akanda (decree 608 / MEFEPEPN of August 30, 2002), Loango (Decree 613 / MEFEPEPN of August 30, 2002) and Mayumba (decree 614 / MEFEPEPN of August 30, 2002)
- The establishment of several breeding projects.

The main texts governing the activities of inland fisheries and fish farming are :

- Law 16/2001, known as the Forest Code in the Gabonese Republic
- Law 16/93 of 26 August 1993 on the Environment Code
- Law 9/84 establishing an exclusive economic zone of 200 nautical miles
- Decree 62 / PR / MEFPE of 10 January 1994, regulating fishing
- Establishment of an economic fisheries observatory
- Fisheries Code in the process of adoption.

In terms of strategy, the Gabonese government has implemented laws to protect marine biodiversity, that aim to:

- Improve the management of fisheries resources through the establishment of an economic fisheries observatory in Gabo, and the establishment of a medium-term fisheries research institute
- Develop fishing and aquaculture activities through the promotion of small-scale fisheries support centres; the training of neo-fishermen; the supervision of operators; and by the impulse of the development of fish farming
- Strengthen the institutional and per-sectoral capacities of the sector by the adoption of a new legal framework (Fisheries Code) for the responsible management of fisheries in Gabon; and the reinforcement of the regulatory provisions of the fisheries in force in Gabon
- Promote the financing of the fisheries sector by realizing the concentration of public investments; the strengthening of the sources of finance dedicated to the financing of fisheries and aquaculture activities; the study of the taxation of fisheries and fish farming; and the opening of a credit line for fisheries and fish farming.



Marko Laakkonen

Elephant

Gambia (the)

More than 119 species of migratory water bird exist the in Gambia

The Gambia is a small Sahelian country, bordered by Senegal and extending to the western coast of Africa. It covers a total land area of approximately 10,689 km². With its characteristic Sudan Savanna woodland vegetation, the country has the following main ecosystem types: forest (closed and open woodland ecosystem); agricultural (arable and rangeland ecosystems); marine and coastal; inland water (wetlands) and terrestrial (tree/shrub savanna). The Gambia is endowed with a high diversity of plant and animal species. The components of biodiversity embrace the wild fauna and flora and associated ecosystems as well as the domestic species.

Capacity building initiatives enhance the effectiveness of biodiversity conservation

The participation of local communities has been improved with the establishment of Site Management Committees in all of the protected areas (PAs), and the formation of Community Forest Committees (CFCs). The community owned protected areas have eased the process of expanding the boundaries of Kiang west National Park and the designation of the new protected area (Jokadu National Park) that has increased protected area coverage from 51,240 ha to 71,526 ha.

These processes have enabled the incorporation of other ecosystems into an existing network of protected areas and, as a result, have encouraged diversification of governance styles that, in a broad perspective, has contributed to achieving the Aichi biodiversity targets.

In the quest for sustainable financing of protected areas, the Gambia has successfully developed guidelines for private sector involvement that have brought about collaboration between the department and Eagle Heights (a UK charity organisation). The Eagle Heights project is designed to reintroduce wildlife species in Abuko and Kiang west national park. The department has successfully developed a tourism package with some local private investors — Snake farm, Tanji Eco-camp, Tanji Village museum and Tanji bird reserve. A proposed crocodile trophy hunting programme is being explored for future revenue generation. A Biodiversity Trust Fund has already been established with proceeds of US$ 40,000 as seed money for PA financing sustainability options.

Under GEF financing with the implementation of the World Bank and UNDP executed projects, six protected area management plans were developed. The participation of multiple stakeholders has enhanced planning of conservation management activities and participatory zoning of the areas. Community livelihood projects have been developed through sponsored programmes (beekeeping, gardening, village banking schemes, oyster farming initiatives, village woodlots). Plans for the capitalization of future opportunities have also been set.

To improve institutional capacity of the department of parks and wildlife management, a proposal has been developed to turn the institution into an autonomous organisation under the guidance of Zambia Technical assistance. This proposal is currently being reviewed by cabinet.

Under the (GBMIS) project, 25 staff have benefited from a series of training courses at certificate, diploma and masters degree level in the field of wildlife conservation and natural resources management, enhancing capacity for biodiversity conservation.



Frans Vandewalle on flickr

Wire-tailed swallow (Hirundo smithii)

Georgia

Awareness of the population regarding protected areas was raised by 15 per cent between 2009 and 2011. Between 2003 and 2013, 639 ha area of forest was restored

The Caucasus is considered by international organizations to be one of the distinguished regions of the world in respect of biodiversity. It is one of WWF's 35 priority places, as part of the greater Black Sea basin, and is also part of two of the 34 biodiversity hotspots (the Caucasus and Iran-Anatolian hotspots) identified by Conservation International as being simultaneously the richest and most threatened reservoirs of plant and animal life. The biodiversity of Georgia provides life-sustaining ecosystem services and natural resources for the population, and supports sustainable development of important economic sectors such as forestry, agriculture, hydropower and tourism.

Committed to monitor the conservation status of protected habitats and species

Georgia ratified the European Landscape Convention in 2010. Pursuant to the requirements of this convention, the party must provide for preservation of landscapes, as part of the cultural and natural heritage and introduce landscape planning, which is of great significance for Georgia since it is a country distinguished by its high historical and aesthetic values and is rich in original natural and cultural landscapes.

The process of ratification of the Nagoya Protocol on "Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization" is ongoing. Joining the international treaty is especially remarkable for a country as rich in genetic resources as Georgia. Over 2,000 species of Georgian flora have direct economic value as timber resources and food for humans and animals. 1,200 species of vascular plants are used as medicinal herbs.

The Georgia–European Union Association Agreement, executed in 2014, includes important commitments for the conservation of species and habitats and the sustainable use of biological resources. One of the most significant commitments is the harmonization of Georgian biodiversity conservation legislation with the EU Council Directives on the conservation of natural habitats and wild fauna and flora and the conservation of birds. The country is committed to establishing a system to monitor the conservation status of protected habitats and species and carry out special conservation activities with respect to protected species. Georgia has already made progress to this effect with technical assistance from the GIZ.

The draft law will: establish a legal background for the creation of Emerald Sites and Special Protected Areas for bird species; determine grounds for identification of such territories, their inclusion in the European network, their conservation and monitoring; include provisions aimed at enhancement of legal protection at the national level of critically endangered species and those species, which are strictly protected under international treaties and EU directives; and also provide a legal framework for accessibility of genetic resources, traditional knowledge, and equitable sharing of benefits arising from their utilization.

Utilization of genetic resources in Georgia will be accessible based on the relevant preliminarily communicated consent and bilaterally agreed conditions. In 2014, a law on Genetically Modified Living Organisms was adopted in Georgia such that the introduction of genetically modified organisms into the natural environment is banned.



Jordan Sanchez on Unsplash

Mestia, Georgia

Germany

Germany's National Strategy on Biological Diversity encompasses a broad dialogue process with key stakeholders from the public sector, industry, science and civil society

Germany's National Strategy on Biological Diversity (NBS), adopted in 2007, aims to halt the further loss of biological diversity through the realisation of around 330 targets and 430 measures. Based on the principles of the Convention on Biological Diversity, it includes the guiding principle of sustainability, taking account of ecological, economic and social aspects. It encompasses a broad dialogue process with key stakeholders from the public sector, industry, science and civil society. Regular information, discussion and working events support the establishment of long-term networks and cooperation.

Targeted conversations for communities

The core events of the NBS dialogue process are the national forums which bring all target groups and topic-specific dialogues together once a year and give stakeholders the opportunity to network and discuss new instruments, measures and focal points for implementing the national strategy. Around 250 people participate in each event, from federal and Länder (federal state) level and also from associations, science, industry and many other areas of society.

The forums serve to promote closer cooperation and better understanding within and between different stakeholder groups. For example, in 2013, Enterprise Biological Diversity 2020, a platform for action and dialogue between business, government and nature conservation, pursued the objective of incorporating biological diversity into business management, taking account of the impacts of economic activity on biological diversity across the supply chain.

A dialogue with municipalities, launched in 2010 with a joint declaration on municipal nature conservation by a number of cities, municipalities and districts, led to the Municipalities for Biological Diversity alliance in 2012. The initial 60 signatories have now grown to 140, all of which have come together to take action for biodiversity conservation at municipal level.

Religious communities joined the conversation in 2015 with the Inter-religious Action Alliance for Biological Diversity, which focuses on ensuring and protecting the integrity of nature with a platform for inter-religious exchange and cooperation between religious communities, nature conservation associations and scientific community.

Youth Congresses on Biodiversity take place every three years and give young people the opportunity to deepen their knowledge on biological diversity though workshops and excursions. Participants engage in projects for biological diversity with professional supervision after the congress.

Activities in Germany for the UN Decade on Biodiversity 2011–2020 are closely linked to the implementation of the NBS. Activities improve awareness of biological diversity throughout society by means of project competitions, media and public relations work. In addition, a weekly competition recognises projects that have worked in an exemplary manner for the conservation, sustainable use or awareness of biological diversity.



Image: Deutsche Bundesstiftung Umwelt

Young people at the Youth Congress on Biodiversity 2017

Ghana

There are three species of frog — Baumann's reed frog (Hyperolius baumanni), lime reed frog (Hyperolius fusciventris), Bobiri reed frog (Hyperolius sylvaticus), and one lizard species, the false agama (Agama sylvanus) endemic to Ghana

The importance of biodiversity to Ghana may be considered along the lines of benefits that are derived from the variety of living organisms. These are essential for sustaining agriculture, health, ecosystem services including climate mitigation, wealth, aesthetics and general human wellbeing. In 2013, agriculture in general (classified to include fisheries, forestry and logging) contributed 21.9 per cent of Ghana's GDP. It was projected that by 2017, forestry and fisheries sectors would grow at a rate of 1.2 per cent and 5.7 per cent respectively with associated sectoral contribution of 1.4 per cent and 1.0 per cent to GDP. Maintenance of biodiversity is therefore essential for the sustainable production of food and other agricultural products and the benefits these provide to humanity, including food security, nutrition and livelihoods. It is widely acknowledged that biodiversity and agriculture are strongly interrelated because while biodiversity is critical for agriculture, it can also contribute to conservation and sustainable use of biodiversity. Indeed, sustainable agriculture both promotes and is enhanced by biodiversity.

Actions to Implement the Convention

From the over 160 actions that were pencilled since the fourth report, approximately 13 per cent of these were undertaken. The significant outcomes were:

- Law enforcement having received a major boost with the setting up of the prosecution department of the Forestry Commission
- Awareness creation activities having also been undertaken across the country through the REDD+ Roadshow, Forestry Week and similar sector activities aimed at mass awareness creation on biodiversity
- The Forestry Commission and Newmont Golden Ridge Resources implementing an offset project to help quantify the residual impacts of a gold mine
- The government of Ghana published a new Forest and Wildlife Policy that aims among others at "the conservation and sustainable development of forest and wildlife resources for the maintenance of environmental stability and continuous flow of optimum benefits from the socio cultural and economic goods and services the forest environment provides to the present and future generations"
- Ghana is also implementing a Sustainable Land and Water Management project aimed at reducing land degradation and enhancing maintenance of biodiversity in selected micro watersheds in the Northern Savanna region
- The Forestry Commission has also established a Rapid Response Team to identify and deal with illegal activities in protected areas
- A new wildlife conservation legislation is currently before parliament



Albert Ansah

Community helping nature

Key achievements in mainstreaming

- Linkages with ongoing initiatives such as (REDD+) and Forest Law Enforcement, Governance and Trade are critical for ensuring conservation of biodiversity in a synergistic way
- The Emission Reduction Programme under REDD+
- The Forest Investment Programme.
- Maintenance of the Globally Significant Biodiversity Areas
- Akoben Initiative of EPA aimed at compliance monitoring for environmental standards in the extractive industry, particularly mining.

Greece

Greece is home to 85 habitat types of European importance and hosts a large number of species of European importance

Greece is notable for its high species diversity, an extensive coverage of natural and semi natural habitats, a lengthy coastline and a broad and well-documented diversity of landscapes with high aesthetic and cultural values. Natural ecosystems and habitats make up over 50 per cent of national territory. Forests and wooded areas cover 33 per cent of territory, while grasslands cover 13 per cent and scrublands 21 per cent. Water and wetlands surface take up 2 per cent, and bare land 3 per cent of the land. Due to the range of climatic and geomorphological conditions, the isolation of the mountains and islands, and an almost pristine natural environment there are a large number of endemic species. It is home to 1,278 endemic plant species (22.2 per cent of all species present), as well as a total of 3,956 endemic animal species, out of overall 23,130 animal species present.

Developing the National Biodiversity Strategy and Action Plan

The country has made great strides in recent years, towards achieving the goals of the Convention on Biological Diversity, by implementing various national conservation and environment protection policies, while also participating in a number of pan-European initiatives.

The National Biodiversity Strategy and Action Plan was introduced in 2014, setting out the vision for the protection of biodiversity and of its ecosystem services, based on three general objectives: halting biodiversity loss, promoting biodiversity as a national natural capital, intensifying the contribution of Greece to preventing the loss of global biodiversity.

Target 3 of the National Biodiversity Strategy aims to strengthen Greece's national system of protected areas, which is largely linked to the EU's Natura 2000 network of protected areas. Greece is home to the 35 per cent of Europe's biodiversity, and within its national borders 446 Natura 2000 sites have been designated. These correspond to 27.59 per cent of the country's land territory (terrestrial sites) as well as to 19.60 per cent of territorial waters (marine sites), following an expansion of the Marine Protected Area network in 2017. These new figures safely overshoot the target of Sustainable Development Goal 14.5.

The Ministry of Environment and Energy, has already launched the elaboration of Special Environmental Studies, presidential decrees and management plans that, once completed, will be legally approved and enforced for the whole Natura 2000 network to ensure adequate protection, regulate and define the conservation terms and implement a judicial management of all Natura 2000 sites in Greece, by 2022.

The Ministry of Environment and Energy has been recently awarded a European Commission LIFE Integrated Project that will run for the period 2018–2025. The project's main objectives are the implementation of 10 Action Plans for habitats and species of Community interest listed in the Birds and Habitats EU Directives, the pilot implementation of Management Plans in Natura 2000 sites and the fine-scale mapping and assessment of ecosystems and their services at national level. The successful implementation of the project will result in a substantial improvement of habitats' and species' favourable conservation status in the country.



Vangelis Batsikostas on Unsplash

The rocks of Meteora above the plain of Thessaly

Grenada

Approximately 22 species of terrestrial mammals are found in Grenada. Three of these are native — the lesser chapman's murine opossum, the greater chapman murine opossum and the nine banded armadillo

The majority of Grenada's biodiversity is found in its forests. The most comprehensive assessment of the country's forest resources was documented in the 1940s, noting six forest communities: cloud forest; rain forests and lower montane rain forest; evergreen and semi-evergreen seasonal forest; deciduous forest and dry woodlands; littoral woodland; and mangrove forest. The major forest regions in Grenada are found at Mt. St Catherine, Grand Etang Forest Reserve, Mt. Hope/Claybony water catchment (private lands), Levera, Morne Delice, the Annandale watershed, and High North Forest Reserve in Carriacou.

Continuing trend of conservation

Extensive work has been done on the policy, planning and legislative frameworks relating to biodiversity conservation in Grenada. A range of new policy and planning documents were elaborated on the national level and several new pieces of legislation were enacted.

On the national level several biodiversity related project were implemented during the reporting period.

The Terrestrial Protected Areas estate increased from 1,765 ha in 2000 to 2001 ha in 2014, equivalent to 13.4 per cent increase. This occurred due to the legal declaration of the 236 ha Annandale Forest Reserve in 2006.

47 Marine protected areas achieved major growth with the legalization of the Molinere-Beausejour MPA and the Woburn Clarkes court Bay MPA in 2001, totalling 498 ha of sea space. The Sandy Island Oyster Bed MPA although actively managed is awaiting legal designation. This designation will add another 787 ha to the existing MPA. This trend is expected to continue cognizant of the Grenada Declaration which targets effective conservation of at least 25 per cent of terrestrial and near shore marine areas by 2020 in accordance with Grenada's declaration made at COP 8. In fact, the Ridge to Reef Project 49 plans to expand the MPA and TPA estates significantly by the end of 2019. At Cop 8 in Brazil, Grenada made a bold declaration to protect 25 per cent of its territorial and coastal and marine ecosystem. Subsequently, Grenada joined forces with seven other Caribbean countries under the Caribbean Challenge Initiative (CCI) which seeks to expand and consolidate the Caribbean network of protected areas, both marine and terrestrial. The countries pledge to effectively conserve 20 per cent of their resources by 2020. Grenada is now and active member of the Caribbean Biodiversity Fund which seeks to leverage resources for protected areas by developing sustainable finance mechanism for accessing long-term and reliable financing.

During the period of study, several education and public awareness projects were implemented. For example, the Reef Guardian Programme involved farmers, fisherfolk and school children on the imperatives for biodiversity conservation. Many public sector initiated and donor-funded projects included elements of public education and awareness on biodiversity. In addition, several locally based non-governmental organizations have implemented public education and awareness programs on the areas for example of turtle watching, sustainable farming, sustainable fishing, pollution control and national clean-up campaigns. The programme on the lionfish is a case in point with the elaboration of the Grenada lionfish action plan.



David Kirsch on flickr

Mona Monkey in Grand Etang National Park

Guatemala

In addition to biological diversity, a feature that defines Guatemala as a mega-diverse country is its remarkable cultural wealth, being globally one of the countries with the largest number of linguistic communities per unit area

Guatemala has the richest, most unique and most lively biodiversity in Mesoamerica, which hosts between 7 and 10 per cent of the known forms of life on the planet and ranks second in the regions with the greatest diversity of species and endemism. With respect to fauna, 706 birds, 142 amphibians, 244 mammals and 245 reptiles are reported in Guatemala; 10,317 species of flora constituted by 20 of algae, 376 of fungi, 168 of lichens, 195 of hepatics, 782 of ferns, 527 of mosses, 58 of conifers, 2,352 of monocotyledons and 5,839 of dicotyledons. In addition, there are 1,561 aquatic species.

First Reserve for Amphibian Conservation in Guatemala

In 2011, the document was signed for the creation of a New Ecological Reserve for the Conservation of the Forest and the Endemic Amphibians of the Sierra Caral, in the Cordillera del Merendón (Department of Izabal, Guatemala). This reserve covers a total area of 2,299.42 ha, which will be dedicated for the conservation of nature.

This new Reserve expanded and strengthened the Guatemalan System of Protected Areas, and will contribute to the protection of the Natural Heritage of Guatemala and the world. The Reserve conserves the largest contiguous forest of the Municipality of Morales, Izabal, thus contributing to a better future for the inhabitants of that locality. In this Sierra, the ecosystems are Very Humid Tropical Forest at elevations lower than 900 meters above sea level and very Sub-Tropical Warm Humid Forest from 900 to 1,221 meters above sea level. Sierra Caral is fundamental for the Caribbean Region of Guatemala, due to its water production and the presence of large areas of forest.

Forests protect local communities from landslides, in a context of global climate change. The amphibian fauna of Sierra Caral is composed of 9 salamanders, 2 caecilians and 24 frogs and toads. This makes a total of 35 species of amphibians and is equivalent to 22 per cent of the total species of this group reported for the country, refugees in just 0.25 of the national territory.

In this Sierra there is the greatest number of threatened amphibians in Guatemala with a total of 12 species included in the IUCN red list. Five species of critically endangered amphibians are reported: Nototriton brodiei, Cryptotriton wakei, Agalychnis moreletii, Duellmanohyla soralia, Ptychohyla hypomykter. There are also five threatened amphibian species: Bolitoglossa odonnelli, dunni, Craugastor charadra, sabrinus, Bromeliohyla bromeliace and two species of vulgar amphibians, Craugastor xucanebi and Plectrohyla matudai.

35 per cent of the amphibian species that live in Sierra Caral are within some category of threat of extinction according to the 2013 IUCN Red List. It is particularly important to note that, within this list, five endemic species are reported for Guatemala and the region border with Honduras: Cryptotriton wakei, Nototriton brodiei, Craugastor nefrens, Craugastor xucanebi, Duellmanohyla soralia.

PA L1970 on flickr

Cricket

Guinea

Guinea's territory includes 186 community forests and 53 protected areas

The Republic of Guinea is a coastal country located in West Africa. It covers an area of 245,857 km², and has a 300 km-long coastline on the Atlantic Ocean. In terms of vegetation, the country has six major geographical areas for land-based ecosystems: mangrove, dry forest, savannah, dense humid forest, mountain, and the agriculture area. Guinea possesses a dense hydrographic network, notably as the Niger, the Senegal and the Gambia rivers all originate in the Guinea highlands, making the country the water tower of the sub-region. It is also one of the 34 global biodiversity hotspots recognized by WWF and the IUCN.

Strengthening the network of protected areas

In execution of the 2011–2020 management plan, Guinea's network of protected areas increased from 8 per cent in 2009 to 15 per cent in 2014. This represents an increase of 7 per cent, bringing protected areas to 36,879 km² in the country. This has been the result of the creation of new protected areas.

In order to respect its political engagements to manage the territory's biodiversity sustainably and become more involved in the process of managing national and regional protected areas, Guinea has also drawn up management plans for the Wildlife Sanctuary of the Loos Islands and the Natural Reserve of the Alcatraz Islands. The management plans for Kapatchez and the Mélakoré estuary are also being developed.

Additionally, as part of strengthening the management effectiveness of protected areas, the government has created a body of protectors of nature with special paramilitary status. For the operationalization of this body, a staff of 2,000 agents was recruited and trained. Among these, about 500 are deployed for the surveillance of the protected areas network. In addition, 48 training officers made available by the Ministry of the Environment, Water and Forests received leadership training. To complete this training, a technical training program is planned at the level of the Ministry.

The Guinean network of protected areas has also benefited from the training support, technical equipment (GPS), patrol boats, binoculars, motorcycles, solar kits, computer equipment, and vehicles from WWF, the European Union, Wetland International, IUCN and GE, among others.

In addition to these advances, the government organized a stakeholder roundtable of financial, technical and scientific partners in Dakar in November 2013 to mobilize funds for the sustainable management of the national network of protected areas. Fifty-three partners took part and expressed their interest in supporting Guinea's effort.

At the regional level, Guinea currently chairs the regional network of marine protected areas of West Africa and is a member of the Regional Partnership for Coastal and Marine Conservation in West Africa (PRCM).



jbdodane on flickr

Guinea

Guinea-Bissau

With 338.652 ha of mangroves, Guinea-Bissau hosts 2.5 per cent of the global mangrove surface

Guinea-Bissau is a coastal country in West Africa in the transition zone between the Sudanese Sahel and Congolese Guineo domain displaying remarkable biodiversity recognized worldwide. Guinea-Bissau's territory has a total surface of 36.125 km² and is constituted by a continental part, and a group of about 80 islands and islets. The Guinean population, mostly live and depend on these diverse biological resources, which are the basis of its economy and its welfare.

Actions against deforestation and for the reduction of forest degradation

The deforestation process, forest degradation and changes in the use of the soils are considered as a principal risk and threat for the coastal and terrestrial biological diversity. Several initiatives have been undertaken to reduce this phenomenon. Among these, the activities of the countryside federation KAFO deserve particular attention.

KAFO was established in 1996 and has been operating as an NGO since 2000. The fundamental missions of the organisation are Community Self-Promotion and Rural Sustainable Development. KAFO supports both individual and community empowerment in order to advance development and environmental protection in countryside areas. The KAFO federation has contributed positively to conservation efforts through information, education and awareness raising activities in farming communities. Thanks to a partnership with Community Radio of Djalicunda it was able to reach farmers to share good practices and to spread agricultural and traditional knowledge. KAFO is involved in capacity building activities targeting farmers and the communities which are supported by farming activities. The NGO also promotes apiculture and conservation, and has established a seed bank.

Moreover, it has undertaken research activities in the forest areas and has trained farmers to protect forest resources. For example, the population of 150 villages was taught to apply four good practices for forests, namely: fight and prevent fires in forests, sustainable production of vegetable coal, production of forest trees' seeds, and reforestation techniques. KAFO has trained and empowered 300 farmers who are followed by a group of community forests agents and also by the Forest Management Committee. The new dynamics of local farming in these forest areas ensures the participation of the local community and women who are also trained by professional forest agents, gardeners and coal workers.

The actions resulted in positive conservation efforts: the production of coal has been reduced and firewood is sustainably sourced. Extinction of rare species is being prevented in the forests of Oio, Cacheu and Bafatá Regions, thanks to the protection of Borassus aethiopium, Pterocarpus erinaceus, Afzelia africana.

KAFO has also set-up six forest nurseries which yield an average annual production of 47,136 forest plants. The efforts of these communities have been consolidated resulting in the protection and regulation of 30 forests around 150 villages.



Nations Online Project

Varela beach, Guinea-Bissau

Guyana

No critically endangered mammals are known to occur in Guyana. Guyana's species status was estimated as 8,000 plant, 467 fish, 130 amphibian, 179 reptile, 814 bird, 225 mammal, 1,673 arthropod, over 1,200 fungi, 33 bacteria, 13 nematode, 44 algae, 17 mollusc, and an estimated 30 virus

Guyana is situated in the neo-tropical biogeographical territory of north-eastern South America and is also part of the Guiana Shield region which forms part of the Amazon Biome. The Amazon Biome, spanning 6.7 million km² is the single largest remaining tropical rainforest in the world and is home to at least 10 per cent of the world's known biodiversity. Guyana is home to a vast expanse of primary tropical forest, freshwater and other unique ecosystems. Guyana consists of four main natural regions: coastal plain, hilly sand and clay region, interior savannas and forested highlands.

Guyana's biodiversity-related strategies

In preparation for the fifth national report, Guyana enacted multiple biodiversity-related strategies. National policies were developed including the National Forest Policy, National Land Use Policy, Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising from their Utilization, and National Biosafety Framework. National strategies were developed to assist in biodiversity management and protection, including the Low Carbon Development Strategy (LCDS) and Protected Areas Strategy.

National Plans were also developed including the National Forest Plan, National Protected Areas System Plan, National Land Use Plan, and the National Mangrove Management Action Plan. Key pieces of legislation were enacted to conserve and protect biodiversity including the Wildlife Management and Conservation Regulations (2013), Species Protection Regulations (1999), Protected Areas Act (2011), the Forest Act (2009), and the Hydro-Electric Power Amendment Act (2013) which allows for the creation of biodiversity offsets.

The Wildlife Management and Conservation Regulations were gazetted in 2013 and the Wildlife Import and Export, Biosafety and ABS legislation are currently being developed. In 2014, Guyana acceded to the Nagoya Protocol on Access and Benefit Sharing. Institutional and governance arrangements were strengthened with the creation of the Ministry of Natural Resources and the Environment (MNRE) in 2011 which has as its primary focus the harmonizing of policy and management in the natural resources-based sectors, and better mainstreaming of conservation and environmental management. All the natural resources related Agencies and Commissions are now under the purview of the Ministry.

A Costed Strategic Framework 2013–2018 for the MNRE was also prepared. Significant progress was made regarding protected areas including the establishment of the Protected Areas Commission (PAC) and two new protected areas (Kanuku Mountain Protected Area and the Shell Beach Protected Area), efforts to create the National Protected Areas Trust Fund, development of a strategic plan for the PAC, development of a plan for the NPAS, management plans for individual protected areas, and establishing field presence in protected areas. Guyana's LCDS provided the framework to reconcile protection of the rainforest while pursuing economically rational development. In 2009, the government of Guyana launched this innovative strategy to pursue low carbon economic development while conserving forests in an effort to support global climate change mitigation and earn revenue from forest climate services. Through the LCDS and partnership with Norway, Guyana is implementing one of the first models of avoided deforestation



Bernard Dupont on flickr

Guianian cock-of-the-rock (Rupicola rupicola)

Haiti

75 per cent of Haiti's 2,000 species of fauna are endemic

The Republic of Haiti occupies one-third (27750 km²) of the second largest island of the Caribbean, known as Hispaniola, and shared with the Dominican Republic. The country is surrounded by the Atlantic Ocean to the north, and the Caribbean Sea to the west and south. Most of the territory consists of rugged and mountainous land with abrupt slopes and deep valleys, with five mountain ranges occupying 75 per cent of the country. The rest of the territory consists of flat expanses, with coastal and marine access. Haiti is located in an internationally recognized biodiversity hotspot, the Caribbean, which ranks fourth in the world for major diversity indices, and perhaps containing the highest concentration of endemic species on a land area basis.

Saving the rhinoceros iguanas from extinction in Anse-à-Pitre

A characteristic trait noted in Haiti — which constitutes a new trend in the past decade — is the growing involvement of civil society in the management and governance of biodiversity in the country. Local groups often operate in collaboration with international NGOs and receive the support of certain cooperation agencies. Such has been the case for the protection of the rhinoceros iguana population in south-eastern Haiti. Conservation efforts have been based on the combined efforts of the Organization of Active Youth of Anse-à-Pitre (OJAA) and the Municipality of Anse-à-Pitre, as well as the Grupo de Jaragua, the International Iguana Foundation and the Critical Ecosystem Partnership Fund (CEPF).

It began in 2012 when the International Iguana Foundation (IIF), in consultation with Grupo Jaragua, a Dominican civil society organization, undertook a scientific expedition to Anse-à-Pitre in the south-east of the country in order to find rhinoceros iguanas (Cyclura cornuta) that were believed to have been extinct since 2007. A small population of rhinoceros iguanas was discovered, and IFF started working with the youth group OJAA in a breeding operation. Very quickly, the OJAA committed to protect and monitor the species.

Thanks to the financial resources provided by the Critical Ecosystem Partnership Fund (CEFP), IIF involved the local municipality, and a municipal by-law was passed establishing the first Iguana Reserve in Haiti. The Reserve is jointly managed by the OJAA you group and the Municipality of Anse-à-Pitre. It currently protects 3,000 ha of dry forest for the conservation of the small population of rhinoceros iguanas.

IFF has assisted the OJAA and the Municipality of Anse-à-Pitre in the preparation of a management plan integrating the needs of local cattle breeders who use the remains of the dry forest for the itinerary of their animals. Information, Education and Communication activities have also been undertaken for local communities, focused on the safeguard of the iguanas.

The experience of OJAA and the municipality of Anse-à-Pitre thus epitomizes a model illustrating a strong sense of community commitment in the context of a common property ownership system, in which the members of a social group work to reduce the potential collective damages to the environment.

Kayla Gibson

Haiti

Honduras

In 2012, the nest of a harpy eagle (Harpia harpyja), among the largest extant species of eagles in the world, was reported in a remote sector of the Patuca National Park

Due to its geographical location, the Republic of Honduras has widespread biological diversity resulting from the convergence of its tropical and subtropical ecosystems that are terrestrial, marine-coastal and freshwater. These environments have favoured the existence of endemic species concentrated in sites considered as hotspots, with environmental conditions not disturbed by anthropogenic activities, especially in mountains with cloud forests of over 1,000 ha. The country's biological diversity has been widely used traditionally by indigenous peoples as a means to complement the traditional diet, especially in areas with forest coverage and with communities in the coastal-marine zone.

Progress towards the goals of the programme of work on protected areas

In order to create and strengthen national and regional systems of protected areas and integrate them into a global network as a contribution to the worldwide agreed goals, the SINAPH (New National Park System) strategic plan was created for a period of 10 years, 2010–2020, and examines 16 strategic guidelines.

The theme of the protected areas in Honduras has been incorporated into sectoral policies and programmes such as agriculture, forestry and fisheries, and has recently been the subject of attention within the framework of free trade agreements, particularly in CAFTA-DR. It is also considered in the strategies of sustainable tourism, ecotourism, payment of environmental goods and services, poverty reduction and the Millennium Development Goals. It is also considered in the national plan that is being developed and will be decreed as law by the National Congress. An assessment was made of the effectiveness of the management in 2007 based on information gathered six years earlier, and a new assessment is currently being compiled from evaluations made in 2008. These are expected to be published in the Mesoamerican Congress on Protected Areas

The initiative of private landowners has been strengthened in the private reserve network, which complements the work of the public sector. Lack of financial resources remains the main obstacle, in particular to cover the recurrent costs of the system and for the ongoing development of research programmes.

Initiatives continue to depend on international cooperation, but efforts are being made to strengthen the protected areas and Wildlife Fund in order to increase the national contribution. Current priorities include the strengthening of local actors, particularly organizations of various kinds, as well as of local governments in their capacity to manage and implement projects; and the strengthening and support of research institutions.



Image: H. Dohlen

A harpy eagle's nest (Harpia harpyja) in a remote area of Patuca National Park

Hungary

Hungary is the only Member State where sufficient territories have been designated for the conservation of species and habitats of European importance, and no new site designations are necessary

The Hungarian Parliament's 2015 adoption of a National Biodiversity Strategy 2015–2020 builds on the country's longstanding commitment to biodiversity. Hungary has already surpassed Aichi Target 11 (to protect at least 17 per cent of land and water) as approximately 22 per cent of the country's total area is under legal protection. This increases to over 36 per cent when taking into account the extension of areas protected under legislation during the past 25 years. This includes the designation of protected areas and Natura 2000 sites, establishment of the ecological network and land acquisition for nature conservation.

Ahead of schedule on biodiversity

Steps to implement CBD objectives include a wide range of activities with good results in many areas, including the protection of birds of prey and action to reverse the decline of endangered species. Hungary has also taken strong measures to save the environment from genetically modified organisms by developing a GMO-free agricultural strategy and was one of the first Parties to sign the Nagoya Protocol on Access and Benefit Sharing in 2011.

In total, Hungary has 10 national parks, 39 landscape protection areas and 169 nature conservation areas of national importance. Bogs, mires, alkaline lakes and all caves are protected by law. Many areas are preserved in close to natural state, allowing ecological processes to take place mostly undisturbed.

Hungary's ecological network contains protected areas, bueffer zones, Natura 2000 sites, environmentally sensitive areas and natural areas. The main purpose of the ecological network is to contribute to the overall protection, maintenance and enhancement of biodiversity, thus also helping the effective implementation of the CBD. An important aspect of the network is its role in promoting biological connections between different areas.

With 525 sites in total, Hungary's Natura 2000 network consists primarily of national parks and landscape protection areas. The proportion of grasslands under protection is more than double the EU average. Over half of the national protected areas are forests and over 70 per cent of inland waters belong to the network.

In 2011 the European Commission evaluated the completeness of the country's Natura 2000 network. The evaluation found that Hungary is at present the only Member State where sufficient territories have been designated for the conservation of species and habitats of European importance, and no new site designations are necessary. The Natura 2000 network was judged to be sufficient for all habitats and species of EU importance, and the designation was declared complete.



Dimitry Ljasuk on Unsplash

Tiszaörvényi Hajóállomás, Tiszafüred, Hungary

Iceland

Four species of invertebrate are found only in Iceland, two of which are midges and the other two groundwater amphipods. The Arctic fox is Iceland's only native terrestrial mammal

Iceland is located on the Mid-Atlantic Ridge, approximately 290 km east of Greenland and 970 km west of Norway, at the junction where the tectonic plates of North America and Eurasia meet. Large and mountainous, Iceland is Europe's second largest island and the third largest in the Atlantic Ocean, encompassing a land area of about 103,000 km², a coastline of 4,970 km and an exclusive economic zone of 200 nautical miles which extends through 758,000 km² of the surrounding ocean. Due to the geothermal hotspot beneath central Iceland and the divergent movement of the tectonic plates to each side, volcanic eruptions are relatively frequent, averaging two per decade.,

Emphasis on areas with habitats for the protection of birds

Currently there are 101 areas protected for nature conservation, covering approximately 20 per cent of the country. Terrestrial areas cover approximately 1.5 million ha, wetlands 226,000 ha, mountainous areas are approximately 1.6 million ha and coastal and marine areas 455,000 ha. A number of protected conservation areas have also been established with special legislation.

During the last five years, emphasis has been on areas with habitats for protection of a number of species of birds, both species that breed in Iceland and also migrating bird species passing through Iceland. Areas to strengthen protection both in terms of abundance and distribution have been selected for the species concerned. Currently 24 areas are protected for bird conservation, a total of 375,000 ha. Five new bird areas have been protected in the last five years and there are plans for further increase in areas for bird protection, especially migrating and marine species. There has been a general trend of increase in protected bird species and species that have been endangered such as falcons, the white tailed eagle, grey phalarope and Slavonian grebe.

The Icelandic falcon (Falco rusticolus) has been recovering but the population osculates in an 8 to 10 year cycle along with the main prey species, the ptarmigan. The ptarmigan is the most popular game bird in Iceland. The population has a fluctuating cycle of 8 to 10 years naturally, but the population size has decreased during the last 2 to 3 decades. To address this problem, restrictions have been imposed on hunting, the hunting season was shortened considerably and ban on sale of ptarmigans has been in effect since 2005. The ban, suggested voluntary bag limit, propaganda, and the fear of a total hunting ban has led to reduced hunting and partial recovery of the ptarmigan population.

The Slavonian grebe has been increasing in numbers the last 1 to 2 decades and has, at the same time, extended its breeding range in the country. The white tailed eagle has been recovering due to conservation measures for the last 40 to 50 years, including monitoring and regular watching of the nesting sites during the breeding season. The population is now up to 66 breeding pairs from 20 pairs around 1964. A number of threatened bird species have been recovering over the last few years. Protective measures such as wetland restoration and protected areas have been effective for recovery for a number of bird species. Increased public awareness and better information have also been effective.



alexiby

Fjaðrárgljúfur, Iceland

India

The practice of eco-development secures support from local communities and other stakeholders for management of protected areas

Thanks to its area-based conservation measures, along with protected areas designated under the Wildlife Protection Act 1972, India has over 20 per cent of its total geographical area under biodiversity conservation, thereby exceeding the Aichi Biodiversity Target of 17 per cent. India's 12 National Biodiversity Targets build on a range of existing activities in many areas. There are three levels of planning unit for establishing a representative network of protected areas (PAs), based on biogeographic classification according to zones, provinces and biomes. The practice of eco-development secures support from local communities and other stakeholders for the management of PAs.

Leadership in practice

Section 37 of the Biological Diversity Act 2002 empowers the provincial state government to declare areas of significant biological diversity as Biodiversity Heritage Sites in consultation with local bodies. 11 Indian sites covering an area of 941.21 km² had been declared by the end of 2017.

India has designated 18 Biosphere Reserves, covering an area of 89,531 km², of which 10 are included in the World Network of Biosphere Reserves. Eco-Sensitive Zones are notified around National Parks and Wildlife Sanctuaries under Environment (Protection) Act 1986.

Wetlands are legally protected under the Wetland (Conservation and Management) Rules 2017. The National Wetland Inventory and Assessment of 2011 identifies wetlands in India covering 4.63 per cent of the geographic area. Nearly 60 per cent of these wetlands fall in the legally protected areas discussed above. The remaining 40 per cent comprise natural and human-made wetlands.

The National Forest Policy aims to conserve the biological diversity of the natural forests. The Joint Forest Management initiative of the government provides for involvement of local communities in the management and conservation of the forest resources through establishment of Joint Forest Management Committees. This includes recognition of the rights of tribes and other traditional forest dwellers to forest resources and dwellings.

In the area of wildlife conservation, an independent evaluation of India's 125 national parks and wildlife sanctuaries took place from 2006 to 2014, and this exercise will continue for 125 PAs, including the country's Tiger Reserve Network, during the period from 2017 to 2018.

One of the three objectives of the Convention on Biological Diversity and the objective of its Nagoya Protocol on Access and Benefit Sharing is the fair and equitable sharing of benefits arising from the use of genetic resources. India is implementing this objective through the Biological Diversity Act, 2002.

Ratification of the Nagoya Protocol during India's Presidency, enabling its entry into force on 12 October 2014 — more than a year before its target date — was a major step towards achieving the first of the global Aichi Biodiversity Targets. The pivotal role played by India in achieving this showcased the country's leadership in biodiversity in the global arena.



Wikimedia Commons

Grey Langur monkey in Rishikesh



Indonesia

8,157 fauna species of mammal, bird, reptile and fish, and 1,900 butterfly species accounting for 10 per cent of the species on Earth have been documented in Indonesia

Indonesia is a tropical archipelago with 13,466 verified islands and with a land area of 2.01 million km^2. It is flanked by the Pacific Ocean and the Indian Ocean which makes Indonesia rich in biodiversity. This includes the diversity of living things with their variety of resources in terrestrial, marine and aquatic ecosystems as well as their ecological complexity. Species and genetic diversity are also believed to be very high if based on the ecosystem diversity ranging from Indonesia's area from east to west, at sea and on land as well as on each island. Indonesia is also an archipelagic country with a complex topography that is believed to have the richest marine biodiversity in the world.

Green belt mangrove on the northern Coast of Java

Local communities in Dukuh Pandan Sari, Central Java, are now relieved of the risk from tidal flood and abrasion due to a mangrove ecosystem restoration programme initiated by the community group, Mangrove Sari, who live in the northern part of Brebes Coast. In total, 3 million mangrove trees have been planted since 2008.

Mangrove Sari, supervised by the Farmer Association for Integrated Pest Control (IPPHTI), also requested funding from the Indonesian Biodiversity Foundation (Kehati Foundation) in order to gain support for creating managing approximately 129 ha of degraded land.

The Kehati Foundation has given aid for a community-based adaptation and mitigation programme for coastal communities. The programme not only includes rehabilitation of the degraded coastal area by planting mangrove trees but also a pilot programme to plant saltwater-tolerant paddy rice. In addition, there is now regulation governing mangrove protection at the village level.

Kehati Foundation also supports local communities to seek financial and technical assistance from other resources,such as NGOs and universities. In addition, 10 companies participate in the programme through Corporate Social Responsibility to expand restoration areas and community development. Local and national schools also contribute to the programme.

Recently, neighbouring villages have developed similar local community groups, and networking among coastal communities has been established in Brebes — Sawojajar, Grinting, Randusanga Kulon and Bangsri — and Central Java — Tegal, Demak dan Semarang. The community group now has an ecological pilot fishpond, goat cattle, managed by the group. Women's groups also contribute in initiating food products from fisheries and mangroves. The groups also grow local natural colouring plants to produce coloured powder and paste.

The local community group's success has been in developing value added from local natural resources and increasing their income by producing local products made from mangrove fruits, seaweed culture, blood cockles farming, crab farming, saltwater-tolerant paddy rice, goat cattle, and natural colouring plants. Paddy seed produced by Tani Lestari is also distributed to other regions in West Java Province and Central Java Province. The local communities are now aware of the significant value of coastal ecosystems as well as the need to protect the mangrove ecosystem.



Pukpik on Unsplash

Mount Bromo, Indonesia



Iran

The country's protected areas have consistently been increased and, from 194 sites in 2010, there were 274 sites in 2014, with 29 national parks, 44 wildlife refuges, 35 natural monuments, 166 protected areas and 10 biosphere reserves

Iran is located in West Asia and borders the Caspian Sea, Persian Gulf, and Gulf of Oman. The mountains enclose several broad basins, or plateaus, on which major agricultural and urban settlements are located. With an area of 1,648,000 km^2, Iran ranks eighteenth in size among the countries of the world. Although much of the country is dry, the wetlands are globally significant, with large populations of migratory birds wintering there. The complex and varied climates, topography, geological formations and anthropological management of natural resources have led to a varied and unique biological diversity. In the Iranian ecosystems approximately 8,000 species of plant, 197 of mammal, 535 of bird, 227 of reptile, 21 of amphibians, 160 of freshwater fish and 710 of marine fish have been recorded.

Encouraging systematic capacity development

The CACP is a long standing initiative between Iran's Department of Environment, UNDP and a number of committed international partners, namely the Wildlife Conservation Society, Panther, Cheetah Conservation Fund and IUCN's Cat Specialist Group. Phase I of the project was co-funded by the Global Environment Facility and was implemented from 2001 to 2008. Phase II was implemented in 2010.

An opportunity has now arisen to collaborate with Iran's DoE to achieve two parallel goals. Addendum to Phase II will be aimed at assisting the DoE to fulfil its commitments to UNCBD under Iran's Programme of Work on Protected Areas. The extended phase II will aim to remove a number of barriers currently hampering sustainable Protected Area (PA) management. The single most important barrier pertains to PA financial sustainability and the addressing of PA financing gaps.

As pilots will be selected in cheetah habitats, the ultimate goal of this Addendum would be to achieve the sustainability of PAs as well as augment the sustainability of CACP results. Thus, the Addendum will build on the substantial achievements of CACP through strengthening the current PA management regime in selected cheetah habitats. The addendum will aspire to generate representative local enterprises with access to capital and markets and empowered local communities as local partners of DoE in conservation activities. In this respect, systematic capacity development will target DoE provincial staffers as well as the main beneficiaries of wildlife and ecosystem conservation — the local communities.

The presence of private sector will also be assessed as an enabler with regard to access to capital and markets. The crux of project's philosophy is therefore to design and implement sustainable and biodiversity-friendly livelihood options for local communities, where possible bringing to bear the resources of the private sector. The project will try to strike a balance between the conservation needs of the pilot PAs and sustainable poverty alleviation within PAs.

This new approach is vital to secure the long term survival of endangered wildlife in pilot areas and the emergence of a modern conservation paradigm, based on which the interests of all stakeholders are fully considered and secured through the design of appropriate incentive mechanisms as well as commensurate conservation obligations. The Addendum will also aspire to implement a climate resilient rangeland management model.



Image: Iran's 5th National Report to the CBD

Asiatic Cheetah in Iran

Iraq

The Sheik Hadid Shrine is a sinkhole near Haditha town where two endemic species of fish are found — Typhlogarra widdowsoni and Caecocypris basimi

Iraq is a vast, biodiversity-rich and biogeographically diverse country, which encompasses seven main terrestrial ecoregions, Zagros Mountain forest steppe, Eastern Mediterranean conifer-sclerophyllousbroadleaf forests, Middle east steppe, Mesopotamian shrub desert, Arabian Desert and East SaheroArabian xeric shrublands, Red Sea Nubo-Sindian tropical desert and semi-desert, and South Iran Nubo-Sindian desert and semi-desert. There is one marine ecoregion, the Arabian Gulf. The variety of natural habitats including lowlands, desert, steppes, plateaus, mountains, wetlands, coastal and marine habitats, provide the country with natural, biological and economical diversity.

Consolidating achievements on the fifth National Report

In the fifth National Report, Iraq highlighted three key successes. The first concerning the implementation of the Convention relates to the cross-sectoral institutional involvement achieved under the coordination of the Iraqi Ministry of Environment (MOE) for the development of national strategies and action plans concerning the environment and biodiversity. This involvement includes the development of the National Environmental Strategy and Action Plan for Iraq (NESAP), the development of the National Biodiversity Strategy and Action Plan (NBSAP) and the collection of data for the 5NR to the CBD. Both the strategies have adopted a participatory approach, between the MOE, acting as the national umbrella supervising all environmental related activities and actions, and the involved institutional stakeholders (all ministries, various Committees of the Parliament Council).

Data collection for the fifth National Report is another successful story for Iraq's implementation of the Convention; a Ministry of Environment dedicated team has repeatedly visited and surveyed main scientific and technical information sources nationally, trying to fill the gaps of information that have already been recognized as a main issue in the Fourth National Report. The most recent findings of the KBA Programme have been reported as concerns the field work and field surveys; recent scientific articles and discoveries have been searched from national libraries, from the web and from personal communication/sources with local experts and scientists.

This methodical research has allowed not only the enrichment and increase of the data archives about the environment in Iraq; but has also contributed to spreading the message of biodiversity importance, thereby raising awareness among the contacted stakeholders.

The third success story for the Iraqi implementation of the Convention deals with the local level and active stakeholder involvement in the protection of biodiversity. The services that the ecosystems provide consist of a wide range of benefits of which the local people are the direct and main beneficiary. At the same time, the most effective effort that can protect and conserve the local natural resources, including biodiversity, comes from the local people themselves. The idea of educating and building the capacity of the locals everywhere, especially around the KBAs, ensures that the best approach for protection measures.

In Iraq there are currently two sites that are already protected to a certain extent, in one case on the basis of customary law and, in the other case, with a local conservation group. These two excellent examples of local initiatives to protect biodiversity are the Barzan Tribal protected area (Kurdistan Nature Watch) and Dalmaj marsh (Friends of Dalmaj).



Aram Sabah on Unsplash

Zakho, Iraq

Ireland

The rich variety of Ireland's marine plants and animals and the huge range of habitats that they live in are largely a result of geographical location, with Ireland lying within the influence of both cool northern waters and warmer southern current flows

Ireland's location on the north-western edge of Europe influences the range of habitats and species that occur within its territory. For its relatively small size, the country has a rich biological diversity. More than 30,000 species and 117 distinct habitats have been described for the terrestrial environment. Similarly, Ireland's marine territory has a rich biodiversity and a wide range of habitats. Native woodlands are an important reservoir of biodiversity, containing a host of specialist woodland flora and fauna. However only 2 per cent of the land area supports native woodlands, and these often contain exotic and naturalised tree and shrub species.

Strengthened knowledge base

Strengthening the knowledge base for conservation, management and sustainable use of biodiversity in Ireland is seen as a crucial element of the National Biodiversity Action Plan (NBAP) and realising the goals of the CBD. Since the introduction of the NBAP the following has been achieved in this area:

- A National Vegetation Database (NVD) has been developed by the National Biodiversity Data Centre in collaboration with the NPWS. It contains more than 30,000 relevés, or vegetation sampling units, stored in TURBOVEG software. It brings together data from academics, environmental consultants and state bodies. The NVD continues to be updated, and additional relevés provided by NPWS in 2014 are due to be incorporated. The database provides a core building block for a future Irish vegetation classification system.
- Between 2009 and 2012, an intensive national programme of work to carry out benthic surveys of approximately 100 marine Natura 2,000 sites was carried out. These surveys mapped the distribution and extent of intertidal and subtidal, benthic communities based on analysis of physical and biological data and feed into the assessment of license applications for aquaculture and the regulation of fisheries. In 2012, a survey of the Codling Bank was carried out to investigate the biodiversity composition of this area of the Irish Sea.

The following legislation has been introduced in Ireland since the fourth Report to the Convention on Biological Diversity:

- The Planning and Development Act 2010 Part XAB ensures that both plans and individual projects are compliant with the EU Habitats and Birds Directives. The Department of Environment Communications and Local Government is the competent authority in executing the Planning and Development Act and the Department of Arts Heritage and Gaeltacht is the statutory consultee in relation to plans or projects that may impact on Natura 2000 sites and species.
- A new Forestry Bill was presented to Dáil Éireann by the Minister of State at the Department of Agriculture, Food and the Marine in October 2013. The primary purpose of the Bill is to reform and update the legislative framework relating to forestry and to support the development of a modern forest sector, which operates in accordance with good forest practice and with a view to the protection of the environment.



Dronepicr on flickr

Aerial view of gardens

Israel

The Open Spaces Protection Fund serves as an offset for land development projects and therefore balances incentives and subsidies harmful to biodiversity

One of the major initiatives for mainstreaming biodiversity in Israel in recent years has been the Open Spaces Protection Fund. The fund was established in 2012 by the Israel Land Authority (ILA) to allocate funding for the restoration of open spaces and aquatic habitats, protection of endangered ecosystems, conservation of biodiversity and planning sustainable development. It serves as an offset for land development projects (mostly housing) and therefore balances incentives and subsidies harmful to biodiversity. Israel sees the fund and the activities it achieves as an integral part of the country's progress towards the Aichi Biodiversity Targets.

Safeguarding open spaces

The main aims of the fund include rehabilitation, restoration and conservation of open spaces, rivers and aquatic habitats, as well as land acquisition from private owners for the purpose of protection of open spaces with significant ecological value. It also addresses treatment and removal of environmental hazards, waste and invasive species, and area-based conservation of biodiversity and ecological corridors. Other activities are the collection and processing of data, and spatial planning of open spaces to ensure sustainable development and land use.

The ILA issues an annual call for projects, which is open to both central and local government and academic institutions. To date, more than 300 projects nationwide have received funding out of a total sum of US$ 150 million.

The Jordan River Slopes Restoration Project for the rehabilitation of the river is well underway with the support of the fund, resulting in the clearing of eroded soil, waste and other hazards, eradication of invasive plant species, and reclamation of the river banks. Water flow and water quality have also improved.

Another project aims to eradicate the invasive plant species Acacia saligna from the Judean Hills. The fund allocated US$ 0.4 million for this five-year project, which began work in 2017.

Restoration work has begun in the Sorek River Estuary, located near a large urban area and affected for many years by pollution, effluents and sewage, as well as mosquito infestation. Past use of harsh pesticides caused soil degradation and the collapse of the river banks. Ecological prevention methods are replacing pesticides and the pollution of the river has decreased significantly. Revitalization of a marsh area as part of this project supports a rich biodiversity of flora, invertebrates, amphibians, fish, birds and mammals.

The fund also supports 'HaMaarag', Israel's National Nature Assessment Programme, which carries out data collection and monitoring by scientists and experts in natural and social sciences and economics.

The Conservation of Open Spaces Fund is an example of a national achievement and success under the Convention on Biological Diversity. This economic tool and the relevant legislation will continue to be highly effective in supporting biodiversity in Israel.



Image: Albatros

Jordan river slopes after restoration

Italy

Italy is extremely rich in biodiversity; it has the highest number and density of both animal and plant species within the European Union, as well as a high rate of endemism

In Italy, the protected areas are one of the most important tools for nature conservation, that have also allowed to achieve some important goals of the Aichi Biodiversity Targets. Italy is one of the richest biodiversity countries in Europe and the system of national/regional protected areas, together with the Natura 2000 network covers an area of 9,474,343 ha, affecting 21 per cent of the surfaces and over 19 per cent of the national marine area. The protected areas, in addition to preserving the richness of biodiversity and natural ecosystems, are ideal places to raise awareness on natural and cultural capital and to promote the development of territories enhancing a sustainable and responsible tourism.

Sustainable tourism — pilot intervention in the Egadi Islands Marine Protected Area

The tourism sector can be a fundamental economic activity for many protected areas, but it can cause important environmental impacts, especially if concentrated in limited seasonal periods and on particularly sensitive ecosystems. Therefore, there is a need to move towards tourism forms that respect and protect the environment, ecosystems and biodiversity, implementing strategies to minimize and manage human impact.

The Italian Ministry for the Environment promotes the European Charter for Sustainable Tourism in Protected Areas, a methodological tool and a certification that allows to involve local stakeholders in the development of sustainable tourism.

In this context, many projects have been realized in the protected areas; in particular, the Egadi Project, developed by ENEA and Egadi Islands Marine Protected Area (MPA), has promoted a model of integrated and sustainable management of water resources, the waste cycle and natural resources in all three islands of the Egadi Archipelago.

The project made it possible to create a composting plant for the transformation of the organic fraction of separate collection waste into fertilizer; the treatment and reuse of waste water and the instalment of a "house of water" fed by photovoltaic panels, to reduce the use of water bottles.

In particular, to avoid the residues of Posidonia oceanica, a typical Mediterranean aquatic plant, remaining on the beach or disposed as common waste, ENEA has patented a procedure that allows their replanting on the seabed, with a considerable environmental benefit. This procedure has increased the submerged forests of Posidonia, an eventuality essential for the marine ecosystem because they may absorb high quantities of CO_2 as well as providing an important habitat for the reproduction of numerous fish species.

An environmental quality label, implemented by the Egadi Islands' MPA, has been created for local companies committed to reducing the environmental impact of their activities, also with the aim of promoting tourism. Up to now 100 operators have the MPA quality label.

To carry out this project, ENEA conducted special surveys in collaboration with the Municipality of Favignana, which also includes the islands of Levanzo and Marettimo, and with the Egadi Islands MPA, protecting and enhancing the largest marine reserve in Europe.



Luciano d'Angelo

Cala Rossa, Favignana, Sicily

Jamaica

Thanks to conservation efforts, a total of 349 iguanas were released from the headstart programme between 1996 and 2017

Jamaica's largest terrestrial endemic vertebrate, the Jamaican Iguana (Cyclura collei), was common along the coastal plains and hills of southern Jamaica up until the late 1800s but by 1948, it was considered extinct. Following the rediscovery of the species in 1990, numbers rose again. Today, conservation efforts are as important as ever as the iguana is listed as critically endangered on the IUCN Red List due to habitat loss, over-harvesting and the introduction of non-native predators.

Saving the iguana

Initial conservation efforts began with the formation of the Jamaican Iguana Research and Conservation Group (re-named in 2006 as the Jamaican Iguana Recovery Group) led by Dr. Peter Vogel and other local stakeholders, with significant support from international partners.

Since the rediscovery of the species, conservation efforts have included protection of the core nesting sites in the Portland Bight Protected Area (the largest protected area in Jamaica), development of a comprehensive recovery plan for the species and the establishment of a headstart captive facility at the Hope Zoo.

In 1993, local and international groups conducted a workshop in Kingston, Jamaica, which led to the development of a Population and Habitat Viability Assessment and comprehensive recovery plan, sponsored by the International Union for Conservation of Nature (IUCN). The release of headstarted iguanas back into the core nesting area began in 1996, with other conservation activities focusing on securing protection for the Hellshire Hills, recovery efforts for the remaining population and establishing a reintroduced population on the Goat Islands.

Conservation efforts have been successful, with a total of 349 iguanas being released from the headstart programme between 1996 and 2017. However, major threats to the iguana's persistence still exist, including predation from non-native predators, illegal deforestation and charcoal production, and large-scale development projects. Methods of mitigating the threats have been included in all of the recovery and management plans for the species that are currently in place.

Ecological restoration in Portland Bight Protected Area

The Government of Jamaica/European Union/United Nations Environment Programme Climate Change Adaptation and Disaster Risk Reduction Project ended in December 2013. Building on the project, the National Environment and Planning Agency implemented a number of components to increase the resilience of selected coastal areas against potential climate change impacts. Adaptive management strategies include rehabilitation of mangrove forests, seagrass beds and coral reefs within selected Marine Protected Areas.

Mangrove rehabilitation was conducted in the Portland Bight Protected Area, which suffered damage to thousands of acres of mangrove trees and blocked tidal channels due to Hurricane Ivan in 2004. After site assessment, interventions included restoration of the hydrology and introduction of nursery-reared mangrove seedlings. The seedlings have responded positively to the interventions and the constructed channel continues to fulfil the hydrological demands of the forest, allowing the area to generate its own seedlings. The project has surpassed the performance criterion of at least one mangrove per 4 m^2 over 50 per cent of the area within two years from natural recruitment or active planting.



Bobby Duperrouzel

Jamaican Iguana feeding

Japan

In Japan, forests cover approximately 250,000 km^2 of land which accounts 67 per cent of the national land

Japan has many endemic species and a rich biota (estimated at about 90,000 known species) within a small area of national land. Japanese biodiversity is characterized by a high percentage of endemic species: about 40 per cent of land mammals and vascular plants, about 60 per cent of reptiles and about 80 per cent of amphibians are endemic to Japan. The country has rich natural environments that provide habitats for wild monkeys (Japan is the only developed country which has a wild monkey population) and many other medium and large wild animals including bears and the sika deer (Cervus nippon).

Activities of the Japan Committee for the United Nations Decade on Biodiversity

To encourage various parties to achieve the Aichi Biodiversity Targets and to encourage them to cooperate with each other, the Japan Committee for the United Nations Decade on Biodiversity (UNDB-J) selects and recognizes best practices and then promotes the selected projects through PR activities. More specifically, UNDB-J comprehensively assesses, selects and recognizes best practices from various projects conducted by different parties working towards the achievement of the Aichi Biodiversity Targets, that are registered by the Nijyu-maru Project.

As of March 2018, 133 projects have been recognized by UNDB-J as best practices. One of the projects is Tohoku Green Renaissance from the Sea and the Rice Field. With the aim of achieving Green Renaissance in areas affected by the great East Japan earthquake by taking biodiversity restoration into account, various parties including citizens, Tohoku University and NPOs are conducting activities in cooperation with each other, such as the restoration of rice fields and participatory ecosystem monitoring. The project was highly valued because it supported affected farmers by selling branded rice which was grown in a biodiversity-conscious way, in addition to contributing to the conservation and restoration of biodiversity in disaster-affected areas.

UNDB-J also actively promotes the recognized projects by posting them on the UNDB-J website and certificating them at the National Meetings on Biodiversity as well as at regional seminars organized by UNDB-J.

There is also recognition that local governments should play an important role in the conservation of biodiversity and the sustainable use of its components. For example, at COP 10, the Plan of Action on Subnational Governments, Cities and Other Local Authorities for Biodiversity was approved. The plan expects local governments to take initiatives for biodiversity conservation, such as the formulation of Regional Biodiversity Strategies.

In Japan, the Local Government Network on Biodiversity was established in October 2011, through which cooperation between local governments has progressed. With regard to Regional Biodiversity Strategies stipulated in the Basic Act on Biodiversity, 43 out of 47 prefectural governments had formulated strategies by March 2018, and 46 prefectures have either formulated, or are in the process of formulating, or are considering the formulation.



Kaz Empson on flickr

Japan in Autumn

Jordan

The high number of birds — 436 is due to Jordan's location along the migratory route between Eurasia and Africa. The marine environment maintains more than 510 marine fish species, 5 per cent of which are endemic

Jordan embraces four biogeographic regions, namely: the Mediterranean, Irano-Turanian, Saharo-Arabian and Sudanian. The four regions comprise thirteen vegetation types which provide the natural habitats for over 4,000 species of fauna and flora from the terrestrial, marine and freshwater environments in addition to genetic resources. The country's 2,622 species of vascular plants represent 1 per cent of the world flora. Jordan hosts 644 animal species of which, 83 are mammal, 436 birds, and 348 fish. Three new protected areas have been established since 2009 namely, Yarmouk, Fifa, Qatar, bringing the total to 11.

Ecosystem conservation — local honeybees and biodiversity

Agriculture in Jordan is regionally focused on rain-fed wheat and barley on the plateau, and olives in the mountain areas, whereas intensely managed agricultural lands are situated in the Jordan Valley.

Several local breeds and varieties are becoming rare and some are even being threatened, such as the Jordanian native cattle breed, native Arabic horse, native chicken, Syrian donkey, Jordanian tomato, cucumber, squash, wheat, lentils, and barley. Conservation plans put in place for native land races of cereal and field crops are doing well.

The Bee Research Department at NCARE confirmed, through its research, that the free benefits derived from pollination obtained by ecosystem services provided by endogenous insects, including the honeybee, improve productivity and quality. According to the outcomes of the studies, the value of ecosystem services provided by insects to 34 selected crops to the Jordanian economy was 33 per cent of the total value of those crops' production, and the approximate value of estimation due to honeybee pollination was 27 per cent of their total value which was over 26 times more than the total value of Jordan's domestic honey production. Self-sufficiency outcomes indicate that loss of insect pollination will directly affect at least 35 per cent of local crop production of those selected and that this will harm food security. Moreover, it is becoming evident that there is a crucial need to attract the attention of younger generations to the value of honeybees in achieving food security and stability of ecosystem conservation.

Due to the worldwide decline in the honeybee population, and the decreasing number of beekeepers, NCARE established a Bee Research Department which is mandated to conserve the local honeybees Apis m. syriaca, to study its behaviour, breeding, and selection. During the last 10 years the department distributed, for free, over 20,000 queens' cells which had helped in the conservation of this important honeybee genetic resource.

Further, the Department published four books and pamphlets; one of which was "Honeybees and Medicinal Plants of Jordan" demonstrating the strong relationship between honeybees and wild flora. The programme also included a schools' awareness campaign targeting 1,200 classes with over 42,000 students from as wide an audience as Jordan, Iraq and Palestine.



hey tiffany! on flickr

Jordan

Kazakhstan

The flora of Kazakhstan amounts to over 13,000 species, including more than 5,754 species of higher vascular plants, about 5,000 species of mushroom, 485 lichen, more than 2,000 algae, and about 500 bryophyte

Kazakhstan is the ninth largest country in the world with an area of 2.72 million km² . The country enjoys a unique set of landscapes, ranging from deserts to high mountains and ecosystems of inland seas. Moreover, arid and sub-humid lands cover more than 75 per cent of the Kazakhstan territory. The flora of Kazakhstan integrates more than 13,000 species, including more than 5,750 species of vascular plant, about 5,000 fungi, 485 lichen, more than 2,000 algae, and about 500 bryophytes. The centres of flora endemism are the Karatau mountains and the Western Tien Shan.

Positive changes to environmental legislation

Fishing has been reducing in both its annual tonnage of catch and the number of employed staff in the sector. This downward trend in the number of individual fishery units creates an alternative in the development of commercial fishing. The gradual reorientation of fisheries to commercial fish farming will allow the removal of pressure from fish resources of natural water bodies. The growth of business activity on the development of trade fish farms will contribute to the creation of additional jobs, mostly in rural regions. It is also necessary to implement projects aimed at increasing the economic potential of the fishing industry.

Between 2010 and 2013, several changes were introduced to environmental legislation and structures responsible for the conservation of biodiversity in Kazakhstan. As a result, in 2012, the president of Kazakhstan signed a law to make amendments and additions to some legislative acts on issues of forestry, wildlife and protected areas.

In general, the changes were intended to clarify some of the provisions, exclude incorrect interpretation of articles, strengthen market mechanisms for biodiversity conservation, tighten liabilities for violation of environmental laws, and refine and divide authorities of state agencies at various levels. The designation "key ornithological area" (IBA), was then introduced into legislation. Also, large-scale changes were made in forestry. In summary, all adopted amendments and additions have significantly strengthened the environmental legislative framework.

The Environmental Code of the Republic of Kazakhstan has been implemented. The code specifies units of environmental protection; competencies of specially authorized state bodies in protection; reproduction and use of flora and fauna; and environmental quality standards stipulated by the legislation of the Republic of Kazakhstan. In addition, the code includes:

- The assessment of biodiversity within ecology expertise and environmental audits, state control, state environmental monitoring, and maintenance of a unified system of state natural resources
- Identification and actions in case of environmental emergencies and environmental disaster
- The procedure for the development and approval of environmental requirements for economic and other activities.
- Environmental requirements for the common use of wildlife.



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Summer view of Almaty region mountains

Kenya

Around 25,000 animal species and 7,000 species of plant have so far been recorded in Kenya

Kenya is endowed with diverse ecosystems and habitats that are home to unique and diverse flora and fauna. The country's rich biodiversity can be attributed to a number of factors, including a long evolutionary history, varied and diverse habitat types and ecosystems, diversity of landscapes and variable climatic conditions. Kenya straddles the Equator with a land area of approximately 583,000 km². With a coastline of approximately 640 km, the total area of the Kenyan Marine Exclusive Economic Zone (EEZ) extending 200 nautical miles is about 230,000 km².

Africa and the Madagascar island. Kipepeo project in Gede, Malindi

Arabuko Sokoke forest in Kilifi County is the largest continuous block of indigenous forest in the whole of Coast Province with an area of 370 km². It is a globally important forest for conservation with several endemic species of plants, birds and mammals. It has been ranked as the second most important forest for threatened bird conservation in mainland Africa and one of the 19 important bird areas in Kenya.

Over the years the biodiversity of Arabuko Sokoke has suffered wanton destruction from farm encroachment, firewood collection and charcoal making, illegal hunting, and accidental fires emanating from neighbouring farms. In addition, there was increasing human-wildlife conflicts emanating from wildlife destroying crops in the area.

To reduce threats and further loss of biodiversity as well as change the local community's attitude towards the forest, an initiative was mooted in the 1990s to establish an income-generating project based on the local biodiversity. The initiative proposed butterfly farming, and the Kipepeo Project was born. The project involves collecting butterflies from the forest, raising them on the farm, and selling the pupae to the international market. The project is one of the success stories in the county having managed to generate income for farmers as well as promoting a positive perception of wildlife and biodiversity in general among the locals. The Kipepeo project, managed jointly by National Museums of Kenya and the local community, has about 500 farmers and has employed four people from the local community. Between 1994 and 2001, the project generated cumulatively over US$ 130,000 with positive effects on livelihood and attitudes. Currently the project sells over 50,000 pupae per year, as well as honey, and has been self-sustaining since 1999. It also benefits from the vibrant tourism industry where visitors to the coastal beaches visit the project's butterfly centre at Gede Ruins.

Also, in Kenya, the following recommendations and conservation interventions are being implemented:

- Promote integrated natural resource management that includes diversifying farming systems, enhancing natural capital and building on local and traditional knowledge
- Development of high value products from indigenous plants for pharmaceutical, neutraceutical and cosmetic industries, placing agriculture within the context of society and ecosystem thus empowering local communities to address depletion of natural resources and loss of biodiversity
- Certification of agricultural products, e.g. Rainforest Alliance, where certified products earn a premium price in international markets
- Practice conservation agriculture to reduce excessive use of chemicals as well as reduce soil erosion
- Increase production per unit area to minimise need for expansion through use of modern technologies.



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View of Kilimanjaro from Amboseli National Park, Kenya

Kiribati

The Phoenix Islands Protected Area has increased with full closure to commercial fishing by 2015

Kiribati lies close to the equator and consists of three main groups of islands — Gilbert, Phoenix and Line — that are far from each other and distinct in time differences. Phoenix and Line Islands are inclusive of Kiritimati Island which is the world largest coral atoll. The shorelines of the islands in Kiribati are surrounded by coral reefs and its atolls are low lying and usually consist of a broken ribbon of land enclosed by a lagoon.

The Live and Learn Project and Climate Adaptation

The work of the Kiribati government on ecosystem services is mainly through the assistance of NGOs and other vital organizations such as church groups, and other governmental organizations. The Live and Learn Environmental Education (LLEE) is an NGO established in 2013 with a focus on food security and climate change, especially for the benefit of the most isolated and vulnerable communities. The programmes of the LLEE assist in establishing, strengthening and extending community-based knowledge hubs (KHs). They also support and promote the uptake of climate-resilient crops, farm technologies and climate change leadership at community level.

The LLEE has identified three community-based knowledge hubs: Temaiku (South Tarawa), Tebunginako (Abaiang) and Nonouti. In line with the key objective of the KHs, the LLEE worked collaboratively with these communities to promote the adoption of climate-resilient crops and farm technologies, and provide training as capacity building to local farmers. Expansion of the farm technologies and communities were needed to continue the next phase of the programme.

A study supports the fact that, through financial assistance from the Live and Learn Project as well technical assistance, the people learned to use farming for income generation even with poor soil conditions. Some of the notable benefits of the KHs approach identified include: close interaction and networking between local farmers from different communities, and information sharing through technology demonstrations; and the distribution of climate-resilient crops and promotion of farm technologies amongst farmers and communities. The distribution was facilitated by the KHs with the support of LLEE and other partners. A variety of climate-resilient crops were established. Additionally, the seedling and planting materials provided by the Agriculture and Livestock Division and Taiwan Technical Mission were distributed to community members through KHs.

171 households from the KHs in South Tarawa were actively engaged in vegetable and root crop production and fruit tree planting. In supporting the communities, the KHs organized a system for marketing excess farm products to market outlets and supermarkets throughout the island. Another derived benefit was the facilitation of a system of information sharing between stakeholders and on planting materials. Climate resilient crops and technologies are now extended across the communities which contribute to sustainability of food resources and income benefits. This is done through capacity development of communities in ecosystem-based adaptation practices through demonstration modality which resulted in the adoption of these practices by the KHs and community.



Amoghavarsha JS

Kiribati's coral lagoons

Kuwait

The vegetation that exists in the desert is especially important as it protects the soil from erosion and is an important food source for livestock species and wild animals

Kuwait is characterized by its four desert ecosystems of sand dunes, swamps and salt depressions, flat desert, and desert plateau, as well as its flat topography and many valleys that descend mainly north-eastwardly. The country's coastline is about 660 km long with its most important feature being Kuwait Bay which is a suitable nursery ground for fish and shrimp larvae. Despite its small size, the country is characterized by nine geomorphological features, for instance, mud flats, gravel plains, north plains, and limestone banks. The vegetation consists of shrubs, herbs and perennials which vary seasonally depending on winter rainfall. The marine environment in Kuwait and the Persian Gulf is characterized by an abundance and diversity of species and environments, including fish, turtles, wetland areas and coral reefs.

Environmental Monitoring Information System of Kuwait (eMISK)

The Environment Public Authority (EPA) regularly monitors water benthic meiofauna that comprise about 304 species, 45 of which exist on Kuwait's shores. The General Authority is working on various forms of environmental pollution monitoring on an ongoing basis. Further research is needed to monitor wildlife development and distribution and develop measures for habitat preservation. Attention must also paid to the application of laws banning hunting and the unsustainable use of biodiversity.

The EPA of Kuwait initiated the Environmental Monitoring Information System (eMISK) which is an ambitious system to establish, build and maintain a comprehensive geo-environmental database of the country along with an enterprise level GIS system for access, update and analysis of environmental data. This geo-environmental database will be made available through eMISK to decision makers and stakeholders from within EPA, as well as to outside agencies and the public at large.

Among the main goals of eMISK are to raise awareness at all levels of Kuwaiti Society of the values of the environment, and to place authoritative scientific information at the centre of decision-making.

eMISK is housed within the state-of-the-art infrastructure at the Kuwait Environmental Monitoring Centre (KEMC) premises within EPA and is composed of seven high-end servers, 16 GIS workstations and about 50 EPA-wide users connected through intranet-based applications built on an ArcGIS Server. eMISK is accessible to researchers, students and specialists from other organizations over the internet. eMISK will cater to the environmental data needs of public of all categories and ages from within and outside Kuwait through the planned environmental data portal being developed under the same project.

eMISK will gather all relevant geo-environmental information from the EPA, other organizations, and recent first-hand sources of information including high-resolution satellites.



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Young falcon

Kyrgyzstan

Forests are located on 5.62 per cent (1,123,045 ha) of the country's area and, despite its small area, they play a significant role in the regulation of ground and surface sources

Kyrgyzstan is situated at the centre of Eurasia and covers an area of almost 200,000 km^2. The country borders Kazakhstan, China, Uzbekistan, and Tajikistan. Kyrgyzstan is surrounded by the arid and extra arid plains of Central Asia, whose environment is influenced by desert that stretches from the Sahara to the Gobi. The distance from the nearest ocean (about 3,000 km) determines the general aridity and continentality of the climate.

Efficiency measures for the conservation of biodiversity

Activities on fulfilment of the Convention indicates that joining the Convention on Biological Diversity has a positive effect on the biodiversity of the country. In the Country Development Strategy for 2009–2011, environmental security issues have been included as one of the five priorities of the country. At the same time, efficiency measures for the conservation of biodiversity were determined as one of the objectives. To achieve these objectives, measures aimed at improvement of the environmental legislation to meet the commitments under this and other related environmental conventions should be implemented. A National Sustainable Development Strategy of the Kyrgyz Republic for the period of 2013–2017 was developed and approved by the Decree of the President as of 2013.

Progress achieved in terms of positive changes in biodiversity

- The area of specially protected natural areas expanded from 5.2 per cent in 2008 to 6.006 per cent in 2012. The national system of specially protected natural areas in the Kyrgyz Republic includes by 11 state reserves (604.3 ha), 9 state natural parks (302.9 ha), 10 forests, 23 botanical, 19 geological, 2 and 14 complex hunting (zoological) reserves with a total area of 301,400 ha. Today according data of SAEPF the total area of all categories of specially protected natural areas to date is 1,200,872.0 ha or 6.006 per cent of the country's area. Since submission of the fourth report two state reserves were organized: Surmatash State Reserve (2009) and Dashman State Reserve (2012), as well as the State Natural National Park "Sarkent" (2009).
- Annually the country's forestries plant forests on areas up to 3,000 ha.
- The first national forest inventory of the Kyrgyz Republic for 2008-2010 was made and a database was created. The results of the inventory was approved by the Decree of the Government as of July 26, 2011 and a brochure "Integrated Assessment of Natural Resources for 2008–2010" was published. It contains statistical data analysis and evaluation of tree and shrub resources of Kyrgyzstan.
- Since 2005, sustainable development principles have been integrated into the education system of the Kyrgyz Republic in the framework of the Concept of transition of the Kyrgyz Republic to Sustainable Development until 2010.
- The legal framework for the protection of biodiversity is enhanced.



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Yaks in Kyrgyzstan

Lao People's Democratic Republic

One of the main forest policies is to restore forest cover to 70 per cent by the year 2020

The Lao People's Democratic Republic (PDR) is one of the most biodiverse countries in Southeast Asia. Discoveries of new and large species are ongoing, with 28 new species discovered in 2014. The great range of biodiversity exists thanks to the Lao PDR's abundance of forest and water resources, which cover the entire length of the country. National Protected Areas now cover 14.2 per cent of territory, while this increases to around 20.2 per cent of land area with the addition of Provincial Protected Areas and District Protected Areas.

Comprehensive successes with minimizing impacts on biodiversity

Lao PDR has been successful in its Biodiversity Management objectives. This includes establishing and managing a comprehensive and representative system of PAs that covers the nation's biodiversity. Also much progress has been made towards establishing and managing a system of National Biodiversity Conservation Areas and National Protected Areas (NPAs). Accomplishments include an extensive evaluation of the NPA system, approving NPA management plans, creating new NPAs, and creating detailed PA zoning. Two Ramsar sites have been designated.

Ex-situ research and conservation is not practiced widely in the Lao PDR. New and existing projects such as Pha Tad Khe Botanical Gardens and the Free the Bears Project, are valuable in terms of direct conservation — wildlife rehabilitation — and have the potential to raise public awareness of biodiversity and conservation.

It also encompasses protecting indigenous biodiversity from uncontrolled introduction and spread of alien species and genetically modified organisms. A number of major accomplishments have been made, such as establishing Biosafety coordination committees; the submission of a Biosafety Law to the National Assembly; and improving monitoring of Living modified organisms.

The objective of promoting ecologically sustainable management practices for ecotourism has been well implemented in general. Ecotourism training opportunities have expanded and more information is available to tourists to encourage them to follow socially and environmentally responsible practices while traveling.

Strong efforts have been made to improve forest management, such as assigning forest categories, and expanding production, protection and conservation. A comprehensive policy has been established for forest management, particularly for logging and fuel woods; monitoring of impacts of plantations on surrounding ecosystems; and the writing of management plans for a larger number production forests.

There have been key achievements in promoting industrial, energy and mining development by minimizing the impacts on biodiversity during the development processes. The achievements include the establishment of department divisions to specifically promote environmentally responsible investments; and focusing on Environmental Impact Assessment and Environmental and Social Impact Assessment.

The largest obstacle to overcome in the National Biodiversity Strategies and Action Plan is the monitoring of environmental impacts of investments and enforcing laws accordingly, such as enforcing 'the polluter pays' principle.

The conservation of biodiversity through ecologically sustainable agriculture has been supported. Land Use Planning has been aimed at reducing shifting cultivation in selected areas. Also, farmers' access to credit has increased.



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Asian cows

Latvia

Protected territories now cover 11 per cent of Latvia's terrestrial area

The territory of Latvia occupies 6,457,300 ha, with 3.9 per cent covered by inland waters, 45.7 per cent by forest, 4.9 per cent by bog, and 38.5 per cent by agricultural land. The system of nature protection in Latvia is mainly regulated by two laws: the Law on Species and Habitats Protection and the Law on Specially Protected Nature Territories. Based on these, several supporting regulations have been adopted. In general, the country's nature conservation legislation corresponds to requirements of EU Directives, Convention on Biological Diversity and other conventions.

Success stories for conservation in Latvia

The most significant success for conservation was the elaboration and adoption of the first National Biodiversity Programme in 2000. Various other sectoral plans and programmes elaborated afterwards incorporated information and priorities set in the programme. Until 2003 most activities listed in the Action Plan were fulfilled. In 2014, the Environmental Policy Concept 2014–2020 was adopted by the government, with targets and priorities based on current and future scenarios.

Another significant success has been the establishment of the Natura 2000 network in 2004 and an improvement in the system of national protected territories. Based on the existing network of protected territories, 31 areas have been reconsidered, 109 new protected territories designated, and 48 existing protected territories amended or enlarged. The protected territories now cover 11 per cent of country's terrestrial area (not including the biosphere reserve (7 per cent of country area).

The establishment of a compensation mechanism for forest management in protected territories for private land owners was included as one of the priority actions in the previous National Environmental Policy Plan (2004-2008). The respective law and governmental regulations were adopted in 2006 and the system of compensation came into operation. This was a great success and positively changed the attitudes of land owners towards nature protection. From 2006–2008 compensations for forestry restrictions in approximately 2,300 ha were paid. In 2013 the government adopted the Law of Compensation for restrictions on economic activities in protected areas. The new law and regulations determinate the new compensation mechanism for land owners in protected territories.

Another success has been the attraction of funding from the EU LIFE Nature and EU ERDF programmes. From 2001–2014, 27 LIFE projects were implemented for the protection of biodiversity. Many habitat and species habitat management and restoration activities in various protected territories have been implemented through these projects. Local municipalities, land owners and other stakeholders were largely involved in implementation projects.

A public monitoring programme was run during the GEF/UNDP co-financed project "Biodiversity protection in North Vidzeme Biosphere Reserve". Inhabitants of the Biosphere Reserve were invited to obtain and submit information in questionnaires on various species, agricultural activities, and distribution of invasive species in their property or neighbourhood. There was a good response from inhabitants and much information within the territory of the Reserve was collected.



Image: Guntars Mednis; Source: Wikimedia Commons

Autumnal Landscape in Latvia



Lebanon

The conservation policies applied in the Shouf Biosphere Reserve have helped to protect the endemic cedar tree, Cedrus libani, the symbol of Lebanon

Covering 166 km², the Shouf Biosphere Reserve (SBR), with 30 per cent of the cedar forests remaining in Lebanon, has played a major role in biological diversity conservation for over 20 years. The Ministry of Environment is responsible for protection and restoration work in the reserve, which is one of the most important Lebanese sites for implementation of biological diversity projects contributing to the Convention on Biological Diversity objectives and Aichi Biodiversity Targets, the Sustainable Development Goals and other Multilateral Environmental Agreements.

Revitalizing an ancient reserve

The conservation policies applied in the SBR have helped protect the endemic Cedar tree, Cedrus libani, which is the symbol of Lebanon. They have also assisted in the recovery of carnivore populations such as the wolf, hyena and jackal. In addition, they have supported the reintroduction of the nubian ibex, which was native to Lebanon until 1900, and the relocation of the rock hyrax, helping to restore the balance between herbivores and carnivores.

About 290 species of birds have been recorded in the reserve and the Ammiq Wetland — a Ramsar Site and Important Bird Area and home to over 1,056 plant species. The region also contains 31 species of reptile including chameleon, tortoise and several species of snake, lizard, frog and toad.

In 2017, various projects took place in biodiversity conservation, rural development, involvement of local communities, awareness raising and environmental education. Other activities included area restoration, ecosystem services, climate change mitigation, upgrading of management policies and reintroduction of selected native wildlife.

The reserve has managed to engage the community in the area through diverse programmes to support rural entrepreneurs, women, youth and the unemployed by enhancing sustainable business practices and facilities that are linked to tourism, agriculture and traditional products. By helping with various activities to protect the reserve, they are able to enhance their knowledge, abilities and skills in protected area conservation and can become involved in ecosystem conservation, restoration and land rehabilitation.

The SBR facilitates environmental awareness activities for university students, researchers and scientists who visit the reserve. Issues addressed include pollution, global warming, climate change, hunting, sustainable management of water resources and deforestation. Syrian refugees and children with special needs also engage with numerous environmental awareness-raising activities on subjects such as World Water Day, biomass management, old agricultural terraces and composting.



Ramy Kabalan on Unsplash

Kadisha Valley, Lebanon



Lesotho

Lesotho has listed 63 mammal species as native, including various bats, monkeys, baboons, hyenas and aardvark

There has been discussion as to what would have been the natural vegetation of Lesotho, the vegetation of the country without having been altered by human actions and or livestock (the Indigenous Forests of Lesotho). To this end the vegetation of the country has commonly been referred to as predominantly natural grassland. The discussion of status, trends and threads would largely be centred on the three vegetation zones of Low and Rebelo, namely Highveld grassland, Afromontane grassland and Afroalpine grassland. Within these are also found patches of indigenous forest and plantation. While the zones are generally classified as grasslands, the Fourth National Report reclassifies this as 12 vegetation types.

Developing mechanisms and measures to implement the Convention

The initial stages of success can be traced from the point of ratification of the Convention in 1995 which confirmed commitment of Lesotho to sound environmental management, through the development of mechanisms and undertaking of measures that would facilitate reduction of loss of biodiversity at national level.

The localization of Agenda 21 (1994) facilitated integration of environmental aspects into developmental initiatives, which necessitated a review of national policies, which included the National Environmental Policy for Lesotho of 1996, revised in 1998. The process culminated in the development of the National Biodiversity Strategy and Action Plan as the means of implementation.

The Environmental Act of 2008 was promulgated in order to incorporate a wide spectrum of stakeholders, including private sector, into integrating environmental considerations in their programmes. This established milestones of compliance through environmental impact assessment guidelines, regulations, and the introduction of a range of conservation strategies. A point of success in the process of implementation has been the establishment, in 2003, of the Ministry of Forestry and Land Reclamation, to disaggregate the more environmentally focused activities from the otherwise broad mandate of the Ministry of Agriculture, which also facilitated its re-orientation into the Ministry of Agriculture and Food Security.

At central government, a project or an intervention is introduced through workshops to ensure synergy and complementarities in government functions. It is at this stage that aspects of continuity and sustainability beyond project lifetime are considered. Comprehension and acceptance of the project at this level can be taken as a measure of success.

The government has also taken measures to strengthen the capacity of indigenous and local communities and to enhance their involvement in decision-making processes, notably through assistance in the formation of interest groups such as traditional healers, initiators, herders and artisans associations.



Michael Jansen on flickr

Sani Pass, Lesotho



Liberia

Biologically, Liberia's forest and coastal marine ecosystems are exceptionally diverse, with high rates of endemism and many species that are nearly extinct outside the country

The country's resources contain a significant amount of biodiversity, with over 2,000 vascular plants (including 225 tree species), 600 bird, 150 mammal, and 75 reptile species. Liberia's forests also produce a wide range of other environmental goods and services that benefit it and the rest of the world. Approximately 70 per cent of the population live in rural areas and depend for their livelihood on the products and services of agricultural, forestry and other extractive industries. The protection and management of national forest areas and reserves has therefore been of great concern to the communities that depend on those natural resources.

Community forests established and comprehensively managed

Liberia has made some efforts in the implementation of the convention since the completion of the Fourth National Report. A number of actions have been taken to institutionalize the implementation of the convention at national level. For instance:

- The Environmental Protection Agency has developed a number of regulations, standards and guidelines for the implementation of environmental and social impact assessments in line with environmental protection and management law and the National Environment Policy
- The Ministry of Lands, Mines and Energy is completing the revision of its legislation, policy, regulations and guidelines to improve management and enforcement of environmental and social impact assessment concerns in the mining sector
- The Forestry Development Authority is reviewing the regulations and guidelines on Private Use Permits to bring that aspect of the forestry to best practice standards. It has also developed a ten core best practice Code of Harvest
- The Ministry of Agriculture has completed a policy on nutrition and food security, and undertaken other studies in the sector.

All of these actions have been carried out with the involvement of relevant stakeholders including the local population, with funding from the government and donor organizations.

The Forestry Development Authority has demarcated seven community forests, and developed policy, regulations and guidelines for the management of community forestry. Other achievements include training a number of women in communities around one of the protected areas, Sapo National Park, in livelihood improvement, both in Sinoe and Grand Gedeh Counties. The major national achievement for this division was the passage into law of the Community Rights Law by the national legislature and the establishment of the Community Forestry Development Community, a committee representing affected communities where forest concessions are in benefits to be accrued to those communities.

Prior to the coming into force of the new forestry law, community forestry was not taken seriously, and only three community forests existed in the entire country. Under the new era, there are seven community forests with most of the management tools in place in the form of technical guidelines, policy and regulations.

In terms of what is anticipated in the next five years, the strategic plan includes the establishment of 10 community forests, training of personnel and putting in place the institutional framework, technical guidelines and legal regimes by 2018.



jbdodane on flickr

Blue Lake, Bomi Hills



Libya

Petroleum exploration, sea fisheries and coastal urbanisation are the main activities in the Libyan coastal zone

The wildlife of Libya is spread over the Mediterranean coastline and encompasses large areas of the Saharan desert. The protection of wildlife is provided through appropriate legislation in seven national parks, five reserves, 24 protected areas, two wetlands under Ramsar Convention, and also in other areas. There are also five UNESCO World Heritage Sites related to culture. The most important parks are the El-Kouf and Karabolli national parks. The well known nature reserves are the Benghazi and the Zellaf reserves. The wildlife species recorded in the country are 87 mammals and 338 species of bird.

Libya's natural national assets are its nearly 2,000 km of coastline and the vast Sahara desert which is the semiarid and arid region to the south. The hills, ponds and coastal habitats that comprise coral reefs, mangroves, sea grass beds, salt marshes, and mud flats add to the biodiversity. Some of the sites are important for migratory birds

Loggerhead turtles in Libya

Libya is one of the most important loggerhead turtle (Caretta caretta) nesting grounds in the Mediterranean Sea. The Libyan nesting population is unique, making its management important for the entire Mediterranean loggerhead turtle assemblage. The nesting activities of these turtles at various nesting sites in Libya has been reported by several sources.

The Fourth National Report presented an initiative to implement the Libyan Sea Turtle Programme (LibSTP), for the conservation of sea turtles and their habitat, which was officially launched in 2005. The goal was to study, protect and raise awareness of the turtles in Libya. The programme also trains turtle enthusiasts and students to voluntarily survey and protect nesting beaches.

Surveys in 2005–2008 indicated that nesting is largely concentrated in areas such as the Gulf of Sirte and the region around Benghazi. In 2005, 73 nests were protected on three beaches west of Sirte and 3,179 hatchlings were successfully released. A total of 550 nests were recorded in 2006 and 841 were documented in 2007 at 28 beaches along the Libyan coast. During the 2009 season, 358 nests were recorded in five nesting beaches in the region of Sirte.

Between 2008 and 2009, the LibSTP project raised further awareness through national media, and improved the previously unsuccessful tagging of sea turtles by switching from plastic to inconel metal flipper tags.



Gabriele Bettelli on flickr

Akakus desert, Libya

Liechtenstein

Protected Areas in Liechtenstein cover 12.3 per cent of national territory

Situated between Switzerland and Austria and, at 160 km², the fourth smallest sovereign state in Europe, Liechtenstein has natural boundaries created by the Alpine Rhine to the west and the Rätikon massif to the east. Nestling at the transition point between the Eastern and the Western Alps, it incorporates the Rhine Valley plain and slopes in addition to the mountainous region. The plain in the west is dominated by intensively used agricultural areas and settlements and covers about one-third of the country's territory. There is a great diversity of flora and fauna with plant communities occurring at all altitudinal levels between colline and alpine altitudinal zones.

Conservation in protected areas and beyond

There are four categories of legally protected areas in Liechtenstein, covering natural protected areas, forests, plants and landscape. Natural and forest protected areas are the two most strictly protected categories, with a focus on the conservation of habitats for threatened animal and plant species that are protected by law or ordinance. These areas cover 12.3 per cent of Liechtenstein's territory. The 11 natural protected areas are largely wetlands and are situated in the Rhine Valley. The biggest natural protected area, the Ruggeller Riet (93 ha) is the most significant bird-breeding site in Liechtenstein and is a Ramsar wetland of international importance.

The 30 forest protected areas, which include forest reserves and special forest areas, are mainly located at higher elevations as well as along the river Rhine as remainders of former alluvial forests. The Liechtenstein mountain area is a contiguous plant protection area with less stringent protection provisions than in the nature and forest protection areas. In addition, there are 28 landscape protected areas. These landscapes are of exceptional importance due to their natural scenery or their cultural-historic value. The inventory of these areas serves as an instruction framework that must be taken into account by the state and the municipalities, especially when it comes to land-use planning.

Nine of the eleven nature protection areas were established in the 1960s and 1970s, with two more areas declared in 2012 and 2013. The Inventory of Nature Priority Areas still includes various small-scale biotopes that should be placed under protection. There is no need for additional action with respect to the designation of forest protection areas, which were almost all placed under protection by ordinance in 2000. The ordinance was amended several times in order to allow for the extension of landfill areas.

Conservation of animal and plant species in Liechtenstein is not possible with the designation of protected areas alone. Accordingly, measures are also undertaken outside these areas to conserve habitats for animals and plants. The inventory of rough pastures covers wet bedding meadows, moors and dry meadows. Cultivation agreements for these areas are based on the Law on the Protection of Nature and Landscape.

Published in 2013, the first countrywide mapping exercise for these areas revealed that almost all the wet rough pasture locations have been conserved, along with the majority of dry rough pasture locations. This is remarkable since the ecological criteria applied in 2013 were far more stringent than those applied in 1990.



Image:: Andrew Bossi. Source: Wikimedia Commons

Vineyards in Vaduz

Lithuania

Scots pine occupies the biggest share — 720,300 ha — in Lithuanian forests. Protected areas in 2009 reached 1,026,100 ha or 15.7 per cent of the total national territory in 2014

Lithuania is home to about 20,500 fauna, 1,800 flora and 6,100 fungi species, of which 771 species are entered in the country's list of protected fauna, flora and fungi species. 53 plant communities are included in the Red Data Book, and the sea territory has 54 natural habitat types of community importance along with 101 flora and fauna species of community interest. In 2014, the national network of protected areas covered 1,026,100 ha or 15.7 per cent of national territory. Protected areas had increased slightly compared to 2013.

A pilot ecological network through nature frame areas in South Lithuania

Between 2010–2014, a project — the Development of a Pilot Ecological Network through Nature Frame areas in South Lithuania — funded by the LIFE+ programme and the Ministry of Environment of Lithuania, was created for the conservation of rare and endangered species and their habitats, and to improve their conservation status. The project was implemented in the south of the country, in territories adjacent to the sites of construction of the OHL, and implemented by the Lithuanian Fund for Nature.

The project encompasses three major types of activity: protection of target species and restoration of their habitats, creation of an ecological network, and education of local communities. The targets of the project are the reptilian and amphibian species: pond turtle (Emys orbicularis), European tree frog (Hyla arborea), fire-bellied toad (Bombina bombina), great crested newt (Triturus cristatus), natterjack toad (Bufo calamita), European green toad (B. viridis), common spadefoot (Pelobates fuscus), moor frog (Rana arvalis), pool frog (R. lessonae), sand lizard (Lacerta agilis), and a significant number of birds and invertebrate species requiring small ponds of still water, small meadows and non-overgrown sandy slopes.

A range of conservation actions were implemented for the target species, including digging of ponds, preparation and surveillance of sites for turtles to lay eggs, collection of eggs laid in sites considered unsafe, raising juveniles, releasing them back to the natural environment, breeding tree frogs or collecting their eggs and raising of their juveniles, and strengthening sustainable and nature-friendly farming. These actions have been carried out in order to create ecological corridors for the target species between the protected territories.

During the project, 164 ponds were dug with a total area of 151,130 m², and 40 places suitable for pond turtles to lay eggs, were arranged. Also, 52 habitats for the project's target species were restored. In addition, employees of the Lithuanian Fund for Nature, the Regional Parks of Meteliai and Veisiejai, and the National Park of Dzūkija collected eggs from unsafe places (mostly from roadsides), hatched 128 offspring turtles in the Lithuanian Zoo and set them free into suitable habitats in southern Lithuania. Measures were taken to protect the turtles' eggs against predators such as foxes and raccoon dogs that have a significant adverse effect on the pond turtles in that they eat their eggs. 88 egg hatches were preserved during the project.



Ugnė Vasyliūtė on Unsplash

Into the woods

Luxembourg

59 zones, corresponding to 3 per cent of national territory, are classified as natural reserves. 27 per cent of national territory is covered by 66 Natura 2000 sites

Despite the limited surface of its territory (2,586 km²) and the absence of marine, coastal or mountain ecosystems, Luxembourg presents a great natural variability. There are two main geographical regions, distinguishable by their geology and climate: the Oesling in the north — which forms a plateau at an altitude of about 500m, with its forested hills cut by rivers and narrow valleys — and the more densely populated Gutland in the south. 84 per cent of the national territory consists of farmland and forest. Thus, despite its small surface, Luxembourg has a rich biodiversity. For example, 1,300 vascular plants have been recorded, and certain species' populations are considered of particular importance in the region, such as the red kite, greater horseshoe bat and black stork.

Enlisting local authorities in nature protection

Despite the absence of indigenous communities on its territory, Luxembourg has emphasized the close coordination and collaboration with local communities, and notably communes (municipalities) for the protection of nature. Accordingly, communes are entrusted with the mission of promoting the preservation of biological diversity, and the conservation and restoration of natural landscapes and natural coherence at a local level.

A law passed in 2005, concerning the partnership between the inter-communal syndicates and the state, provides a legal framework for the protection of nature at local level and the state's co-financing of the work carried out by the inter-communal syndicates in this field.

Communes have thus joined together to form six inter-communal syndicates that are equipped with biological stations at Sicona-West, Sicona-Centre, SIAS, Naturparkark Öewersauer, Naturpark Our, and Naturpark Mëllerdall. These stations carry out the scientific work in their regions by running monitoring and assessment studies of the state of nature and the management of action plans.

Activities organized by the stations such as Nature for People, and Fit by Nature, help to raise awareness among children and adults about the importance of nature and its benefits for people. These biological stations are therefore an essential tool to adapt Luxembourg's biodiversity strategy to regional specificities.

The presence of biological stations in the entire national territory is an objective of Luxembourg's National Biodiversity Strategy. To this end, the plan to accelerate the membership of communes to the existing biological stations, inscribed in the first National Plan concerning the Protection of Nature, was very successful. Indeed, the national coverage of biological stations increased from 1,400 km² (50 per cent) in 2011 to 2,070 km² (80 per cent) in 2018.

A national promotional campaign to further the enrolment of communes that are currently not part of inter-communal syndicates will be carried out to aim for total national coverage by 2021. Furthermore, a seventh biological station, Biologische Station Osten, is currently in the process of being created.



Steije Hillewaert

Luxembourg

Madagascar

Madagascar committed to the World Parks Congress held in Durban in 2003, to triple the area of its protected sites

Madagascar is one of the 10 hotspots of global biodiversity. The unique natural heritage is severely threatened with extinction due to anthropogenic and sectoral activities. However, sustainable socio-economic development depends on environmental goods and ecological services provided by ecosystems. To date, enormous progress has been made on the conservation and enhancement of biodiversity in order to ensure sustainable development that combines the preservation of biodiversity, economic development and social equity for all.

A modern vision of protected areas for Madagascar

The establishment of the Madagascar Protected Areas System is the result of a participatory and inclusive process at local, regional and national levels integrating all stakeholders. It has been done in such a way as to involve the local population in the management of natural resources, to engage in consultation with all sectors and actors concerned, to enhance the cultural and traditional characteristics in conservation, to empower regional and local authorities in the management of protected areas, to integrate protected areas within a broader framework of spatial planning and development of the territory and to mobilize financial resources at a national and international level in order to perpetuate conservation and development activities.

The System of Protected Areas of Madagascar (SAPM) reflects a modern vision of protected areas, notably through the introduction of new types of governance, the establishment of protected areas of all categories of the International Union for the Conservation of Nature (IUCN) and The involvement of all stakeholders, especially local communities, NGOs, decentralized local authorities and the private sector in the management of protected areas.

The protected area system is a representative set of protected areas that includes all major habitats that are large enough to support viable populations of flora and fauna, and well-connected in order to enable the genetic exchange necessary for the stability of species.

In 2015, the code for the management of protected areas was recast, and new protected area categories were created — the natural monument, the harmonious protected landscape, and the reserve of natural resources — along with management objectives combining conservation and development.

In the medium and long term, efforts will also focus on the financial sustainability of the areas protected, and the growing involvement of local communities in this management. This would ensure sustainable development and reduce the pressures and threats on the protected areas.

Currently, the country's commitments to the creation of protected areas have been met, with 123 protected areas, of which 122 have decrees of definitive creation and one area is under temporary protection status Together, these cover an area of just over 7 million ha or approximately 12 per cent of national territory.

Marketing actions are necessary to enhance the biological, ecological, cultural, morphological and aesthetic potentials of these areas and to ensure the commercialization of associated products such as access and filming, and promote other value chains such as tourism, catering, and handicrafts in their peripheral areas.



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Central highlands

Malawi

Malawi expects to achieve effective law enforcement in the prevention of wildlife crime, resulting in a reduction in illegal wildlife trade and an increase in elephant populations

Malawi commemorated the International Day for Biological Diversity on May 22 in Lilongwe under the theme 'Biodiversity and sustainable tourism'. The occasion provided the opportunity to reflect on various biodiversity initiatives being undertaken in the country. One of these is a multifocal area project aimed at strengthening landscape connectivity and management to improve livelihoods and conserve key biodiversity areas, utilizing Global Environment Facility funds. Through the project, Malawi expects to achieve effective law enforcement in the prevention of wildlife crime, resulting in a reduction in illegal wildlife trade and an increase in elephant populations. It also aims to strengthen integrated management in biodiversity landscapes critical for climate resilience and livelihoods.

Projects for biodiversity

The multifocal area project has a component that focuses on development of policy frameworks, including development of Access and Benefit Sharing Regulations and strengthening of enforcement to curb the illegal wildlife trade. The project will also generate more carbon accreditation schemes developed for select protected areas (PAs), while improving management at those sites demonstrating sustainable use of natural resources, conservation of biodiversity, and improved connectivity between sites. The initiative deploys IUCN Red listings for threatened species within Malawi to meet conservation goals such as the delivery of Aichi Biodiversity Targets 11 and 12.

Malawi hosted its first Biodiversity Information Management Forum (BIMF) from 29 to 31 May, 2018 under the theme 'Bringing together primary biodiversity and land cover data for Malawi's sustainable development'. The BIMF convened stakeholders involved in the generation of both primary biodiversity data and spatial information to map pathways for mobilization and mainstreaming of the information.

The country is also participating in the African Biodiversity Challenge (ABC), a competition-based project coordinated by the South African National Biodiversity Institute to mobilise policy-relevant data in Ghana, Malawi, Rwanda and Namibia. The ABC in Malawi is led by the Museums of Malawi in collaboration with the National Herbarium and Botanical Gardens and the Wildlife and Environmental Society of Malawi as well as the Malawi Global Biodiversity Information Facility (GBIF) node at the National Commission for Science and Technology. The Biodiversity Information for Development (BID) project is funded by the European Union and led by GBIF with the aim of increasing the amount of biodiversity information available in sub-Saharan countries. A current BID project is mobilizing, digitizing and publishing selected biodiversity datasets comprising threatened plants, invasive alien species and pollinator species.



Skip Russell on flickr

Pied kingfisher

Malaysia

Malaysia has 306 species of wild mammal, more than 742 species of bird, 567 of reptile, 242 of amphibians, more than 449 of freshwater fish and over 150,000 species of invertebrates

Malaysia lies entirely within the equatorial zone, and belongs to the Sundaland biogeographical region. The territory covers an area of approximately 33.27 million ha, consisting of Peninsular Malaysia, the states of Sabah and Sarawak in the eastern region and the Federal Territory of Labuan in the north-western coastal area of Borneo Island. The two regions are separated by about 540 km of the South China Sea. Malaysia's multi-racial and multi ethnic population is estimated at 29.7 million as of 2013.

Improving judicial oversight in environmental cases

In January 2012, The Honourable Tan Sri Arifin Bin Zakaria, the Chief Justice of Malaysia at the Opening of the Legal Year 2012, stated that Environmental Courts would be established. Within less than a year, a Practice Direction was issued to courts across the country to prioritize environmental cases and to ensure swift adjudication. Under the Practice Direction, almost 38 pieces of legislation will come under the purview of the Environmental Court.

Some key legislation together with a number of prescriptions contained within these various Acts over the past decade will now be considered under the jurisdiction of the Environmental Court :

Provisions under the International Trade in Endangered Species Act 2008, under the auspice of the Environmental Court, range from offences dealing with import and export permits to possession of scheduled species, and breeding or propagation of scheduled species.

The Wildlife Conservation Act 2010, having the most number of provisions under the purview of the Environmental Court, relates to offences such as licensing requirements; prohibition of certain acts within wildlife sanctuaries and reserves; hunting; the possessing, dealing or keeping of wildlife without lawful authority; the disturbing of salt licks and various other offences involving cruelty to wildlife.

Moreover, Malaysia has developed a number of new national policies pertaining to biodiversity, natural resources and the environment including The National Policy on climate change.

This Policy was adopted in 2009 and thereby provided crucial recognition of climate change issues at the national level. It serves as the framework to mobilize and guide various government agencies, industries and communities, as well as all other stakeholders, towards addressing the challenges of climate change in a concerted and holistic manner. The emphasis placed within the policy is to strengthen the capacity of the country in relation to climate change vulnerability and towards promoting various mitigation responses to climate change impacts.

The Policy aims to guide climate related responses and seeks to compliment all other existing national policies across all sectors. It provides pathways towards integrating climate change aspects. The policy contains a number of key strategic thrusts that guide the national response.



Ariff Ateed

Fern fiddlehead

Maldives

The declaration of two significant wetlands as protected areas has had positive results for biodiversity and local livelihoods

The fragile coastal ecosystems of the small island mid-oceanic nation of Maldives provide economic prosperity and social wellbeing for the citizens. The economy of Maldives is predominantly dependent on the rich marine and coastal biological diversity of the low-lying islands. Of the different coastal ecosystems, the globally significant coral reefs and mangrove wetlands enable human settlements and protect the islands and inhabitants from extreme events and the impacts of climate change. The declaration of two significant wetlands as protected areas has had positive results for biodiversity and local livelihoods.

Coastal ecosystems for sustainable development

The southernmost two cities of Maldives, Addu and Fuvahmulah, are set in the most unique and ecologically diverse wetlands in the Maldives. For an island nation highly vulnerable to impacts of climate change like the Maldives, the wetlands play a key role in defending the islands against the rising sea levels and flooding caused by increased frequency and intensity of rainfall. The Government of Maldives has declared the two wetlands in Addu and Fuvahmulah as protected areas and has formulated a Climate Change Adaptation Project (CCAP) to support existing efforts to protect and manage these areas. This project has significantly contributed to the achievement of several Aichi Biodiversity Targets, as well as national targets under the National Biodiversity Strategy and Action Plan.

Through this project, Addu and Fuvahmulah have experienced enhanced socioeconomic development, as well as development of ecotourism infrastructure and recreation facilities. The project has also improved the management and protection of the local coral reefs, ensuring enjoyment of these areas by locals and visitors to the island. A Coral Reef Monitoring Framework was developed to safeguard the coral reefs, including a Coral Database.

Other outcomes of the project are alternative livelihood support programmes for local communities and capacity building for the private sector, to ensure the sustainable use of natural resources. The success of this project has resulted in many environmental, economic and social benefits to the two most populated cities of Maldives outside of the capital city, Male'. Ecotourism infrastructure has received a boost thanks to a visitor centre in Addu and a recreation facility and boardwalks in Fuvahmulah, along with the implementation of other sustainable activities.

Capacity building programmes have been conducted for 10 private sector entities, including tourist resorts and dive centres, by providing the tools and training to monitor the condition of the coral reefs and the goods and services that the entities receive from the coral reefs. Additionally, alternative livelihood support programmes were conducted in Addu and Fuvahmulah focusing on sustainable use of natural resources such as handcrafting, toddy tapping and organic farming.

The project has brought about significant acknowledgement of the value of biological diversity and the many economic, social, recreational and aesthetic benefits provided by these coastal ecosystems in Addu and Fuvahmulah.



Aviv Ben Or on Unsplash

Thulusdhoo Island in the Maldives

Mali

Mali's fauna features 136 mammal species, 70 of which are large mammals

Located in Western Africa, Mali is a vast landlocked country that spans 1.2 million km². The country is divided into several bioclimatic zones: the hyper-arid Saharan zone covers 51 per cent of national territory; the arid Sahelian zone is composed of grassy steppes, and spans a quarter of the territory; another quarter is characterized by a mosaic of savannah in the Sudanese zone; and the remainder includes the lower delta of the Niger river, with wet meadows, and the sub-humid pre-Guinean zone. Mali currently features 27 protected areas, representing approximately 8 per cent of national territory.

Awareness-raising, integration of biodiversity values, and reduction of habitat loss

Over the period 2006–2010, the analysis of forested areas in Mali revealed a net increase in forest cover. The overall surface increased from 9,922,410 ha (8 per cent of national territory) in 2006 to 13,389,910 ha (10.8 per cent of national territory) in 2010, which corresponds to a 34.9 per cent increase. This is notably the result of a better integration of environmental considerations in the development programmes and policies as put forth in the national strategic framework for growth and poverty reduction (CSCRP, 2012-2017).

In this respect, particular projects can be underlined that have sought to promote the sustainable use of forest resources, promoting both development and protection of biodiversity. For example, the project "Support of the valorization of non-timber forest resources for a sustainable conservation of biodiversity in the rural commune of Kolokani," initiated by the NGO, Malian Coalition for Solidarity and Development, organized awareness-raising activities and the involvement of beneficiaries in the sustainable management of their natural resources. The NGO also ensures an improvement of forest cover in the commune. A public-private partnership was thus established around the protection and exploitation of the Sterculia setigera gum in the region. This has contributed to fulfilling various objectives of the Convention on Biological Diversity, notably those linked to awareness-raising, mainstreaming, sustainable production and consumption, and reducing pressures on vulnerable ecosystems.

Following this lead, the project "Preservation of biodiversity through the development of ecotourism in the rural commune of Tankadougou," carried out by the NGO, Action for Rural Promotion and the Protection of the Environment, has addressed several objectives of the Convention, including awareness-raising, integration of biodiversity values, and reduction of habitat loss. The actions focus on the training of local populations on the benefits of ecotourism activities, the establishment of the management committee for the area, and training activities on agro-forestry plant production techniques.

The project "Promotion of the community management of non-timber forest products," financed by the FAO, also seeks to integrate biodiversity considerations into the economic sector. Launched in 2007, the project is carried out by two national NGOs developing an approach based on the analysis and marketing of the by-products of the forest and fauna in three administrative regions of the country.



Geneva Centre for the Democratic Control of Armed forces

Community management of non-timber forest products seeks to integrate biodiversity considerations

Malta

Malta encourages active stakeholder collaboration for effective management of protected areas and promotes the value of biodiversity through a number of interactive educational and awareness-raising activities

The Maltese Islands support a variety of important and unique habitats and species. In view of this, Malta has designated various areas under national and European legislation and international multilateral environmental agreements. To date, Malta has 28.5 per cent (89.5 km^2) of its land area covered either by one or by multiple protective designations. Included in this is 13.5 per cent of land area forming part of the EU Natura 2000 Network of protected areas. In the marine realm, Malta has made considerable advances and, to date, has designated 29.9 per cent of Maltese waters (3,487 km^2) as marine protected areas.

Action on land and at sea

Significant progress has been made in the context of awareness and educational events to build momentum in the implementation of the management planning process for terrestrial protected areas, especially those forming part of the Natura 2000 Network. The Flora, Fauna and Natural Habitats Protection Regulations are the main legal frameworks that call for the protection and conservation of biodiversity, laying down provisions for the designation of protected sites. So far, 34 terrestrial sites have been designated to form part of the EU Natura 2000 network.

As a party to the Convention on Biodiversity and through the implementation of the national targets and measures in the country's National Biodiversity Strategy and Action Plan, Malta has undertaken diverse actions with the aim of achieving the Aichi Biodiversity Targets. National efforts range from conservation actions to maintain and restore species and habitats, to actions aimed at integrating biodiversity concerns in sectors that are beneficiaries of ecosystem services.

Malta has 60 national sites designated as Tree Protection Areas (TPAs), with the aim of protecting trees and woodlands. Some of these protect individual trees and small groups of trees of value as well as other areas, to ensure the protection of rare and threatened trees that have a restricted native distribution in Malta. Trees within a TPA are protected from activities and operations that may have an adverse impact on them, such as development.

The country encourages active stakeholder collaboration for effective management of protected areas both on land and at sea, and promotes the value of biodiversity through a number of interactive educational and awareness-raising activities. Resources are continuously planned and mobilised to ensure that management plans and relevant actions are fully implemented.

Another effective example of public awareness is the 'BioSnippet Initiative', designed to disseminate interesting information on local biodiversity to educate the public, thus increasing its appreciation. Biodiversity tours in protected areas are held on a regular basis, whereby biodiversity experts from the Environment and Resources Authority (ERA) provide free guided tours to selected areas of high natural value. In parallel, ERA participates in a popular TV show, 'Malta u lil Hinn Minnha', during which ERA experts regularly present information on a selected protected area, highlighting Malta's biodiversity and heritage in general. At a recent event, the declaration of two new national species further aided public awareness of biodiversity.



Ferenc Horvath on Unsplash

Ghajn Tuffieha, Mellieha, Malta

Marshall Islands

Under the Micronesia Challenge, RMI has achieved a 15 per cent target for terrestrial conservation and a 20 per cent target for marine conservation areas

The people of the Republic of the Marshall Islands (RMI) have a strong bond with the land and sea and the species associated with these ecosystems. For example, the forests provide ecosystem services such as stabilizing the soil and providing habitat for endangered and endemic animals. The inhabitants of RMI are also accomplished seafarers, navigators and fishermen. Traditional fishing practices remain in use today, but many are being lost, along with in-depth understanding of the sea and its creatures. The country's Aichi Biodiversity Targets draw on the deep knowledge and traditional practices of local communities.

The power of local knowledge

A number of existing plans and initiatives address components of the country's biodiversity targets, in particular the national conservation areas plan. Responses by RMI include the participation of community and the development of financial arrangements. This is in line with Aichi Target 20, resource mobilization, and Targets 17 and 18, community participation. Aichi Target 1 on awareness-raising is included as a key activity of local officers working with communities on threatened species. In addition, education and awareness are built into the community-based fisheries and resource management planning, including the Rare Pride campaign (utilization of charismatic flagship species to build local pride) and Just Act Natural (raising awareness on cultural and natural heritage through theatre).

The Coastal Management Advisory Council (CMAC) in 2006 is one of the strongest mainstreaming tools employed by RMI, comprising a cross-sectoral working group of people from a range of organizations, all with a common interest in the conservation, development and management of coastal and marine resources. The structure of CMAC ensures that resources are maximized and that everyone is aware of who is working where and with what community.

One of the components of the Convention on Biological Diversity is the use of living modified organisms, which is also covered under international agreements such as the International Treaty on Plant Genetic Resources and the Cartagena Protocol. A comprehensive legislative review of this issue in Marshall Islands found many deficiencies, but provided some clear recommendations on how these could be addressed with the existing national framework.

The review recommended the development of a National Biosafety Framework with several components, including a coherent Government policy, regulatory regime, permitting system, monitoring and enforcement regime and public awareness, education and participation programme. It highlighted the importance of working with other sectors including public health, agriculture, biosecurity, customs, legal and fisheries. A cross-sectoral framework was further recommended as a mean of overseeing biosafety development in RMI. This included the central role being spearheaded by the Quarantines Research and Development section, with oversight by the Environment Protection Authority, Marshall Islands Marine Resources Authority and Office of Environmental Planning and Policy Coordination. There are plans to establish a working group with support from the cabinet.



Christopher Michel, Source: Wikimedia Commons

The Marshall Islands

Mauritania

Mauritania has one of the world's richest maritime facades in fish resources and boasts six types of marine turtle

Situated in north-west Africa, the Islamic Republic of Mauritania spans 1,030,000 km². This arid country can be divided into two regions: the Saharan that makes up 75 per cent of the territory and is composed of grass and shrub steppes, with a low amount of biogenetic resources; and the Sahelian, that contains plant formations such as shrubs and trees. Two azonal domains can be superimposed on this distinction, with the coastal sector in the west, bordering the Atlantic Ocean, and the valley of the Senegal River in the south.

The rehabilitation of the estuary of the Senegal River mouth in Diawling National Park

The lower basin of the Senegal River used to be a complex natural estuary where the salinity level varied according to the seasons. During the rainy season, when the rainwater flooded the area, it was almost cool, while during the dry season, when the water level dropped and seawater entered the delta, it became brackish.

With the construction of the Diama dam, the pseudo-ecosystem of the delta suddenly became divided into a permanent freshwater ecosystem upstream of the dam, while the downstream area became deprived of freshwater for most of the year. It thus turned into a hyper-saline habitat.

However, efforts have been made to restore pre-dam conditions in a part of the area currently known as the Diawling National Park, on the Mauritanian side of the river. Eighteen years later, the results have been impressive. The area has once again been transformed into a wetland where vegetation and fish are re-emerging, mangroves are thriving, and notably where water birds are returning.

The importance of the area for marine biodiversity is not very well known. However, it is recognized as the breeding and nursery ground for nearly 100 marine, estuarine and freshwater species of commercial interest. It is especially the place for the spawning and growth of mullet and many species of shrimp. The mangroves of the southernmost part of this humid coastal area are much more diverse and dense than the mangroves of the Arguin Park. Rhizophora racemosa and Avicennia germinas are among the principal tree species.

The Diawling National Park is also a very important site for the migration of tropical palearctic and Afro-tropical migratory birds. The biological diversity of this site is related to the estuarine nature of the site with an artificial water supply. The flooding process of the area is a system in which most nutrients are stored in the biomass. Large breeding colonies of herons, egrets and cormorants nest at the level of the Tamarix stands adjoining the coastal dune. The massive decomposition of the biomass during floods provides trophic resources for the various bird species. It is followed by a period of production (vegetation, fauna, micro-organisms, fish) and reproduction. The birdlife adjusts to this cyclical process. Afro-tropical species breed in a cycle and the arrival of Palearctic migrants coincides with the decline of the waters and the abundance of food.



John Spooner

Amatlich, Mauritania

Mauritius

The forest in Mauritius covers around 25 per cent of its land area

The Republic of Mauritius is located in the western Indian Ocean and consists of two main islands, Mauritius and Rodrigues, and a number of outer islands. No part of the country has ever been connected to a continental landmass and this isolation, together with the age of the islands, means that its native biodiversity is unique. This has allowed some of the richest and most extraordinary terrestrial biodiversity to evolve, giving rise to a high percentage of endemic species. Mauritius is engaged in several coastal and marine biodiversity projects and studies to protect its remarkable natural heritage.

Assessing coastal and marine biodiversity

Since coral reefs are constantly threatened by rising seawater temperature and ocean acidification, coral culture has an important role to play in rehabilitating degraded reefs, hence enhancing the ecosystem services they provide for tourism, fisheries and coastline protection. Land-based coral farming can be used to create sanctuaries for maintaining biodiversity and genetic resources and for propagating threatened species to prevent local extinction.

A coral farming project, started in 2011, is focusing on the culture of coral species which are in high demand for the aquarium market. It is also addressing the propagation of threatened species to prevent local extinction, along with the mass culture of corals, creation of a coral sanctuary to preserve biodiversity and genetic resources, and collaboration with the private sector to create land-based coral farms and coral gardens for hotel resorts.

Another project is undertaking an assessment of marine living resources using a DNA-based approach. In Mauritius, the degradation of coastal habitats and overexploitation of marine living resources threaten the persistence of certain species. In 2010, the Mauritius Oceanography Institute initiated a project to establish an inventory of marine species of commercial importance by combining traditional taxonomic identification tools and a DNA-based approach. To date, 189 commercial fish species have been inventoried, of which 42 are new records to Mauritius and three may be potentially new species. Additionally, nine species of holothurians have been identified.

A seaweed farming project on an experimental farm in Rodrigues is showcasing three seaweed cultivation methods with two species of seaweeds. The farm in Petite Butte is being monitored by the personnel of Rodrigues Office in collaboration with the South East Marine Protected Area and the Fisheries and Research Training Unit.

There are also plans to study the diversity of other groups of organisms such as molluscs, crustaceans and soft corals. The morphological and genetic data generated from this study are continuously being uploaded on the publicly accessible Mauritius Oceanography Institute's online marine diversity and genetic databank. The information gathered from this project will be valuable for the sustainable use and conservation of marine living resources in the waters of Mauritius.



Agf fotos on Unsplash

Mauritius



Mexico

Mexico is one of the world's megadiverse countries and centres of domestication and origin of cultivated plants. It was the first megadiverse country to ratify the Nagoya Protocol on ABS in 2012

When the Convention on Biological Diversity (CBD) was adopted, Mexico took a decision to establish a National Commission for the Knowledge and Use of Biodiversity (CONABIO) to compile information regarding the knowledge of biodiversity and to promote research, teaching and dissemination of Mexican biodiversity and its sustainable uses. Since its establishment, CONABIO has provided the Government, academia and society in general with scientific information to allow for the conservation and sustainable use of the natural capital of all Mexicans. Over time, it has undergone two main stages of development: compilation of information and analysis and creation of knowledge regarding the natural wealth of Mexico.

A quarter century of knowledge for decision making

Today, CONABIO has reached a new stage that includes the generation of intelligence and communication, both collective and individual, for making decisions on the conservation and sustainable use of the natural capital of Mexico. It stimulates the development and knowledge of natural capital across the country and influences decisions concerning global biodiversity and public policy. In addition, it maintains a presence in social networks, creating awareness about the vital importance of Mexico's natural capital.

The Commission is considered an authority in global meetings and organizations dedicated to biodiversity. It is also an adviser to national and international institutions and a means of communication among researchers, collectors of information, decision makers, producers of public policy, environmentalists and the public in general. It has been shaper and trainer of people in terms of awareness of the fundamental value of the country's natural capital, assisting researchers, politicians, government officials, authorities, students, agricultural producers, fishermen, artisans and others.

During the last 25 years, CONABIO has developed novel mechanisms for scientific research and for the formal development of statistics regarding the natural resources and biodiversity of the nation. It has sought to diversify the forms, media and instruments in which information is expressed to facilitate understanding on the part of those who inhabit the ecosystems and manage the natural resources.

CONABIO generates information about the three levels of biodiversity: ecosystems, species and genetic resources. The information developed supports the three objectives of the CBD and the Strategic Plan for Biodiversity 2011–2020, in particular Aichi Biodiversity Target 19.

In 2016, within the framework of the United Nations Conference on Biodiversity (COP13), CONABIO presented the National Biodiversity Strategy (ENBioMex) and its 2016–2030 Action Plan. EnBioMex establishes 14 guiding principles with six strategic axes, 24 lines of action and more than 160 actions that seek to increase efforts to positively impact biodiversity and reduce the direct causes of its loss.



Adolfo Felix on Unsplash

Marine Turtle



Micronesia (Federated States of)

There are 130 Areas of Biological Significance identified in Micronesia. The FSM is known as a critical corridor for commercially important migratory fish stocks, including the skipjack, yellowfin, and bigeye tuna

The Federated States of Micronesia (FSM) is comprised of four States: Yap, Chuuk, Pohnpei and Kosrae. The country's 607 islands stretch across almost 3 million km² of the Pacific. There are 12 terrestrial biomes and six marine biomes, which are characterized by a high rate of endemism and a profusion of species. For example, the country is home to more than 1,200 species of ferns and flowering plants, more than half of which are native species. More than 1,000 species of fish and 350 types of coral inhabit the country's coastal and marine areas.

Community-based organizations lead the way

In the FSM, communities and resource owners are the traditional stewards of their surrounding environment. Over the past decade, natural resource management agencies and NGOs have worked alongside community-based organizations, women's and youth groups, traditional leaders and natural resource owners. This engagement is widely seen as a critical component to the success of conservation work. In addition to the establishment of management plans, community groups are working with resource management agencies and local NGOs to rehabilitate habitats and conduct monitoring and research activities.

A clear success for biodiversity conservation efforts in the FSM is the Yela forest conservation easement in Kosrae, which was officially established in 2014 after more than a decade of negotiations. Covering 78 acres of wetland forest, including part of the largest remaining contiguous stand of Ka tree (Terminalia carolinensis) in the world and a portion of the Tafunsak area watershed, it is the first conservation easement in the entire Micronesia region.

While retaining title and traditional usage rights to the land, the landowners have agreed not to develop the area and to work collaboratively with the Kosrae Island Resource Management Authority, which now has authority to regulate the site. In return, the United States Forestry Services (Forest Legacy Program) and the David and Lucille Packard Foundation contributed to an endowment managed by the Micronesia Conservation Trust that will provide annual payments to the landowners.

Outside of Kosrae, others are learning from the Yela easement as it respects traditional ownership rights common throughout the region while promoting conservation. The site could be a model for similar agreements in other critical habitats, especially for the way in which the collaborating partners are actively engaged in managing the site, including clearing channels in the watershed, combating invasive species, replanting native species and putting in a network of ecotourism trails.

In addition to work on the ground, the management team is also engaged in community outreach and awareness-building about the value of the watershed and the wetland forest. A key achievement to date is the reduction in clearing of trees from the site, attributed to an increased understanding of the importance of the site's resources and the impact of overharvesting in the area.



Matt kieffer on flickr

Chuuk State, Micronesia

Monaco

Monaco's vegetation is dominated by thermophilic plants such as the olive, carob, and mastic tree, and the Aleppo pine

The Principality of Monaco is a small landlocked state located in the French territory, along the Côte d'Azur. It has a surface of 202 ha, including 53 ha which have been built on the sea. This makes it the second smallest independent state in the world. With a population density of 17,889 inhabitants per km², Monaco is also the most densely populated country in the world. The national territory is almost entirely urbanized and there are no forests or agricultural land. However, green spaces occupy 20 per cent of the national territory, and the country features remarkable limestone cliffs and coastal and marine ecosystems.

Protecting the principality's trees with the Monaco Tree Code

In the context of the protection of land biodiversity, the Monegasque government has put in place a policy that aims to preserve all types of trees and certain plants, such as palm trees, on its territory. In 2011, this work resulted in the stipulation of measures to protect trees and certain plants. The Tree Code consists of two notebooks, and presents protective measures as well as the conditions for planting and renewing trees in Monaco.

The first notebook "The tree in the city," deals with the place of trees in a city such as Monaco — one that is very small and particularly congested. It also describes the conditions for registering and valuing arboreal heritage as well as integrating this data in a Geographic Information System (GIS).

The Government has thus identified all of the trees in a specific inventory. This data is integrated into the GIS system, which makes it possible to inform on the following criteria:

- The diversity — the plants are classified by family, genus and species, in order to obtain an accurate picture of the biological diversity present in Monaco
- The age, planting date and origin are recorded for each individual
- The distribution of trees on the national territory
- The health status to give an idea of the general state of the arboreal heritage
- The various managers.

Within this arboreal heritage, certain plants are designated heritage trees because of their exceptional biological and botanical characteristics.

In the second notebook, "The urban landscape," measures of preservation and renewal of Monaco's green heritage are described. Among the key measures, tree felling has been forbidden unless authorized by the Department of Urban Amenities. Other preservation measures include:

- The measures to be taken to protect trees and plants in construction zones, including protection of trunks, roots and crowns
- The criteria for evaluating the monetary value of a tree in case of compensation
- The maintenance measures promoting biological control, banning the use of chemical materials and favouring trimming methods adapted to the city.

Programmes of renewal are also established based on the information from the plant inventories.



Image: Anthony Delanoix

Monaco

Mongolia

Mongolia introduced wildlife species protection in the school curricula and achieved over 96 per cent of targets for the National Biodiversity Action Plan

Mongolia is susceptible to climate change due to its location and vulnerable ecosystems, together with its economic system, which is highly dependent on seasonal climates. There have been significant changes over the past 40 years in anthropogenic activities, including population increases, changes in farming and herding, and human population distribution. Lower precipitation rates and the drying of many surface water sources have put Mongolia in a position where the buffering and recovery potential of a healthy ecosystem are more important than ever to curb the impacts of climate change and stochastic environmental events.

Addressing the causes of climate change

Mongolia has conducted IUCN Red List assessments of its entire known vertebrate species. There are some positive trends in biodiversity, such as the increase in the number of known species. Since the Fourth National Report of the Convention on Biological Diversity, the number of known fungi, lichen, plant, insect and bird species found in Mongolia has risen. However, ecosystem services associated with healthy grasslands, arboreal forest and semi-arid saxaul forests — such as gas exchange and carbon storage — are likely to be reduced by changes in Mongolia's biodiversity. Services at risk of a noticeable impact include water storage, soil structure and composition, nutrient storage and cycling.

Mongolia has twice reviewed its initial National Biodiversity Action Plan (NBAP), produced in 1996. The first review, in 2000, indicated that although a significant number of actions were being implemented, there were holes in overall coordination and improved implementation was required to meet targets. As a result of this, a committee was established to oversee the implementation of the NBAP, with funding from the Global Environment Facility and the United Nations Development Programme Biodiversity Project. A second review of the NBAP in 2009 concluded that it was fulfilling its main objectives and achieving its potential contribution to protect biodiversity in Mongolia, achieving 96.5 per cent of the NBAP targets.

Collectively, the reviews generally reported positively on the fulfilment of Mongolia's original NBAP. The subsequent stage led to the recruitment pf a project manager, who produced a draft of the revised NBSAP for Mongolia before an Inception Workshop in June 2012.

In addition, the Australian NBSAP was used as a model due to similarities between the two countries, both of which have vast area, low human density, traditional knowledge of nomadic herders and local groups living traditionally off the land. Until the revised NBSAP has been completed, the original NBAP will be referred to along with the 2011–2020 Aichi targets.

The Government has implemented actions related to the Aichi Biodiversity Targets, including the establishment of a degree programme in ecology and the training of teachers and higher level officials in ecological issues. It has also established a conservation training centre to provide high-level training to staff of the Ministry of Environment and Green Development as well as a library for related materials.



Marcin Konsek on Wikimedia Commons

Gorkhi-Terelj National Park. Mongolia

Montenegro

Skadarsko Lake is one of the largest reserves of peat in Europe. With some 3,250 plant species, floristic diversity in Montenegro is among the highest in the region

The territory of Montenegro falls within two basic biogeographical regions: Mediterranean and Alpine. In relation to a small surface of 13,812 km², it encompasses a wide range of ecosystems and habitat types. Numerous areas of international importance with rare, endemic and endangered species have been identified in the country, including 13 Important Bird Areas (plus 7 potential areas) and 22 Important Plant Areas. Specific agro-biodiversity of the country also represents an important quality. On the global level, Montenegro is one of the biodiversity hotspots in the Mediterranean.

Progress assessment of the National Biodiversity Strategy Action Plan

The Action Plan of the National Biodiversity Strategy 2010–2015 contains 54 measures and activities grouped under seven themes corresponding to the key challenges identified in the process of drafting the Biodiversity Strategy Action Plan (BSAP). Based, in particular, the Third Annual Report published by the Environmental Protection Agency in November 2013, an assessment was made of the extent to which the Action Plan has been implemented.

For the majority of BSAP measures, progress was achieved. This includes progress with inventories of species (endemic, protected, invasive) and the establishment of an ecological network (Natura 2000); development of capacities for biodiversity protection and its sustainable use; biodiversity protection action planning on a local level; public participation in biodiversity-related decision making; and analysis and integration of climate change concerns. Implementation of several measures related to the prevention and mitigation of pressures on ecosystems — BSAP theme 4 — has also been assessed as moderately successful, including activities to combat illegal forestry activities; research of forest habitats; effectiveness of SEA and EIA and assessment of acceptability of forestry and water use interventions; and preparation of the remaining fisheries assessments.

Under theme 5, biodiversity mainstreaming, implementation of the majority of activities (close to 60 per cent) was also assessed as having moderate progress so far. Efforts to mainstream biodiversity into sectoral policies and plans are evident for tourism, forestry and transport sectors. In the transport sector, significant improvement has been observed compared to previous practices (impact assessments for reconstruction or expansion of transport infrastructure). Satisfactory progress was achieved in developing the legal framework and alignment with EU legislation — which is the country's top priority — as well as with some forestry activities such as protection of seed stands; identification of marine habitats requiring protection; efforts to develop ecotourism and mainstream biodiversity in transport development plans; and preparations to proclaim new protected areas.

It is also worth of mentioning that substantial contributions to the implementation of BSAP measures and activities was provided through several important projects such as regional project dealing with Ohridsko, Prespansko and Skadarsko Lakes, Coastal Area Management Programme (CAMP), IPA projects, GEF/UNDP biodiversity projects in Montenegro, projects aiming to improve forest management and planning, and others.



Tourisme Monténégro

Montenegro

Morocco

APA caravan organized 10 workshops between 2017 and 2018, with more than 250 beneficiaries and 10 out of 12 regions of Morocco covered

The Kingdom of Morocco has a wide range of ecosystems, species and biological resources that provide an important basis for the livelihoods of the people and for the socio-economic development of the Country. However, these resources remain vulnerable and poorly developed, as many ecosystems are overexploited and/or degraded and the use of their potential services increasingly compromised.

Sharing the benefits of genetic resources

APA Caravan (Access and sharing the benefits of genetic resources) comprises a series of training and awareness workshops, each with about thirty participants representing civil society and the research sector involved in the management of the country's genetic resources. Local elected representatives also attend the workshops, to communicate expectations to local people about the importance of valuing and protecting the genetic resources of the regions concerned.

APA caravan responds to the need to raise awareness among decision-makers and local people about the need for regulation to ensure access, use and fair and equitable sharing of the benefits of their heritage biodiversity. The workshops also address aspects of the establishment of legal mechanisms for the protection of genetic resources in support of the deployment of a national legal framework. Communication is an integral part of the Caravan's programme to promote the development of partnerships and synergies for the protection and enhancement of biological diversity.

Given the complexity of the subject, the project team and experts responsible for facilitating the workshops ensure that technical content is simplified to allow successful assimilation, including the legal elements of the Nagoya Protocol. This approach will also eventually allow more widespread dissemination to local populations whose effectiveness depends on the commitment of participants and their ability to pursue the momentum initiated during training.

The content, presentation language and examples used have been adapted to local knowledge, resources and peculiarities. Thus, palms were the focus in the region of Guelmim while, in Sous-Massa, debates focused on the use and potential of the argan tree.

This approach has been effective, particularly during simulations of contract negotiations where participants developed a greater ability to appropriate the APA mechanism and to perceive the importance of setting up a framework to protect the resources and rights of local people.

Among the beneficiaries of the APA Caravan workshops are local elected officials who are representatives of the government authorities responsible for the verification and monitoring of access to genetic resources; local experts and academics representing the scientific and research sector, and are often in collaboration with foreign bio-prospectors; and representatives of the associative sector as the main providers/processors of genetic resources and often holders of knowledge associated with them.

Future activities of APA Caravan will be exclusively reserved for women, representing about fifty Argan tree cooperatives comprising more than 2000 women.



Anes el Bardoudi on Unsplash

Oasis in Akka Ighane

Mozambique

Of the 5,781 plant species recorded in the country, approximately 800 are endemic or nearly endemic

Mozambique is rich in biodiversity due to the high variety of ecosystems. There are four main categories of natural ecosystem: terrestrial, marine, coastal and lake. The country has five different biomes subdivided into 12 ecoregions. Up to four phyto-geographic regions are recognized: Regional centre of Zambezian endemism, Swahilian regional centre of endemism, Swahilian-Maputaland Regional transitional zone and Maputalalad-Tongoland centre of endemism. In terrestrial ecosystems, forests have a prominent role, covering 406,000 km^2. Marine and coastal ecosystems occupy an area of approximately 572,000 km^2. In the marine environment, it is estimated that seagrass ecosystems cover 439 km^2 and Mozambique coral reef 1,890 km^2, whose conservation status is generally good. Overall, approximately 10,000 species have been recorded.

Strengthening capacity for biodiversity conservation

Since its independence in 1975, the government of Mozambique has taken important measures to strengthen its capacity for biodiversity conservation, with participatory management in natural resources an adopted strategy. In addition to the economic, ecological and institutional development objectives, the government's policy for forests and wildlife incorporates social objectives, given that natural resource management is complex and involves the recognition of decision making mechanisms present in rural areas, upon which the exercise of power at the level of rural communities is based.

The main actors of community-based natural resource management are the state, private sector, NGOs and the local communities. Community participation is subject to various management models: committees of resources management; informal collaborative management; constructive relationships and mutual benefit; conversion to plantations, agro forestry systems, game farming; community forest concessions; promotion of products for local use; and co-management with the private sector to promote market access.

During the term of the previous National Biodiversity Strategies and Action Plans (NBSAPs), over 500 initiatives in participatory management, covering 19 per cent of the productive forest area, were implemented. Also, many practical knowledge and local institutions were identified, documented and stimulated. These practices included traditional and adapted techniques for natural resource management in local communities, especially in the management of species, varieties, soil fertility and related aspects.

The country is implementing decentralization mechanisms, conferring an increased value and weight on local institutions. These institutions' access to, and use of, natural resources such as land tenure systems and cultural practices that interact with the degradation of biodiversity and land are being strengthened and used for the development of sustainable management systems for natural resources and biodiversity. Traditional management methods such as taboos, and sacred and profane forests are being implemented with substantial gains in the level of effectiveness of biodiversity conservation. The model of the Chirindzene Reserve in Gaza province, with its supernatural forest management practices, rituals, and spiritual and sacred elements, is being replicated in the country. In other cases, the "One leader, one forest" initiative is driving the emergence of the protected forests that function for community needs.



Jana on Unsplash

Mozambique sunrise

Myanmar

The extensive coastline accommodates 500,000 ha of brackish and freshwater swampland supporting essential ecological functions and habitats for aquatic organisms such as fish, prawns and other aquatic fauna and flora

The Biodiversity and Nature Conservation Association (BANCA) is a local non-profit organization that has operated biodiversity conservation activities throughout Myanmar since 2011. In conducting conservation activities within a local context, particularly with the Ministry of Natural Resources and Environmental Conservation, it is successfully networking with other organizations. Currently, BANCA is targeting several conservation zones, the first of which comprises the coastal area of the country in Gulf of Mottama (GOM) in Mon State, Meinmahla Kyun in Ayeyarwady Delta, and Nanthar Island in Rakhine State. The Southern Sundiac area of Lenya's proposed Nature Reserve comprises the second conservation zone and the Dry Zone of central Myanmar zone three.

Survey reveals biodiversity pressure points

In the three targeted zones, species conservation is systematically carried out, focusing on the critically endangered spoon-billed sandpiper, Gurney's pitta and Baer's pochard. For habitat conservation, a Ramsar site in GOM has been partially designated in Mon State. In an integral approach to conservation of species, habitat and development of education and community livelihood activities have also been initiated with a co-management approach.

As part of the habitat conservation and livelihood initiatives for the rural communities, BANCA conducted a sociobiological survey in Kelatha Wildlife Sanctuary in Mon State. The survey was carried out in March 2016 by diversified professionals in the field of forestry, ornithology, mammology, socio-economy, herpetology and insectology. The survey identified the socioeconomic status of the communities surrounding the sanctuary as well as the ecosystem services rendered by the sanctuary for those communities.

The original area of 25 km^2 was designated by the Forest Department as a sanctuary in 1947. Due to the change of use of 44.81 acres for a Prison Department housing complex and mining area for Taung Zun quarry mine, the present area now stands at 5,548,473 acres. Although the whole area of the sanctuary is legally under the management of the Forest Department, it is thriving under the care of orchard farmers and monastic institutions. The whole area is planted with fruiting trees, although very few natural forest trees remain.

The survey revealed that eight villages with a total population of 25,075 people surrounding the sanctuary are dependent on it for clean spring water and the opportunity to harvest fruit. In addition, the survey recorded the presence of 69 species of birds, 17 species of mammals, 72 species of butterflies, 12 species of beetles and six species of dragonfly, as well as 14 species of herpetofauna and 98 species of trees. It also revealed examples of Thawka-gyi (Amherstia nobilis), a species thought to be extinct in the wild, together with Thawka Lay (Seraca indica) in the scattered area of natural forest in the sanctuary.

BANCA is endeavouring to carry out further surveys on Thawka-gyi as regards its distribution and composition and evaluation of ecosystem services rendered by the sanctuary for the communities depending on the Kelatha Wildlife Sanctuary.



Ministry of Natural Resources and Environmental Conservation

Durian fruit

Namibia

Namibia is home to the largest remaining cheetah population and largest population of free-roaming black rhino. 20 State Protected Areas cover an area of 138,749 km², approximately 17 per cent of Namibia's land surface

Namibia is blessed with exceptional natural resources and an impressive variety of species and habitats. It is one of the few dryland countries in the world with internationally recognized biodiversity hotspots. Approximately 43.5 per cent of landmass is classified as being under conservation management, through: protected areas on state land; communal conservancies; freehold conservancies and private game reserves; tourism concessions; and community forests.

Biodiversity and ecosystem services are of particular importance to the tourism, agriculture and fisheries sectors which, alongside mining, form the basis of the economy. Around 70 per cent of the population also depends on the natural resource base for income, food, medicinal needs, fuel and shelter. A 2017 study estimated that the annual value of nature in Namibia was approximately US$ 0.9 billion or 9 per cent of GDP.

Conserving and sustainably utilizing biodiversity for poverty alleviation

The conservation of biodiversity, and particularly its sustainable utilization, is promoted in Namibia as an engine and enabler for poverty alleviation and economic growth, particularly in rural areas. This is largely based on the fast-growing tourism sector, which has opened up opportunities for rural communities to engage in tourism-related concessions such as accommodation facilities, conservation hunting operations and the sale of indigenous natural products.

The Community-Based Natural Resources Management (CBNRM) Programme, which has devolved rights over wildlife and forest resources to local communities, has been a remarkable achievement. Since the first communal conservancy was gazetted in 1998, the programme has expanded to cover approximately 20 per cent of the country's landmass through a network of 83 communal conservancies and 32 community forests. The programme has placed rural communities at the centre of biodiversity management and has resulted in increasing populations of iconic species such as elephant, free-roaming lion and black rhino. The programme is based on three pillars:

- Institutional development: good governance creates the basis for resource management and the equitable distribution of returns
- Natural resource management: innovative resource management enables biodiversity conservation and the sustainable use of wildlife and plant resources
- Business, enterprises and livelihoods: incentive-based conservation approaches enable an expanding range of rural livelihood options.

It is estimated that the Programme has contributed almost US$ 0.4 billion to Namibia's net national income and has generated employment for an estimated 853 people involved in communal conservancy management. By the end of 2016, 53 joint venture tourism enterprises with over 1,000 employees, and 55 conservation hunting concessions with over 300 employees, were operational in communal conservancy areas. A further 1,284 indigenous plant harvesters and 570 craft producers were being employed in communal conservancy areas.



Image: : Luca Galuzzi, Source: Wikimedia Commons

Namib-Naukluft National Park, Namib Desert, Namibia

Nauru

In the Nauru BioRAP 2013 species study, new records of 51 moth, 13 land snail, 17 ant and 6 dragonfly species were found. Two species of giant clam, Tridacna maxima, thought locally extinct in previous studies from the 1980s were found

The small Pacific atoll island of Nauru, located close to the equator, is set on top of a volcanic seamount rising from the ocean floor. The land area is about 22 km² and the coast line circumference is 30 km long, and there is a narrow coastal plain about 50 to 300 m wide. The country is engaged in several projects to conserve biodiversity, promoting the re-establishment of forest cover and its associated native flora and fauna, encouraging responsible waste disposal and identifying sustainable land management practices.

Projects to raise awareness and improve practices

The Grow and Green Project (GGP) is one of several Government-funded initiatives to promote the planting of local fruit trees such as lime, breadfruit, salsop and coconut for food security, soil fertility improvement and local capacity-building. The project succeeded in its aims of producing planting materials and setting up family fruit tree plots. It also helped to raise awareness and provide training and technical support to individual households and schools in the planting and care of fruit trees.

Another successful case study is the Clean and Green Programme (CGP). Poor waste management and uncontrolled pollution can exacerbate the degradation and hamper the restoration of both inland and coastal ecosystems on Nauru. This Government-funded and community-driven programme has proved highly successful at educating the public and facilitating the proper management and disposal of household waste.

The CGP engages and trains a contingent of about 140 young workers, selected from 14 districts to promote awareness and education on waste management and provide support services to facilitate the effective collection and disposal of household waste by district communities.

A third initiative is the Sustainable Land Management project (SLM), which focuses on the restoration of minelands and the sustainable use of limited space and land resources of the settled narrow coastal areas of Nauru. These factors are essential to the regeneration of biodiversity and ecosystem services that underpin the survival of the island's population in the medium to long term (10–50 years and beyond).

The SLM project was developed as a Government and community initiative and implemented from 2008 to 2012 to address issues of land degradation and drought in Nauru in relation to the United Nations Convention to Combat Desertification, Land Degradation and Drought. It succeeded in providing further guidelines for land restoration and funding for capacity-building training of Government and non-governmental staff. A National Action Plan emerged from this project, detailing the overarching policy framework for financing future national and local sustainable land management actions.

A fourth project, the Nauru BioRAP 2013 species study, yielded new records of moth, land snail, ant and dragonfly species, as well as of two species of giant clams (Tridacna maxima) thought locally extinct in previous studies from the 1980s.The white-tip reef shark was also observed in abundance.



Tatters on flickr

Phosphate rock island of Nauru

Nepal

Biodiversity conservation in Nepal takes a participatory approach at landscape level, with inter-agency and transboundary collaboration

Although Nepal has a large variety of faunal and floral species, its status as one of the least developed countries means that it faces challenges in harmonizing nature and people in the course of economic development. However, the country has shown noteworthy performance in biodiversity conservation. Nepal entered into the conservation era with the promulgation of the National Park and Wildlife Conservation Act in 1973. This led to the declaration of 20 protected areas within the administrative boundary of the country, Chitwan National Park being the first of these.

Internationally, Nepal is signatory to a number of multilateral and bilateral environmental agreements, including the Convention on Biological Diversity (CBD). In compliance with the CBD, Nepal has developed its own National Biodiversity Strategy and Action Plan 2014–2020.

An active partner in action for biodiversity

Biodiversity provides various types of direct and indirect ecosystem services. These range from habitat conservation to essential materials for livelihoods of peoples and economic development. Nepal has demonstrated its concern for biodiversity conservation by complying with various multilateral and bilateral environmental agreements and has formally implemented these through legislative measures.

Biodiversity conservation takes a participatory approach at landscape level, with inter-agency and transboundary collaboration. Inadequate resources to effectively control poaching for trade motives is one of the greatest challenges, but cooperation is the pride of the country's conservation modality and this has guided a comprehensive strategy to achieve significant milestones.

Nepal has demonstrated dedication towards biodiversity conservation through enforcement of legislative measures over time. All periodic national development plans have integrated biodiversity conservation activities and the biodiversity conservation provisions are also clearly spelled out in the country's constitution (2015). In keeping with the essence of CBD and the Millennium Development Goals, Nepal formulated its Biodiversity Strategy in 2002, followed by the Biodiversity Strategy Implementation Plan in 2004. Furthermore, several species conservation action plans have been formulated, focusing on specific wildlife species that are on the verge of extinction.

Nepal has also set standards for zero poaching of rhino and has undertaken rigorous efforts in combating wildlife crime. The government destroyed stockpiles of wildlife parts confiscated from illegal traders on the occasion of International Biodiversity Day in May 2017. In this way, the country clearly conveyed the message to the world that it regards wildlife as having absolutely no economic value after death. This was possible due to the long-standing adoption of participatory, landscape and transboundary approaches.



Ben Pauer

Swayambhunath Temple is home to a large population of monkeys living among human infrastructure

Netherlands

In the Caribbean Netherlands, protected area management organizations have well organized education and outreach programmes and strong after-school programmes for local children

The Kingdom of the Netherlands has its territory in Europe and in the Caribbean, and consist of four countries: The Netherlands, Aruba, Curaçao and Saint Maarten, with the latter three located in the Caribbean along with the municipalities of Bonaire, Saint Eustatius, and Saba. Biodiversity in the Caribbean is very different from that in Western Europe. The islands of the Caribbean Netherlands form part of the larger Caribbean biodiversity hotspot on the basis of their species richness and high level of endemism. An estimated 10 to 15,000 species occur on and around these three tiny islands.

Programmes and celebrations

During the International Year of Biodiversity 2010, a 'Coalition 2010' gathering over 200 companies, NGOs and local governments engaged in massive awareness-raising actions in order to increase public awareness of the importance of nature and their willingness to share responsibility for its preservation. The overall theme, "The Garden and The Fridge," addressed care for nature as well as consumption and lifestyle. Ten regional and two nationwide projects received government co-funding, with the remainder of over 200 projects and initiatives supported by the initiators.

The coalition organised the nationwide celebrations of World Biodiversity Day 2010 and 2011 involving national celebrities including HRH Princess Irene. Since then, coalition partners continued awareness-raising activities with various funding sources. The annual celebration of World Biodiversity Day was combined with Fête de la Nature Holland for the first time in 2013. A wider continuation of this event was established with funding in 2014 by the Nationaal Groenfonds (Dutch National Fund for Rural Areas) and other organizations. In addition, the National Tree Planting Day has been celebrated annually under a variety of sub-themes involving thousands of school children.

Also, numerous CEPA activities have been implemented under governmental nature education programmes. Recently, several new steps have been taken to increase awareness and involvement of the Dutch government. The completion of two major governmental programmes for awareness-raising that were operational until the end of 2012: "Learning for Sustainable Development" and "Nature and Environmental Education." They were then merged into a follow-up programme: "Progress in Sustainability by Social Innovation for a Green Economy."

In 2014 the themes of the Natural Capital Agenda 2013 and its effects will be integrated into the awareness-raising programme: "Progress in Sustainability," that is intended to increase knowledge, awareness and attitude towards a sustainable economy and green economic growth. The programme has a budget of US$ 4.6 million per year and other parties are supposed to contribute financially. The programme consists of five themes: biodiversity, energy, food, water and materials. These themes are bound to transition processes such as sustainable production and consumption, socially accepted enterprise, educational issues and integral development.



Malcolm Lightbody on Unsplash

Zaanse Schans, Zaandam, Netherlands

New Zealand

Pest eradication and biodiversity recovery on 117 offshore islands is one of New Zealand's greatest biodiversity success stories

New Zealand is an island nation that was originally covered in ancient forests full of birds, invertebrates and lizards, but with no terrestrial mammals, apart from bats. When the first people arrived about 800 years ago, they brought Pacific rats and dogs with them, starting a process of destruction of the country's wildlife and forests in which many species became extinct or threatened. The country has developed a reputation as the world leader in offshore island pest eradication and biodiversity restoration programmes, primarily through its Department of Conservation (DOC), which is responsible for managing a network of public conservation lands (protected areas) across the country.

Biodiversity recovery on offshore islands

In the mid-20th century, a push back against the impact of invasive species began, focusing particularly on the nation's smaller, offshore islands where remnants of biodiversity lost on the main islands had often managed to survive. New Zealand has since become a centre of excellence for eradicating invasive mammals from offshore islands, with this success being the genesis of indigenous species recovery activities throughout the whole country. The country's 117 pest-free islands have become lifeboats for species recovery.

New Zealand has attracted international recognition for its island pest eradication efforts, which directly support the achievement of a number of the Aichi Biodiversity Targets, as well as the vision and objectives of the Convention on Biological Diversity. Target pests have been eradicated (Aichi Target 9) and areas of particular importance for biodiversity have been conserved (Aichi Target 11).

Ecosystems have flourished, natural habitats have been protected (Aichi Target 5), and rare endemic species have been brought back from the brink of extinction (Aichi Target 12). Pest eradication efforts have been informed by both scientific research and local knowledge (Aichi Targets 19 and 18). Publicity around the eradication work, as well as ongoing controlled public access, has helped raise public awareness of the value of biodiversity both domestically and among the many international tourists who visit these islands every year (Aichi Target 1).

Biodiversity monitoring on New Zealand's pest free islands has been carried out for many decades, producing a wealth of knowledge about the ways in which ecosystems recover and function in the absence of pest species. Improvements in biodiversity on offshore islands are well-documented, providing models for other nations to adopt. The benefits to biodiversity that accrue justify ongoing investment in eradication and restoration programmes.

Many of New Zealand's offshore islands are classified as protected areas. The pest eradication expertise built up over decades of experience is now highly sought after and the DOC and allied specialist operators have worked on many other islands, from the North Sea to the Indian Ocean and across the Pacific, to help other nations tackle their invasive pest problems. Staff frequently work in collaboration with land owners and local iwi (akin to 'tribes' in Māori), hapū (sub-tribal descent groupings) and whānau (extended families) to carry out pest eradication projects. An example of this is "Project Island Song" which aims to restore birdlife to a group of islands in the eastern Bay of Islands through pest eradication. The project is led by the Guardians of the Bay of Islands, resident subtribes in the area, and the DOC.



Grant Maslow

Juvenile rowi translocating back to Okarito Forest

Nicaragua

The faunal wealth of Nicaragua is composed of 14,287 species, of which 86 per cent are invertebrates and 14 per cent vertebrates

Nicaragua has a geographical position that gives favourable conditions for the development of biodiversity, since it represents a transition zone from tropical to subtropical climate, where different distribution ranges of globally important species converge. Nicaragua has 68 ecosystems, a figure that represents 60 per cent of the 114 ecosystems identified in the Central American Isthmus. The country's biological wealth reported to date is 20,485 species, distributed as 29.35 per cent flora, 9.75 per cent vertebrate, 59.98 per cent invertebrate, and 0.89 per cent fungal.

Integrating the values of biodiversity

Nicaragua is in the process of updating its National Biodiversity Strategy and Plan of Action. Although the definition of specific indicators has not been finalized in the framework of the implementation of the Strategic Plan of the CBD (2011–2020), the country has reached the definition and implementation of national goals, indicators and instruments that are contributing to the conservation of biodiversity and the objectives of the Strategic Plan of the CBD (2011–2020). The following highlights are the advances that Nicaragua has been developing in this field:

- The National Human Development Plan establishes specific guidelines for the protection of our Mother Earth and mandates the involvement of both government institutions and local actors in the search for the common good
- In compliance with these mandates, Environmental Education for Life has been promoted. With this, hundreds of communities have become aware and a new vision of the conservation of natural resources has been created
- Nicaragua has national and sectoral strategies and policies that integrate the values of biodiversity
- During the period corresponding to this report, the legal framework for the protection of Biodiversity has been strengthened through the approval of the following: Law of Conservation and Sustainable Use of the Biological Diversity of Nicaragua; Law for the Protection and Welfare of Domestic Animals and Domesticated Wild Animals; and Law of Promotion of Agroecological or Organic Production
- Through the implementation of alternative productive projects, work is being done on the recovery of ecosystems; implementation of life corridors for biological connectivity; conversion of farms through the promotion of agroforestry and silvopastoral activities; protection of watersheds; management of protected areas; and the rescue of genetic resources
- Incorporation of the private sector under shared responsibility in the processes of biodiversity conservation. Some examples of this are: the declaration of Private Wild Reserves, the production of biomass, and the establishment of forest plantations
- Local communities, indigenous peoples and Afro-descendant communities and local governments are also making efforts to protect and conserve biodiversity.



Voy_Tec on flickr

Ometepe Island rising out of Lake Nicaragua

Niger

The population of giraffes has increased from 49 in 1989 to 175 in 2007

Situated in West Africa, Niger is a landlocked country that covers 1,267,000 km². Much of the country is composed of desert: the natural landscape stretches from the Saharan zone in the north to the Sahelian prairies, and ends with a thin strip of forested land in the south of the country. The territory is generally quite flat, with low-lying plateaus and plains, and some higher plateaus of up to 2,000 m of altitude in the north. Niger has a total of 2,761 species of plant and 3,200 of animal. To protect its biodiversity, the country has established seven protected areas for wildlife, covering 14.29 per cent of national territory. It also possesses 84 classified natural forests.

Local management structures for rural wood markets to prevent forest degradation

In Niger, the biological diversity of forests is threatened by a number of menaces that include the expansion of extensive agriculture (progression of cultivated land), the overexploitation of natural resources through overgrazing, and excessive wood cutting, and the insufficient administrative monitoring of rural wood markets which has led to the degradation of certain forest stands.

With the establishment of local management structures (LSMs) for the rural wood markets however, participatory management has been able to stop the expansion of agricultural land.

The case of the Baban Rafi forest in the Maradi Region is an example of the successful halting of forest regression. The historical progression of the forest clearly shows that heavy land pressures represent the most significant threat to the safeguard of the forest. Indeed, while it covered an area of 51,400 ha in 1979, it decreased to just 40,606 ha in 1991, a reduction of 21 per cent of surface area. This was mainly the result of agricultural clearance. The forest surface further decreased from 37,193 ha in 1993 to 35,325 ha in 1997, a reduction of over 14 per cent in just five years.

Since the establishment of LSMs for the rural wood markets in the Baban Rafi forest in 1997, the progression of agricultural land has almost been stopped. In 2003, in the context of the revision process of the land use plan, its surface was estimated to be 35,540 ha. In 2012, the inventory work carried out by the Maradi Regional Directorate of the Environment in the forest demonstrated that the expansion of agricultural land had been stabilised from 2003 to 2012. The forest cover in 2012 (35,540 ha) was the same as in 2003.

The participatory management of the rural wood markets has also provided increased collective revenues to the local populations. The implementation of components concerning the reform and land planning of forest ecosystems and the establishment of rural wood markets is thus one of the principal novelties in the participatory approach to the forest stands and the creation of revenues at local level. The case of the Baban Rafi forest demonstrates the overall success of the participatory management of forest resources in the area.



Tromat

Sand dune near Niamey, Niger

Nigeria

Nigeria contains nearly 853 km of coastline along the Pacific Ocean. Wetlands are estimated to cover 28,000 km², approximately 3 per cent of the 923,768 km² land surface area

Nigeria is rich in biodiversity and houses comparable levels of endemism and species richness due to a complex topography and wide variety of habitats. These include coastal creeks of the Niger Delta, the rainforests of the Cross River basin and the mountains along the Cameroun border with Nigeria. The Atlantic Ocean forms the southern border. With its highly diverse marine and freshwater ecosystems, there is an inland array of forest and woodland ecosystems that reach Sudan Savannah and the Sahel/semi-desert belt in the northern part of the country.

Innovation in financing National Biodiversity Action Plans

Nigeria is implementing new, modern and unique ways to finance the National Biodiversity Strategies and Action Plans (NBSAPs) and biodiversity projects. One of these is promoting participation of the entire gamut of Nigerian citizenry in biodiversity conservation through the mechanisms of crowd funding — a financing method that uses the tactics of soliciting moderately modest contributions from a group of individuals to generate funds for a cause. This mechanism will be used to raise funds for NBSAP as follows:

- The naming of facilities, sites or visible components of conservation (protected) areas after individuals, firms, or corporations, by way of an organized honour scheme for prescribed sums of money
- Operating a build-and-operate scheme for private entrepreneurs willing to participate in the running of visitors' centres in national parks, forest reserves and other conservation areas where emphasis is on biodiversity conservation
- Organizing regular periodic biodiversity-based lotteries with the guidance of the National Lottery Regulatory Commission. Lotteries will be organized, with a special event on World Biodiversity Day to generate funds for biodiversity conservation. A lottery is a type of betting or gaming with three important features — some payment is required of participants; one or more prizes may be won by participants; the prizes are won by chance. Profits from the lottery will be ploughed into biodiversity conservation projects of the NBSAP, such as maintenance of infrastructure in national parks and game or forest reserves
- The establishment of a mechanism for collection of biodiversity taxes from direct users of biodiversity: Developing and operationalizing a revenue generating system that is based on taxation of the direct beneficiaries from biodiversity exploitation. For example, various categories of visiting tourists such as game-viewers, photographers and researchers, will be made to pay commensurate entrance and usage fee charges. Also various categories of industry will be made to pay biodiversity taxes, commensurate with the magnitude of disturbance, such as noise, air and water pollution, that they cause in the environment
- Promoting Ecotourism: This will be done through government and private sector support for biodiversity-based festivals such as the Argungu Fishing Festival, the Biseni Fishing Festival and others of its kind in the Niger Delta. The Ministry of Culture and Tourism will take a lead in this activity. Profits from organizing these will partly be used to enhance conservation of biodiversity at festival sites and their environs.



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Obudu plateau, Cross River state, Nigeria

Niue

About 75 per cent of the Small Grants Programme resources to date address the biodiversity focal areas

Biodiversity is very important to the economy of Niue with about a fifth of GDP coming from the agriculture, fishery, forestry and hunting sectors. It is also the basis for subsistence lifestyles and has cultural significance. Niue has about 19,000 ha of native forest comprising approximately 70 per cent of the island's land area, with 23 per cent in conservation areas, primarily the Huvalu Conservation Area. The forest is the critical habitat for three prized food species; fruit bat, wood pigeon and coconut crab. The environmental values of the forest also have economic value in that the natural environment of Niue is its principal tourist attraction.

Advocating sustainable living through high level strategic planning

Niue has integrated biodiversity into planning at the highest level, with the country's National Strategic Plan having environment as one of its seven pillars. A wide range of activities have been undertaken to advocate sustainable living. This largely comes in the form of legislation, strategies and action plans.

The Environment Act of 2003 provides for the establishment of the Department of Environment as the focal agency for the implementation of all environmental agreements. It further provides for the establishment of an Environment Council to coordinate the work of government departments regarding the various requirements of the CBD, UNCCD and UNFCC.

The Bio-security Bill aims to protect health, environment and agriculture of Niue and to facilitate trade in its animal and plant products. This creates a comprehensive regime to control the import and export of plants and animals, as well as internal control of pests.

The Coastal Management Policy of 2008, with its vision statement of "a safe, productive and sustainable coastal environment for Niue," provides a framework to guide the management and development of Niue's coast.

The fundamental guiding principle of the Forest Policy of 2004 refers to sustainability, "keeping in mind future generations so that equity between generations can be maintained." The themes of sustainable use, conservation, basic needs, individual and collective responsibility, and economic development complete the statement of basic principles.

The Niue government identifies the coastal resources as a priority, prompting the creation of biodiversity projects. Comprehensive development of the Environmental Impact Assessment regulations emphasise sustainable development.

The National Integrated Strategic Plan 2009–2014 sets out national strategic objectives. An environment component objective is to promote "sustainable use and management of Niue's natural resources and environment for present and future generations".

The Private Sector Strategic Development Plan 2007–2010 provides a framework for the development of the private sector. Reference to the enactment of the Bio-security Bill is of importance to ensure that stringent border controls are in place.

The National Implementation Plan for Persistent Organic Pollutants (POPs) 2005 provides strategies in the implementation of the Stockholm Convention and attempts to address POPs issues in Niue.



Sandwich on flickr

Avaiki Cave

Norway

The cold northern climate is challenging, and the species found in Norway are well adapted to low temperatures, a short growing season and humid climate. Bumblebees can also be adapted to a cold climate

Many of the Aichi Biodiversity Targets are concerned with maintaining well-functioning ecosystems or improving ecological status. A core goal of the Norwegian action plan for natural diversity is to ensure that the nature management regime is sustainable, so that the overall pressure resulting from human activities and use of nature allows Norwegian ecosystems to maintain good ecological status over time. The Aichi targets are reflected in Norway's three national biodiversity targets, which are concerned with achieving good ecological status in ecosystems, safeguarding threatened species and habitats, and maintaining a representative selection of Norwegian nature across the full range of habitats and ecosystems.

Understanding good ecological status

Norway's plan is based on the fundamental idea that well-functioning ecosystems benefit society as a whole, and that we have an obligation to pass on healthy ecosystems to future generations. However, one problem the Norwegian authorities face is the lack of clear, agreed management objectives for ecological status, even though sustainable management is specified as a goal in a number of statutes. This results in differing views on the need for action and where to strike a balance between different interests. Clearly defined objectives would provide a better basis for making decisions in cases marked by different interests and social objectives, and would help to achieve environmentally, socially and economically sustainable development.

To address these issues, the Ministry of Climate and Environment is developing scientifically based criteria for good ecological status. Defining what is meant by 'good ecological status' is the first step in developing management objectives for different areas. It will not necessarily be Norway's objective to achieve good ecological status everywhere. If other public interests weigh more heavily, it may be decided that it is acceptable for parts of an ecosystem not to achieve it. In addition, pressures that are not under national control, such as climate change, ocean acidification and long-range transport of pollutants, may make it impossible to achieve good ecological status everywhere.

The Government will develop management objectives for the various ecosystems and determine which types of areas or which parts of each ecosystem should achieve good ecological status, taking all necessary factors into consideration. Once the management objectives have been established, the Government will organize the use of policy instruments with a view to maintaining ecological status in areas and ecosystems where it is already good enough and improving it in areas where it is poorer than stipulated by the management objectives. The Government will use this system as a tool for making nature management more effective and for setting priorities for restoration projects in accordance with Aichi target 15. The aim is for a management system based on clearly defined objectives for ecological status to be in place by 2020.

In September 2016, the Ministry of Climate and Environment selected an Expert Committee with a mandate to develop recommendations for a comprehensive technical system for the determination of good ecological condition.



Pascal Debrunner on Unsplash

Trollfjord



Oman

Oman is home to more than 1200 documented plant species

The Sultanate of Oman is the third largest and probably the most diverse country in the Arabian Peninsula. Oman borders the Strait of Hormuz to the north, the United Arab Emirates and Saudi Arabia to the north-west, and the Republic of Yemen to the south-west. The land is formed of stony desert plains, sandy and mountainous areas, littoral and coastal plain, with desert areas covering 79 per cent of the total. The agro-biodiversity area covers 8 per cent of country surface area and the coastal zone covers only 3 per cent. Despite its dry climate, Oman is located in an area of outstanding biodiversity, mainly in the parts of the Sultanate where the precipitation is highest. The country is home to more than 1,200 documented plant species (3 globally threatened), 509 marine flora, 766 marine invertebrate, 988 fish (globally 13 threatened), 89 herptile (6.7 per cent endemic), 518 bird (12 globally threatened) and 93 mammal (20 globally threatened).

One of the world's most rigorously green governments

The United Nations Environment Programme (UNEP) has credited Oman with having one of the best records in environmental conservation, pollution control and maintenance of ecological balance. The country is even stated as having one of the world's most rigorously "green" governments. Biodiversity is ensured through varying topographic features, from a vast arid desert in the west to a belt of grass and woodland in the mountainous region of the south, and the Arabian Sea in the east.

The Oman Animal and Plant Genetic Resources Centre, in collaboration with national partners, contributes to the educational awareness programmes. For example, the Qurum Natural Park exhibition, that introduced school children to Oman's plants, animals, marine and microbial species; a roadshow activity that aims to raise awareness of diversity, and the benefits, threats and uses of genetic resources; and a Science Café series meeting to provide a platform for mutual learning and dissemination of knowledge on issues related to genetic resources in the Sultanate, with a web portal for information on genetic resources developed.

Curricula in Oman continued to offer information and share knowledge about economic species, threats to species and habitats, and the importance of conservation and sustainable use of biodiversity. Materials have been produced and distributed to raise awareness on the socio-economic values of biodiversity and the importance of appropriately managing it.

Promoted by the government, NGOs are raising awareness and highlighting the role of women for biodiversity. Several of these run workshops on environmental awareness, including workshops concerning women, mainly in rural areas.

Several government ministries conducted the Renaissance Whale and Dolphin project, a multifaceted scientific and public awareness project established by the Environment Society of Oman in 2011. The project provided information that can lead to effective conservation management.

Oman's unique wildlife and nature reserves are key attractions of the country and as such are being featured and promoted by both the Ministries of Information and Tourism.



Rita Willaert

Wadi Bani Khalid



Pakistan

The programme has established a strong linkage between healthy ecosystems and human welfare, thereby mainstreaming the importance of biodiversity to the custodian communities

Pakistan is home to the Himalayas, Karakorum and Hindukush mountain ranges, which host a diversity of large ungulates — markhor, urial, ibex and blue sheep — which conservation biologist George Schaller aptly termed the "Mountain Monarchs". By the mid-1980s, these ungulates were at the verge of extinction due to rampant hunting, habitat loss, easy access to weapons and low levels of law enforcement. To address the crisis, tribal leaders in Balochistan province of Pakistan started a conservation programme in Torghar hills of northern Balochistan, with the help of US Fish and Wildlife Service. This programme being implemented across the country.

An innovative approach to conservation of ungulates

Living in a fragile and damaged natural resource-based area is a major cause of poverty. To subsist, the poor are compelled to mine and overexploit the limited resources available, further aggravating the situation. Pakistan's conservation programme established community based conservation by providing an innovative way to finance conservation and generate alternate sustainable livelihoods.

Managed by local elders and communities, the programme allows community game watchers to monitor the area and stop all poaching while allowing a small amount of trophy hunting once populations became stable. Proceeds from trophy hunting are utilized by the community to underwrite the costs of conservation.

The role of custodian communities is now increasingly recognised in national biodiversity-related policies and legislation. Proactive involvement of local communities has helped in recovery of ungulates and in improvement of non-target threatened species and habitats. This has led to recognition of the role of communities in conservation and management planning for all protected areas. Community Conservation Areas have increased significantly, thereby enhancing the national protected areas network. Currently there are 117 such areas in Pakistan.

The community-based conservation initiative has a three-pronged approach: conservation of species and habitats; sustainable use of biological resources; and fair and equitable sharing of benefits. The conservation efforts in the community-managed conservancies are supported by the technical expertise of the relevant wildlife departments. Joint monitoring is carried out to evaluate the trends of populations, not only of the ungulates but also of other non-target species and habitats as well. The concept of sustainable use of biological populations is based on strict monitoring and population estimates carried out on scientific grounds. The procedures are significant enough to meet the CITES criteria.

The Federal Ministry of Climate Change has a mechanism of establishing the population structures of desired ungulate species and recommends a reasonable number of heads available for culling. The measures on conservation and sustainable use have resulted in viable ungulate populations of wild sheep and goats.

The activities conducted under the umbrella of community-based conservation and trophy hunting contribute towards Pakistan's Aichi Biodiversity Targets as well as its Sustainable Development Goals commitments. Predator-prey relationships are being restored, with an increase in prey populations and other non-target species and more stable populations of predators at all levels.



Dr. Masood Arshad

Kashmir markhor in Chitral Gol National Park

Palau

Palau has 724 known species of native vascular plant, including at least 194 endemic species

The Republic of Palau is a Small Island Developing State located in the tropical north Pacific. The main island group lies approximately 800 km north of New Guinea and 800 km east of the Philippines. Only nine of the more than 340 islands that make up the country are inhabited. The inhabited islands are: Angaur, Babeldaob, Hatohobei, Helen Reef, Kayangel, Koror, Peleliu, Pulo Anna, and Sonsorol. Palau has a total land area of approximately 490 km², and a total marine area of approximately 616,000 km². Palau is divided into 16 states, including 10 states on the island of Babeldaob. Babeldaob is the largest island with more than 80 per cent of the total land area of the country.

The Palau Protected Areas Network

Biodiversity protection in Palau has been undertaken mainly through the establishment of protected areas. Biodiversity targets are identified, and an action plan with associated funding is developed to guide biodiversity conservation and resource management actions.

The Palau Protected Areas Network (PAN) is a nationwide network of terrestrial and marine protected areas that aims to protect areas of significant biodiversity, important habitats, and other valuable resources that are essential to the future social, cultural, economic and environmental stability and health of Palau. To date there are 13 PAN sites that consist of single and networked sites. These sites have a management plan that guides conservation and natural resource management efforts within their borders, implemented by site conservation officers employed at the state in which they are located.

A small number of terrestrial and marine species are on the IUCN Red List. Efforts to improve the conservation status of these species are usually carried out as part of protected area management plan implementation. However, a number of these species are charismatic and have generated sufficient public interest, leading to the development of a standalone conservation action plan for the species in question. One such species is the Palau megapode, a IUCN endangered bird whose conservation status is being imperilled by coastal erosion through storm surges and climate change. In 2013, efforts began to draft a conservation action plan to address the threats to the megapode's status. The plan has been completed and is now being integrated into protected area management plans of Kayangel and Koror States.

In 2011, the Koror State Rangers and Belau National Museum began an informal survey of the bird diversity of the Rock Islands Southern Lagoon UNESCO World Heritage Site (WHS). The preliminary results documented extensive activity of the endangered Palau megapode throughout the WHS. The outcome was a recommendation to conduct a full survey of the megapode population in the WHS in order to develop effective management strategies to conserve this important species and potentially valuable ecotourism attraction. In 2012, Palau Conservation Society coordinated a full survey of the megapodes of the site in partnership with the museum and rangers, with funding from the BirdLife International Community Conservation Fund through the Royal Forest and Bird Protection Society of New Zealand. Based on the results and recommendations of the two surveys, the Koror State Government included megapode conservation action items in their five-year management plan for the site.



LuxTonnerre on flickr

Milky Way

Palestine

Native Mediterranean forest represents 50 per cent of the total area, and appears to be increasing its coverage in some areas

Wadi Al-Quff Nature Reserve (WAQ) is a state-owned reserve located in Hebron Governorate, covering about 250 ha, and is one of the oldest natural reserves in the West Bank. The protected area (PA) on the western escarpment of the Hebron hills is an important part of the hydrological system that replenishes the western aquifer. Local communities collect various types of plants for traditional medicine, as well as edible plants and mushrooms for general consumption. These activities have reduced dramatically over the last 15–20 years and livestock numbers have also declined. The WAQ PA has a key role to play in addressing these issues.

Revitalizing an important nature reserve

The PA is located in the Mediterranean forests, woodland and scrub biome, one of WWF's Global 200 priority biomes for conservation. The area is a natural reservoir of wild species, contributing to the conservation of many species from extinction and playing a major role in the ecological balance in the region as the largest reserve in the south. It is also part of Conservation International's Global Biodiversity Hotspots in the Mediterranean Basin and falls within a global Centre of Plant Diversity. It has been designated nationally as an Important Bird Area.

The reserve is dominated by Quercus calliprinus and coccifera shrubland and other non-forest Mediterranean species. Large parts of the area were planted with introduced pines decades ago. While this was intended to help preserve the soil, it affected the local forest ecosystem and created an artificial environment not conducive to all autochthonous species. Native Mediterranean forest represents 50 per cent of the total area, and appears to be increasing its coverage in some areas. While these areas are dispersed, they could be expanded with appropriate forest management

The Environment Quality Authority of Palestine has taken the first steps towards establishing a national system of protected areas as a method to conserve the wealth of biodiversity by preparing a management plan for the WAQ PA. The plan comprises an analysis and evaluation of the information collected, while the management strategy defines the vision, management goals and objectives for PA management at the reserve, thereby setting the overall strategic framework.

The long-term vision for WAQ is that it will be a well-managed, protected area with healthy Mediterranean forest, shrub, and grassland areas that harbour rich flora and fauna with healthy populations of typical Mediterranean species. Palestinian and international visitors will visit, study and enjoy the reserve as a flagship example of Palestinian nature. Future conservation activities will be based on a work plan that consists of eight management programmes, and an investment and financial plan for the WAQ's first five-year management cycle.



Submitted by party

Regeneration of the native species nder the Pinus trees

Panama

With its 2,988 km of coastline and 66,405 km² of coastal waters, the country has unparalleled access to the flora and fauna of three different bodies of water — the Caribbean Sea, the Gulf of Chiriquí and the Gulf of Panama

Panama is located in the region with the greatest biodiversity on the planet, among the six known centres of global biodiversity, with high altitude variations that, under tropical climate conditions, favour a diversity of ecosystems containing 12 of the 30 Life Zones of Holdridge on the planet, in addition to the 24 categories of vegetation proposed by UNESCO and the seven additional categories that were included for the country that harbour a wide variability of ecosystems and habitats that allow the establishment of many species.

Strengthening institutional capacities to integrate biodiversity management

Following the participation of Panama in the Project "Support to terrestrial protected areas of Mesoamerica," implemented by UNEP within the framework of the partnership with the Lifeweb initiative, a process of valuation of ecosystem services and biodiversity was developed in the Volcán Barú National Park. After a participatory process and consultation with key stakeholders, the benefits of this area and its priority ecosystem services such as water, the provision of recreation and tourism opportunities, climate regulation and moderation of extreme weather events were identified. Tools and economic and legal mechanisms were developed to improve the management of this protected area, including sustainable agricultural practices.

With the UNDP-GEF project "Transversalizing the conservation of biodiversity in the operation of the tourism and fishing sectors in the Archipelagos of Panama," it has been possible to strengthen the systemic and institutional capacities to integrate the management of biodiversity into the activities of production, through the creation of opportunities for biodiversity-friendly investments, and through the strengthening of policies, legal framework and governance structures in the archipelagos of Panama.

The economic valuation of 25 protected areas has been developed by the Environmental Economics Unit of the National Environmental Authority. The Water Resources Authority of Panama has created three special coastal marine management zones: the Las Perlas Archipelago, the Southern Zone of Veraguas, and the Southern Zone of Azuero. In addition, two marine reserve areas have been established: La Marinera in the province of Los Santos, and Zona Matumbal in the province of Bocas del Toro; while a total of four coastal marine management plans have been prepared, with the declaration of two new reserve zones planned.

Also, training and the necessary coordination for the elaboration and implementation of Farm Management Plans within protected areas have been initiated.

Currently, the Authority of the Aquatic Resources of Panama (ARAP), through the Fisheries Management Programme of Reservoirs, monitors lake fishing activity at national level. In Lago Bayano, where artisanal fishing is practiced with greater intensity, a Cage Tilapia Project has been developed and carried out by a private company in agreement with the ARAP. At Lago Fortuna, it is in the process of approving its management plan, which will include an aquaculture component. In addition, the management plan, with emphasis on fishing and tourism, is underway at the reservoir of La Yeguada Hydroelectric.



Michael Klotz on flickr

Violet-Bellied Hummingbird

Papua New Guinea

Occupying less than 0.5 per cent of the Earth's landmass, Papua New Guinea is proud to be home to 6–8 per cent of the world's biodiversity

Considered one of the world's most biodiversity-rich countries, Papua New Guinea is also one of the last frontiers of biodiversity discovery and conservation. The country rivals Borneo, the Amazon and the Congo in terms of biodiversity wealth, hosting 6–8 per cent of global species and one-sixth of the world's known languages. Papua New Guinea comprises the eastern half of the largest tropical island on earth, along with hundreds of smaller outlying islands, its land mass occupying less than 0.5 per cent of the world's total. The interior comprises vast expanses of rainforest covering around 75 per cent of the country as well as spectacular highland valleys, grass lowlands, ancient swamps and mangroves. Mt. Wilhelm is the highest peak, at 3,600 m.

Papua New Guinea hosts 4.5 per cent of the world's known land mammals and is home to over 800 species of bird, and 25,000–30,000 vascular plant species. Between 1998 and 2008, at least 1,060 new species were discovered, including 218 plant, 580 invertebrate, 71 fish, 132 amphibian, 43 reptile, two bird and 12 mammal.

The Tree Kangaroo Conservation Programme

Following two decades of effort and experience, the Tree Kangaroo Conservation Programme (TKCP) has shaped the concept of community based conservation in Papua New Guinea (PNG). Together with the YUS Conservation Area, the country's first and only nationally recognized conservation area, the TKCP serves as a benchmark and national model for community-based conservation in PNG. The TKCP is the Woodland Park Zoo's signature international conservation programme, focused on conserving the endangered Matschiei's tree kangaroo (Dendrolagus matschiei) and its habitat in PNG's Huon Peninsula.

From its beginning in 1996, TKCP has evolved into a holistic programme supporting habitat protection for a wide range of threatened species, as well as initiatives to enhance local community livelihoods and access to government services. The programme has grown from its roots in mountainous areas to embrace a broad landscape encompassing marine and coastal reef ecosystems, lowland and montane rainforests, alpine grasslands, and the agricultural areas and settlements belonging to more than 50 villages within the Yopno, Uruwa and Som (YUS) watershed areas in the Huon Peninsula.

Together with local landowners in the YUS, the PNG government, Conservation International, and many other supporters, TKCP helped to establish Papua New Guinea's first nationally–protected Conservation Area in 2009.

Given an IUCN Protected Area category VI, the YUS is the first and only protected area of its type in the country, providing protection at the landscape level. It is wholly owned by the local people, and has the full support of the PNG government for long-term protection.

To encourage the creation of other nationally-protected conservation areas in PNG, TKCP and Conservation International have published "Lessons Learned from the Field: Achieving Conservation Status in Papua New Guinea" to serve as a guide for other PNG practitioners of community-based conservation projects.



Image: Brocken Inaglory, Source: Wikimedia Commons

Reefs in Papua New Guinea



Paraguay

The Paraguay River divides the country into two different natural regions: the eastern and western regions or the Paraguayan Chaco

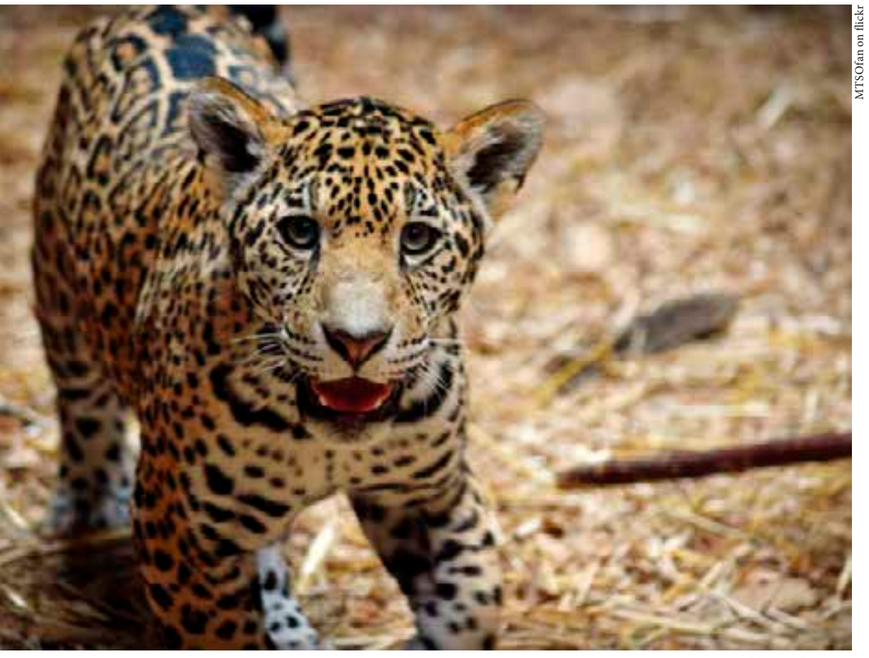
In Paraguay there is a high floristic biological diversity, due to four large ecoregions converging: the Alto Paraná Atlantic Forest (BAAPA), the Chaco, (dry and humid), the Pantanal and the Cerrado, which house a mosaic of very diverse ecosystems, a product of the evolutionary process of the past and current climates. The great diversity of species includes forest formations with high biological diversity, as well as wetlands integrated by a complex of pastures and forests subject to periodic flooding with a great diversity of migratory birds and fish. In these ecoregions it is estimated that there are about 8,000 to 13,000 species of plant and 100,000 species of invertebrate. Of these, 4,490 species of plant, 2,434 invertebrate, 297 fish, 681 bird, 182 mammal, 159 reptile, and 85 amphibian have been identified.

Conservation strategies for jaguars in Paraguay

The jaguar (Panthera onca), the largest feline in America, and once very abundant, is currently threatened. Where cattle and big cats both share the same territory, they are both in danger as the felines attack the cattle and, in retaliation, the cattle owners kill the felines. This is so common in the area of jaguar distribution that, together with the loss of habitat due to deforestation and the decrease of natural prey, the populations of jaguars in Paraguay are endangered. Between the borders of Bolivia and Paraguay there is an immense area of 120,000 km², which covers the territory between the largest protected areas of both countries, called the Jaguar Conservation Unit (UCJ) of the Gran Chaco, where the Wildlife Conservation Society (WCS) focuses its conservation efforts on the species.

The main objective of the WCS Programme in Paraguay is the conservation of jaguar populations in the Paraguayan Chaco, by reducing the conflict between jaguars, humans and livestock. The specific objectives are to: understand the patterns of behaviour, ecology and habitat through constant monitoring with camera traps; install and systematize the operation of antidepredatory systems where human-livestock conflicts have been identified; and disseminate the results to achieve the replication of techniques that are successful, and thus diminish the main threat to jaguar populations — the indiscriminate hunting of individuals in retaliation for events of attacks on livestock.

In a first stage, WCS carried out monitoring with trap cameras in six medium to large properties (between 4,000 and 40,000 ha) to understand the habitats and to verify the jaguars' presence and their potential natural prey. Subsequently, various antipredatory and attack mitigation techniques have been installed during the seasons considered to have the most attacks during the year, especially calving season. The study was disseminated among various groups of farmers and some of the neighbours to the sites where the techniques are installed, to view the effectiveness of them in the prevention of attacks. A protocol of action using these techniques has been presented to the Secretariat of the Environment in cases of conflict between jaguars and cattle, for their inclusion in the regulations of the recently approved law on conservation of the Panthera Onca.



MTSOfan on flickr

Young Jaguar



Peru

The forests of the low jungle, represent the most extensive forested region of the country and extend within the Amazonian plain below approximately 500 metres above sea level

The diversity of landscapes, natural regions, biomes, life zones, ecoregions, ecological levels and ecosystems, is one of the features that define Peru as one of the megadiverse countries of the world and the Andean mountain system therefore has a very important role in understanding the presence and distribution of this enormous diversity. The Andes is the longest tropical mountain range in the world, at 7,250 km, covering seven countries of South America, crossing the Peruvian territory longitudinally and rising rapidly to more than 6,000 m altitude, creating a complex combination of climates, soils and microenvironments that sustain a varied biological and ecosystem diversity. Within this framework, a great social and cultural diversity is also configured.

Recovery of wetlands in high mountain ecosystems of Huayana and Pomacocha

In the most vulnerable areas of the districts of Huayana and Pomacocha, there is a relationship between agricultural and livestock production systems and the provision of ecosystem services. The decline in the provision of these hydrological ecosystem services causes imbalance in the biological diversity of the area, affecting the development of productive and economic activities and the food security of these communities. The authorities of these districts therefore implemented actions to protect their branches and wetlands, and priority has been given to undertake actions for the protection and recovery of these ecosystems based on effective social participation as a basis for improving the value of ecosystem services and therefore the surrounding biodiversity.

The actions undertaken were the identification and participatory prioritization of wetlands and subsequent agreements with the communities, taking as the criteria those that would benefit the most; and the development of wetland recovery and restoration activities.

The actors involved are the District Municipalities of Huayana and Pomacocha and the Campesino Community of Huayana and Pomacocha, which are producers of Andean crops and recognized for the conservation of agrobiodiversity. They are officially recognized with administrative autonomy, and participated in actively monitoring the execution of the project. The successes have been:

- Social recognition of the importance of maintaining harmonious relations between productive activities and the maintenance of strategic ecosystems
- Reduction of the vulnerability of local populations and their production systems in the face of exposure to extreme drought events
- Strengthening the organizational capacity of the communities
- Recognition of the value of ancestral and traditional knowledge in the management and maintenance of a sustainable territory
- Rescue of ancestral practices around water and land
- Direct impact on economic profitability due to losses avoided.

In summary, Peru planned to protect 40 ha of wetlands and managed to protect more than 90 ha, with the active participation of the communal authorities and the population in general.



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Machu Pichu, Peru



Philippines

The Philippines holds the third largest coral reef area in the world, a total area of 22,500 km², representing 9 per cent of the total coral reef area globally

The Philippines in an archipelagic country with a total coastline of 37,008 km. With more than 60 per cent of the country's total population living in coastal areas, many small-scale artisanal, subsistence and commercial fishers depend on coastal and marine ecosystems like mangroves, coral reefs and their associated ecosystems as a source of food and livelihood. The country has a total land area of about 30 million ha, 5.45 million ha or 14.2 per cent of the total area of the country are protected areas, 4.07 million ha or 13.57 per cent are terrestrial areas, while 1.38 million ha or 0.63 per cent are marine areas.

Recognition of the role of indigenous peoples in governance

Biodiversity in the Philippines has been successfully implanted at the local levels. Traditional governance, as practised in Indigenous Community Conservation Areas (ICCAs), has long played a direct role in the conservation and maintenance of ecosystems and the species that inhabit them. There is increasing recognition of ICCAs by the international community, the national government and by the indigenous peoples of their role in this new governance regime.

A national consortium, Koalisyon Ng Katutubo at Samahan Ng Pilipinas (KASAPI), has been designated to establish the ICCA Network in the Philippines. More indigenous peoples' communities have expressed a wish to have their own ICCAs documented and mapped. Through the New Conservation Areas in the Philippines Project (NewCAPP), the experience of the recognition of ICCAs was presented during COP11 and was cited as pioneering and as one of the best practices in global initiatives on the recognition of ICCAs as a viable parallel approach to the governance of Protected Areas (PAs) and in the achievement of Aichi targets. Aside from ICCA recognition, the role of Local Government Units (LGUs) in local legislation and partnership with stakeholders in this effort are being strengthened.

The conservation and sustainable use of biodiversity concerns all stakeholders. It is important to harness the cooperation of LGUs and local stakeholders' organizations in the implementation of biodiversity–related programmes. This is addressed by ensuring that biodiversity conservation is mainstreamed into the LGUs' governance system, particularly in decision making, land use planning, zoning, investment planning and programme implementation. This also helps institutionalize the co-management of PAs, KBAs and Critical Habitats between the Department of Environment and Natural Resources and LGUs.

Through the Biodiversity Partnerships Project, a framework and methods for mainstreaming biodiversity into the Comprehensive Land Use Plans (CLUP) of LGUs has been prepared as a supplementary guide to LGUs. Among the various land use management options proposed to conserve biodiversity are: the assessment of the long-term implications of existing land uses on PAs, key biodiversity areas (KBAs) and critical habitats (CHs); integration of PAs, KBAs and CH zoning with Comprehensive Land Use Plan zoning; monitoring of KBAs and CHs and limiting agriculture and settlements to multiple use zones of PAs; and relocation of incompatible land uses within and in the periphery of CHs, KBA protection areas and PA core or strict protection zones. It is hoped that pilot LGUs will integrate and mainstream biodiversity into their land use planning process and that positive outcomes are realized.



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El Nido, Star Beach



Poland

The most important tasks of the parks are related to nature conservation, including protection of forest ecosystems, terrestrial non-forest ecosystems and aquatic ecosystems, as well as animals, plants and fungi

The protection of biodiversity in Poland is successfully implemented as part of the activities of the extensive network of 23 national parks. The Government supports numerous activities in the field of nature protection, scientific and educational activities as well as making valuable natural areas available for tourism. Significant achievements include the enlargement of the area protected in the form of national parks, the implementation of projects aimed at the restitution of selected species, and the sustainable use of natural resources in the form of cultural grazing of sheep and cattle to protect non-forest ecosystems.

The critical role of national parks

Poland's national parks cover a total area of around one per cent of the country. The most important tasks of the parks are related to nature conservation, including protection of forest ecosystems (60 per cent of the total area of all national parks), terrestrial non-forest ecosystems (28 per cent of the area) and aquatic ecosystems (12 per cent of the area), as well as animals, plants and fungi. National parks also run scientific and educational activities and in 2016, the number of people visiting education centres and museums in parks exceeded 980,000. They also ensure sustainable tourism provision in their areas. In 2016, parks attracted more than 13 million people and the length of the tourist routes in all parks exceeded 4,000 km.

Special achievements in the implementation of the Convention on Biological Diversity by national parks include creation of a new national park and enlargement of the area of several existing parks. There have also been successes in the implementation of projects aimed at restoration of populations of endangered or threatened species (peregrine falcon and apollo in Pieniny National Park, European pond turtle and aquatic warbler in Polaski National Park, and fir trees in the Stołowe Mountains and Karkonosze National Park).

Protection of particularly valuable ecosystems is another important function of parks, an example being the comprehensive restoration of a hydrological system in the Middle Basin of the Biebrza Valley in the Biebrza National Park. This involved large-scale engineering works aimed at restoring the most valuable wetland areas.

The stimulating effect of grazing on the development of inland sandy grasslands has been demonstrated by preventing their overgrowth. Due to the selective form of feeding by Polish konik, moderate selection is being carried out in the reserve to limit their population. This avoids the total elimination of some meadow plant species and the development of monocultures controlled by one species.

Parks also allow for the utilization of cultural grazing by native species of farm animals as part of the active protection of non-forest ecosystems in several areas. For example, in the Gorczański National Park area, the cultural grazing of sheep and cattle was reactivated by the Park in 2003 after several years of absence of these animals on the glades within the Park.



Bogusław Kozik

Apollo Butterfly

Portugal

The project aims to improve knowledge of the geographical distribution of native vascular plants, assess their extinction risk and publish the first Red List of vascular plants for mainland Portugal

Portugal's territory encompasses three biogeographical regions and its climate and hydrological processes, combined with centuries of human intervention, have resulted in a considerable diversity of species, ecosystems, landscapes and geology. The country is home to 35,000 plant and animal species, including a significant number of endemic and relic species. The compilation of Portugal's first Red List of Vascular Plants for mainland Portugal is an important step in preserving biodiversity among the country's flora.

A cooperative effort to identify endangered plants

Plans for a Portuguese Red List of Vascular Plants was drawn up in the mid-1990s, but only received approved European funding in 2016 for a mainland Portugal project. This paved the way for a two-year project to improve knowledge of the geographical distribution of native vascular plants and assess their extinction risk, leading to publication of the first Red List of vascular plants for mainland Portugal.

Due to time and budget constraints, only 620 plants were selected as the target taxa to be assessed for the project. This list of target plants includes all Portuguese endemic species and all legally protected species under the Habitats Directive, as well as plants with relevant geographic disjunctions, species almost endemic to Portugal and some taxa already known to be rare in mainland Portugal.

Starting with the database of the Flora-On platform, which contains geo-referenced observation records for numerous plants, the project focused on gathering reliable up-to-date fundamental information about each target plant. Emphasis was placed on collating data from Herbaria specimens, scientific-technical bibliography and fieldwork, to fill information gaps concerning distribution area, population size, conservation status, quality of habitat, threats and other factors. The project database currently holds more than 500,000 occurrence records.

An advanced data management platform with multiple innovative functionalities was developed specifically for the project. This collaborative platform facilitates sharing information in networks and has the potential to support other Red Lists, since it can be generalized to any taxonomic group or region and its open source code is open to expansion.

A major strength of the project is its collaborative working process, which aims to be inclusive of the whole Portuguese botanical community. The team comprises 14 technicians and 80 volunteer collaborators, including professors, researchers, environmental consultants and experienced amateur botanists.

At present, 487 out of the 620 target taxa plus 66 additional plant species have been assessed under the IUCN criteria and categories. Preliminary results suggest that 54 per cent of the 553 plants evaluated are threatened. Even among the 122 legally protected plants under the Habitats Directive, 42 per cent were listed as threatened in some way.

Ultimately, this project aims to be a landmark as a collaborative effort of the Portuguese botanical community and will create a solid base for future work in assessing the extinction risk of the entire Portuguese flora. The project is co-financed by the Cohesion Fund through the Operational Program for Sustainability and Efficient Use of Resources and by the Environmental Fund.



Ana Julia Pereira

Delft Blue (Nigella papillosa)

Qatar

Eight species of mammal, 242 bird, 29 reptile, one amphibian and 228 species of invertebrate have been recorded in the terrestrial ecosystems. The flora consists of 371 species of flowering plant

Qatar has an arid climate, hot between June and August and more pleasant between November and February. The country has very little variation in its geography, most of the surface being plain with small, scattered carbonate mountains in the north and sand dunes in the south-east. The remaining areas are either stony or soft soil. The flora and fauna are unique and well adapted to the hot and arid environment. The basic habitat types include mangroves, sabkha, sand dunes, Hammada desert (rocks and gravel), rocky ecosystems, wadies and runnels, and depressions that collect fine sand. Approximately 1,900 wild species have been documented, including 1,000 terrestrial and 900 marine species.

Harmony between economic growth, social development and environmental protection

Qatar's National Vision 2030, developed in 2008, rests on four key pillars: human, social, economic and environmental development. In the fourth pillar, the national vision is to manage the environment such that there is harmony between economic growth, social development and environmental protection: "The State of Qatar seeks to preserve and protect its unique environment and nurture the abundance of nature granted by God. Accordingly, development will be carried out with responsibility and respect, balancing the needs of economic growth and social development with the conditions for environmental protection." Biodiversity conservation relates to all four of the national vision's key pillars; without nature and natural resources there can be no social or economic development.

Legislation has been enacted to deal with habitat protection and species conservation, addressing issues such as overgrazing, hunting, and wildlife trade. Programmes are being pursued for the protection of endangered species such as marine turtles and the mangroves on the east coast.

Qatar has established five terrestrial protected areas (PAs) accounting for about 18 per cent of total land area, and three marine PAs, nearly all habitat types being represented in the PA network. Also, two new sites are being proposed for designation as PAs.

Qatar has achieved a substantial increase in the coverage of the PA system by the designation of new areas. Several PAs serve as sites for the restoration of endangered wildlife species through reintroductions. The restoration of the wild-extinct Arabian oryx constitutes a remarkable model in this respect. A small founding herd was successfully bred in captivity at the Arabian oryx Breeding Centre and animals from this stock were reintroduced in three reserves: Shahanya, Ushaijrij and Almazhabyah. The Rheem gazelle that became locally extinct was also reintroduced following successful captive breeding. The reintroduced populations have grown to 650 Arabian oryx and 3,500 Rheem gazelles. The past reintroductions, however, have been in fenced reserves, and now they are being released into open protected areas as fully free ranging animals.

The research work in the PAs is being expanded and management plans are being revised. SCENR is also seeking ways to improve local community participation in the management of PAs.



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Hoopoe

Republic of Korea

In 2017, a total of 49,027 species were recorded, representing a 72 per cent increase compared to the first national survey's outcome in 1996

Established under the Ministry of Environment in 2007, the National Institute of Biological Resources (NIBR) researches and manages Korean biological resources. Through nationwide surveys and research, NIBR identified a total of 49,027 Korean indigenous species in 2017, twice as many as in the 1996 biodiversity status (28,462 species). As part of the country's ongoing efforts to implement its National Biodiversity Strategy, the Republic of Korea has made this information available in a national biodiversity information sharing system, contributing to global efforts to conserve biodiversity and achieve the Aichi Biodiversity Targets.

Sharing information on indigenous species

Since its inception, NIBR has contributed to national policy development and international cooperation by establishing national databases on Korean biodiversity. It has also provided biodiversity education programmes and exhibitions for public awareness.

NIBR maintains a National Species List, based on species information from scientific journals and academic publications. The collected species information is reviewed by the National Biodiversity Committee and is consolidated and published as a series. It is freely available to the general public in paper and electronic form. The National Biodiversity Information Sharing System also provides the current status of Korean indigenous species so that people can search for specific information on each species. In particular, the National Species List covers all species that are subject to or require national management.

The establishment of the National Species List is designated as a national task in accordance with Article 10 of the Act on the Conservation and Use of Biological Diversity. A search interface contains precise data on scientific names, common names and taxonomic orders of each species for institutions, academics and the general public, to reduce incorrect identification of Korean indigenous species. The list also provides Korean Taxonomic Serial Numbers (KTSNs) for efficient management of biological resources at the national level, offering the basis for effective and consistent implementation of international legal instruments such as the Nagoya Protocol on Access and Benefit-sharing.

Research has taken place on a national scale over the last 12 years to discover new and unrecorded species in Korea, with the investment of about 50 billion Korean won. Over 300 researchers participated in this research, which identified 13,578 new and unrecorded candidate species. There was a particular focus on species such as insects, invertebrates, algae, and protozoa, which had been relatively undiscovered due to a lack of professional researchers and funds.



Arnie Chou on Unsplash

National park

Republic of Moldova

There are approximately 15,000 species of animal. The Botanical Garden (Institute) of the Academy of Sciences of Moldova has a plant genetic fund of about 11 thousand species

Biodiversity in the Republic of Moldova is conditioned by its geographic position. Its territory is situated at the junction of three biogeographic zones: Central-European, represented by the Central Moldovan Plateau (maximal height 430 m) with the largest forests in the country (codru woods), and where communities of important spontaneous plants and wild animals are preserved; Eurasian, represented by forest steppes and steppes regions; and Mediterranean, represented by fragments of xerophyte forest steppe in the south of the country. Many populations are situated at the extremes of the natural areas of species, which increases vulnerability to climate change.

The expansion of protected areas and ecotourism

Since adoption of the CBD, the Republic of Moldova made great efforts to expand its protected areas, resulting in a booming ecotourism industry. The extent of protected areas (PAs), before the wetlands were taken under protection for their international importance, was just under 2 per cent of territory.

The largest expansion of protected natural areas was done in 2006, with the inclusion of the RAMSAR Wetlands of International Importance, and especially the Lower Prut Lakes, Lower Nistru and Unguri-Holoșnița districts, which increased the percentage of protected natural areas up to 4.65 per cent. The foundation, in 2013, of the Orhei National Park resulted in the expansion of the total surface of protected natural areas, to almost 6 per cent of national territory. Several state institutions and NGOs actively participated in the expansion.

The Republic received essential support from the Global Environment Facility by implementing the project: "Improving Coverage and Management Effectiveness of the Protected Areas System in Moldova," conducted between 2009–2013. A set of recommendations were proposed regarding the elaboration of statutes and objectives of management of natural protected areas according to the IUCN practices. The result was an increase in the interest of ecotourism, as the number of visitors to PAs increased from 6,266 in 2008 to 9,020 in 2010. Ecotourists increasingly appreciate places where natural resources are protected, with tourists being beneficiaries of cultural services such as landscape and recreation. Most tourists are attracted by the beautiful landscapes, rich flora and traditions kept in the Moldovan villages. Undisturbed ecosystems will continue to attract tourists while their willingness to pay for biodiversity conservation is increasing. The ecotourism sector is estimated to have a total value of US$ 5.9 million in 2011 and a projected value of US$ 79.8 million in sustainable ecosystem management services. In 2011, the contribution of ecotourism at national GDP was estimated at US$ 7.9 million. In 2011, both the public and the private sector benefited from the values of ecosystem services. For example, 13 per cent of the value was earned for the national budget, while 78 per cent (US$ 4.6 million) was earned by private enterprises. Capital investment from international sources has been US$ 1.4 million, along with the creation of some 1,400 full-time jobs.



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Lonely Tree

Romania

A high level of diversity of habitats reflects a high diversity of flora and fauna species, including 3,795 species and subspecies of vascular plant

Romania is located in Central Europe, in the Danube watershed and Black Sea basin, equidistant from both the North Pole and the Equator and from the Atlantic Ocean and the Ural Mountains. The diversity and relatively balanced proportional distribution of the forms of relief — 28 per cent mountains, 42 per cent hills and plateaus, and 30 per cent plains — are unique features for Europe and rare at the global level. The territory of Romania includes Continental, Alpine, Pannonian, Black Sea (Pontic) and Steppic (only present in Romania) biogeographic regions. The Black Sea bioregion includes not only the coastal platform but also the Romanian territorial waters plus the exclusive economic area, under the EU Framework Marine Strategy. Romania also includes 54 per cent of the Carpathian Mountains range, while 97.8 per cent of the national river system drains into the Danube.

Expanding the National Ecological Network of protected areas

Significant progress has been achieved in the implementation of the national targets for biodiversity, objectives of the Convention on Biological Diversity and the Strategic Plan for Biodiversity 2011–2020, including, expanding the National Ecological Network of protected areas (PAs) including Natura 2000 sites and improving their management

At the time of adoption of the new protected areas law in 2000, the provisions for designation of new PAs and IUCN categories become available which made the process of designation very clear and easy to understand. This has resulted in a very dynamic process of designation, with more than 120 new PAs, included in all IUCN categories. This process decreased in the late 2000s, mainly because of the entering into force of Natura 2000, which became a priority. Nevertheless, the period saw the designation of three PAs of national interest: Cefa Natural Park (category V); Prundu cu Păsări Island; and Ceaplace Island — both inside the Danube Delta Biosphere Reserve and category Ia. All of these PAs were the results of two conservation projects. The total of national PAs declared by Romania are: the Danube Delta Biosphere Reserve; 13 national parks; 15 natural parks, of which are two geo-parks; and 925 scientific reserves, natural reserves and natural monuments.

As a Member State of the EU, Romania has to establish and strengthen the Natura 2000 network on its own territory. Natura 2000 areas cover 22.7 per cent of Romanian territory, 383 sites of community importance and special scientific interest, and 148 special protection areas designated at national level.

One of the most important achievements of the current reporting period is the strengthening of the management system in Natura 2000 sites. Even if the capacity of public authorities are decreasing, especially in terms of staff, the management of PAs has been improved by involving administrators and custodians. These are represented by various stakeholders, and have an obligation to ensure the management of PAs according to legislation and draft management plans. At the end of current reporting period, the Ministry of Environment and Climate Change had signed 43 contracts and 289 custodian conventions for the administration of PAs with various custodians and administrators.



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Romania

Russian Federation

The endangered animal population has recovered, urging the Russian Federation to reduce the Red List by 50 taxa between animal and plants

Russia is the largest state on Earth, with rich natural and intellectual resources. Climate-related irregular development has contributed to the conservation of flora, fauna and ecosystems in a near-wild state in most areas and a system of protected areas has been functioning for about 100 years. Rational use of hunting and sea biological resources has been established and the country has made significant achievements in the ecological efficiency of agriculture. Over 60 per cent of the Russian area is distinguished by pristine habitats of plants and animals. The number of endangered animal and plant populations has also dropped.

A strong tradition in conservation

The Russian Federation has been involved in a range of successful activities aiming to conserve biodiversity in recent years. The introduction of the concept of biodiversity into conservation practice in Russia has strengthened the justification for spatial conservation development in the country through the establishment of an effective and representative network of protected areas of different categories. Several new protected areas have been established and there are also Federal natural sanctuaries such as Gazelle Valley and Pozarym (2011).

The implementation of the programme of the Emerald Network in the European part of Russia identified a network of Areas of Special Conservation Interest formed under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), including up to 740 areas altogether.

Two new UNESCO World Natural Heritage sites have been established: the Putorana Plateau in 2010 and Lena Pillars in 2012. Currently five other nominations to UNESCO World Natural Heritage sites have either been developed or are under development, implying significant benefits for nature conservation.

Forest certification in Russia has progressed in accordance with the Forest Stewardship Council (FSC) and 25 per cent of forests have already been certified. In addition, the concept of ecosystem services has become embedded into standard conservation practices as well as the country's project for The Economics of Ecosystems and Biodiversity (TEEB) programme.

The Russian Federation Initiative began a consultation process in 2012 on the inclusion of carbon-accumulating ecosystems (bogs, tundra, and steppes) for the post-Kyoto Protocol agreement of the United Nations Framework Convention on Climate Change.

The population of many animal species, including some on the International Union for the Conservation of Nature Red Lists, has increased. The Red List of the Russian Federation has been reduced by 50 taxa of plants and animals as some species improved their conservation status. Various national strategies on rare species conservation have been developed or are under implementation.



Image: Daniil Silantev on Unsplash

Winter landscape south of the Ural Mountains

Rwanda

Rwanda is one of the top birding countries, with 670 bird species recorded in the country

Although Rwanda is a small country of 26,338 km², it has a remarkable variety of ecosystems. The country has Guinea-Congolese and Sudanese vegetation types, which include savannah with grasses, bushes and trees as well as mountain rainforests and mountain meadows. Forest galleries, swamps and aquatic vegetation also prevail. The country is located within the centre of the Albertine Rift in the western arm of Africa's Rift Valley, which is one of the continent's most biologically diverse regions. Rwanda has a well-established network of protected areas, consisting of three national parks (all of which are transboundary) as well as forest reserves, wetlands of global importance and forests of cultural importance.

Reforestation of the Gishwati Forest Reserve

Between 1933 and the mid-1970s, the Gishwati natural forest reserve constituted the relic of the ombrophyllous montane forests and covered approximately 280 km². In the early 1980s, Gishwati lost 100 km² through conversion to pasture and another 100 km² to pine plantations. Population growth in the area during the 1980s led to demand for grazing, settlement, cropland and fuel food. Gishwati was further deforested for cattle ranching development, followed by the resettlement of refugees after the 1994 genocide, when land was degraded due to the free-grazing of livestock, crop-farming exploitation and plantation of non-native tree species.

Consequently, in 2005, more than 90 per cent of Gishwati was cultivated and the remaining remnant forest covered 600 ha. The forest reserve had lost most of its natural habitats and rich biodiversity and was plagued with flooding, landslides, erosion, decreased soil fertility, decreased water quality and heavy river siltation, all of which aggravated poverty within the population surrounding the ecosystem.

Recently, through various management plans, the Gishwati natural forest reserve has gradually been restored. In 2005–2006, with efforts by the Forest Conservation Project to restore the forest, 286 ha were added. Additionally, from 2008 to 2011, the Great Ape Trust/Gishwati Area Conservation Program worked on conservation and restoration of the Gishwati Forest Reserve and reforested more than 598 ha using indigenous species. This increased the current Gishwati Forest Reserve surface to an estimated 1,484 ha.

A grassroots organization, Forest of Hope Association, has been established in the Rutsiro District to help the local community play an active role in the protection of the Gishwati forest, through the establishment of a Community Forest Protection Initiative. This has prevented the illegal use of forest resources due to the commitment and collaboration of all stakeholders including local communities. The area has been divided into a natural forest area, cattle ranching farms, rangeland and a cultivated area for crop production.

Since 2016, the Gishwati Forest, together with another local remnant forest, Mukura Forest Reserve, has been upgraded to the Gishwati-Mukura National Park. The Government has mobilized funds to restore and rehabilitate the landscape and to increase its resilience through a forest landscape approach. The cultivated site is now regenerating due to implementation of sustainable land management techniques, including the planting of native agroforestry species.



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The Landscape Approach to Forest Restoration and Conservation (LAFREC) Project

St. Kitts and Nevis

The Federation has embarked on a project that aims to expand and strengthen the terrestrial and marine protected area system and reduce habitat destruction in areas of influence that negatively impact ecological functioning

A key economic pillar of the Caribbean twin-island Federation of (St. Christopher) St. Kitts and Nevis is tourism, which has a reciprocal relationship with the environment. The Federation has embarked on a project that aims to expand and strengthen the terrestrial and marine Protected Area (PA) system, and reduce habitat destruction in areas of influence that negatively impact the ecological functioning of these areas. The St. Kitts and Nevis Conserving Biodiversity Reducing Habitat Degradation in Protected Areas and their Areas of Influence Project is funded by the Global Environment Facility (GEF) with support from the United Nations Development Programme (UNDP). It will be implemented by the Ministry of Agriculture, Marine Resources, Human Settlement, Cooperative and Environment, through the Department of Environment.

Reducing habitat degradation in protected areas

Current Government efforts are focused on strengthening the protection and management of an expanded PA Estate, including operationalization of existing and new sites. By the end of 2019, an operationalized Terrestrial Protected Area Estate will comprise Central Forest Reserve National Park, Royal Basseterre Valley National Park, Nevis Peak National Park, Camps River Watershed Area and Booby Island Nature Reserve. In addition, three declared Marine Management Area (MMA) Conservation Zones contribute to this marine Estate.

The Government of SKN, through the Conserving Biodiversity project, is also focusing its efforts on improving ecosystem representation in designated areas. The project will establish and strengthen management operations at key sites as well as institutional, policy, legal/regulatory, information and financing frameworks. These existing and recently operationalized sites will be managed by a new institutional structure dedicated to management of PAs.

Some of the Government's efforts through the project are to establish a baseline biodiversity and ecosystem baseline, through terrestrial and marine ecological inventories. The Environment Awareness Group (EAG) will conduct scientific research for the justification and compilation of a list of terrestrial habitats, flora and fauna in need of national conservation and protection in St. Kitts and Nevis. EAG has designed and is implementing the ecological and biodiversity inventories at Booby Island, Central Forest and Nevis Peak.

During the coming months a team of scientists from the United Kingdom will be working with the Department of Marine Resources, Department of Fisheries and Department of Environment along with other organizations to assess the ecology and biodiversity of three proposed conservation areas around St. Kitts and Nevis. Using underwater video, they will record information on the flora and fauna which inhabit the seabed. The project will assist the Federation in strengthening its commitment to the requirement of Aichi Biodiversity Target 11. At the local level, public sensitization and capacity development are assisting residents in becoming more knowledgeable about their environment while giving them a forum to share their local knowledge on biodiversity.



Mark Yokoyama

St. Kitts and Nevis

St. Lucia

Saint Lucia has known successful species restorations, notably for the Saint Lucia parrot, the latanyé palm and the Saint Lucia whiptail lizard

Saint Lucia is a small volcanic island located within the Lesser Antillean Arc of the Caribbean Archipelago. The country is characterized by steep, rugged landscapes with deep valleys and fast flowing rivers. Surrounded by the Atlantic Ocean and the Caribbean Sea, the island's coastlines, particularly the east coast, are deeply indented by near-vertical cliffs with a number of narrow sandy beaches. The island's tropical location has endowed it with a number of habitats, and rich terrestrial and marine biodiversity. Some of these biological resources are endemic to the country — more than 200 species occur nowhere else, including 7 per cent of the resident birds and 53 per cent of the reptiles.

Success of the Soufriere Marine and Piton Management Areas

The Soufriere watershed and coastal region is located in an area that is very ecologically diverse and with an economy predominantly based on agriculture, fishing, and tourism —now the main growth sector in Saint Lucia. In 1999, conflicts between tourism users and traditional users in the fishing and agriculture industries gave rise to the legal declaration of marine reserves and fishing priority areas, including the Soufriere Marine Management Area and the Piton Management Area (PMA). The sustainable development framework for Soufriere identified protected areas as a means for conserving biodiversity and other natural, cultural and historical resources.

More recent efforts to address these issues and conflicts have placed greater emphasis on increased community participation in development, and the establishment of a sound institutional framework, with initiatives such as the preparation of a land use plan for the Soufriere region, the establishment of a community-based organization known as the Soufriere Regional Development Foundation and the establishment of the Soufriere Marine Management Area (SMMA). The inclusion of the PMA on the World Heritage List represents the culmination of these pioneering and innovative efforts.

The SMMA management framework is fully participatory, comprising a board and stakeholder committee, a key functional mechanism in the management of the SMMA demonstrating a prototype for public-private sector partnerships in natural resource management, particularly at community level. The stakeholder committee demonstrates how co-management can assist in promoting regulatory legitimacy and compliance in light of limited resources for monitoring and enforcement.

The achievements of this management response have been numerous, including the co-existence of users with minimal conflict; a general increase in fish stocks in marine reserves and fishing areas and a reflection of these increases in fishermen's catches; self-sustainability with regards to operating costs; international recognition; community support; and an enhanced awareness in resource users.

A number of lessons have been gained from this management response. Notably, that the adoption of an ecosystems approach requires a consultative and participatory process of resource management. This has led to the enhanced co-existence of users in a shared coastal zone, and increased commitment to the conservation, sustainable use and more equitable sharing of benefits from the use of resources of the SMMA. Furthermore, involvement of community members and resource users has helped to increase ownership for the SMMA initiative, through the direct involvement of resource users in management and has provided the forum for open and continuous communication and information exchange.



Catherine Edmund

St. Lucia

St. Vincent and the Grenadines

The islands harbour 1,150 species of plant and 163 of fern, including 15 endemic flowering plants and 4 ferns, 7 species of amphibian, over 20 of reptile, 170 of bird, 22 of mammal, and 516 species of marine biodiversity

St. Vincent and the Grenadines is an archipelagic state in the Eastern Caribbean. The main island, St. Vincent, is located to the north of the island archipelago. The Grenadines, a chain of 32 islands and cays, lie to the south, between St. Vincent and Grenada. The diverse physical features and climatic conditions of St. Vincent and the Grenadines have resulted in a variety of ecosystems such as forest, grassland, wetland, coastal and marine, which harbour and sustain high biodiversity and contribute to human wellbeing. To date, the country has recorded some 14 endemic animals, 19 endemic plants and 29 regionally endemic tree species.

Innovations in reforestation

In 1982, the World Resources Institute determined that St. Vincent and the Grenadines possessed some of the largest examples of relatively unaltered tropical rain and cloud forests in the Lesser Antilles. Most of St. Vincent's natural forest is found in the island's conservation corridor within the central mountain range. The forest inventory completed in 1993 indicated that the total forestland area was approximately 12,683 ha and consisted of primary rainforest (4,306 ha), secondary rainforest (3,450 ha), and dry scrub woodland (2,178 ha).

In 2004, it was estimated that the islands contained about 12,748 ha of tropical forests representing approximately 29 per cent of the land area. Natural forest constituted about 70 per cent of this area with planted forest and agro-forest representing about 25 per cent and 5 per cent, respectively. Now, there is concern for the status of the islands' forest. Forest loss is estimated to be at a rate of 3–5 per cent annually, due primarily to the encroachment of banana cultivation and illegal farming. The Forestry Department continues its reforestation efforts within upper and middle watershed areas, with the aim of increasing forest cover for soil and water conservation. Examples of such efforts include the reforestation of unstable lands and those unsuitable for agricultural activity within the Cumberland Forest Reserve, with the aim of preserving forest, protecting against sedimentation and improving the overall hydroelectric potential of the watershed. Further, reforestation efforts in the Montreal Watershed resulted in reduced land slippage and soil erosion and water sedimentation.

In the past, reforestation efforts were concentrated in areas reclaimed from agricultural activity. Today the focus is also on areas reclaimed from marijuana farming. Mahogany (Swietenia macrophylla and S. Mahagoni), and blue mahoe (Hibiscus elatus) are the prime species planted in reforestation activities. There is also a thrust towards establishing mixed plantations and agroforestry stands, allowing for the inclusion of indigenous forest species and agricultural crop trees.

Exotic and indigenous plantations help to meet increasing demand for local timber, poles, fuelwood, charcoal and handicraft species. Their production, however, has been a low priority because planting efforts were committed to 'protection' rather than 'production' forests. Some 142 ha of plantations have been established by the Forestry Department under its reforestation programme and are primarily located in Cumberland, Perseverance and Vermont Valleys



dchris on flickr

Petit Tabac

Samoa

42 per cent of average households contain at least one fisherman

Biodiversity is the ecological foundation of the life support systems on which Samoa exists. The diversity of its species, ecosystems and genetic information in animals, plants and microscopic life forms provide biological resources and the ecosystem services that are fundamental to the country's physical, social, cultural and economic wellbeing. For a human population where 72 per cent of households are agriculturally active, agro-biodiversity species such as taro, bananas and breadfruits are major contributors to food security, local incomes and export revenues. There is a similar dependence on marine species as a source of income for 25 per cent of all households. Many plant species are used for traditional medicines, building materials, fuel, and raw material for handicrafts, traditional canoes and many wooden implements.

Ecosystem management

The management of native and endemic species of high conservation value made notable progress, especially for birds with the BIORAP which sought to ascertain the status of the critically threatened puna'e, tuaimeo, ma'oma'o, and manumea. The lack of confirmed sightings for some species is a concern but suggests that surveys should continue. There is also now a strong case for a captive breeding programme for those species where sufficient individuals may be found, as the only remaining option for saving them. This is a direction the National Biodiversity Strategies and Action Plans should now consider, an idea that has previously been mooted by the Ministry of Natural Resources and Environment using the Aleipata Islands.

Other species are well documented in the IUCN's Red List of Threatened Species and Samoa must collaborate and provide regular information for this list to be kept up to date.

Samoa's flora does not have flagship species that can be said to be similarly threatened with extinction, possibly because of a lack of research and information. But species such as ifilele, and poumuli are not yet in any danger of extinction, although existing biomass has dwindled significantly below safe levels. Other native species, including malili, tava, and pau, have been genetically improved under the SPRIG project and mass produced in forestry nurseries. The mangrove species, grantum (Xylocarpus moluccensis), is recommended by the National Environment Sector Plan for priority conservation action including the option of ex-situ conservation.

Samoa's knowledge of marine species has increased but is an area in need of continued research. There are on-going monitoring activities for marine turtles with targeted activities to protect nesting beaches, and these activities require continuing support. Inshore fisheries appear to be more regularly monitored for biomass and species diversity and monitoring results have led to the reintroduction of species such as clams and trochus in some villages where local extinctions were observed.

Several other species monitoring activities are reported, reflecting the interests of outside institutions and scientists. Foreign interest is an important source of expertise and funding that would otherwise be inaccessible. Likewise, continued collaborations with international organizations including Conservation International, BirdLife International and the Pacific Islands Roundtable for Nature Conservation have produced mutually beneficial associations.



NeilsPhotography on flickr

The Toe Sua Ocean Trench

San Marino

The Republic of San Marino is improving the conservation status of the 17 species of bats present on the national territory through the EUROBATS programme

The Republic of San Marino is located around 15 km from the Adriatic Sea on the northern ridge of the Romagna Apennines. The territory is heavily anthropized and urbanized, with numerous elements of interest from a naturalistic point of view, constituting a complex landscape. Despite its limited territorial dimension of 61 km2, San Marino boasts a great variety of natural environments and micro-habitats and a rich heritage of biological, geological and landscape diversity. The country has been adopting environmental legislation aimed at promoting sustainable development which does not threaten the quality and quantity of natural heritage and reserves.

Biodiversity education and training in schools

In line with European directives and the goals of the Convention on Biological Diversity, San Marino has established protected areas to safeguard rare biological species. There have also been several studies of the state of the environment and biodiversity, vertebrate and invertebrate fauna, vegetation, and the quality of water, air and soil. As a result, knowledge of the state of conservation of the country's natural and semi-natural ecosystems is now fairly comprehensive. At the same time, regular education, training and awareness-raising actions are carried out by several stakeholders.

In recent years, San Marino has invested significantly in education and training concerning the environment, climate change and the importance of biodiversity, developing a wide range of activities aimed at promoting knowledge of the natural environment. In San Marino schools, environmental education involves the understanding of relations with or within the ecosystem, active citizenship through participation in social processes, and sustainability.

The purpose of the country's Environmental and Sustainable Development Education programme is to substantially change individual and collective behaviours and attitudes. Many environmental issues have been included in the curriculum guidelines for San Marino schools, providing a fundamental reference tool for the local curriculum. This includes a series of interdisciplinary programmes closely linked to the territory and adopted by all school grades.

School activities are based on two common elements: to live the environment in order to be able to appreciate it, and to recognize the impact of everyday behaviour on the environment. In kindergarten (3–6 years), the programme is mainly focused on experiences and games, as well as on space and time dimensions as key parameters to understand the interdependence of environmental components. In elementary school (6–11 years), children learn how to protect ecosystems and recognize the effects of human activities on the environment. In junior high school (11–14 years), children become acquainted with specific terms and cause-effect relations. With regard to climate change, students learn to assess the global impact of technologies and products on the environment. In high school (14–19 years), students are invited to adopt a complex and comprehensive point of view in their analysis of the San Marino landscape in order to develop their skills to correlate local and global aspects.



Wikimedia Commons

The towers of San Marino on the three peaks of Monte Titano

Sao Tome and Principe

A total of 148 plant species are endemic to the country, of which 50 are present on Príncipe and 123 on São Tomé. 25 are endemic to both Islands

Located at the Gulf of Guinea, the archipelago of São Tomé and Príncipe (STP) has a volcanic origin and consists of two islands and several islets. The two main islands cover an area of just over 1,000 km² (São Tomé with 859 km² and Príncipe with 142 km²). On the whole, the country is mountainous, with the higher proportion below 800 m. The highest point is the Pico of São Tomé, reaching 2,024,m above sea level. Despite having a relatively small area, the particular orography and geographic situation led to the speciation of a unique biological diversity, with various types of ecosystems and endemic species.

Benefits of in-situ and ex-situ conservation methods

In-situ conservation — the conservation of plants and animals in their natural communities — is a fundamental part of a country's system of conservation of its genetic resources, since it ensures that natural evolutionary processes, and changes, resulting from the interaction with the physical and cultural environment, are maintained, allowing the generation of genetic variation resulting from the adaptation to the environmental and social changes.

When this process is not possible, ex-situ conservation is practiced by removing part of the population from the threatened habitat and carrying it to a new location, which can be a wild area such as a sanctuary or a captive area such as a zoo, botanical garden or other similar site.

Implementing efforts to enhance in-situ conservation, the government of São Tomé and Príncipe created four protected areas, corresponding to 30 per cent of national territory. This is the case of Obô Natural Park of São Tomé and the Príncipe Natural Park, whose task it is to protect the great mountain and lowland ecosystems, as well as the respectively associated species on the STP archipelago. The protected areas ensure that the remaining dense forests and rugged relief is maintained, uninhabited and relatively pristine.

The Integral Reserve of Tinhosas Islets (15 ha) was then created, together with the Reserve of Rolas Islet, (6 ha). From a biological and natural-istic point of view, among other objectives, these protected areas aimed at the preservation and conservation of coastal forest and marine ecosystems, as well as the promotion of the orderly use of the territory and its natural resources, in order to ensure continuity of the evolutionary processes that have occurred over several million years. There have been also some efforts to conserve some species ex-situ, to ensure the genetic preservation (and potential) of endangered species in their natural habitat.

The country already has a botanical garden with more than 400 specimens of endemic flora, and a herbarium with more than 1,000 plant samples collected during several botanical expeditions inside the parks. The objective of creating the botanical garden (associated with the herbarium) was to encourage tourism and recreation, gather phenological data, environmental education, the teaching of systematic botany, awareness of conservation, and the ex-situ conservation of endangered species, through a set of live samples for scientific research.



Caroline Granycome on flickr

Blue Waxbill

Saudi Arabia

Approximately 87 species of reptile and amphibian recorded in the Arabian Peninsula are not found elsewhere. There are over 250 species of bird, 26 per cent of which have ancient polar origins, 25 per cent tropical African origins, and only 3 per cent Eastern origins

With a land area of approximately 2,150,000 km², Saudi Arabia is the largest country in the Middle East. It is bordered by Jordan and Iraq to the north, Kuwait to the northeast, Qatar, Bahrain and the United Arab Emirates to the east, Oman to the south-east and Yemen to the south. It is the only nation with both a Red Sea coast and a Persian Gulf coast, and most of its terrain consists of arid desert, lowland and mountains. Saudi Arabia's biodiversity reflects its geographical position between Africa, Asia and Europe. There are 2,250 species of flowering plants of which some 246 species are considered regionally endemic. There are 93 mammal species, 432 bird, 9 freshwater fish, 103 reptile and seven amphibian species found in the country.

Awareness-raising campaigns in schools and wild honey production

Saudi Arabia's youth population is considered to be high, with those under the age of 15 representing over 29 per cent of the population of 27 million. Education is prioritized as an awareness-raising tool for national heritage, including the environment and its natural resources. In an effort to achieve the Convention on Biological Diversity's target on awareness-raising, Saudi Arabia has put in place a number of strategies, one of which is a 10-year strategy led by the ministry of education, in collaboration with other stakeholders such as the Saudi Wildlife Authority. This strategy includes awareness-raising campaigns in schools, the most prominent of which was "We Protect it to Grow", a campaign started in 2006 in which over 8,000 children from around the country participated.

Wild honey production

The production of wild honey is one of the most successful practices using natural resources in Saudi Arabia because it is a measurable, sustainable activity that yields tangible and direct benefits to local communities and also has a positive influence on conservation of terrestrial ecosystems

Historically a number of ancient protected areas were established for honey production as it is dependent on the flowering of native plants and trees, and, within them, grazing was prohibited during the flowering season or excluded all together. A number of these areas continue to be well maintained because of the high economic value of wild honey. Production thus competes successfully with other natural resource uses such as pastoralism, and has effectively discouraged overgrazing of rangelands in areas where it is practiced. The production of wild honey serves as an environmental indicator of healthy plant communities.

The most important environmental impact often associated with honey production is the felling of dragon trees, the trunks of which are hollowed out for making hives. Another negative impact is the importing of bee colonies from other continents, a practice that may destroy most of the local bee populations and cause a drop in the quality of the local product. A few simple regulations to prevent negative impacts are required to make wild honey production a model resource use that should be encouraged in all protected areas that are suitable for such activity.

The Saudi Wildlife Authority also releases the awareness-raising Al Wadihi magazine, to highlight the country's environmental issues, which has proven to be an important tool for garnering public support on biodiversity-related targets and policies



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Dareen Beach, Al Jubali

Senegal

Since 2012, marine protected areas increased from five sites to 11, and over 60,0000 ha of mangroves were reforested. In April 2018, observation of elephant was registered in Niokolo-koba National Park

Located at the far west of the African continent, Senegal covers an area of 196,712 km² with a 700 km-long coastline that runs along the Atlantic Ocean. It features three main phytogeographical regions: Sahelian, Sudanese and Guinean, represented mainly by steppes, savannas and forests. The country is subdivided into six ecogeographical zones: the valley of the Senegal River, the silvo-pastoral zone of Ferlo, the Niayes zone, the peanut basin, Casamance, and the eastern Senegal area. This provides the country with a rich variety of ecosystems and species. In order to ensure the protection of biodiversity, many protected areas have been set up including six national parks, four fauna reserves and three special reserves, seven marine protected areas, 213 classified forests, 22 community natural reserves, 27 pastoral units and several community forests. A few of these protected areas have been classified as UNESCO Biosphere Reserves and RAMSAR sites.

The Popenguine Natural Reserve: a successful case of biodiversity restoration

In the past decades, the state of Senegal has undertaken multiple actions for the restoration and conservation of the components of biological diversity. The Popenguine Natural Reserve constitutes a particularly successful case of biodiversity restoration involving community-based conservation. The reserve, created in 1986, is located in the south-western part of the Thies region. It covers an area of 1,009 ha, and is part of the larger Popenguine Classified Forest. Restoration activities in the reserve have been led by the Collective of Economic Interest Groups of Women for the Protection of Nature and Sustainable Development (COPRONAT), under the supervision of the Direction of the National Parks (DPN).

The reserve benefits from special status among other protected areas in the country in that it is jointly managed by the Direction of National Parks and the local population assembled within an association, enabling a successful community-based conservation approach.

A recent study, Niemet-Gampika, 2013, analyzing the land-use dynamics revealed significant positive changes in the Popenguine Natural Reserve after three decades. In 1984, before its establishment as a Natural Reserve, the entire protected area was dominated by bare soil. From 1986 onwards, the proportion of bare soil has been steadily decreasing, and plant formations have increased.

This recolonization of the plateaus by vegetation results from the efforts on biodiversity conservation and restoration undertaken by the local population, which notably translated into the implementation of restriction from certain areas, Assisted Natural Regeneration (RNA), and reforestation. The combination of these activities transformed the landscape over time from bare plateaus to shrub savannas and thickets. The most characteristic species in the area are thorn bushes, especially the acacia Senegal and the acacia raddiana.



Image: A. DIOP

Oryx algazelle at Guembeul Fauna Reserve

Serbia

Serbia plans to increase the protected areas surface to 12 per cent of the territory by 2021

Serbia represents an important centre of biological and geological diversity in Central Eastern Europe, with eight basic types of habitats. The country is home to a number of internationally recognized sites for conservation of biodiversity, including 10 areas that have been included in the list of wetlands of international importance and two established UNESCO Biosphere Reserves. The most important areas for biodiversity are the high mountain regions, sand and steppe habitats and refugial areas. The Spatial Plan of the Republic of Serbia requires 12 per cent of the country's territory to be protected by 2021.

The crucial role of education

The Law on Nature Conservation is the main regulatory framework for the protection of biodiversity in Serbia, with measures for the protection and improvement of species, their populations, natural habitats and ecosystems. The country's total area under protection has increased in relation to the data presented in the Fourth National Report of the Convention on Biological Diversity (CBD), currently representing 67.48 per cent of the total territory of the country. In addition, 117 new areas have been placed under protection since the report (2.28 per cent of the territory). The ecological network is established as a functionally and spatially connected entity comprising areas of national and international importance and ecological corridors, covering 20.93 per cent of the territory.

In recent years, Serbia has provided numerous observation points, educational tracks and information resources for visitors, as well as many other promotional materials. Special attention has been dedicated to the construction of visitor centres in the protected natural goods areas. Seminars by the Institute for Nature Conservation of Serbia aid in the professional development of teachers in the area of environmental protection and nature conservation. The seminars are delivered through accredited programs of the Ministry of Education, Science and Technological Development of the Republic of Serbia.

Development programmes enable teachers to follow the newest concepts, guidelines, trends and knowledge in environmental and nature protection, through cooperation with experts. Workshops, lectures, field practice and presentations improve teachers' skills. A cross-curricular approach to processing of topics within environmental and nature protection develops a critical approach to education regarding environmental protection and motivates the teachers to develop their professional skills and knowledge independently. Since 2004, more than 1,000 biology and geography teachers from schools and other educational institutions have participated in the seminars.

The Secretariat for Urban Planning, Construction and Environmental Protection has organized an annual event, A Work Day for Nature, since 2008. This initiative seeks inclusion of all entities which deal with the protection of nature, such as ministries, institutes for nature conservation, managers of protected areas, citizens' associations, educational institutions, local communities and individual companies. The turnout for these actions is significant and there are often more than 100 participants.



Ministry of Environmental Protection, Republic of Serbia

Meanders of Uvacko Lake within the special nature reserve

Seychelles

Tourism is the largest sector of the Seychelles economy, accounting for 26 per cent of GDP and employing over one-third of the country's workforce in 2008. A record total of 230,272 tourists visited the country in 2013

The Republic of Seychelles in the southwest Indian Ocean consists of 115 islands, which are the only oceanic islands in the world of continental, granite, origin and are of considerable ecological interest, having been isolated from continental landmasses for 65 million years. The Seychelles is recognized as a biodiversity hotspot by Conservation International and a centre of plant biodiversity by the International Union for the Conservation of Nature (IUCN) and the World Wildlife Fund (WWF). Endemism is high, at 50–85 per cent for different animal groups and approximately 45 per cent for plants. The government has launched a project to conserve one of the country's most iconic plants, the coco-de-mer palm.

Conserving the world's largest seed

The coco-de-mer palm Lodoicea maldivica, endemic to the Seychelles and classified as vulnerable by the IUCN, is a national flagship species for tourism and conservation. The species occurs in three main populations, with the largest at the World Heritage Site of the Vallée de Mai, which is managed by the Seychelles Islands Foundation (SIF). Historically the main threats have been fire and development; however, over the last 30 years no drastic reductions in numbers have been recorded.

The species famously bears the largest seed of any plant, for which it is in great demand. As a result it has been heavily exploited across its limited range for the last 15 years, when instructions were issued to ensure the complete removal of all nuts from the forest to prevent poaching. Even then, it was known that such harvesting levels would not be possible to maintain indefinitely but because the coco-de-mer is so long-lived (up to several hundred years). In addition, many facets of its biology are still completely unknown, making it difficult to assess sustainable limits to harvesting. The Seychelles Island Foundation (SIF) has therefore been running a long-term programme of research and monitoring to improve management and ensure long-term viability of the coco-de-mer which has already led to several significant outcomes for the species.

Sustainable harvesting: Researchers from ETH Zurich collaborated in demographic modelling using population matrix models to identify the life stages of the coco de mer with the strongest influence on population dynamics as well as the consequences of current harvesting intensities. An initial population model was developed based on available data. Population growth rate under current and alternative harvesting regimes was estimated, accounting for uncertainty regarding adult mortality and lifespan.

Model projections of the population under current harvesting intensities predict a marked decrease in the proportion of juveniles in the population and a gradually declining population over the next 200 years. Population growth rates were most sensitive to adult survival, reflecting the long generation time of this species. Based on the preliminary model a precautionary sustainable harvesting limit was proposed, which is currently being followed up and implemented by SIF.

The research group also quantified morphological and genetic differentiation among the three main coco-de-mer populations. All populations were relatively genetically diverse with remarkably little differentiation among populations although the results suggest that the capacity to dominate across a range of habitats may be due to high phenotypic plasticity and that seeds should not be transferred between island populations.



Tommaso Nervegna on Unsplash

Praslin, Seychelles

Sierra Leone

Some 74 of the 2,000 plant species recorded in the country are endemic to Sierra Leone. Wildlife in the Savanna is characterized by elephants, leopards, hyenas, duikers, genets, civets, warthogs, aardvarks, chimpanzees, baboons and monkeys

Sierra Leone has a total land surface area of 71,740 km². Forest accounts for 27,620 km² (38.5 per cent of land surface) while national protected land is 2,941 km² (4.1 per cent of the total surface area). The country lies within the Upper Guinean Lowland Forest Ecosystem with an abundant richness in ecosystem and species biodiversity, with lowland rainforests, mountain forests, savannah woodlands, agricultural, freshwater and wetlands. There are 48 forest reserves and conservation areas, representing about 4 per cent of the land area. The total area of government wildlife reserves is estimated at 173,000 ha. The country is divided into four main relief regions: coastline, interior lowland plain, interior plateau and mountains.

Habitat protection and awareness-raising

Since 2003, the National Biodiversity Strategies and Action Plans (NBSAP) have gained the attention of ministries and environmental NGOs. Wide ranges of projects have been undertaken in diverse areas of biodiversity conservation including habitats and species.

Sea turtles have had more conservation attention and protection than any other species in the country, having been assessed, and campaigns run for their protection by the Sea Turtle Conservation Programme in collaboration with the Ministry of Fisheries and Marine Resources (MFMR) and Ministry of Agriculture, Forestry and Food Security (MAFFS).

Manatees, amphibians and the other reptile species have not been accorded specific species protection status, but the protection of their habitats by MAFFS and MFMR in collaboration with environmental NGOs in Sierra Leone, has benefited them. The habitat protection activities included the creation of Marine Protected (MPA) and Protected Areas (PAs). The recently established Gola National Park and the Yawri Bay MPA, in addition to older PAs and national parks in Sierra Leone represent progress.

The review of the country's forestry, fisheries and wildlife laws and regulations are recommendations from the 2003 NBSAP. The review started in 2000 and has had a series of consideration by the MAFFS, environmental NGOs, and law reform committees. It is presently ongoing under the leadership of MAFFS through the Biodiversity Project.

Progress is also being made in the designation of marine protected areas for the four main estuarine systems in the country — Scarcies River Estuary, Sierra Leone River Estuary, Yawri Bay and Sherbro River Estuary.

One of the biggest achievements of the implementation of the NBSAP is in the area of education and awareness raising on the importance of biodiversity in general to human survival. Since 2003, radio programmes, newspaper articles, community meetings and workshops have been created by various stakeholders to promote the wise use and management of biological resources and habitats. Also various biodiversity-related study programmes have been introduced in the universities and colleges to address the education and technical needs of natural biological resource management in the country. There have also been major strides in promoting both in-situ and ex-situ conservation, especially for areas that fall within the country's PA system.



jbdodane on flickr

Sierra Leone

Singapore

Conservation initiatives range from the establishment of nature reserves and creation of new buffer parks to the enhancement of ecological connections, whether through intensification of streetscape planting or the use of vertical and skyrise greenery

Singapore is a city-state with a population of approximately 5.61 million and a land area of 719 km^2, located within the Sundaland biodiversity hotspot. Despite being one of the most densely populated, highly urbanized regions in the world, Singapore has a high level of biodiversity. While rapid industrialization and urbanization commenced following Singapore's independence in 1965, the Government recognized the importance of parks and greenery and established a green infrastructure foundation through the ambitious Garden City vision. Singapore's early greening efforts created a 'green skeleton' for biodiversity initiatives to be layered on seamlessly in the years that followed.

Biodiversity in a highly urbanized city-state

Singapore launched its first National Biodiversity Strategy and Action Plan (NBSAP) in 2009. As denser living conditions and the increasing rate of development make it more challenging to maintain greenery and conserve the remaining natural heritage, the Government decided to systematically consolidate, coordinate, strengthen and intensify biodiversity conservation efforts initiated by the NBSAP through the National Parks Board (NParks) Nature Conservation Master Plan (NCMP).

Launched in 2015, the NCMP has four priorities: the conservation of key habitats; habitat enhancement, restoration, and species recovery; applied research in conservation biology and planning; and community stewardship and outreach in nature. All conservation initiatives of the NCMP encompass terrestrial, coastal and marine ecosystems and take into account activity at the ecosystem, species and genetic levels. Conservation efforts that develop from the NCMP build ecological resilience through the strengthening of ecological linkages that help in the conservation of native biodiversity and adaptation to the effects of climate change.

Several conservation initiatives provide support and build on each of the four main thrusts of the NCMP. The first of these is a project titled The Conservation of Key Habitats, which aims to safeguard and strengthen core areas that harbour the majority of Singapore's native biodiversity. Conservation initiatives range from the establishment of nature reserves and creation of new buffer parks to the enhancement of ecological connections, whether through intensification of streetscape planting or the use of vertical and skyrise greenery.

Conservation of core areas is another area of focus. Singapore's four major nature reserves collectively cover the various ecosystem types found in Singapore, including lowland dipterocarp forests, secondary forests, freshwater swamps, streams, mangroves, rocky shores and inter-tidal mudflats. Nature parks have also been established on the margins of the nature reserves to act as green buffers as well as alternative venues for members of the public to enjoy recreational activities close to nature. Additionally, 20 Nature Areas have been created under the Urban Redevelopment Authority's Parks and Waterbodies Plan (Special and Detailed Controls Plan), and these sites will be kept away from development for as long as possible.

Another project is Singapore's First Marine Park, which NParks established in 2014 as a platform for outreach, education, conservation and research of Singapore's native marine biodiversity. The park serves as a hard coral repository.



Poh Wei Chuen on Unsplash

Cloud tree building in Singapore

Slovakia

Internationally significant areas include two World Natural Heritage sites, 14 Ramsar sites, 4 UNESCO -MAB biosphere reserves and 41 Special Protection Areas for protection of birds as well as 642 sites for protection of habitats and species of plants and animals

Conservation of biodiversity in–situ has a long tradition in Slovakia, with special attention paid to area based conservation. Today, more than 30 per cent of the country is conserved or specifically managed within one of the eight management categories of Protected Areas (PAs) recognized by the Nature and Landscape Conservation Act. Internationally significant areas present in Slovakia include two World Natural Heritage Sites, 14 Ramsar sites, four UNESCO MAB Biosphere Reserves and 41 Special Protection Areas for protection of birds, as well as 642 Natura 2000 sites. Due to its geographical location, geomorphologic and climate diversity, the country has the highest diversity of any Central and Eastern European country.

Preserving natural heritage

Slovakia signed the Convention on Biological Diversity in 1993, the year of the country's establishment,and biodiversity protection has been recognized ever since as one of the five priorities of the state environmental policy.
In 1998, a comprehensive National Biodiversity Strategy was established. However, implementation of the strategy has posed significant challenges over the years. These include problems with land consolidation and unresolved problems with land owners/users; the need to learn how to communicate with stakeholders and how to design incentives for them; and abandonment resulting from structural changes in agriculture. Another issue was the introduction of very strict scientific criteria into the designation of the PA network , driven by Slovakia's accession into the European Union (EU) in 2004.

Slovakia had to solve difficulties with understanding of the Convention on Biological Diversity (CBD) as well as with new EU legislation and its implementation into its existing nature protection system. In addition, the creation and transposition of the new elements brought new systematic approaches into nature and landscape protection. Despite these issues, the country achieved success with these goals but still faces challenges due to lack of time for consultations (especially during the accession period into the EU) and ongoing problems with land consolidation.

In 2004, Slovakia issued a national list of proposed sites for the Natura 2000 network. This was enlarged in 2012 and is curently undergoing futher enlargement. The country also revised its national biodiversity strategy in 2012 to incorporate the Aichi Biodiversity Targets as well as its action plan for biodiversity protection till 2020. This action plan consists of 167 activities with different scales and timing for achievements, which will be fulfilled by the national nature protection authorities and other relevant public or private stakeholders, as well as non-governmental organizations.

Although the National Biodiversity Strategy has been harmonized with EU policies, Slovakia still keeps its special position of being a relatively small country in the heart of Europe with rich biological and landscape diversity. Its main priority is therefore still more to preserve natural heritage than to develop or restore nature.

By 2018, Slovakia had made significant progress in establishing a complex common monitoring system of all the habitats and species included in the Natura 2000 network, to support its reporting duties and also for the purposes of the CBD.



Jaroslav Kostal

Slovakia



Slovenia

It is important to emphasize that as a country with only two million inhabitants and very limited resources, Slovenia has developed a stable and functioning system of nature protection

Among the most distinctive features of Slovenia are its well-preserved natural resources, rich biodiversity and landscape diversity. Since the proclamation of independence of the Republic of Slovenia in 1991, a complex and well-functioning nature protection system has been established. The system is based on a constitutional provision which states that when acquiring and using any property, in addition to its economic and social function, its ecological function should also be taken into account. In 1999, the Nature Conservation Act introduced the basis for comprehensive conservation of biodiversity and established the protection of valuable natural features as national heritage. Today, around 14 per cent of Slovenia's territory is in protected areas and 37 per cent is protected under Natura 2000.

Safeguarding nature and national heritage

In 1995, the Republic of Slovenia became actively involved in the Sofia Initiative for the Conservation of Biodiversity in the Countries of Central and Eastern Europe and in 1996, it ratified the Convention on Biological Diversity (CBD). The implementation of the CBD in Slovenia was initially closely linked to the implementation of the Pan-European Strategy on Biological and Landscape Diversity. After Slovenia joined the EU in 2004, that initiative became less important for the country. The two basic strategic documents of biodiversity conservation in the Republic of Slovenia were the National Environmental Protection Programme (NEPP) and the Strategy for the Conservation of Biodiversity. The new NEPP which is currently in preparation will, inter alia, address all relevant global biodiversity conservation goals and Agenda 2030 objectives.

The Cartagena Protocol on Biosafety identifies biosafety as an important component in conserving biodiversity and regulates transboundary movements of living genetically modified organisms. Slovenia ratified the Cartagena Protocol in 2002 and has since established a robust biosafety system with all the necessary infrastructure and decision making procedures.

Since the CBD entered into force in Slovenia, its implementation has been focused primarily on the first two objectives: the conservation of biodiversity and the sustainable use of its components through cooperation at all levels. It is important to emphasize that as a country with only two million inhabitants and very limited resources, Slovenia has developed a stable and functioning system of nature protection. It has central legislative and decision making institutions and local communities which are supported by regional professional public services as well as non-governmental organizations acting in the public interest.

Permanent protection of vulnerable species is a matter of particular importance in Slovenia and is established by the Protection Act as a result of the political decision that the preservation of a part of nature is in the public interest due to its great conservation value. The protected areas are usually established by the government or the competent body of one or more local municipalities. National parks and other protected areas of national importance are established by the National Assembly of the Republic of Slovenia.

The presence of large carnivores — Eurasian lynx, wolf and brown bear — in Slovenia is a proof of preservation of sufficiently large areas that enable their existence. The population of bears is large and stable, population of wolves is increasing, while the population of lynx, which was reintroduced in Slovenia in the 1970s, is very small and at risk. A repopulation project is currently under way.



Miha Krofel

Brown bear



Solomon Islands

Fishing is specialized, where women and children usually collect marine molluscs, particularly bivalve, gastropod and cephalopod. The fish fauna stand at 1,019 species, belonging to 82 families and 348 genera

The terrestrial biomes of the Solomon Islands comprise tropical rain forest, mountain, inland water, volcanic islands, hot springs and mud pools. The coastal biodiversity includes coral reefs, mangroves, intertidal zones, estuaries, seagrass, algae, littoral vegetation and estuaries. In the marine biomes, tuna supports commercial development and coastal artisanal fisheries. Whales, dolphins, sharks and turtles provide multiple uses to the islanders. Likewise, agrobiodiversity supports subsistence livelihoods and contributes significantly to local and foreign revenues.

Protecting the coral triangle

The Solomon Islands Coral Triangle Initiative National Plan of Action (NPOA) of 2010 seeks to address poverty through fisheries management while adapting to climate change. The NPOA commits to the implementation of the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF) Regional Plan of Action.

This initiative can be traced to the provisions of the three Rio Conventions, particularly regarding cooperation at the regional level. The aim is to ensure the country sustainably manages marine and coastal resources to ensure food security, sustainable economic development, biodiversity conservation and adaptation to emerging threats.

A people-centered approach and ecosystem-based resource management is promoted by the country's flagship Community-Based Resource Management model. Viewed as a vehicle for stimulating other national policy priorities, enabling maintenance of marine resources for food security and people's livelihoods, the policy selected Malaita, Western, Central and Guadalcanal as locations for implementation.

The Solomon Islands aimed to have 50 per cent of its coastal, watershed and inshore area under improved management through CBRM and ICM approaches by 2015. The action plan to achieve this was developed to meet the Millennium Development Goals, including those addressing climate change adaption and mitigation and eradication of extreme poverty and hunger. It also sought to address the Aichi Biodiversity Targets 10 and 11 and the cross-cutting National Biodiversity Strategies and Action Plans (NBSAP) targets.

These strategies provided the baseline for the strategic goal of enhancing the implementation of NBSAP through participatory planning, knowledge management, capacity-building and decentralizing of NBSAP to subnational and community levels.

Other projects have further implemented the objectives, including Marine and Coastal Biodiversity Management in Pacific Island Countries (2013-2018), Pacific Integrated Water Resources Management Project, Mekem Strong Fisheries, Strengthening Coastal and Marine Resources Management in the Coral Triangle of the Pacific and others. In addition, the CTI-CFF has now established a Secretariat in Indonesia.

Projects resulting from the country's commitment to biodiversity have already had far-reaching positive effects. For example, the influence of the Gerusu protected area network, which emerged from the NPOA's first phase of implementation, helped to strengthen the provincial government. This in turn enabled the Central province to become one of the first to receive United Nations Development Programme funds.



Wade Fairley on flickr

Small-scale fisheries, Solomon Islands



Somalia

It is estimated that biodiversity and ecosystems support 80 per cent of the population in Somalia

Somalia is one of the most biodiverse countries in the Horn of Africa, with a high level of endemic species. Livestock, fisheries and natural products are the backbone of the national economy. Diverse habitats distributed within terrestrial and aquatic ecosystems support over 80 per cent of the population. This rich biodiversity provides fundamental ecosystems goods and services important to social, economic, cultural and human well-being of the Somali population. Although Somalia's biological biodiversity database is very minimal, the country seeks to address the global biodiversity targets. In the coming years, Somalia will undertake various important biodiversity assessments in its Protected Areas (PAs) and other facilities.

Addressing biodiversity targets on multiple fronts

Two examples of the importance of biodiversity to human well-being in Somalia are crop production and livestock. The Somali economy has traditionally been dominated by pastoralism (50 per cent) and crop production. Currently, Somalia is working to develop a National Biodiversity Action Plan (NBSAP) to address threats to biodiversity in accordance with the objectives of the Convention on Biological Diversity. The NBSAP will include an assessment on the status of biodiversity and will identify priority areas that need urgent actions for conservation. Public awareness will be increased through education. National policies, laws and programmes will be developed to work on priority issues and to provide a legal framework for the protection of biodiversity.

So far, Somalia is working to implement the proposed activities in reserve areas, including enforcement of the ban on charcoal exports, reforestation pilot programmes in different soils and climatic environments, and the production of a State of the Environment report to assess the status of biodiversity resources and to guide future conservation and sustainable management and development decisions.

Conservation threats to PAs and natural ecosystems will be assessed, including climate change, uncontrolled land clearing for agriculture, deforestation and overgrazing. In all of these areas, Somalia seeks to design and implement strategies that reconcile the importance of conserving important areas of biodiversity with those of human needs and use. This could include ways to integrate protection with sustainable use.

The country will also update its flora and fauna inventory, much of which is outdated. Such an update would assess the status of abundance, distribution and socioeconomic relevance of each taxonomy. The PA system will be re-assessed as to its viability, species composition and conservation status. This could form the basis for redefining Somalia's PA network and integrating it into wider land-use and environmental planning. The scale and extent of invasive species will be assessed too. Planning will take account of the need to conserve and create biodiversity conservation corridors to foster improved connectivity in the landscape.



Jakub Jacobsky on Unsplash

Camel train, Somalia



South Africa

South Africa is home to 10 per cent of the world's plant species, 7 per cent of its reptile, bird and mammal species, and harbours around 15 per cent of the world's marine species

South Africa has revised aspects of its Protected Area (PA) management strategy as a result of issues revealed by an in-depth research initiative. An annual assessment of PA management effectiveness for Ezemvelo KZN Wildlife (Ezemvelo) protected areas in 2014–2015 showed that although the area of effectively managed protected area estate increased compared to the previous year, the mean score for all protected areas decreased by almost two per cent, with only about half the protected areas achieving the minimum standard. Concerns included the growing number of many small- to medium-sized protected areas scoring below 60 per cent effectiveness, lower than the national minimum standard of 67 per cent.

Assessment tools aid wildlife management effectiveness

The formal assessment of the management effectiveness of protected areas managed by Ezemvelo was undertaken in line with the organization's Annual Performance Plan (APP) Medium Term Strategic Framework target (2014–2019), which seeks to ensure that 90 per cent of the Ezemvelo PA estate meets or exceeds the national minimum standard of 67 per cent effectiveness by the end of 2019. The 2014–2015 assessment made use of the Ezemvelo Management Effectiveness Tracking Tool, which ensures that scores are fully comparable and allows for trends to be identified.

The nature of such assessments means that rigorous engagements with protected area management take place and it is therefore of paramount importance that their collective concerns and obstacles relating to the fulfilment of their duties are also documented. The findings of the assessment are based on objective scientific criteria developed over the years by the World Bank and the World Wildlife Fund and have the full endorsement of the International Union for the Conservation of Nature.

In addition to the improved area of effectively managed PA estate compared to the previous year, the results also show an increasing dichotomy between low- and high-scoring PAs. It appears that those PAs with higher scores are maintaining their standards of management, whereas once PAs enter the lower-scoring categories they continue to decline. Despite the increase in effectively managed PA estate compared to the previous year, the mean score decreased by 1.7 per cent to 60.44 per cent effectiveness.

A major concern is that many of the problem areas identified in previous years are still constraints on PA management. The assessment concluded that the organization's focus on achieving goals as paper exercises and its inability to resolve issues on the ground are highly problematic, as is the lack of adaptive management initiated and driven from the executive level.

The assessment advised the establishment of a task team to develop a turnaround strategy for PA management, to be championed by the Strategy Unit. Further recommendations are that senior managers should ensure that all low-scoring areas per PA should be tabled through the relevant management structures, to facilitate ongoing adaptive management, and that a process should be initiated for the delineation of buffer zones.



Matthias Mullie on Unsplash

Hluhluwe–iMfolozi Park, South Africa

South Sudan

The Sudd swamps, with an estimated area of about 57,000 km² represent some of the most extensive wetlands in Africa with a complex of channels and open water bodies

South Sudan is the world's newest nation having attained independence in 2011. It covers approximately 640,000 km² in the centre of Sub-Saharan Africa. The country has a tropical wet and dry climate with two rainy seasons and high humidity. Ecologically, it is divided into six agro-ecological zones: the Greenbelt, Ironstone Plateau, Hills and Mountains, Flood Plains, the Nile/Sobat Rivers and the arid and pastoral zone. The variety of species and the complex ecosystems constitutes the country's biological diversity, and are the foundation of its socioeconomic development. The diversity of biological resources interact with one another and the physical environment to form a wide range of ecosystems that are categorized into ecological zones: savannah, flood/swamps, montane forest, semi-desert and lowland forest.

Committed to preserving the biodiversity and environmental integrity of the new country

Despite being a new country with various socioeconomic concerns, the government and constitution of South Sudan have introduced a high amount of legislation, policies and frameworks related to environmental sustainability and biodiversity conservation. Currently, there are over 20 policies being implemented into the constitution that will help biodiversity.

The main legislation is the Environmental Protection Bill of 2013, that aims to promote ecologically sustainable development to improve the quality of life. This is done to preserve the flora and fauna, the quality and flow of water, any outstanding geological, ecological or physiographical features of the burdened land — or restrict the scope of any activity on that land — and create or maintain migration corridors for wildlife.

The Wildlife Conservation and Protected Areas Bill of 2015 covers all matters concerned with wildlife conservation, the establishment and management of protected areas and the sustainable management and conservation of South Sudan's natural heritage and wildlife for the benefit of its citizens. The Bill allows local communities around protected areas to manage wildlife in collaboration with the South Sudan Wildlife Service (SSWS).

The Forests Bill of 2009 is designed to operationalize the Forestry Policy covering all matters concerned with all forests and woodlands in the country. The Bill also establishes a National Forest Fund (NFF) to be managed semi-autonomously, to support forestry research, education and protection of forest biodiversity and heritage.

The Water Bill 2013 provides for the protection of water sources from pollution, erosion or any other adverse effects by creating protected zones within a catchment draining to, or above, any water facility, forming part of a water supply or any catchment, lake, reservoir, aquifer, wetland, spring, or any other source of water.

The Ministry of Animal Resources and Fisheries Policy Framework and Strategic Plan of 2012–2016 aims at promoting best animal husbandry practices to reduce environmental degradation; and to promote sustainable management of rangelands and pastures through integrated range management practices.

The Agriculture Sector Policy Framework for 2012–2017 provides for the protection of plants, seed management, and the development of a plant genetic resources conservation programme and a biosafety framework.



United Nations on flickr

South Sudan

Spain

Spain has the highest number of vascular plants — 8,000–9,000 species — among European and Mediterranean countries. Its rate of endemism is between 20 and 25 per cent

The great diversity of ecosystems that Spain harbours promotes a high diversity of plant and animal species. At least 54 per cent of the total number of known species in Europe is found in Spain, which makes it responsible for the conservation of the greater specific wealth of Western Europe. The taxonomic knowledge of biodiversity in Spain is broad: in terms of composition, there are around 91,000 terrestrial species and about 11,075 marine species.

Spanish Inventory on Natural Heritage and Biodiversity

The Spanish Inventory on Natural Heritage and Biodiversity is a key tool in the knowledge and planning of natural heritage and biodiversity, in conformity with Article 7 of the Convention. The main objective of this inventory is to provide objective, reliable and comparable information at the level of the Spanish State, from which the conservation, management and sustainable use policies can be drawn up and the biodiversity values disseminated. It also contributes as a source of information to meet the information requirements from international commitments.

Before implementation, information was available across various public administrations but, in many cases, in dispersed and heterogeneous forms and with difficulties in access. The development of the Spanish Inventory on Natural Heritage and Biodiversity () enables the organization and harmonization of this information while contributing to significantly improving knowledge of biodiversity and natural heritage.

The information included in the inventory is organized in an integrated information system (Nature Data Bank) that allows its storage, analysis, integration, decision making, monitoring of indicators and dissemination. From this platform, any user can access the alphanumeric, cartographic, documentary and multimedia information available on the various components of the IEPNB. Official information on wild species in Spain is already available in an integrated database with online access.

In addition, since 2009, a Spanish inventory report on natural heritage and biodiversity has been published annually, where information on status and trends is collected and analyzed.

In the field of a coherent planning and management of protected areas, it is remarkable that, at present, the total area of protected spaces in Spain represents more than 30 per cent of the terrestrial territory and 12 per cent of the marine waters under national jurisdiction.

The European Natura 2000 Network covers 27 per cent of Spanish territory and incorporates, as of June 2018, 1,467 Sites of Community Importance (SCI) of which 77 per cent already has management plans; and 647 Special Protection Areas for Birds (SPA), of which 66 per cent has a management plan. The Marine Natura 2000 Network has also received a significant boost in recent years and currently includes 53 SCIs and 47 SPAs, with an area of almost 85,000 km².



Stefan Kunze

llubí, Mallorca, Spain

Sri Lanka

An island-wide survey of crop wild relatives was conducted in protected and non-protected areas, resulting in the preparation of ecogeographic descriptors for these crop species

Sri Lanka possesses unique agrobiodiversity and its varied ecosystems are rich in crop wild relatives (CWR) – the wild relatives of crop ancestors and other related species. These plants are a critical source of genes for resistance to pest and diseases, as well as stresses such as droughts, floods and temperature changes. Most CWR populations are not found in Protected Areas (PAs) but they abound in buffer zone and are vulnerable to deforestation, urbanization and expansion of agriculture lands .Many species are being lost due to climate change and landslides, while some are in danger due to over extraction for food or medicines. A project to study them in situ is providing essential information to reverse this trend.

Sustainable use of crop wild relatives

Prior to 2004, little attention was given to conserving and utilizing CWR in Sri Lanka and few had been comprehensively studied or researched. A list of CWR in Sri Lanka was compiled using already published material on the Sri Lankan flora and the records of the national herbarium. The list includes 410 species of food CWR, belonging to 47 families and 122 genera. Out of these, 366 are native species and 77 are endemic relatives of food crops, while 44 species are naturalized exotics. This is only a preliminary list, which needs to be further refined. To recognize the true genetic relationships of these species, detailed studies must be carried out.

In general, CWR species of agricultural importance occur as members of disturbed communities within the major vegetation types of the country. Open canopy forest areas, secondary forests, disturbed grasslands and shrub jungles are rich in these plants. The wild relatives of fruit plants are largely associated with semi-evergreen, intermediate and wet evergreen forests. There are large numbers of agriculturally important wild species in different crop groups.

A project titled 'In situ conservation of crop wild relatives through the enhanced information management and field application' addressed the threat to these species, studying the wild relatives of rice, Vigna (mungbean), banana, cinnamon and pepper varieties. An island-wide survey of CWR was conducted in protected and non-protected areas, resulting in the preparation of ecogeographic descriptors for these crop species. The project also delivered a list of morphological characteristics and herbarium specimens of important taxa which are difficult to identify.

Other activities included the collection of ethnobotanical notes of wild relatives of priority CWR, prediction maps and distribution maps. The mapping of wild rice distribution in Puttalam District in North Western Province was accompanied by the declaration of these habitats as an Environmentally Protected Area under the Provincial Environment Statute of the province. In addition, awareness programmes were conducted for PA managers and relevant officials to integrate CWR conservation into the national PA system using information of ecogeographic survey and ecogeographic descriptors.



Emily Goodhart on Unsplash

Protected wild elephant in natural habitat

Sudan

More than 50 per cent of households participated in the production processes of gum Arabic, boosting their annual incomes

Sudan ratified the Convention on Biological Diversity (CBD) in 1995, the Cartagena Protocol on Biosafety in 2005 and the Nagoya Protocol on Access and Benefit Sharing (ABS) in 2014. Since then, the country has made significant progress, achieving Aichi Biodiversity Target 11, with 10 per cent of its marine territory already protected. Sudan has also strengthened the legal and institutional capacity for implementation of ABS, engaging local communities in biodiversity conservation and ABS issues.

Involving communities for biodiversity

An example of Sudan's actions for biodiversity is the rehabilitation of the degraded Forest ecosystem in the Nabag Reserve Forest through a participatory approach involving the local community. This action resulted in a significant increase in afforestration areas inside the forest reserves. Outcomes included the adoption of an agro-forestry system in which A. senegal (Hashab) is intercropped with other crops. The afforestration areas inside forest reserves have increased from 270,207 ha in 1990 to 511,183 ha in 2012, and the area planted in community forests has increased from 270,276 ha to 1,622,675 ha during the same period.

The forest rehabilitation project also led to an increase in the incomes of local communities, improvement of the environment canopy and encouragement of decision makers to implement a project to revitalize Sudan's gum arabic production and marketing.

Sudan's Forest National Corporation has been involved in the awareness and training activities for local communities participating in the gum arabic project. Local people take part in the production and marketing aspects of the project, in addition to the provision of financial services, water services, transportation, seeds and seedlings for refarming the gum gardens of the households in the target area. More than 50 per cent of households participated in the production processes of gum Arabic, boosting their annual incomes.

Other actions which have contributed to in-situ and ex-situ conservation of biodiversity include the establishment of gene banks and protected areas, as well as the collection of native species. Sudan has increased its total plant genetic resource holdings with the establishment of a field gene bank in the Kassala area of eastern Sudan. This facility is dedicated to the conservation of banana genetic resources collected from different parts of the country. It also set up an in-country regional seed gene bank unit at the El Obeid Agricultural Research Station in western Sudan in 2005. This unit houses the active collection from the crop genetic resources collected from western Sudan (Kordofan and Darfur regions), as well as an in-country mechanism for safe duplication of germplasm under conservation.



Wikimedia Commons

Sudan



Suriname

As the Republic of Suriname works towards adjusting national laws, measures are already being taken to conduct better land-use planning to prevent damage to or eradication of ecosystems, including vulnerable ones

The Republic of Suriname is situated on the north-eastern coast of South America and is part of the Amazon biome and the Guiana Shield ecosystem. With forest cover of over 93 percent, it is known as the greenest country on Earth. Forests in both the inland and coastal areas are important in mitigating the effects of climate change and sea level rise. The biological diversity of the country is particularly important as it provides goods and ecological services to the people of Suriname. When sustainably managed and preserved, it generates income, reduces malnutrition and eradicates poverty.

Biodiversity strategies for the greenest nation

The Government of the Republic of Suriname is working towards the conservation and protection of its biological resources, both inside and outside protected areas. New regulations are being drafted and existing ones are being updated. A major step will be the Environmental Framework Act, which will set the scope of all environment-related laws and regulations that are already in place or still need to be established.

Measures have been taken to conduct better land-use planning to prevent damage to or eradication of ecosystems, including vulnerable ones. The Government has a structure in place for regulating gold-mining activities and applying forest restoration and rehabilitation techniques. Concurrent steps are being taken to phase out the use of mercury in artisanal gold mining and to introduce environmentally friendly alternatives.

Information from a preliminary inventory of Invasive Alien Species (IAS) will serve to establish an IAS Management Plan with protocols for IAS control in protected areas. Commitment to responsible biotechnology and valuing ecosystems for their services will help protect the country's biodiversity and develop new ways to increase its agricultural capacities. In addition, there are proposals for the establishment of new protected areas and updated management plans are being drafted for the existing coastal ones.

The Republic of Suriname is in the process of restructuring and rebuilding the State's environmental bodies in order to ensure sound and integrated environmental policies. Environmental management, and consequently the coordination of the management of biological resources, is enacted at the level of the President.

Projects are ongoing in both sectoral and cross-sectoral fields. These include promoting the conservation of agricultural biodiversity, implementing the Fisheries Management Plan, and preparing implementation of the United Nations REDD+ programme. There are also initiatives to make an inventory of mercury use by artisanal and small-scale gold miners, to promote the rehabilitation of former mining areas in Eastern Suriname with grass plantations for bio-fuel, and to monitor deforestation via satellite image analyses. The Anton de Kom University of Suriname has created a Master of Science programme in Conservation Biology and Sustainable Management of Natural Resources to strengthen capacity.



Donovan Nasio

Three-striped Poison Arrow Frog, Suriname



Sweden

The people in the network have learned from each other and systematically built further on one another's knowledge to work further with ecosystem services

Increasing the understanding of the value of ecosystem services and biological diversity – and their importance to society – was the focus of a communication project carried out by the Swedish Environmental Protection Agency together with its partners among the central and regional government agencies and other stakeholder organizations from 2014 to 2017. Contributing to achievement of the Swedish Environmental Quality Objectives was another important goal. The hub of the project was an ecosystem services network, consisting of approximately 50 people active within government at all levels and in stakeholder organizations. Their task was to convey knowledge of the benefits of ecosystem services to their organizations and integrate this knowledge into their work activities.

Understanding the value of ecosystem services

The communications project had three main goals: knowledge (the intermediary group would have sufficient knowledge, engagement and will to work with communicating the message), attitude (establishment of a common view among the intermediaries about the value for society of functioning ecosystems) and action (increased integration of the knowledge of ecosystem services in decision-making processes).

The project used various tools to reach out to the general public and organizations in society. Active use was made of social media and YouTube to communicate the value of ecosystem services to new target groups. More conventional communication channels such as the authorities' home pages, the daily and specialist press, radio and television were valuable tools to reach the interested public, stakeholders and civil servants.

The ecosystem services network has been very successful. The people in the network have learned from each other and systematically built further on one another's knowledge to work further with ecosystem services. A total of 75 per cent of 200 important stakeholders in government and stakeholder organizations assess that knowledge about ecosystem services has increased since 2014. They also expect that consideration of ecosystem services will be included in more decisions in the coming five years concerning municipalities, the construction and infrastructure sectors and the land-based sectors.

The project has contributed to existing work towards achieving the Environmental Quality Objectives on biological diversity and Aichi Targets 1 and 2. A clear lesson emerging from the project after its completion is that communicating the value of ecosystem services is a comprehensive area that affects a number of societal questions. These include the labour and housing markets, social economy and business administration, climate adaption, land-use planning and public health. The collaborative work of the government agencies and the network on ecosystem services will continue through a measure in the Environmental Objectives Council to increase the pace of efforts to achieve Sweden's Environmental Quality Objectives.



Ministry of the Environment and Energy

Pollination by a honeybee on apple tree flower

Switzerland

The forest area has grown by about 45 per cent since the late 19th century. Today, almost one-third of the country's area is covered by forest

As a country located in the middle of Europe, and with approximately two-thirds of its territory lying in the Alps, Switzerland is situated geographically at the crossroads of Europe's biological exchanges. The territory can be divided into three large natural regions: the Alpine chain, which has served as a refuge for numerous species of arctic flora from the last ice age; the Plateau, a vast undulating plain with a mosaic of cultivated land and wooded strips; and in the west, the Jura chain with a series of wooded hilltops. The varied landscapes and small-scale differences among habitats as well as the geographic position have created a rich diversity of ecosystems and species in the country. Approximately 19,000 species of plant and fungi are recorded, as well as an estimated 40,000 animal species. Switzerland is thus one of the most biodiverse countries in Europe.

The Environmental Protection Organisations' collective right of appeal

Environmental protection organisations' collective right of appeal is a success-story of Switzerland's environmental policy. It allows organisations working on environmental protection to draw legal opposition to certain projects that would cause considerable damage to natural landscapes and ecosystems. This right of appeal thus constitutes an instrument allowing and promoting better implementation of national environmental legislation.

This right of appeal is found in Article 12 of the Federal Act on the Protection of Nature and Cultural Heritage (NCHA), being granted to non-profit organisations concerned with nature protection, cultural heritage protection, monument preservation or related objectives. Similar provisions exist for putting into circulation genetically modified organisms and the planning, construction or modification of installations for which an environmental impact assessment is required.

Environmental protection organisations' collective right of appeal is usually applied by organisations to examine an administration decision. It is applicable only in clearly defined areas, and only to projects subject to an environmental impact assessment (EIA) and to federal projects. Only after such an appeal is made, can a court verify whether a decision concerning a project that affects nature conservation is in accordance with the law.

A review of the right of appeal conducted in 2000 found that:

- Environmental organisations make use of the instrument in a cautious and successful way. The right of appeal is thus a cost-effective measure strengthening the implementation of environmental legislation
- The right to appeal has a preventative effect on projects, as environmental aspects are anticipated to avoid lengthy objection procedures. From an environmental point of view, the right to appeal improves the quality of projects
- The right to appeal promotes consensus by facilitating dialogue between stakeholders
- The right to appeal is an important instrument promoting public participation and awareness. Indeed, it requires a high degree of involvement and volunteer work among the members of the environmental protection organisations.

In summary, the right to appeal is an instrument supporting the implementation of all goals of the Conventions' Strategic Plan 2011–2020.



Image: Chris Holgersson

Rotenboden, Zermatt, Switzerland

Syrian Arab Republic

Sabkha Juboul, located south-east of Aleppo, hosts 1 per cent of the world's population of a group of water birds such as the flamingo, the endangered white-headed duck, and the greater white-fronted goose

Syria enjoys a wealth of biodiversity, both plant and animal, which is attributed to the diversity of its topography and climate. The country is located on the eastern side of the Mediterranean basin, between three continents, Asia, Europe and Africa. It has a total area of 185,180 km^2, and varies in height between high mountain peaks at 2,814 m in Al-Sheikh Mount and areas of 300 m below sea-level in the Golan Heights. Syria's diverse ecosystems include coastal areas, mountains, forests, plateaus, desert plains, rivers, and saline ponds. Rain rates range from more than 1,000 mm in the western and north-western parts to 120 mm in the east.

Launching the Biodiversity Conservation and Protected Areas Management Project

The National Strategy and Action Plan (NBSAP) launched in 2002 included considerations to decrease all environmental threats in development projects for the conservation and sustainable use of biological resources. A key objective of the NBSAP is to protect all natural sites in forests and other natural ecosystems. In this regard, actions are ongoing to increase the percentage of land under protection.

The action plan contains short- and mid-term (1–5 years) objectives addressing: scientific studies on the status and trends in biodiversity, especially of rare and endangered species and on increasing their numbers; the establishment of protected areas representing unique local varieties; capacity-building; the establishment of a national gene bank and a herbarium, especially for endemic species; and the identification of causes of biodiversity loss and adequate policy development. Long-term (6–10 years) objectives address: the establishment of a national network of protected areas representing all ecosystems and the establishment of biological agricultural practices for the sustainable use of biodiversity.

Biodiversity considerations have been incorporated in numerous national policies, legislation, national strategies, criteria and standards on environment impact assessment, partially in the Agricultural Development Strategy, and in the new Forestry Law of 2007. Although good progress has been made in this regard, additional efforts are required to ensure mainstreaming in all relevant legislations and their appropriate application thereafter. The Syrian government launched the Biodiversity Conservation and Protected Areas Management Project in 2005 to preserve plant and animal species and maintain their habitats in three nature reserves: Mount Abdel Aziz, the Farnalq Forest and Abu Qubais. The project aimed to build the capacities of reserve teams, motivate various stakeholders to engage in the conservation process and create additional income for reserve residents. It used innovative mechanisms to start local companies and raise awareness on and acceptance of the conservation objectives in the three pilot areas. The project has also continued to transfer the expertise to the Lajat reserve.

The project's main achievements included announcing 49,000 ha of land in Mount Abdel Aziz as a protected area and recording over 1,016 plant varieties, 46 mammal species, 233 bird species and 54 reptile and amphibian species across the three new nature reserves. Some of the newly recorded species include the endangered wild peony, the three-lobed apple and the cotoneaster.



Somar Ahmad on flickr

Mishqita Lake

Tajikistan

Tajikistan has strengthened its institutional structure to ensure the planning of biodiversity for sustainable use and has expanded the territories of Nature Protected Areas to 25 per cent of the total country area

The mountain environment of Tajikistan enjoys a rich biological diversity, due to extremely diverse ecological conditions. Of the 25,000 species of flora and fauna, more than 3,000 are now actively used in the everyday life of the population, as ecosystem services. The Government ensures the conservation of valuable genetic resources and the principles of biodiversity conservation and sustainable use are included in a number of state initiatives. These include poverty reduction, food and environmental programmes, as well as the Strategy and Action Plan for the Conservation and Sustainable Use of Biodiversity for the periods 2000–2010 and 2015–2025.

Strengthening institutions to ensure diversity

Tajikistan has strengthened its institutional structure to ensure the planning of biodiversity for sustainable use and has expanded the territories of Nature Protected Areas to 25 per cent of the total country area.A specially authorized body under the National CBD Focal Point in Tajikistan has a mandate that includes the coordination of biodiversity issues throughout the country, development of guidelines and methodological documents on biodiversity and their implementation in different sectors of the country.

The National Biodiversity and Biosafety Center, under the Committee for Environmental Protection of the Republic of Tajikistan (NBBC) has developed a close cooperation with national stakeholders in issues of biodiversity conservation and use. In particular, NBBC receives information on implementation of the national Aichi Biodiversity Targets and monitors development and integration of biodiversity conservation measures in key sectors of the country. Over the last 10 years, the National CBD Focal Point has established an 'agro net' consisting of gardens of genetic resources in ten model territories across an area of more than 200 hectares.

Government decisions to strengthen the restoration and conservation of forest resources have helped to expand and integrate mechanisms for biodiversity conservation. With the support of international organizations, nurseries for cultivation of local juniper species have been restored in an area of about 120 hectares. Much work has been done on breeding of wild large ungulate animals, such as Bukhara deer, gazelle, marchor and others, which were on the verge of extinction. In some local areas the number of these animals has increased to 15–20 per cent.

The National Strategy and Action Plan for Biodiversity Conservation of the Republic of Tajikistan, updated in accordance with the Aichi Biodiversity Targets, has confirmed the well-established and productive partnership between the Government of the Republic of Tajikistan with the Global Environment Facility (GEF), the United Nations Development Program (UNDP), the United Nations Environment Program and other international partners.

Long-term experience of cooperation with international organizations has promoted practical initiatives on ex-situ and in-situ conservation of wild relatives of local varieties of fruit, cereals and leguminous plants. Valuable plant resources are preserved in the specially protected natural areas, botanical gardens and nurseries as well as in farms and households. Using a homological approach, climate models and forecasts for the next 50 years have been compiled to adapt local agrobiodiversity species in the context of climate change.



National Biodiversity and Biosafety Center, Tajikistan

Iskanderkul Lake

Thailand

Around 420 coral communities and reefs in Thailand root in the area around 96,357 Rais dispersing around remote coasts, river estuaries, seawalls and almost all islands

Thailand is one of the richest biodiversity countries in Southeast Asia. With its climatic diversity, topographic complexity, long coastline of 2,710 km, and extensive fringing reef systems, the country is endowed with a wild variety of floral and faunal habitats and rich biodiversity. Thailand lies within the two major biogeographical regions: the Indochinese region to the north and the Sundiac region to the south. However, the flora and fauna are also influenced by Indian and Palearctic biogeographical regions, resulting in six biogeographical units: North Highland, Korat Plateau, Central Plain of the Chao Phraya River, Southeast Upland, Tenassarim Hills, and Southern Peninsula.

Biodiversity strategies and investigations into the health of marine turtles

Thailand has formulated three consecutive National Biodiversity Strategies and Action Plans (NBSAP) as "National policies, measures and plans on the conservation and sustainable utilization of biodiversity". The first covered the period 1998–2002; the second covered 2003–2007; and the third and current NBSAP covers the period 2008–2012.

The third NBSAP was formulated based on the 2010 biodiversity target, which was adopted by the World Summit on Sustainable Development in 2002, and developed policies, strategies and guidelines on implementation regarding the conservation and sustainable use of biodiversity, in accordance with the sustainable development concept, with the intention to achieve the target to significantly reduce the rate of biodiversity loss by the year 2010, and in accordance with the CBD Strategic Plan, which was adopted by the Conference of the Parties at its seventh meeting in 2004.

The Marine Turtles Nursery and Breeding Project

The marine turtles nursery and breeding project, which aims to restore the population of turtles to the wild, is one of the key measures in Thailand for marine turtle conservation. In this project, the turtles were raised in breeding ponds until maturity so as to avoid predators, then released into the sea. This has been carried out in cooperation with local communities, the private and public sector, in order to raise awareness of marine turtle conservation among the youth and the public. In the fiscal year of 2007, the Marine and Coastal Resources and Mangrove Forests Research and Development Institute had bred 580 green turtles, 104 leatherback turtles, and 93 olive ridley turtles, and periodically released the adult turtles into the sea, between December 2006 and April 2007 on the east coast of the Gulf of Thailand. The marine turtles were bred at Munnai Island, Rayong Province.

Projects related to the breeding and reproduction of marine turtles include the following investigations:

- Evaluation of the efficiency of the reproductive system of marine turtles bred in Phuket Marine and Coastal Resources Institute
- Project on electro-ejaculation of marine turtle semen
- Study of the level of heavy metal in the blood and its relation to corticosteroid and sex steroid to assess risks of reproduction in dolphins, dugongs and marine turtles.



Rushen on flickr

Megalaima incognita, moustached barbet juvenile, in Khao Yai National Park



The former Yugoslav Republic of Macedonia

Around 120 habitat types of the third level of the European Nature Information System classification have been identified in the country, belonging to 28 ecosystem types

The Republic of Macedonia is situated at the centre of the Balkan Peninsula and is part of the wider Mediterranean Region that has been identified as the third most important biodiversity hotspot in the world with respect to the number of endemic plant species. Accordingly, although relatively small in territory at 25,713 km^2, the country holds an important position on the global map of biological diversity hotspots. A large part of the country's territory, just over 44 per cent, lies at an altitude of between 500 and 1000 m and nearly 80 per cent of the territory has a hilly and mountainous nature, with a number of valleys connected with deep gorges and canyons.

Firm rules on nature protection

The Law on Nature Protection specifies general measures for species protection, with regard to: extermination of indigenous wild species; reduction of the populations of wild species, destruction of their habitats, or modification of their living conditions to an extent that would cause a state of danger; deliberate disturbance of wild animals, especially during mating, breeding or wintering, as well as capturing, hunting or shooting of wild animals; deliberate removal of wild plants and fungi from their habitats, reduction of their population, or destruction in any way; deliberate damaging or destruction of habitats of wild species; and using non-selective means of wild species collection and hunting. A total of 194 species have been designated as strictly protected, of which there are 9 fungi, 51 plant and 134 animal species.

Destruction, collection, cutting or uprooting of strictly protected plants and fungi are prohibited, while with regard to strictly protected animals: the deliberate capture, keeping and shooting; deliberate damage or destruction of their developmental forms, nests, roosts, and habitats; deliberate disturbance; deliberate destruction or taking of eggs from nature; hiding, keeping, raising, selling, buying and transferring or any other form of acquiring and stuffing; are all prohibited acts. A total of 820 species have been designated as protected, of which there are 75 fungi, 151 plants and 594 animal. Protection of species identified as game (110 bird species and 23 mammalian species, of which only 14 species are regarded game without protection) is regulated by the Law on Hunting.

As a positive example of an established system for the collection and purchase of wild species, in Pellister National Park, around 15 species and other forest products are collected regularly, including: bilberry (Vaccinium myrtillus), economically the most important species; several species of fungi; common juniper (Juniperus communis); and seeds and pine cones of the Molika pine (Pinus peuce). These all provide extra income to the local population, sometimes reaching 20 per cent of the total income.

The system for sustainable collection of bilberry in accordance with the principles of organic production has been implemented as of 2007 when the Public Institution for the Park established quotas (around 130 tonnes of bilberries are collected at an average per year); training of collectors on the manner and period of collection; registration of collectors and issuance of identity card by the public institution; and purchase agreements.

The rangers of the Pellister and additionally engaged collectors control the enforcement of the specified rules in cooperation with forest police and Inspectorate of Environment.



Ava Babili on flickr

Black Drin river springs



Timor-Leste

The country is located in the Coral Triangle which sustains about 120 million people and where 76 per cent of the world's coral species and 6 of the world's 7 marine turtle species can be found

Timor-Leste is a country positioned in a biodiversity hotspot, known as Wallacea, which harbours a number of globally significant ecosystems and endemic species. Its geographic position also places the country in a strategic area for marine biodiversity. It is located in the Coral Triangle which sustains about 120 million people and where 76 per cent of the world's coral species and six of the world's seven marine turtle species can be found. Timor-Leste has a coastline of approximately 700 km in length, and a potential Exclusive Economic Zone (EEZ) of approximately 75,000 km^2. Over 100 rivers from the highlands flow into the coastal zone, but discharges are short and fast flowing due to the steep topography. There are 24 key wetland sites that have been identified as environmentally significant and in need of conservation and resource management.

Studies on the versatility of the kidney bean in Timor-Leste

Biodiversity and food security issues are crucial to the island. Through the Ministry of Agriculture and Fisheries, with the Government of Australia through the Australian Agency for International Development and the Australian Centre for International Agricultural Research, Timor-Leste implemented "The Seeds of Life" Programme in 2005, a bilateral assistance programme aimed to address food security issues in the country.

In this regard, research on the kidney bean has been important for food security. The bean is one of the highest in protein content of grain legumes and is the most expensive of seeds sold locally. It is commonly grown during rainy season in the cold highlands at an elevation of 1,000 m or above. Production might be affected by climate change such as an increase in air temperature. This suggests that if the bean is merely grown in the cold highland areas, its production will be reduced due the changes in air temperature.

Several studies on the adaptation of the kidney bean to lowland coastal areas have been undertaken by the Department of Agronomy and Centre for Climate Change and Biodiversity, National University of Timor Lorosa'e since 2012. The research objectives were to identify the potential of grain legumes (among others) to be grown after rice in the lowland coastal areas; whether the kidney bean had the ability to adapt to water deficit conditions; and the appropriate time to sow seeds after rice harvesting.

The three-year study has confirmed that the bean can be grown in the lowland coastal areas. It was observed that, during the dry season, the bean plant developed fast, accumulated high biomass, and reached flowering and maturity after about 30 and 72 days respectively after sowing. This growth habit is also important to cover ground and thus prevent water loss through evaporation, conserving more water for plants. This finding that production of kidney beans in lowland coastal areas would compensate for low grain production from highland areas if affected by climate change is significant. The results of the three years study led to conclude that kidney bean can be grown in lowland coastal areas during dry season. This could increase grain production of kidney bean through utilization of residual water after rice or with supplement of irrigation.



Kate Dixon on flickr

Dawn from Mt. Ramelau, Timor Leste



Togo

In the Fazao-Malfakassa national park, the number of elephants increased by 57 per cent in 10 years

Located on the coast of the Gulf of Guinea in West Africa, Togo is one of the smallest countries in Africa, 56,600 km², and has a great diversity of natural landscapes. To the south, the country faces the Atlantic Ocean with a coastal plain of lagoons, mangroves, marshes and small sacred forests. The centre of the country is characterized by hills and mountains ranging from south-west to north-east, as well as savannas and wooded plains. The northern part of the country also includes vast savanna plains as well as agroforestry parks and dense dry forest plots housing the main protected areas including the Oti-Kéran-Mandouri and Fazao-Malfakassa national parks, and the Galangachi and Doungh wildlife reserves.

Participatory management of protected areas

To support the collaborative management of protected areas, Village Associations of Participatory Protected Area Management (AVGAP) have been established, particularly at the level of the protected areas of Oti-Kéran-Mandouri, Togodo, Abdoulaye and Bayémé. The AVGAPs are grouped into a larger union of village associations for the participatory management of protected areas (UAVGAP). As such, 48 AVGAPs were placed around the Oti-Kéran-Mandouri national park and 50 were established at the Fazao-Malfakassa. In addition to the three AVGAP set up in 2011 around the Abdoulaye Fauna reserve, three new ones were put in place, bringing to 104 the total number of AVGAP by 2013.

Mechanisms have been developed to mobilize resources for the AVGAP and UAVGAPs. For example, residents of the Oti-Kéran-Mandouri enjoyed dividends of 30 per cent of revenue from the park's crossing rights between 2006 and 2008, enabling school building.

A ministerial order granted a 15 per cent rebate to the riparian population as a result of the exploitation of forest plantations. Between 2006 and 2009, the Office for Forest Development and Exploitation (ODEF) paid about US$ 265,000 per year to the populations bordering the state plantations.

NGOs actively support people in sustainable natural resource management projects. For example, the NGO Rafia has accompanied the populations of four villages in the savannah region in the management of community forests with the implementation of income-generating activities. The project to strengthen the conservation role of Togo's National Protected Areas System (PRAPT) has initiated the enhancement of non-timber forest products in the savannah region with women's communities through beekeeping and the manufacture of shea butter around Oti-Kéran-Mandouri.

The Environmental Action Association for Sustainable Development is also working with Alibi populations in Tan Prefecture to develop a plan for the development and management of a 4,000 ha community forest with the support of IUCN France and the GEF

The ITTO project "support for the mobilization of community initiatives for the promotion of forestry in Yoto" has contributed to the socio-economic development of basic communities through the protection of flora and the development of reforestation activities. This was achieved through a self-promotion pilot in the form of action research for integrated sustainable development.

Target populations were encouraged to develop private reforestation activities in order to create community forests whose future exploitation could significantly improve their incomes.



jbdodane on flickr

Ogou, Plateaux Region, Togo



Tonga

Tonga is home to 20 endemic species of terrestrial and sea bird

The Kingdom of Tonga is a small South Pacific nation comprising 171 islands, of which about 37 are inhabited. There are four main island groups, consisting of both volcanic and coral islands. Tonga is endowed with unique resources and derives much of its economic, environmental and social well-being directly or indirectly from its environment. Through projects funded by the Global Environment Facility Small Grants Programme (GEF SGP), the country supports numerous special ecosystems that provide protection against diseases, climate change and natural disasters, support nutrient cycling, and aid sand and soil formation.

Building an effective civil society

The Civil Society Forum of Tonga (CSFT) is mandated to provide strong leadership and assist its members through the provision of various platforms, capacity-building, and leadership development on thematic areas such as socio-economic, political, human rights and environment issues. As the National Host Institution for the Global Environment Facility Small Grants Programme (GEF SGP), CSFT has funded and completed 11 projects since 2009.

One of the successful projects implemented under the GEF SGP focused on Special Management Areas (SMAs). In collaboration with the Ministry of Agriculture, Food, Forestry and Fisheries, CSFT provided continuous support to three SMA communities. Community participation was monitored when a new project commenced and in 2011, community participation accounted for 48 per cent of all local families. As people witnessed the positive results emerging during project implementation, there was full commitment from the community.

Community support is the key to the success of any project to be completed on time, but it is also the key to long-term success. For example, the Lagoon for Generation project found that a massive coastal cleanup involving local people led to increased mangrove populations, improved coastal cleanliness and raised community awareness.

There are also parallel efforts by the Tonga Community Development Trust (TCDT), an indigenous, non-governmental development organization with a focus on capacity-building with special attention to less developed and more disadvantaged communities. Projects cover a range of focal areas, including family and community health, rural water supply and sanitation, sustainable development and environmental conservation.

Community ownership has been instrumental to the success of the various GEF SGP projects in Tonga. On the island of Felemea, the yield benefits from SMAs are equally shared amongst members. All three communities have recorded an increase in fish species variation and species concentration. There are also species that were known to have disappeared but are now in abundance, which is a very positive indication.

Another factor that contributes to success is governance structure, with the highest success rate seen where all positions are selected by the community themselves. The provision of alternative livelihoods contributes to the effectiveness of conservation efforts, especially where SMAs provide alternatives to a strict no-take policy.



madstefan on flickrvv

Azur, Vava'u Island, Tonga

Trinidad and Tobago

The coastal zone houses the most biologically diverse ecosystems in Trinidad and Tobago such as coral reefs, seagrass beds, rocky shores, beaches, mudflats, mangrove swamps and littoral woodlands and scrub

The economic value of biodiversity in Trinidad and Tobago is observable through its forests and marine ecosystems as they are the natural resources required for food, products and sustainable livelihoods. The added value of these ecosystems has greater benefit through preservation rather than destruction. The economic benefits from forests are important, not only as a natural resource, but also the added value from carbon sequestration. Forests also serve as a source for water and prevention of disasters such as forest fires. The value of the marine environment to the economy is seen in the fishing industry and through coastal protection.

The benefits of the Green Fund

The Green Fund was established under the Finance Act 2004 by the Government of Trinidad and Tobago, and is capitalized by a tax on the gross sales and receipts of corporate companies operating in the country. The Fund is a grant facility available to Community Based Organizations (CBOs) and NGOs or, according to the legislation, "…any other body incorporated by or under a law other than the Companies Act." The Fund's resources are distributed by an agency established for that purpose under the supervision of an advisory committee. Groups qualifying for funding must be involved in activities focusing on environmental conservation, reforestation or remediation. In this regard, projects carried out in areas such as the Caura Valley have benefited.

The Caura Valley watershed is affected by a range of driving forces, leading to declines in the capacity of the ecosystems in the area, especially the forested lands and the river. Having noticed the changes that are taking place, and being the persons who are most directly affected by these changes, residents of the Caura Valley have mobilized themselves to become advocates, and lobbyists for the protection of the valley. The residents, led by the Caura Valley Village Council (CVVC), have become involved in many different projects and initiatives aimed at conserving and restoring the biological diversity of the valley; providing opportunities for livelihoods; and reducing the vulnerability of the valley to natural disasters.

In 2015, the CVVC finalized its Strategic Plan in which five goals were established: a well-managed watershed within environmental limits; strategic infrastructural development serving the valley; sustainable levels of wealth generated by the residents; a vibrant, world-renowned heritage and nature centre; and a well-governed village council and an equipped Activity Centre. An important area of focus within the plan that ties the goals together is the development of eco-finance (or Payment for Ecosystem Services). The members of the CVVC consider that this type of scheme, which could be piloted and potentially funded under the Green Fund, would provide an opportunity to address many of their concerns related to the declining state of the ecosystems within the valley, and the associated risks that this poses, not only to residents, but to the wider community in Trinidad, especially in the context of climate change.

The work completed to date exemplifies the commitment of communities in Trinidad and Tobago in helping to address the biodiversity-climate change nexus on a local scale. This type of initiative, related to the development of an eco-finance model for the valley, is one that is likely be adapted across the country as an Eco-DRR model to help the country to reduce its vulnerability to climate change.



Stephanie Tom Yick

Trinidad and Tobago

Tunisia

In total, 81 ecosystems have been recorded in the country

Located in North Africa, Tunisia covers 163,610km^2. Despite its relatively small size, it has a rich biological diversity due to its geographical location between Europe and Africa, at the level of the Strait of Sicily, as well as because of its varied climate, geology and relief. In the north, the territory contains the eastern end of the Atlas Mountains, as well as vast and arid steppes. The country's 1,300 km-long coast along the Mediterranean features lagoons, tombolos and sand beaches on the northern and eastern borders on the country. The whole southern part of the country is desert land (40 per cent of the territory), marked by a succession of chotts — El Gharsa, El Jerid, El Fejaj — rocky plateaus and dunes.

The conservation of genetic resources through the National Gene Bank

In the past decades, Tunisia has made considerable efforts towards the conservation of plant and animal genetic resources and the fight against genetic erosion, an objective inscribed in Aichi target 13. Aside from the creation of many botanical gardens, arboretums and living collections, one of the most significant actions in this domain has been the establishment, in 2007, of a National Gene Bank (NGB).

The NGB's principal mission is the conservation of genetic resources of plants, animals and microorganisms, as well as coordination between the different operators in the field, the promotion of conservation activities, and the sustainable uses of genetic resources. Its work also serves to fight against genetic erosion and the irreversible disappearance of local genetic resources.

The NGB has nine thematic groups: cereals and pulse; forage plants; fruit trees; vegetable crops, condiments and flowers; forest and pastoral plants; medicinal and aromatic plants; microorganisms; marine genetic resources; and ornamental plants.

Since its creation, the NGB has carried out many programmes of collection, and the characterization and conservation of genetic resources. It has also participated in the duplication and conservation of collections held in research institutions as well as the repatriation of local genetic resources held in international gene banks and institutions.

The NGB currently conserves nearly 40,000 accessions of plant genetic resources. A majority of these are reserved for cereals because of their strategic importance in terms of food security and socio-economic aspects. For example, since 2007, the thematic group on cereals and pulse carried out the collection and repatriation followed by the characterization and conservation of 11,759 accessions of cereals including durum wheat, common wheat, and barley. The NGB also coordinates participatory conservation actions for local genetic resources of durum wheat by over 50 farmers.



Jérôme Prax on Unsplash

Ksar Ghilane, Tunisia

Turkey

Turkey, situated where two different gene and diversity centres overlap, is the gene and origin centre of many cultivated plants and grains

Turkey displays a limited but relatively diverse biological presence. The country has agricultural, forest, mountain, steppe, wetland, coastal and marine ecosystems and different forms and combinations of these. Of the biogeographical zones, the Euro-Siberian extends throughout northern Anatolia and in those parts of the Thracian Region that face the Black Sea. This is the climatic region with the highest rainfall and is largely covered with forests. The Mediterranean Biogeographical Zone covers all areas on the Mediterranean coast and the western parts of Thrace and includes very different types of ecosystem. The Irano-Turanian zone is the largest of the Biogeographical Zones, starting in Central Anatolia and extending as far as Mongolia. The continental climate and steppe flora are predominant in this zone.

The current biodiversity situation in Turkey

Conservation zones cover 6 per cent of the entire country and are monitored at the ecosystem level. The regular monitoring of species listed in the Hunting and Fisheries Laws is in place at the species level. A national monitoring unit has been established in the Ministry of Forestry and Water Affairs (MFWA) to perform monitoring at both the species and ecosystem levels, and it is currently gaining effect.

The MFWA conducts controls and investigations at local level under the Regulation on the Environmental Impact Assessment, and monitors any activities that may have adverse impacts on the environment, taking measures to remove the impacts to the greatest extent possible. Also, any activities that may have adverse impacts on the monk seals and sea turtles such as sand-hauling from the sea, fishing, and industrial wastes, are followed up under the monitoring programmes implemented for the two species, which are endangered.

The mainstreaming of biodiversity into relevant sectoral and cross-sectoral strategies; plans and programmes in the classical sectors based on natural resources; and a new project, the "Ecological Economy Action Plan," have been prepared and will be carried out between 2015 and 2017. A new national synergy study is also planned. A project on Climate Change and Biodiversity has been prepared, with the possibility of support from the GEF.

The MFWA and the Ministry of National Education conduct regular training and awareness raising activities. A national strategy that urges public awareness-raising and involvement under the GEF-funded Biological diversity and Resource Management project, has been developed. This is followed by a strategy and action plan that urges capacity building of NGOs concerning biological diversity under the same project.

The national biological diversity website has been constructed in both English and Turkish. Also, NGOs from the environmental sector are playing a significant role in public-awareness raising and enhancing sensitivity.



Sarah Yeomans on flickr

Turkey

Turkmenistan

The collapse of the Aral sea ecosystem and its far reaching consequences serve as the focal point for the efforts of Turkmenistan's water, land and environmental authorities

Turkmenistan is a landlocked country located in arid Central Asia, extending over 488,000 km^2, and home to 5.7 million people. There is sandy Garagum desert, stretching north-south and east-west; and low mountains along the border with Iran. Hilly steppe towards the Caspian Sea in the west and north-west dominates the landscape, covering an area in excess of 350,000 km^2 and represents the country's main ecosystem. The Kazakh steppe and low salt-pan flats situated on the shores of the Caspian sea and surrounding the bay of Garabogazköl are diminishing in size due to rapid desertification. The Kopetdag and Koytendag mountain ecosystems at the extreme south-west and south-east receive more rainfall that the rest of the country.

Plan to establish a protected areas network based on past successes

Turkmenistan joined the Convention for Biological Diversity in 1996 and, since then, a number of successful initiatives have been undertaken. For instance, the project: "Preservation and sustainable management of biodiversity of global importance at the Khazar Nature reserve on the Caspian shore" that ran from 2006 to 2010. A concerted effort on behalf of several governmental bodies, pursuing educational, organizational and financial levers, with a special emphasis on adaptive planning and project management, had achieved prevention of biodiversity loss in the Caspian shore ecosystem. The project established a baseline of what is achievable as well as paving the way for future projects in similar environments, geographically, socially and logistically.

The National afforestation project ran from 2000 to 2013 and achieved marked successes in the areas of Kopetdag mountains, where 60 million new trees have been planted over an area of 100,000 ha, thus achieving soil stabilization in this vast area, stalling desertification on the approaches to the mountains and re-establishing fragile forest ecosystems in the region that had been critically threatened in the last decades of the previous century. This has led to the enlargement of the natural range of markhor (Capra falconeri) and is expected to result in stabilization of the local population.

In 2013, the creation of Golden Age lake centred around Karashor depression in the middle of Garagum desert had achieved unprecedented success in the desalinization of local soils, the stabilization of desertification in the vast area around it, and the establishment of a regionally important nesting site for local and migratory bird species, such as the black-winged stilt (Himantopus himantopus) and white-tailed lapwing (Vanellus leucurus), which, while not threatened globally, were brought to the brink of extinction due to decline in the area of Aral sea

Turkmenistan's plan is to establish a protected areas network and increase coverage to over 30 per cent in the long term. Legislation has also been introduced for protecting national parks and biosphere reserves, which includes provisions for adjoining territories, development approaches and restrictions on activities in these areas. Management plans have been developed for reserves in Repetek, Amudarya and Syunt-Hasardag.

Fifty key international ornithological territories have been identified and described in Turkmenistan, covering all natural ecosystems in the country, as well as occupying 7 per cent of its territory.



Bruno Vanbesien on flickr

Poppies, Nisa

Tuvalu

Studies have suggested the total number of inshore fish and offshore species could be 900 or more

Tuvalu is a group of nine small low-lying limestone islands or atolls with a total land area of only 25.9 km² spread over an ocean area of about 1.3 million km². Tuvalu's Exclusive Economic Zone (EEZ) covers an oceanic area of approximately 900,000 km². Funafuti, the most highly populated atoll and capital, has 33 islets encircling a lagoon with a land area of about 275 km². The isolated, small, low-lying resource-poor atolls of Tuvalu are on the frontline against climate change, with the escalation impacting natural disasters and declining food, health and energy security.

Fruitful ideas for conservation interventions

The main intervention favoured by most R2R BIORAP respondents was the implementation of enforceable conservation and restoration practices, including the establishment, or strengthening of, systems of marine managed areas, including some no-take Marine Protected Areas (MPAs). Also suggested were restrictions on the catching of particularly threatened species until their numbers recovered sufficiently to allow exploitation to recommence. Other interventions suggested were improved marine pollution control and waste management, including improved household and institutional sewerage treatment and disposal; and enforceable legislation or by-laws against coral degradation such as damage due to boat anchors. A concerted campaign to raise awareness of the importance and conservation status of biodiversity was also considered a priority by most contributors.

The main interventions to address the drivers of the loss of terrestrial BES were the implementation of enforceable conservation and restoration practices, national awareness and education programmes; the propagation, and replanting of coastal protection species, specifically coastal reforestation, and the establishment of nurseries, improved windbreaks, hedges and seawalls.

Among the suggested conservation interventions would be the designation of selected uninhabited reef islets as wildlife reserves for threatened native plants and animals where their exploitation could be made illegal or where sustainable harvesting practices could be encouraged. Such islets would ideally be free from pests such as ants, rats and weeds or could be the focus of eradication programmes for these species. Islets like Tepuka Islet and the associated marine protected area could also serve as nature and cultural tourism sites and living laboratories for Tuvaluan students to learn about their biodiversity and ecosystem services.

Agricultural conservation areas could also be established, which could include:

- An excavated taro pit garden conservation and enrichment initiative, in which a diversity of cultivars of both taro and other plants could be promoted, as well as the planting of important mulching or fertilizer plants around these areas
- The promotion of mixed coconut-dominant agroforestry areas
- The establishment of fodder and mulching plant reserves with appropriate plants used for feeding pigs and other animals, many of which are also the main plants used for mulching and composting. This could include living fencing and hedging that can be pruned to provide fodder or mulch
- Village garden enrichment programmes that include increased cropping of food trees and other perennial food plants, short-term seasonal vegetables, medicinal and other culturally valuable plants and improved hedge plants. This could also see villages designated as horticultural enrichment areas.



Michael Coghlan on flickr

Red eyed frogs, Funafuti, Funafute

Uganda

With a recorded 18,783 species of fauna and flora, Uganda ranks among the top ten most biodiverse countries globally. It is host to 53.9 per cent (400 individuals) of the world's remaining population of mountain gorillas

Since becoming a Party to the Convention on Biological Diversity (CBD), Uganda has made significant progress in implementing it and its Protocols. The CBD has been domesticated in national laws and policies, including the Constitution of the Republic of Uganda. In particular, the Government is responsible for taking measures to prevent or minimize damage and destruction to land, air and water resources resulting from pollution or other causes, and for the creation and development of parks, reserves and recreation areas and the conservation of natural resources to safeguard and protect biodiversity.

Safeguarding biodiversity through regulatory action

In Uganda, the National Environment Act and the National Environment Management Policy have integrated the CBD, with relevant national laws and policies on environment and natural resources reviewed or developed accordingly.

The Land Act provides for Government or local government to hold in trust for the people and protect natural lakes, rivers, groundwater, natural streams and ponds, wetlands, forest reserves, national parks and any other land reserved for ecological and touristic purposes for the common good.

The National Policy on Biotechnology and Biosafety (2008) defines a framework for the safe application of biotechnology towards national development. The Policy recognizes modern biotechnology as a tool that can be used to enhance agricultural productivity, improve food and nutrition security, promote conservation and sustainable use of natural resources, and enhance human and environmental health.

Systems of Protected Areas (PAs) have increased from four national parks to a total of 735 forest and wildlife PAs. In addition, Uganda has designated 34 sites as important bird areas. Environment Impact Assessment (EIA) regulations were formulated in 1998 to cover all projects likely to have adverse impacts on the biodiversity, with appropriate mitigation measures to minimize or avoid potential negative impacts.

The National Biodiversity Strategy and Action Plan (NBSAP) was developed in 2002 and revised in 2015, with NBSAP II (2015–2025) mainstreamed in the National Development Plan II. It integrates the provisions of the National Vision 2040 and the Sustainable Development Goals.

A study on the level of investment on biodiversity conservation and management, supported by the United Nations Development Programme, has enabled Government to assess the funding gap for biodiversity conservation and management, estimated at about US$ 450 million per year. A National Biodiversity Finance Plan has been developed to guide mobilization of additional financial resources.

The Guidelines and Action Plan for Financing Biodiversity Conservation in Uganda supports implementation of the NBSAP while providing for investment in biodiversity conservation.

National regulations on Access to Genetic Resources and Benefit Sharing were formulated in 2005, followed by Guidelines for Accessing Genetic Resources and Benefit Sharing in Uganda in 2007. A national Clearing House Mechanism was developed and launched in 2013 to promote and facilitate technical and scientific co-operation among partner institutions.



Ghost Presenter on Unsplash

Queen Elizabeth National Park, Rubirizi, Uganda

Ukraine

The Protected Areas System has expanded to over 6 per cent of the Ukrainian territory

Occupying less than 6 per cent of Europe's area, Ukraine possesses 35 per cent of its biodiversity, associated with the favourable location of the country at a crossroads of migration and nature zones. There are many rare, relict and endemic species of biota (over 70,000), while certain flora (826 species) and fauna (543 species) which require special protection are included in the Red Book of Ukraine. In cooperation with other countries, Ukraine takes concerted measures to protect wildlife species specified by the international treaties to which it is a Party.

Funding the protection of nature

Ukraine is an agrarian state which possesses a powerful resource potential for agriculture. Forests occupy 16 per cent of the territory of Ukraine and the stockpiling and sale of timber is an important income item for the state and the population. The territory of Ukraine is crossed by several large rivers and water resources are important to ensure environmental and food security and stability.

Agricultural development of the territory stands at 72 per cent, with 56 per cent of land ploughed. The replacement of autochthonic cultural genetic diversity is evident as a result of increasing imports of domestic breeds of animals and plants as well as a decreasing number of wild species caused by privatization and development along riverbanks and coasts. Measures aimed at improving biodiversity are continuously implemented, along with improvements in the legislative framework in the fields of protection, conservation and sustainable use of biodiversity.

Activities are continuously carried out to conserve valuable natural systems and sites for the subsequent creation of Nature Reserve Fund areas of national and local importance. The locations of growth and habitation of regionally rare species of plants and animals listed in the Red Book of Ukraine are recorded and priority wetlands of international importance have been defined. A number of the territories have been examined to identify the key areas of the ecological network.

Given that economic activity is a decisive factor influencing the environment, actions to reduce the impact of anthropogenic factors focus on improving biodiversity and the condition of structural elements of the ecological network. The number of regional programmes on the ecological network and environmental protection has also increased, with 13 regional programmes approved since 2013.

At present, six regional schemes of development of the ecological network and 46 local schemes of development of the ecological network have been approved. Overall, the amount of land enjoying protection in Ukraine has expanded, with the Protected Areas System Nature Reserve Fund areas now covering over 6 per cent of the country.



Ministry of Ecology and Natural Resources of Ukraine

Valuable natural sites are chosen for the creation of Nature Reserve Fund areas

United Arab Emirates

Abu Dhabi is home to around 1,900 km² of blue carbon-storing ecosystems, with an average of 94 mg/ha in coastal sands

The United Arab Emirates (UAE) is characterized by a number of rich and unique ecosystems despite its harsh climate. The country is located in the dry tropical zone extending across Asia and North Africa, bordering Oman to the east and Saudi Arabia to the south, as well as sharing maritime borders with Qatar to the west and Iran to the north. Deserts comprise about 80 per cent of the country's area and host a variety of plants that have adapted to the climate and become an important source of grazing, in addition to being used for a range of medicinal products. The UAE's mountain ecosystem acts as a refuge for wildlife as it hosts 44 per cent of the country's wild plants, 42 per cent of its mammals, 24 per cent of its reptiles, and 17 per cent of its birds.

The UAE's new biodiversity strategy

Biodiversity protection, such as the conservation of the endangered Arab falcon and the protection of camel diversity, plays an important role in UAE's cultural legacy. Fisheries and tourism represent significant parts of the UAE economy, and these services aim to investigate the opportunities in building a local greener Emirate through a better understanding of carbon and coastal ecosystem services and their potential contribution to climate change mitigation efforts.

The UAE is considered a leader in the field of biodiversity conservation. This can be observed in the number of protected areas declared in the country, which has increased from 19 in 2010 to 22 in 2013, with a total area of 6841,975 km², the largest being the Marawah Marine Biosphere Reserve, covering 4,255 km². Similarly, the number of sites designated as Wetlands of International Importance (Ramsar Sites) has increased from two in 2010 to five in 2013. The UAE has also initiated various programmes for the protection of endangered species and put in place a number of policies and regulations for wider environmental preservation.

The new (and first) Biodiversity Strategy of the United Arab Emirates (2014-2021) includes a series of main orientations and national goals in line with the "Emirates vision 2021", in addition to the Emirates' Strategy for Green Development, the National Strategy for Coastal and Marine Environment, the Biosafety Strategy and the Aichi Biodiversity Targets. The main orientations focus on: mainstreaming biodiversity in all economic and social sectors; reinforcement of knowledge sharing and capacity building for upgrading and addressing biodiversity management; improvement of biodiversity status through habitat protection, genetic diversity and restoration of degraded ecosystems; reducing pressure on marine and terrestrial biodiversity; and enhancing regional and international cooperation on biodiversity cross-cutting issues. 21 national targets with action-driven and outcome-oriented measures, grouped under five thematic areas, have been set out. The new biodiversity strategy includes particular engagements on capacity building, communication and public awareness, resource mobilization, and on a national knowledge sharing platform in line with the Clearing-House Mechanism of the Convention on Biological Diversity. Progress on the implementation of the strategy and action plan will be monitored and assessed and findings will be reported by representatives from each Emirate.



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Falcon Training in the Desert, Dubai

United Kingdom

The countries of the UK have established a range of initiatives to restore peatland ecosystems within wider natural landscapes — for wildlife, as a contribution to climate mitigation and to provide wider economic and social benefits

Peatland ecosystems are globally significant for their contribution to carbon capture and storage. They support rich wildlife communities and can regulate water flow and improve water quality. In the UK, peatlands have been subject to a variety of pressures related to land management, drainage, afforestation, pollution and climate change. The countries of the UK have established a range of initiatives to restore peatland ecosystems within wider natural landscapes – for wildlife, as a contribution to climate mitigation and to provide wider economic and social benefits.

Restoring peatland ecosystems

In 2012, the Scottish Government funded Scottish Natural Heritage to set up the Peatland Action Programme to provide grants for peatland restoration. Since its establishment, the programme has supported the restoration of over 10,000 ha of peatland through 262 projects. Demonstration, training and online education resources have been used to engage local communities. Public support for the programme is high, with 95 per cent of surveyed respondents agreeing that future generations will benefit from the restoration of peatlands.

In 2003, the Moors for the Future Partnership was set up in England to restore peatland in the Peak District and South Pennines. The programme is supported by a range of partners including the Peak District National Park Authority, Government Agencies, non-governmental bodies and water companies, and has a broad funding base, including Government agencies, Heritage Lottery and the EU LIFE Programme.

Since 2003, the partnership has been responsible for the revegetation of 30 km^2 of bare, eroding and desiccated peat. Monitoring has shown that conservation works can lead to a rapid accumulation of sediment with a 90 per cent reduction in particulate organic carbon in stream water in gully-blocked and revegetated sites compared to control sites.

In 2017, a new US$ 13.2 million grant scheme to restore England's iconic peatlands was officially opened for bids. Grants were awarded in May 2018 to projects supporting the restoration of 6,580 ha of upland and lowland peatlands. The work of the projects will abate and store an estimated 23,000 tonnes of carbon per year.

In 2017, Northern Ireland (alongside the border region of Ireland and Western Scotland) received funding from the European Union INTERREG VA Programme to undertake a number of conservation projects that will make significant contributions to the restoration of natural habitats and vulnerable wildlife in these countries.

The Co-operation Across Borders for Biodiversity project is worth US$ 5.7 million and will include restoration of 2,228 ha of blanket bog across the three countries including Garron Platea, which is one of the best examples of blanket bog anywhere on the island of Ireland. The US$ 9.6 million Collaborative Action for the Natura Network project will improve the conservation status of 3,150 hectares of natural habitats, including peatland.

In Wales, the ambitious goal is to get all Welsh peatland which supports semi-natural habitat into sustainable management by 2020 (around 66,000 ha). Changes to the approach to natural resource management of the Welsh uplands have led to the provision of at least US$ 10.6 million by the Sustainable Management Scheme, supporting 15 projects. As a result of these efforts, over 50 per cent of Wales's semi-natural peatlands are now being managed in a sustainable way.



Black Mountains Land Use Partnership

Wales's semi-natural peatlands

United Republic of Tanzania

Tanzania hosts six out of the 25 globally known biodiversity hotspots. There is an extensive diversity of species, with at least 14,500 known and confirmed. The country is among 15, globally, with the highest number of endemic species

Located in Eastern Africa and comprising Tanzania Mainland and Zanzibar, Tanzania is home to six out of the 25 global biodiversity hotspots. These vast biodiversity assets have the potential to contribute to the economy and to support human well-being. The Government has taken several actions to address loss of biodiversity. These include formulating, reviewing and mainstreaming of biodiversity issues into relevant national policies, strategies and legislation, along with expanding and managing the network of protected areas. Othe areas of action are demarcating and protecting water catchment areas, promoting participatory management of biodiversity resources, and initiating programmes to protect threatened species such as black rhino and elephants.

Mainstreaming biodiversity issues

The Government has established environmental units in all Sector Ministries and continues to designate Environmental Management Officers at all levels of Local Government Authorities. Major programmes currently being implemented in the country have successfully mainstreamed conservation issues. One example of these programmes is the Lake Victoria Environmental Management Programme, a transboundary project designed to achieve development and global environmental objectives.

The project aims to improve collaborative management of transboundary natural resources of the Lake Victoria Basin and reduce environmental stress in the targeted pollution hotspots and selected degraded sub-catchments. Its desired outcome is to improve the livelihoods of communities who depend on the natural resources of the basin. The programme has two components relating to biodiversity conservation – watershed management and point sources pollution control. Implementation of these components ensures that the biodiversity of this important ecosystem is conserved.

Another initiative, the Lake Tanganyika Integrated Management Project, aims to produce an effective and sustainable system for managing and conserving the biodiversity of Lake Tanganyika and its basin. Biodiversity issues have been mainstreamed in this programme through interventions related to catchment management and pollution control through wastewater management.

Various sectors are also implementing programmes that are of relevance to conservation of biodiversity.

Biodiversity conservation has been mainstreamed (explicitly or implicitly) in a number of national development frameworks, including Tanzania Development Vision 2025, the National Strategy for Growth and Reduction of Poverty (2010–2015), and the National Environmental Action Plan (2013–2018). Relevant sectors have also taken measures to mainstream biodiversity into their policies, strategies and plans. The national education curriculum has integrated biodiversity knowledge in teaching and learning processes. In addition, participatory management of wildlife, forest and marine areas is being promoted to address the need for biodiversity conservation. Participatory management is a means to sustain livelihoods, particularly for poor communities. The use of alternative energy sources such as biogas, briquettes, solar, wind and hydropower is also being encouraged.



Diana Robinson on flickr

Female lion chasing wildebeest at Ndutu



Uruguay

The Uruguayan coast has an area of 670 km and includes the eastern coast of the Río de la Plata, and the coast of the Atlantic Ocean

Uruguay is located in South America. It has its coasts on the Atlantic Ocean and the Río de la Plata and has a territorial surface of 176,215 km² and 120,684 km² of territorial sea. It borders the Federative Republic of Brazil to the north, north-east and east, and with the Argentine Republic to the west and north-west. Its climate is temperate, and the rains are usually abundant, with an average annual precipitation of 1,300 mm, although there are usually prolonged periods of drought. There are a wide variety of soil types and landforms with an extensive hydrographic network, characterized by six main basins. The population is 3.29 million, concentrated mainly in the capital and metropolitan area.

The grassland alliance in natural land management and conservation projects

Founded by Birdlife International and its partners in Uruguay, Argentina, Brazil and Paraguay, the Alianza del Pastizal is a regional initiative that promotes the conservation of natural pastures and their biodiversity in the Southern Cone of South America. In Uruguay, the Alliance has an increasing number of rural establishments and members committed to the conservation and sustainable management of high proportions of the natural land contained in their properties.

There are several examples of Alliance member establishments that, with the support of national organizations, have implemented sustainable pasture management practices. There are also links with the Ministry of Livestock, Agriculture and Fisheries (MGAP); the National Directorate of the Environment; and the National System of Protected Areas.

Within the framework of a cooperation agreement between the Responsible Production Project of MGAP and Aves Uruguay — representative of the Pastizal Alliance in Uruguay — seven property projects of integrated management of natural resources were implemented between 2010 and 2011. A comprehensive strategy was proposed to promote production and conservation in all properties of the group that included components for:

- Improving the management of natural pastures (systematizing grazing modules, defining optimum occupation and rest times and progressing over areas of natural field that were not subdivided)
- Providing habitat for birds that use medium and high grassland (strategy to guarantee the coexistence of different grass heights in each grazing module, instead of the predominance of short and thin carpets)
- Improving water quality and distribution for animals (construction and or repair of cut-offs, all of which were fenced and excluded from grazing, generating better quality water supplies for animals, and more developed pastures, which are specific habitats for certain species of fauna)
- Providing shade and shelter for the animals (important silvopastoral proposals, with different types of tree arrangements, but always thinking about livestock and optimizing the use of forage resources)
- Promoting the knowledge of producers about biodiversity at the flora and fauna level.



Nando.uy on flickr

Villa Serrana, Lavalleja, Uruguay



Uzbekistan

The national Red Data Book of Uzbekistan (2009) includes 107 species of vertebrate, 77 of invertebrate, 321 of plant and 3 species of fungi

Covering an area of 447,400 km², the Republic of Uzbekistan is located in the basin of the Aral Sea, Central Asia, and lies between the two major Central Asian Rivers, the Amudarya and the Syrdarya. The climate is subtropical, sharply continental and arid in most parts of the country. According to the criteria of the UNESCO world map of desertification and the UN Convention to Combat Desertification, the country has an aridity index from 0.03 to 0.20, and is subject to intensive desertification and droughts.

Raising public awareness

In Uzbekistan a massive project to raise public awareness about biodiversity has been conducted by means of information campaigns, mass media, publications, organization of workshops, and wide distribution of thematic information. In order to create a sustainable basis for ecological knowledge, work is carried out on the introduction of ecological aspects, including biodiversity, into educational programmes.

The State Committee for Nature Protection prepared and published a number of editions on ecology including: Educational aid for school children of 5th and 6th forms; Uzbek-Russian-English ecological dictionary; The Red Data Book (volumes 1 and 2); Report on the state of the natural environment and use of natural resources in the Republic of Uzbekistan in 2005-2006; booklets on the Gissar nature reserve; a photo-album within the series of Protected natural areas in Uzbekistan; the book Nature Reserves and National Parks; and A popular ecological encyclopedia, volumes 1 and 2.

A monthly TV programme, Man and World that was devoted to ecological problems of Uzbekistan was broadcast on the First TV Channel of in Uzbekistan. Contacts were made with television information programmes which highlight workshops, presentations and conferences organized by the State Committee for Nature Protection. Also, raids organized by the Administration for Protection of Fauna and Flora received extensive media coverage, highlighting the detainment of poachers catching fish during spawning, as well as the illegal felling of trees.

Radio channels broadcast monthly radio programmes such as Human and Nature, Youth in Nature Protection, and Ecology News.

Business contacts have been made with newspaper journalists, with a nomination for the best article on protected areas established.

The State Committee for Nature Protection and other interested bodies organize annual celebrations with the broad participation of the general public dedicated to international ecology holidays, such as the Earth Day, Water Day, Day of Nature Reserves and National Parks, World Wetlands Day, World Environment Day, World Biodiversity Day, and World day to Combat Desertification. These efforts and activities have culminated in raising public awareness throughout the nation.



Jean-Pierre Dalbéra on flickr

Uzbekistan

Vanuatu

Vanuatu has several species of turtles, including loggerhead, green turtle, hawksbill and leatherback

Vanuatu is an archipelago located in the Southwest Pacific Ocean which includes an array of 83 islands, of which about 65 are inhabited. The total land area covers 12,336 km² and the country's coastline is 2,528 km long. Vanuatu's island chains are mostly of volcanic origin and are mountainous. 74 per cent of land is covered with natural vegetation. Forested areas are the dominant landscape element, including tropical lowland evergreen rainforest, broad-leaved deciduous forest, closed conifer forest, montane rainforest, as well as mangrove forests. The country's biodiversity is rich and includes, among others, 1,000 vascular plant species of which 150 are endemic, 121 bird species and 28 species of reptile.

Community-based assessment of crown of thorns on Emae Island

Invasive species can have a negative impact on native ecosystems and the species they contain. These impacts may disrupt the ecosystem processes, degrade habitats, reduce biodiversity and introduce diseases to flora and fauna. Island ecosystems appear to be more vulnerable to invasions, as they tend to have fewer species present and are less complex with distance from the continent.

The crown of thorns (COT) starfish (Acanthaster planci) is native to the Indo-Pacific Region of which Vanuatu is a part. Although it is native, it is currently acting as an invasive species, and as such, Vanuatu's Fisheries Department has been working with some communities to control its spread. For example, in mid-2004 on Aore Island and the Million Dollar Point area on Santo, over 3,000 COTs were collected. In late 2013, the shallow waters of Luganville yielded some 3.7 tons of COTs during nine days of community effort.

These efforts are particularly important because COTs are one of the natural threats to coral reefs. The predation of corals by COTs has caused coral mortality that has contributed to habitat loss, resulting in the displacement of marine organisms inhabiting the coral reef ecosystems. As such, a research project to investigate potential effects of cheap, easy-to-find low pH solutions for control of the COTs was carried out in 2014. The assessment was implemented by the Institute for Research and the Fisheries Department of Vanuatu, and was funded by French agency LABEX CORAIL.

The project's objectives were threefold. Firstly, to assess the population density of COTs at the island scale using a participative, transect-based approach. Secondly, the project intended to pilot test the effectiveness of education and training materials and methods on participative COT surveys. The third objective was to pilot test the effectiveness of acidic injections on living COTs. The project was carried out on the coral reef directly by the Marae Village on Emae Island in March 2014.

The assessment led to a number of observations and findings. Notably, the survey emphasized low to very low densities of COT populations around Emae Island. The highest number of COTs was observed in the Makatea area. Therefore, the mean densities of COTs were found to remain below the threshold usually considered for outbreaks. The second principal finding of the assessment was that an injection of an acidic solution, in this case lemon juice and vinegar, was found to efficiently and quickly cause death among the COT populations.



Stacie Lucas on Unsplash

Lelepa, Vanuatu

Venezuela (Bolivarian Republic of)

52 per cent of Venezuela is covered by a huge variety of tropical forest types, currently estimated at 47.6 million ha of complex and biodiverse forests

The Bolivarian Republic of Venezuela has a privileged geography and physiography, with high orographic, climatic and ecological diversity. The country is located between the north of the Amazon Basin and Isla de Aves in the north of its exclusive economic zone, and from the Orinoco Delta and the Essequibo to the Serranĺa de Perij. The total area is 916,445 km² with a land surface of 882,050 km². The maritime area includes approximately 71,000 km of territorial sea, 100,000 km of continental shelf and 472,000 km of exclusive economic zone in the Caribbean Sea and Atlantic Ocean. This location gives the country a wide diversity of ecosystems throughout 27 climatic zones, with 650 types of natural vegetation, 23 relief forms and 38 large geological units.

The conservation of crocodiles

As a result of the high diversity in biomes, Venezuela concomitantly presents one of the world's highest biodiversity indices in plant and animal species. The Escudo de Guayana region, along with the mountainous systems of the Andes, the Cordillera de la Costa and the Serranĺa de Perij-, are the main endemic centres for the country's wild flora and fauna

Conservation of the Costa Cayman

This significant programme aims to reinforce the existant populations and reintroduce specimens from the coastal Cayman (Crocodylus Acutus) throughout its natural distribution area. Among the actions taken for its conservation are population monitoring; the rescue of nests and/or newborns, and captive breeding for later release to the wild. To date, 703 specimens of the Costa Cayman have been released.

Among the most important activities are:

- Monitoring of the population status of the species using a census of individuals
- Estimation of the abundance of nests of the species by locality using a census of nests. Saltwater crocodiles lay their eggs in a mound of plants and mud
- Estimation of annual reproductive success by locality in terms of viable nests
- Collection of wild newborns for captive breeding
- Captive breeding in nurseries by conservationists of the species
- Annual releases of juvenile alligators bred in captivity
- Care of contingencies related to the wellbeing of the species
- Mobilization of confiscated specimens and reintegration into the wild.



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El Consejo, Venezuela

Viet Nam

A policy on payment for environmental services has become an important source of financing for the forest sector, generating revenue for participating households and protecting about 4.6 million ha of forest

The rich biological diversity found in Viet Nam makes it the world's 16th most biodiverse country. About 16 per cent of all global species exist in Viet Nam, where the topography and climate have given rise to a wide diversity of natural terrestrial, freshwater, coastal and marine ecosystems. The need to balance development with environmental protection, sustainable use of natural resources and biodiversity conservation is reflected in the Sustainable Development Strategy of Viet Nam to 2020. These themes are also present in the National Strategy for Green Growth 2013-2020. The country's vision to 2050 includes strategies for environmental protection, biodiversity conservation, and the strategic development of agriculture, forestry, fisheries and tourism.

Integrating biodiversity into policy

Biodiversity conservation is the responsibility not only of the environment sector but also of many other sectors and governmental levels, especially businesses which rely on biodiversity and ecosystem services (such as agriculture, forestry, fisheries and tourism). Viet Nam's National Strategy on Climate Change focuses on improving the quality of forests, afforestation, greening vacant land and bare hills, and ensuring the efficient exploitation of forests. It also aims to enhance the protection, management and development of submerged forests and land ecosystems. A key goal is to increase the forest coverage to 45 per cent by 2020.

The country's National Strategy on Green Growth for the period 2011-2020 and its vision to 2050 seeks to accelerate the process of restructuring and improving economic institutions towards more efficient use of natural resources. This includes enhancing the competitiveness of the economy through increased investment in technological innovation, natural capital and economic instruments. The strategy addresses threats posed by climate change and poverty.

According to the National Strategy for Forestry Development 2006-2020, forest development should contribute to economic growth, hunger eradication, poverty reduction and environmental protection. In this context, the management, use and sustainable development of forests provide the foundation for forestry development, based on promoting forest business and attracting investment resources for the protection and development of forests.

A national programme to planting five million ha of forest between 1998 and 2010 has greened wasteland and barren hills, subsequently increasing the total forest area. A policy on payment for environmental services has become an important source of financing for the forest sector, generating revenue for participating households and protecting about 4.6 million ha of forest. Through the implementation of plans for sustainable forest management and forest certification in the 2016-2020 period, Viet Nam expects to have at least 500,000 ha of forest that are certified to be under sustainable management by 2020. This will include 350,000 ha of newly planted forest and 150,000 ha of natural forest.

Vietnam has also established criteria to identify rare and endangered species that need to be protected. This will allow for development of a list of endangered, precious and rare species prioritized for protection, a list of aquatic species and waters restricted for exploitation, and a list of invasive alien species.



Doan Tuan on Unsplash

Chế Cu Nha, Vietnam

Yemen

Yemen has sector strategies and action plans for the agricultural, fisheries, environmental and other development sectors, enhancing education and awareness to adopt better resource management strategies

Yemen has a rich variety of both biodiversity and landscapes, reflecting the variety in geology and altitudes found within the country. Located at the junction of several major biogeographic zones, Yemen provides important passage and resting sites for migratory birds and marine resources, and is a significant centre for wild relatives of domestic crops. The country has a variety of habitats which range from coastal mangroves, shrublands and dunes along the coastal plains to the eastern deserts and an array of mountain habitats. It has also long been a centre for breeding and selection of cultivated plants and livestock.

Raising awareness for better practices

Because of its altitudinal variation and its location at the crossroads of the African, Asian and Palearctic ecological zones, Yemen has a wide range of terrestrial, coastal and marine natural habitats, species and genetic diversity, including many endemic species. These resources are of major economic importance because of their potential for tourism and the wildlife and fisheries they support. Also, numerous plants are used in traditional medicine, in local industries, and for grazing and fuel wood.

Yemen formulated its National Biodiversity Strategies and Action Plan with the inclusion of stakeholders, local communities and NGOs in the coordination and consultation phases. Although the responsibility for environmental education and awareness lies on all institutions dealing with biodiversity, the education and awareness unit of the Environmental Protection Authority (EPA) has been the most active in this regard. The unit issues an Environment Magazine on a quarterly basis and actively participates in the environmental page in Al-Thawra daily newspaper, publishing environmental news, information and newspaper articles.

The EPA provides the national TV and radio stations with environmental information and audiovisual materials to produce TV spots and documentary programmes. It cooperates with many national partners in producing bulletins, posters and brochures to enhance public awareness in general workshops, environment clubs, school campaigns and summer camps. It also organizes and actively participates in environmental events such as world international environmental day, water environmental day and desertification day.

Yemen has sector strategies and action plans for the agricultural, fisheries, environmental and other development sectors, enhancing education and awareness to adopt better resource management strategies. Regulation of marine resources such as fish takes place through laws and by-laws which strictly inhibit fishing in the spawning seasons. Livelihood alternatives for the local communities reduce pressure and excessive demands on the natural resources.

Community cooperation is a key element, with awareness programmes on sustainable natural resources exploitation for local communities and stakeholders. This enables the adoption of environment-friendly methods and techniques as alternatives to the bad practices that have destroyed habitats in the past.



Valerian Guillot on flickr

Hornhill plateau, Socotra

Zambia

The semi-evergreen, evergreen and deciduous forests cover 66 per cent of the total area of Zambia. The country has eight wetlands of international importance (Ramsar sites) covering over 40,000 km²

Zambia is endowed with an abundance of natural resources and a rich biological diversity. The importance of biodiversity for Zambia lies mainly in its contribution to the provision of ecosystem goods and services for national economic development and livelihoods. At the ecosystem level, forests, agro-ecosystems and wetlands can be distinguished as the key ecosystem components that have a relatively greater bearing on the country's natural system integrity upon which the national economy and the livelihoods of the population depend. The current assessment recorded a total of 12,505 species in the country compared to 7,884 in a 1998 assessment.

Strict regulations for forest reserves

The network of Zambia's statutory protected areas comprises 20 National Parks (NPs) covering 63,630 km², 36 Game Management Areas (GMAs) covering about 16,7557 km² and 490 Forest Reserves (FRs) covering 74,361 km². The Protected Area network map was overlaid on the vegetation map for a preliminary overview of vegetation-based ecosystem representation in NPs and FRs. There are two main categories of forest reserves in the country: local forests (306) and national forests (184). The management objective in local forests is to meet the needs for forest products for present and future generations of local people. The objective for establishing national forests is to protect and conserve major water catchments and their biodiversity. For these reasons, both local and national forests fall in the IUCN conservation area category VIII (multiple use management area or managed resource area).

Regardless of the type of forest reserve, no permanent settlements are allowed there. Within each category of forest reserve, two functional sub-categories are recognized: production (107) and protection (383) forests. Licensed exploitation of forest products is allowed in production forests while protection forests are intended for the protection of water catchments, biodiversity and cultural values. In addition to forest reserves, there are also 59 botanical reserves that are located either within or outside forest reserves. Botanical reserves were established to preserve relic vegetation types and/or promote the in-situ conservation of important plant genetic resources. They are also sources of germplasm for multiplication and breeding programmes.

Although FRs are classified as either protection for the conservation of biodiversity and watersheds or production for sustainable utilization of forest resources, in practice there is no difference in the way that they are managed.

The Zambia Wildlife Authority (ZAWA) administers NPs and oversees the protection of wildlife. The Wildlife Act of 1998 provides for the establishment of Community Resources Boards (CRBs) that provide for the involvement of local communities in the co-management of wildlife in GMAs. At the time of writing, there were 54 CRBs in the country. Since the Fourth National Report, the key changes in the status of National Parks and Game Management protected area systems is the creation of a new national park. The Lusaka National Park was established in 2011 on tracts of land that were forest reserves, and have since been de-gazetted to pave way for the establishment of the park. The Park is stocked with 827 animals comprising nine species.



Ellen Weiss

Elephants at the Lower Zambezi

Zimbabwe

Zimbabwe has 20 Important Bird Areas (IBAs) covering 30,050 square kilometres, which is 7.7 per cent of the total surface area

Zimbabwe's Protected Area (PA) network is made up of national parks, wildlife estates and gazetted forests, conservancies and Communal Areas Management Programme for Indigenous Resources areas. Together, PAs constitute 28 per cent of the total land area. Human encroachment on some protected areas, private game reserves and conservancies has resulted in changes to ecosystems and habitats. Zimbabwe has intensified efforts at conserving biodiversity through participation in five transfrontier conservation areas. The country's forest biodiversity comprises plantations, protected indigenous forests, woodlands, bushland and wooded grasslands.

A participatory approach

A statutory instrument on access to genetic resources was formulated in 2011 and a draft policy on intellectual property is also being devised. Acceptance of the principles of equitable access and benefit sharing is enshrined in the Constitution and the Indigenisation and Economic Empowerment Act. This has led to the creation of community share ownership trusts in the mining sector.

Wildlife-based and forest-based land reform programmes have provided the basis for indigenous communities to engage in enterprises that have created community game ranches and commercial communal conservancies. There are local-level participatory institutions for natural resource management, such as community-based enterprises for beneficiation of natural resources, river catchment management councils, wildlife committees, environmental subcommittees and fire management committees.

The National Water Policy of 2013 incorporates overall environmental protection and pledges the provision of adequate quantities and quality of water for wetland ecosystems and wildlife. Integrated environmental concerns that promote biodiversity conservation are incorporated in the National Energy Policy of 2012, the Comprehensive Agricultural Policy Framework, the Ministry of Mining and Mining Development's Five-Year Strategy Plan (2011–2015) and several statutory instruments on aspects such as commercial exploitation of forest-based products and access to genetic resources and indigenous resource-based knowledge. The National Environmental Council, comprising permanent secretaries of relevant ministries, academics and representatives from civil society and industry, provides impetus for improved harmonization of policies and conservation efforts.

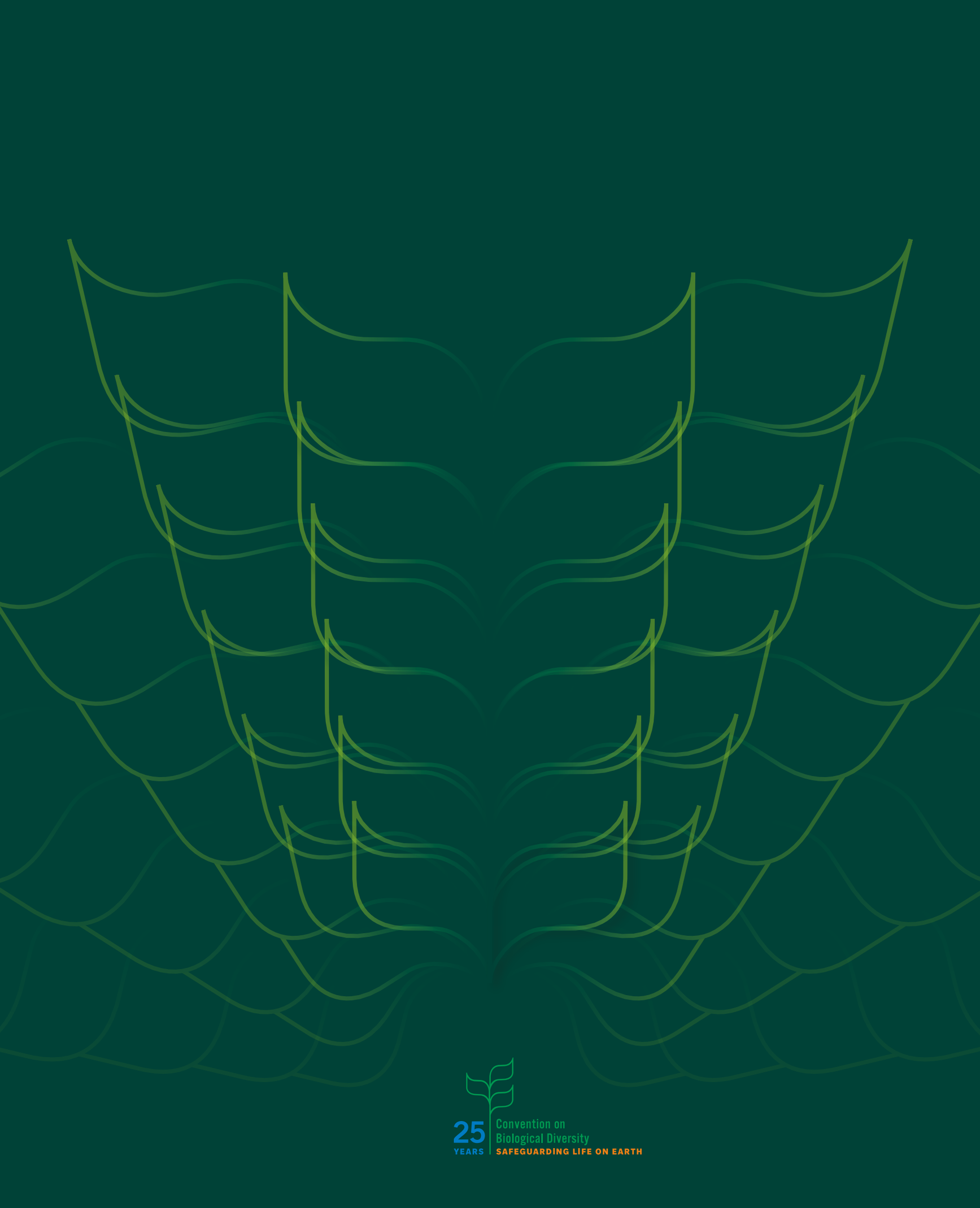
BirdLife Zimbabwe has identified and mapped Important Bird Areas and undertakes regular monitoring of bird populations and assessments of habitats. The Zimbabwe Parks and Wildlife Management Authority has collaborated with national, regional and international scientific and academic institutions to conduct research and wildlife and animal surveys in protected areas. Ongoing monitoring of lion, wild dog and elephant populations takes place with financial support from the private and NGO sectors.

The National Herbarium and Botanic Gardens carried out reassessment of habitats and endemic plant species in the Eastern Highlands in 2012. Other projects include Forestry Commission monitoring of invasive alien species in Eastern Highlands plantations, and a Man and the Biosphere monitoring programme.



Ninara on flickr

Victoria Falls, Zimbabwe


25
YEARS
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