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FIRST VIETNAMESE WILDLIFE CONSERVATIONIST RECEIVES GOLDMAN ENVIRONMENTAL PRIZE



**Việt Nam actively and proactively
implements commitment to the United Nations
“Decade on ecosystem restoration”**



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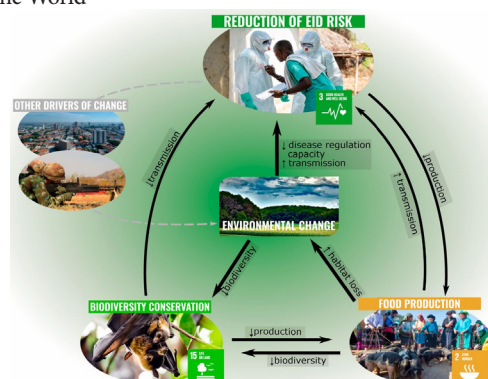
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First Vietnamese wildlife conservationist receives Goldman Environmental Prize

Director of Save Vietnam's Wildlife (SVW)

Nguyễn Văn Thái has become the first Vietnamese wildlife conservationist and the only Asian to receive the 2021 Goldman Environmental Prize the world's most prestigious award for grassroots environmental activists. The Prize honours grassroots environmental heroes from the world's six inhabited continental regions of Africa, Asia, Europe, Islands and Island Nations, North America South and Central America.

The Prize, worth US\$ 200,000, recognises individuals for sustained and significant efforts to protect and enhance the natural environment, often at great personal risk.

MOTIVATION FOR WILDLIFE CONSERVATION

Mr. Nguyễn Văn Thái was given the Award at a virtual ceremony, which took place on June 15th 2021 for his contribution to rescuing 1,540 pangolins from the illegal wildlife trade between 2014 and 2020 and establishing Việt Nam's first anti-poaching team under the co-management of SVW - a local non-Governmental organisation and the Government since 2018. The team has destroyed 9,701 animal traps, dismantled 775 illegal camps, confiscated 78 guns and arrested 558 poachers between June 2018 and December 2020, leading to a significant decline in illegal poaching in Pù Mát National Park in Nghệ An Province.

In 2016, Mr. Nguyễn Văn Thái opened the Carnivore and Pangolin Education Centre, the first of its kind in Việt Nam, in order to provide wildlife conservation courses to local children and the general public. He also gives training courses to customs officials, border guards and forest rangers on wildlife laws and how to prop-



▲ Mr. Nguyễn Văn Thái - Director of Save Vietnam's Wildlife

erly care for seized pangolins. As a result, nearly 8,200 children living in the buffer zone of Cúc Phương National Park have been inspired in wildlife conservation so far. About 2,500 Law enforcement officers have been given training courses on wildlife conservation.

Mr. Nguyễn Văn Thái said: "I am also very proud to be the first Vietnamese working in the field of wildlife protection to receive the Award. This is the biggest prize I have received in my life so far". Mr. Nguyễn Văn Thái planned to spend the money on the conservation of pangolins and wildlife in the future. The Award was recognition for his tireless efforts in protecting wildlife.

Mr. Nguyễn Văn Thái grew up near Cúc Phương National Park in the Northern Province of Ninh Bình. When he was a child, he witnessed a mother and baby pangolin being caught and killed by people in his village. "Therefore, I decided to make pangolin conservation my life's work", he said. He applied to study Forest Protection and Management at the Forestry University in 2001 - 2005. Five years later, he went to the United Kingdom for a six-month course on wildlife conservation management in 2010. Then he studied for a master's degree in wildlife conservation at the National University of Australia in 2012.

Mr. Nguyễn Văn Thái said in 2014, when he set up SVW - a centre to secure a future for Vietnamese wildlife, he realised that most of the wildlife conservation activities were momentary and short-term. Most projects to conserve wildlife at that time were carried out under the sponsorship of international organisations, he added.

Thus, he decided to establish the Centre to Save Việt Nam's wildlife in the long-term.



ADVANTAGES AND DISADVANTAGES

Mr. Nguyễn Văn Thái said in recent years, pangolins had become more known, so many people in the community started taking action to protect the species. “It is one of the advantages”, he said. Another advantage was he could combine his understanding of Vietnamese people in wildlife consumption and the knowledge he learned from international training courses and conferences for conservation, he said.

Talking about the disadvantages, Mr. Nguyễn Văn Thái said building an operating mechanism for a non-profit organisation in Việt Nam was a challenge, while there were not many guidelines as well as



▲ Mr. Nguyễn Văn Thái was given the Award for his contribution to rescuing 1,540 pangolins from the illegal wildlife trade (2014 - 2020)



▲ Mr. Nguyễn Văn Thái (second, left) during one of his trips to release pangolins into the wild

lessons in management and administration. Additionally, worrying about funds to implement wildlife conservation activities was also a challenge, he said. “The habit of consuming wild animals is deeply rooted in Vietnamese culture, so changing their habit is a really hard and long-term task”, he added.

Moreover, the participation of non-profit organisations in wildlife conservation had not yet received much attention from State management agencies as expected, he said.

Mr. Nguyễn Văn Thái plans to grow the model of wildlife conservation, carried out by SVW, to many national parks across the country. He also wanted to contribute to the amendment of some legal documents, making use of wild animals a prohibited act and strongly condemning and sanctioning violators, he said. We would also attract more businesses and individuals to contribute to wildlife and biodiversity conservation in Việt Nam in the future, he added.

“One person cannot protect wildlife, one organisation cannot protect wildlife, but all of us can. We need everyone to protect wildlife”, he said. ■

BẢO BÌNH



Looking back at 10 years of implementing biodiversity conservation activities in Việt Nam

The International Day for Biological Diversity (22nd May 2021) with the theme “We are part of the solution” has called on people to live in harmony with nature and apply nature-based solutions. This is also an opportunity for Việt Nam to look back at the achievements and challenges in biodiversity conservation of the country over the past 10 years (2010 - 2020) to create a premise, towards the completion of the sustainable development goals.

VIỆT NAM'S BIODIVERSITY HAS HIGH VALUE IN THE WORLD

Việt Nam is one of the countries with high biodiversity in the world, especially in species diversity. According to the 6th National Report to the United Nations Convention on Biological Diversity (2019), Việt Nam has 51,400 species of organisms that have been identified, including: 7,500 species of micro-organisms; 20,000 plant species on land and in water; 10,900 species of terrestrial animals; 2,000 species of invertebrates and fish in freshwater and over 11,000 species of marine life. Every year, many new species continue to be discovered, extending the list of existing species in Việt Nam.

Among the recorded species, many have high conservation value, affirming the global importance of Việt Nam's biodiversity such as *pseudoryx nghetinhensis*, *tragulus versicolor*, *muntiacus vuquangensis*, *muntiacus truongsongensis*, *nesolagus timminsi*, *elephas maximus*, *bos javanicus*, *bos sauveli*, *panthera tigris corbetti*, *panthera pardus*, *cervus nippon*, primates, testudines living in the sea, on land and in freshwater... The fauna of Việt Nam is quite rich in species composition and has a high level of endemism compared to other countries in Indochina. Specifically, Việt Nam has 15/21 monkey species in the region, including 7 endemic species and sub-species; 33/49 endemic bird species, of which 10 are endemic to Việt Nam.

Results of basic surveys of different territories in Việt Nam in recent years show that a number of new species have been discovered and described, including many new genera and species of scientific value. Statistics show that the number of new species found in Việt Nam accounts for more than half of the new species in the Mekong Subregion (including Cambodia, Laos, Myanmar, Thailand and Việt Nam) (WWF, 2015). Of the total 139 species of animals and plants found, there are 90 species of plants, 23 species of reptiles, 16 species of amphibians, 9 species of fish and 1 species of mammal. Scientists of Việt Nam have announced 1,023 new species for both plants and animals for science (Vietnam Academy of Science and Technology and Vietnam National University). From 2014 to 2018, there were 344 new species for science including 208 animal species, 136 plant species, which were described and published in prestigious international scientific journals and the Journal of Biology of Vietnam Academy of Science and Technology (6th National Report to the United Nations Convention on Biological Diversity, 2019)

CONSERVE AND RESTORE THE VALUE OF PRECIOUS BIODIVERSITY

Over the past decade, Việt Nam has developed and actively implemented the National Strategy on Biodiversity to conserve and restore biodiversity value. Over the past time, the legal system on biodiversity conservation and protection of wild species has continued to change and adjust. Along with the improvement of legal provisions on forest protection and development (Law on Forest Protection and Development 2004, Law on Forestry 2017), legal provisions on fisheries (Law on Fisheries 2004 and amended 2017), legal provisions on investment and business (Law on Investment 2014), the Law on Biodiversity 2008 which took effect on 1st July 2009 is the most comprehensive legal document regulating the conservation and sustainable development of biological species, endangered, precious and rare species prioritized for protection, wild species, biodiversity conservation facilities. Accordingly, policies, decrees and circulars guiding the implementation of the Law on Biodiversity were also issued, creating a complete legal framework for wildlife management.

In particular, the amended Criminal Code 2017 increased the maximum penalty up to 1 billion VND and 15 years in prison for crimes related to wildlife. This shows the Government's drastic handling of violations and protection of wildlife. On the other hand, the Prime Minister's directives such as Directive No. 03/



▲ *Pygathrix cinerea* discovered in Kon Plông District (Kon Tum)

CT-TTg on strengthening direction and implementation of measures to control and conserve endangered, precious and rare wild animals; Directive No. 28/CT-TTg dated 17th September 2016 on urgent solutions for preventing and fighting the violation of wild animals against the Law and recently the Prime Minister's Directive No. 29/CT-TTg dated 23rd July 2020 on a number of urgent solutions for wildlife management issued in the context of the spreading Covid pandemic.

Besides, species conservation activities have also been strongly implemented and achieved remarkable results. Investigation, inventory, monitoring and evaluation of endangered, precious and rare species prioritized for protection are carried out in order to develop a database of wild species. In the period 2010 - 2020, basic survey projects on forest and marine resources (including coral reef ecosystems, coastal ecosystems) have been implemented. The volumes of Fauna and Flora of Việt Nam are continuously updated with 31 volumes of fauna and 21 volumes of flora that have been published since 2.000 up to now. The

list of endangered precious and rare species prioritized for protection is updated and promulgated in Decree No. 64/2019/NĐ-CP. The Vietnam Red Data Book has been updated (Institute of Ecology and Biological Resources, 2015). Many wildlife monitoring programs have also been implemented, typically: The project to investigate the status of *panthera tigris corbetti*, *ursus malayanus* in Pù Mát National Park (NP) - Nghệ An; The program to monitor primates in Phong Nha NP - Quảng Bình; The project to monitor population of *trachypithecus francoisi poliocephalus* in Cát Bà NP - Hải Phòng; The project to monitor population of *rhinopithecus avunculus* in Nhà Hang, Chạm Chu Nature Reserves - Tuyên Quang, Khau Ca Nature Reserve - Hà Giang; A number of programs to monitor spoonbills and red-crowned cranes implemented by Birdlife International; The project to monitor peacock species in Đắc Lắc Province; The project to monitor pangolins and mammals in a number of national parks and conservation areas; The project to monitor Hoàn Kiếm turtles; The program to tag and monitor sea turtles during the breeding season and the program to relocate and hatch turtle eggs in Côn Đảo NP; The program to monitor daytime migratory raptors in Asian countries and territories...

Many in-situ species conservation activities have been developed and approved by the Government such as the Master Plan for urgent conservation of elephants in Việt Nam for the period 2013 - 2020; The National Program on tiger protection in the period



2014 - 2022; Urgent Conservation Action Plan for primates in Việt Nam to 2025, vision to 2030; Program on Conserving endangered turtle species of Việt Nam to 2025, vision to 2030. On that basis, many local authorities have actively developed and approved species conservation programs/plans in their provinces under the support from funding sources or projects such as Thừa Thiên - Huế, Quảng Trị, Kon Tum, Quảng Nam, Thanh Hóa.... Thanks to in-situ conservation activities, the number of individuals of some primates has increased. According to FFI (2016), Nguyễn Đình Hải, Nguyễn Xuân Đăng et al (2016), there are more than 500 individuals of *pygathrix nemaeus cinerea* in Kon Plông (Kon Tum) and over 200 individuals of *trachypithecus barbei* at Xuân Liên Nature Reserve, Thanh Hóa discovered. When it was first established, Vân Long Wetland Nature Reserve (Ninh Bình Province) in 2001, scientists' statistic that there were only 43 individuals of *trachypithecus delacouri*. Thanks to good protection, the *trachypithecus delacouri* population is increasing in number, in 2010, there were 110 individuals and by 2016 it had increased to about 150 individuals. Currently, there are 7 herds of *trachypithecus delacouri* with about 40 individuals newly discovered in the limestone mountains of Hà Nam Province. Obviously, the increase in primate herds is a positive sign because there has been an expansion of the area of suitable habitats for each of these groups of primates.

In addition to in-situ conservation efforts, displacement conservation activities have also been implemented with certain achievements. Currently, there are 7 biodiversity conservation facilities licensed to operate. Additionally, thanks to the incentive policy for breeding endangered species, some species still exist and develop, typically *cervus nippon* which has long been extinct in the wild in Việt Nam for a long time has been studied and raised. Some successful research results in the

breeding of rare and precious wildlife species in localities are: *Crocodylus siamensis* is at very high risk of extinction in the wild now restored by the reintroduction program in Cát Tiên NP; *Python molurus* and *python reticulatus* are popularly bred in the Southern provinces, export products are skin, meat, live pythons; *Naja* have been successfully raised and reproduced in many localities such as Vĩnh Tường - Vĩnh Phúc.

The successful artificial reproduction and commercial farming of endangered wild fauna and flora species with high economic value have created opportunities for socio-economic development in localities, contributed to the conservation of genetic resources and reduced pressure on wildlife exploitation in the wild.

HUMANS ARE THE DECISIVE FACTOR OF BIODIVERSITY CONSERVATION SOLUTIONS

With these achievements, it can be affirmed that wildlife conservation as well as biodiversity conservation has really made positive changes, gradually turning this work into a task of the whole society with the participation of the whole society. This is very meaningful because the theme of the International Day for Biological Diversity 2021 is "We are part of the solution", as an affirmation that humans are also a factor of the solution to conserve biodiversity, even the key factor, determining the success of this work.

However, besides the achievements, Việt Nam still has many challenges. According to the report evaluating the results of the National Strategy on Biodiversity to 2020, vision to 2030, a number of issues such as the import of invasive alien species, environmental pollution, global climate change, the increasingly complex wildlife crime situation as well as the fragmentation and narrowing of habitats and over- and illegal exploitation of forest and marine resources in many areas are the main reasons why biodiversity is threatened. In addition, the management system and policies, laws also have overlaps and inadequacies that need to be improved.

To be able to effectively conserve wild species, Việt Nam has been and continues to be consistent with the goals of in-situ conservation, combined with conservation solutions to relocate endangered species; strengthens Law enforcement to improve the effectiveness of conservation policies; raises awareness about wildlife conservation and changes habits for sustainable consumption, avoids damage to species and their habitats; continues to amend regulations on species conservation to create a comprehensive and consistent legal corridor; mobilizes the participation of organizations and individuals in the conservation of species in particular and biodiversity in general. ■

NGUYỄN HẰNG



Government promulgates a Decree detailing the preliminary environmental impact assessment

On 21st May 2021, the Government promulgated Decree No. 54/2021/NĐ-CP detailing the preliminary environmental impact assessment (EIA). This Decree takes effect from the date of signing and annuls Article 12 of the Government's Decree No. 40/2019/NĐ-CP dated 6th April 2020 detailing the implementation of a number of articles of the Law on Public Investment.

Accordingly, Decree No. 54/2021/NĐ-CP applies to agencies, organizations and individuals participating in or related to investment, public investment and public-private partnership investment, construction investment activities and issuance of investment registration certificates, except for the issuance of investment registration certificates at the request of investors.

Subjects that need to carry out preliminary EIA include investment projects subject to the preparation of EIA reports specified in Appendix II, Section I, Appendix issued together with the Government's Decree No. 40/2019/NĐ-CP dated 13th May 2019 amending and supplementing a number of articles of the decrees detailing and guiding the implementation of the Law on Environmental Protection in one of the following cases: Public investment projects (except for urgent public investment projects, projects under national target programs, component projects of projects for which investment policies have been decided by competent authorities, investment preparation tasks, planning tasks); Public-private partnership investment projects (PPP projects); Investment projects subject to approval of investment policies in accordance with the legal provisions on investment; Investment projects subject to issuance of investment registration certificates, except for the issuance of investment registration certificates at the request of investors.

Regarding the content of the preliminary EIA, subjects that must carry out the preliminary EIA shall carry out the following contents, including: Assessment of

the suitability of the location of the investment project with the National Strategy on Environmental Protection, the National Master Plan on Environmental Protection, the content of environmental protection in regional planning, provincial planning and other relevant plannings; Identification and forecast of the main environmental impacts of investment projects on the environment on the basis of scale, production technology and location of the project; Identification of environmentally sensitive factors of the area where the investment project is implemented according to the location options (if any); Analysis, assessment and selection of options on scale, production technology, waste treatment technology, location of investment project implementation and measures to minimize environmental impacts; Identification of the main environmental issues and scope of environmental impacts that need to be kept in mind during the implementation of the EIA.

Agencies, organizations and individuals that propose investment projects specified in Clause 1, Article 3 of this Decree shall carry out preliminary EIA during the preparation of pre-feasibility study report, investment policy proposal report, application for approval of investment policy, application for an investment registration certificate. The content of the preliminary EIA shall be considered by the competent authority at the same time as the appraisal of the application for decision or approval of the investment policy of the project and the issuance of the investment registration certificate according to the legal provisions on public investment, PPP investment, investment and construction.

Decree No. 54/2021/NĐ-CP also stipulates that an investment project that has EIA report been appraised by a competent authority before the effective date of this Decree with results are approved without amendment and supplementation and the investment project that has EIA report been approved by a competent authority before the effective date of this Decree, the preliminary EIA is not required. An investment project that has carried out preliminary EIA and is approved by a competent authority for investment policy is not required to carry out preliminary EIA when applying for an investment registration certificate. As for a public-private partnership investment project that the competent authority has received the investment policy decision dossier before 1st January, 2021 and the project that has had the EIA report according to legal provisions on environmental protection shall continue to comply with legal provisions at the time of receipt. In case a PPP investment project that has investment policy decision dossier been received by a competent authority before 1st January, 2021 but has not yet had an EIA report, shall implement in accordance with legal provisions on investment in the form of PPP, the Law on Public Investment■

MAI HUONG

Efficient efforts in nature and biodiversity conservation and orientation in the near future

DR. NGUYỄN XUÂN DŨNG

MSC. ĐẶNG THÙY VÂN

*Nature and Biodiversity Conservation Agency
Vietnam Environment Administration (VEA)*

Viet Nam is recognized as the country of high biodiversity in the world. Biodiversity has made a great contribution to ensuring food security and people's livelihood; maintaining genetic resources of livestock and crops; providing construction materials, fuel and pharmaceutical sources; creating natural landscapes; being the source of many good customs and habits of the Vietnamese people.

The social-economic development, population growth and climate change has put a great pressure on biodiversity in Viet Nam. Recognizing the importance of biodiversity, in recent years, the state management of biodiversity conservation has been achieved encouraging results such as improvement of the legal system; strengthen inspection and supervision; promotion of international cooperation on biodiversity conservation.

THE ACHIEVEMENTS

The legal system on biodiversity has been gradually improved

Currently, 25 documents have been developed and issued directly guiding the implementation of the Law on Biodiversity (8 decrees of the Government; 4 decisions of the Prime Minister (PM); 1 directive of the PM and 12 circulars). In 2020, the Ministry of Natural Resources and Environment (MONRE) has developed the Law on Environmental Protection (amended), submitted to the National Assembly for approval, in which the content of nature conservation and biodiversity has been mentioned in Chapter II of regulations on the protection of natural resources, environmental components, natural heritage and integrated in a number of other provisions.

Biodiversity conservation planning is implemented. Decision No. 45/QĐ-TTg of the PM approving the National Biodiversity Conservation Master Plan to 2020, with a vision to 2030, has arranged the system of existing protected areas and proposed to gradually establish and put into operation new conservation zones; review and upgrade the system of biodiversity conservation facilities; propose a new system of biodiversity corridors. By the end of 2019, there were 23 approved biodiversity conservation plans at the provincial and central levels. There are 11 localities that have developed biodiversity conservation planning but have not yet been approved. In the process of reviewing and assessing conservation needs, 23 provinces have planned to add new planning objects (44 protected areas, 37 biodiversity conservation facilities and 15 biodiversity corridors). The integration of biodiversity conservation into provincial land use planning is also piloted in Lạng Sơn and Sơn La provinces. At the beginning of 2020, the PM approved the task of making a national master plan for biodiversity conservation in the period of 2021 - 2030, with a vision to 2050.

The system of protected areas and areas with international titles was established and consolidated

The number of protected areas and wetlands of international importance (Ramsar sites) in our country continues to increase. As of 2019, the whole country has 172 protected areas with a total area of 2,493,843.67 ha (an increase of 6 conservation areas compared to 2015 with a total additional area of 66,693.97 ha) including 33 national parks; 65 nature reserves; 18 species and habitat conservation areas; 56 landscape protection zones; 9 areas are recognized as world biosphere reserves. In the period 2016 - 2020, to establish 1 new national park, 2 wetland protected areas, 2 species and habitat protected areas, 2 nature reserves, 2 Ramsar sites, 5 ASEAN Heritage Parks; established 3 biodiversity corridors at provincial level with a total area of 521,878.28 ha connecting biodiversity in the provinces of Quảng Trị, Quảng Nam and Thừa Thiên - Huế. From 2016 to 2020, 10 marine protected areas have been established with a total area of 187,810.93 ha, accounting for 0.19% of Vietnam's sea area.

Control the trade and consumption of endangered wild animals and release of invasive alien species

In the past time, the MONRE has promptly guided and directed the strengthening of control over the import and trade of freshwater lobsters; develop and submit the PM's Draft Directive on invasive alien species. The management



of endangered wild species has always been strengthened, with special attention paid to the implementation of the PM's Directives on this content. In 2020, the Ministry will develop and submit to the PM for promulgation a Directive on a number of urgent solutions to wildlife management in the new situation. The list of endangered, precious and rare species prioritized for protection is updated and supplemented. On February 14th, 2020, in the context of the COVID-19 epidemic, the MONRE issued Official Letter No. 679/BTN-MT-TCMT to Ministries, Ministerial-level agencies, Governmental agencies, people's committees of provinces and cities on strengthening wildlife management and controlling illegal captive breeding, trade and consumption. In addition, the MONRE continues to organize the implementation of the conservation program of endangered and rare species prioritized for protection approved by the PM (elephants, tigers, primates, turtles) and develop conservation program for species on the list of endangered precious and rare species prioritized for protection. Ministries, sectors and localities have taken drastic and more active actions in controlling the illegal hunting, trading, consumption and captive breeding of endangered species; Many activities have been carried out to conserve wildlife populations in the wild. In addition, the Ministry also guides provinces to establish biodiversity conservation facilities. Up to now, there have been 7 biodiversity conservation facilities granted certificates of establishment by the Provincial People's Committee in accordance with the provisions of the Law on Biodiversity. Wildlife population monitoring programs are implemented in the localities. Signing agreements with international organizations on enhancing cooperation in conservation of endangered, precious and rare species; request Ministries, branches and localities to strengthen wildlife management and control illegal captive breeding, trading and consumption. Develop documents on management of invasive alien species, wild species, migratory birds, flight ways of migratory birds.

Implement the program on conservation and sustainable use of genetic resources

Currently, in the country, a network of agencies has been formed, including a number of focal units and 68 units belonging to 6 Ministries/sectors participating in the implementation of the tasks of the Program on conservation and sustainable use of plant, animal and micro-organisms genetic resources. The collection, storage and conservation of genetic resources is carried out every year and has increased significantly. In 2020, a total of 88,968 genetic resources were collected, an increase of 3.12 times compared to 2010. Ministries and sectors have issued 10 licenses to access genetic resources, of which, MONRE has granted 2 licenses to access genetic resources for commercial purposes, commercial product development and 6 licenses for non-commercial purposes; The Ministry of Agriculture and Rural Development (MARD) issued 2 licenses for commercial purposes, commercial product development; issued more than 72 decisions permitting the bringing of genetic resources abroad for non-commercial study and research purposes.

Restoration and development of green tree ecosystems

At the 10th session of the 14th National Assembly, the PM proposed an initiative to plant 1 billion new trees in the next 5 years, including urban trees. The MARD and the MONRE have developed a project on restoration and development of green tree ecosystems in order to respond to the emergency situation of climate change and environmental pollution, ensuring sustainable development of the country, at the same time, implement specific activities, including the application of artificial intelligence technology to build digital maps to provide specific locations and instructions on plants for the convenience of participating organizations and individuals. Ministries, branches, localities, organizations and individuals in society have actively responded to and implemented tree planting activities and have initially formed a new lifestyle for agencies, organizations, families and individuals, people in society.

Building and developing a database (database) of biodiversity, digitizing the management of natural heritage is interested and promoted, towards the digitization of management on biodiversity conservation, in line with the e-Government of natural resources and environment sector.

The e-news on natural resources and natural heritage introduces and promotes the beauty, value and potential of Vietnam's natural landscape and biodiversity, connecting with Ministries, branches, localities and related agencies is under construction. Continue to upgrade and operate the National Biodiversity Database to serve the management and conservation of biodiversity. Currently, MONRE is developing a scheme to inventory and build a biodiversity database, which is expected to be submitted to the PM for promulgation in the third quarter of 2021. At the same time, systematically develop a set of technical guidelines on inventory, monitoring, reporting, monitor-

ing the status and evolution of biodiversity, serving the management and policy making on nature conservation and biodiversity.

International cooperation in biodiversity conservation is prioritized for implementation by MONRE. The Ministry has well performed its role as the focal point for implementing international commitments on biodiversity, expanding partners, mobilizing resources to support the implementation of activities in the fields of species conservation, genetic resource management and wetland management, management of biosphere reserve, ASEAN heritage site, initiative to establish biodiversity corridor... In 2019, MONRE prepared the 4th National Report on the implementation of the Cartagena Protocol on the implementation of the Cartagena Protocol on Biosafety; Develop the 6th National Report on Biodiversity and submit it to the Secretariat of the Convention on Biodiversity; Report on the implementation of the Ramsar Convention at the request of the Ramsar Secretariat (2020). Besides, many international cooperation projects on nature conservation and biodiversity have been implemented effectively.

Controlling impacts from socio-economic development activities on biodiversity, especially impacts from development projects through good implementation of strategic environmental assessment (SEA) and environmental impact assessment (EIA): The content of impact assessment on biodiversity is focused on SEA, EIA. Most of the EIA councils of development projects that may affect biodiversity are organized by MONRE with the participation of biodiversity experts and representatives of agencies in charge of managing nature conservation and biodiversity. Thereby, it is required to assess the current status of biodiversity; the project's impacts on biodiversity; implement measures and plans to mitigate adverse impacts on the environment and biodiversity. However, the requirements for management, climate change, EIA and SEA for natural areas need to be prioritized for protection, especially internationally recognized areas such as biosphere reserve.

Guiding and inspecting the implementation of the Law on Biodiversity. Annually, MONRE has inspected and evaluated the implementation of legal documents related to biodiversity and promptly guided the implementation of biodiversity conservation at the provincial level, focusing on implementation contents of Law on Biodiversity, National Strategy on Biodiversity to 2020, vision to 2030; wetland conservation, management of access to genetic resources and benefit sharing...; regularly coordinate with other relevant agencies such as the MARD, the Ministry of Health, the Ministry of Science



▲ Delegates participate in a roundtable discussion on Youth with nature conservation and biodiversity and the Vietnam Biodiversity Photo Contest 2020, on 5th June 2021



and Technology to handle hot issues in biodiversity management such as forest fire prevention, species control invasive aliens, wildlife protection...

Propaganda, dissemination and guidance on the implementation of legal regulations on nature conservation and biodiversity have been deployed nationwide. Every year, according to the guidance of the Convention on Biodiversity, MONRE issues an official letter guiding the implementation of activities to celebrate the International Day of Biodiversity according to internationally selected themes. Propaganda documents and instructions are implemented attentively. Television programs introducing Vietnam's protected areas and biodiversity and biodiversity conservation management are also shown on national television channels and local channels to all regions of the country. Many training materials, training on biodiversity, biosecurity; Protection and rational use of biodiversity resources have been compiled and sent to relevant agencies, departments.

LIMITATION

The work of nature conservation and biodiversity has had many positive changes, with efforts and attention from the central to local levels; mechanisms and policies have been implemented synchronously and are gradually being perfected. However, biodiversity shows signs of continuing to decline, ecological balance is at risk of being affected by the impact of development pressure and global climate change.

Biodiversity continues to be degraded ecological balance is at risk of being affected. The size, quality and diversity of natural ecosystems continue to decline; the establishment of new protected areas and expansion of protected areas is still slow; wildlife species continue to decline; there are still risks from invasive alien organisms and risks from genetically modified organisms. The situation of forest fires and deforestation has increased, causing serious damage to forest areas and vegetation cover.

Natural ecosystems are reducing in area due to conversion of land use purposes. There are only a few primary forests left, divided and isolated into small

areas, scattered in some areas such as the Central Highlands and the Northwest, so it is difficult to have a chance to fully recover. Cutting down natural forests, converting land and water surface making habitats of wild animals has been reduced or lost, especially for large-sized species such as tigers, elephants or migratory species such as birds, fish species. In the period 2017 - 2019, there were 3,499 projects with 170,504 hectares of forest being converted to other purposes.

The situation of violations of the law on biodiversity and forest protection continues to be at a high level: From the beginning of 2017 to March 2019, the customs authority chaired and coordinated to detect and arrest 87 cases of exploitation violations, trading in endangered wildlife, in which many large-scale violations were detected such as the seizure of more than 1.8 tons of ivory and more than 6.3 tons of pangolin scales at Tiên Sa port, Đà Nẵng; 2.8 tons of pangolin scales and 600 kg of ivory on January 31st, 2019; Quảng Ninh Province: handle 40 criminal cases out of a total of 93 cases detected and arrested; Quảng Trị Province, from 2015 to now, has handled 2 cases/44 violations. The number of violations of the Law on Forest Protection and development in the period 2016 - 2020 occurred 73,834 cases, an average of 14,667 cases/year. Damaged forest area is 11,661ha; In 2019, the forest area damaged by illegal deforestation was 578 hectares, reduced 10 hectares (2%) compared to 2018; There were 292 forest fires (an increase of 117 cases, equivalent to 67% compared to 2018), the damaged forest area was 1,997 hectares of forests of all kinds, an increase of 1,649 hectares over the same period in 2018.

Ecosystems of rivers, lakes and lagoons are also being over-exploited, under heavy pressure from large infrastructure development projects such as blocking dams to serve irrigation and hydropower needs, leading to environmental loss. survival of many aquatic species and degrade ecological functions. Rivers and lagoons have been changed, leading to loss of water regulation function, causing erosion, salinization, depletion of flows... affecting the lives of people and many animal species. Marine ecosystems such as mangroves, coral reefs, seagrasses and biodiversity are being degraded and reduced in area. With the current situation of hunting, trading and consuming wild plants and animals, the number of endangered, precious and rare species under threat has increased.

ORIENTATION OF BIODIVERSITY CONSERVATION IN THE COMING TIME AND PROPOSE SOLUTIONS

With the pressure of development and the impact of climate change taking place more and more fiercely globally, the risk of biodiversity loss and degradation has caused serious consequences for the sustainable development of the country. In the current context, enhancing the effectiveness of nature conservation and biodiversity in Việt Nam is one of the national urgent tasks.

To enhance the effectiveness of biodiversity conservation, some orientations in the coming time need to be prioritized to implement the following contents:

- Promote the implementation and completion of legal documents on biodiversity management, guiding documents for the implementation of the Law on Environmental Protection (amended) after being promulgated (for contents on biodiversity); Develop a project to amend the Biodiversity Law; develop a National Strategy on Biodiversity to 2025, with a vision to 2050; develop a national plan for biodiversity conservation in the period of 2021-2030, with a vision to 2050; raise awareness and responsibility of sectors, levels and communities in nature conservation and biodiversity nationwide; to unify the system of protected areas nationwide; mobilize the participation of the whole society in the work of nature conservation and biodiversity conservation;

- Developing and implementing the project of ecosystem restoration; implementing the National Action Plan on conservation and sustainable use of wetlands; promote the establishment of conservation areas according to the biodiversity conservation planning; Implement the project of inventorying and building a biodiversity database to build and operate the national biodiversity database and the information website on natural heritage and biodiversity, connecting with the locality. Piloting the survey, assessment, monitoring and monitoring of biodiversity according to the ecosystem; propose to study the mechanism of payment for ecosystem services in the Mekong River Basin...;

- Continue to promote zoning for conservation and protection of natural landscapes and biodiversity in accordance with the legislation on climate change, biodiversity and other relevant laws; strengthening the management capacity of protected areas and natural heritages; biodiversity conservation facilities; develop a policy and legal frame-

work for conservation and protection of biodiversity corridors and areas of high biodiversity; protect and preserve the ecological value of nature and the natural environment;

- Develop and propose some models for conservation and sustainable use of biodiversity and pilot model of mechanism for accessing genetic resources and sharing benefits from genetic resources and traditional knowledge about genetic resources; biosafety control and management mechanism for genetically modified organisms, genetic specimens and genetically modified organisms products; biodiversity assessment, biodiversity compensation, biodiversity impact assessment in socio-economic development activities... Building and piloting biodiversity conservation facilities;

- Strengthening international cooperation in nature conservation and biodiversity to mobilize resources for nature conservation and biodiversity.

- Promote inspection of biodiversity conservation management and communication to raise awareness on nature conservation and biodiversity.

In order to continue to effectively implement biodiversity conservation goals from the perspective of sustainable development, some solutions are proposed as follows:

- Consolidate the organizational apparatus and strengthen human resources for state management of nature conservation and biodiversity at Central and local levels; focus on strengthening the organizational system of agencies performing the task of biodiversity conservation management, independent from the agencies managing the exploitation and use to increase control measures over the exploitation and use of natural resources level, strengthen the coordination between Ministries and sectors, between Central and local levels in biodiversity management;

- Focus on allocating and building human resources and funding commensurate with the assigned tasks at central and local levels; capacity building for biodiversity conservation and management agencies; prioritize allocating resources (human and financial) to carry out biodiversity conservation activities in the locality;

- Increase budget expenditures for environmental protection, including expenditures for biodiversity conservation to meet the requirements of practice; consider breakthrough solutions in terms of resources for environmental protection to meet the requirements of the mission, keep up with the rapid increase in scale, the increasingly complex evolution of environmental problems, in line with the increasing trend in strengthening environmental management in the region and in the world;

- Strengthen the supervision and direction of competent authorities in the implementation of solutions to solve and handle existing problems of the conservation of nature and biodiversity.■



Promoting the implementation of the Ramsar Convention in Việt Nam

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The Convention on Wetlands (Ramsar Convention, Iran, 1971) is an international treaty with the mission of “conservation and wise use of wetlands through local, regional and national actions and international cooperation to contribute to the achievement of sustainable development goals worldwide”. To date, 171 countries have joined the Convention and more than 2,418 wetlands worldwide, covering an area of more than 254 million hectares, have been recognized and included in the Ramsar List of Wetlands of International Importance (RLWII).

Accordingly, the members of the Ramsar Convention (RC) have the following tasks: Designate at least one wetland for inclusion in the RLWII and maintain the ecological character of this wetland; Wise use of wetlands (incorporating wetland conservation considerations into national land-use planning and encouraging wise use of wetlands); Encourage and strengthen the conservation of wetlands through the establishment of nature reserves on wetlands and the development of strict protection measures for Ramsar sites, wetland reserves of small scales and especially vulnerable; Promote international cooperation on the conservation of wetlands, especially transboundary wetlands, water bodies which share common species and development assistance for wetland projects; Promote communication on wetlands and support the activities of the Convention.

SOME OUTSTANDING RESULTS IN THE MANAGEMENT OF WETLANDS

Việt Nam is the 50th country in the world and the first in the ASEAN region to officially join the RC since 1989. Over the past time, Việt Nam has implemented many activities on conservation and wise use of wetlands to fulfill its member state responsibilities.

Internalize the RC and perfect the system of documents on wetland management

Việt Nam has been building and perfecting a legal system in accordance with the principles and provisions of the RC, including Decree No. 109/2003/ND-CP dated September 23th, 2003 of the Government on conservation and sustainable development of wetlands. It can be said that this is the first legal document that directly regulates wetland management to implement the RC. Articles of the Decree have been concretized into strategies, policies and action plans of the natural resources and environmental sector and related Ministries, branches and localities nationwide.

Up to now, Việt Nam has 4 laws relating to wetland management such as: Law on Fisheries (2003, 2017); Law on Forest Protection and Development (2004), now the Law on Forestry (2017); Law on Environmental Protection (LEP) (2005, 2014, 2020), Law on Biodiversity (LB) (2008) and many documents guiding the above laws. In particular, the LB in 2008 is the first document to internalize the concept of wetlands in the legal document system of Việt Nam. Article 35 on sustainable development of natural ecosystems in the natural wetlands of the LB, which directly regulates the wetlands and inventory activities and establishes a sustainable development regime for natural wetlands in Việt Nam. On that basis, the wetland classification system has been issued with 26 types of wetlands belonging to three groups of marine and coastal wetlands, inland wetlands and artificial wetlands.

According to the LEP (amended) passed by the National Assembly on November 17th, 2020, the content of important wetlands and wetland ecosystem services for business purposes of tourism, entertainment and aquaculture was included in the Law. In environmental sensitive factors to classify investment projects include important wetland areas and in environmental information include information on important wetlands. In addition, wetland ecosystem services for tourism, entertainment and aquaculture business purposes are among the paid natural ecosystem services.

In response to Vietnam's requirements for wetland management in the face of development pressures and global climate change trends as well as the context of the LB being passed, the Government of Việt Nam has also issued "Decree No. 66/2019/ND-CP dated July 29th, 2019 on conservation and sustainable use of wetlands" replacing "Decree No. 109/2003/ND-CP dated September 23rd, 2003 on conservation and sustainable development of wetlands", which has codified the requirements of the RC and comprehensively stipulates specific policies on wetland

management, wetland conservation areas, Ramsar sites and wetlands. important activities to encourage, invest resources... in conservation and sustainable use of wetlands in Việt Nam.

Directive No. 15/CT-TTg dated June 17th, 2019 of the Prime Minister on the inventory of land, mapping of the current state of land use in 2019, including the content of the inventory of wetlands. Circular No. 27/2018/TT-BTNMT December 14th, 2018 of the Ministry of Natural Resources and Environment (MONRE) regulating statistics, land inventory and making the current state of land use maps. Including the form of wetland inventory; Decision No. 1932/QĐ-TTg dated December 30th, 2019 of the Prime Minister approving the Project Inventory of land, mapping the current state of land use in 2019, including inventory of wetlands. The MONRE has issued Circular No. 07/2020/TT-BTNMT dated August 31st, 2020 detailing the contents at Point c, Clause 1, Article 31 of Decree No. 66/2019/ND-CP dated August 31st, 2020. July 29th, 2019 of the Government on conservation and sustainable use of wetlands; The Vietnam Environment Administration (VEA) has also issued guidance on the process and procedures for nomination for recognition of Ramsar site.

Currently, the Nature and Biodiversity Conservation Agency (VEA) is submitting many important documents to provide more specific guidance for the implementation of Decree No. 66/2019/ND-CP, including: National Action Plan on conservation and sustainable use of wetlands in the 2021 - 2030 period; Decision to establish the Vietnam's Network of Ramsar sites; Decision to announce the list of important wetland areas nationwide.

Strengthen communication and raise community awareness in the management and protection of wetlands

The themes of World Wetland Day, World Biodiversity Day and World Environment Day are annually propagated and disseminated by the MONRE. Especially in 2019, Việt Nam successfully organized major environmental events such as activities to respond to the International Day of Biodiversity in 2019 and the awarding ceremony of recognition of Vietnam's 9th Ramsar site for Vân Long Wetland Nature Reserve (WNR). This event has attracted the wide participation of the local community and Ministries, departments and sectors across the country.

In addition, MONRE has also conducted training to improve wetland management capacity and disseminate new documents on wetland management at Central and local levels. In 2020, establishment announcement events of Thái Thụy Wetland Reserve, Thái Bình Province and Tam Giang - Cầu Hai Wetland Conservation Area, Thừa Thiên - Huế Province were widely propagated through mass media channels and was recognized by the public and voted as one of 10 events of the natural resources and environment sector in 2020. This contributes to promoting the conservation of nature and biodiversity of wetland areas in Thái Bình, Thừa Thiên - Huế provinces in particular and the whole country in general.



▲ Láng Sen Wetland Reserve with a rich and diverse ecosystem



Promote the management, conservation and wise use of wetlands

Currently, in Việt Nam, 47 wetland conservation areas have been established and planned and many models of wise use of wetlands with community participation have been deployed in many places across the country. In 2019 - 2020, Việt Nam has established 2 WNRs according to the provisions of the LB (Thái Thụy WNR, Thái Bình (September 6th, 2019); Tam Giang - Cầu Hai WNR, Thừa Thiên - Huế (February 20, 2020).

In addition, environmental protection activities in rivers and coastal areas have been proactively and positively participated by communities across the country, many conservation and wise use of wetlands have been widely deployed nationwide. Community-based models of management or conservation and wise use of wetlands are implemented in many localities, such as environmentally friendly aquaculture, ecological shrimp ponds in the Northern coastal area, coral reef management in Ninh Thuận...

Expand the area and establish a network of wetlands of international importance

Việt Nam has successfully nominated 9 Ramsar sites with a total area of 120,549 ha (Xuân Thủy - Nam Định National Park (NP) (1989); Bàu Sấu in Cát Tiên - Đồng Nai NP (2005); Ba Bể Lake - Bắc Kạn (2011); Tràm Chim - Đồng Tháp (2012); Mũi Cà Mau NP (2013); Côn Đảo NP (2014); Láng Sen Wetland Reserve - Long An (2015); U Minh Thượng NP - Kiên Giang (2016); Vân Long WNR - Ninh Bình (2017). The recognition of Ramsar sites contributes to attracting international and national attention in wetland conservation, and at the same time strengthens the country's priceless human value and natural tourism resources in general and Ramsar sites in particular, create a significant attraction for domestic and foreign tourists, contributing to socio-economic development.

Currently, many localities have actively promoted the implementation of projects to build records for the establishment of the conservation area, which determine the criteria and ability to meet the Ramsar site for future nomination such as: Đồng Rúi, Tiên Yên (Quảng Ninh), Cần Giờ (Hồ Chí Minh City), Đồng Nai Cultural Nature Reserve (Đồng Nai)... At the same time, the network of Ramsar sites in Việt Nam is gradually being established set up and operate operations. The Nature and Biodiversity Conservation Agency has built a website for the Vietnam Ramsar Site Network at <https://vran.vn/>.

Promote international cooperation in the conservation and wise use of wetlands

Over the years, Việt Nam has mobilized the active support of many international organizations, bilateral and multilateral international partners... in the conservation and sustainable use of wetlands.

Difficulties and challenges in the implementation of the RC

Besides the successes achieved, we are facing many difficulties in the implementation of the RC, including: Effects of climate change leading to saltwater intrusion which impacts on biodiversity and people's livelihood; To harmonize (balance) the relationship between conservation and economic development in wetlands in the face of pressures of socio-economic development, especially in wetland areas in coastal areas and on land; Limited financial potential for investment in nature conservation and sustainable development in Ramsar sites; Limited human resources (quantity, quality) to carry out the management and conservation of nature in Ramsar sites; Environmental pollution (water source, plastic waste) to Ramsar sites.

STRENGTHEN MANAGEMENT TO ENSURE EFFECTIVE IMPLEMENTATION OF THE RC

In order to ensure the effective implementation of the RC in the near future, in response to the Communication Campaign to celebrate the 50th Anniversary of the ratification of the RC, Việt Nam will focus on prioritizing the implementation of measures on the basis of strategic planning of the Convention including:

Completing mechanisms and policies (such as benefit sharing, public-private partnership, integration of wetland management and conservation into national, regional and local plans and plans...) for conservation and sustainable use of wetlands;

Strengthen Law enforcement and secure resources to carry out activities on environmental protection, nature conservation and biodiversity in wetland areas at national level;

Strengthen communication, raise public awareness, train staff working on wetland management at the Central and local levels to meet the needs of wetland conservation and management;

Expanding the Ramsar sites and promoting the operation of the Ramsar Site Network and the National Wetland Working Group to contribute to improving the efficiency of Ramsar sites management and ensuring the maintenance of the ecological characteristics of the wetlands of international importance;

Promote conservation activities and wise use of wetlands through the zoning and establishment of wetland conservation areas, ensuring a mechanism of benefit sharing among wetland stakeholders;

Strengthen cooperation with RC member countries to share experiences, exchange information and learn successful models in wetland management, implementation of the RC as well as mobilizing international resources economic support for the conservation and wise use of wetlands in Việt Nam in the context of global climate change■

Consultation on the Draft Decree detailing a number of articles of the Law on Environmental Protection in 2020

Performing the tasks assigned by the Prime Minister in Decision No. 2197/QĐ-TTg dated 22nd December 2020 promulgating the List and assigning the agency in charge of drafting documents detailing the implementation of laws and resolutions passed by the XIV National Assembly at its 10th Session and Decision No. 343/QĐ-TTg dated 12th March 2021 promulgating the Plan for implementation of the Law on Environmental Protection (LEP) in 2020, the Ministry of Natural Resources and Environment (MONRE) has taken the prime responsibility and coordinated with other Ministries, sectors, local authorities, relevant agencies and experts to develop a Draft Decree detailing a number of articles of the LEP 2020 (hereinafter referred to as the Draft Decree).

THE NEED TO ISSUE A DECREE

The LEP 2020 was passed by the XIV National Assembly at its 10th Session and will take effect from 1st January 2022 with the aim of timely institutionalizing the Communist Party's guidelines and the Government's policies on reforming Việt Nam's environmental institutions in harmony with the environmental protection legislation in the world, meeting the requirements of international integration. The highest goal is to improve environmental quality, protect people's health, maintain ecological balance, biodiversity conservation and sustainable economic development.

The LEP has many provisions aimed at drastically reforming administrative procedures, contributing to reducing compliance costs of enterprises through the following provisions: Narrowing the subjects required to carry out environmental impact assessment (EIA); integrating administrative procedures into an environmental license; synchronizing environmental management tools in each phase of the project, starting from

the consideration of investment policy, project appraisal, project implementation until the project is officially put into operation and finished. For the first time, the LEP is designed with a policy framework aiming to form a law on environmental protection that is comprehensive and in harmony with the socio-economic legal system.

The LEP 2020 was passed with 16 chapters and 171 articles (reducing 4 chapters and increasing 1 Article compared to the LEP 2014), of which 65 contents are assigned by the Government. In order to soon bring the provisions of the LEP into life and also ensure the conditions for the effective organization for implementation of the LEP, the promulgation of a Decree detailing the implementation of a number of articles of the LEP 2020 is necessary.

PURPOSES, VIEWS AND SOME BASIC CONTENTS OF THE DRAFT DECREE

The Draft Decree was developed with the purposes of ensuring that the provisions of the LEP 2020 are implemented promptly, synchronously, consistently and effectively as soon as the LEP comes into force; ensuring compliance with the Constitution and the LEP 2020 and other relevant legal documents; ensuring consistency and synchronization with other legal documents in the current legal system; ensuring conformity with international treaties to which Việt Nam is a signatory; improving transparency, feasibility and policy on administrative reform, creating favourable conditions for implementation; inheriting and developing current relevant regulations on environmental protection; supplementing new regulations to fundamentally overcome difficulties and obstacles arising in reality of the current legal system on environmental protection;

The Draft Decree also clarifies the management contents; clearly defines the roles, positions, tasks and powers of the state management agencies in charge of environmental protection on the principle of ensuring the consistency of state management on environmental protection, without overlap in functions and tasks, only one agency is assigned with the main responsibility to meet practical requirements, to improve the effectiveness and efficiency of state management on environmental protection; ensures clear assignment and decentralization in the state management on environmental protection; strengthens local decentralization; strengthens the responsibilities and obligations of all agencies, organizations and individuals for environmental protection work.



▲ The MONRE on July 14th held a webinar to consult opinions from associations and businesses for the Draft Decree detailing a number of articles of the LEP 2020

The Draft Decree includes 13 chapters, 197 articles and annexes, with some basic contents such as:

Regarding protection of water environment, the Draft Decree stipulates the contents, order and procedures for promulgating the plan for surface water environment quality management for inter-provincial rivers, lakes and intra-provincial rivers, lakes, which play an important role in socio-economic development and environmental protection; the relationship of the plan with the national plan for environmental protection; responsibilities of MONRE and provincial people's committees in formulating, promulgating or submitting a plan for surface water environment quality management for promulgation.

Regarding protection of air environment, the Draft Decree specifically stipulates the contents, order and procedures for promulgating the national plan for air quality management and the provincial plan for air quality management; responsibilities of MONRE, provincial people's committees in organizing the implementation of the plan. In particular, the Draft Decree also specifically stipulates the implementation of emergency measures in

case the air quality is seriously polluted as well as the determination of the seriously polluted air environment at the inter-regional, inter-provincial and provincial level.

Regarding protection of land environment, the Draft Decree stipulates that areas must be surveyed, assessed and classified in terms of land environment quality; the survey and assessment of potentially contaminated areas is carried out at a preliminary level and the contaminated areas is carried out in detail. The Draft Decree stipulates specific responsibilities of the MONRE and the provincial people's committees for disposing, rehabilitating and remedying the environment in the land areas with soil contamination left behind or unidentified organizations and individuals causing contamination; responsibilities of organizations and individuals for disposing, rehabilitating and remedying the environment in the land areas with soil contamination caused by them. Accordingly, organizations and individuals that contaminate the soil environment must be handled for violations and remedy the consequences through disposing, rehabilitating and remedying the contaminated land areas.

Regarding protection of natural heritage environment, the Draft Decree stipulates criteria for establishing and recognizing other natural heritages; stipulates the ranking of other natural heritages into provincial, national and special national natural heritage based on their scale, value and importance; stipulates the order, procedures and competence to establish and recognize other natural heritages, order, procedures and competence to nominate for recognition of natural heritages recognized by international organizations; stipulates environmental management and protection measures

for natural heritages, responsibilities of the MONRE, the Ministry of Agriculture and Rural Development, the Ministry of Culture, Sports and Tourism, Ministries and local authorities in survey and evaluation, environmental management and protection of natural heritages.

Regarding environmental zoning, the Draft Decree stipulates the environmental zoning for natural geographical areas with environmentally sensitive factors into strictly protected zones, emission restricted zones and other zones; specifies the determination of environmental zoning in the national environmental protection planning, the provincial planning to propose the orientation for environmental protection for strictly protected zones and emission restricted zones; assigns the responsibilities for the provincial people's committees to prescribe the roadmap for applying the best available technology, requirements on environmental protection of production, business and service activities that are likely to pollute the environment in order to ensure that they do not pollute the environment with a roadmap to relocate or stop operating as prescribed by Law for production, business and service activities.

Regarding environmental criteria to classify investment projects, on the basis of groups of environmental criteria specified in Clause 1, Article 28 of the LEP 2020, in order to ensure uniformity and consistency between the legal provisions on environmental protection and others relevant, the Draft Decree details each group of environmental criteria, specifically: Scale, capacity of the project (approach the classification of projects according to the legal provisions on public investment, investment, construction and others relevant); types of production, business and services of the project (classified into 2 types with risks and without risks of polluting the environment); scale of land use area, land with water surface, use of the project's marine area (approach according to decentralization of management authority of the legal provisions on natural resources and environment of sea and islands and others relevant); scale of exploitation of natural resources (approach according to decentralization

MINISTER OF NATURAL RESOURCES AND ENVIRONMENT TRẦN HỒNG HÀ SENT A LETTER TO COLLECT COMMENTS TO COMPLETE THE DRAFT DECREE

The LEP will take effect from 1st January 2022 with many new and breakthrough contents and policies, comprehensive and in harmony with the socio-economic legal system, focusing on improving the capacity of prevention, response and protection of environmental components and people's health.

In order to ensure that the LEP is implemented and quickly comes into force as soon as it takes effect, the MONRE has developed a Draft Decree detailing a number of articles of the LEP and posted it for public comments on the Government and Ministry's web portal.

With the aim of ensuring that the Decree when issued by the Government is highly feasible, in line with reality, fully includes the new contents and policies of the LEP 2020, on 21st June 2021, the MONRE Minister Trần Hồng Hà has sent a letter to request Ministries, agencies, mass organizations, experts and officials working in the field of natural resources and environment to promote their roles, responsibilities, creativity, innovation and professional knowledge to spend time researching and providing comments to the Draft Decree. In which, focus on commenting and assessing comprehensively the Draft Decree; directly editing each specific content of the Decree, ensuring that the contents of the Decree are clear, understandable and feasible; proposing initiatives to further improve the Draft Decree on contents and drafting techniques. Comments and suggestions should be sent directly to the Minister via email: thha@monre.gov.vn or tranhavempa@gmail.com before 15th July 2021.

of management authority of the legal provisions on water and mineral resources); in particular, each group of types and characteristics of the project has been specified to be associated with each environmentally sensitive element specified at point C, Clause 1, Article 28 of the LEP 2020. On that basis, the Draft Decree stipulates a list of types of production, business and services that are at risk of polluting the environment and classified according to 3 levels of capacity: large, medium and small (Appendix 6); details the List of projects belonging to group I, group II and group III on the basis of a combination of environmental criteria specified above (Appendix 7a, 7b and 7c).



The Draft Decree also stipulates details on consultation in EIA implementation on the basis of inheriting the provisions of Decree No. 40/2019/NĐ-CP dated 13th May 2019 on subjects and forms of consultation through organizing meetings to collect comments of the public community; collect written comments from relevant agencies and organizations and prescribe a number of special consultation cases. Also, the Draft Decree stipulates details on the form of consultation through posting on the website of the standing appraisal agency; stipulates responsibilities of investment project owners in the process of project preparation and implementation before operation in case of changes compared with the decision approving the results of appraisal of the EIA report.

Regarding environmental licenses, the Draft Decree stipulates the dossiers, order and procedures for awarding, adjusting, renewing, re-awarding and revoking environmental licenses; the appraisal and award of environmental licenses are carried out through the appraisal council and inspection team in the spirit of simplifying administrative procedures. The Draft Decree also stipulates responsibilities of standing agencies appraising and awarding environmental licenses, consultation and comment collection in the process of awarding environmental licenses. In addition, the Draft Decree stipulates the order and procedures for the revocation of an environmental license to ensure that it does not affect the establishment's production and service business when the licensing agency issues the wrong authorization or the license contains contents contrary to the legal provisions, in accordance with the legal provisions on handling of administrative violations.

Regarding trial operation of waste treatment works after being awarded environmental licenses, the Draft Decree stipulates the plan and duration

of trial operation of waste treatment works of the project; monitoring of wastes of waste treatment works during trial operation; responsibilities of the project owners, the environmental protection agencies of the province where projects are implemented. Also, the Draft Decree has clarified that other environmental protection works are not subject to trial operation in order to apply uniformly and consistently across the country.

Regarding management of domestic solid wastes, the Draft Decree stipulates the management of domestic solid wastes from agencies, organizations, concentrated production, business and service zones and industrial clusters; responsibilities for managing domestic solid wastes from agencies, organizations, concentrated production, business and service zones, industrial clusters, and the selection of technology for domestic solid waste treatment; selection of investors, owners of domestic solid waste treatment; roadmap of domestic solid waste treatment by direct landfill technology. In order to concretize the provisions of the LEP 2020 on collecting waste fees based on weight or volume instead of the current average calculation per household or per capita, the Draft Decree stipulates the costs for collection, transportation and treatment of domestic solid wastes paid by local authorities to investors and provision of domestic solid waste treatment services; responsibilities of domestic solid waste collectors, transporters, treatment facilities and people's committees at all levels. The Draft Decree also stipulates a roadmap to restrict the production and import of disposable plastic products, non-biodegradable plastic packaging and products and goods containing microplastics.

Besides the above contents, the Draft Decree also stipulates the contents of environmental protection in production, business and service activities; urban and rural areas; responsibilities for recycling and disposing discarded products and packages of producing or importing organizations and individuals; environmental monitoring; environmental information system, database; prevention and response to environmental incidents; compensation for environmental damages; economic tools and resources for environmental protection; state management, inspection, investigation and online public services on environmental protection...

In order to ensure the proper implementation of the process of developing legal documents, also to make the documents feasible after its promulgation, on 17th June 2021, the full text of the Draft Decree and the Draft Report were published on the Government's Portal, the MONRE's Portal and the Vietnam Environment Administration's Portal to collect comments from ministries, sectors, local authorities, relevant organizations and individuals before submitting to the Government for consideration and promulgation.■

CHÂU LOAN - TRUNG THUẬN

Proposing regulations on payment for ecosystem services for wetlands to complete the Draft Decree detailing a number of articles of the Law on Environmental Protection in 2020

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A natural wetland is an area of marsh, peatland, or permanent or temporary water, including marine areas with a depth of not more than 6 meters at low tide. Wetlands are one of the most productive ecosystems on earth, referred to as the "kidneys of the landscape" because of the function they perform in hydrological and chemical cycles. They are called "bio-supermarkets" because of the rich food source and rich biodiversity they provide. Because of the extremely important values and roles of wetlands for people, in 2021, the theme of "Wetlands and Water" was selected by the Ramsar Convention Secretariat. Payment for Ecosystem Services (PES) is an economic tool to realize the principle of "users, benefiting from resources and environment must pay". In Việt Nam, PES is widely known in the forestry sector with a payment mechanism for forest environmental services that has been institutionalized in the forestry legislation and provides proven benefits. However, besides forest ecosystems, there are many other types of ecosystems that have values and potentials to apply PES such as wetlands, seas... Therefore, the Law on Environmental Protection (LEP) in 2020 has issued regulations to apply PES to other important ecosystems, including wetlands. This paper proposes a natural PES mechanism for wetlands in order to provide a basis for the development of guidelines for the implementation of detailed regulations on wetlands PES in Việt Nam.

REGULATIONS ON PES FOR WETLAND ECOSYSTEMS AND REQUIREMENTS NEED DETAILED GUIDANCE

Natural wetlands are permanent or temporary wetlands, peatlands, or bodies of water, including waters with a depth of not more than 6 meters at low tide. According to Article 138 of the LEP in 2020: "Natural PES is mechanism in which organizations and individuals who use natural ecosystem services will pay money to organizations and individuals who provide environmental and landscape values thanks to natural ecosystems to protect, maintain and develop the natural ecosystem". Types of ecosystem services applied to wetlands are specified in the Law, including "wetland ecosystem services for tourism, entertainment, and aquaculture business purposes; carbon sequestration and storage services". In addition, to ensure that there is no overlap in the application of PES with the Law on forestry, at point A, Clause 2, Article 138, it is agreed that "forest environmental services of forest ecosystems in accordance with the law on forestry". Therefore, in order for the regulation on natural PES for wetlands to be applied, it must ensure that it does not overlap with the current regulations of the Law on Forestry and at the same time, satisfy 4 natural PES principles, including: (i) Organizations and individuals using one or several natural ecosystem services must pay for natural ecosystem services; (ii) Payment for natural ecosystem services is made in the form of direct payment or indirect payment through trustfund; (iii) Natural PES money is accounted into the cost of products and services of the user of the natural ecosystem service, which must cover the costs of protecting, maintaining and developing the natural ecosystem; (iv) Organizations and individuals providing natural ecosystem services must use money obtained from the natural PES to protect, maintain and develop the natural ecosystem.

IDENTIFY THE RELATIONSHIP AMONG STAKEHOLDERS AND THE ISSUES RAISED TO GUIDE THE IMPLEMENTATION OF THE NATURAL PES POLICY FOR WETLANDS

Based on the results of reviewing the current regulations in the LEP, after consulting experts and scientists on related issues, the study establishes a mind map showing the relationship among stakeholders in the application of natural PES to wetlands are presented in Figure 1.



Issues that need to be clarified in order to put the regulation on natural PES for wetlands into practice include: (i) Clearly defining the application area; (ii) Those who provide and are paid for ecosystem services; (iii) Users and payers for ecosystem services; (iv) Form of PES; (v) PES rate; (vi) Use and manage PES; (vii) exemption or reduction of PES; (viii) Other regulations related to the rights and obligations of the parties, PES exemption and reduction, inspection and supervision of implementation and handling of violations.

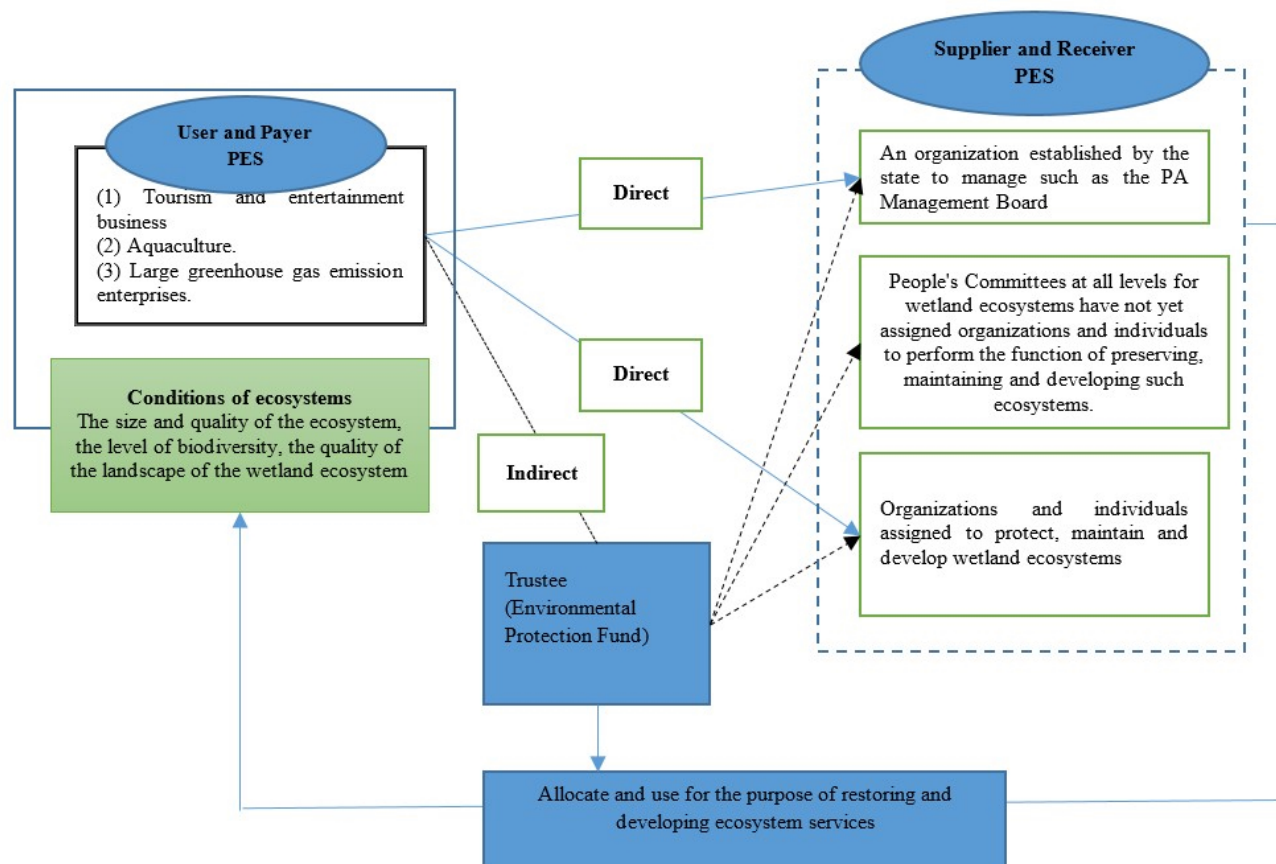
PROPOSING DETAILED REGULATIONS FOR WETLAND ECOSYSTEM SERVICES IN THE LEP 2020

Firstly, the area applying PES wetland for the purposes of tourism, recreation and aquaculture is an important wetland and associated water area in the buffer zone of the wetland conservation area which offers business services in tourism, recreation, aquaculture and carbon sequestration and storage services according to the Law on Biodiversity. To avoid overlap with

the forestry legislation, the study proposes that in the case of forested wetlands, payment for the forest area is applied in accordance with the provisions of the forestry law. In addition, in the case of marine protected areas or aquatic resource protection zones in wetlands area to ensure consistency, the application of PES shall comply with the regulations on wetland PES.

Secondly, the individuals and organizations that provide and are paid for wetland ecosystem services are: (a) Conservation Area Management Boards such as Wetland Reserve Management Boards or National Parks...; (b) Organizations and individuals assigned to manage, protect, maintain and develop the natural ecosystem of the wetland. Where there is forest in the wetland area, the payment for the forest area shall be applied in accordance with the provisions of the Law on forestry; (c) Organizations and individuals assigned to manage, protect, maintain and develop wetland ecosystems that provide carbon sequestration and storage services.

Thirdly, users and payers for wetland ecosystem services: (a) Organizations and individuals engaged in tourism and entertainment business activities, including: travel services, tourist transport, travel accommodation, food service, shopping, sports, yachting, swimming, diving, entertainment, health care, sightseeing, advertising and other related services serving tourists in the area covered with PES wetlands; (b) Organizations and individuals that have aquaculture activi-



▲ Minister Source: Author, 2021

▲ Figure 1. Stakeholder relationships in the application of natural PES to wetlands

ties located in the area where PES is applied for wetlands; (c) For organizations and individuals that have production and business activities with greenhouse gas emissions, they must use carbon sequestration and storage services of the wetland ecosystem to reduce emissions. Greenhouse gas is determined in accordance with the Law on Greenhouse Gas Reduction and Ozone layer protection.

Fourthly, the form of PES in wetland: (i) Organizations and individuals engaged in tourism and entertainment business; Aquaculture activities located in the area of wetland PES application must pay directly to the providers through a contract agreed between the two parties, unless the wetland ecosystem has not been assigned by a competent state agency; (ii) Organizations and individuals engaged in activities causing greenhouse gas emissions shall pay to organizations and individuals providing carbon sequestration and storage services through an entrustment contract through the Vietnam Environment Protection Fund.

Fifthly, the rate of payment for wetland PES is determined on the basis of a voluntary agreement between the provider and the user of the wetland ecosystem service in accordance with the actual conditions and must ensure; (i) At least, equal to 1% of the total revenue made in the period for tourism and entertainment activities in areas where PES is applied in wetlands; (ii) At least, equal to 5% of the lease value of water surface, sea surface or 1% of revenue in the period for aquaculture activities in areas where PES is applied; (iii) The level of payment for carbon sequestration and storage services of the Wetland Ecosystem is applied after conducting assessment, testing and proposing to apply from January 1st, 2027.

Sixthly, in order to ensure the PES principle stated in the LEP 2020, the use and management of Wetland PES: (i) Wetland ecosystem service providers have the right to decide on the use of the money obtained from wetland ecosystem services after fulfilling financial obligations to the State in accordance with Law; (ii) If the provider of services for the wetland ecosystem is an organization, the money obtained from PES will be spent on the following activities: Paying the contracted party to protect and



▲ *Wetlands have an important role for life*

develop the wetland ecosystem; administrative expenses for the maintenance, conservation and development of wetland ecosystems.

Seventhly, to ensure fairness, it is necessary to determine who is exempt from paying PES for wetlands. These subjects include: Households and individuals in areas with difficult economic conditions, poor households, and near-poor households as confirmed by local authorities; organizations and individuals whose production and business activities are affected by natural disasters, fires, earthquakes, storms, floods, flash floods, cyclones, tsunamis, landslides, epidemics causing direct damage to capital and assets leads to incapacity or cessation of production and business activities and is not required to buy property insurance as prescribed by law; individuals engaged in production and business activities lose their civil act capacity, die or are declared dead, missing, no longer have any property to pay, or their guardians or heirs are unable to pay debts on their behalf; the organization of production and business activities has a decision on dissolution or bankruptcy issued by a competent authority in accordance with Law and has no capital and assets to pay debts to the provider.

Eighthly, the rights and obligations of the wetland ecosystem service provider: (i) The wetland ecosystem service provider has the right to request the wetland ecosystem service user to pay for using the wetland ecosystem service according to regulations; (ii) To be responsible for managing and using PES money in accordance with the purposes and provisions of the law; (iii) To have obligation to maintain the area, protect the quality of wetland ecosystem services provided in accordance with the Law and signed contracts; (iv) To exercise other rights and obligations as prescribed by Law.

Ninthly, the rights and obligations of the wetland ecosystem service user: (i) To be informed of the status of implementation and results of the maintenance, protection and development of the wetland ecosystem within the area where the service is provided; informed of the area, quality and status of the ecosystem assessed by the wetland ecosystem service provider; (ii) To be notified by the En-



Environmental Protection Fund of the results of entrustment payment for wetland ecosystem services to the wetland ecosystem service provider; (iii) Participating in the process of planning, implementing, inspecting, monitoring and accepting the results of maintenance, protection and development of wetland ecosystems within the area where wetland ecosystem services are provided; (iv) Request the competent state agency to consider the adjustment of natural PES money in case the ecosystem service provider fails to ensure the correct area or degrades the quality and the state of the ecosystem for which the user has paid the corresponding amount; (v) Sign a contract, declare the amount of wetland ecosystem services to pay for entrustment to the Environmental Protection Fund; (vi) Pay for wetland ecosystem services sufficiently and on time according to the contract to the providing organization or individual directly or indirectly to the Environmental Protection Fund; (vii) Participate in the protection of wetland ecosystems within the area where wetland ecosystem services are provided.

Tenthly, the providing organizations and individuals that are paid for natural ecosystem services are obliged to disclose on: a natural PES project, enclosed with a map describing the boundaries, landmarks, and area of providing natural ecosystem services; list of organizations and individuals using and paying for natural ecosystem services; list of subjects to be paid, amount to be paid, quarterly and annual payment plan. In addition, for the implementation of PES for wetland ecosystems in accordance with legal regulations, ensuring efficiency and fairness, it is necessary to develop a mechanism to inspect and supervise the management and use of ecosystem service fees. The agency responsible for inspection and supervision should be decentralized according to the management responsibility assigned to each wetland ecosystem.

ANALYSIS OF SUITABILITY AND IMPACT OF PES APPLICATION ON WETLANDS IN VIỆT NAM

According to data from the Global Environment Facility (GEF), there are currently about 57 countries implementing PES policies. This regulation is consistent with Resolution No. 24-NQ/TW of the Central Committee of the Communist Party on

proactively responding to climate change, strengthening natural resource management and environmental protection. In the direction of the Government at the National Strategy on Biodiversity to 2020, with a vision to 2030, has given the task of "piloting a policy of payment for environmental services applied to marine and wetland ecosystems"; Decree No. 66/2019/ND-CP on Conservation and Sustainable Use of Wetlands sets forth the requirement "Develop guidelines on wetland PES and benefit-sharing options in important wetland sites in order to ensure a fair and reasonable benefit-sharing mechanism in terms of rights and obligations among stakeholders in the use of wetland ecosystem services". In fact, the application of the policy of payment for forest environmental services has been implemented effectively and has received the approval of the society, creating financial resources outside Stage budget for forest development. Việt Nam currently has about 12 million hectares of wetlands, diverse in types and distributed in all ecological regions of the country, with about 26 different types of wetlands. The services that wetland ecosystems provide to people are very large, including both direct and indirect.

Implementing PES on wetlands helps ensure fairness, creates financial resources outside Stage budget for renovating, restoring and developing important ecosystems and natural landscapes, so the application is necessary, the level of revenue, the payment method will be applied in accordance with the characteristics and socio-economic conditions of each locality, so it will be flexible and will not have a great impact on the subjects who have to make the payment. Therefore, the institutionalization of regulations on PES is necessary and in line with current orientations and regulations, make use of the potential of other ecosystems for national economic development. The application of this regulation in the short term will have an impact on the redistribution of a part of the revenue to the users who have to pay for the wetland ecosystem services, but in the long term, it will create double benefits because it contributes to maintaining the sustainable economic activity for organizations and individuals who use and pay PES and at the same time contribute to the maintenance and development of wetland ecosystems■

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Amending and supplementing some provisions of Decree No. 155/2016/ND-CP on penalties for administrative violations against environmental protection regulations

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On May 24th, 2021, the Government of Việt Nam issued Decree No. 55/2021/ND-CP to amend and supplement some provisions of Decree No. 155/2016/ND-CP dated November 18th, 2016, on penalties for administrative violations against environmental protection regulations. Decree No. 55/2021/ND-CP will take effect from July 10th, 2021. The promulgation of Decree No. 55/2021/ND-CP is crucial to create legal gaps while the revised Law on Environmental Protection (LEP) and the Law on amending and supplementing some provisions of the Law on penalties for administrative violations will take effect from the 1st January, 2022.

The revision of Decree No. 155/2016/ND-CP stems from the issuance of Decree No. 40/2019/ND-CP dated May 13th, 2019, on amendments to Decrees guiding in detail the implementation of the LEP. Accordingly, many provisions in Decree No. 40/2019/ND-CP that stipulate the responsibilities of organizations and individuals, production, business and service establishments for environmental protection have been amended. This led to the requirements for corresponding provisions on administrative sanctions to handle violations of environmental protection. Due to the lack of these provisions, inspection officials currently have difficulty in imposing a sanction against the establishments that do not comply with the provisions of Decree No. 40/2019/ND-CP. Furthermore, the National Assembly of the Socialist Republic of Việt Nam approved the Law amending and supplementing a number of provisions of the Penal Code in 2017 that changed fundamentally provisions on environmental crimes. Therefore, it is necessary to amend Decree No. 155/2016/ND-CP to generate synchronization in han-

dling administrative and criminal violations of environmental protection regulations. Besides, the revision could promptly overcome the arising shortcomings in the implementation of Decree No. 155/2016/ND-CP.

As a consequence, the Ministry of Nature Resources and Environment (MONRE) was assigned to review Decree No. 155/2016/ND-CP and submitted the amended Decree to the Government for consideration and promulgation from the end of 2019. MONRE has also consulted widely with other Ministries, line Ministries, localities, and the communities, then amended and supplemented 37 articles and the Appendix of Decree No.155/2016/ND-CP based on opinions of the members of the Government, Ministries and line Ministries. Some key highlights of Decree No. 55/2021/ND-CP are as follows:

Firstly, Decree No. 55/2021/ND-CP specifies additional sanctions to handle violations of new provisions of Decree No. 40/2019/ND-CP, for example, the violations of environmental procedures related to an environmental protection plan, environmental impact assessment, confirmation of completion of



▲ Decree No. 55/2021/ND-CP added a new provision in which the people's public security forces have the power to impose penalties for acts of discharging untreated waste into the environment



environmental protection works, environmental monitoring and supervision, import of scrap as raw production materials. Decree No. 55/2021/ND-CP also eliminates the provisions that are no longer in line with the practice.

Secondly, Decree No. 155/2016/ND-CP was reviewed to ensure synchronization with the Penal Code regarding acts of discharging wastewater and emission into the environment...

Thirdly, Decree No. 55/2021/ND-CP resolved some problems when implementing Decree No. 155/2016/ND-CP. To illustrate, many provisions that only reflect the general principles were clarified for further application. Particularly, the new Decree has overcome the obstacles regarding the suspension of operation for violation of environmental protection in the case of public facilities such as hospitals or domestic waste treatment facilities. According to regulations on penalties for administrative violations against environmental protection, principal penalties are depending on the seriousness of violations, including fines, application of remedial measures, and suspension of operation for a definite period. It has witnessed the difficulty in suspending the operation of public facilities such as hospitals or domestic waste treatment facilities because of considerable impacts on the welfare and the society. For instance, if hospitals are forced to temporarily suspended, it could affect the people's medical examination and treatment. Similarly, the suspension of violated domestic waste treatment facilities would lead to the disruption in waste collection and treatment that cause the loss of urban beauty and even environmental pollution. As a result, the amended Decree stipulates that the additional penalty in the form of suspension of operation for a definite period to public facilities is not applied in case their violations do not lead to environmental pollution, or they have stopped committing violations or have completely remedied the consequences of their administrative violations.

In addition, Decree No. 55/2021/ND-CP also revised violations against regulations on hygiene in public places. Previously, the fine promulgated in Decree 155/2016/ND-CP for such violations were not suitable for some people's income, leading to the complicated procedures to impose sanction to handle. For example, the violation

of discharging domestic waste on pavements, roads, alleys that is caught on the spot by the competent officials, is only handled by the communal-level police chief or the district-level people's committee chairperson or higher. This has been not feasible in practice so that there have been few cases handled. Therefore, the provisions on hygiene violations in public places have been revised in Decree No. 55/2021/ND-CP in which fines for these violations have been reduced and the fine rates have been adjusted in line with the power to impose penalties. Accordingly, the soldiers of People's Public Security Forces on duty shall have the power to impose a fine up to VND 500,000 while the communal-level police chiefs and heads of public security stations shall have the power to impose a fine up to VND 2,500,000. For some acts such as throwing, littering, or discarding cigarette butts, leftovers, and ashes outside of the permitted places, a fine ranging from 100,000 to VND 150,000 shall be imposed on the spot by the police without issuing notices of administrative violations. It is the same for the case of the act of addressing personal sanitation needs (urination, defecation) outside of permitted places at residential, commercial, service, or public areas (a fine ranging from VND 150,000 to VND 250,000 shall be imposed for this act). The reduction in fine rates aims to ensure the feasible application to the majority of people as well as to simplify the sanctioning procedure with the form of on-site fines. Subsequently, the sanctions for handling environmental violations in public places could become more effective.

Additionally, Decree No. 55/2021/ND-CP also amended and supplemented the provisions on determination of power to impose penalties in which the competent forces have the authority to impose principal and additional penalties and remedial measures against administrative violations. Especially, the Decree indicates that People's public security forces shall, under their authority, and within their managing sectors and scope, have the power to impose penalties for acts of installing equipment, pipelines, or other waste discharge routes to discharge untreated waste into the environment. Moreover, border guard forces shall, under their authority and within the sectors under their authority and scope of their duties, have the power to impose penalties for violations against regulations on solid and hazardous waste management and marine environmental protection. This new provision helps to strengthen competent forces when detecting violations in border areas and on seas and islands, following the functions and tasks of the border guard forces.

Other provisions in Decree No.155/2016/ND-CP were also revised to ensure consistency and uniformity with existing regulations. Besides, it eliminates duplication with relevant Decrees on penalties for administrative violations. More importantly, the revision did not change the structure and the penalties specified in this Decree.

The promulgation of Decree No. 55/2021/ND-CP provides a solid legal basis for competent agencies to handle administrative violations; raising awareness of organizations and individuals and strengthening the effectiveness of state management in the field of environmental protection ■



Potential and opportunities for biodiversity conservation outside protected areas in Việt Nam

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Other Effective Area Conservation (OECM) is understood as “A defined geographical area that is not a protected area (PA), which is governed and managed in ways that help achieve the desired actively and sustainably outcomes in terms of internal conservation of biodiversity and ecosystem functions and services that accompany and in some cases, help preserve cultural values, spiritual, socioeconomic and other local values” (IUCN-WCPA Task Force on OECMs, 2019). OECMs are an opportunity both to recognize and contribute to the conservation of biodiversity outside of PAs and to motivate conservation outside of PAs through the identification and support of OECMs (IUCN, 2020).

The Convention on Biological Diversity (CBD) has set Aichi Target 11 which defines: “By 2020, at least 17% of terrestrial and inland waters and 10% of marine and coastal areas, especially areas is of particular importance for ecosystem services and biodiversity, conserved through an efficient and equitable management system, representing ecosystems, linking within the system of PAs and other effective area conservation measures, integrated with broader terrestrial and marine landscapes”. To achieve this goal, CBD recommends member countries to implement OECM, one of the solutions to increase the efficiency of internal biodiversity conservation, preserving the values of nature.

Over the past time, Việt Nam has made efforts to achieve a number of national goals on nature conservation (NC) and biodiversity. But as a member state of the CBD, Việt Nam needs to make great efforts to achieve Aichi Target 11. Meanwhile, the increasing pressure of socio-economic development is a barrier that makes it difficult for Việt Nam to achieve the goal on expansion of the NC system. Therefore, OECM is an effective solution for Việt Nam.

1. POTENTIAL OECMS IN VIỆT NAM

With a total forest area of 14,609,220 hectares, reaching a coverage of 41.89%, of which 2,161,661 hectares are special-use forests for conservation, 4,646,138 hectares of protection forests and 4,263,935 hectares of product forests as natural forests (Ministry of Agriculture Rurals and Development, 2020), Việt Nam has great potential for biodiversity conservation outside of PAs. In addition, Việt Nam also has many valuable natural landscapes that need to be conserved in terms of biodiversity conservation value (living habitat, conservation of genetic resources); environmental and ecological values; scientific value (keeping ecological cycle, natural ecological succession, vestiges of natural development...); aesthetic value, entertainment; cultural values... This is the great potential to implement OECM in Việt Nam.

According to IUCN guidelines (IUCN-WCPA Task Force on OECMs, 2019), the criteria for determining OECMs include: Areas that are delimited for conservation but are not protected areas; those areas must be managed; achieve long-term effects on biodiversity conservation and contribute to in-situ conservation; have linked ecological functions, have service, cultural, spiritual, socio-economic values for the locality. OECM is divided into 3 types and is completely outside the PA system, specifically: Type 1 OECM group is the area where conservation is essential (Primary conservation), these areas have the potential to become PAs. OECM type 2 is the area where conservation is secondary (Secondary conservation). Group 3 OECM is an area where conservation issues are by-product of management (Ancillary conservation).

According to the above guidance, potential OECM objects in Việt Nam can be identified as:

- *Potential OECM group type 1:* High biodiversity areas located outside the PA system belong to protection forests, buffer zones of NCs, production forests are natural forests....; The natural heritages established and recognized according to the provisions of point c, Clause 1, Article 20 of the Law on Environmental Protection (LEP) in 2020. In addition, important bird areas outside the NC can also be followed and do not overlap with above mentioned areas.

- *Group of potential OECMs category 2:* Important wetlands (wetlands) outside the NC system, biodiversity corridors. Currently, the list of important wetland



areas including the above areas is being developed by Ministry of Natural Resources and Environment (MONCE) based on synthesis from the proposals of localities. There are 33 biodiversity corridors planned nationwide, of which 3 biodiversity corridors have been established, connecting the Sông Thanh - Sao La - Elephant NCs of Quảng Nam; Đắk Krông - Bắc Hướng Hóa of Quảng Trị and Sao La - Phong Điền of Thừa Thiên - Huế.

- *Potential OECM category 3*: Important Ecological Landscape and Private Conservation Facility. Important ecological landscapes can be understood as natural landscapes with major environmental and ecological values, which may contain other values: aesthetics, entertainment, culture... These objects are located outside the protected areas, providing the main services for tourism activities and environmental and ecological values for human life but good support for conservation. Currently, in Việt Nam, there have been a number of private conservation facilities established with the main purpose of exploiting recreational services such as: Vườn Xoài (Mango Garden) Ecotourism Area Co., Ltd. (Đồng Nai), Vinpearl Land Wildlife Rescue and

Conservation Center (Vinpearl land Co., Ltd.) (Khánh Hòa), FLC Wildlife Park (Faros Zoo Investment and Development Joint Stock Company) (Bình Định), Mỹ Quỳnh Zoo (Long An), Phú Quốc Safari (Kiên Giang), Ninh Bình Bear Conservation Facility (Ninh Bình), Đồng Tâm Snake Farm (Tiền Giang).

2. LEGAL REGULATIONS RELATED TO OECM IN VIỆT NAM

Current status of legal regulations related to OECM in Việt Nam

The legal provisions related to OECM in Việt Nam are currently concentrated in a number of laws and documents under the Law: Law on Biodiversity 2008, Law on Natural Resources and Environment of Sea and Islands in 2015, Law on Forestry 2017, Law on Planning 2017, Law on Fisheries 2017, LEP 2020. The detailed legal regulations to identify OECMs in Việt Nam are concentrated in the Law on Forestry 2017 and the Law on Biodiversity 2008. In addition, the OECM is also subject to the scope of the Laws: Natural Resources and Environment of Sea and islands in 2015, Fisheries in 2017, Planning in 2017 and Environmental Protection in 2020, specifically:

- Potential OECMs are areas of high biodiversity, important ecological landscapes and biodiversity corridors that are the subject of national biodiversity conservation planning. These subjects are specified at point C, Clause 5, Article 25 of the Planning Law 2017 and Article 26 of Decree No. 37/2019/ND-CP on 7/5/2019 of the Government detailing the implementation of a number of Article of the



▲ Planning biodiversity corridors to effectively conserve precious and rare species

Law on Planning. Biodiversity corridor is defined in the Law on Biodiversity. However, there are no detailed regulations on the criteria for determining this object in practice.

- Potential OECMs are important wetlands outside the NC, with detailed regulations in Decree No. 66/2019/ND-CP on conservation and sustainable use of wetlands; Circular No. 07/2020/TT-BTNMT dated August 31st, 2020, detailing the contents at Point c, Clause 1, Article 31 of the Government's Decree No. 66/2019/ND-CP dated July 29th, 2019, on conservation and sustainable use of wetlands.

- Potential OECMs are Natural Heritage established and recognized under the provisions of point C, Clause 1, Article 20 of the LEP 2020. The criteria for identification are specified in clause 2, Article 20 of the Law. Currently, detailed regulations on criteria, order, procedures and authority to establish and recognize natural heritage are being developed and are expected to be promulgated in the Decree guiding the implementation of the LEP 2020.

- The remaining potential OECMs, there are currently no specific legal regulations for these subjects.

In addition, potential OECMs belonging to protection forests, natural production forests, and buffer zones of protected areas need to comply with the provisions of the Law and sub-law documents of: Law on Forestry 2017, Law on Fisheries of 2017.

Legal gaps to promote OECM implementation in Việt Nam

- Basically, there are regulations to identify OECMs in Việt Nam. However, there are not yet uniform, detailed and specific regulations and guidelines to identify OECM according to CBD recommendations and IUCN guidelines. In addition, there are many potential OECM objects that do not have regulations to identify.

- Lack of uniform regulations, in general, can promote the implementation of OECM in Việt Nam. These objects fall under the scope of many laws and sub-law documents that have not

yet been unified. This can lead to overlap, difficult to delineate and complicated when implementing OECM in Việt Nam.

- Implement OECM effectively if the role and contribution of the private sector is promoted. However, at present, Việt Nam still lacks specific legal regulations, mechanisms and policies to encourage the participation of the private sector in NC and biodiversity.

- Financial mechanism, sustainable revenue is the key issue for sustainable development of OECM. Although there are some regulations, this is still a big gap in the legal regulation in Việt Nam.

3. RECOMMENDATIONS ON SOME ISSUES TO PROMOTE THE IMPLEMENTATION OF OECM IN VIỆT NAM

Develop a set of criteria and methods to determine OECM suitable for Việt Nam

From the results of the review of potential OECMs in Việt Nam based on IUCN guidelines globally, it is clear that there are many specificities for Việt Nam if it wants to form an effective network of OECMs. Therefore, it is necessary to develop a detailed technical guide to identify OECMs in Việt Nam. This guide focuses on the following topics:

- Methodology to identify OECMs: in fact, potential OECMs are being regulated by relevant policies, so it is necessary to show methods and approaches to harmonize the purposes that the area is implementing. performance and goals of an OECM.

- Detailed screening criteria for each type of object include protection forest, natural production forest, biodiversity corridor, NC buffer zone, important wetlands and others. In the case of overlapping or multiple choices, the selection method is effective, for example, in the biodiversity corridor with protection forests and natural production forests, selecting biodiversity corridors or selecting areas of protection forests and natural production forests separately; or areas with mixed ecosystems...

- Technical issues: defining the boundaries of OECMs; management status (currently, in Việt Nam, there are many subjects involved in management, so it is necessary to check which ones are effective and which ones are ineffective and need to be converted, for example, whether forest owners who are socio-political organizations can ensure the requirements of OECM); identification and management of biodiversity values in the OECM area; evaluating and exploiting eco-service values, cultural, historical and tourist values of OECMs.

Landscape approach in defining and implementing OECM

Landscape approach is an integrated approach, which tends to be widely applied in NC and biodiversity in the world, especially in Europe and North America. This approach is considered appropriate to solve the current problem of biodiversity conservation. From a scientific



point of view, the landscape approach is synthetic, considering the systematicity, integrity and correlation of the components. This approach is effective in determining the boundaries of the objects to be conserved to ensure the systematicity, integrity, maintain important ecological functions, promote the conservation value of the natural object. This approach will be effective in defining and implementing OECM.

- At a small scale, the landscape approach promotes advantages in defining the boundaries of OECMs. The landscape approach is an integrated approach that includes conservation goals in harmony with the development that is true to the nature of the OECMs. This is a suitable approach to identify OECMs such as: high biodiversity areas outside the NC, biodiversity corridors, other important natural landscapes with conservation value...

- On a large scale, it is possible to form NC and biodiversity systems with component units being protected areas and OECMs. In this system, established NCs act as hubs connecting with OECMs which are areas of high biodiversity outside the NC by biodiversity corridors. This model will help to solve some difficult problems at present, which are: Need to expand the habitat for species while increasing the area and expanding the established protected areas is difficult; Strengthen the exchange and connection of populations of species and habitats divided by socio-economic development and global climate change; Ensure the integrity of landscapes and habitats to maintain important ecological functions, increase the efficiency of NC and biodiversity.

Proposing mechanisms and policies to promote the implementation of OECM in Việt Nam

To promote the implementation of OECM in Việt Nam, the most necessary and urgent activity at the moment is to perfect the legal system and create favorable mechanisms and policies to help promote the development of OECM in Việt Nam. Focus on some following specific issues:

- Specifying criteria and issuing technical guidelines to determine OECM appropriate to the Vietnamese context: IUCN has issued guidelines globally based on CBD's recommendations; however, Việt Nam needs internalize and issue guidelines appropriate to the national context.

- Establishing a sustainable development mode for OECMs: For effective and long-term development, it is necessary to establish a sustainable development mode for OECMs according to each specific OECM hierarchy (3 types of OECMs according to the IUCN guidelines). The OECMs are natural ecosystems, it is necessary to establish a sustainable development regime according to the provisions of Article 34 of the Law on Biodiversity in 2008. Other OECMs need to have appropriate mechanisms and policies in the future to promote development.

- Application of payment for natural ecosystem services to OECMs: Regulations on payment for ecosystem services have been promulgated in Article 138 of the LEP. These regulations are a solid legal basis, which can promote the implementation of the payment for ecosystem services provided by OECM. Applying the payment for ecosystem services will create a sustainable source of income and promote the implementation of OECM in Việt Nam.

- Mechanisms and policies to encourage the private sector and the community to participate in OECM: Because most of the OECMs are not under the state management system but owned by the private sector and the community. Therefore, it is necessary to develop incentive policies to strengthen the role and participation of the community and the private sector in the work of NC and biodiversity through promoting the implementation of OECM■

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Việt Nam actively and proactively implements commitment to the United Nations "Decade on ecosystem restoration"

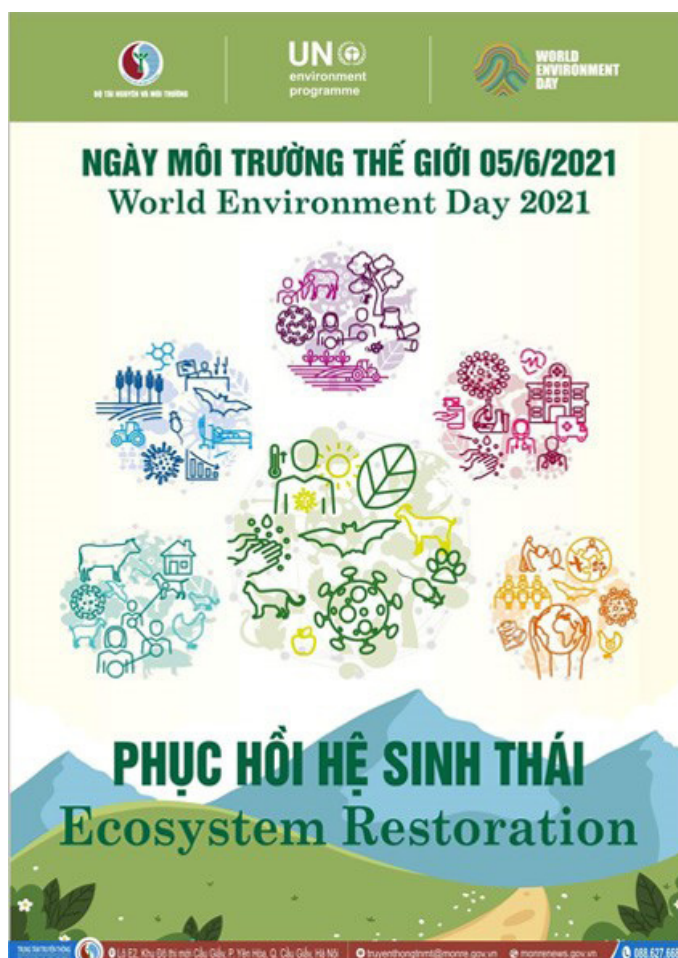
Việt Nam is one of the countries with high biodiversity in the world, having many types of natural ecosystems, biological species, rich and endemic genetic resources. Biodiversity in Việt Nam brings direct benefits to people and makes great contributions to the economy, especially in agricultural, forestry and fishery production; is the basis for ensuring national food security; maintains genetic resources for breeding livestock and plants; provides materials to construction and is a source of medicinal herbs, food... In addition, biodiversity is also a source of artistic and cultural inspiration and has been associated with the spiritual life of Vietnamese people for thousands of generations. Therefore, biodiversity is still an important solution, an option for sustainable development.

WE ARE PART OF THE SOLUTION FOR NATURE

Ecosystems play an extremely important role in human life, providing us with extremely valuable benefits such as stabilizing the climate, purifying the air, oxygen, water, food, medicine, etc. In addition, ecosystems are also the habitat of many wildlife species. However, for a long time, the use of natural resources to serve human socio-economic development activities has made ecosystems around the world degraded. According to the Global Assessment Report on Biodiversity and Ecosystem Services of the Inter-governmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES Report) developed in 2019, biodiversity is important to humans, providing 18 basic services globally to maintain human activities and development. However, 14 of these 18 contributions of nature are on a global decline. In addition, the rate of forest cover globally has decreased from 31.6% to 30.6% in the period 1990 - 2015. The coral reef ecosystem is assessed as having the highest decline in survival index, which has decreased by 35% between 1970 and 2015. 25% of studied species are threatened with extinction; many species groups are assessed as highly threatened with extinction,

in which the group with the highest percentage of species at risk of extinction are amphibians, mammals, birds, reptiles and fish.

Humans are an integral part of nature, a child who is strong but small in front of Mother Nature. Therefore, humans must rely on nature, obey the laws of nature (adherence to nature), live in harmony, be friendly with nature and join hands (with other pieces of nature) to protect nature, environment, also protect ourselves. This year's International Day for Biological Diversity has the theme: "We are part of the solution # For nature", following the theme of the year 2020 "Our solutions are available in nature" in the series of awareness and action to protect nature and environment, towards sustainable development. This message is also in response to the United Nations General Assembly's declaration on the "Decade on ecosystem restoration" for worldwide efforts to prevent and reverse the degradation of ecosystems and enhance awareness of the importance of ecosystems to human life.





In response to this event, on 14th May 2021, the MONRE issued Official Letter No. 2298/BTNMT-TTTMT to the Ministries, departments, agencies and Central mass organizations; People's committees of provinces and centrally run cities; socio-political organizations, mass organizations; associations, corporations, businesses and related units interested to direct, guide and coordinate in organizing propaganda activities on theme and messages in response to the International Day for Biological Diversity and the World Environment Day 2021.

Accordingly, the MONRE proposes to implement consistently the strategies, schemes, tasks and solutions on: Researching and applying nature-based solutions, approaching ecosystems in the process of developing master plans at national, regional and provincial levels; Establishing and effectively managing nature reserves; promoting the implementation of conservation and sustainable use models; Applying ecosystem approach in integrated management of coastal zones, river basins, sustainable forest management, focusing on the role and interests of the community. Along with that, strengthen activities to control wildlife

trade and exploitation of migratory wild species according to the Prime Minister's Directive No. 29/CT-TTg dated 23rd July 2020 on a number of urgent solutions for wildlife management; manage and control invasive alien species according to the Prime Minister's Directive No. 42/CT-TTg dated 8th December 2020 on strengthening the management and control of invasive alien species; restore degraded ecosystems; protect the natural landscape and biodiversity; effectively conserve species and genetic resources. Especially, apply nature-based solutions to mitigate impacts from socio-economic development on ecosystems; promote the development and implementation of economic models for sustainable use of natural resources. At the same time, implement programs, projects and tasks for ecosystem restoration such as: planting trees; collecting garbage on both banks and on the water surface; developing a propaganda plan to properly exploit aquatic species...

Currently, due to the complicated situation of the COVID-19 acute respiratory infection, the MONRE requires local authorities based on the actual situation to organize propaganda in accordance with current regulations on epidemic prevention and control (creation and innovation in implementation methods, forms of communication, application of information technology) in the direction of realizing dual goals, associated with the prevention of the COVID-19 epidemic, having a pervasive effect, strongly influencing the public awareness. It is possible to organize online workshops and talk shows with the following contents: Propaganda and dissemination of the Law on Environmental Protection in 2020; introduction to mod-



▲ *Representatives of organizations and individuals were awarded the 5th AEEAs*

els and solutions for ecosystem restoration, biodiversity conservation...; Organize activities suitable to the actual situation (Cleaning up the environment, planting trees, collecting and treating wastes; propagandizing and encouraging the community not to use non-degradable plastic bags and disposable plastic products...); Strengthen control over the waste collection, transportation and treatment; Encourage the hanging of banners, panels and posters made from environmentally friendly materials in public areas, streets and offices; Recognize, praise and reward organizations, individuals and businesses that make effective and practical contributions to the rational use of resources, environmental protection, biodiversity conservation...

SOME SOLUTIONS AND ORIENTATIONS TO ACTIVELY ENTER THE “DECADE ON ECOSYSTEM RESTORATION”

Together with the world's efforts to overcome the climate and biodiversity crisis and strengthen food and water security, Việt Nam has actively joined the Government Leaders' Pledge for Nature: United to reverse biodiversity loss by 2030 for Sustainable Development at the United Nations Summit on Biodiversity in 2020 as well as the statement of the United Nations General Assembly on the “Decade on ecosystem restoration” (2021 - 2030). Việt Nam has also been proactively implementing the call of the United Nations General Assembly as well as the Convention on Biological Diversity in restoring ecosystems at various levels.

First, at the global level, Việt Nam is actively contributing comments to the draft Post-2020 Global Biodiversity Framework (GBF) that the Secretariat of the Convention on Biological Diversity is drafting and is expected to be approved at Conference of the Parties to the Convention on biological diversity at the end of 2021. In which, focus on priority goals and activities to restore ecosystems.

As the 50th country in the world and the 1st country in the ASEAN region to officially join the Convention on wetlands (Ramsar) since 1989, to date, Việt Nam has carried out many activities on conservation and effective use of wetlands to fulfill its member country responsibilities. Specifically, Việt Nam successfully nominated 9 wetland areas with a total area of 120,549

ha; implemented planning and zoning to establish 47 wetland nature reserves. In the two years 2019 - 2020, Việt Nam has established 2 wetland nature reserves according to the provisions of the Law on Biodiversity. The recognition and conservation of wetlands contributes to attracting international and national attention in conservation and enhances the country's extremely valuable natural tourism resources and humanities in general and Ramsar sites, creating a significant attraction for domestic and foreign tourists, promoting socio-economic development.

Second, at the regional level, Việt Nam actively participates in the process of drafting ASEAN Joint Statement contributing to the draft GBF as well as participates in programs and projects on ecosystem restoration, mitigation of pressure on biodiversity in nature reserves, ASEAN heritage parks.

Third, in the country, many initiatives, programs and projects are being developed and implemented to contribute to the ecosystem restoration. Typically, the project to plant 1 billion trees launched by the Prime Minister in the period 2021 - 2025 to contribute to ecological environment protection, landscape improvement and response to climate change, socio-economic development, improvement of the quality of life of the people and the sustainable development of the country.

In the recent period, MONRE has been assigned by the Government to lead the implementation of the “Greater Mekong Subregion Biodiversity Conservation Corridors Project”. Through the Project, biodiversity corridors at the implementation sites have been connected to habitats, ensuring the maintenance and protection of habitats for some target species; enhancing the quality of ecosystems, contributing to maintaining forest cover, promoting the responsibilities of forest owners, especially the community; piloting the integration of biodiversity corridor management contents into existing policies, proposing new mechanisms and policies on biodiversity corridors; improving community livelihoods to increase people's income.

In addition, the Ministry is also developing a Draft National Strategy on Biodiversity to 2030, with a vision to 2050 to submit to the Prime Minister for approval in 2021, setting out objectives, key tasks and strategic solutions to improve and restore ecosystems, protect rare species and genetic resources, and effectively promote the benefits of ecosystem services for sustainable economic and social development. In particular, the issue of ecosystem restoration is being considered as one of the key contents of the coming period. Priority tasks for implementation of this Draft Strategy include: Survey, assessment and identification of degraded ecosystems; Implementation of measures to restore biodiversity and ecosystem services of degraded areas, especially natural heritage sites; Promotion of research and application of science and technology, international cooperation in the restoration and development of natural ecosystems, ensuring the maintenance of natural ecosystem services to sustainably serve human interests.

With the above orientations and solutions, Việt Nam has been active and proactive in implementing the commitment of the United Nations “Decade on ecosystem restoration” (2021 - 2030)■

ĐỖ HƯƠNG



The Effects of China's Ban on imported scrap plastic on global recycling efforts

In 2017, China imported nearly 5.7 billion kilograms of scrap plastic. A year later, that figure had dropped by 99.1%, following the implementation of China's "National Sword" policy, when the Chinese Government began to heavily regulate and restrict the importing of waste materials into China. But what effects is the policy having on global recycling efforts?

For nearly 30 years, China imported over half of the world's scrap plastic recyclables. This appeared to be a symbiotic relationship; countries were able to ship away their plastic problem and Chinese recyclers had a constant stream of materials. However, due to the world's infatuation with plastic, the stream turned into a tsunami and Chinese recycling plants began to find themselves overwhelmed with waste from all corners of the globe. A lack of monitoring and regulation of the processing of the waste materials led to high levels of water and air pollution being generated by the recycling plants, which caused many health problems in China. In an effort to curb these problems, the Government introduced the "National Sword" policy in 2018, which banned the importing of 24 categories of solid waste, including post-consumer scrap plastic and mixed paper, and reduced the acceptable contamination level of other waste materials to just 0.5% (previously China had accepted contamination levels of between 5-10%). This level of contamination is so low that it effectively constitutes a ban too. The policy was part of a broader initiative to curb the illegal importation of recyclates; following on from Operation Green Fence (2013) and preceding the Blue Sky Initiative (2018).

In the year prior to the Ban, China imported 842 million tons of plastic waste from Japan, 629 million tons from the US and 390 million tons from Europe's largest exporter, Germany. The importation of plastic waste would increase Chinese domestic waste figures by 10 - 13%.

The effects of the Ban created a void in the market for recyclables, which exposed the vulnerability of the global reliance on a single importer. Large exporting countries were left scrambling to find solutions to their waste problems, while smaller South-

east Asian countries suddenly saw a sharp increase in the amount of waste arriving at their ports. In 2017, Thailand received 153 million kgs of scrap plastic. By the end of 2018, one year after China began enforcing the Ban, Thailand's importation of scrap plastic had more than tripled to half a billion kilograms. Over the course of 2018, Indonesia experienced a 250% increase in scrap plastic imports and Việt Nam experienced a 200% increase.

Another country that saw a marked increase in waste importation post-ban was Malaysia. Malaysia has a large Chinese-speaking minority, which made it easy for Chinese waste processing plants to relocate there. In the town of Jenjarom (near Kuala Lumpur), residents noticed a marked increase in the number of plastic plants in early 2018. These plants were continually pumping noxious fumes into the air and residents began experiencing respiratory problems. By mid-2018, community members had located about 40 processing plants in the town, many of which were operating without licenses. Continued lobbying of Government officials saw the closure of 33 plants, but activists believe that many of these have just moved elsewhere in the country. It is unsurprising that smaller nations are willing to accept the world's waste. Government figures show that Malaysia's plastic recycling and manufacturing industry is currently worth about US\$ 7.2 billion. Unfortunately, these smaller nations are ill-equipped to cope with the volume of waste the world generates and many have had to start enforcing restrictions themselves.

When the Ban came into effect, experts hoped that the inability to rely on China would encourage Western countries to expand their waste processing abilities and spur manufacturers into making more easily recyclable products. Before the Ban, the EU exported 95% of its collected plastic to China, while America exported 70%. These countries have well-established recycling collection programs, but due to their reliance on



▲ In 2017, China imported nearly 5.7 billion kilograms of scrap plastic



China, the development of domestic waste markets and infrastructure has been stifled.

The Ban highlighted two important lessons. *Firstly*, it served as a wake-up call for Governments to invest in local recycling infrastructure. *Secondly*, perhaps more uncomfortably, it highlighted that simply recycling is not enough to atone for purchasing plastic-packaged goods. Many consumers feel a sense of absolution and satisfaction when recycling plastic packaging. Yet, as the Ban showed, recycling programs cannot be the only solution to the plastic plague. Consumers need to use their dollars as the catalysts of change and simply refuse to continue to purchase plastic-packaged goods.

It has now been almost four years since the Ban and in many ways the world is better for it. Despite the upheaval and chaos that was caused, many nations have now sought to ban certain single-use plastic items. While these bans cannot be solely attributed to a consequence of China closing its doors, the change in Chinese policy certainly had an effect. In October 2018, the EU voted for a complete ban on a variety of single-use plastic items, which it hopes to see come into effect in 2021. The British Government is seeking to tax any plastic packaging (produced or imported) in the UK that does not contain 30% or more recycled plastic. The tax will come into effect in April 2022. Finally, in China itself the Ban has seen some positive impacts. From the beginning of 2019, more than 40 Chinese cities began rolling out waste sorting programs for recyclables and trash. The country that once recycled the world's waste was notoriously bad at dealing with its own. However, given the void left in the Chinese recycling market, the scrap plastic industry in the country is well equipped and ready to deal with its own recyclables. In 2020, China unveiled a pilot scheme for 10 zero-waste cities. While the scheme does not aim for the cities to produce no waste, it hopes to achieve a more circular economy through "an advanced urban governance concept, which aims for minimum generation, maximising recycling and disposing of solid waste in an environmentally sound manner" ■

HOÀNG DƯƠNG

V iệt Nam has had strong economic growth in recent years, in which the production and processing sector has contributed. The Government has opened industrial parks (IPs) with essential infrastructure such as utilities, transportation and waste treatment zones to create new industrial sectors. As of September 2020, Việt Nam has 369 IPs with a total area of 113.3 thousand hectares, attracting about 10,055 foreign investment projects with a total registered investment capital of nearly 200 billion USD and about 9,845 domestic investment projects with a total registered capital of 2.34 million billion VND, creating jobs for 3.83 million direct workers. In 2019, IPs generated a total revenue of 235 billion USD with an export value of approximately 142 billion USD, equivalent to 59% of the total national export turnover and created approximately 3.85 million direct workers.

However, the process of industrialization and development of IPs at a fast pace is posing challenges in terms of environment (water, soil, air, noise), resource use (energy, water and raw materials). Increasing resource efficiency and cleaner production in Việt Nam through IPs is necessary. However, the implementation of waste and gas emission reduction at the enterprise scale and recycling and reuse of by-products among enterprises is always slower than the expansion and development of IPs. With many IPs, the transformation into eco-industrial parks in Việt Nam is necessary to realize economic, environmental and social efficiency at the IP scale.

In the world, the eco-industrial park model towards sustainable development has been implemented since the 1990s and achieved many positive results. In Denmark, Kalundborg Eco-Industrial Park is typical in the development of a closed eco-industrial park with 20 industrial symbiosis networks and local urban systems. Symbiosis models all start from independent product exchanges that gradually evolve into a complex network of symbiosis interactions. An important factor for success is the good cooperation and communication connection among members of the IP, the mutual trust and support among enterprises in the IP. The model of eco-industrial park in Kalundborg implemented from 1982 to 1997 has saved 19,000 tons of oil, 30,000 tons of coal, 600,000m³ of water and 130,000 tons of CO₂. In 2001, enterprises in the IP saved 160 million USD by joining the symbiosis network.

In Việt Nam, the Project "Implementation of eco-industrial park initiative for sustainable industrial zones" (Project) implemented by the United Nations Industrial Development Organization (UNIDO) and the Ministry of Planning and Investment (MPI) in 2015 - 2019 has aimed to pilot the transformation of 4 IPs (Khánh Phú IP, Gián Khẩu IP in Ninh Bình; Hòa Khánh IP in Đà Nẵng and Trà Nóc 1, 2 IPs in Cần Thơ) into an eco-industrial park model. One of the main activities of the Project is to support enterprises in IPs to raise awareness and implement solutions for resource efficiency and cleaner production, research and support the implementation of industrial



Pilot transformation into eco-industrial park model at Trà Nóc 1, 2 industrial parks in Cần Thơ

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Department of Economic Zones Management

Ministry of Planning and Investment

NGUYỄN TRÂM ANH

Industrial Resource Efficiency Division

United Nations Industrial Development Organization (UNIDO)

symbiosis networks among enterprises to contribute to popularizing cleaner and low-carbon production methods, reducing greenhouse gas emissions, water pollutants and improving water use efficiency, reuse of wastes in the pilot transformation IPs.

Trà Nóc 1, 2 IPs are located in Ô Môn and Bình Thủy Districts, Cần Thơ City. Trà Nóc IP includes 2: IPs, Trà Nóc 1 (established in 1995) and Trà Nóc 2 (established in 1998) invested by Cần Thơ IPs Infrastructure Construction Joint Stock Company, these are the first two IPs of the Mekong Delta region. Currently, the IP is 100% occupied with a total of 190 projects of 107 enterprises. The total area of industrial land and leased land is 213.41ha, registered capital is 1,143,437 million USD, implemented capital is 741,568 million USD, accounting for 64.85% of registered capital. Trà Nóc 1, 2 IPs are multi-sector IPs, which focus on seafood processing, garment, fertilizer, chemical and animal feed sectors.

With the total annual emissions of 49,657.6 tons including many types of wastes having potential for reuse such as wastes from seafood processing (shrimp, fish), paper (food containers, plastic bags, cartons...), rice husk ash, organic wastes (food, leftover vegetables) but so far the reuse of wastes is mostly spontaneous. With the total average amount of wastewater generated in the IP is 9,035 m³/day, two wastewater treatment plants were built in turn with daily capacity of 12,000 m³, but the results of surface water monitoring in Trà Nóc 1, 2 IPs still show signs of organic pollution. Because these IPs are located close to residential areas, the problem of surface water pollution has partly affected the lives of people living around these areas. Most enterprises have not implemented resource efficient

cy and cleaner production solutions to save production costs and reduce resource usage, emissions and wastes. These characteristics have led to many environmental disadvantages, this is also one of the reasons for IPs to be selected to participate in the pilot model of transforming from the conventional IP model into the eco-industrial park model.

IMPLEMENT RESOURCE EFFICIENT AND CLEANER PRODUCTION (RECP) SOLUTIONS

These are solutions that continuously apply an integrated environmental prevention strategy to manufacturing processes, products and services to increase efficiency and reduce risks to people and the environment. Also, it is one of the criteria to be recognized as an eco-industrial park specified in the Government's Decree No. 82/2018/NĐ-CP dated 22nd May 2018.

To support the transformation into an eco-industrial park model, the Project has supported 32 enterprises in Trà Nóc 1,2 IPs to participate in the RECP Assessment Program. Through this Program, enterprises have been trained on RECP implementation methods, supported in enterprise assessment to discover RECP solutions. Through the assessment at enterprises, the Project has guided and helped enterprises implement over 350 cleaner production solutions. Solutions focus on the following groups:

(1) *Good housekeeping*: Is the simplest in cleaner production solutions, these are investment-free solutions that can be implemented immediately after identification.

(2) *Better process control*: Is to ensure optimal process conditions for resource consumption, production and waste generation. Process parameters such as temperature, time, pressure, pH, production speed... must be continuously monitored and maintained at the optimum level possible.

(3) *Input substitution*: Is a solution to replace existing materials with more environmentally friendly materials, bringing higher efficiency. There is usually a direct relationship with the quantity and quality of the product.

(4) *Equipment modification*: Is to improve existing equipment to reduce wasted materials. The solution includes regulating the speed of the motor, optimizing



▲ Plastic waste not only flooded in seas, but also in remote and mountainous areas

the size of the tank, insulating hot and cold surfaces, or improving the design of a critical part of the equipment.

(5) *Technology change*: Is to use a new process, old equipment will be replaced to use modern and more efficient equipment. This is a solution that requires a large investment, so enterprises often consider carefully before deciding to invest. However, due to the large savings and high-quality improvement when changing technology, the profit is quite large and the return on investment is in a very short time.

(6) *On-site recovery/reuse*: Is a solution to collect and reuse "wastes" in the same or another part of the production process.

For enterprises participating in the Project, the implementation of RECP solutions has saved enterprises nearly 47 billion VND/year and helped reduce electricity consumption (13,255,095 kWh); water (365,326m³/year); chemicals and wastes (666 tons/year); reduce 12 Kt CO₂eq/year. Small and medium enterprises have also mobilized 57 billion VND to implement RECP solutions.

IMPLEMENT INDUSTRIAL SYMBIOSIS

Industrial symbiosis in an IP is a cooperative activity among enterprises in the same IP or with enterprises in other IPs in order to optimize the use of inputs such as raw materials, water, energy, wastes, scraps ... in the process of production and business. Through co-operation, enterprises form a network to exchange for production, share infrastructure and services for production, improve technological processes and business performance. Implementing industrial symbiosis is a criterion to be recognized as an eco-industrial park specified in the Government's Decree No. 82/2018/NĐ-CP dated 22nd May 2018.

In order to support the transformation into eco-industrial parks, the Project has researched and discovered 18 symbiosis solutions among enterprises, of which 7 solutions were studied for economic and technical feasibility to propose to enterprises for implementation. Solutions focus on the following symbiosis groups: (i) Reuse of wastewater after treatment: make use of wastewater in fire prevention and fighting or recover wastewater for reuse in IPs; (ii) Service sharing: share capacity building training services for workers at enterprises or provide boiler operation services; (iii) Infrastructure sharing: share cold storages among companies with the same needs; (iv) Reuse of wastes: reuse iron and steel, scrap paper; (v) Energy sharing: cooperate in sharing the use of boilers among companies. The proposed model of symbiosis connections among companies in Trà Nóc IP is presented in Diagram 1.



TRANSFORMATION POTENTIAL

Although further steps are still to be taken to implement the proposed symbiosis networks, the initial results of the transformation into eco-industrial park in Trà Nóc 1, 2 IPs have brought socio-economic and environmental benefits, and mobilized great resources from the private economic sector. These results also show the potential of making the transformation into the eco-industrial park model of IPs in Việt Nam.

SOME DIFFICULTIES FOR THE TRANSFORMATION INTO ECO-INDUSTRIAL PARK MODEL

First, awareness and skills to implement resource efficient and cleaner production solutions: Implementation of RECP solutions is an effective tool to support the development of eco-industrial parks and improve competitiveness of enterprises. However, most of the small and medium-sized enterprises in IPs in Việt Nam currently lack professional managers or technical staff in applying these solutions. Awareness of the need to continuously apply RECP solutions in the production process also requires to be further raised by managers of enterprises. Some enterprises are not willing to share information and data on raw materials, energy, chemicals, water consumption and wastes generated from the production process. These are information and data needed to determine the basis for the implementation of the RECP. Besides, the mindset of being afraid of change is quite common in most enterprises. Therefore, it is necessary to raise awareness about the benefits of RECP in the development of eco-industry for managers and technical staff of enterprises.

Second, it is difficult in implementing industrial symbiosis: Implementing industrial symbiosis is one of the mandatory criteria to be recognized as an eco-industrial park. Therefore, increasing the reuse of wastes among enterprises should be encouraged. However, there is currently a lack of a comprehensive policy on waste management with specific regulations on the types of wastes that are allowed to be reused and specific guidelines for such reuse among enterprises in IPs. The Law on Environmental Protection in 2020, Article 142 stipulates to encourage

the development of the circular economy in accordance with the country's socio-economic conditions. Therefore, it is necessary to continue to develop standards or technical guidelines to realize waste reuse solutions to support the implementation of industrial symbiosis solutions.

Third, lack of financial resources to support enterprises in technological innovation: During the project implementation, financial barriers are the biggest difficulties in the transformation into eco-industrial parks. The improvement of manufacturing processes in many enterprises through the implementation of RECP solutions and small investments have provided great profit opportunities. However, there are still some enterprises that are unable to do so because the required investments are beyond their ability. On the other hand, investments that generate environmental benefits are often not financially attractive to small and medium-sized enterprises. The support of concessional loans for small and medium-sized enterprises is essential for achieving the goals of creating environmental benefits and supporting the transformation into eco-industrial parks. Currently, there are not many such sources of credit. Also, a credit mechanism to make incentives to implement industrial symbiosis solutions is also essential. Therefore, it is necessary to develop effective financial mechanisms to attract credit sources for small and medium-sized enterprises to implement cleaner production and industrial symbiosis solutions.

Fourth, human resources to apply new technologies: Technological innovation and application of new technologies continue to be key in the transformation into eco-industrial parks. As the transformation takes place and higher goals are set, an investment in human resources is required to be able to implement and apply modern technologies. It is therefore necessary to train a skilled workforce to do this.

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UNEP's grants support conservation and restoration of marine habitats



Coral reefs, mangroves and sea grasses are crucial for life above and below water. These aquatic habitats do everything from house fish, to store carbon to protect communities from storm surges. But all three are under threat from a combination of climate change, coastal development and pollution. In the last 30 years the planet has lost up to 50 percent of its coral reefs and many more of these wildlife-rich ecosystems remain under threat from climate change.

The United Nations Environment Programme (UNEP) and the International Coral Reef Initiative (ICRI) have launched a grant program that will provide US\$ 80,000 to projects that support the conservation of these three marine habitats. The grants will focus on initiatives that lead to the “sustainable management and protection of vulnerable marine and coastal ecosystems. The new grants build on an initiative launched in 2017, the Small Grants Programme. Under that drive, five projects received grants of up to US\$ 60,000 to protect coral reefs and related ecosystems from climate change.

The first project developed spatial information layers for climate change vulnerability and anthropogenic stress. The infor-

mation was then incorporated into conservation planning for the Sabah and Terengganu states in Malaysia; The second project supported the conservation of the Mesoamerican Reef by developing innovative financing mechanisms to repair the coral outcrop after hurricane damage; The third funded project tapped into the climate change mitigation potential of mangrove ecosystems in Kenya, leveraging sustainable financing streams through the voluntary carbon market. It built on another award-winning project in Gazi Bay, Kenya; The fourth project developed a seascape genomics methodology to assess conservation priorities and apply it to the UNESCO-listed reef system of New Caledonia. It focused on improving coral reef conservation strategies against bleaching in the French territory, which comprises dozens of islands in the South Pacific; The final project offered certification of peer trainers in the management of coral reefs, sea-grass beds, mangroves and beaches in marine protected areas of the Western Indian Ocean.

The new grants come at the outset of the UN Decade on ecosystem restoration (2021 - 2030), which aims to repair degraded ecosystems in an effort to fight climate change, enhance food security and preserve biodiversity. They also put a spotlight on the UN Decade of Ocean Science for Sustainable Development (2021 - 2030), which seeks to ensure that ocean science supports national actions to sustainably manage underwater ecosystems and contributes to the 2030 Agenda for Sustainable Development. ■

NHẬT MINH



EU to tighten pollution laws to clean up air and water



▲ *Air pollution costs inhabitants of European cities more than 160 billion Euros (US\$ 190 billion) each year*

The European Union (EU) will tighten regulations on air pollution, waste and use of chemicals to protect public health and address key causes of biodiversity loss. The plan to tackle pollution, sets out targets for 2030, on the way towards reducing air, water and soil pollution to levels no longer considered harmful to health and nature by 2050.

"One of the big lessons we have learned from the COVID crisis is the close connection between human health and the health of the planet. At the moment, neither is doing well. Vulnerable groups including low-income communities bear the brunt of pollution's negative impacts", EU Environment Commissioner Virginus Sinkevicius said.

Dirty air is a key culprit and is linked to the EU's climate change goals, since factories and cars that churn out pollutants also emit planet-warming gases such as CO₂. Europe's air quality has

improved in recent years but is still deadly, with 400,000 premature deaths, 48,000 cases of heart disease as well as 6.5 million cases of chronic sleep disturbance to noise in the EU in 2018.

The European Commission said that, by 2030 it aims to reduce premature deaths associated with air pollution by at least 55%. It would revise EU air pollution limits next year to better align them with upcoming World Health Organization recommendations. Tighter "Euro 7" rules, due to be proposed this year, will also limit vehicle pollution.

Other targets for 2030 include a 25% reduction in ecosystems where air pollution threatens biodiversity and a 50% reduction in marine plastic litter. To meet those goals, the European Commission will propose measures to phase out endocrine disruptors - chemicals that interfere with hormones - consider capping ammonia emissions from livestock farming and factories and revise pesticides regulations to reduce the use of chemicals.

EU rules coming into force from 2023 will set more stringent quality standards for drinking water. By 2025 the EU will review waste laws to improve recycling and reduce waste generation. ■

AN VI

European countries adopt Vienna Declaration on clean, safe and healthy transport

The greenhouse gas emissions from transport contribute to climate change and traffic-related air pollution, noise and road traffic crashes add to the disease burden in Europe. The COVID-19 pandemic has shown the important role of active mobility in public health and the necessity of strengthening the resilience of mobility to crises and disasters. European authorities agreed that post-pandemic recovery packages need to focus on innovative approaches to expanding clean, safe, healthy and inclusive mobility and transport, including by reducing car dependency, improving rail traffic and public transport and significantly increasing safe walking and cycling. Building on lessons learned from the pandemic, and recognizing the value of public transport systems and frontline workers who ensure that these services continue, a set of recommendations was developed to assure the sustainability and resilience of transport and mobility systems.

Calling for a pan-European strategy on transport, health and environment

On May 18th, 2021, European countries adopted the Vienna Declaration to spur the transformation towards clean, safe, healthy and inclusive transport and mobility, with a strong focus on promoting cycling across the pan-European region. The Vienna Declaration was signed at the end of the Fifth High-level Meeting on Transport, Health and Environment. The virtual meeting, hosted by the Federal Government of Austria, brought together 46 Ministers and state secretaries and representatives of 41 countries in the pan-European region.

The group discussed how to introduce substantial changes in transport and mobility systems in order to address multiple chal-

lenges such as ambient air pollution, greenhouse gas emissions, physical inactivity and noncommunicable diseases and social inequity in access to transport and mobility.

The Vienna Declaration calls for a comprehensive pan-European strategy for transforming mobility towards zero emissions, ensuring health-promoting mobility and building safe and efficient transport in the decade to come. Its recommendations point towards a restart for sustainable transport and investments in green and healthy mobility and transport for all in the region.

"The climate crisis is the biggest challenge of our time. In adopting the Vienna Declaration, we commit to taking leadership in building forward better, and to making our mobility and transport systems climate-friendly, clean, safe and health promoting. There are tremendous positive effects that green transport can have on our citizens' health and climate action, as well as on the recovery of the economy and on the creation of jobs. This is an historic milestone to promote active and zero-emission mobility all over Europe. Climate action is the right solution at the right time", Ms. Leonore Gewessler - Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology of Austria affirmed.

The Vienna Declaration also underlines the need to address inequalities related to transport and urban sprawl, as not all socioeconomic groups have equal access to healthy transportation, public transport networks, resources for active mobility and recreational and green areas.

Building forward better in the pan-European region

Car dependency, restricted use of public space, and lack of safety for cyclists and pedestrians contribute to physical inactivity and sedentary lifestyles, which increase the risk of non-communicable diseases and obesity.

Increasing cycling and walking in every country, ensuring cyclist and pedestrian safety and including active mobility in health policies, can reduce the burden of diseases and the impact of road crashes in the region.

Ministers and representatives of the European countries also adopted the Pan-European Master Plan for cycling promotion, a first-of-its-kind initiative that extends across the region.

The Master Plan calls for: Doubling cycling in the region by 2030; Significantly increasing cycling and walking in every country; Reallocating space for cycling and walking; Improving the active mobility infrastructure in every country; Increasing cyclist and pedestrian safety; Developing national cycling policies, strategies and plans; Integrating cycling into health policies, infrastructure and land-use planning.

European countries also agreed to promote the mobilization of financial resources, including from international institutions, green finance instruments, and public and private sectors; to invest in sustainable mobility and transport systems through partnerships; to invest in strengthening capacities and to exchange experiences across the pan-European region■

NAM HUNG



▲ Increasing cycling and walking in every country



Google, WWF-Vietnam join forces in Sao la conservation campaign

An introduction image of Sao la, Google and WWF-Vietnam kicked off the 'Preserve the Sao la's footprints' campaign to save this endangered species by raising awareness and calling for actions from the public.

The Sao la, native to the Annamite Mountains, spanning the border between Việt Nam and Laos, is symbolic of the rich biodiversity of Việt Nam and the wider Mekong region. The Sao la is considered to be critically endangered with the global population being estimated to be less

than 100. Habitat loss caused by human development, rampant snaring to supply the illegal wildlife trade and climate change are threatening the entire species with extinction.

Google was launching a 3D Augmented Reality (AR 3D) Sao la on Google Search that global users use to view a Sao la close up, with full details of this spectacular species, on their smart devices. This was the first time Google had digitized one of Việt Nam's rare wild animals and produced an AR 3D replica.

In launching the campaign and AR 3D Sao la, Google and the WWF-Vietnam hope to bring the species closer to the public and help people to better understand the way that their behavior and activity impacts nature and rare wildlife. The campaign started in July 2021, will include two phases. The first phase, titled: "Follow the Sao la's footprints", will bring to the audience interesting information about Sao la, resolving common misunderstandings about the critically endangered species. In the second phase, via online interactive activities, the public will learn about how their daily consumption behavior may impact the Sao la, other wild animals and nature.



▲ A Sao la photographed in the wild in Việt Nam

Country Manager of Việt Nam, Laos and Cambodia at Google Asia Pacific Trâm Nguyễn said: "By bringing the AR 3D model of Sao la on Google search, we'd like to introduce to the world this rare, endangered animal. You will get to see them up close, in the most vivid way possible. Google hopes to apply its technology in conservation efforts, digitizing information and images, so that they can be accessed by everyone which is the objective of this campaign".

Dr. Văn Ngọc Thịnh, CEO of WWF-Vietnam said: "WWF-Vietnam appreciates Google's effort in using their brand to support conservation and biodiversity. We are also delighted to join forces with Google in other activities to raise public awareness and call for public actions for the Sao la, bringing hope for a brighter future for our country's biodiversity".

Since the species was first discovered in 1992, in Vũ Quang Nature Reserve, in Hà Tĩnh, only about 10 Sao la have ever been captured alive. They were all caught by local villagers in Laos and Việt Nam but without professional veterinary and husbandry care, the longest that any of the animal's life was a few months at most. The last Sao la known to be captured alive was in 2010 in a village in Laos. It died in less than a week. Biologists have also only photographed the species five times in the wild in the last 25 years, all by camera traps - twice in Laos and three times in Việt Nam. The most recent camera trap photos were taken in 2013, when the WWF captured images of the animal in a Sao la nature reserve in central Việt Nam. It was the first photo of a Sao la in the wild in more than 15 years■

TRẦN TÂN

Plastic pollution is an environmental injustice to vulnerable communities

According to the report “Neglected: Environmental Justice Impacts of Plastic Pollution” by the United Nations Environment Programme (UNEP) and Environmental Justice Non-governmental Organization (Azul), plastic pollution disproportionately affects marginalized communities and communities living near plastic production and waste sites, constituting an environmental injustice. The report calls for the recognition of communities affected by plastic waste and their inclusion in local decision making.

ENVIRONMENTAL INJUSTICE

“Environmental justice means educating those on the frontlines of plastic pollution about its risks, including them in decisions about its production, use, and disposal and ensuring their access to a credible judicial system”, said UNEP Executive Director Inger Andersen.

The report showcases how environmental injustices are linked to plastic production, in areas such as deforestation for road building, the displacement of indigenous peoples to conduct

oil drilling, as well as contamination of potable water by fracking operations to extract natural gas, in countries such as the United States and Sudan. Moreover, the report warns of health problems among African-American communities living near oil refineries in the Gulf of Mexico and the occupational risks faced by some two million waste pickers in India.

DISPROPORTIONATE IMPACTS

The impacts of plastics on marginalized populations are severe, and exist at all stages of the production cycle, from extracting raw materials and manufacturing, through to consumption and disposal, according to the report.

Plastic waste not only endangers the livelihoods of those relying on marine resources, also causes a raft of health issues for people who consume seafood infested with toxic micro and nano plastics. Women suffer from plastic-related toxicity risk, due to higher aggregate exposure to plastics at home and even in feminine care products. Differences in gender, social roles and political power in regulating plastic use and health standards place women at high risk of miscarriages and cancer, further exacerbating gender-related disparities overall.

Aggravated by the COVID-19 pandemic, plastic waste has become a major part of the global pollution crisis, along with biodiversity loss and climate change, representing a triple emergency that must be tackled by strong and effective action plans. The report’s authors recommend that Governments expand their monitoring of plastic waste, study its health impacts and invest in its management. Governments should also adopt and increase enforcement of bans on single-use plastics and encourage reduction, recycling and reuse. Additionally, they should sensitize and embolden affected communities to act by ensuring access to an effective judicial system that follows environmental justice principles, such as free prior informed consent (FPIC) and the right of access to information.

The report follows UN Environment Assembly Resolution 2/11 for UNEP to further study the environmental, health and social impacts of plastic. It shows how plastic waste is undermining the achievement of the Sustainable Development Goals (SDGs), especially SDG1 on no poverty, SDG2 on zero hunger, SDG14 on protecting marine ecosystems and SDG16 on providing access to justice for all and building effective, accountable and inclusive institutions at all levels. ■

CHÂU LONG



▲ Plastic pollution disproportionately affects marginalized communities



Linking cultural diversity and biodiversity for sustainable development

In our world today of rapid changes, biological diversity and cultural diversity are increasingly recognized as key elements for sustainable development. Dedicated to strike for a balance between conservation and development, biosphere reserves (BRs) serve as testing sites to seal the link between these two keys. In Việt Nam, eight recognized World BRs is also the home of about 1,5 million people including thousands of people belong to different ethnic minority groups. Each group has their own ways of living, which reflect their unique understandings and interpretations of the nature accumulated through their hundreds of years residing in these sites. While these minority groups are often vulnerable to the pressure of development from outside, their identity and cultural values embrace with a rich knowledge of the nature are foundation not only to their endogenous development but also to the conservation of these sites as our common home.

BIODIVERSITY AND CULTURAL DIVERSITY AS KEY ELEMENTS FOR SUSTAINABLE DEVELOPMENT

The complexity of different individual parts of nature forms the web of life as the foundation for the existence and development of humankind as a part of it, that no alternative is yet foreseen. Biodiversity offers fundamental conditions for livelihoods and human well-beings which are extremely important for poor people whose livings depend much and directly on the availability of natural resources. In developing countries where is often rich on biodiversity, it is the essential resource for tackling poverty, building resilience against natural and artificial shocks as well as a vehicle for sustainable development.

As much important as biodiversity for the nature is cultural diversity for human beings. Defined as “the manifold ways in which the cultures of groups and societies find expression”, the diversity of these expressions and their dynamic allow human beings as individuals and groups to develop, exchange and accumulate understandings and interpretations of life, including the nature. Cultural expressions, therefore, encompass rich knowledge of biodiversity, which are valuable in both scientific and spiritual terms for individuals and groups of humankind. Cultural diversity is the reflection of biodiversity in our human society. At their inter-link, a loss of a species or the degradation of an ecosystem can lead to the destruction of a way of living, or to a great extent, the collapse of a civilization. On the other hand, a loss of a cultural expression can take away important threads to invaluable knowledge of the nature. The modern path of development, however, resulted in severe loss of biodiversity and cultural diversity with irreversible consequences. This threat to the loss of diversity as our most universal quality is increasingly recognized and addressed through several instruments and collective efforts. The framework for World BRs was set up as one innovative approach toward sustaining human development based on and for both biodiversity and cultural diversity.

INTEGRATING BIOLOGICAL AND CULTURAL DIVERSITY IN THE MANAGEMENT OF BRS

BRs are the model designated to realize a vision of which man coexists in a more harmonized relationship with the environment. One of three goals for BRs as set in the Seville





Strategy (UNESCO, 1996) is to conserve natural and cultural diversity. Actions are taken to integrate biological and cultural diversity in the management of biosphere reserves, especially through enhancing the role of traditional knowledge and cultural heritage.

VIETNAMESE BRS: INITIATIVES TO SEAL THE LINKAGE BETWEEN CULTURAL AND BIODIVERSITY

The network of eight Vietnamese BRs covers diverse natural settings, from marine and coastal ecosystems to the rain forest, which is also the home of about 1.5 million people. Thousands of these residents belong to about 16 ethnic minority groups. On the other hand, like most indigenous groups, they have developed invaluable knowledge and spiritual values toward the natural environment, which is important not only for their own group but also for the wider community. Addressing their special needs and aspirations needs a flexible approach, while Vietnamese BRs were recognized based on the national legal framework for protected areas where the conventional approach focusing on strict conservation dominated. Moving towards the vision designated for BRs, therefore, requires efforts on capacity building, testing and demonstration of models that harmonise conservation and human development.

From 2009 to 2011, UNESCO and the MAB Vietnam National Program initiated a project to promote customary use of natural resources by local groups in BRs and World Natural Heritage sites in Việt Nam. The project created a platform for dialogue among site managers, local communities and decision makers from a broad level on tools and approach for managing their sites to specific measures on handling individual practice.

Such initiative demonstrated that sealing the linkage between cultural diversity and biodiversity can bring in positive solutions for conservation and development in BRs. It was also confirmed that nurturing dialogue and participation requires more time and effort from all relevant stakeholders. In a context like Việt Nam where economic development has high pressure on conservation, ensuring sustainable outcomes from introducing a new approach to these BRs requires continuous investment both technically and financially in improving capacity for better management of these sites.■

NGUYỄN KIM HOA - NHÂM HIỀN

Biodiversity is declining at such a rate that we are undeniably on a path to a sixth mass extinction event. Halting biodiversity loss is a burning issue. We have so far failed to meet any of the biodiversity targets set for 2000 to 2010 and 2010 to 2020 (the Aichi targets), and most of the nature-related Sustainable Development Goals are also on track for failure. The so-called post-2020 Global Biodiversity Framework will set out new objectives to be met by 2030, which will likely include reducing threats to biodiversity and ensuring its sustainable use.

Between 1970 and 2016, average species numbers declined by 68% and by as much as 94% in Latin America and the Caribbean. The major threats to biodiversity include changes in land and sea use (habitat loss), overexploitation, for example, fishing and by-catch, invasive species and disease, pollution and climate change. The loss of biodiversity has serious implications for humans, negatively impacting human health, livelihoods, income, migration and political conflict. Declining biodiversity and habitat are also causing humans and wildlife to come into closer contact, increasing the likelihood that diseases carried by animals will transfer to humans.

New and radical solutions to protecting biodiversity and preventing loss, such as economic instruments like biocredits, legal arrangements, vastly increased funding and protected areas, as well as systemic change targeting power imbalances and economic models, are being discussed in academia, policy and industry ahead of target setting.

One of these solutions to prevent biodiversity loss is to increase the extent of global area under protection. Currently, only 15.1% of land area worldwide is protected. If this was expanded to 50%, avoiding areas with high human density, we could reduce biodiversity loss, prevent CO₂ emissions from land conversion and enhance natural carbon removal. A spatial meta-analysis found a 43% increase in cost-effective protected area coverage was achievable, although ambitious and efforts could be hampered by a lack of international collaboration and rapid land degradation. Interestingly, strengthening the rights to land and resources for indigenous communities could, in theory, help achieve biodiversity objectives on one third of the suggested protected area. Alongside affording biodiversity greater space, funding for biodiversity protection needs to increase. Some have estimated between US\$ 300 to US\$ 400 billion is needed every year, while the Convention on Biological Diversity estimates the Global Biodiversity Framework will cost between US\$ 103 billion and US\$ 895 billion annually, which needs to be directed to countries with the highest biodiversity levels (UN CBD Report, 2020). At present only US\$ 52 billion is made available each year.



Preventing global biodiversity loss: Radical solutions and new targets



▲ *Satellite measurements show that rainforest deforestation spiked to an 11-year high in the Brazilian Amazon*

Biodiversity credits (Biocredits), tradable units of measurement for conservation actions and outcomes, have also been suggested as a novel approach to conservation. If designed well, they would help align our actions with outcomes for biodiversity as well as make financial investment in conservation more attractive and increase transparency in monitoring biodiversity targets. There are many challenges to their design, however, such as ensuring they are inclusive and support equitable distribution of the benefits, which can mean different things for example, redressing the past imbalance of the global South having their resources exploited by the North. Several systems have already been trialled in several places such as wildlife credits, payments for ecosystem services and carbon offsets, with varying results. The first wildlife bond, intended to increase black rhino populations, will launch this year.

Agriculture threatens 86% of at-risk species worldwide and is the principal driver of accelerating biodiversity loss. There is overwhelming agreement that to reduce agriculture's impact we need to shift dietary patterns to predominantly plant based diets, protect and set aside land for nature both on and off farms and shift to more sustainable farming methods. The good news is that if we employ sustainable farming methods to increase crop yields immediately and on a vast scale we can reverse terrestrial biodiversity loss while also meeting food needs for the global population. Sustainable intensification of farming (essentially the use of less resources and land to produce the same or greater amounts of production), reducing trade barriers in agricultural goods, reducing agricultural waste by 50%, and cutting the share of animal calories in human diets by 50% could theoretically avoid two-thirds of projected biodiversity losses. Additionally, landscape-level conservation and agricultural planning must become common practice to tie these two sectors together in policy.

One possible solution to past failures to achieve biodiversity targets is to make the new targets legally binding like the Paris Agreement on climate change. This would take longer to negotiate - the Paris Agreement took around four years- and the goals would likely be less ambitious should



all parties be held to account, but it is expected that this would secure greater compliance. A Global Deal for Nature has been proposed as a plan to be paired with the Paris Agreement, which calls for 30% of land to be protected for biodiversity and 20% designated for climate stabilisation. The introduction of legal obligations is thought to be highly unlikely, however, as the CBD is founded on the idea that countries have a sovereign right over the use of biodiversity.

The scale at which we are attempting to prevent biodiversity loss does not match the scale at which the drivers operate nor the severity of the problem. We need more than individual action - we need systemic change to abandon goals of continual economic growth and properly price environmental externalities, stop using fossil fuels, strictly regulate markets including property, and reduce or regulate corporate lobbying, all of which contribute to wider sustainability issues. Our current economic and social systems promote consumption and population growth as well as globalisation, which makes it difficult to see the impact of our individual decisions as the distance between the point of production and consumption increases. The way in which we approach global problems is also flawed as we fail to collaborate and share information between different disciplines and fail to understand the complex adaptive systems these problems arise within.

To achieve the type of systemic change needed, we must appreciate the widespread impacts of biodiversity loss. This in turn will spur Governments to be more committed to reaching biodiversity targets. Communicating the scale of the threat is challenging, however, partly because the loss of habitat and biodiversity has a delayed reaction in terms of impact on societal and economic welfare, and partly because of optimism bias - we generally underestimate the severity of threats and ignore expert warnings. As such it is difficult to convince those in power of the importance of biodiversity and the devastation to humans the loss of species richness will cause.

There are a multitude of solutions to the biodiversity loss crisis we are facing, including strategies that also tackle inequality, climate change and food insecurity, and as such, there is cause for optimism. The question remains, however, whether new targets will utilise these approaches and prevent a significant loss of species. The failure to reach past goals has been linked to poor investment and accountability and poor translation of the goals to national levels. The new goals and solutions must address the real drivers of habitat and biodiversity loss as well as be easily scaled to country, regional and local levels to ensure progress is made. If we do not step up and act now to avoid the disastrous consequences of biodiversity loss, then environmental, economic and social disaster will force us to. The good news is that we know how to save biodiversity and ourselves.■

HỒNG NHUNG

The livelihoods of local communities living in and around most protected areas in Việt Nam are often based on small-scale agricultural production activities. Deriving a sustainable income from such local produce is often difficult due to competition, unpredictable harvest yields and market price fluctuations. Balancing sustainable economic development with biodiversity conservation in such areas is a complex task, yet it is the main priority of UNESCO's Biosphere Reserves (BRs). An innovative approach to achieving this balance is the development of 'quality economies'. These economies are based on the development of local product brands that are environmentally - friendly and reflect local characteristics and cultural traditions.

EXPERIENCING A QUALITY ECONOMY

In Europe, many recent rural development studies and initiatives have focused on a concept referred to as the "experience economy". In a rural development context this means the cultural or rural experience that can be added to local products. The benefits of adding "experience" to the local economy are that it combines a tourist experience with the purchase, or even the production, of a local product (or service).

The term "quality economy" differs slightly as it focuses more on the quality of the product. For example, this could mean the product's organic features and flavor, or its social, economic or ecological benefits to its locality, whereby the perceived value of the product adds to its sale price.

QUALITY ECONOMIES IN BRS

The Man and the Biosphere Program originated 40 years ago to stress the importance of humans and nature coexisting to ensure a sustainable future. BRs act as living sites for sustainable development where best practices can be tested and demonstrated by policy makers, researchers and local people.

Adding quality to agricultural products and services within BRs is an important component of this sustainability process. Quality economies can benefit local communities and support



Building quality economies in biosphere reserves



▲ *Cát Bà Archipelago Biosphere Reserve*

biodiversity conservation efforts within and around protected areas by sustaining local livelihoods that can become stable and independent of illegal sources of income such as poaching and deforestation.

ACTIVITIES IN VIỆT NAM

A recent assessment by UNESCO of Việt Nam's eight BRs found that there are many local products with great potential for 'quality' branding. Products such as natural honey from mangrove flowers, mushrooms, cashews, tea and citrus varieties to name a few, are considered to be of a high quality that is not yet reflected in the market price. These products have great potential to be value-added and sold at a higher price with effective labeling and promotion, especially to high-end consumers as Việt Nam climbs towards becoming a middle-income country.

In Cát Bà Archipelago BR, a new initiative was recently introduced where quality products and services received official certification and thereby the right to carry the official Cát Bà BR logo. The initiative was developed through cooperation between the Cát Bà Management Board, the Cát Hải District Department of Culture, Sports and Tourism, as well as local businesses and the community. The aim was to build a cache of premium "green" products and services that promote the BR and its aims of achieving sustainable development. At the first awards Ceremony last year seven products were certified including bottled forest honey, electric vehicles for transport around the main township and a number of hotels and tourist services with minimum environmental impacts.

POSSIBILITIES FOR EXPANSION

The quality of rural products and their links with the tourism industry, as the world's largest and fastest growing industry, need to be seriously considered in efforts to make BRs living sites for sustainable development. In BRs, there are enormous opportunities for lasting beneficial partnerships between farmers, local authorities, business and tourism companies through establishing "quality economies"■

MARK HAWKES - XUÂN THẮNG



Marine life is fleeing the equator to cooler waters -this could trigger a mass extinction event

The tropical water at the equator is renowned for having the richest diversity of marine life on Earth, with vibrant coral reefs and large aggregations of tunas, sea turtles, manta rays and whale sharks. The number of marine species naturally tapers off as you head towards the poles. Ecologists have assumed this global pattern has remained stable over recent centuries until now. Our recent study found the ocean around the equator has already become too hot for many species to survive, and that global warming is responsible.

In other words, the global pattern is rapidly changing. And as species flee to cooler water towards the poles, it's likely to have profound implications for marine ecosystems and human livelihoods. When the same thing happened 252 million years ago, 90% of all marine species died.

THE BELL CURVE IS WARPING DANGEROUSLY

This global pattern - where the number of species starts lower at the poles and peaks at the equator - results in a bell-shaped gradient of species richness. We looked at distribution records for nearly 50,000 marine species collected since 1955 and found a growing dip over time in this bell shape. So, as our oceans warm, species have tracked their preferred temperatures by moving towards the poles. Although the warming at the equator of 0.6 over the past 50 years is relatively modest compared with warming at higher latitudes, tropical species have to move further to remain in their thermal niche compared with species elsewhere.

As ocean warming has accelerated over recent decades due to climate change, the dip around at the equator has deepened. We predicted such a change five years ago using a modeling approach and now we have observational evidence.

For each of the 10 major groups of species we studied (including pelagic fish, reef fish and molluscs) that live in the water or on the seafloor, their richness either plateaued or declined slightly at latitudes with mean annual sea-surface temperatures above





20. Today, species richness is greatest in the northern hemisphere in latitudes around 30°N (off Southern China and Mexico) and in the South around 20°S (off Northern Australia and Southern Brazil).

THIS HAS HAPPENED BEFORE

We shouldn't be surprised global biodiversity has responded so rapidly to global warming. This has happened before and with dramatic consequences.

252 million years ago...

At the end of the Permian geological period about 252 million years ago, global temperatures warmed by 10 over 30,000 - 60,000 years as a result of greenhouse gas emissions from volcano eruptions in Siberia. A 2020 study of the fossils from that time shows the pronounced peak in biodiversity at the equator flattened and spread. During this mammoth rearranging of global biodiversity, 90% of all marine species were killed.

125,000 years ago...

A 2012 study showed that more recently, during the rapid warming around 125,000 years ago, there was a similar swift movement of reef corals away from the tropics, as documented in the fossil record. The result was a pattern similar to the one we describe, although there was no associated mass extinction.

Authors of the study suggested their results might foreshadow the effects of our current global warming, ominously warning there could be mass extinctions in the near future as species move into the subtropics, where they might struggle to compete and adapt. If you look at each line in this chart, you can see a slight dip in total species richness between 1955 and 1974. This deepens substantially in the following decades.

Today...

During the last ice age, which ended around 15,000 years ago, the richness of forams (a type of hard-shelled, single-celled plankton) peaked at the equator and has been dropping there ever since. This is significant as plankton is a key-stone species in the foodweb. Our study shows that decline has accelerated in recent decades due to human-driven climate change.

THE PROFOUND IMPLICATIONS

Losing species in tropical ecosystems means ecological resilience to environmental changes is reduced, potentially compromising ecosystem persistence. In subtropical ecosystems, species richness is increasing. This means there'll be species invaders, novel predator-prey interactions, and new competitive relationships. For example, tropical fish moving into Sydney Harbor compete with temperate species for food and habitat.

This could result in ecosystem collapse - as was seen at the boundary between the Permian and Triassic periods - in which species go extinct and ecosystem services (such as food supplies) are permanently altered. The changes we describe will also have profound implications for human livelihoods. For example, many tropical island nations depend on the revenue from tuna fishing fleets through the selling of licenses in their territorial waters. Highly mobile tuna species are likely to move rapidly toward the subtropics, potentially beyond sovereign waters of island nations.

Similarly, many reef species important for artisanal fishers - and highly mobile megafauna such as whale sharks, manta rays and sea turtles that support tourism - are also likely to move toward the subtropics. The movement of commercial and artisanal fish and marine megafauna could compromise the ability of tropical nations to meet the Sustainable Development Goals concerning zero hunger and marine life.

IS THERE ANYTHING WE CAN DO?

One pathway is laid out in the Paris Climate accords and involves aggressively reducing our emissions. Other opportunities are also emerging that could help safeguard biodiversity and hopefully minimize the worst impacts of it shifting away from the equator.

Currently 2.7% of the ocean is conserved in fully or highly protected reserves. This is well short of the 10% target by 2020 under the United Nations Convention on Biological Diversity. But a group of 41 nations is pushing to set a new target of protecting 30% of the ocean by 2030. This "30 by 30" target could ban sea-floor mining and remove fishing in reserves that can destroy habitats and release as much carbon dioxide as global aviation. These measures would remove pressures on biodiversity and promote ecological resilience.

Designing climate-smart reserves could further protect biodiversity from future changes. For example, reserves for marine life could be placed in refugia where the climate will be stable over the foreseeable future. We now have evidence that climate change is impacting the best-known and strongest global pattern in ecology. We should not delay actions to try to mitigate this ■

NAM VIỆT

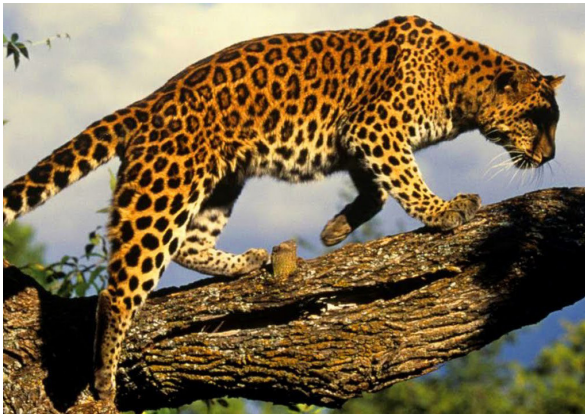


11 of the most endangered animals in the world

In celebration of National Endangered Species Day (May 21st, 2021), World Wildlife Fund (WWF) recognized the animals around the world most in need of protection and conservation efforts and here is a list of 11 critically endangered animals.

1. AMUR LEOPARD

Between 2014 and 2015, there were only around 92 amur leopards left in their natural range. This number is now estimated to be less than 70. They are extremely vulnerable to poachers, who kill them for their coats and bones, the latter of which is sold for use in traditional Asian medicine. They are also at risk from habitat loss due to natural and man-made fires. Climate change is also leading to a decrease in prey availability.



2. RHINO

Rhinos are one of the most poached animals on the planet. Their horns are used in traditional Chinese medicine



and displayed as a symbol and demonstration of wealth. A Javan rhino horn can sell for up to US\$ 30,000 per kg on the black market. Because of poaching, three of the five species of rhinos are among the most endangered species in the world: the black rhino, the Javan rhino and the Sumatran rhino. The Javan rhino is the closest to extinction with only between 46 to 66 individuals left, all of which are in Ujung Kulon National Park in Indonesia

3. ORANGUTAN

The two kinds of orangutan- the Bornean and the Sumatran orangutan- have both experienced sharp declines in populations. A Century ago, there were probably more than 230,000 orangutans in total, but the Bornean orangutan is now estimated at about 104,700 based on updated geographic range and the Sumatran about 7,500. They are primarily threatened by habitat loss from human-caused deforestation for palm oil.



4. GORILLA

There are two species of gorillas, the Eastern gorilla and the Western gorilla, which both have two subspecies. Three out of four are critically endangered on the IUCN Red List of Threatened Species. The only one that is not is the Mountain Gorilla, a subspecies of the Eastern Gorilla, which is considered endangered. There are only around 200 - 300 adult Cross River Gorillas left in the wild. Like many endangered animals, their decline is mostly due to poaching, habitat loss, disease and human conflict.





5. SAO LA

The Sao la is one of the rarest mammals on the planet. It was first discovered in 1992 in the Annamite Range in Việt Nam and is rarely seen. No formal surveys have been undertaken to determine accurate population numbers, but the IUCN estimates the total Sao la population to be less than 750, likely to be much less.



6. VAQUITA

As both the smallest and most endangered marine mammal in the world, the vaquita has been classified as critically endangered by the IUCN since 1996 and experts say there may only be about nine vaquitas left, despite extensive conservation efforts. Their biggest threat is from the illegal fishing of totoaba, a large fish in demand because of its swim bladder. Vaquitas accidentally end up entangled in the gillnets set for totoaba and drown because they can no longer swim to the surface to breathe. Conservation efforts led to the introduction of a ban on gillnets in vaquita habitat back in July 2016, but illegal fishing continues and the threat remains. Efforts now focus on enforcing the ban on gillnets and persecuting those that use them. Conservationists are also working to decrease demand for totoaba, which is a protected species.



7. YANGTZE FINLESS PORPOISE

Finless porpoises live in the Yangtze River in China. Unfortunately, they are vulnerable to fishing; even though they are not directly targeted by fishermen, large numbers of the species die when they become accidentally entangled in fishing gear. The waters they live in are also constantly busy with fishermen and people using the waterways to move around, so they get injured and killed by boats and ships. Additionally, their waters are also affected by high levels of toxic pollutants. There are 1,040 finless porpoises left in the Yangtze. The annual decline rate of 13% means these animals are expected to become extinct within 10 years if there are no effective conservation actions in place.



8. TIGER

Of all the big cats, tigers are the closest to extinction, with fewer than 3 900 tigers remaining in the wild, they exist in only 4% of their historic range. Sunda tigers in particular are especially vulnerable. With numbers estimated to be at fewer than 400 today, accelerating deforestation and rampant poaching mean it could end up extinct like its Javan and Balinese counterparts. Despite increased efforts in tiger conservation- including strengthening law enforcement and anti poaching capacity- a substantial market remains in Sumatra and other parts of Asia for tiger parts and products.





9. KAKAPO

Kakapos are nocturnal ground-dwelling parrots from New Zealand and are critically endangered with only around 140 individuals remaining, each one with an individual name. They were once common throughout New Zealand and Polynesia but now inhabit just two small islands off the coast of southern New Zealand. One of the main threats to Kakapos is predation from introduced species such as cats and stoats that hunt using scent. It is effective against predators that rely on sight to hunt but not smell. Females also leave the nest unattended when finding food, leaving the eggs freely available to predators. Intensive conservation measures mean the population is on the increase now, which is positive. But genetic diversity is low among the remaining kakapo, which could affect survival in the future, especially if they are struck by a disease.



10. SEA TURTLE

Two species of sea turtle are critically endangered on the IUCN Red List of Threatened Species: Hawksbill Turtles and Kemp's Ridley Turtles, while Leatherback sea turtles are classified as vulnerable, though the population is decreasing and several subpopulations are facing extinction. Hunting is one of the biggest threats to sea turtles, with poachers targeting their eggs, shells,



meat and skin. They are also at risk from habitat loss, bycatch and pollution as well as climate change.

Recent estimates show us that there are nearly 6.5 million sea turtles left in the wild with very different numbers for each species. Population estimates for the hawksbill turtle range from 83,000 to possibly only 57,000 individuals left worldwide. Kemp's Ridley and Flatback turtles each have a very narrow distribution, with less than 10,000 individuals left for each species (medium estimates: 25,000 and 69,000 respectively).

11. GHARIAL

Gharials are fish-eating crocodiles from India. They have long thin snouts with a large bump on the end which resembles a pot known as a Ghara, which is where they get their name. They spend most of their time in freshwater rivers, only leaving the water to bask in the sun and lay eggs. Unfortunately, Gharial numbers have been in



decline since the 1930s and sadly, this large crocodilian is now close to extinction. There are only around 100 to 300 left in the wild. Their decline is due to several issues, though all human made. Habitat loss, pollution and entanglement in fishing nets pose some of the biggest threats, along with poachers that target them for use in traditional medicine■

PHƯƠNG LINH



AT THE SOUTHERN TIP OF VIỆT NAM: Mangroves defend the land from the encroaching sea

Cape Cà Mau National Park (NP), at Vietnam's Southernmost point, juts into the Gulf of Thailand like a verdant green toe. This dark green shade is created by an expansive, ecologically vital mangrove forest. But the Province the park sits in, also called Cà Mau, is losing forest and land to the sea. Local media report that since 2007, erosion has eliminated roughly 90 square kilometers (35 square miles) of protective coastal forest there, largely consisting of acacia trees. Volunteers have been working fervently to restore the mangroves in the area, vitally important ecosystems in Việt Nam that could protect coastal land from encroachment.

In August 2020, the Provincial Government declared a state of emergency over concerns that an embankment on the west coast that had been stripped of forest would collapse from strong waves, rising seas and tidal movement. This followed an incident in July in which 12 homes collapsed into a river in Cà Mau after the land beneath them eroded away.

Bordered by the sea on two sides and exposed to typhoons and rising sea levels, Cà Mau is among the most vulnerable regions of a country expected to face some of the worst future impacts from climate change.

CAPE CÀ MAU NP

One model for preventing future destruction can be found in Cape Cà Mau NP. The NP spans 420 km², a little less than one-third of which comprises a strictly protected core zone of mangroves.

According to Deputy Director of the NP Lý Minh Kha, the forests in Cape Cà Mau NP (the Vietnamese name for the NP) are of vital importance in the regulation of ecosystems and geomorphology, as well as in coastal protection. Mangroves along the coast and riverbanks have had important effects in preventing

and combating wind and erosion, improving climate factors, reducing temperature fluctuations, and regulating rainfall. The forest hosts 27 different species of mangroves, 93 bird species, 26 mammal species, 43 reptile species, 139 types of fish and 53 species of crustaceans.

These include the critically endangered Northern river terrapin (*Batagur baska*), the endangered hairy-nosed otter (*Lutra sumatrana*) and the endangered, black-faced spoonbill (*Platalea minor*). The NP is also a Ramsar site. The region was once home to 16,000 km² of wetlands, but huge swaths of mangroves succumbed to defoliants sprayed by the US' military during the Việt Nam war and then, conversion to shrimp aquaculture ponds in the following decades.

More recent conservation and regulatory work has stabilized the mangroves since the late 1990s and the NP's core is well-protected. Yet, aquaculture is taking place outside of this zone and the outer areas face threats like urbanization, land use conversion and deforestation that are common throughout Việt Nam.

Since March 2020, Gaia Nature Conservation, an NGO based in Hồ Chí Minh City, has been working to aid the natural generation of more mangroves in the heart of the NP. The goal is to turn an open mudflat into a healthy mangrove forest, perfect tree-growing methods and raise awareness among local residents and the general public about the importance of protecting the forests.

According to Gaia's Founder and Director Đỗ Thị Thanh Huyền, the planting of mangroves in Cà Mau not only increases the forest cover of the Province, but also improves the economic and ecological values of the forests, including through soil retention, prevention of saline intrusion, water regulation, air purification and nurturing aquatic larvae and creating habitats for rare species.

The Gaia project site covers 50 hectares (124 acres) of mudflats where people often anchor fishing boats or illegally exploit aquatic life. To keep fruits from mangrove "mother plants" in nearby forests from floating away into the open ocean, Gaia installed a 2,900-meter (9,500-foot) fence of wood posts lined with fishing net along the site. Once these seeds take root in the mudflat, they will trap sediment, gradually building up the land. According to the NGO's most recent report on the project, this initial forest growth will consist of the mangrove species *Avicennia alba* and *A. officinalis*. These are pioneer species of the mangroves - the first tree to grow in the sea, followed by other mangrove species.



Gaia's site includes five 1,000-square-meter (10,800-square-foot) plots where the regrowing forest will be closely monitored over six years to assess its health and estimate the number of new trees. Signs warn people from entering the area, and both the NGO and the NP Administration regularly patrol the site, which they hope will eventually shelter 185,000 trees. The monitoring will help her team determine whether other activities, such as planting additional seeds, might be necessary. However, based on experience in Cape Cà Mau NP for this kind of methodology, this is a very effective, cost-saving method of mangrove plantation.

Mrs. Đỗ Thị Thanh Huyền added that she has been heartened by the number of individuals who have donated to the project - currently 6,547 - a sign that many people recognize the importance of protecting Cà Mau's mangroves.

THE SHRIMP FARMS

East of the NP, on Cà Mau's coastline facing the East Sea (known as the South China Sea internationally),

dense mangrove forests give way to countless thin aquaculture plots, where the approach to mangroves is much different.

According to the Ministry of Agriculture and Rural Development, the Province currently has 190 km² of shrimp farms that meet international standards for organic sourcing, sustainability and safety such as GlobalGAP. The dominant shrimp production method in Việt Nam involves open ponds with no tree cover. Here, though, officials hope to expand a production model that integrates shrimp cultivation with forest.

Deputy Head of the IUCN Indo-Burma Region Andrew Wyatt has been involved with this so-called integrated model since 2012, in partnership with the International Climate Initiative of the German Government. Through a project called Mangroves and Markets, Mr. Andrew Wyatt and his colleagues worked to find ways that farmers could benefit financially from maintaining mangrove coverage within their shrimp ponds.

Cà Mau zoning rules already fully protect mangroves along the coast, prohibiting aquaculture. Further inland lie two shrimp production zones. In the outer production zone, the shrimp farms are integrated with the mangroves, and farmers are asked to maintain a balance of 60% tree cover and 40% water surface for farming. Here, farmers are not allowed to clear-cut all of their mangroves at one time. If they want to cut the trees, to sell the wood or use it for cooking fuel, they have to get approval from the forest management board.



▲ Mangroves line an “integrated” shrimp aquaculture pond in Cà Mau Province



▲ The Hanoi flagpole located in the Cultural and Tourist Park of Cà Mau Cape, Đất Mũi Commune, Ngọc Hiển District

They can cut half of their farm and replant it, and then wait another five years or so before cutting the other half. That way they maintain a protective function against storms. Meanwhile, in the inner production zone, which starts 10 km inland from the coast, farmers can clear-cut their whole farm in one go. “These farms have been here since the French colonial period and the trend over the decades has been the expansion of shrimp farming area and whittling away of forest cover”, Mr. Andrew Wyatt said. “So, what Mangroves and Markets tried to do was to link a market mechanism to reforestation or the maintenance of forests”.

The program helps farmers who maintain forest cover on their plots, especially in the inner production zone where clear-cutting is allowed, to gain access to international organic certification, which brings a premium price for their shrimp and boosts their income. This mixing of aquaculture with mangrove forests on a large scale in Cà Mau is unique in the Mekong

Delta and it has proven effective. The Province’s mangrove forest cover has remained largely stable and farmers living in this landscape have noticed minimal impacts from typhoons with significant storm surge.

Other provinces in the Delta have focused more on hard barriers such as embankments to prevent erosion and deflect storm surge. This has led to a phenomenon called coastal squeeze in Bạc Liêu Province, which neighbors Cà Mau to the East.

Coastal squeeze occurs when natural habitats outside of a man-made structure disappear to erosion after being cut off from their wider ecosystem. Satellite imagery shows it clearly: Cà Mau’s healthy strip of coastal mangroves vanishes as it reaches into Bạc Liêu. Nonetheless, erosion is still occurring in Cà Mau, even with this mangrove strip in place, showing how persistent this problem is.

“Still, we always use Cà Mau as best practice, so we advocate this kind of zoning approach. Even with erosion happening on the shoreline, it is not critical because you do not have heavy urban populations living in the forests, and the trees are still providing some form of protection up to 6 miles inland”, Mr. Andrew Wyatt said.

While it is too late to save the homes and forest already lost to erosion, efforts to preserve and expand mangrove forests in Cà Mau highlight just how effective these forests are at keeping both people and biodiversity safe from the elements.■

BÙI HẰNG

Ecotourism in the biosphere reserves in Việt Nam

Biosphere reserve (BR) should first exhibit real procedure “Preserving the nature, the cultural identity, promoting historical values and being closely linked to sustainable social economic development in the local region”. It is important to divide a BR into functional zones which implement fully key objectives and

principles: (i) The core zone consisting of biodiversity, natural landscape, cultural and scientific elements which need to be strictly protected; (ii) The buffer zone is aimed toward socio-economic goals and promote positive effect on the core zone; (iii) The transition zone is supposed to implement sustainable development, improve the livelihood for local people, enhance economic prospects, maintain and demonstrate typical characteristics of a BR in terms of natural landscapes, natural re-

Features of 8 world BRs in Việt Nam and its potential for ecotourism:

No	Name and location	Natural features	Social- humanity and historical features
1	Cần Giờ Mangrove BR (Hố Chí Minh City)	- Typical mangroves - Estuary landscape, coastal Southern Delta	- Using natural resources in fishing and production activities under the Mangrove Forest canopy
2	Đồng Nai BR, Đồng Nai, Bình Phước, Lâm Đồng, Bình Dương and Đắk Lắk provinces	-Typical South Trường Sơn mountain range - Landscape typical in Eastern South, - Typical landscape, various wildlife.	-Longstanding community identity, relics of typical Óc Eo culture - Typical cultural identity of South of Tây Nguyên
3	Cát Bà BR (Hải Phòng City)	- Unique geological feature: KARST - Limestone island has natural uniquely green forest, an important feature of the whole Hạ Long Bay. - Endemic animals: Cát Bà langurs	- Relics of ancient Vietnamese - Island communities with agricultural and fishing village - High value local products - Traces of cultural and historical identity
4	Red River Delta BR (Thái Bình, Nam Định and Ninh Bình provinces)	- The phenomenon of the Red River alluvial sedimentation - Mangroves, rich habitats, adaptation of various bird species	- Communities explore new lands in coastal estuaries - Coastal cultural identities and cultural identities of Northern Delta and Red River - Different craft coastal village
5	Kiên Giang BR (Kiên Giang)	- Phú Quốc, the largest island in Việt Nam - Diversified geographical landscape - Natural rainforest - Wild life habitat on the forest and on the sea	- Eastern coastal cultural identity - Characteristic of economic expansion - History of expanding Southern border
6	Western Nghệ An BR (Nghệ An Province)	- North Trường Sơn mountain, upstream of Cả River, diversified landscape. - Naturally green forest, high biodiversity, different wild rare animals	- Indigenous communities - Cultural diversity - Many local high value products
7	Cù Lao Chàm - Hội An BR (Quảng Nam Province)	- Naturally green forest, typical island landscape, - Typical geographical formation, spectacular landscape	- Longstanding communities - Typical island town - Unique cultural identity, festivals and craft village.
8	Mũi Cà Mau BR (Cà Mau Province)	- Cửu Long River alluvial sedimentation - Typical acidic mangroves	- Typical communities living in sedimented lands - Agriculture, fishing and forestry



▲ Tourist area of Đà Lạt City
(Lâm Đồng Province)

sources, culture, history, typical products. A system of BRs contains various conditions, forming elements to create different ecotourism products.

The 8 BRs spread along the country, lying on differing naturally geographical characteristics, exhibits distinct local cultural features. Based on available BRs, tourism products vary and appeal to different kinds of tourists (sightseeing, experiencing nature, exploring, scientific research, resort...). It is possible to conduct an ecotour across 8 BRs. Especially with the study tour featuring ocean, sea preservation, geography, biodiversity, typical landscape. The operation of different stages of such tour within a BR will be smooth, consistent. Ecotourism within BRs has viable conditions to accommodate various demands of tours in terms of nature and humanity.

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▲ Tràng An Tourist Area (Ninh Bình Province)



▲ Tea plantation in Thanh Chương District
(Nghệ An Province)



▲ Hội An City (Quảng Nam Province)

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VÕ TRÍ CHUNG - TRẦN THỊ HỒNG GẮM



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- Support Korean and Vietnamese enterprises to promote investment in the field of environmental industry in Vietnam;

- Research and explore the technology market in order to serve the promotion and cooperation development, investment and technology transfer in the field of environment and sustainable development.



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