PARTNERSHIP IN ACTION
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CLIMATE ACTION, BIODIVERSITY CONSERVATION, AND PROTECTING MALAYSIA'S SUSTAINABLE FUTURE
Nature is humanity’s most powerful asset. The imperatives of nature are indivisible from the overall notion of development. Loss of ecosystem and its attendant services could cause a decline in global GDP by $2.7 trillion by 2030, and therefore constitutes an existential risk to human well-being and survival. Many of the current crises facing our natural ecosystems, are integrated crises that demand integrated solutions.

In Malaysia, UNDP is proud to partner with the Government of Malaysia and multiple local and global development actors, funders, and communities—to purposefully advance environmental sustainability and resilience through various mechanisms, through both policy and programmatic interventions.

Despite two years of crises brought about by the pandemic, our joint efforts over the past five years have delivered achievements on multiple fronts, from mainstreaming biodiversity into state planning processes as well as enhancing protection of biodiversity, to improving community livelihoods, and natural resource management.

Our work has also supported Malaysia’s transition to an inclusive, resilient, pathway that includes achieving the goal of net-zero emissions, thus facilitating the meeting of its international commitments. To this end, UNDP continues to collaborate with development partners and communities to transform energy and food systems, infrastructure, transportation, land, industry, and other sectors, to combat climate change and eradicate poverty.

These successes, stemming from multiple projects within our wide-ranging portfolio, are narrated in the following pages through stories of resilience, collaboration, and the triumph of human ingenuity over adversity. This coffee table book spotlights the tangible efforts on the ground and highlight the integral role of partnerships and shared vision — without which, progress would not have occurred at the pace and scale it has.

I extend my heartfelt gratitude to the dedicated individuals, communities, and partners who have been instrumental in making these initiatives a success. Your passion and collaboration have been the driving force behind the positive impact we have achieved together.

In reading this publication, I hope that you will be encouraged by the progress that has been made, and inspired to act for what still needs to be done.

Niloy Banerjee
UNDP Resident Representative for Malaysia, Singapore, and Brunei Darussalam
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>05</td>
<td>Introduction</td>
</tr>
<tr>
<td>07</td>
<td>Enhancing Effectiveness and Financial Sustainability of Protected Areas in Malaysia (PAF)</td>
</tr>
<tr>
<td>15</td>
<td>Improving Connectivity in the Central Forest Spine Landscape (IC-CFS)</td>
</tr>
<tr>
<td>25</td>
<td>Mainstreaming of Biodiversity Conservation into River Management</td>
</tr>
<tr>
<td>33</td>
<td>Hydrochlorofluorocarbon (HCFC) Phase-out Management Plan (HPMP Stage-2)</td>
</tr>
<tr>
<td>41</td>
<td>Biodiversity Conservation in Multiple-Use Forest Landscapes in Sabah, Malaysia</td>
</tr>
<tr>
<td>45</td>
<td>Green Technology Application for the development of Low-Carbon Cities (GTALCC)</td>
</tr>
<tr>
<td>53</td>
<td>Developing and Implementing a National Access and Benefit Sharing Framework in Malaysia</td>
</tr>
<tr>
<td>59</td>
<td>Payment for Ecosystem Services (PES) Pilot Project</td>
</tr>
<tr>
<td>65</td>
<td>Integrated Island Waste Management in Malaysia Project and the Sustainable Tourism Recovery Project</td>
</tr>
<tr>
<td>69</td>
<td>Global Wildlife Program: Building Institutional and Local Capacities to Reduce Wildlife Crime</td>
</tr>
<tr>
<td>74</td>
<td>Acknowledgements</td>
</tr>
</tbody>
</table>
INTRODUCTION

UNDP’s technical assistance programmes in Malaysia date from the country’s independence in 1957. For the last seven decades, UNDP’s assistance has been in stride with Malaysia’s own five-year national development plans, strategic agendas and policy priorities.

Through this partnership and the successful implementation of hundreds of projects, UNDP has helped to strengthen the technical capacity of key national institutions, provided critical policy inputs, piloted innovative development projects, and contributed to significant progress in promoting human development in Malaysia.

Within this extensive body of work, the Nature, Climate and Energy (NCE) work in Malaysia represents the largest portfolio in the UNDP multi-country office in Malaysia, Singapore, and Brunei Darussalam. These projects target a range of domains: biodiversity and ecosystems, climate change, energy, environmental management, ozone protection, green commodities, natural resource management and waste management.

In Malaysia, programme implementation is funded from various resources including the Global Environment Facility. The portfolio remains one of the most important programme areas in the Country Programme Document period from 2022 – 2025 with a shift towards diversification of funding and efforts to operationalize new financial instruments.

With a focus on the past five years, UNDP has supported Malaysia’s climate and biodiversity pledges through the co-development of the National Policy on Biological Diversity 2021 – 2030 and the Sarawak Biodiversity Master Plan, which mainstreams biodiversity into both national and sub-national development planning.

UNDP further supports Malaysia in meeting its international commitments (e.g. Paris Agreement and Montreal Protocol, Kigali Amendment) through the integration of low-carbon considerations into national and subnational policies and planning, strengthening of climate data and the nationally determined contribution, and enhancement of environmental management systems and sustainable infrastructure.

UNDP also continues to support the government in integrating green and blue economy approaches, focusing on scaling up green economy initiatives through demonstration pilots and replicating successful models in the commodity, energy, tourism and waste sectors, and to ensure gender mainstreaming in these sectors.

In combating climate change, UNDP provides support on sectoral climate change adaptation efforts by both government and the private sector, assisting in disaster risk reduction efforts, incorporating risk-proofing considerations into infrastructure development and investment planning, and climate change preparedness among vulnerable communities, including through gender-based risk assessments.

UNDP also provides support for the scaling up of conservation programmes and sustainable management of natural resources and biodiversity, ensuring attention to the interests and needs of local and marginalized communities and risks from emerging zoonotic diseases. The Improving Connectivity in the Central Forest Spine Landscape (IC-CFS) is one such key project that works to restore contiguous forest landscapes in the Central Forest Spine and enhance its protection through gazettement of ecological corridors.

Globally, the NCE team helps developing countries to access, combine, and sequence resources from a wide range of funds (including vertical funds – Global Environment Facility and the Green Climate Fund), financial instruments, and mechanisms. Its focus is on helping countries develop the capacity to fully incorporate environmental sustainability and resilience into development at national and local, but also global and regional levels. The principal areas of work are in environmental mainstreaming, environmental finance, adaptation to climate change, and local governance of resources, including energy. To achieve this, the NCE unit works closely with UNDP country offices to help countries develop and implement programmes and projects which advance their capacity to put in place the right mix of regulatory and financial incentives, remove institutional and policy barriers, and create enabling environments that attract and drive private sector investment into sustainable development.

The NCE unit is based in UNDP’s Bureau of Policy and Programme Support and is responsible for providing leadership and technical support to, among other areas, delivery of the Environment and Sustainable Development pillar of UNDP’s Strategic Plan. UNDP’s Nature portfolio is the largest across the UN, with support spanning over 100 countries and three decades of work deeply embedded at the country level.
Malaysia is one of the world’s 17 mega-diverse countries, with a wealth of biological diversity in its terrestrial and marine zones.

There are about 15,000 species of vascular plants, 306 species of mammals, more than 742 species of birds, and 567 species of reptiles; Malaysia’s natural wealth includes iconic species such as the Malayan tiger, Malayan tapir, Asian elephant, Orangutan, Sunda pangolin, and Sunda clouded leopard.

In order to safeguard its globally significant biodiversity, Malaysia has established networks of protected areas (PAs). In Peninsular Malaysia alone, there are at least four PA networks covering a total area of 2.98 million ha (roughly the size of Belgium). These are managed by different agencies including the Federal Department of Wildlife and National Parks (PERHILITAN), Johor National Parks Corporation, Perak State Parks Corporation, and state forestry departments.

To improve how Malaysia’s protected areas are managed, the project, Enhancing Effectiveness and Financial Sustainability of Protected Areas in Malaysia (PAF), was executed by the Ministry of Energy and Natural Resources, implemented by the Federal Department of Wildlife and National Parks, and supported by UNDP with Global Environment Facility (GEF) financing.

The project engaged Indigenous and local communities as equal partners in project design and implementation. These partnerships have enhanced conservation in the three target PAs - ensuring that Indigenous and local communities have the tools to play meaningful roles in park management.

In addition, the PAF project understands the importance of exchanging experiences and knowledge through cooperation, and how valuable it is to foster PA self-reliance. This was achieved by enhancing participants’ creative capacity to find solutions to development problems in keeping with their own aspirations, values, and specific needs. By promoting South-South co-operation, these types of exchanges also enhance the development of complementary capacities.
ALLIES IN CONSERVATION

Dating back over 248 million years, the forest at Endau-Rompin National Park is a pristine, waterfall-laden jungle teeming with wildlife and unique flora and fauna. Endau-Rompin is also one of the country’s Protected Areas (PAs), and home to the nation’s Orang Asli: a collective term for the original or first peoples in Malay. Malaysia acknowledges that Indigenous peoples are inheritors and practitioners of unique cultures and ways of relating to people and the environment.

The conservation of these protected areas is closely linked with the well-being of communities living within the park and those on the outskirts. In Endau-Rompin National Park, this means ensuring that the Orang Asli are meaningfully integrated into the park management.
In 2016, Muhamad Azizi Bin Mustapa and Mohd Bassir bin Abdullah, both Wildlife Officers for the Department of Wildlife and National Parks in Peninsular Malaysia, attended the Korea National Parks Friendship Programme’s month-long training. For both Azizi and Bassir, the trip was a journey into making lifelong friends — and finding solutions and solidarity; embodying the best of what South-South cooperation means.

For Bassir, attending the month-long course meant:

“I was able to increase my knowledge in the management of national parks aspects which I have never been able to obtain from my current workplace. In addition, I was able to exchange opinions and learn from other fellow participants from Thailand, Mongolia and China.”

The PAF project supported capacity building from rangers to managers. In addition to the month-long training in South Korea, a total of 22 Malaysian protected area practitioners also received a 3-month advanced training from the Wildlife Institute of India with project support. Photo: UNDP Malaysia

**FRIENDS FOR LIFE**

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**Background Pic:** South Korean flags outside of Daegu Train Station in South Korea. Photo: Emanuel Ekstrom/Unsplash

**Effective Protected Area Management Training, 2018. Photo: UNDP Malaysia**

**Identifying local knowledge on the conservation of elephant management**

**Effective Protected Area Management Training, 2018. Photo: UNDP Malaysia**

**After the Protected Area Management Training, 2018. Photo: UNDP Malaysia**
Often, there are no prices that reflect the value of the ecosystem services of protected areas, since the services that they provide — such as water purification, flood control, biodiversity conservation, local community livelihoods, tourism opportunities and carbon storage — are not traded in markets.

As a result, the value of such ecosystem services are often not taken into consideration in decisions, affecting land use and protected area (PA) management. These frequently invisible benefits from the natural world are why the PAF project supported the study of the economic importance of PAs via ‘The Economics of Ecosystems and Biodiversity of Terrestrial Protected Areas in Peninsular Malaysia’ (TEEB-PA), to help mainstream the values of biodiversity and ecosystem services into decision-making at all levels.

For TEEB-PA, the study focused on three major PAs: Taman Negara National Park, Royal Belum State Park and Endau-Rompin National Park. Though site-level assessments, the study found that the total economic value of ecosystem services evaluated were as follows: Taman Negara: >US$363 million/annum, Royal Belum: >US$113 million/annum, and Endau Rompin: >US$91 million/annum.

In aggregate, the PA network in Peninsular Malaysia was found to deliver net benefits of nearly US$1.5 Billion per annum, presenting a strong economic case for sustainable financing. Importantly, the study demonstrated the significance of ecosystem services to a range of beneficiaries, including local and Indigenous communities. These services contribute to poverty alleviation initiatives and sustainable rural economies as they support the communities’ dependence on forest services such as non-timber forest products for food, flood protection, and opportunities for maintaining their cultural practices as well as tourism.
The Improving Connectivity in the Central Forest Spine Landscape (IC-CFS) project is a collaborative effort between the Malaysian Government and international bodies to conserve biodiversity and ecosystem services within the Central Forest Spine of Peninsular Malaysia.

With funding from Global Environment Facility (GEF) and support from UNDP, the project is working to restore contiguous forest landscapes and improve connectivity by linking fragmented forests, wildlife and humans into a flourishing ecosystem.

The project was launched as the continuation of the Central Forest Spine Master Plan, which was introduced by the Government of Malaysia in 2009. Under the Central Forest Spine Master Plan, 37 ecological corridors in Peninsular Malaysia were identified as vital linkages for the main forest complexes in the Central Forest Spine. Working across three landscapes in Perak, Pahang, and Johor, the broader ecosystem is linked by connecting fragmented forest areas through the establishment of these ecological corridors.

The IC-CFS initiative is led by a network of implementing agencies from the Ministry of Energy and Natural Resources (KETSA), Forestry Department of Peninsular Malaysia (JPSPM), Department of Wildlife and National Parks (PERHILITAN), Forest Research Institute Malaysia (FRIM) and State Forestry Departments. Together, the coalition has collaborated with non-governmental organizations, businesses and communities to foment change across the local environmental landscape.

The Orang Asli also play an important role in the forest landscape that they call home. By enhancing their positive contributions to the landscape through the IC-CFS project, they are achieving self-determination with the knowledge that their future depends on the decisions that are made today. These partnerships within the Orang Asli community, including youth and women — and also between NGOs and government agencies — work jointly to protect and preserve the Malaysian forest landscape and the wildlife within.

Under the IC-CFS project, a total of 23,735.26ha of critical forest areas within the CFS in the state of Perak (18,866.63 hectares) and Pahang (4,868.63 hectares) have been gazetted. Photo: UNDP Malaysia

02
IMPROVING CONNECTIVITY IN THE CENTRAL FOREST SPINE LANDSCAPE (IC-CFS)

Location: Peninsular Malaysia — Perak, Pahang, and Johor
STRONGER TOGETHER

The human spine serves as a protective sheath and physical channel for the nervous system. Similarly, the Malaysian Government’s Central Forest Spine initiative preserves key habitat, allows for the movement of migratory species, and ensures the mutual survival of biodiversity oases that might otherwise wither and die.

To increase the connectivity between these critical linkages, the IC-CFS project works to establish both primary and secondary linkages. These linkages take the form of stepping stones that replicate riparian corridors — a small patch of restored vegetation that filters and allows movement for mammals, birds and insects between landscapes.

The IC-CFS team knows that the challenging goals of protecting wildlife and ecosystems can be achieved by improving sustainable and long-term financing solutions, and streamlined governance.

Background Pic: Roadcuts are built to facilitate wildlife crossing, thereby allowing wildlife and their genetic resources and ecological functions to flow freely, in Viaduct Gerik Ecological Corridor. Photo: UNDP Malaysia

Group photo with the Local Community Ranger near Perhilitan in Johor, Malaysia. Photo: UNDP Malaysia

Local Community Ranger taking measurements of a wild boar while patrolling the area. Photo: UNDP Malaysia

Members of forest Research Institute Malaysia (FRIM) or Peninsular Malaysia Forestry Research Institute (FMRF) checking the site for the Management Plan. Photo: UNDP Malaysia

The IC-CFS team knows that the challenging goals of protecting wildlife and ecosystems can be achieved via improved planning, sustainable and long-term financing solutions, and streamlined governance. Photo: UNDP Malaysia
A century ago, there were approximately 100,000 wild tigers in their various natural habitats worldwide; that number has decreased to around 3,500 today, with three out of nine subspecies of wild tigers declared extinct within the last 70 years.

At present, tigers are under severe pressure from a variety of interlinked threats: poaching and the illegal wildlife trade, loss of prey species, disease, roadkill, and habitat destruction, to name just a few.

The IC-CFS project’s work to connect fragmented forest areas is crucial for the preservation of the unique Malayan tiger (Panthera tigris jacksoni), a critically endangered species at dire risk of extinction.

An integral part of the project is targeted support to wildlife enforcement systems. Specifically, the project is improving the wildlife crime intelligence system through the integration of wildlife enforcement operations to protect tigers and reduce wildlife crime in Malaysia.

These multi-party collaborations — with government agencies, NGOs, and local communities, and the FDPM — jointly protect and preserve the forest landscape in Malaysia. This unity supports and contributes to Malayan tiger conservation efforts, ensuring that it remains a national symbol for future generations.

“We are losing our tigers. It’s a problem. We have to do something. We have to start to work together.”
Dr. Samsudin bin Musa.
Through the IC-CFS project, FDPM and DWNP - in collaboration with the Malaysia Conservation Alliance for Tigers (MYCAT) - have sought to protect the habitat of the Malayan Tiger by conducting regular patrols and monitoring encroached areas and illegal hunting hotspots. Photo: UNDP Malaysia

Setting up a camera trap to monitor wildlife and encroachment - IC-CFS project, FDPM and DWNP in collaboration with the Malaysia Conservation Alliance for Tigers (MYCAT). Photo: MYCAT

Tiger picture from camera trap - a product of careful monitoring of a range of species simultaneously and continuously over large survey areas and for several months at a time. Photo: UNDP Malaysia

Dedi bin Roslan serves as a Hornbill Guardian in Peninsular Malaysia. Dedi’s work takes him through the Belum-Temengor Forest Complex, with the team of older Hornbill Guardians, in search of these precious and threatened birds. By observing and recording these rare species, their populations can be monitored, and the foundation laid for a renewal. Youth like Dedi (25 years old) are a key part of the Hornbill Guardian team.

I usually work alongside my father. We enter the forest. He will teach me the names of fruits and trees, and the names of all the birds.

Dedi bin Roslan serves as a Hornbill Guardian in Peninsular Malaysia.

HORNBILL GUARDIANS
The Malaysian Nature Society (MNS) in collaboration with Perak State Forestry Department, is at the forefront of hornbill conservation in Perak State, working with policymakers and engaging Malaysia’s peoples, the Orang Asli, as ‘Hornbill Guardians’.

When MNS began work to protect and maintain hornbills and the dense tropical rainforests of Belum-Temenggor, they naturally turned to the people living alongside the birds — people like Dedi, his brother, and his father.

For the Hornbill Guardians, a complementary income to their employment is gained through the sale of Tualang honey, harvested from the giant Tualang tree (Koompassia excelsa). It also happens to be the Helmeted Hornbill’s favourite tree. To reap dividends for wildlife, the forest, and the local community, the IC-CFS project supported the improvement of harvesting methods and marketing opportunities. Following in his father’s footsteps, Dedi is also now an apprentice in collecting honey, and is currently receiving on-the-job training.

Honey harvesting with Orang Asli youth, working to make the honey more profitable in line with one of the project’s core pillars: to improve the socio-economic status of local communities to increase their support for conservation through the generation of sustainable livelihoods. Photo: Yeap Chin Aik/MNS
Malaysia has some 157 river systems, as well as a variety of tropical wetlands, forests, and marine ecosystems, representing several Global 200 Ecoregions. These ecosystems include more than 600 freshwater fish species, all stitched together into a protective web of ecosystem services, from clean water and food production to erosion control and flood prevention.

In three river basins in Malaysia, the project is working to maintain the integrity of aquatic ecosystems through appropriately mainstreaming biodiversity considerations into river basin management. By embedding riparian biodiversity conservation into river management, the project is protecting three riverine habitats: a forested water supply reservoir catchment area, an urban river, and a rural river impacted by plantation development and smallholders.

The project is a collaborative effort between the Government of Malaysia and international bodies to conserve biodiversity and ecosystem services. With funding from the Global Environment Facility (GEF) and support from the United Nations Development Programme (UNDP), the project is working with the Ministry of Environment and Water, and the Department of Irrigation and Drainage Malaysia, along with two NGO partners (Global Environment Centre and Forever Sabah), to protect the river system and to conserve the rich flora and fauna that benefit the communities.

The project’s significance is attested to by its support from the Selangor State Government, Federal Territory of Kuala Lumpur, Perak State Government, and the Sabah State Government.

Location: Perak, Sabah, Selangor, and Kuala Lumpur, Malaysia
The employment of nature-based solutions is quickly becoming the state of the art solution to not just the engineering problems around infrastructure in areas prone to landslides and flooding, but also sustainable livelihoods, biodiversity conservation and climate action. This involves the introduction and promotion of bio-engineering techniques — including digging trenches for drainage, creating silt traps for sediment monitoring, laying down coconut coir mats and planting species suitable for slope stabilization. This work is helping to reduce soil erosion and subsequently to prevent sedimentation downstream, as well as improving the livelihoods of Indigenous communities in the area.

The Upper Kinta River Basin (Perak) covers an area of about 18,000 ha above Ipoh city in Perak. The project's focus is on the management of the upper catchment of Sg Kinta, which is important for both biodiversity conservation and water supply purposes. The pilot initiative, has been using bio-engineering techniques to reduce soil erosion and subsequently to prevent sedimentation downstream, as well as improve the livelihoods of Indigenous communities in the area.

This work has involved a range of local stakeholders with an emphasis on engaging and empowering Orang Asli Indigenous communities. In addition to actively improving environmental awareness and river pollution monitoring, Orang Asli community members were trained and employed in bio-engineering work to support slope erosion mitigation and control in selected portions of the upper catchment.
Further to the technical and capacity building workshops, four bio-engineering sites were established along with a nursery for bamboo and other relevant plants for mitigating soil-erosion at Orang Asli Kampung Pawong Village.

The nursery served as source and storage for plant saplings before planting at bio-engineering site. Photo: Department of Irrigation and Drainage

Further to the technical and capacity building workshops, four bio-engineering sites were established along with a nursery for bamboo and other relevant plants for mitigating soil-erosion at Orang Asli Kampung Pawong Village. Here pictured: a river walk activity to assess bio-engineering activities in October 2021.

Photo: Department of Irrigation and Drainage
The Lower Kinabatangan-Segama Wetlands are the largest Ramsar Wetland in Malaysia, and the first Ramsar site in Sabah state, which lies at the north-eastern tip of Borneo island. Totalling 78,803 ha, the Lower Kinabatangan-Segama Wetlands are fed by two large rivers — the Kinabatangan and Segama — as well as numerous smaller rivers and tributaries. The wide mangrove belts are the largest contiguous mangrove area in the Southern Sulu Sea.

The site harbours rich biodiversity with critically endangered, vulnerable and rare species, including the world’s smallest elephant, as well as several species endemic to Borneo, such as the Sumatran rhinoceros (*Dicerorhinus sumatrensis harrisoni*), proboscis monkey (*Nasalis larvatus*), banteng/tembadau (*Bos javanicus*), and the orang-utan (*Pongo abelli*), among many others.

**Background Pic:** High Quality Forest in Site 2. Riparian Encroachment on South Bank. Photo: Malaysia Department of Irrigation and Drainage-Forever Sabah

**The Arteries of Our Planet**

The project is complemented by community-based participatory work with nine Indigenous communities living along the Kinabatangan and Segama Rivers. The community's extraordinary knowledge bank is critical to the protection of the forest.

The initiative is also providing citizen science training in water quality assessment and species biodiversity through the use of remote sensing technology and other tools. The community is engaged in the protection and conservation of existing protected areas, remnant forest patches, and current or restorable riparian zone forests.

**Local community members drawing drinking water from the river during a community engagement visit, 2021.** The initiative is also providing citizen science training in water quality assessment and species biodiversity through the use of remote sensing technology and other tools. The community is engaged in the protection and conservation of existing protected areas, remnant forest patches, and current or restorable riparian zone forests. Photo: Malaysia Department of Irrigation and Drainage/Forever Sabah
In the 1970s scientists sounded the alarm on ozone-depleting substances (ODS) which were commonly used in aerosol propellants, refrigerants, and air-conditioning systems.

Without this alert, the depletion of the ozone layer had serious consequences for both human health as well as the environment, as more harmful ultraviolet (UV) radiation from the sun had reached the Earth’s surface, leading to serious ill effects.

The global response was crucial. Signed over 30 years ago, the Montreal Protocol is indeed one of the most successful and widely ratified environmental treaties globally. It is, to date, the only United Nations-mediated environmental agreement to be ratified by every country in the world. Member-state parties to the Protocol have gradually phased out the use of 98 percent of ozone-depleting substances (ODS) like Hydrochlorofluorocarbons (HCFCs), allowing the hole in the ozone layer to move towards restoration. The global community continues to work together to monitor and manage the phase-out of remaining ODS and ensure the ongoing recovery of the ozone layer.

With assistance from the Multilateral Fund, developing countries are encouraged through their HCFC Phase-out Management Plans (HPMPs) to prioritize the phase-out of substances with high ozone-depleting potential. Against this backdrop, one of the ozone-related projects that UNDP is supporting in Malaysia is the HPMP Project to support their HCFC phase-out, and to move towards environmentally friendly alternatives in industrial use that are non-ozone-depleting and have a lower impact on climate change.

Malaysia does not produce HCFCs domestically but imports them for use in manufacturing of various products. The imported HCFCs are monitored and regulated by the Department of Environment through legal and regulatory frameworks. To achieve the Montreal Protocol’s post-2015 targets, the Government of Malaysia is taking steps to achieve full phase-out of remaining consumption in the manufacturing of HCFC-based products, as well as the servicing of HCFC-based refrigeration and air-conditioning equipment.

Malaysia’s HCFC phase-out is governed with a HCFC Phase-out Management Plan (HPMP) whereby Stage I of the project was completed in 2016 and Stage II is currently under implementation. Stage II of the HCFC phase-out (2017-2023) includes a combination of interventions such as technology transfer investments, policies and regulations, technical assistance, training, awareness, co-ordination and monitoring in various HCFC-consuming sectors.
Ephemeral substances, long-term consequences

Thirty years after the Montreal Protocol was enacted, the primary remaining highly-ozone-depleting substances are used in the foam sector.

There is a certain irony in the fact that we think of foams, bubbles and froth as emblematic of transient, ephemeral conditions, when chemical foams are problematic because the compounds that make them up are so environmentally persistent.

Malaysia has established a comprehensive regulatory framework for controlling Ozone-Depleting Substances (ODS), and as a result, the country is consistently in compliance with the provisions of the Montreal Protocol.

Through ongoing diligence and action, Malaysia’s HCFC Phase-out Management Plan (HPMP) Stage-II project team is helping to protect the ozone layer — and to reduce climate disruption — by taking measures to control total global production and consumption of substances that deplete the ozone layer, with the ultimate objective of the elimination of all ODSs.

For its successes, the Montreal Protocol requires constant vigilance to achieve full recovery of the ozone layer by 2050. Some countries in the developing world were unable to completely phase out ozone-damaging chemicals in their refrigeration and air conditioning systems. Therefore continued vigilance, international cooperation, and a commitment to addressing the specific needs of different nations are crucial elements in achieving the goals set by the Montreal Protocol.
It can be a dirty job, but someone’s got to do it.

If you’re in Bandar Baru Bangi, Malaysia, Mohd Fairuz Bakarudin is the person to call if you’re needing someone to clean dust or fungus out of your air conditioning system.

Trained as a specialist in Heating, Ventilating, Air Conditioning & Refrigeration Technology (HVAC&R), he worked for more than a decade in preventive maintenance, installation, troubleshooting, repair and maintenance of all marine air conditioning equipment, including on ship tankers and offshore installations. Later he focused on improving indoor air quality HVAC systems.

The conditions can be difficult - subject to extremes of temperature, but Mr Bakarudin knows how important this work is.
Within Bakarudin’s lifetime, HCFC consumption in Malaysia increased from 1,261 metric tonnes in 1996 to 3,949 metric tonnes in 2006, indicating an average annual growth rate of over 12%. This steady increase in HCFC consumption was ascribed to sustained economic development during that decade, resulting in increased demand for consumer, commercial and industrial products operating on HCFCs, particularly in the refrigeration and air conditioning sectors.

Recognising the importance of his work in maintaining and improving HVAC technology, Mr. Bakarudin became a Master Trainer for the Department of Environment (DOE) which is involved in phasing out refrigerants throughout Malaysia since 2015. The main role of a master trainer is to ensure that the teaching and learning needs for practical use are met on an ongoing basis, and to troubleshoot issues related to trainer units which involve identifying and resolving technical problems, conducting diagnostics, and providing support to learners and other trainers when challenges arise.

In addition, he supports the e-Certification Service Technician Programme (e-CTSP) that started in 2016 with project support. Through this training and certification, the DOE awards technicians who have passed the exams with a certificate and a technician card having a QR code which can be verified by a scan from any smartphone. The project provides an online reference of Standard Procedures for all Authorized Training Centres, monitors and collects data related to the e-CTSP training organised by the Authorized Training Centre, provides systematic reporting for future reference and enforcement purposes, and serves as a platform for an online repository database that contains all e-CTSP information and names of technicians certified by e-CTSP.
Sabah is one of Malaysia’s thirteen states, and is located in the northern part of the island of Borneo. Known as ‘the land below the wind’, because of its location just south of the typhoon-prone region around the Philippines, around 55% of Sabah is forest. Sabah’s forest reserves, with a total landmass of 7.34 million hectares, also boasts incredible biodiversity.

Threatened by deforestation and landscape fragmentation, the project experienced its greatest successes in bringing about a change in land-use designation to ‘Class 1 Forest Reserve’. Collectively, the forest reserves — which contain six of Sabah’s seven globally-threatened fauna species — represent an epicentre of high biodiversity importance within the ‘Heart of Borneo’ global biodiversity hotspot.

From an original 18,517 ha of protected area at the start of the project, an additional 156,586.37 ha were established as Class I Protection Forest Reserve and Class VI Virgin Jungle Reserve by project close. These increases directly contribute to achieving Sabah state’s ambitious target of 30% totally protected areas within its landmass by 2025.

The UNDP-supported, Global Environment Facility-financed project covers 261,264 ha of mostly contiguous forest. Working closely with the Sabah Forestry Department and the Sabah Foundation, the project area forms an important landscape connecting three renowned protected areas in Sabah: the Maliau Basin Conservation Area (58,840 ha) to the West, the Danum Valley Conservation Area (43,800 ha) to the East, and the Imbak Canyon Conservation Area (16,750 ha) to the North.
Through research supported by the project, a number of key scientific discoveries were made. One of which was the discovery that globally, the tallest trees in the tropics, which may grow up to around 100 m in height, are found in Sabah. In fact, the two discoveries are closely linked: the high carbon storage in Sabah’s forests is directly tied to the higher capacity which such tall trees provide.

Discoveries like this emphasize the critical importance of protecting Sabah’s forests, not only for their biodiversity value, but also to mitigate the impacts of climate change.
Cities are responsible for 70 per cent of global carbon dioxide emissions, with transport, buildings, energy, and waste management accounting for the bulk of urban emissions.

Consequently, they are also our best shot at reversing our carbon trajectory. Cities are the key to achieving our global climate goals. The battle for the planet will be won or lost in cities.

With funding support from the Global Environment Facility (GEF), UNDP is working together with key Malaysian partners: the Ministry of Environment and Water (KASA) Malaysia, and the Sustainable Energy Development Authority (SEDA), to implement the Green technology application for the development of low-carbon cities (GTALCC) project.

GTALCC is a 5-year project which facilitates the implementation of low-carbon initiatives in five Malaysian cities (Putrajaya, Cyberjaya, Petaling Jaya, Hang Tuah Jaya, Iskandar Malaysia), showcasing a clear and integrated approach to low-carbon urban development.

The goal of the project is to generate substantial greenhouse gas emissions reductions by removing barriers to low-carbon planning and development in Malaysian cities through formulating policy, raising awareness and bolstering institutional capacity, and through demonstration projects showcasing low-carbon technology investments in select cities.

Creating more sustainable, climate-resilient societies involves addressing a range of issues including poverty reduction; access to basic services; livelihoods; provision of accessible, affordable and adequate housing; investments in green infrastructure; upgrading informal settlements; and biodiversity conservation. Successful, well-governed cities greatly reduce climate-related risks for their populations.

As we respond to the global climate crisis, transformative action from cities may be just the catalyst we need in order to restore our relationship with the natural world and ensure a sustainable future for our children.

Location: Putrajaya, Cyberjaya, Petaling Jaya, Hang Tuah Jaya, Iskandar Malaysia

Putrajaya, Malaysia. Photo: Fahrul Azmi/Unsplash
At 5:28 a.m., the air in Selangor, Malaysia is cold, crisp and devoid of fumes.

Norzilla, an employee of a local design consultancy firm, is waiting for the first feeder bus to the Mass Rapid Transit station in Kajang. From there, she will be boarding the 6 a.m. train to Bandar Puteri Puchong, where her firm is headquartered. Were she to drive to work, she’d be braving over 35 kilometres of traffic jams, highway tolls, and the occasional errant driver.

What she’s avoiding amounts to well over an hour’s worth of stress-filled driving, and that’s before she even considers the price of petrol, parking, and depreciation on her car. Her head is pounding just thinking about it. She suddenly hears the familiar sound of hissing brakes and a click as the doors open, and lets out a sigh of relief: right on time.

Transportation, from daily commutes to international shipping, makes up a sizeable portion of the greenhouse gas emissions in cities. Greening this key sector is vital for cities to achieve net-zero emissions.

Helping to bring this to life, the project supported the Iskandar Regional Development Authority (IRDA) to conduct an independent review of the IMBRT, which provided important system-wide design recommendations for transit stations, coupled with proposals on key urban transport policy areas. This includes the domains of zoning, parking, service planning, and non-motorized transport improvements to be carried out within the transport corridor.

These cities are low-carbon leaders with replicable initiatives to accelerate the low-carbon agenda on the pathway to achieve net-zero carbon emissions for the nation in the near future. Their example serves as a role model for other cities, both domestically and internationally.
In 2010, Putrajaya - the administrative and judicial centre of Malaysia - was announced as one of the pioneer townships in green technology as a showcase for the development of other townships. Since then, Putrajaya has embarked on various initiatives towards achieving that aim.

The Putrajaya Green City 2025 document emphasizes Putrajaya's transportation and mobility-related efforts in transforming into a green city. The strategy hinges on integrated city planning and management as well as low-carbon transportation. Non-motorized movement by walking and cycling are highly encouraged as a mode of travelling, through the provision of an integrated network of pedestrian and cycling paths implemented in Putrajaya.
Malaysia is one of the most rapidly urbanizing countries in Asia, with more than 70% of the population living in urban areas at present. Setting low-carbon action plans, each with their own greenhouse gas inventories to help track low-carbon actions already in the works, cities like Kuala Lumpur, Iskandar Malaysia, Seberang Perai and Melaka have made commitments to minimize their carbon footprints.

The goal of achieving net-zero emissions by 2050 is doable. But to reach that milestone requires the full engagement of city governments, augmented by national action and support.
Since 1992, with the signing of the United Nations Convention on Biodiversity, countries have taken efforts to document and protect traditional knowledge in order to achieve the following triple objectives.

Firstly, the conservation on biological diversity; secondly, the usage of natural resources sustainably; and thirdly, the fair and equitable sharing of benefits derived from the use of genetic resources. Specifically, through the Nagoya Protocol, the international community endeavours to ensure the fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge.

The Protocol enables countries to formulate their own policy and legal framework to safeguard access to biological resources and their utilization, which will result in equitable benefits to users, providers, communities and planet.

In Malaysia, the power of innovation, derived from traditional knowledge, science and technology, has transformed genetic resources into medicines, health care and other products that are beneficial for human well-being. For millennia, Indigenous peoples and local communities have managed genetic resources, and today these resources continue to be essential in providing food, medicine and sustaining the livelihoods of communities.

In October 2017, Malaysia enacted the Access to Biological Resources and Benefit Sharing Act 2017 (known as the ABS law) to protect the country’s biological heritage. Fighting biopiracy, the law patents genetic compounds and organisms to ensure proper acknowledgement of their origins. The ABS law also implements requirements for all transfers of biological resources or results of research, and institutes a prior informed consent stipulation.

This project, Developing and implementing a national access and benefit sharing framework in Malaysia, was designed to strengthen the conservation and sustainable use of biological and genetic resources through developing a national framework for the implementation of ABS under the United Nations Convention on Biodiversity.

From recording information to product development for benefit sharing, Malaysia has charted a new direction in research and development activities emphasizing fair and equitable sharing of the benefits realized through traditional knowledge.
One way to protect biodiversity and ecosystems is to find symbiotic solutions that work for people and for the planet. An exemplar of such a win-win solution is found in Long Kerebangan, located in the Malaysian state of Sarawak on the island of Borneo. Here Indigenous communities are harvesting a local plant, Litsea cubeba for its essential oil to make a locally produced soap.

Harnessing traditional knowledge, the extracted essential oil to make sanitary products is improving Indigenous communities’ livelihood through partnerships – and improving health and hygiene.

Locally produced Litsea cubeba essential oil has anti-microbial properties and can be incorporated into sanitary products such as shampoo and liquid hand wash. Photo: Sarawak Biodiversity Centre

Having robust sanitation systems in place – sanitation systems that will continue to function even under stress or challenging conditions.

This innovative project has also enhanced technology sharing and increased awareness of the importance of conserving and restoring plants used by communities. The project provided the opportunity for communities to share traditional knowledge and be recognized as the rightful owner of such knowledge, in addition to enabling communities to reap benefits from any resulting proceeds.

The locally produced essential oil is regarded as a high potential crop, and is being cultivated in a sustainable manner by the communities to ensure its continuous supply. The project also fostered a sense of cooperation amongst the community members, where the benefits obtained were shared equally throughout the community.
In November 2018, the Access & Benefit Sharing (ABS) law paved the way for Malaysia to ratify the Nagoya Protocol, reaffirming the country’s commitment to conserving its unique biodiversity while also promoting the sustainable use and sharing of the benefits derived from its utilization. In February 2019, Malaysia’s ratification came into force, and has been supported by new national regulations and amended sub-national legislation.

The lesson we learned from the ABS Project is that there needs to be political will and law to protect and conserve our traditional knowledge and biological resources.

Through the discovery and development of new products such as pharmaceuticals, nutraceuticals, and agro-chemicals, the project is supporting new business, employment, technology transfer, and capacity-building opportunities.

“...”
Forever Sabah is dedicated to supporting Sabah’s transition to a diversified, equitable, circular economy. They’re engaging government agencies, communities, scientists, and the private sector to find practical solutions to enhance stewardship.

As part of a Forever Sabah-supported programme with state government agencies to pilot development of a Payment for Ecosystem Services (PES) scheme for the state capital’s water supply, community leaders in the catchment developed Village Development Plans that reflect the specific resources and needs of each village, and include a PES approach to improve governance and livelihoods.

The idea behind PES is to use markets to incentivize nature preservation by creating sustainable programmes that compensate communities for conservation and secure desired environmental services for all parties who benefit from intact ecosystems.

In Sabah, PES development is primarily dependent on water conservation fees, whereby water users contribute towards the conservation and management of water catchment areas. One such area is the Babagon Catchment in Sabah.

The area in the Babagon Catchment is mostly steep, well-forested lands, some of which are enriched with durian and other indigenous and cultivar fruit trees, interspersed with patches of cultivated rubber. Around village sites, scattered paddy lowlands are dotted with diverse gardens. The biodiversity in the catchment area contains diverse flora and fauna that most urbanites aren’t familiar with. But for the communities living around Tampasak, Babagon Toki and Kolosunan, protecting this biodiversity means protecting their water.

To maintain project momentum in the face of the pandemic and its economic consequences, the Global Environment Facility Small Grants Programme (SGP), implemented by UNDP, supported Forever Sabah to advance these Village Development Plans with a focus on community livelihoods and enhanced watershed stewardship.
Located 30 minutes due inland from Kota Kinabalu — the capital city of Sabah — Kolosunan is part of the 3,001 ha Babagon Catchment, and part of the wider Moyog watershed in the Crocker Range on Sabah’s West Coast. The catchment traverses three Indigenous Dusun villages (Tampasak, Babagon Toki and Kolosunan) and is home to the Babagon Dam.

The Babagon Dam currently supplies water to approximately 57% of the Kota Kinabalu population (although crucially, not to the three Indigenous Dusun villages above the dam).

Jeffrey Abun is an inspiring citizen scientist and one of the village leaders for the Payment for Ecosystem Services (PES) project near the Babagon Dam. He’s also a Field Coordinator for Forever Sabah — a civil society organization in Malaysia’s Sabah state dedicated to the protection and restoration of the region’s natural habitats. Born and raised in Kolosunan, he can track, catch, and reliably identify dozens of species that serve as useful biological indicators for gauging water quality.
Given the importance of this dam — and in order to protect the watershed — the government limited water access and livelihood activities of the people in the catchment, but by placing restrictions on the three Dusun communities, native customary rights that had been recognized in Malaysia for centuries were compromised.

By placing restrictions on the three Dusun communities, native customary rights that had been recognized in Malaysia for centuries were compromised. Cascading consequences included limited access to clean water and difficulties travelling to neighboring villages, as the dam flooded old transit routes through the valleys. Tampasak villagers who wanted to continue farming have had to rent lands in distant villages in the lowlands, where infrastructural development has, in turn, led to increasing floods.

Recognizing that sustainable conservation entails balancing water, food and energy demands, the core approach for this project has been to improve sustainable livelihoods, promote sustainable and equitable water use, and reinforce traditional stewardship among the Indigenous Dusun residents of the Babagon Catchment in Sabah, Malaysia.

To achieve this, watershed management and restoration activities provided income for local community members, with training programmes across diverse administrative and livelihood areas designed to generate multiple long-term benefits for people and for the planet.

To track tree planting locations that support long-term forest conservation, Forever Sabah supported communities in adopting an online citizen science tool called KoboCollect to empower village tree planters with the ability to record and track data themselves, increasing independence, accountability, and self-management.

Forest restoration has been another key strategy within the project, with activities supporting the community to map and restore forest in riparian zones; so far, 2,910 diverse indigenous tree species with known fruiting, medicinal and ecological benefits have been planted across degraded areas in the Babagon catchment, spanning territories of three villages.

Species like this Euphaea subcostalis reliably indicate healthy stream systems.

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Malaysia’s tourism industry is seizing the opportunity to transition to a more sustainable and resilient model, underpinned by well-protected and conserved natural assets, free from pollution and degradation.

To jointly address the issues of tourism sustainability and island waste management, UNDP Malaysia launched the Integrated Island Waste Management in Malaysia (IIWM) project, and subsequently the Sustainable Tourism Recovery project, in partnership with the Ministry of Tourism, Arts and Culture and the Ministry of Finance Malaysia.

The IIWM project is being implemented in two states: Terengganu and Johor. In the former, UNDP is collaborating with the Terengganu State Government on its two islands, Pulau Redang and Pulau Perhentian Kecil. In Johor, UNDP is partnering with a local NGO, Tengah Island Conservation (TIC), which focuses on waste management in islands.

The project stems from the critical need to address island waste management to ensure improvements are introduced at all levels of the waste management process, from prevention and minimization to proper segregation, treatment, and disposal. This in turn can lead to a significant reduction in pollution accreting in marine ecosystems, which provide the underlying ecosystem services for economic activities such as eco-tourism, fish-farming, and community livelihoods.

The IIWM project works along two inter-related axes: firstly, pilot demonstrations of integrated waste management systems are being inaugurated on vulnerable islands, serving as a model for other areas on Malaysia’s coasts. Secondly, project staff and partners actively educate local communities and service providers about responsible waste management and sustainable tourism practices.

The Sustainable Tourism project was in turn enhanced to address several challenges, especially the COVID-19 impact on the domestic tourism sector, and widened the project’s focus from island waste management to integrate sustainability within the larger tourism value chain.

The project anchors on four pillars, namely: socio-economic sustainability, culture and heritage sustainability, management sustainability and environment sustainability — each identified as a driver towards sustainable tourism. The project aims to rebuild the resilience of destination communities and micro, small & medium enterprise (MSME) businesses, and pilot a sustainable and responsible ecotourism framework at the community level.
In light of the tourism sector’s rapid recovery from the pandemic, the need for careful planning, community consultation, and a sustainability focus is especially apparent.

One area of concern is waste management on destination islands, where an influx of human activity and population — mainly driven by tourism — has further complicated an already complex problem of waste treatment and disposal on islands that often lack the proper infrastructure to establish and maintain holistic waste management systems.

By promoting tourism with nature and communities at the heart of it, and ensuring that waste management is an integrated part of planning, these projects are helping ensure that Malaysia’s resources serve as an asset for generations to come and rendering tourism the ultimate ‘green investment’.
The Global Wildlife Program (GWP) is an international partnership on wildlife conservation and crime prevention for sustainable development which is coordinated by the World Bank.

Funded by the Global Environment Facility (GEF), the GWP is working to combat the illegal wildlife trade and promote sustainable, wildlife-based economies for resilient development.

It brings together 37 national projects across 32 countries in Asia, Africa and Latin America and the Caribbean. The GWP addresses growing threats to wildlife and sustainable development, such as poaching, trafficking, human-wildlife conflict, and livelihood opportunities for communities living alongside wildlife.

Of the 37 national projects, 12 are underway in countries across Asia, led by national government entities and supported by various GEF agencies, viz. UNDP, UN Environment Programme, Asian Development Bank, World Wildlife Fund, International Union for Conservation of Nature, and the World Bank. Of these 12 projects, UNDP coordinates eight projects in six countries.

Malaysia’s project, Building Institutional and Local Capacities to Reduce Wildlife Crime and Enhance Protection of Iconic Wildlife, currently in the final design stage, aims to enhance the protection of three iconic wildlife species and their habitats in Peninsular Malaysia, Sarawak and Sabah: the Malayan tiger, Bornean orangutan and Bornean banteng.
From snow leopards and red pandas in Bhutan, to orangutans in Indonesia, to tigers and elephants in India, our world is richer and more whole — as well as more bounteous and productive — because these species are in it.

But this simple premise requires hard work and nimble policy to address those spaces where the interests of humans and those of wildlife seem to be at odds. Conflict between humans and wildlife arises most frequently when plentiful ecosystems abut dense human populations.

The Asia-Pacific region is an area of both high human populations (>60% of the global total) and key environmental significance: it boasts four of the world’s top ten megadiverse countries.

WAVE OF SOLIDARITY

Relatedly, the region represents the world’s largest stocks of (and demand for) wildlife products, including the illegal trade in flora and fauna. In response, UNDP is undertaking a number of initiatives to combat the illegal wildlife trade (IWT) in the region.

The Malayan tiger, Bornean orang-utan and Bornean banteng are globally threatened, and populations of these key species are subject to serious ongoing pressures that will lead to their imminent extinction if additional action is not taken. These pressures are inextricably linked with regional and global trends that have contributed to the existential crisis facing biodiversity in the 21st Century, including the destruction of tropical forest habitats in general, and wildlife crime in particular.

The GWP project will help increase Malaysia’s capacity to prevent, combat and investigate wildlife crimes, as well as strengthen the participatory management of protected area landscapes and species.
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