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President's order on the announcement of the Law on Environmental Protection 2020

The National Assembly passes the Law on Environmental Protection (amended):

CONCRETIZE MAJOR POLICIES AND ORIENTATIONS OF THE STATE TO MEET DEVELOPMENT REQUIREMENTS IN THE COMING PERIOD

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Cần Thơ energy- from- waste incineration plant in Thới Lai District, Cần Thơ City

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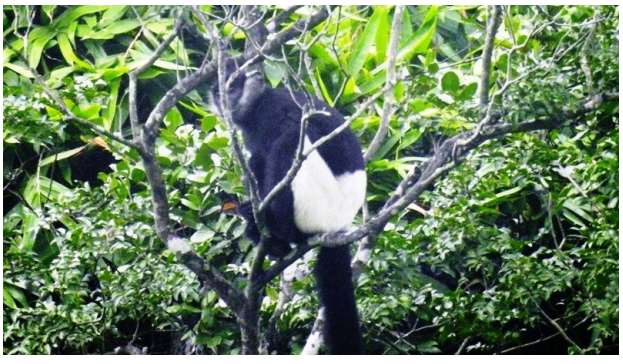

GREEN GROWTH & DEVELOPMENT

NATURE & ENVIRONMENT OF VIETNAM

President's order on the announcement of the Law on Environmental Protection 2020

On 11th December 2020, the State President's Office held a press conference to announce the State President's order on the Law on Environmental Protection (LEP) 2020 and 6 other laws passed by the National Assembly at the 10th Session of the 14th National Assembly.

At the press conference, presenting the LEP 2020, Deputy Minister of Natural Resources and Environment Võ Tuấn Nhân said that the LEP 2020 aims to promptly institutionalize the policies and guidelines of the Communist Party, policies of the State, especially Conclusion No. 56-KL/TW dated 23rd August 2019 of the Politburo; Việt Nam's environmental institutional reform is asymptotic with the legal policy of environmental protection in the world, meeting the requirements of international integration. The highest goal is to improve environmental quality, protect people's health, balance ecology, conserve biodiversity and develop sustainable economics.

With 16 chapters and 171 articles, the LEP 2020 has many provisions to strongly reform administrative procedures, of which cuts more than 40% of administrative procedures, reduces the time for implementing administrative procedures from 20 - 85 days, contributing to reduce compliance costs of businesses through the following provisions: Narrowing the subjects that must implement environmental impact assessment; integrating administrative procedures into 1 environmental license; synchronizing environmental management instruments for each stage of the project, starting from the stage of investment policy review, project appraisal, project implementation until the project goes into official operation and to the end of the project. For the first time, the Law designed a policy framework aiming to form an overall, comprehensive LEP harmonious with the socio-economic legal system.

The Law has many fundamental innovations, including: For the first time, residential community is defined as a subject in environmental protection; enhance information disclosure, consultation, promote the role of supervision and criticism, also ensure the rights and interests of the residential community when participating in environmental protection activities. The Law has supplemented the principle of environmental protection activities to be open and transparent; clearly specified responsibility to disclose information related to environmental quality, environmental impact assessment reports, environmental licenses; the State policy is to encourage organizations and individuals to contribute and provide information on the environment.

Change the method of environmental management for investment projects according to environmental criteria; strictly control projects with a high degree of adverse impacts on the environment, conduct post-check for projects with advanced and environmentally friendly technologies. The Law has shown a strong change in environmental management thinking through institutionalizing the development policy based on the laws of nature, without sacrificing the environment in exchange for economic growth; environmental protection must be in harmony with nature and encourage nature protection and development. Also, set environmental standards and regulations to achieve the goal of ensuring that Vietnamese people enjoy an environmental quality equal

▲ *The press conference*

to those of other countries in the world and in harmony with international regulations to contribute to the implementation of Việt Nam's international commitments on environmental protection and climate change responses. Approach the cross-cutting and scientific method of environmental management for investment projects based on environmental criteria; screen and discourage projects that do not comply with laws of nature, occupy large areas of forests and paddy land, are in danger of causing floods, depleting flows, affecting natural heritages, conservation area; apply appropriate environmental management instruments for each stage from strategy, planning, program development to investment project implementation.

Have institutionalized environmental health content; added many solutions to protect environmental components, especially the air environment and the water environment. The Law has supplemented the content of management of pollutants that has direct impacts on human health; clearly specified the responsibilities of the Ministry of Natural Resources and Environment, the Ministry of Health, Ministries, ministerial-level agencies, and Provincial People's Committees in monitoring, controlling and preventing pollutants affecting human health as well as assessing the relationship between environmental health and human health, especially the relationship between environmental pollution and new diseases; Promote classification of wastes at source; orient ways of managing and dealing with wastes, contributing to promoting the circular economy in Việt Nam. For the first time, the Law has specified the implementation of waste fee collection based on weight or volume instead of the current average per household or per capita; stipulated the extended responsibility of organizations and individuals that manufacture or import recyclable/non-recyclable products and packages that must be recalled at the required rates and specifications or through service contracts or financial contribution mechanisms to support the recycling of products and packages manufactured or imported by them; thereby, creating a favorable legal corridor to promote the waste recycling in Việt Nam; For the first time, the institution of state management authority is based on the principle of integrated, unified management, one task is assigned to only one agency in charge of implementation with strong decentralization for local levels. The Law abolished the procedure for issuing license for wastewater discharged into water sources, irrigation works, incorporated this content into environmental license to unify responsibilities, authority and principles of integrated water resources management; also, drastically reduce administrative procedures for businesses. In parallel with this institution, the Law has also added the responsibilities, authority to participate, criticize and consensus of irrigation works management agencies right from the EIA stage until the issuance of environmental license for facilities discharging wastewater into irrigation works in order to enhance the coordination of agencies, while ensuring the role of the state management agencies in charge of irrigation works in controlling water quality of irrigation works.

▲ *Deputy Minister of Natural Resources and Environment Võ Tuấn Nhân speaking at the press conference*

For the first time, the Law specifies institutions on environmental auditing aimed to enhance the enterprise's capacity and efficiency in environmental management. The purpose of this activity is to strengthen the capacity of enterprises to manage the environment, to help them recognize gaps in environmental management and to have solutions to adjust environmental management activities more effectively; Concretize provisions on responding to climate change, promoting the development of the domestic carbon market. The Law has added provisions on climate change adaptation, GHG emission reduction, ozone layer protection, and integration of climate change responses into the system of strategies, planning and implementation of international commitments on climate change and ozone layer protection. Institutions on organization and development of the carbon market are as instruments to promote the reduction of greenhouse gas emissions in the country, helping the implementation of the contribution to GHG emission reduction as committed by Việt Nam when participating in the Paris Agreement on Climate Change.

Complete the legal corridor to protect natural heritage in accordance with international law on world heritage, meeting the requirements of the international integration process. The

Law has set out the criteria for establishing and recognizing natural heritage based on international criteria and current conditions in Việt Nam; in which, for objects that are natural heritages as prescribed in the law on forestry, fisheries, biodiversity and cultural heritage, these provisions are still applied to avoid disturbances and overlaps. The Law also stipulates the content on environmental protection of natural heritage to protect and promote the sustainable values of natural heritage in our country.

Create policies to develop sustainable economic growth models, promote a circular economy, restore and develop natural capital resources to create a driving force for sustainable development and improve growth quality and national prosperity. The Law has added a chapter on economic instruments and resources for environmental protection including policies on developing environmental industries, environmental services, environmentally - friendly products and services; prioritizing green procurement for projects and tasks using state budgets; promoting the exploitation, use and development of natural capital; especially promoting the circular economy. Also, the Law supplements policies on green credit and green bonds to mobilize diverse social resources for environmental protection.

With the above new breakthrough policies, businesses, communities and people expect that the LEP 2020 will create many breakthroughs, promote the effectiveness of environmental protection and support our country's international integration process▪

CHÂU LONG

On 17 th November 2020, continuing the 10th session of the 14th National Assembly (NA), the NA heard the report on explanation, acquisition of opinions and revision of the Law on Environmental Protection (LEP) (amended). After that, the NA voted to pass the LEP (amended) with 443/466 members agreed (accounting for 91.91%); 16 members disagreed (accounting for 3.32%) and 7 members did not participate in the vote.

The passed LEP (amended) reflected a dramatic change in environmental management thinking through institutionalizing development policies based on natural laws, without sacrificing the environment in exchange for economic growth; screening and selecting development investment projects based on environmental criteria. The highest goal is environmental quality improvement, people's health protection, ecological balance, biodiversity conservation and sustainable development.

The LEP includes 16 chapters, 171 articles and takes effect from 1st January 2022, the Clause 3 of Article 29 (Preliminary Environmental Impact Assessment) takes effect from 1st February 2021. The LEP (amended) stipulates 7 principles of environmental protection, which clearly state that environmental protection is the rights, obligations and responsibilities of all agencies, organizations, residential communities, households and individuals. Environmental protection is a condition, foundation, central and prerequisite factor for sustainable socio-economic development. Environmental protection activities must be linked to economic development, natural resource management, and be considered and evaluated in the course of implementation of development activities. Environmental protection is in harmony with social security, children's rights, gender equality, ensuring the rights of everyone to live in a healthy environment. Environmental protection activities must be conducted regularly, openly and transparently; prioritize forecasting and preventing environmental pollution, incidents and degradation, managing environmental risks, minimizing waste generation, increasing waste reuse and recycling to exploit the values of natural resources of wastes...

State policies on environmental protection are clearly defined in the LEP (amended), in which the State creates favorable conditions for agencies, organizations, communities, households and individuals to participate in the implementation, inspection and supervision of environmental protection activities. Conduct propaganda and education activities in combination with administrative, economic and other measures to strengthen compliance with the law on environmental protection, develop culture of environmental protection. Focus on biodiversity conservation, environmental protection of natural heritage; rational and economical exploitation and use of natural resources; clean and renewable energy development; technical infrastructure development for environmental protection. Prioritize reduction of environmental pollution, restoration of degraded natural ecosystems, with focus on environmental protection in residential areas…

The LEP (amended) also specifies 14 prohibited acts in environmental protection activities such as: Transporting, landfilling, dumping, discharging, burning solid wastes, and hazardous wastes in contravention of technical procedures, provisions of the LEP. Discharging wastewater and gas emissions into the environment that have not been treated to meet environmental technical regulations. Spreading into the environment toxic chemicals; harmful viruses that may transmit to humans, animals; microorganisms that have not been tested; carcasses died from epidemics and other agents that are toxic to humans, organisms and nature. Causing noise and vibration in excess of en-

The National Assembly passes the Law on Environmental Protection (amended):

Concretize major policies and orientations of the State to meet development requirements in the coming period

vironmental technical regulations; discharging smoke, dust and noxious odors into the air. Carrying out an investment project or discharging wastes when the conditions are not met in accordance with the LEP. Importing and transiting wastes from abroad in any form. Illegally importing used means, machinery and equipment to demolish, recycle...

In addition, the LEP (amended) also has specific provisions on environmental protection for water, air, soil, natural heritage; National environmental protection strategy and planning; Content of environmental protection in regional, provincial planning; Strategic environmental assessment, environmental impact assessment (EIA), environmental licenses; Environmental protection in production, business, service, urban and rural areas ...

Previously, on 24th October 2020, the NA discussed online about the Draft LEP (amended). Most of NA members agreed with the content of received opinions and the revised Draft Law and contributed many valid opinions to the Draft Law. On 5th November 2020, the Standing Committee of the NA directed the submission of opinions to the NA on 4 contents with different opinions and studied, received and revised the Draft Law submitted to the NA for approval. On 17th November 2020, the Standing Committee of the NA issued a report on the acceptance explanation and the Draft LEP (amended) to submit to the NA for approval.

Accordingly, the 4 contents still have different opinions to consult the NA, including: Classification of projects according to their level of impacts on the environment; subjects implementing preliminary environmental impact assessment; authority to appraise EIA reports; environmental licenses.

Regarding the classification of projects according to their level of impacts on the environment, the Draft Law has received the majority of opinions of the NA members. Accordingly, investment projects are classified into 4 groups: I, II, III and IV; specifying the criteria of each group as a basis for the Government to detail and promulgate a list of investment projects in groups I, II and III. Article 28 of the Draft Law is renamed to "Environmental criteria for classifying investment projects" in order not to be confused with project classification according to investment criteria.

▲ *The afternoon plenary session on 17th November, the 10th session of the 14th NA*

For the subjects implementing the preliminary environmental impact assessment (EIA), the Draft Law has received the opinions of the NA members and expressed in Article 29. Accordingly, only projects with high risk of adverse environmental impacts (Group I) are required to implement preliminary EIA. This option reduces administrative procedures for investors when implementing projects subject to investment policy decision and approval but not in the group of projects with high risk of adverse environmental impacts. For public investment projects, public-private partnership (PPP) projects or investment projects with private capital funding that do not have high risk of adverse environmental impacts, investors will not have to implement preliminary EIA. This option does not overlook the subjects of investment projects with private capital that are not subject to investment policy approval but have a high risk of adverse environmental impacts. Through preliminary EIA, investors avoid wasting finance and time in case the projects do not meet the requirements of environmental protection.

▲ *NA members pressing buttons to vote to pass the LEP (amended)*

Regarding the authority to appraise EIA reports, the Draft Law has been revised according to the majority of opinions of NA members, that assigns provincial People's Committees to assume the prime responsibility and coordinate with relevant Ministries in appraising EIA reports for investment projects in their areas under the authority

SOME COMMENTS OF NA MEMBERS ON THE DRAFT LEP (AMENDED)

Member Trần Thị Quốc Khánh (Hà Nội Delegation): *The passed Law and its enforcement will create a revolution*

The passed LEP (amended) and its enforcement will create a revolution. Two revolutionary issues here are "green procurement" and "waste classification at source", in which "green procurement" must be integrated into agriculture, industry and many other fields. Waste classification at source has been mentioned for a long time, but implementation is still ineffective. Therefore, the passed Law will also create a mechanism for implementation, contributing to sustainable development and minimizing environmental pollution. After the Law is passed, there should be specific instructions for each residential area in implementing waste classification at source...

Member Lưu Bình Nhưỡng (Bến Tre Delegation): *The Draft LEP (amended) is the basis for better dissemination and education on environmental laws*

In general, the Draft LEP (amended) from the point of view, the guideline to the goal... is all important content and is presented quite well. Voters and the people strongly agree with this amendment with the point of issuing early to have an important legal framework to ensure to keep and protect the environment, not only in residential areas but also in concentrated production areas and with large projects and constructions that can cause large and long-term environmental consequences and risks.

to decide on investment of ministries and ministerial-level agencies, except for projects under the responsibility of the Ministry of Natural Resources and Environment, the Ministry of Public Security and the Ministry of National Defense and as stipulated in Article 35 of the Draft Law. In order to improve the professional capacity of local authorities and strengthen the coordination and receipt of opinions of the NA members, the Draft Law has added in Clause 3, Article 35 the responsibilities of Ministries and ministerial-level agencies in the process of coordinating with the Provincial People's Committees to appraise EIA reports.

With the content of environmental licenses, the Draft Law has received opinions from NA members and clearly defined the coordination mechanism between agencies competent to issue environmental licenses with agencies managing and exploiting irrigation works in the process of appraisal and decision to issue environmental licenses. Accordingly, this coordination must be carried out right from the EIA implementation stage. Draft Law specifies the order and procedures for appraisal of EIA reports, issuance of environmental licenses, in case projects, facilities, concentrated production, business and service areas, industrial clusters have operations of discharging wastewater into irrigation works, the agency appraising the EIA reports and issuing environmental licenses must obtain written approval from the state management agency competent to manage such irrigation works such as Point d, Clause 3 of Article 34 and Point C, Clause 2 of Article 43.

In addition, the Draft Law has also received opinions from NA members and revised many articles and clauses such as: Environmental protection of natural heritage (Article 20, Article 21); national environmental protection planning (Article 23); environmental protection in regional, provincial planning (Article 24); provisions on environmental protection of surface water, groundwater; responsibility for air environmental quality management; environmental audit; revision of regulations on environmental protection in mineral exploration, exploitation and processing activities and oil and gas activities; wastewater collection and treatment; the time to calculate the statute of limitations for environmental lawsuits; assignment of state management responsibilities; revision of regulations on transition terms...▪

On the other hand, climate change is a big and frequent threat to the environment, so legal provisions are needed to limit these impacts. Besides, the completion and approval of this Draft Law is also the basis for better implementation of law dissemination and education to raise people's awareness of environmental protection. In addition, ministries, sectors as well as local authorities can apply to handle environmental problems which are still very "fragile" today.

Member Đặng Ngọc Nghĩa (Thừa Thiên - Huế Delegation): *The view of sustainable development must be throughout the Draft LEP (amended)*

Environment is a top priority issue, not only in our country but also in the world. Việt Nam has to face with greenhouse effects, climate change, natural disasters, storms, floods... This shows that the environment is affecting our lives every day, every hour.

The Draft LEP (amended) has many new provisions such as more decentralization of environmental management to the provincial level in EIA, discharge licensing... The approval of the Draft Law by the NA will contribute to limiting the environmental impacts to the people. We do not trade the environment for economics; and keep the living environment clean to ensure the health of the people. The view of sustainable development must be throughout in this law, "every family, every people", especially the leaders of every sector must be self-conscious to keep and protect the environment▪

HỒNG NHUNG

MONRE seeks to complete regulations on solid waste management

The Vietnam Environment Administration (the Ministry of Natural Resources and Environment) will be in charge of completing regulations on solid waste management in the amended Law on Environmental Protection, which will treat plastic waste as a natural resource, the Ministry of Natural Resources and Environment (MONRE) has said. Minister of Natural Resources and Environment Trần Hồng Hà said building policies and legislation for plastic waste was the Ministry's key task to implement the Government's Decision on launching the national action plan for marine plastic waste management.

Under the National Action Plan for marine plastic waste management, the ministry's agencies, units, civil servants, officials and employees will participate in recycling, treating and curbing plastic waste use. Based on these activities, the Ministry will work to change public awareness about the impact of environmental pollution by using disposable plastic products and non-biodegradable plastic bags in production activities and daily life.

It will call upon the public to give up the habit of using disposable plastic products and replace plastic bags with environmentally friendly products. The Plan focuses on four targets, including completing policies and legislation on plastic waste management; formulating, implementing and reviewing strategies, projects and some specific tasks; strengthening international co-operation on scientific research, technology application in plastic waste treatment; and raising awareness and changing behavior towards plastic use.

In terms of building policies and legislation of plastic waste, the Vietnam Environment Administration (VEA) will be in charge of reviewing and proposing measures to complete regulations on managing re-exported plastic waste or returning imported plastic scrap that does not meet the requirements of environmental protection. It will work with authorities to develop new environmental criteria for products and plastic bags derived from recycled plastic, products containing micro-plastic particles and nano-resin to prevent negative impacts on human health and the ecological environment. It will also propose regulations and roadmaps to ban the use of microplastics in the production of cosmetics, garments and fertilizers.

The Ministry will require the VEA to chalk out policies to limit single-use plastic production and consumption and to encourage organizations and individuals to classify plastic waste for waste collection and recycling; The use of plastic products such as single-use plastic bottles, cups and straws in offices or at conferences will be restricted. Waste classification will be implemented at offices.

The VEA will be in charge of publishing documents guiding the classification of daily-life solid waste at homes and offices.

In addition, the VEA needs to take measures to replace disposable plastic bags with eco-friendly ones at shopping malls and supermarkets by 2026. The VEA will work with Ministries and agencies to statistic and classify plastic waste to build a database on registration, declaration and management of solid waste▪

PHƯƠNG TÂM

▲ *The VEA will work with Ministries and agencies to statistic and classify plastic waste*

Comment on some new policies in the Law on Environmental Protection 2020

NGUYỄN THI
Ministry of Natural Resources and Environment (MONRE)

The Law on Environment Protection (LEP) in 2020 has just been passed by the Vietnam's National Assembly, including 16 chapters, 171 articles, effective from January 1st, 2022, in which many new and breakthrough policies such as the classification of the first projects have been specified. investment according to environmental criteria; regulations on environmental permits; import manufacturers extended responsibility for product recall and recycling; pay for the collection, transportation and treatment of domestic solid waste from households and individuals based on the volume or volume of sorted waste; regulations on response to climate change; Adopt best available techniques (BAT); prevention and response to environmental incidents; payments for natural ecosystem services; carbon market organization and development; liability insurance for damages caused by environmental incidents; cyclic economy; green shopping; exploitation, use and development of natural capital; green credit, green bonds; environmental audit.

1. Classification of investment projects according to environmental criteria, environmental impact assessment (EIA), environmental permit and environmental carrying capacity

Classification of investment projects according to environmental criteria: Although this content has been applied as a basis for determining the subjects of EIA under the LEP 2014. However, by the LEP 2020, the classification of investment projects according to environmental criteria has been scientifically specified in Article 28. Accordingly, projects are classified into: Investment projects with high risk of adverse impacts on the environment (Group I); Investment projects with risk of adversely affecting the environment (Group II); Investment projects with minor risk of adverse impacts on the environment (Group III); Investment projects with no risk of adversely affecting the environment (Group IV). This classification is based on 3 criteria: Size, capacity, type of production, business and service; Area of land use, land with water surface, marine area, scale of exploitation of natural resources; Sensitive factors for the environment.

For this classification, the Law has defined behavioral rules for each group to effectively control each category, meeting the project principle, the more likely the project has the risk of causing pollution, the more closely it is controlled as follows: For Group I investment projects, the Law stipulates more management measures such as: Preliminary environmental impact assessment (Article 29) in the pre-feasibility study stage of construction investment, proposing investment policy, request for approval of investment policy or approval for investment policy; EIA (Article 30) in the feasibility study process; Having environmental permit, if wastewater, dust, emissions are discharged into the environment, they must be treated, or hazardous waste must be managed before going into operation (Article 39).

For Group II investment projects, no preliminary environmental impact assessment is required; only requires EIA for some types of projects; For the remaining projects, if wastewater, dust, emissions are discharged into the environment, they must be treated, or hazardous waste must be managed, the environmental permit must be issued right in the project feasibility study stage.

For Group III investment projects, the EIA is not required; no EIA is required; environmental permit need to be issued by local level if generated wastewater, dust, exhaust gas.

For Group IV investment projects, it is required to register the environment (Article 49) if waste is generated and the Communal People's Committee receives the registration.

Environmental permits are specified in order to integrate all types of current environmental permits, certificates: wastewater discharge; exhaust gas emissions; Hazardous waste treatment; scrap import; hazardous waste source owner registration. With this integration, the majority of existing licenses as well as licensing procedures are reduced to help reduce social costs and costs of investors in investment, production, business and translation activities. At the same time, ensure uniform state management of the environment.

The LEP 2020 has set the environmental criteria to classify investment projects, from which appropriate environmental management tools for each type of project

are applied in each stage of project implementation. This is a scientific and unified approach which has been applied effectively by many advanced countries in the world.

Carrying capacity of the environment: The LEP 2020 stipulates the granting of environmental permits based on the environmental zoning, the environmental carrying capacity (Article 42). The key point in this regulation is reflected in Clause 2, Article 7, which stated: "Shall not approve EIA report appraisal results or grant environmental permit for new investment projects that discharge wastewater into surface water sources of no carrying capacity as announced by a competent state agency, unless the project owner has a plan for wastewater treatment that meets environmental technical regulations on surface water quality before being discharged into the receiving environment or there is a plan to recirculate, reuse so as not to generate more wastewater or in the case there is project of treating the pollution, improving, restoring, and improving the quality of the environment in the polluted area". With this regulation, along with the strict enforcement, the area of serious environmental pollution or environmental degradation will decrease, accordingly, people's right to live in a clean environment will be guaranteed efficiency.

2. Circular economy and solid waste management towards the application of recycling, resource circulation

Circular economy is a completely new content, defined to keep up with the current development trend when resources, fuels and raw materials are increasingly scarce and expensive. The transition from a linear economy (where resources and inputs go through the production process forming an output to consumption and end at the major disposal stage at landfills) to the circular economy in which "design, production, consumption and service activities reduce the extraction of raw materials, materials, extend product life, reduce generated waste and minimize negative impacts". Article 142 shows that the regulation focuses on saving fuel by improving design, applying advanced production technology, using recycled materials, so resources will be saving, recirculating.

Along with the regulation of circular economy, the LEP 2020 has many new regulations on solid waste management to gradually contribute to the formation of a circular economic model such as: Adequate application of the manufacturer's extended responsibility mechanism for product recall and recycling (extended producer responsibility - EPR) (Article 54); Payment of service charges for collection, transportation and treatment of domestic solid waste from households and individuals based on the amount of sorted waste (Article 79); Ordinary industrial solid waste is self-recycled, treated, co-treated, and energy recovered (Article 82), specifically as follows:

Provisions on recycling responsibilities of producers and importers (Article 54), although are stipulated in principle but have sufficient basis to fully apply the EPR mechanism, according to which "The producer or importer of products and recyclable packages must recycle according to the required rates and recycling specifications", have choices to carry out recycling by themself "or" make a financial contribution to the Vietnam Environment Protection Fund to support recycling products and packaging". The EPR mechanism is widely applied in Europe, ASEAN countries, Korea, Japan and Taiwan.

Applying this mechanism, Korea has effectively implemented resource savings, increasing the recycling volume by 75% for more than 10 years (in 2003: from 1,047,000 tons to 1,837,000 tons in 2017), of which in 2017: 92% of plastic waste is recycled (2003: 172,000 tons to 883,000 tons in 2017). In Taiwan, the amount of waste per capita tends to decrease gradually (from 1.15 kg/person in 1998 to 0.87 kg / person in 2014), but the rate of recycling tends to increase (increased from 3% in 1998 to 45% in 2015).

Paying for domestic solid waste collection and treatment service based on the sorted amount of waste, according to which: domestic solid waste must be classified into, solid waste that can be reused or recycled; food waste; other domestic solid waste. They must be stored in packages to be collected and disposed of. The gathering point, transfer station must have different areas to store the classified domestic solid waste, ensuring that classified wastes are not mixed together. Solid waste that is reusable, recyclable, and hazardous waste generated from households and individuals has been classified according to regulations without having to pay for collection, transportation and treatment services. For other types of solid waste, it must be stored in the packages prescribed by the People's Committee to be collected and recycled. Domestic solid waste collectors and transporters have the right to refuse collection and transportation of domestic solid waste from households and individuals that fail to classify and use packaging in accordance with regulations.

As can be seen, the Law has clearly defined regulations that allow local authorities to collect costs to pay for domestic solid waste through the sale of plastic bags (which can be understood that this bag is issued exclusively by the local government in the area, the price is calculated accordingly), people will put garbage in it, the bigger the bag, the higher the price. The collection unit only collects waste that is contained in this plastic bag. People who want to spend a little money must find ways to limit waste; waste classification (recyclable garbage is left separately for sale or transfer at no cost to collection service), only store non-recyclable waste in plastic bags distributed by the local government onions; arrange garbage neatly, minimize the volume to be stored in a plastic bag.

This policy has been successful in many countries such as Korea, Japan, Taiwan... In other countries, at first, people also objected to and refused to classify garbage, not use bags issued by the authorities and sneaky litter. However, after a while the collector does not collect the waste that is not contained in the bag according to regulations, the waste in some places starts causing pollution, forcing the community to speak up and taking measures to adjust the behavior. In parallel with this, the monitoring and handling of violations are strictly carried out, along with the propaganda and awareness raising of the community, after a few years, the separation of garbage at source is carried out as a habit of civilized and modern life.

Conventional industrial solid wastes that are self-recycled, treated, co-treated, and energy recovered are fully regulated, paving the way for recycling, reuse, energy recovery, building materials production and ground filling, will basically overcome the current common industrial wastes that are piled up, thrown away without a mechanism to recycle, reuse…

Thus, the above groundbreaking regulations, if applied methodically and systematically with high determination of all levels of government, especially local authorities and the support of citizens and enterprises will basically solve the current increase of solid waste landfills such as Nam Sơn and Đa Phước and contribute to forming a circular economy in Việt Nam.

3. Create a legal framework to promote response to climate change, meet the implementation of commitments in the CPTPP and EVFTA and international treaties on climate change

According to the LEP 2020, the contents of climate change adaptation (Article 90) are fully defined including impact assessment, vulnerability, risk, loss and damage; implementing climate change adaptation, disaster risk reduction, community-based and ecosystem-based climate change adaptation models; respond to sea level rise and urban inundation; building and implementing a monitoring and evaluation system for climate change adaptation activities, thereby enhancing the resilience of natural and social systems, minimizing the impacts of climate change and take advantage of opportunities brought by climate change. The contents of greenhouse gas emission reduction (Article 91) such as implementing the roadmap and methods of reducing greenhouse gas emissions according to international commitments; inventory of greenhouse gases, development of domestic carbon markets.

Regulations on organization and development of carbon markets are specified in Article 139, this is a new market tool that can, on the one hand, help us fulfill international commitments to reduce greenhouse gas emissions, on the other hand, it helps domestic enterprises to develop and apply low-carbon technology. The most important thing is to serve as a basis for developing domestic carbon markets, linking with international carbon markets to develop exchange of greenhouse gas emissions quotas and appropriate carbon credits in accordance with the provisions of law and international treaties to which the Socialist Republic of Việt Nam is a member.

The ozone layer protection provisions in Article 92 shall serve as the basis for the management of production, import-export, consumption and elimination of ozone-depleting substances, controlled greenhouse effects. within the framework of the international treaty on the protection of the ozone layer. In addition, other regulations aim to expand the scope of climate change responses implementation such as integrating climate change responses into strategies and planning (Article 96); building a national database on climate change (Article 97), implementing international commitments on climate change and protecting the ozone layer (Article 98). Thus, it can be seen that the LEP 2020 already has basic regulations to manage climate change response activities to adapt and mitigate the impacts of climate change, and at the same time taking advantage of development opportunities offered by the carbon market.

4. Regulations ensuring clear determination of mechanisms and responsibilities in the prevention and response to environmental incidents and environmental remediation after environmental incidents

Prevention and response to environmental incidents specified in Articles 121 to 129 clearly define the competence, responsibility, mechanism for prevention, preparation for environmental incident response and response

and environmental recovery after incidents on the basis of flexible application of incident, disaster response, search and rescue mechanisms. These contents continue to be regulated centrally and directly to prevent environmental incidents of establishments. Regulations serve as the basis for the implementation of planning, drills and development of the environmental incident response plan (the establishment's plan is mainstreamed, integrated, and approved with other incident response plans so as no new administrative procedures arise).

Responding to environmental incidents is done according to 4 incident levels, based on the scope of influence at the time of incident detection to determine the agency responsible for directing response: Environmental incidents grassroots level (by the establishment's response); District environmental incidents; Provincial environmental incidents; National level environmental incidents. The Law also clearly defines the person who directs the response to environmental incidents as the Chairman of the People's Committee at district and provincial levels, and the Chairman of the National Committee for Incident and Disaster Response and Search and Rescue. The environmental incident response leader establishes an environmental incident response command center and a working group to determine the cause of the environmental incident; appointing the commander and spokesperson for the environmental incident; mobilize forces, equipment and means to respond to the incident. This regulation aims to clearly define in the direction of response to the commanders at the scene, as well as to speak on environmental incidents to ensure professionalism, efficiency, synchronization and consistency.

The environmental recovery after the incident is carried out by organizations and individuals according to the environmental restoration plan approved by the People's Committee of the district, province and the MONRE corresponding to each incident level (for a grassroots incident, by the establishment itself within the establishment). In case the cause of the incident cannot be identified, the agency approving the plan will implement the plan for environmental recovery after the incident. The environmental recovery after environmental incidents must ensure the compliance with environmental technical regulations on ambient quality.

Organizations and individuals that cause environmental incidents have the responsibility to pay promptly and all costs for environmental incident response and environmental restoration; in case the State responds to environmental incidents and recovers the environment, the organizations or individuals causing environmental incidents shall have to reimburse the State for related expenses. For environmental incidents with unidentified causes or unidentifiable organizations or individuals causing environmental incidents, funding for environmental incident response and restoration shall be paid by the State.

Organizations, individuals and residential communities potentially affected by environmental incidents must be informed of the incident risks and environmental incident response measures of surrounding establishments; to be informed, participate and supervise environmental incident response activities. The start and end of the environmental incident response and restoration phase must be announced and publicized by the competent authority/person on the mass media for organizations, individuals and communities are known, participated and monitored.

These regulations have provided a mechanism to clearly define the responsibility for environmental incident response of the establishment and state agencies and have the feasible mechanism to respond to environmental incidents effectively, in a timely manner, thoroughly applying the principle that polluters have to pay but still demonstrates the role of the State in responding to environmental incidents.

5. Applying best available techniques (BATs), environmental audit are two effective tools in environmental control for both managers and investors

Application of BATs (Article 105) is a regulation that catches up with technology-based management methods to help improve production efficiency, energy saving waste treatment, increase proactivity in pollution control based on the use of best available technology, consistent with general economic conditions, as well as investment capacity, that means, actively controlling over time the entire production process, environmental treatment of the establishment. An environmental audit (Article 74) is a tool to help investors recognize the changes of input factors in the production process in order to propose measures to improve efficiency of production and waste treatment. Since then, both managers and investors will be more proactive in controlling environmental issues at the facility and also have tools to determine the level of pollution of the production facility based on the results of environmental audit. Accordingly, it will be easy to have measures to intervene, handle, or provide evidence to

claim damages caused by the acts of causing environmental pollution and proactively prevent, respond to, and remedy the environment caused by environmental incidents. Although the regulations applying the two tools mentioned above depend on the application roadmap (for BAT) and encourage production, business and service establishments to carry out environmental audits by themselves, but this provision will be an important basis for proactively and effectively implementing environmental control.

6. Economic and financial tools and the formation of effective and practical environmental protection resources under the new mechanism

Payment for natural ecosystem services (Article 138) means the payment by an organization or individual using natural ecosystem services to an organization or individual that provides value of the environment and landscape created by natural ecosystems to protect, maintain and develop natural ecosystems.

Green procurement (Article 146) is regulated to keep pace with the world's trends in the procurement and consumption of environmentally friendly products and services in order to minimize the adverse impact on health and the environment.

Exploitation, use and development of natural capital (Article 147) is an important basis for sustainable exploitation, protection and efficient conservation of land, water, forests, aquatic resources, minerals, fossil fuels, natural energy sources and natural ecosystem services.

Green credit (Article 149), Green bonds (Article 150) are not defined in the Law, but through the green credit, it can be seen that green credit, green bonds are loans for projects related to environmental protection, climate change adaptation, resource efficiency, energy saving.

These new regulations will open a mechanism to form and access capital for investment in green projects; activities and projects to maintain, protect, conserve and restore natural ecosystems, initially supporting the transition to a low-carbon economy, a green economy, ensuring rapid, efficient and sustainable economic development, balancing human development needs and interests with the requirement of protecting nature; bring people live in harmony with nature.

7. Mechanism for ensuring compliance with regulations of the LEP, ensuring feasibility, strictness and meeting requirements of new generation FTAs in general as well as CPTPP, EVFTA in particular

Strict compliance with the LEP is always in place, in which many regulations on environmental protection are highly appreciated, adjusting social relationships. However, compliance with regulations on environmental protection in our country remains low. Facing increasingly polluted environment; the decline of the ecosystem, complicated developments of climate change, at the same time meeting the constitutional requirement of the People's right to live in a healthy environment and increasing compliance with environmental laws of FTAs (such as CPTPP and EVFTA), it requires that the strict enforcement of the LEP is more urgent than ever. Therefore, throughout the

▲ *People have the right to live in a healthy environment*

LEP are the regulations to ensure the feasibility as well as the mechanism to effectively implement, a few important institutions such as:

Regarding the functions and state management organization on the environment: It can be seen that the Law has sharply reduced fragmentation in environmental management, especially in solid waste management, in which the MONRE is the leading agency. Eliminate the fragmentation in the environmental license level, whereby the MONRE is only authority to grant the environmental license, which includes the granting of permits for discharging wastewater into water sources and discharging wastewater into irrigation works. At the same time, the system of state agencies on environmental protection will continue to be consolidated in a streamlined direction. This is an important basis to organize the implementation of the LEP effectively, synchronously and strictly.

Regarding environmental inspection and supervision: In recent years, inspection activities have been implemented in a focus manner, then with the provisions of the Law, inspection activities will continue to be implemented strictly, increased supervision for project groups or facilities, production and business according to the above project classification.

Regulations on project classification according to environmental criteria and regulations applying this classification are a measure to individualize projects and facilities with the risk of causing environmental pollution according to each level to take appropriate and effective measures to avoid indiscriminating which will destroy investors' efforts to develop production, business, services as well as environmental protection, thereby improving the feasibility of regulations.

Promoting the socialization of environmental protection activities is the biggest breakthrough in the Law to thoroughly implement the principles of environmental protection, which is the responsibility and rights of each individual, organization, community, and state agency. The State only acts as an agency to promulgate and enforce policies and laws; is the arbitrator, is the agency handling the violation. Self-management of environmental protection is given to the residential community, such as monitoring the classification and littering of domestic waste; supervise the environmental protection of projects, production, business and service establishments and the Ministry has a mechanism to receive, process and respond to feedback and recommendations of organizations, individuals and communities on the activities that causing environmental pollution in particular and violating the law on environmental protection. The most important socialization mechanisms are those related to finance, economy and new tools in environmental protection, including: payment mechanism for the collection and treatment of domestic solid waste is based on the amount of waste; Producer and importer's open responsibility mechanism for products and packaging after use (EPR mechanism); Deposit mechanism for environmental protection; Payment mechanism for environmental incident response, environmental recovery after incidents; Compensation mechanism for environmental damage; Liability insurance for damages caused by environmental incidents; Payments for natural ecosystem services... are mechanisms that directly affect the pocket of people who exploit and use the environment, causing environmental pollution, and are also regulations to encourage investment in environmental rehabilitation and restoration, nature conservation... will be an important mechanism to fundamentally change perceptions and behaviors toward environment of each individual and organization while also promoting the implementation of environmental protection, with resources to prevent, respond, overcome, improve and restore the environment.

Thus, it can be seen that the LEP 2020 has amended and supplemented the most basic, substantial and practical issues, basically meeting the requirements and expectations of environmental protection, exploitation and conservation of nature in sustainable manner in the future. Simultaneously it catches up with the trends of environmental protection, sustainable development of countries around the world and international commitments to which Việt Nam is a member. However, these new regulations do not come into effect right away but need continuous enforcement efforts for many years to see results such as the payment mechanism for collection and treatment services of domestic solid waste treatment based on waste quantity or EPR mechanism. In the face of the strong economic development, population growth and urban development, the pressure on the natural and environment is increasing. More than ever, the application of these new environmental protection regulations is more and more necessary and requires unlimited support from each citizen, community; the uninterrupted determination of the Government, but the key role is that of the head to gradually improve the living environment, providing a balanced and harmonious development between human and nature▪

New points about economic instruments in the Law on Environmental Protection 2020

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The Law on Environmental Protection (LEP) 2020 has many new points on the use of economic instruments for environmental management to meet the Party's major guidelines, especially the "perfecting socialist-oriented market economy institution" by using more and more realistic economic instruments for environmental management, gradually moving to applying the basic principles of the market in environmental management, of which two basic principles are: Polluter-pays; Beneficiary-pays.

In fact, the above principles have been applied in the past, but the LEP 2020 has new, additional and more complete points to meet the operational requirements of the market economy institution, provided that the behavior of the subject polluting the environment shall pay to remedy that pollution, the business activities that benefit from the environment must be responsible for the environment, that is to pay to compensate the environmental service providers.

New points about economic instruments in the amended LEP:

Firstly, right from the title of Chapter XI, the phrase "economic instruments" is used and there is a section on "economic instruments for environmental protection" to reflect the provisions in the chapter with economic instruments to be used.

Secondly, about environmental protection taxes and fees. Environmental protection taxes, which have been included in the LEP 2020 as the basic principles, but still respect not to change the laws on taxation and environmental protection that have been implemented. New points on the environmental protection taxes stipulate that instead of the current provisions in the Law on Environmental Protection Taxes, the tax is "indirect", only collected by product, now the amendment does not use the phrase "indirect", clearly stating that taxes on products causing negative impacts on the environment or environmental pollutants aiming at applying to behavior of production and business activities causing damages to the environment.

For environmental protection fees, a new point compared to the LEP 2014 is that it clearly stipulates and expands the subject of fees, but still ensures the principles and provisions of the Law on Fees and Charges issued.

The LEP 2020 also clearly defines the role of the Ministry of Natural Resources and Environment, as "taking the lead in assessing the level of environmental pollution, the greenhouse effect of wastes or products, goods when used, causing negative impacts on the environment to propose a specific list of payers of environmental protection taxes and fees". This will ensure the suitability of the environmental management agency in regulating the polluting behavior of organizations and individuals through the Tax Fee instruments.

Thirdly, about the environmental protection deposit, it is added to the LEP 2020 as a separate article, along with the provisions on environmental protection deposit in the previous "mining" content, adding two types of environmental protection deposit, these are "waste landfill" and "scrap import from abroad for use as raw materials for production". The addition of this instrument will have the effect of attaching responsibility for landfill and scrap import from abroad which will be financially bound or equivalent to being accountable from beginning for environmental protection.

Fourthly, about payments for natural ecosystem services. This is a new provision based on the BPP principles and practice for a fairly successful application of payments for forest ecosystem services. The LEP 2020, in addition to the

▲ *The LEP 2020 has a provision on the environmental protection deposit with the "waste landfill" activity*

provisions on payment for forest ecosystem services under the provisions of the Law on Forestry, adds three additional types of natural ecosystem services that have to pay for environmental services: Wet-land ecosystem services; Marine ecosystem services; Rocky mountain, cave and geopark ecosystem services. In which, it is specified that only businesses of tourism, entertainment, aquaculture and carbon absorbtion must pay for environmental services. With the contents specified in this Article, organizations and individuals must pay for ecosystem services when conducting business.

Fifthly, about organization and development of the carbon market. This is an economic instrument based on the principle of "win-win solution" when participating in the carbon market between the buyer and the seller. Currently in the world, this type of market has been formed and developed, in Việt Nam we have participated in a commitment to reducing carbon with global efforts to reduce greenhouse gases, but it is not presented by Law, so this is a new provision presented in the LEP 2020.

Sixthly, about liability insurance for compensation for damages caused by environmental incidents. Although the LEP 2014 has a provision on "Liability insurance for environmental damages", the LEP 2020 amended this in detail and more clearly as "damages caused by environmental incidents". These risks are not foreseen and business enterprises are encouraged to buy insurance so that when risks occur, insurance can reduce the level of damages to businesses, on the other hand, the awareness of environmental protection of businesses is also raised when participating in buying insurance.

The LEP 2020 has been supplemented, amended and improved with economic instruments for environmental protection to meet practical needs to apply to behavior of organizations and individuals that cause environmental damages and benefit from the environment based on market principles. Besides, other financial mechanisms have been completed and added in the LEP 2020 such as environmental protection fund, green procurement, green credit and green bonds to create a complete mechanism towards all business activities in the market and people are aware and responsible for environmental protection through economic instruments and financial mechanisms■

In accordance with the provisions of the Law on Public Investment, the Law on Investment in the form of public-private partnership, public investment projects, and investment projects in the form of public-private partnership, when considering the investment policy decision, must implement preliminary environmental impact assessment (EIA) in accordance with the Law on Environmental Protection (LEP). The Law on Investment also stipulates that the investment project dossier under the competence of the National Assembly, the Prime Minister to decide on investment policies, when applying for investment policy approval, must have the content "preliminary EIA". Along with that, to specify subjects, contents of preliminary EIA in laws relating to investment, complete and synchronize legal provisions on investment and environmental protection, the Ministry of Natural Resources and Environment has presided over and coordinated with relevant ministries and agencies to develop a Draft Decree on preliminary EIA. The Draft Decree is currently being submitted to the Prime Minister for consideration and approval.

With the actual requirements of considering the contents related to environmental impacts of investment projects, it is necessary to enhance the quality of prevention work in environmental protection; identify projects with potential negative impacts on the environment and preliminarily determine the scope and scale of environmental impacts of investment projects. Also, ensure the EIA in the later period is focused on the most important environmental impacts of the projects, helping save time and money for the EIA implementation... drafting a decree on preliminary EIA is necessary and is an objective practical requirement.

The Draft Decree stipulating preliminary EIA is developed on the legal basis of the LEP, the Law on Public Investment 2019; The Law on Investment 2020, the Law on Investment in the form of public-private partnership 2020, the Law amending and supplementing a number of articles of the Law on Construction 2020. In addition, the Draft Decree is also developed on the basis of selective inheritance of Government's Decree No. 40/2020/ND-CP dated 6th April 2020, detailing the implementation of a number of articles of the Law on Public Investment and Government's Decree No. 40/2019/ND-CP dated 15 May 2019 amending and supplementing a number of articles of the decrees detailing and guiding the implementation of the LEP. The results of implemented preliminary EIA are parts of the pre-feasibility study report or investment project proposal. The contents of preliminary EIA are considered and appraised by competent state agencies concurrently with the pre-feasibility study report, investment policy proposal report, application dossier for approval of investment policy, application dossier for the Investment Registration Certificate to reduce time and enhance the quality of appraisal.

Also, the Draft Decree is proposed to apply to agencies, organizations and individuals participating in or related to activities of investment, public investment, public-private partnership investment, construction investment and issuance of investment registration certificates, except for cases of issuance of investment registration certificates at the

Detailed provisions on subjects, contents of preliminary environmental impact assessment

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request of investors. The Draft Decree has 3 Chapters and 7 Articles: General provisions; Preliminary EIA; Terms of enforcement. Subjects required to implement preliminary EIA are projects with high risk of adverse environmental impacts, including: Projects in the form of production, business or service having a risk of environmental pollution with large scale and capacity; Projects providing hazardous waste treatment services; Projects importing scrap from abroad for use as raw materials for production; Projects in the form of production, business or services that are likely to pollute the environment with medium scale and capacity but in areas having environmentally sensitive factors; Projects not in the form of production, business or service having a risk of environmental pollution with large scale and capacity, but in areas having environmentally sensitive factors.

In addition, projects using land, having land with water surface and having marine areas with a large scale or medium scale but in areas with environmentally sensitive factors; Projects exploiting minerals and water resources with large scale and capacity or with medium scale and capacity but in areas with environmentally sensitive factors; Projects requiring conversion of land use purposes with medium scale or higher but in areas with environmentally sensitive factors; Projects requiring large scale migration and resettlement are also subject to preliminary EIA. The time of preliminary EIA is conducted in the prefeasibility study stage of construction investment, proposing investment policy, and requesting approval of investment policy for investment projects subject to the request for decision or approval of investment policy in accordance with the law on investment, public investment, public-private partnership investment, construction.

According to the new Law on Environmental Protection approved by the National Assembly on 17th November 2020, the contents of the preliminary EIA take effect from 1st February 2021. Therefore, agencies, organizations and individuals proposing investment projects subject to the abovementioned contents shall implement preliminary EIA. The contents of a preliminary EIA are reviewed by a competent state agency concurrently with the application dossier for the issuance of decision or approval of investment policy. The contents of the preliminary EIA include: Assessing the suitability of the location of investment projects with the national environmental protection strategy and planning, environmental protection contents in regional planning, provincial planning and other relevant plans; Identifying and forecasting the main environmental impacts of investment projects based on the scale, production technology and location; Identifying the environmentally sensitive factors of the areas where investment projects are implemented according to the location options (if any); Analyzing, assessing and selecting options on scale, production technology, waste treatment technology, location of investment projects and measures to minimize environmental impacts; Identifing the major environmental issues and scope of environmental impacts that need to be considered in the EIA implementation process.

According to the Draft, in cases where an investment project has been approved by a competent authority for the EIA report, or confirmed by the registration of the environmental protection plan before the effective date of this Decree, preliminary EIA is not required. Along with that, an investment project that has implemented preliminary EIA and has been approved by a competent authority for investment policy is not required to implement preliminary EIA when applying for investment registration certificate; An investment project whose application for decision or approval of investment policy has been received by a competent authority, or is issued with an investment registration certificate before the effective date of this Decree shall continue to be settled according to the provisions of law at the time of receipt, except where agencies, organizations or individuals request to comply with the provisions of this Decree.

Obviously, preliminary EIA is a very necessary step to consider before making an investment decision or issuing investment license for a project. Hopefully, when the Decree comes into effect, it will remove difficulties for investors, ensure the unity of the legal system on investment - environment and help identify environmental problems early from development projects, ensure the pollution prevention principle and the common goals of sustainable development■

Environmental audit institution in the Law on Environmental Protection 2020

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The Law on Environmental Protection (LEP) 2014 recognized the environmental audit (EA) as an incentive instrument for the implementation of environmental management (in Clause 7, Article 6). However, to date, there has been no guiding document regarding this content for implementation. In fact, the EA has been implemented in a number of projects and enterprises, but mainly integrated in financial statement audits, compliance audits, energy audits without a proper EA.

From the results of implementation in some units as well as the correct assessment of the role and significance of the EA, also from the study of experiences in some countries around the world, the research team has proposed to develop a separate article on the EA. On 17th November 2020, the National Assembly of the Socialist Republic of Việt Nam passed the LEP 2020 with 171 Articles of which Article 74 has provided more specific and detailed EA content for production, business and service establishments and assigned the Minister of Natural Resources and Environment to provide technical guidance on environmental self-audit activities of production, business and service establishments. In addition, the LEP 2020 also stipulates the role of the State Audit Office of Việt Nam in the implementation of environmental management audit (specified in Article 160).

The EA institution in the LEP 2020 includes the following contents:

Firstly, the LEP has provided an overview and complete EA concept for production, business and service establishments. The EA is a systematic and comprehensive review and assessment of the efficiency of environmental management and pollution control of production, business and service establishments. Comparing with the EA concepts that some countries and international organizations are using today, it shows that the above concept is appropriate, fully covers the main content and purpose of EA.

Secondly, the EA implementation at production, business and service establishments includes 2 contents: First is the use of energy, chemicals, raw materials, scraps imported from abroad as raw production materials and second is pollution control and waste management. With the above mentioned content, it can be understood that EA implementation at production, business and service establishments includes: thematic audit (energy, chemicals, fuels, raw materials, wastes), transport audit (imported scraps) and audit of compliance with policies and legal provisions on environmental protection.

Thematic audit, also known as technical audit: will help each production, business and service establishment improve the efficiency of environmental management and increase efficiency in the use of energy, water and raw materials, and have suitable solutions to treat wastes generated in the production process. Requirements for input information such as energy, chemicals, raw materials and output information such as products and generated wastes are very important and necessary for thematic audit implementation through physical balance calculation method.

Transport audit: the implementation will help production, business and service establishments identify the causes of loss of raw materials, scraps and environmental pollution during transportation from warehouses, ports... to factories. The implementation of this content also requires full information about the transport means, distance, plan, equipment and technical equipment…

Audit of compliance with policies and legal provisions on environmental protection: information on the operation situation, the environmental record are the necessary input sources. The experience of some countries shows that in order to implement audit of compliance with policies and legal

▲ *Production, business and service establishments have to implemente the EA on pollution control and waste management*

provisions on environmental protection, it is necessary to have full information about the environment of enterprises through access to records or through surveys, collecting information by questionnaires and actual observations in enterprises.

Thirdly, the State's incentive policies for production, business and service establishments to implement environmental self-audit are issued without mandatory requirements. Such provisions aim to create favourable conditions for production, business and service establishments to actively implement. Each production, business and service establishment can choose by itself: Implement environmental self-audit if there are sufficient conditions of human resources, technical equipment; or hire a consulting unit with full functions, duties and other conditions to advise and prepare the establishment's EA report. The above provisions are intended to encourage enterprises to implement EA and choose the optimal implementation plan, in accordance with their own conditions and capabilities. The ultimate goal is to realize by themselves the importance and role of the EA in environmental management and production and business plan.

Because the EA is a new institution, so to ensure the guidance on implementation of enterprises, the Ministry of Natural Resources and Environment is tasked with developing the EA guidelines for production, business and service establishments. If this guiding document is issued, it will be the basis for establishments to make EA reports in accordance with features and characteristics of each production sector and area. The content of the guiding document includes the orders, procedures, steps and methods necessary for EA implementation at the enterprises as well as the general forms in the EA report.

The provisions on EA in the LEP 2020 is a major step for better environmental management at the enterprises, helping enterprises have more options with more solid legal basis in the implementation of environmental management at the enterprises▪

The Directive of the Prime Minister on strengthening solid waste management

On 1st December 2020, Prime Minister Nguyễn Xuân Phúc signed to issue Directive No. 41/CT-TTg on a few urgent measures to strengthen solid waste management.

The Directive clearly stated that over the past time, environmental protection work has been paid attention by the Communist Party and State and has achieved many important results. However, environmental pollution caused by solid wastes continues to increase, affecting human health and the sustainable development of the country. In some localities, the storage, gathering, transfer and treatment of domestic solid wastes (Hereinafter referred to as wastes) have not met the environmental protection requirements, leading to the appearance of environmental "hot" spots, causing the risk of social insecurity and unsafety.

The cause of the above situation is that local authorities have not paid adequate attention to the solid waste management in their areas; mechanisms and policies to mobilize resources from the society to participate in solid waste management, especially wastes, are still inadequate; the investment in waste collection, storage, gathering, transfer, transportation and treatment infrastructure has not met the actual situation; the classification of wastes at source just stopped at a pilot level in some localities, models have not been reviewed, evaluated and replicated; communication activities to raise awareness of the community have not been implemented regularly and continuously. In some localities, wastes are still mainly disposed of by landfill method or by small incinerators that do not meet the requirements of environmental protection while current regulations on treatment unit prices have not attracted investors to apply advanced and modern technologies. In addition, the state management over the past years has had an interference and overlap between Central and local agencies, which is not consistent with the principle of assigning only one focal agency to be responsible. The above-mentioned issues have been reducing the effectiveness and efficiency of solid waste management, especially waste management.

To overcome the limitations and shortcomings in the current solid waste management, also proactively prevent and minimize environmental pollution, create a fundamental change in solid waste management, in which focus on waste classification at source; in case of ineligible waste classification at source, priority should be given to the investment in treatment facilities with concentrated classifying stage before treatment; apply modern, advanced waste treatment technologies, make use of useful ingredients in wastes as raw materials, fuel, production materials, minimize the generation of secondary wastes that need treatment, the Prime Minister instructed:

Ministry of Natural Resources and Environment (MONRE): Review and revise legal documents according to its compe-

tence or submit to competent authorities for promulgation of documents related to solid waste management, pursuant to the Law on Environmental Protection (amended), develop, complete and issue technical and economic norms on waste collection, transportation and treatment and regulations on methods of pricing waste treatment services; expeditiously formulate and submit to the Prime Minister for consideration and approval of the national environmental protection plan in the first quarter of 2022, including contents of the orientation of the location and size of the concentrated solid waste and hazardous waste treatment areas at regional and national levels.

Strengthen solid waste treatment to ensure environmental sanitation

Ministry of Construction: Assume the prime responsibility for, and coordinate with the MONRE to urgently develop technical standards and regulations on the design of the solid waste collection systems in accordance with the classification of wastes at source of commercial centers combined with apartments, condominiums combined with offices ... to plan and arrange waste gathering and transit points in urban centers and rural concentrated residential areas to ensure environmental sanitation.

Ministry of Finance: Prioritize the balance and allocation of environmental protection expenditures to support activities of classifying wastes at source, collecting, transporting and treating wastes in the annual budget plan. Focus on allocating funding to support localities that cannot balance their own budgets to completely handle environmental pollution at landfills seriously polluting the environment in public areas.

Chairpersons of the People's Committees of the provinces and Centrally-run cities: Formulate and promulgate incentive mechanisms and policies to attract investment in waste treatment projects with advanced and modern technologies; simplify procedures for investment preparation, construction and operation of waste treatment facilities; review and assess existing waste treatment technologies in the area, request treatment facilities to have a roadmap to renew waste treatment technologies to meet environmental protection requirements, to be implemented before 2023; adopt a roadmap to gradually increase waste collection, transportation and treatment service prices in order to gradually reduce support from the State budgets; not restrict the collection and transportation of conventional industrial solid wastes and hazardous wastes from other localities to their respective localities for treatment according to regulations. Specify the form and amount of money that households and individuals have to pay for the collection, transportation and treatment of domestic solid wastes based on the weight or volume of wastes classified according to provisions of Law on Environmental Protection (amended), aimed at minimizing wastes generated and promoting the classification of wastes at source.

Provinces and Centrally-run cities, including Hà Nội, Hồ Chí Minh City, Đà Nẵng, Hải Phòng, Cần Thơ: Urgently invest in or put into operation waste treatment plants in the direction of modern, environmentally friendly technologies; strive to reduce the percentage of wastes treated by direct landfill method by the end of 2025 to below 20%. Other provinces: Strive to reduce the percentage of wastes treated by direct landfill method by the end of 2025 to below 30%; for rural areas, it is necessary to maximize the use of organic wastes for reuse, recycling, composting or self-treatment in households into compost; Local authorities: Also need to create favorable conditions for the Vietnam Fatherland Front and socio-political organizations to participate in, criticize and supervise solid waste management and treatment activities; actively provide information, promote the role of the media in solid waste management activities▪

CHÂU LONG

▲ *Strengthen solid waste treatment to ensure environmental sanitation*

Prime Minister instructs to strengthen the management and control of invasive alien species

On 8th December 2020, the Prime Minister issued Directive No. 42/CT-TTg on strengthening the management and control of invasive alien species. The Directive clearly states that the management and control of invasive alien species is a consistent view of Việt Nam in practice to maintain ecological balance, conserve biodiversity, protect the environment and people's health, contributing to sustainable development of the country. Over the past time, the legal system of management and control of invasive alien species of Việt Nam has been gradually improved, meeting practical requirements, in accordance with the international conventions that the Socialist Republic of Việt Nam is a member. The Ministries, sectors and local authorities have taken many drastic and consistent solutions to prevent and control invasive alien species.

However, recently, a number of invasive alien species appear in some localities, with the risk of negatively affecting biodiversity, environment, socio-economy, especially in the field of agriculture, forestry and fishery; the risks of illegally importing, farming and spreading invasive alien species in Việt Nam are quite high. The main reason is due to insufficient awareness of the harmful risks of illegally importing, farming and releasing invasive alien species; in some localities, the control of alien species has not been given adequate attention, lack of initiative, new cases are handled with lack of consistent involvement of Law enforcement agencies to control invasive alien species.

In order to promptly prevent and control invasive alien species, the Prime Minister requests Ministers, Heads of ministerial-level agencies, Heads of Governmental agencies, Chairmen of People's Committees of provinces and centrally-run cities to direct the strict implementation of the legal provisions on farming, developing and trading invasive alien species; strengthen the management and control of invasive alien species according to their assigned competence, functions and tasks.

The Ministry of Natural Resources and Environment (MONRE) shall assume the prime responsibility and coordinate with the Ministries, sectors, local authorities and concerned agencies in urgently summarizing and evaluating the results of the implementation

▲ *Some aquatic invasive alien species in Việt Nam*

of the project on preventing and controlling invasive alien species in Việt Nam up to 2020 according to Decision No. 1896/QD-TTg dated 17th December 2012 of the Prime Minister; plan to prevent and control invasive alien species in Việt Nam in the coming time; review and evaluate legal provisions and propose plans to supplement and perfect the system of legal documents on control and eradication of invasive alien species to meet practical needs; issue guidelines for assessing the risks of invasive alien species; update, supplement and promulgate the List of invasive alien species; coordinate with Ministries, sectors and local authorities in strengthening inspection, investigation, and enforcement of legal provisions on prevention and control of invasive alien species; guide the organization of propaganda, dissemination and awareness raising activities on invasive alien species; develop and distribute propaganda materials, organize training courses, guide the identification of invasive alien species.

The Ministry of Agriculture and Rural Development shall assume the prime responsibility for and coordinate with ministries, sectors and local authorities in enhancing measures to control invasive alien species and alien species having invasive risks in agricultural, forestry and fishery production; strictly manage activities of farming alien species having invasive risks; direct and guide the application of measures to control and eradicate invasive alien species in agricultural, forestry and fishery production.

The Ministry of Public Security shall assume the prime responsibility for, and coordinate with the ministries, sectors, local authorities in taking measures to combat, prevent and strictly handle illegal acts in importing, spreading, farming and developing, transporting and trading invasive alien species; The Ministry of Industry and Trade shall direct the Market Surveillance Agency to coordinate with relevant specialized agencies to strengthen the inspection and handling of illegal trading invasive alien species in accordance with the Law; The Ministry of Information and Communications shall assume the prime responsibility and coordinate with the Voice of Vietnam, Vietnam Television and relevant agencies in strengthening propaganda and popularization in the media about the harmful effects of invasive alien species and legal provisions on control of invasive alien species for people's information and implementation; assume the prime responsibility and coordinate with ministries, sectors, local authorities in strengthening the prevention and handling of acts of taking advantage of the provision and use of the Internet and online information for the purposes of advertising, propagation and sale of goods and services related to invasive alien species; The Ministry of Science and Technology shall promote research and application of scientific and technological advances in controlling and eradicating invasive alien species; organize the implementation of scientific research projects applying biological control measures and integrated solutions to control and eradicate invasive alien species, determine the transmission paths of invasive alien species due to the impacts of climate change; The Ministry of Finance shall direct the Customs forces (especially the border customs force) to proactively coordinate with quarantine units to strengthen inspection and control, ensuring effective prevention of intrusion of invasive alien species; assume the prime responsibility for, and coordinate with the MONRE and relevant agencies in developing HS codes to control illegal import of species in the List of invasive alien species; allocate recurrent funding to ministries, ministerial-level agencies and centrally-run agencies according to their assigned functions and tasks to control invasive alien species; The Voice of Vietnam, Vietnam Television and press agencies shall strengthen propagation and dissemination of information on the harmful effects of invasive alien species, the legal provisions on control of invasive alien species to people for information and implementation.

The People's Committees of provinces and centrally-run cities shall urgently review and evaluate the results of the implementation of the project on prevention and control of invasive alien species in their areas in accordance with Decision No. 1896/QD-TTg of the Prime Minister; plan to strengthen prevention and control of invasive alien species in their areas in the coming time; strengthen the inspection and supervision of the implementation of legal provisions on control of invasive alien species and alien species having invasive risks in the areas; implement Law propaganda and dissemination and awareness raising for the community about not importing, trading, farming, developing and releasing invasive alien species; proactively inform and report promptly when detecting or spreading out invasive alien species; conduct investigation and assessment of invasive alien species in the areas and take measures to control and eradicate▪

Some new points in the provisions on the List of scrap permitted for import from overseas for use as production materials

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The import and use of imported scrap if not strictly managed and controlled will lead to the risk of some organizations and businesses taking advantage of the import of scrap to bring waste into Việt Nam, adversely affecting human health and the environment. Therefore, the review and adjustment of the List of scrap permitted for import from overseas for use as production materials is necessary to strictly control imported scrap to meet environmental protection requirements, as well as strengthen the collection and recycling of scrap in the country, minimizing waste generated from production and business activities.

Over the past years, the demand for import of scrap as raw materials in the steel, paper, plastic, and cement industries... tends to increase. According to the General Department of Customs, the total volume of imported scrap in 2017 increased 2 times compared to 2016, only in the first 5 months of 2018, the volume of imported plastic scrap increased sharply, nearly 2 times as much as in 2017. The cause of the increase in the volume of imported scrap in recent years is due to the strong economic growth of Việt Nam, the development of industrial production, leading to the increasing demand for use of scrap as production materials. While the domestic supply is in short, businesses increasingly import for production. Therefore, there have been a number of businesses looking for ways to "dodge the law" to illegally import scrap that are ineligible to meet technical regulations on environmental protection for imported scrap into Việt Nam for use as production materials, leading to the risk of environmental pollution.

Therefore, in order to improve the effectiveness of the state management of environmental protection for imported scrap for use as production materials, the Ministry of Natural Resources and Environment (MONRE) has cooperated with line ministries, sectors and local authorities to focus on improving, supplementing, developing and submitting to the Government, the Prime Minister, or promulgated according to their authority legal documents on environmental protection in import of scrap in the direction of strictly stipulat-

▲ *Decision No. 28/2020/QD-TTg stipulates a number of types of scrap that are not permitted for import from overseas for use as production materials, including waste and scrap plastic from styrene polymers*

ing environmental protection conditions for facilities using imported scrap as production materials; not licensing facilities importing scrap for only preliminary process, process of and reselling raw materials. MONRE also reviewed, amended, supplemented and promulgated new national technical regulations on environment for imported scrap for use as production materials to strictly manage the quality and types of imported scrap. In particular, MONRE has developed and submitted to the Prime Minister for promulgation of Decision No. 28/2020/QD-TTg dated 24th September 2020 on the List of scrap permitted for import from overseas for use as production materials (Decision No. 28/2020/QD-TTg).

Decision No. 28/2020/QD-TTg is developed on the basis of ensuring a number of objectives and principles to strictly implement the direction of the Prime Minister in Directive No. 27/CT-TTg on a number of urgent solutions strengthening the management of import and use of imported scrap as production materials as well as regulations on environmental protection, ensuring the consistency among relevant legal documents; proactively preventing, controlling types and quality of imported scrap and requirements in environmental protection; consistent with international practices and commitments in import and use of imported scrap as production materials as well as practical conditions of Việt Nam. The List of scrap permitted for import from overseas for use as production materials has met the requirements and criteria such as: Removing all types of scrap that are likely to pollute the environment in import of scrap (especially scrap recovered from domestic and agricultural waste...); no import of scrap with low recycling efficiency (Likely to pollute the environment, generate hazardous waste in the process of being used as production materials); limiting scrap that has little demand for import, or even not imported in recent years; limiting and proceeding to stop importing scrap that domestic raw materials can satisfy in the coming time.

In the Decision No. 73/2014/QD-TTg dated 19th December 2014 of the Prime Minister on the List of scrap permitted for import from overseas for use as production materials, there are 36 types of scrap permitted for import into Việt Nam. Decision No. 28/2020/QD-TTg is adjusted that includes only 23 types, which are permitted for import inherited from Decision No. 73/2014/QD-TTg. However, Decision No. 28/2020/QD-TTg has removed a number of types of scrap that were permitted for import for use as production materials such as: Gypsum (HS code: 2520.10.00); Chemical elements doped for use in electronics, in the form of discs, wafers or similar forms (HS code: 3818.00.00); Waste and scrap of plastics of polystyrene (PS): Soft, not firm (HS code: 3915.20.10); Waste and scrap of plastics of polyvinyl chloride (PVC): Soft, not firm (HS code: 3915.30.10)... Adjustment of the List of scrap permitted for import is aimed at eliminating some types of scrap that do not have import demand, enhancing environmental protection for import of scrap, making use of domestic raw materials and promoting technology transformation of production and recycling facilities.

In addition, Decision No. 28/2020/QD-TTg also stipulates the roadmap for some types of scrap permitted for import from overseas for use as production materials until 31st December 2021, including: Recovered paper or paperboard (waste and scrap): Others, including also unsorted waste and scrap (HS code 4707.90.00); Granulated slag (slag sand) from the manufacture of iron or steel (blast furnace slag includes: granulated slag, slag sand from the manufacture of cast iron, iron, steel) (HS code 2618.00.00). The application of the roadmap will also give some businesses time to prepare and improve their capacity to invest in infrastructure, machinery and equipment to utilize domestic raw materials and minimize risks of polluting the environment in the process of importing and using these types of scrap.

Additionally, the Decision also has a transitional clause (Article 3), which clearly states the types of scrap permitted for import from overseas according to the Certificate of eligibility for environmental protection in import of scrap from overseas for use as production materials issued by the competent authority in accordance with the legal provisions to continue to import until the Certificate expires (including all types of imported scrap under Decision No. 73/2014/QD-TTg). This regulation aims to minimize the impact of the adjustment of the List of scrap permitted for import on the operations of facilities that use scrap as production materials and have been issued a Certificate of eligibility for environmental protection in import of scrap from overseas for use as production materials by the competent authority and currently importing scrap in accordance with Decision No. 73/2014/QD-TTg.

It can be said that the issuance of Decision No. 28/2020/QD-TTg has contributed to perfecting the legal corridor in environmental protection for imported scrap from overseas for use as production materials, minimizing the import of scrap that does not meet the requirements, regulations and standards on environmental protection into Việt Nam. This also contributes to promoting manufacturing businesses to transform, replace with advanced and environmentally friendly technologies, adjust raw material needs, increase the use of domestic scrap sources and promote the scrap recycling industry in the country▪

Directive No. 10/CT-BGTVT on strengthening the management, reuse, recycling, treatment and reduction of plastic waste in transportation activities

In the context of plastic pollution becoming one of the biggest challenges facing countries, the Prime Minister has recently issued Directive No. 33/CTT-TTg on strengthening the management, reuse, recycling, treatment and reduction of plastic waste. In order to concretize and implement the tasks and solutions assigned by the Prime Minister, on 7th October 2020, the Ministry of Transport (MOT) issued Directive No. 10/CT-BGTVT on strengthening the management, reuse, recycling, treatment and reduction of plastic waste in transportation activities.

Accordingly, the MOT requires its affiliated agencies and units: To be active, exemplary, positive and to take the lead in reducing plastic waste; to minimize the use of disposable plastic products (including persistent plastic bags, bottles, straws, foam food containers, cups and tableware...); not to use disposable plastic bandrolls, banners, bottles, cups, straws, bowls, chopsticks... at work and during conferences, seminars, meetings and holidays, anniversaries and other events; to prioritize to select recycled and environmentally friendly products; To pioneer and to be exemplary in implementation of waste classification at source at the office, to arrange waste bins to classify waste at agencies and units; not to mix plastic waste and other recyclable waste with organic waste; to encourage the development and implementation of models as a basis for replication of agencies and units in the field and area under their management; To carry out propaganda and dissemination to raise awareness for civil servants, officials and workers in agencies and units on classifying, collecting and minimizing plastic waste; to collaborate with relevant organizations and individuals to mobilize people to limit or not to use disposable plastic products to protect the environment.

In addition, the Directive also assigns specific tasks to agencies and units on ocean plastic waste management until 2030 such as: Disseminating to ship owners, seaport operation enterprises requirements for plastic waste control and regulations on collection and treatment of waste from boats; increasing the regular and irregular handling of cases of ships' violations of waste discharge at sea according to their competence; following up, updating and promptly disseminating regulations on management of marine plastic waste and microplastics of the International Maritime Organization to relevant agencies and units...

Seaport operation enterprises; inland waterway ports and wharves, strictly comply with regulations on collection, transfer and treatment of waste from operation of ports, wharves and from ships, inland waterway vessels in, out and anchored at ports, wharves; develop and complete the system of plastic waste collection, classification, transportation and treatment in accordance with regulations; arrange suitable, safe and convenient plastic waste storage equipment and gathering points; take the initiative in classifying plastic waste at source.

Ship owners, inland waterway vessel owners ensure equipment and organization of management of waste generated in the operation of means of transportation in accordance with relevant technical regulations; proactively apply measures to manage, minimize and reuse plastic waste in the operation.

Agencies and units need to actively develop and implement training, retraining and communication programs towards the goal of changing behavior, behavioral habits, use of disposable plastic products, and plastic waste disposal to the environment for their cadres, civil servants and workers; organize the implementation of scientific research projects to recycle and reuse plastic waste in the transportation sector; conduct surveys, statistics, classification and assessments of plastic waste generated from transportation activities; develop plastic waste collection, classification, transportion and treatment models and plastic waste management, reduction and reuse measures in transportation activities; advise the organization to develop regulations on plastic waste collection and treatment in the specialized fields of transportation in accordance with the law on environmental protection and international treaties to which Việt Nam is a member▪

TRẦN ÁNH DƯƠNG

▲ *Ship owners, inland waterway vessel owners ensure equipment and organization of management of waste generated in the operation of means of transportation*

Research on international experience and requirements of international conventions as orientation to amendment of a number of contents of the Law on Biodiversity

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Conservation of biological diversity is an important task in environmental protection and sustainable development which has been confirmed in many guidelines and policies of the Party and State. Over the past 50 years, Việt Nam has actively integrated with the world, participated in many international conventions related to biodiversity such as the World Heritage Convention (UNESCO Convention, 1983); Convention on the Conservation of Wetlands of International Importance (Ramsar Convention, 1989); The Biologial Diversity Convention (CBD, 1994) and Protocols such as: Cartagena Protocol on biosafety (2004), Nagoya Protocol on access to genetic resources and benefit sharing (2014); Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1994); United Nations Framework Convention on Climate Change (UNFCCC, 1994), Convention against Desertification (UNCCD). In which, the requirements for biodiversity conservation are mainly regulated in CBD, Ramsar Convention and CITES.

Implementation responsibilities and commitments to such international treaties, Việt Nam has internalized regulations and guidelines of the international agreements in a number of laws relating to the conservation of biodiversity: Law on the Forest Protection and Development (in 1991, amending and supplementing in 2017 into the Law on Forestry); Law Fishery (2003; revised and supplemented in 2017) and especially, the Law on Biodiversity (LB) has been adopted in 2008 and come into effect since 2009 that has covered the contents of specific laws on management, conservation and development of biodiversity in Việt Nam.

Since the promulgation, the LB has been implemented in which Ministry of Natural Resources and Environment (MONRE) plays an leading role. Over the past 10 years (2009 - 2019), the implementation of the LB has achieved a number of important achievements such as an increase in the number of protected areas (PAs); limit negative impacts on biodiversity; carried out many programs and solutions to protect natural ecosystems, rare and endangered species of prioritized for protection; wild genetic resources of crops and animal breeds are researched, stored and preserved; access to genetic resources and benefit sharing have come into practice; management of genetically modified organisms and invasive alien species are promoted...

However, the LB also reveals a number of shortcomings, failing to keep up with the requirements of practice and international integration, which need to be amended and supplemented. Some issues need to review and consider include: Institutional arrangements and responsible management of the state management on biodiversity; Categories and management of the protected area; Conservation management and sustainable use of wild species; Collect and manage information on biodiversity and finance for biodiversity (including new financial mechanisms).

The study "Research scientific basis and practice in the country and internationally as arguments to edit some content of LB" by the Nature and Biodiversity Conservation Agency, conducted in 2019 - 2020 was reviewing the provisions of the International Convention directly related to biodiversity conservation of which Việt Nam is a member, experiences from other countries and practices in Việt Nam and proposing directions to adjust and complete five contents of the Law as earlier mentioned.

1. INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITY OF STATE MANAGEMENT ON BIODIVERSITY

Biodiversity is an interdisciplinary issue that requires the participation of many stakeholders, in which the institutional arrangement of state management agencies is quite diverse. The governance model applied in each country depends on many factors, including institution, culture, natural resources, geography and conservation priority. The study results showed that in 40 countries, of which 21 countries (52.5%)

applied the centralized model to manage biodiversity (with one Government agency performing state management overall of environmental protection, biodiversity of the protected area, protection of wild species field, management of genetic resources...), 13 countries (32.5%) applied the decentralized management model (tasks on biodiversity management are assigned to many agencies) and 6 countries (15%) with decentralized management model (distribution of tasks between national and local agency).

The evaluation of the practical organization and management of biodiversity in Việt Nam showed that organization state management is fragmented and lacks linkages (responsible for state management of biodiversity is currently being delivered to many sectors without unified management), while the LB assigns "MONRE to take responsibility for state management of biodiversity" (Clause 1, Article 6); however function, competent of state management of nature and biodiversity conservation overlap, requirement of state management on biodiversity conservation is being stipulated dispersedly in many different laws, so the same content can be regulated and guided differently which lead to overlap in implementation.

Inconsistencies, overlaps in policies and laws; competent and function of lined ministries have created barriers that undermines effectiveness of state management and results of biodiversity conservation in practice. Therefore, it is necessary to complete regulations to ensure consistency in the management and conservation of biodiversity; clearly define the overall and specialized authority and function of state management on biodiversity conservation of relevant ministries; promote rearrangement or add supplementing bodies with biodiversity conservation function at central and local level. Without reform, the unified management of national biodiversity resources will face many difficulties due to the inability to concentrate the necessary capacities and resources.

From the above analysis, the study has proposed a number of recommendations for the amendment of the LB including: supplement the content and responsibility of state management on nature and biodiversity conservation; unify state management of biodiversity conservation in accordance with centralized model from the Central to local Governments.

2. DEVELOP CLASSIFICATION AND MANAGEMENT OF PROTECTED AREAS

Regarding protected area classification

The Convention on Biological diversity (CBD) requires and encourages countries to establish and manage protected areas and special protected areas for biodiversity conservation (Article 8). On that basis, IUCN has instructed on the classification, establishment and management of the protected areas. IUCN recommends countries depending on scale , biodiversity value and management goals to classify different categories of protected areas: National Parks (National Parks), strict nature reserves, protected seascape and landscape, protected area with sustainable use of natural resources, wilderness area and habitat/species management area. In addition, there are a number of international initiatives to protect important habitats of species such as Biosphere Reserve (BR), World Natural Heritage, Ramsar sites, or areas of high biodiversity value. The application of this NR classification is widely applied in other countries, including developed and developing ones. Each country has some specific modifications under practical conditions and the process will be in accordance with regulation.

In Việt Nam, regulations on classification of nature reserves have been stipulated in LB, Forestry Law and Fishery Law. Basically, there is an agreement on the names of four objects of the nature reserve (NR) including: National Park, NR, Species and habitat protected areas, and protected areas of the park. However, the current classification criteria is not unique among LB, Forestry and their guidance documents. For high biodiversity areas and internationally recognized biodiversity areas including: Natural Heritages, BRs, Ramsar sites are not currently stipulated in the LB and other laws. Compared with the guidance of CBD and IUCN, the NR categories identified in the Laws are basically compatible with the arrangement and classification of IUCN. However, it is also noted that the IUCN classification is often associated with the protection objective, therefore there are recommendations for different management regimes; Meanwhile, these principles are not clearly specified in the laws of Việt Nam. In Việt Nam, among the proposed class, protected area with sustainable use of natural resources has not been regarded as one category of NRs. In fact, many similar types exist, such as protected fisheries resources, bird sanctuaries...

From that study, it is recommended that the LB should unify the criteria for establishing the NR in the legal system; consider criteria associated with management objectives; adding one category of the natural reserve combining with sustainable use of natural resources; consider renaming "NR" to "protected area" to suit international practice; adding regulations on area of conservation priority recognized with international titles.

About management of the NR

The CBD recommends that priority conservation areas should be established and put in place for effective management practices; Conservation objectives should be implemented according to the management plan, including: Applying a "approach", so the NR is planned to connect ecosystems; Ensure the NR is ecologically representative of the area in order to protect the ecosystems, species and population size; Identify nearby ecosystems, outside the NR or nearby NR to connect, creating a NR network for ecosystems and species; Involve communities living in or around the PA (especially indigenous people) to understand the benefits they receive from the NR and to support to protect the NR from local communities' influence; Redirecting efforts to best promote the conservation of the NR (this means stopping existing activities which don't promote clear conservation goals).

The guidelines of CBD, Ramsar provide recommendations based on the management model of the PA, including the setting of specific objectives, monitoring and evaluation measures for management effectiveness, planning, conservation planning, business plan, wise-use model with community participation. The CBD recognizes that the NR can be managed directly by the Government, by a co-management NGO, business or by the local community.

The application of the ecosystems approach and recommendations for management of the NR by CBD has been widely applied in many countries. However, the most common form of management in countries is the management of community protected areas, which means communities directly manage protected areas on land owned by the community or associated with life and development of community.

The basic contents of CBD have been legalized in the LB. For the NRs, the legalization content includes: Clear and complete regulations on the main objectives and criteria to classify and establish the NR; order and procedures for formulation, appraisal and making decision on the establishment of the NR; management regime, protection, investment policy for functional zones and buffer zones; responsibilities and rights of stakeholders, especially for communities living in and around the NRs. The NR is classified into four categories, including National Park; NRs; NR of species and habitats; landscape protected area. Based on the level of biodiversity, biodiversity value, and size of the area, the NR is classified into national and provincial reserves for appropriate management and investment policies. In addition, the Law provides for the investigation, assessment and establishment of sustainable development regimes for natural ecosystems at sea, natural mountainous areas, limestone mountains, unused land for restoration and protection of natural ecosystems and natural habitats.

However, a review of the legal system shows that a number of issues have not been specified in the LB such as: no regulations on applying the ecosystem approach in biodiversity conservation; no regulations to facilitate conditions for the establishment of neighboring ecosystems, linkage and support for biodiversity conservation in the NRs; the role, benefits and responsibilities of community participation are limited; no mechanism to mobilize private sector in biodiversity/NR management. In order to better respond to the establishment of a synchronous NR system, a number of issues need to be adjusted including: the authority to manage the NR should be

▲ *Cù Lao Chàm Biosphere Reserve (Quảng Nam Province) is home to rich biodiversity*

decentralized to as much as possible; Ensuring consistency in direction, administration and management of biodiversity conservation; Processes and procedures ensure consistency and transparency; stricter regulations on the conversion of land and water surface for conservation to other purposes.

In addition, some regulations on the process and procedures for establishment and management of protected areas are not currently consistent between the Law on Forestry, the Fisheries Law and the LB, thus not yet creating a favorable legal environment in the the establishment of the NR.

The amended LB needs to consider and supplement regulations on ecosystem approach; regulations on establishing ecosystem networks, or habitats associated with the NR; specifying responsibilities and interests of communities living in and around the NR; regulations on private and community management models of the NR; stipulates the process and procedures for the establishment of the NR; strict regulations on the conversion of water surface land for conservation purposes into other uses.

3. MANAGEMENT, CONSERVATION AND SUSTAINABLE DEVELOPMENT OF WILD SPECIES

Conservation management and sustainable development of wild species are an important content in the framework of conventions: CBD, Ramsar, CITES. The CBD requires member states to prioritize in situ conservation measures, the maintenance and restoration of species populations in their natural environment and application of ex-situ conservation measures which support for in-situ conservation requirements, including rescue measures, captive wildlife conservation and re-release into natural habitat. This is a measure to restore natural populations of species, reduce threats to species in the wild, including illegal fishing, hunting, and recognition of traditional livelihood rights associated with the use of wild species by local community. In consistent with CBD, the Ramsar Convention emphasizes the need to protect the habitat of waterfowl and wildlife wetland habitats.

CITES controls the international trade in threatened flora and fauna through a system of licensing and enforcement monitoring. The CITES-controlled species are included in 3 Appendices: Appendix I is endangered species which international trade for commercial purposes is completely prohibited; Appendix II are species that are not yet endangered, but their trade should be controlled to avoid extinction; Appendix III includes species that the country requires other member states to help protect. Thus, unlike CBD's goal to conserve and sustainably use wild species, CITES contributes to ensuring that international trade in wild animals and plants does not pose a threat to survival of these species in the wild. CITES determines the jurisdiction of a member country's CITES Authority to control international trade species in CITES Appendix through the licensing system; requires the designation of a CITES Scientific Authority to assist with the enforcement of specimen control requirements and to ensure that trade in species does not affect species in the wild.

Considering countries' experience in wildlife protection shows that most countries apply the IUCN endangered criteria to establish a list of endangered and differentiated wild species groups with different levels of protection. These countries differ in their processes for listing threatened species and how these processes are scientifically strictly controlled. Relocation conservation measures are also required by Law and there is a system for controlling international trade in wildlife in CITES Appendix.

Việt Nam has established a fairly adequate legal system to manage, conserve, and sustainably use wild species: including specifying criteria to identify species with high levels of protection requirements (the LB 2008); list of species; stipulating regimes to protect species in the list; regulations on establishment and operation of biodiversity conservation facilities; establishing a licensing system, monitoring wildlife farming and cultivation; establish sanctions rules to handle violations. However, there are still issues that have not been focused, including conservation and re-release into the wild to restore populations, regulations on the exploitation of wild species to ensure not lead to exhaustion of resources; regulations on wildlife conservation and trade still overlap, conflict in the establishment of lists, management regimes and authorities; Conservation facilities are generally regulated, lacking specific guidelines. Regulations on species conservation are still being dispersed in the LB, Law on Forestry and Fishery...

In general, the amended LB requires an overall approach between conservation and sustainable use of biological species, focusing on wildlife protection regulations in the LB: including conservation measures (in-situ and ex-situ); regulations to control international trade in endangered species; Clearly assign responsibilities and authorities of state management agencies; Agreeing on criteria and consolidating the list of endangered, precious and rare species with different levels of protection according to priority levels to solve overlapping problems; Regulations on the development and sustainable use of biodiversity, including: conditions for exploitation and hunting of wild, migratory and endangered, precious and rare species; Management of facilities and wildlife farming, rescuing and re-releasing▪

Strengthen capacity, support the implementation of an integrated natural resource management approach

In recent years, the Vietnamese economy has had strong developments, but such developments have changed the natural landscape. Therefore, the implementation of the project "Integrating natural resource management and biodiversity conservation goals into socio-economic development planning and management of biosphere reserves in Việt Nam" (BR Project) is of greater importance in promoting a management approach in harmony with nature.

On the occasion of launching BR Project, Environment Magazine had an interview with Mrs. Hoàng Thị Thanh Nhàn - Deputy Director of Nature and Biodiversity Conservation Agency - Deputy Director of BR Project.

***VEM:** Madame, it can be said that the BR project implementation is of great significance in the context that Việt Nam is facing pressures from development activities and natural disasters. Could you please briefly introduce the BR Project?*

Mrs. Hoàng Thị Thanh Nhàn: In recent years, Vietnam's economy is in the process of rapid development, the construction of new infrastructure, expansion of the transport network, tourism development... lead to changing landscape, increasing threats to ecosystem services (ecosystems) and biodiversity.

On that basis, the Ministry of Natural Resources and Environment (MONRE) cooperated with the United Nations Development Program (UNDP) and other stakeholders to successfully develop and approve the BR Project funded by the Global Environment Facility (GEF) through UNDP. The project aims to support completion of the legal framework for the protection and management of the biosphere reserve (BR); Strengthening the efficiency of the management of the three BRs participating in the Project, namely BR of Đồng Nai, Đồng Nai Province; The BR of Cù Lao Chàm, Quảng Nam Province; BR of Tây Nghệ An, Nghệ An Province, through capacity building activities, supporting the implementation of integrated resource management approach; sustainable forest rehabilitation and management; support community livelihood models to reduce pressure on natural resources and manage biodiversity conservation.

The long-term solution proposed by the Project is to help Việt Nam bring the issue of biodiversity conservation and protection into planning and management of landscape, forest and marine landscape; At the same time, these contents are also included in the main economic and manufacturing sectors to shift to a more sustainable and equitable development. To achieve this, actions should be taken to strengthen capacity, coordination between the national and provincial levels on natural resource management, biodiversity conservation, prevention and management of alien invasive species.

***VEM:** Could you tell us, integrating natural resource management and biodiversity conservation goals into socio-economic development planning in Việt Nam today?*

Mrs. Hoàng Thị Thanh Nhàn: BR is an area with marine or terrestrial ecosystems that helps promote harmonious solutions between biodiversity conservation and sustainable development of these areas. BR has three main functions: conservation, economic development and research and education. From 2000 to now, Việt Nam has had 9 nationally recognized BRs with a total area of more than four million hectares (accounting for 12.1% of the country's natural area) including marine and terrestrial areas: Cần Giờ (2000), Đồng Nai (2001), Cát Bà (2004), Red River Delta (2004), Kiên Giang (2006), Tây Nghệ An (2007), Cù Lao Chàm - Hội An (2009), Cape Cà Mau (2009) and Lang Biang (2015).

However, to date the Vietnamese legal and policy framework has not yet supported the management of BRs, helping to combine conservation and production management, and implementing management at the overall landscape level including core, transition and buffer zones. In Việt Nam, BR is a relatively new concept that most decision-makers do not fully understand and fully recognize or has not been integrated into policy making on conservation and development at the national level and provincial level. Similarly, at the sub-national level, there is no clear responsibility for the planning and management of the BR. Although each BR has a management board, there is no uniform regulation for the BR to allow the Management's efforts to be integrated into the Management of different organizations and industries. This leaves the BRs in Việt

Nam currently vulnerable due to lack of landscape-level planning, lack of monitoring and evaluation and the lack of integration of biodiversity conservation or protected area management (PA) into the socio-economic development plan and processes, leading to a conflict between conservation and development.

Currently, the management of BRs in Việt Nam has not yet implemented the integration of planning, zoning, resource use and other measures for the entire landscape of the archipelago, including the core zone for conservation, buffer zone and transition zone. Most of the domestic BRs are conflicts between conservation and development, as many people living in the BR are poor and depend on livelihood practices such as logging, hunting, illegal shooting and overfishing. However, the main causes of this conflict are the lack of experience or understanding of sustainable livelihood options, as well as the lack of incentives for sustainable use of natural resource.

A major barrier to biodiversity conservation in Vietnam's BRs is the lack of community-based wildlife (wildlife) management and conservation programs, which mainstream conservation at the landscape level; This is a much-needed approach to address threats to wildlife (such as hunting pressure) in production areas, through cooperation between the nature reserve (NR) managers and authorities outside the NR, at the same time providing potential benefits to local communities from wildlife conservation and sustainable use of wildlife products. This challenge shows that a major barrier to effective management of BRs is the lack of technical capacity and resources for local stakeholders to implement integrated resource management and conservation of biodiversity at a large landscape level. Finally, due to the low awareness and understanding of local people and other stakeholders about conservation, the economic benefits of the BR have limited efforts to integrate biodiversity conservation into sustainable land and forest management programs.

VEM: *In order to solve the above issues, what will be addressed in the framework of the BR Project?*

Mrs. Hoàng Thị Thanh Nhàn: To solve the above problems, in my opinion, it is necessary to take action to strengthen capacity, coordination between national and provincial levels on natural resource management, biodiversity conservation, prevention and management of invasive alien species. The BR Project launched today will contribute to solving the barriers to improve the legal and institutional framework; mainstreaming multidisciplinary planning and management; knowledge management.

The Project will focus on solving the problem at two levels. Project activities at the national level will support policy development and completion, legal environment for integrated ecosystem management in the BR as well as integration of natural resource management and the goals of biodiversity conservation in socio-economic development planning and the management of BRs in Việt Nam; capac-

▲ *BR Project Inception workshop*

ity building activities to implement the policies. At the BR level, the Project will implement specific activities, pilot policies which are developed at the national level, and specific activities aimed at sustainable resource use and management of the NR and biodiversity-friendly development practices.

In order to integrate the goals of natural resource management and biodiversity conservation into socio-economic development planning and the management of the BR, the Project has selected 3 BRs: Cù Lao Chàm, Hội An; Đồng Nai and Tây Nghệ An. These three areas are selected due to their high representativeness of ecosystems (Cù Lao Chàm represents marine ecosystems; Tây Nghệ An represents mountain ecosystems and Đồng Nai represents tropical forest ecosystems); connectivity (Tây Nghệ An and Đồng Nai both have great potential for improving connectivity between important ecosystems); tourism development potentials (allowing Việt Nam to experiment with a model of tourism-based financial mobilization and participation in the management of BRs); local support and implementation capacity. All three selected sites are facing a series of threats to biodiversity, ecosystem function and sustainability of natural resource management, from tourism and infrastructure development; agricultural expansion; over exploitation of natural resources and living practices leading to ecosystem degradation such as forest fires and water quality degradation.

VEM: *Can you tell us, the Project's outstanding approach and its intended contributions to the achievement of the country's goals and international commitments to which Việt Nam has participated?*

Mrs. Hoàng Thị Thanh Nhàn: To find harmonious solutions between conservation and development goals, overcoming obstacles towards sustainable development is a difficult problem not only for Việt Nam, but also with other countries in the world. The Project has studied lessons learned from countries around the world and practical lessons in the operation of the BR to propose the application of new approaches to the management and sustainable use of resources, including: Integrating the goals of biodiversity conservation into legal documents, strategies and planning for socio-economic development; Multi-sector and multi-stakeholder approach to natural resource management; applying SLIQ approach in resource management (S: Systems thinking; L: Landscape management; I: Interdisciplinary coordination; Q: Quality economics); Conservation associated with sustainable use of natural resources, improving livelihoods, promoting cultural values. These approaches will be specifically researched by the Project to integrate and apply in the coming time.

It can be said that the Project is suitable and supportive to achieve the goals of the National Strategy on biodiversity to 2020, with a vision to 2030 such as: Identifying the main causes of biodiversity loss to reduce direct pressure. to increase biodiversity and prevent biodiversity decline in NRs; Minimize the conflicts between conservation and development; Conserve biodiversity in the NR system with typical ecosystems and mixed ecosystems; Enhance biodiversity conservation at the ecosystems, species and genetic resources levels; Benefits from biodiversity and ecosystem-related services should be shared fairly and equally with the participation of local communities. In addition, when the above new approaches are successfully implemented and widely applied, it will contribute to sustainable development of the country through completing relevant legal bases, protection and sustainable use natural resources, overcoming obstacles to achieve harmony between conservation and development goals, creating interest and mobilizing stakeholders' participation in conservation activities.

In addition, the Project will contribute to the achievement of international commitments to which Vietnam has participated, such as assisting the achievement of the Aichi goals, especially Strategic Goal B (Reducing direct pressure on biodiversity and promoting sustainable use), Strategic Goal C (Improvement of biodiversity by protecting ecosystems, species and genetic diversity) and Goal 12 (By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained). The Project also contributes to the implementation of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs), especially SDG 15 on preventing biodiversity loss. In particular, the project directly supports the achievement of a commitment to join the world network of biosphere reserves, which is carried out in an open, interdisciplinary and multi-sector direction to ensure the three functions of each BR▪

NGUYỄN HẰNG

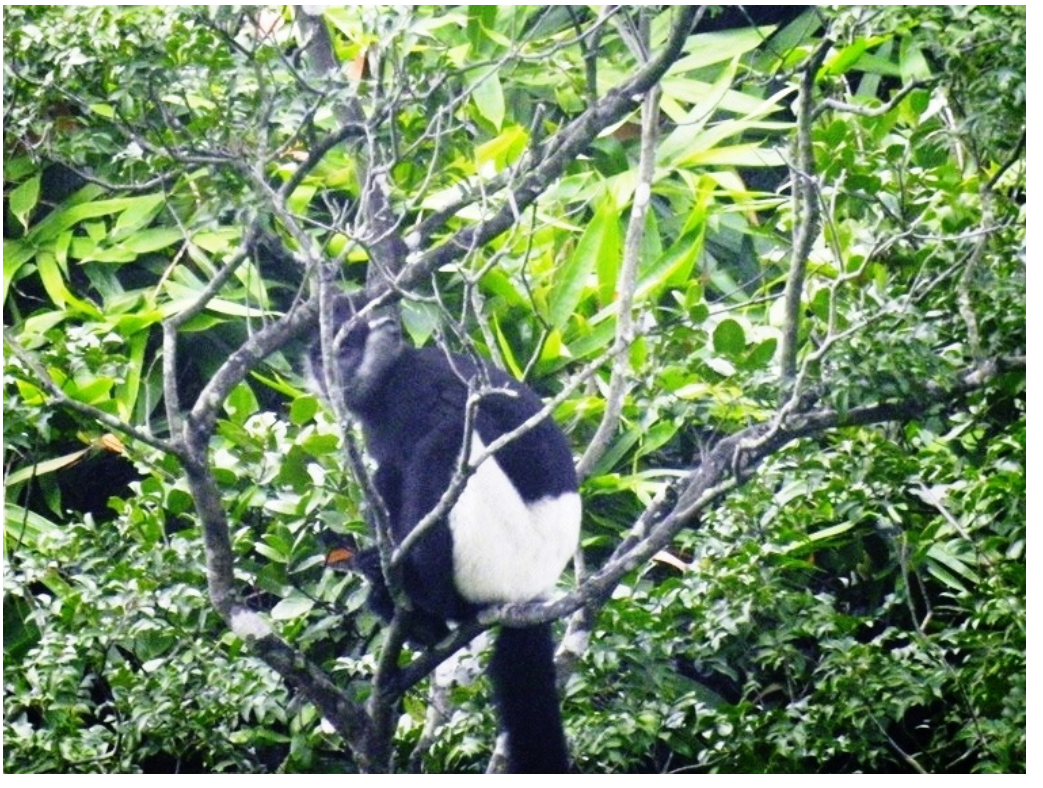
Urgent conservation of trachypithecus delacouri populations

Trachypithecus delacouri is one of 25 species of particularly rare primate, listed in the Red Data Book of Việt Nam and also "critically endangered" according to International Union for Conservation of Nature (IUCN). In Việt Nam, trachypithecus delacouri has only about 300 individuals in the wild, mainly in the Vân Long Wetland Nature Reserve, Ninh Bình Province and in the forest areas of Kim Bảng District, Hà Nam Province.

As a province located on the edge of the Red River Delta, Hà Nam currently has a unique forest in the complex of Tam Chúc national key tourist area, this is the habitat of wild animals. In 2016, in Kim Bảng forest area, the Fauna and Flora International (FFI) and Hà Nam provincial authorities conducted a study on the state of biodiversity, thereby discovered many rare species of flora and fauna such as macaca assamesis, mountain ardea cinerea, buceros bicornis, callosciurus erythraeus, melanochlora sultanea, cinnyris jugularis..., in particular, discovered 13 herds of trachypithecus delacouri including 73 individuals. However, currently the survival of this trachypithecus delacouri population is directly affected by the quarrying activities as raw materials for cement production with a large scale in the area. In addition, hunting, trapping and exploiting timber and non-timber forest products by the people also reduce the quality of the very limited habitat of trachypithecus delacouri herds.

Facing this situation, on 10th July 2020, the FFI sent a letter to the Prime Minister of Việt Nam proposing the emergency conservation of the trachypithecus delacouri in Kim Bảng forest. On 24th July, the Government Office sent Official Letter No. 6026/VPCP-KGVX to the Ministry of Agriculture and Rural Development, the People's Committee of Hà Nam Province, in which, assigned the People's Committee of Hà Nam Province to urgently direct and organize the application of urgent measures to protect the trachypithecus delacouri population in the natural habitat in the area according to the Emergency action plan to conserve primate species in Việt Nam to 2025, vision to 2030 approved by the Prime Minister in Decision No. 628/QD-TTg dated 10th May 2017; review and evaluate the observance of legal provisions in quarrying activities in the area, ensure that it does not affect the existence and development of the wild trachypithecus delacouri. Ministry of Agriculture and Rural Development is responsible for reviewing and guiding the People's Committee of Hà Nam Province to implement urgent measures to protect the trachypithecus delacouri; direct relevant local authorities to research and propose the establishment of a species and habitat reserve in order to conserve the long-term trachypithecus delacouri population in the province in accordance with legal provisions.

Realizing the importance of protecting this rare primate, in January 2019, the People's Committee of Hà Nam Province held a consultation meeting to develop a



▲ *Trachypithecus delacouri in Kim Bảng forest, Hà Nam Province*

project to establish the trachypithecus delacouri nature reserve; also, identify areas that overlap in planning; assess impacts of human on the nature reserve. The Department of Agriculture and Rural Development of Hà Nam Province also sent an official letter to the People's Committee of Hà Nam Province and the Department of Natural Resources and Environment to advise and recommend, submit to the Government and relevant Ministries and agencies, to consider planning for mineral exploitation and building materials in the natural forests and protection forests of the province; to move the quarry area expected to serve production line 3 of Xuân Thành Cement Plant to another location. Also, direct the Provincial Forest Protection Department, Forest Protection Sub-Departments to coordinate with the forest rangers of Hòa Bình, Ninh Bình, Hà Nội in forest protection, propaganda and advocacy for people not to hunt wildlife, cut forests and strictly handle violations in accordance the legal provisions. In addition, the Department of Agriculture and Rural Development cooperates with FFI, Center for Nature Conservation and Development (CCD) to develop a project to establish Hà Nam trachypithecus delacouri nature reserve; establish community forest protection groups; open propaganda classes on forest protection, trachypithecus delacouri protection and environmental protection for about 1,450 people.

Currently, the trachypithecus delacouri is in danger of extinction, only recorded in Vân Long area (Ninh Bình), Tam Chúc national key tourist area, Kim Bảng District (Hà Nam). Therefore, the conservation of trachypithecus delacouri will contribute to creating a landscape of Tràng An, Tam Chúc with protected forests, combined into a UNESCO World Heritage Site. This combination will promote conservation activities of trachypithecus delacouri, while promoting local economic development, creating jobs and minimizing environmental pollution. Accordingly, in order to conserve the trachypithecus delacouri and other natural heritages, it is necessary to plan the entire Kim Bảng forest, including the forest area of Tam Chúc, Kim Bảng District and a part of Thanh Liêm District as the nature reserve (special-use forest) with a management board and forest protection force.

Trachypithecus delacouri weights about 8.1 - 9 kg; head-body length is from 0.46 to 0.665m; On the top of the head, there is a black crest with rather wide white fur marks from the cheeks to above the ears. The legs are black, the rump has white fur extending to the base of the tail and thighs; limbs are long, tail is longer than body with black fur. Trachypithecus delacouri lives in old forests, primeval forests on rocky mountains with many caves. However, due to the separation of the terrain, they live even in poor forest habitats, even only vines and bushes. Their main foods are shoots, leaves, fruits, the foraging area is relatively large, both on earthy mountain and rocky mountain, the living range of each herd is from 20 - 50 ha.

Hà Nam Province has issued Official Letter No. 1265/UBND-NN&TNMT dated 18th May 2017 on the policy of developing a project to establish a nature reserve for species and habitat of trachypithecus delacouri with an area of 3,500 ha including 2 zones: Core zone or strictly protected subdivision (Mature forest/habitats for trachypithecus delacouri) and forest rehabilitation subdivision (Area degraded by recoverable limestone extraction). The proposed area for the establishment of the species and habitat reserve located in the Southwest of Phủ Lý City, in the administrative area of Ba Sao Town, Thanh Sơn and Liên Sơn Communes (Kim Bảng) is an area with high biodiversity value, with 488 species of vascular plants, 126 species of terrestrial vertebrates, many of which are in the Red Data Book of Việt Nam and the world, this is also the habitat of the trachypithecus delacouri. The total proposed conservation area is about 2,438.3 ha, of which the area with forest is 2,373.3 ha (97.3%); the area of land without forest is 3.4 ha (0.14%); water surface area is about 50 ha (2.1%); other land is 0.4%.

Obviously, the establishment of the trachypithecus delacouri nature reserve in Kim Bảng is of great significance in the conservation of rare fauna and flora species, as well as a basis for scientific research, education, propaganda and public awareness. Hopefully, the practical works that the authorities and people of Hà Nam Province are jointly implementing will soon be effective, contributing to the conservation and development of this rare primate in the area▪

TRƯƠNG HUYỀN

Life cycle analysis of solid waste management scenarios through the application of thermal methods in Hải Dương City

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Hanoi University of Natural Resources and Environment

The energy utilization from waste can be achieved with the application of different thermal technologies which can also result in energy recovery form waste. In this study, a life cycle analysis is carried out for different scenarios of managing municipal solid waste in Hải Dương City by 2030. This analysis predicts overall environmental burdens of municipal solid waste towards the goals of minimizing environmental pollution, reducing treatment costs and utilizing raw materials in order to emerge opportunities for circular economy. The results show that, with the socio-economic development of Hải Dương City, the construction of incineration plants combined with the production of high calorific fuel pellets is an appropriate treatment plan to suit the local conditions.

1. INTRODUCTION

It is estimated that cities in Việt Nam generate around 38,000 tons of waste per day with an 85% collection rate. According to the Department of Waste Management, Vietnam Environment Administration (Ministry of Natural Resources and Environment), domestic waste treatment is not only a concern of some provinces but also an urgent and complicated issue of the whole country. Currently, 70% of the generated waste is sent to landfills. Many of these are unsanitary landfills which cause trouble for adjacent people. In addition, due to the large area of land occupied, many urban areas have faced the lack of space for landfills. The pollution of solid waste from the burial process also causes many conflicts with the people living around the landfill, increasing the number of conflict activities such as preventing garbage trucks from entering the area. Thus, the cost of compensation for damage caused by polluting landfills is increasing. The decomposition of rubbish in landfills also generates large amounts of methane, a potent greenhouse gas. Going along with the direct impacts of climate change on human life and the ecological environment, the generation of large amounts of greenhouse gases also represents significant drawbacks of landfills.

Hải Dương City, Hải Dương Province, is recognized as the economic, technical, educational, scientific, medical and service center of the province. The Government has issued Decree 88/CP establishing Hải Dương City which is defined as a class-III urban area. By 2009, Hải Dương City was a city meeting class II urban standards in Hải Dương Province, being an industrial - services center in the Northern key economic region. Along with increasing urbanization, waste disposal has become a pressing issue in Hải Dương City for many years. The population increase and the rise in the living standards are the main reasons for an exponential increase in the volume of municipal solid waste (MSW) generated. The total amount of daily solid waste generated in Hải Dương Province averages 1300 tons per day. The collected amount is about 880 tons per day, accounting for about 68%.

In Hải Dương City, besides Soi Nam landfill operating before 2011, which was overloaded causing environmental pollution, all domestic solid waste in the city are collected by Urban Environment Co., Ltd and daily transported to the organic fertilizer manufacturing company. However, this amount of MSW has just accounted for a small proportion of the collected waste. In order to reach the target of hygienic collection and disposal rates in 2020 up to 95% of solid waste which would be collected and treated hygienically, the amount of treated domestic waste has been estimated at 1,300 tons per day. One of the most important environmental issues is the treatment of domestic solid waste which is both environmentally effective and does not occupy too much land. Hence, the method of treating solid waste by thermal method has been considered to show the potential for the local context by reducing the volume of solid waste to the lowest level, reducing methane emissions, generating less leachate, less land area occupied...

LCA (Life Cycle Assessment) is an analysis technique to assess the environmental impacts associated with a product, process or activity by identifying and quantifying energy, materials used, and waste released into the environment, thus identifying and assessing ways of improving its opportuni-

ties (according to Society for Environmental Toxicology and Chemistry). The LCA is also defined as a tool for systematic assessment of the environmental aspects of a product or service system through all stages of its life cycle.

A system boundary curve model of the LCA is the interface between the waste management system and the environment or other product systems. The life cycle begins when the material or product becomes waste, i.e., its owner removes it in the waste collection bin. Each collection method requires its own infrastructure, i.e., dedicated bins and collection facilities. Depending on the collection system of each country, solid waste can go directly to treatment plants such as incinerators, composting areas or sorted before treatment.

The LCA evaluates resource use, emissions into air, water, and soil, and useful products. All inputs (resources and energy) and outputs (emissions and products) must be identified and quantified during the LCA's life cycle inventory (LCI) phase. The most important LCI components of each management phase are determined by stages of generation - collection - transportation - sorting and disposal.

For these reasons, the authors would like to outline proposals concerning the evaluation of the solid waste treatment using thermal methods in Hải Dương City. The results obtained from the research will partly serve as a basis for selecting solid waste treatment technology for Hải Dương City. It is interesting to note that at the same time the planning for both design and construction of a desirable management system can be carried out to suit the conditions of the study site.

2. METHODS AND DATA USED

2.1. Object and scope of research

The objects of the study include municipal solid waste generated from households in Hải Dương. The goal of this study is to analyze the current MSW management system and compare with different MSW management strategies that can be effectively implemented in Hải Dương City from an environmental point of view. According to the recent General Development Plan for Hải Dương City up to 2030 with visions towards 2050 approved by the Provincial People's Committee on July 14, 2017, the initiative expanded to include eight more communes in Hải Dương City. They are Minh Tân, Đông Lạc (Nam Sách District); Ngọc Sơn Commune (Tứ Kỳ District); Tiên Tiến and Quyết Thắng Communes (Thanh Hà District); Gia Xuyên, Liên Hồng, and Thống Nhất (Gia Lộc District) communes with total area of 13,070.78 ha.

Different waste management treatment practices were investigated and specific alternative proposed MSW management systems using thermal treatment methods were compared. More specifically, three alternative scenarios have been introduced and compared regarding the management of the MSW generated in Hải Dương City.

2.2. Integrated waste management IWM2 software

To achieve the research objective, the assessment was carried out using the "Integrated Waste Management" (IWM-2). The model was utilized as a decision supporting tool which takes into account all the environmental loads such as waste streams, collecting, treating and disposing of waste, in order to achieve environmental benefits, economic optimization and social acceptance. This will lead to a practical waste management system for any particular area.

IWM-2 is a software created to accurately predict the environmental and economic burden of a specific waste management system. This software is used by diverse groups of individuals including policy makers, waste managers, researchers, environmental groups or students who want to research and evaluate totally both the environmental impact and the economic cost of the waste management system. Models using this software will provide an optimization scenario to compare with other waste management scenarios.

This model does not require a large amount of data thanks to a default data set to provide to the user. However, the more data provided by the users, the more accurate the results of the research waste management system are. To run the model, it is necessary to have data on the number of people and households in the study area, the amount of waste generated per capita in a year, the discharge characteristics of the study area. Data on energy demand, operating costs and performance are also required to describe each waste management process from collection through sorting, biological treatment, heat treatment and burying. One of the most important data to run the model is the electricity grid description. Different options for using the electric network will produce different results for the environment. Therefore, it is necessary to accurately describe the domestic grid of the study area to ensure the most accurate model calculation.

IWM-2 is used in the LCI phase to assess the life cycle of a specific waste management system. The stages assessed by this model include the emission phase, waste collection, sorting, biological treatment, heat treatment, landfill and generated energy. Secondary impacts (issues related to construction, decommissioning of facilities and waste management facilities) are not included in the model.

In the IWM-2 model, inputs and outputs of each unit process (waste collection, central sorting, biological treatment, heat treatment and landfill) are all carried out on a volume basis, except heat treatment is carried out on mass and measurement basis. Emissions and leachate are distributed on the basis

of each component (i.e., based on the composition of the material being buried); This approach takes into account the basic physical relationships between waste and gas and leachate as recommended by ISO 14041.

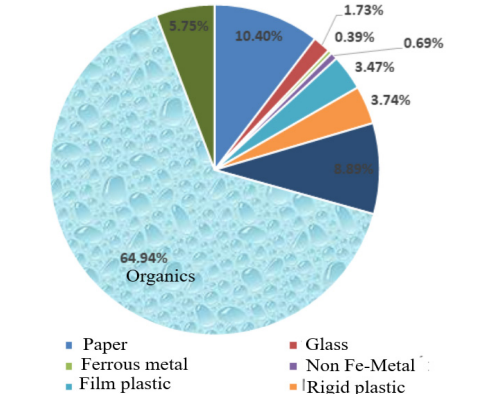
2.3. Model input data

The input data under examination included in the study are: Total population derived from census data and forecasted data to 2030, total amount of household waste generation, waste composition, and (iv) the current waste treatment methods.

In the inventory analysis, most of the data used to model the different waste treatment scenarios were obtained from the current state of solid waste treatment in the city, following the National Strategy on Integrated Management of Solid Waste to 2025, with a vision to 2050 and the Decision No. 26/2020/QD-UBND of the Provincial People's Committee of Hai Duong province. In the cases, recycling is prioritized and performed as energy and useful materials recovery practices for waste that nevertheless arise in order to reduce the volume of waste sent to landfills and the environmental impacts.

The population projection data of 2030 data was taken into account according to the Hải Dương City Master Plan to 2030 with a vision to 2050. Specifically, the amount of solid waste generated in 2030 is 1,678 tons per day and night.

The composition of solid waste used in the study is shown in Figure 1.



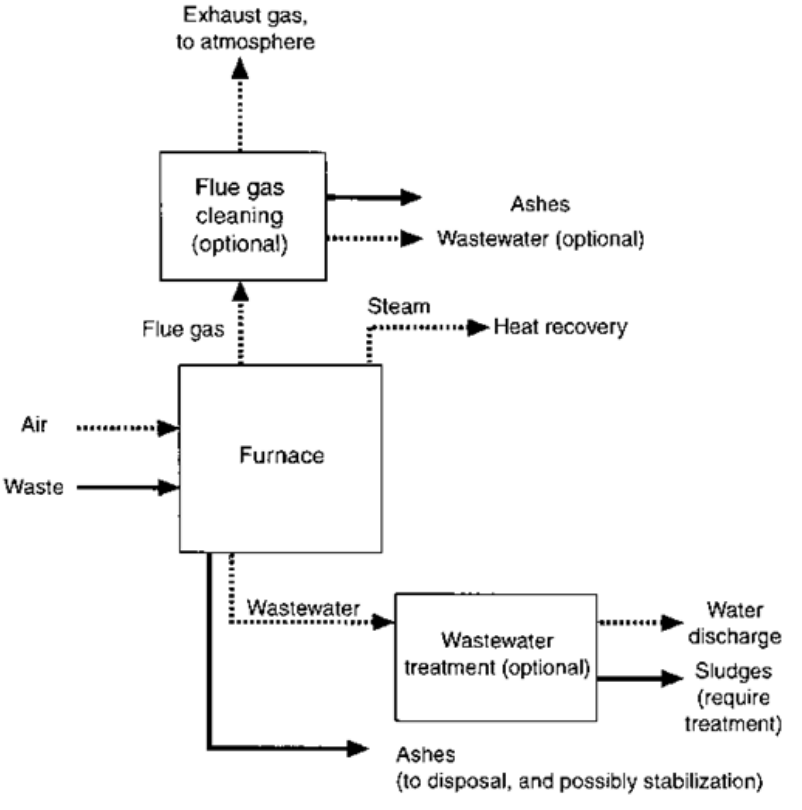
▲ *Figure 1: Solid waste composition analysis at landfills*

3. RESULTS AND DISCUSSION

3.1.Proposed scenarios

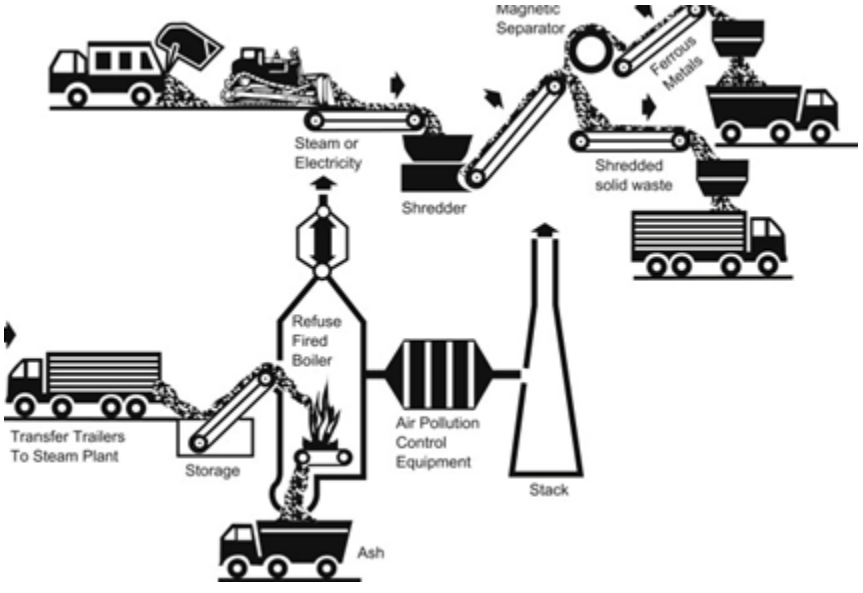
- *Scenario 1:* Is considered as the scenario used for reference, therefore, using the current technology, collection rate of solid waste reaches 80%. Households carry out the classification and sorting of waste such as plastic lumps, metal, plastic bottles to sell to bottles buyers. According to some previous studies, the rate of collection of recyclables in households is assumed to be 70% of the generated recyclable waste. After being collected, the waste is transported to Việt Hồng Solid Waste Treatment Facility (Thanh Hà District, Hải Dương). Based on the data taken from the transportation process of solid waste to the factory, 45% of the waste is treated by microbiological method while the rest is burned. However, by 2030, due to the estimated amount of solid waste generated according to the planning data, up to 612,470 tons per year will exceed the plant's capacity (64,000 tons per year). The remaining amount of waste is assumed to be taken away for burying.

- *Scenario 2:* The amount of waste collected and transported to the treatment area is similar to the scenario 1, but it is assumed that all collected solid waste will be burned. This scenario was designed taking into account the state of Việt Hồng Solid Waste Treatment Plant, in which the produced compost cannot be sold, so the combustion technology has received more attention from managers.



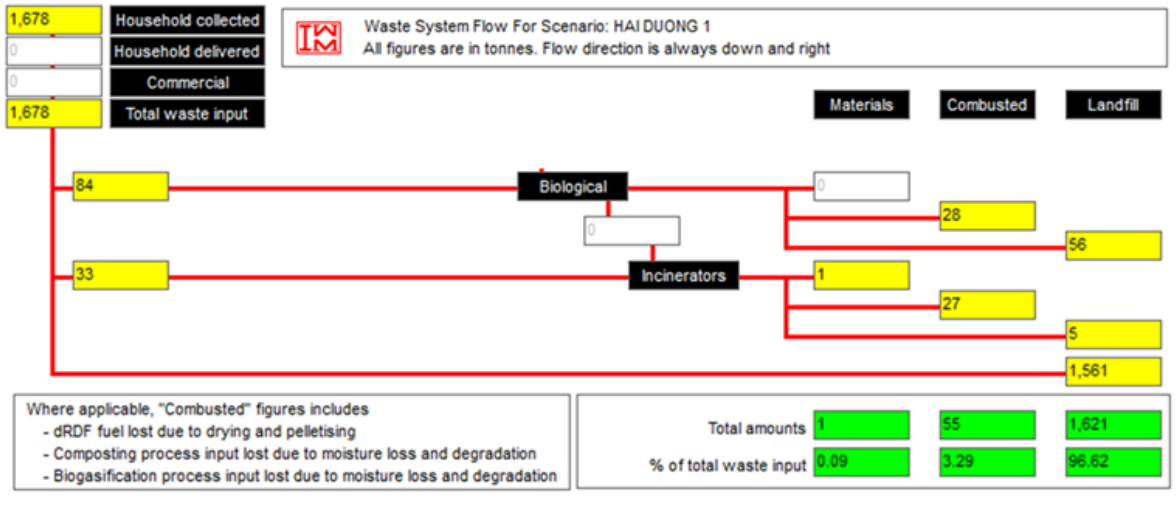
▲ *Figure 2: Simplified flow scheme of incinerator*

- *Scenario 3:* The amount collected and transported to the treatment area is similar to the scenario 1, assuming that the treatment technology consists of the waste-to-energy system in Việt Hồng Solid Waste Treatment Plant with improvement and investment in the fuel pellet processing system, namely RDF.

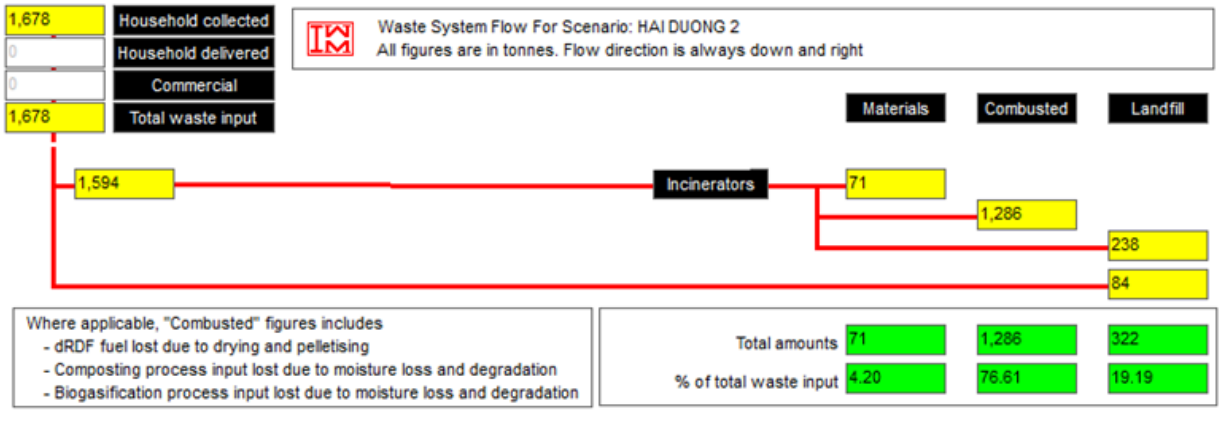


▲ *Figure 3: Cross-section of typical RDF system*

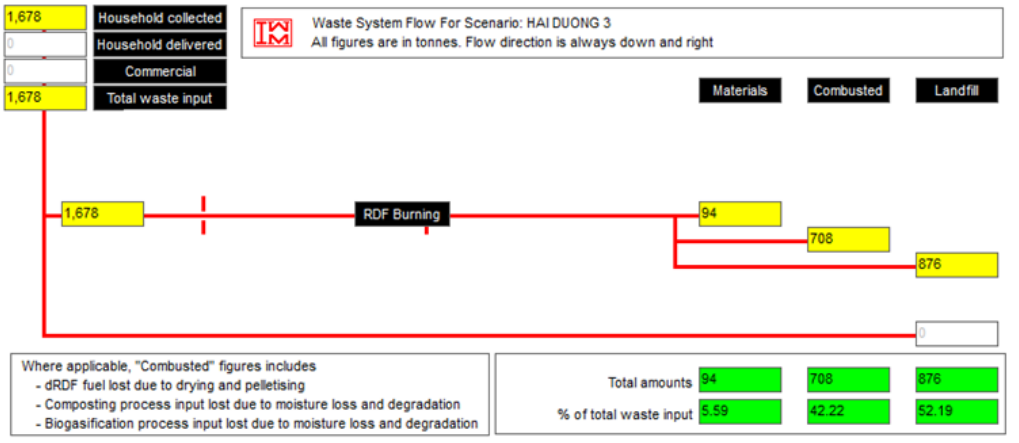
The material circulation flows according to the above scenarios are shown in Figure 4 (a, b, c).



a. Scenario 1



b. Scenario 2



c. Scenario 3

▲ *Figure 4: Solid waste circulating stream by three scenarios (Note: Unit in circulating stream is ton per day and night)*

3.2. Evaluation of environmental effectiveness of options

IWM-2 software was used to calculate and compare the scenarios according to the following parameters:

- Exhaust gases: CO_2, CH_4, NOx, HCl, SO_2
- Leachate: COD in water
- The remaining solid waste is put into landfill

Calculation results are shown in Table 1 and Figure 3.

	Scenario 1	Scenario 2	Scenario 3
CO_2 (kg/year)	302,786	1,243,299	-18,713
CH_4 (kg/year)	122,614	5,925	66,313
NOx (kg/year)	1	-79	-264
HCl (kg/year)	21	13	15
SO_2 (kg/year)	6	26	-457
COD (kg/year)	592	32	324
Final solid waste (kg/year)	1,620	235	736

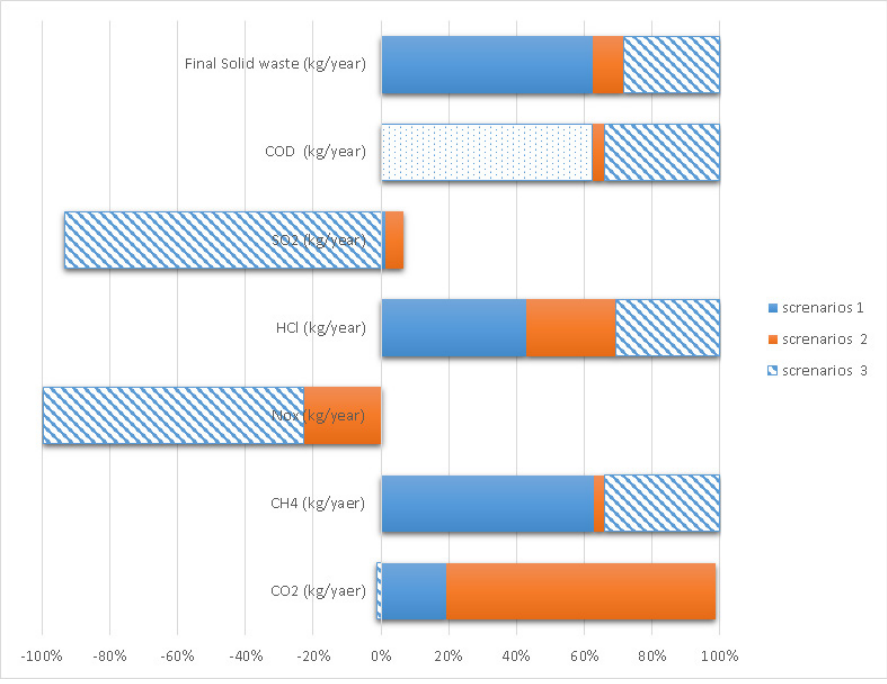
Table 1: Assessment results calculated by IWM2 of three scenarios

After using IWM-2 model in three scenarios developed in case of Hải Dương City, the results are presented as follows:

- *Scenario 1*: When the current treatment facilities are taken into account, Hải Dương's government needs to invest in building a new waste landfill site with a capacity of 1620 tons per day. Such a large amount of solid waste is put into landfills, which also increases the pollutants in leachate and exhaut gases. Moreover, the burial of solid waste occupies a large area of land and can easily cause more conflicts with households living in the vicinity of the landfill site.

- *Scenario 2*: By putting all domestic solid waste into incineration, this method generates the waste residual, mainly ash, accounting for the smallest amount of the three scenarios. However, the amount of CO_2 released into the environment is still the largest, which is a prodominent disadvantage when we need to consider the treatment plan in terms of reducing environmental pollution. To implement this scenario, Hải Dương City needs to invest in building 9 more incinerators with the same capacity as the current incinerator, which is also a major drawback of this scenario.

- *Scenario 3*: In this scenario, the remaining solid waste is three times higher than the scenario 2 but only accounts for 45% compared to the scenario 1. In the scenario 3, the local government should invest in additional technologies, including compression, cutting and forming processes to produce fuel pellets. The numbers of incinerators that need additional investment is three. They can directly use fuel pellets to burn power generation (results calculated by the software are 683,617kWh of electricity) and reduce the moisture content of waste. In addition, this scenario also reduces the amount of NOx and SOx acids due to the change of not burning waste directly but indirectly burning through fuel pellets. If the amount of unused energy due to the reduction of solid waste put into the incinerators is calculated, the amount of energy savings in this scenario would reach 1,267,234 kWh (Figure 6).



▲ *Figure 5: Comparison of scenarios based on environmental parameters*

the same capacity to the current capacity. The estimated amount of electricity generated is 683,617kWh which is capable of serving the plant itself or joining the national grid. This is also a source of funding to offset the cost of solid waste treatment. Simultaneously, the 3rd scenario shows that it is technically possible to reduce the amount of energy needed for the treatment process, the operating costs, adapting the urgent need to make the scenario more economically feasible▪

Results

Scenario **HAI DUONG 3**

Costs | Fuels | Final Solid Waste | Air Emissions | Water Emissions | Emissions Guide

	Units	Collection	Sorting	Biological	Thermal	Landfill	Recycling	Total
Elec-consumed	kWh	Zero	36,077	Zero	15,740	Zero	n/a	51,817
Elec-generated	kWh	n/a	n/a	Zero	Zero	Zero	n/a	Zero
Elec-recycling	kWh	n/a	n/a	n/a	n/a	n/a	-683,617	-683,617
Petrol	litres	Zero	n/a	n/a	n/a	n/a	n/a	Zero
Diesel	litres	Zero	Zero	Zero	Zero	Zero	Zero	Zero
Nat-gas	m3	n/a	Zero	n/a	Zero	n/a	n/a	Zero
Total	GJ	Zero	362	Zero	158	Zero	-6,868	-6,348

▲ *Figure 6: The amount of energy savings due to the reduction of solid waste put into the incinerators*

4. CONCLUSION

Through the development of solid waste treatment scenarios for Hải Dương City, the optimal urban solid waste treatment scenario for Hải Dương City is proposed as follows. After being collected, the waste is transported to a waste treatment plant. The amount of 612,470 tons of solid waste per year is treated at the facility using the method of processing pellets of fuel (RDF) and burning on site to generate electricity. According to this scenario, the local Government needs to invest more in the fuel pellet production system with 4 incinerators designed with

References

1. Thông Chi, "The notorious waste treatment plant in Hải Dương dumps ash and ash into the environment", Lao Động Newspaper, May 20, 2020.

2. Bùi Mai Phương, Master's thesis in 2020 on "Research and evaluate the effectiveness of solid waste treatment by thermal methods in Hải Dương City".

3. Forbes R McDougall, Peter R White, Marina Franke, Peter Hindle, "Integrated solid waste management: A Life Cycle Inventory", 2nd edition, 2003.

4. Lương Mai Hương, PhD thesis on "Application of Life Cycle Research (LCA) to reduce the amount of landfill solid waste activities in Hanoi" .

5.Marc J. Rogoff, Francois Screve, "Waste-to-Energy Technologies and Project Implementation", (Second Edition), 2012

6. WHO, 1999, "Safe Management of Wastes from Health Care Activities", 1999.

What's the environmental impact of all the single-use PPE we are throwing away now in huge numbers as a result of responding to the COVID-19 crisis?

There's no question about it: all the disposable Personal Protective Equipment (PPE) in our waste stream is taking a toll on the environment. A recent study in the Environmental Science and Technology Journal found that we are using some 129 billion disposable masks and 65 billion disposable gloves every month around the world nowadays as we try to stay safe during the worst pandemic to hit the human race in a century.

Most of the masks in the US are made from polypropylene-based plastic but some are made from related forms of plastic such as polystyrene, polycarbonate, polyethylene, or polyester. These synthetic fibers are designed to resist liquids and do not biodegrade in the environment once discarded, instead breaking down into smaller and smaller pieces of plastic that end up in landfills or, even worse, as litter that finds its way into waterways and the ocean.

Some of the discarded PPE ends up in medical waste bins and is shipped off to an incinerator for disposal, which unfortunately may not be any better for our health or the environment. According to the US's Environmental Protection Agency (EPA), incinerators send particulate matter, heavy metals, acid gases, nitrogen oxides, carbon monoxide and other noxious pollutants airborne. As such, environmental advocates aren't happy about a plan by the United Nations to help communities around the world set up their own small local incinerators to deal with PPE and other COVID-related waste.

Meanwhile, reusable masks may have a longer life as a useful product, but that doesn't mean they'll necessarily biodegrade in the environment when their time comes. Most are made from cheap synthetic fabrics like nylon or polyester and are prone to breakage and short lifespans and can last even longer and wreak more havoc when littered into the environment.

The upshot of all this is that we'll have discarded PPE from the pandemic around for a lot longer than we would like. It joins the rotting plastic that sits in landfills, washes up on beaches and floats in oceans, amounting to more than five trillion plastic particles contaminating the world's surface waters. The particles are toxic to ecosystems and wildlife. Marine creatures can mistake mask remnants and fibers for food, and/or can get entangled in them so they can't hunt, feed or eat.

So, what can we do to offset, or even halt the impact? The pandemic continues, but by choosing reusable, biodegradable masks, we can reduce the demand and consumption of PPE. Eco-friendly alternatives are available - or you can make your own using salvaged fabric and online craft guides. The Hemp Foundation and Tentree sell masks made from biodegradable and repurposed materials. Meanwhile, Bambooo's bamboo masks are made of sustainably sourced, pesticide-free bamboo and Planet Organics' cotton/rubber varieties are also attractive and easy on the environment▪

NAM HƯNG

▲ *Most of the masks in the US are made from polypropylene-based plastic*

Bat approaching scenarios in Việt Nam

LÊ MINH ĐỨC
Hanoi Vietnam Environmental Industry Association
NGUYỄN THỊ HỒNG LAM
Environmental Science Institute (VEA)

Prologue: *Based on the concept of "no trade-off between environment and economic growth", the Draft amendment of the Law on Environment Protection (LEP) 2014 has been fundamentally and comprehensively revised, from mindset, the approach to environmental management (risk management), to the addition of new management policies and tools... and Best Available Techniques (BAT) is one of the proposed additional tools in the Draft.*

Accordingly, BAT is universally understood as the best technology selected to ensure that it has practical relevance, economic efficiency and environmental pollution prevention and control ability. BAT has currently been regulated by many countries around the world and applied effectively and successfully in pollution prevention and control. BAT is a new issue in Việt Nam, proposed to be legalized for the first time ever. However, in fact, BAT has been deployed and applied in a number of industries in our country due to the need of technology changes and the pressure of competition in the international market towards enterprises.

BAT is a new issue. Although the application of BAT is both an opportunity and a challenge, it is truly necessary with an appropriate sequence, especially in the current context where environmental pollution is increasing, pollution tends to shift, technology is outdated, and we are facing the possibility of becoming a dumping ground for developed countries...

Việt Nam is stepping forwards a deeper integration and participation in global value chains. The Foreign Direct Investment (FDI) sector in Việt Nam now accounts for 70% of export value and nearly 30% of growth contribution. The impact of the new-generation Free Trade Agreements with high standards requires enterprises to convert to the best technology. The application of BAT in enterprises is an inevitable trend for the benefit of the enterprises itself as well as environmental protection. However, Việt Nam has a big gap of technology compared to the world; and the environment and policy institutions in Việt Nam are still inadequate.

Currently, it is fairly common use of outdated technology of the 1980s and 1990s, which is the cause of significant industrial pollution with high emission factors. In addition, the policy environment is posing many issues that need to be adjusted for the sake of an effectively implementation of the BAT. Việt Nam currently has a large shortage of environmental market-based policies, as well as lack of mechanisms for coordination and decision-making among BAT stakeholders (Ministries, sectors and provinces); The major of Vietnamese enterprises are mostly medium, small to very small enterprises, with limited technological capabilities.

Based on analysis of international experiences, as well as the opinions of enterprises, the authors have given three BAT approaching scenarios in Việt Nam, including: Low scenario - baseline scenario; Medium scenario - Baseline scenario incorporating international BAT list; High scenario - baseline scenario combining international BAT list and new source.

DESCRIPTION OF THE SCENARIOS

Low scenario: Principally, major countries are implementing BAT under a common guidance framework, technological information is mainly collected from local source, that is called as baseline scenario. Vietnam's first choice is based on the common traditional practices that other countries are doing. However, as Vietnam's starting point is different from other countries, the local best available techniques (BAT Vietnam) may still be a long way to catch up other countries. Therefore, the baseline scenario or the first choice of Việt Nam is called the low scenario.

Basically, the low scenario is implemented according to the common guidance framework being applied by countries, also known as the Sevilla process. Sevilla process consists of 3 basic steps: Technology information collection; Technology evaluation; building up of Criteria and Selection of BAT. Some countries have a further "choice of polluting sectors/activities" prior to

the main process such as Russia, Korea. Resulted in Sevilla process, there will be BAT conclusions and BREF (BAT Reference Document). In EU, experts proposed the fourth step moving from the BREF to the permit/integrated condition". The BAT conclusions will be included in the BREF. From the BREF, only the Emission Limit Value (ELV) is converted into a permit/integrated condition.

Medium scenario: Although the low scenario is applied in many countries, it is expected that there will be limitations in Việt Nam. To overcome this, the medium scenario proposes adding the international BAT list. Therefore, the medium scenario is integrated approach between the international BAT and local BAT. The goal is to get closer to international standards for pollution prevention and control.

High scenario: The high scenario is the medium scenario plus the BAT priority given to new sources. The new sources are first subjects to be applied BAT of International list prior to common and local use of BAT. Therefore, the high scenario is the integrated plan to solve the shortcomings of the previous scenarios.

IMPLEMENTATION STEPS

Basically, all three scenarios are built with the following steps: Selection of sectors/activities applying BAT; Collection of technology information; Evaluation of technology information; Setting up of criteria and selection of BAT and setting BREFs and permit/integrated conditions. In regard to sectors selection, there are 17 installations types possibly causing seriously environment pollution (specified in Decree No. 40/2019/ND-CP, dated May 13, 2019 of the Government on amendments to Decrees on guidelines for the LEP 2014) that is subjected to the application of BAT. However, in different scenarios there will be different approach.

Low scenario and its 5 implementation steps

Selection of sectors/fields applying BAT: 17 installation types are to be subjected to BAT application.

Collection of technology information: Following the guidance of the Organization for Economic Co-operation and Development (OECD), the steps to collect technology information include: Designing and sending questionnaires; collecting monitoring data; collecting data through expert meetings and associations; collecting data through research papers and other sources. The information content covers the technical, economic and environmental aspects of technology. In this step, the Ministry of Natural Resources and Environment (MONRE) will be the focal point for directing and coordinating with other stakeholders: Establishing Technical Working Groups (TWGs); Sending the questionnaire to the enterprises; Organizing technical group meetings. TWGs will decide the content and scope of the investigation.

Assessment of information technology: TWGs are mainly responsible for the assessment of technology information. Monitoring database and other research information/data were also gathered and reviewed. This step is a pre-selection or identification of potential technology to become a candidate of BAT.

Building up of criteria and BAT selection: To select BAT, BAT criteria are given by countries for its selection. Criteria can be set in the framework of Law/or Decree as in Russia or decided by TWGs (technical Working Group). Việt Nam can refer to the guidance of the European Union (EU) on the process of determining conclusion on BAT, including the following steps: take-off meeting of the TWGs; Presentation of the Draft Conclusion for comments; TWG's Conclusion Meeting; Final BAT conclusion; Exchange forum; The National Council votes; Final Decision Making on BAT Selection. Conclusion on BAT describes the techniques selected as BAT and their expected environmental performance. Conclusion on BAT is a separate and independent product of the BAT determination process. Conclusion on BAT is the reference for establishing permit/license conditions (including ELVs). A final decision on BAT is included in the BREFs.

Setting BREFs and permit/license conditions: BREFs generally include the following information: General information about the field involved; Application techniques and processes; Current consumption and emissions; Techniques considered in BAT determination; Conclusion on BAT; Emerging technology; Comments on the conclusion and recommendations for future works; Some terms. The establishment of permit/license conditions can be found in the European Industrial Emissions Directive (IED).

Medium scenario

In this scenario, the implementation steps are the same as Low one above. Only technology information is collected and selected not only from local source but also from international BAT list.

Collection of technology information: In this step, two information collection processes will be conducted simul-

taneously: Investigating and collecting of local technology information and collecting of information on the international BAT list.

Technology assessment/building up of criteria and BAT selection: A different thing in the medium scenario is that Vietnam's BAT list should include both domestic and international BAT. There will be two selection processes for domestic and international BAT with different criteria. The MONRE will issue these selection criteria. After these selections, the BAT international and Vietnamese technical nominee lists will be mixed/formed into a general list.

Setting BREFs and permit/license conditions: The final conclusion on integrated BAT will be incorporated into the BREFs. The ELVs will be selected as the basis for establishing permit/license conditions. The BREF/conclusion on BAT and ELVs will also be submitted to the competent authority for approval. These standards/regulations will take effect not later than 6 months after being approved by the competent authority.

High scenario

The implementation steps are the same as above, but the new source selected from 17 installations list are subjects of BAT application first, with consideration given to the priority of certain pollutants, their size and location of application.

In the high scenario, BAT-based international standards are given priority to new sources. The scale and types of pollutants of which the BAT will be applied will be decided by the MONRE.

IMPACT OF THE SCENARIOS

Low scenario

The low scenario is given the lowest expectation for the improvement of environmental quality, due to the application of low standardized domestic BATs, based on domestic technological information. There is a significant gap between the best available techniques local and international. In terms of implementation, the low scenario may be more favorable because many countries have applied it. On the positive side, the low scenario has certain impacts on the policy system and enterprises' awareness. The implemented scenario will clarify the reality of domestic production and technology. In particular, Vietnam's ELVs have a chance to compare with international ones in the same industries/fields of production. Therefore, enterprises will be aware of where they are, the goals they need to aim for, and better understanding of the difficulties that they will faced in the process of management and technology innovation to meet new requirements.

Medium scenario

The medium scenario has many positive points compared to the low scenario, bringing the emission limit values closer to the international regulations. However, this will also lead to greater investment costs, which are beyond the capabilities of parts of enterprises.

Due to international BAT application, the scenario will lead to the status of having two existing standards. Some leading companies apply BAT-based international standards, while the rest follow a backward schedule, corresponding to lower standards. Therefore, the policy for one target group will be distinct from the other. The medium scenario creates a technology gap in the country, positively impacting the process of competition and technology innovation. In the context of integration, the application of standards close to international BAT will be a necessary preparatory step to create new factors and competitiveness within the country.

High scenario

The high scenario will have a great impact on enterprises, firstly for newly invested enterprises/large-scale new sources, new sources of FDI and 17 polluting production types. Vietnam's new sources are major technology imported ones which originally are subject to international standards at the place of origin. The Government will consider the subjects of application, propose policies to support enterprises, and encourage positive trends in BAT implementation.

The high scenario will also be the basis for establishing new competition policies and environmental market-based policies in line with international integration trends, paving the way for new widespread technological innovation and new high-tech transfer from developed countries to Việt Nam. At the same time, the high scenario step by step brings international BAT standards into the list of Việt Nam in accordance with the integration trend toward the principles of equality, discrimination and green growth in the world.

Today, BAT is recognized as a dominant policy tool. The implementation of the BAT policy will bring many benefits to Vietnamese enterprises. The inclusion of BAT regulations in the LEP (amended) is a necessary new step for the future. Việt Nam needs to soon select appropriate scenarios, issue a roadmap for enterprises to participate in BAT implementation▪

VIỆT NAM GIVES PRIORITY TO PROJECTS WITH HIGH TECHNOLOGY AND ENVIRONMENTAL PROTECTION

This is the affirmation of the Minister of Planning and Investment Nguyễn Chí Dũng at the online conference with the theme "Việt Nam - the rising star" jointly organized by the Ministry of Planning and Investment, the State Bank and Standard Charter Bank, attracting the participation of business leaders from Asia, Europe and America.

According to Minister Nguyễn Chí Dũng, Việt Nam implements a policy of actively attracting foreign investment selectively, taking technology quality, efficiency and environmental protection as the key evaluation criteria. Prioritizing projects with advanced technology, new technology, high technology, clean technology, high added value, spillover effects, connecting the production chain in association with human resource training...

Việt Nam will have special incentives for projects that meet the above requirements and to prepare for the shifting investment inflows, Việt Nam has been accelerating the preparation of conditions such as land fund reviews, factory premises, as well as other essential infrastructure.

At the conference, Mr. Nirukt Sapru - General Director of Standard Charter Việt Nam and a group of five ASEAN and South Asian countries said that many startups and multinational corporations have been interested in establishing investment activities in Việt Nam to capitalize on geographic distance and policy and ASEAN connectivity to drive business▪

DUY BẠCH

ĐÀ NẴNG CITY BEGINS 1 MILLION 'GREEN' HOUSE PROJECTS

Đà Nẵng's Industry and Trade Department has launched a pilot project on the development of a million-green roof-top solar power houses. Vice Director of the Department Nguyễn Thị Thúy Mai said the first 45 households in the Đà Nẵng City would join the Project on roof-top solar power with capacities from 1.8-kilowatt peak (Kwp) to 3KWp in 2020. She said each household with under 3KWp solar power system would receive VNĐ 2 million (US$ 87) support for each KWp from the project.

The Project, which was jointly developed with the centre for Green Innovation Development (Green ID), aims to raise potential solar power in the City and reduce carbon emissions. According to the City's power corporation, more than 1,000 roof-top solar power projects, of which 52 percent are residential buildings, have been built in the city, supplying 1.7 million KWh to the City's grid each year.

It said some new projects with a total capacity of 5,000 KWp would be built in the city by the end of this year. At least, VNĐ 7 billion (US$ 304,000) had been paid for local solar roof-top systems, including residential and public buildings, as well as factories at industrial parks following solar power contracts between power corporations and households.

▲ *A roof-top solar power system at a trading centre in Đà Nẵng City*

Statistics from the department showed that Đà Nẵng has great renewable energy potential, with 2,000 hours of sunlight per year and an estimated 1,140 MW (Megawatts) of solar power. About 30% of the City's population use solar power for water heaters, while about 20 five-star hotels and resorts are using a solar power water heating system. Đà Nẵng, in co-operation with the European Union, launched a pilot project to develop solar energy at two hospitals, two schools and six households and build a database of solar power capacity in the city as well as a policy framework for clean energy development.

The City plans to build a 4.4MW solar farm on the closed Khánh Sơn Landfill to supply 7.7 million kWh per year to the city's power grid, while reducing 5,000 tons of carbon emissions each year. The development of renewable energy projects from ocean waves, tides and biogas from rural areas is planned for 2025▪

HỒNG NHUNG

Toxic additives in plastic

A new report, coordinated by the Regional Activity Centre for Sustainable Consumption and Production (SCP/RAC), serving both the Stockholm Convention and the Barcelona Convention, has been produced in collaboration with the International Pollutants Elimination Network (IPEN) to give evidence of toxic chemical components in plastics that can harm human and environmental health and impede a safe circular economy.

"Plastic's Toxic Additives and the Circular Economy" references vast evidence from renowned scientific articles and journals on the most concerning groups of chemicals used in plastic production. The report identifies "substances of concern" in plastics that pose a risk to human and environmental health including flame retardants, per fluorinated chemicals, phthalates, bisphenols and nonylphenols. These substances, many of which are endocrine disrupting chemicals, are toxic additives in plastics that are commonly used in everyday consumer goods including: children's toys, food packaging, electronics, as well as textiles, upholstery and furniture.

The report covers the presence and impact of the hazardous chemicals of concern in all stages of plastic product use-cycle from production and use, to recycling and landfill, incineration, waste to energy, land and marine accumulation, and addresses their associated impacts on human, marine biota, and environmental health. Human health consequences of endocrine disrupting chemicals commonly used in plastics include thyroid function disruption, reproductive impacts, obesity, immune system, increased damage, increased cancer risk and impacts on brain and neurological development. Toxic additives also affect marine life, which is particularly worrying in the Mediterranean Region, considered a biodiversity hotspot.

"The COVID-19 pandemic has showed the links between environmental health and the wellbeing of human societies. Now is the time to act on science to reduce plastics' toxic chemical additives and the pollution in all its forms and to seek sustainable ways in which we can live in harmony with nature. Taming the leviathan of plastic litter, which stifles marine life and releases highly hazardous substances in the environment, must become a priority", Mr. Gaetano Leone - Coordinator of UNEP/MAP - Barcelona Convention Secretariat said. There are many steps that can be taken to recover in a smart way from COVID-19. Tackling the plastic pandemic is a giant step towards a green renaissance in Mare Nostrum, Mr. Gaetano Leone observed.

▲ *The report*

Circular economy models are designed to eliminate waste, rebuild natural capital and keep products, materials and molecules flowing effectively through the economy at their highest value. Based on this approach, plastics that contain hazardous chemicals can continually expose ecosystems and people to harmful agents. This is of particular concern with recycled plastics that contain Persistent Organic Pollutants (POPs), which are banned or regulated in international chemical conventions, including the Stockholm Convention.

BRS Secretariat Executive Secretary Rolph Payet stated: 'There are a wide variety of chemical additives in plastics, some of them have been identified as POPs and are now listed under the Stockholm Convention - for example, brominated flame retardants and fluorinated water repellents. However, it is challenging for countries to manage POPs and other hazardous chemicals added to plastics throughout their life cycle including when plastic wastes are finally disposed of or recycled. We also need transparency on which plastics contains which additives, to enable their subsequent environmentally sound management. I urge industry and academia to intensify their efforts to find alternatives to such additives in plastics". Efforts to tackle the world's plastic pollution problem must further address the substances of concern that are ubiquitous in plastic waste".

Polymers and their additives are extensively used in consumer products to make synthetic fibers, foams, coatings, adhesives and sealants. "Recycled plastics" – plastics from a variety of sources that have been melted down, re-formed, and used to make new products have been shown to contain many banned, restricted, or otherwise hazardous chemicals.

The publication details toxic exposures related to each state of the plastic life cycle from production to disposal addressing landfill and incineration. Emissions of hazardous substances

such dioxin are a result of uncontrolled combustion of plastic waste and in particular of plastics containing halogens such as PVC, polytetrafluorethylene, Teflon, or brominated flame retardants. Technologies such as pyrolysis or combustion of fluorinated polymers or fluoropolymer dispersion can result in the unintentional formation and release of fluorinated POPs (PFOA), other PFAS, other toxic substances, ozone depleting substances and greenhouse gases. The publication details how air pollution control in incineration technologies result in highly toxic dioxin intensive incinerator ash.

SCP/RAC's Director, Enrique de Villamore highlighted: "Building on the momentum the frontrunners have created regarding the plastic waste global crisis, we need to increase our ambition and to go 'beyond recycling' to address plastic pollution at source with a solid prevention strategy: Accelerating safer material innovation, promoting industry collaboration, innovating in recycling systems and ensuring transparency throughout the value chain. SCP/RAC will continue to push the boundaries and support ambitious objectives for a safe circular economy in the coming years".

To tackle the issue, the report call for coordinated strategies to reduce the production and use of chemicals of concern and prevent regrettable substitutions in plastic products. Four key approaches to tackle the challenges that hazardous chemical additives pose to achieving a circular economy are identified: Materials should be designed in accordance with goals of causing no harm to environmental and human health and achieving zero waste; Investment must be made to develop new, safer materials and systems that avoid the production and use of plastics with hazardous chemical additives and the replacement of toxic additives with regrettable substitutions; Industry collaboration will be key for industry to take responsibility for the hazardous materials they produce; Transparent chemical composition labelling of plastic materials need to be promoted▪

ĐỨC SINH

ĐÀ NẴNG CITY APPROVES BIODIVERSITY CONSERVATION MASTER PLAN

Đà Nẵng City's People's Committee has approved the Master Plan on biodiversity conservation in 2030 in line with long-term socio-economic and sustainable development goals. The Plan would include funds of nearly VNĐ 100 billion (US$ 4.4 million) to cover the cost of conservation, forest protection and afforestation as well as establishing new reserves on an area of 43,722 ha.

Following the Plan, current nature reserves of Sơn Trà, Bà Nà - Núi Chúa and Nam Hải Vân, or South Hải Vân forest, will be key priorities for strict protection in biosphere reserves, natural landscape protection, herb and botanical gardens covering 37,534 ha. The Bà Nà - Núi Chúa Nature Reserve would be promoted as a National Park, while the Sơn Trà Naturre Reserve and the South Hải Vân special use forest will be kept as two ature reserves.

▲ *A red-shanked douc langur (Pygathrix nemaeus) at the Sơn Trà Nature Reserve*

A core zone of the three reserves of Sơn Trà, Bà Nà - Núi Chúa and Nam Hải Vân forest and 10,979 ha of the Đà Nẵng Bay would be a new biosphere reserve to protect endangered species.

The Master Plan also includes a botanical garden in the Bà Nà-Núi Chúa reserve and a 10ha herb garden in the Sơn Trà Nature Reserve. Two lakes - Hòa Trung and Đồng Xanh - Đồng Nghệ - will be protected landscape zones, including wetlands and endangered species conservation sites. It said the protection of the nature reserves and promotion of new reserves and protected natural areas will aim to build rich biodiversity conservation corridors with neighbouring Thừa Thiên - Huế and Quảng Nam in the future.

According to the City, the Master Plan on biodiversity conservation would help promote eco-tourism services while protecting the rich biodiversity of flora and fauna. The Sơn Trà Nature Reserve, 10 km from the City, is home to more than 1,300 red-shanked douc langurs - the world's biggest population of the endangered primate listed by the International Union for Conservation of Nature (IUCN).

The Nature Reserve, which is 600m above sea level, is known for its rich biodiversity, with 387 animal species and 1,010 plant species. Meanwhile, 626 animal species and 793 plant species, including the endangered Northern buffed-cheeked gibbon and Edwards's pheasant were reported living in the Bà Nà - Núi Chúa Nature Reserve. The two nature reserves of Sơn Trà and Bà Nà-Núi Chúa are the "green lungs" of Đà Nẵng, supplying millions of tonnes of oxygen to residents and tourists▪

NGUYÊN HẰNG

ADB and Phú Yên sign Việt Nam's first certified green loan for 257 MW solar power project

The Asian Development Bank (ADB) and Phú Yên TTP Joint Stock Company (Phú Yên JSC) signed a US$ 186 million loan to develop and operate a 257 Megawatt (MW) Solar Power Plant in the Southern Province of Phú Yên's Hòa Hội, through the country's first certified green loan. Phú Yên JSC is owned by B.Grimm Power Public Company Limited and Trường Thành Việt Nam Group Joint Stock Company (TTVN).

The financing comprises a US$ 27.9 million loan funded by ADB, a US$ 148.8 million syndicated loan (B loan) funded by commercial banks with ADB as lender of record and a US$ 9.3 million loan from Leading Asia's Private Infrastructure Fund (LEAP).

The syndicated loan is the first green B loan in Asia and the Pacific to be certified by the Climate Bonds Initiative and one of the largest such loans yet mobilized in Việt Nam. The initiative is an investor-focused not-for-profit, promoting large-scale investment in the low-carbon economy and also administers the international Climate Bond Standards and Certification Scheme.

Participating commercial banks include Bangkok Bank, Kasikorn Bank, Kiatnakin Bank, Industrial and Commercial Bank of China and Standard Chartered Bank. Green loans are used to fund new or existing projects that deliver environmental or climate-related benefits.

Infrastructure Finance Division Director for East Asia, Southeast Asia and the Pacific at ADB's Private Sector Operations Department Jackie B. Surtani said ADB is committed to supporting B.Grimm, one of the bank's most valued clients, with its long-term expansion into Việt Nam and its important work in renewable energy.

"We're also excited to work for the first time with TTVN. This project will support the rapid development of solar power capacity in Việt Nam, advance the country's low-carbon growth goals, and, we hope, catalyze further commercial bank financing for renewable energy", Mr. Jackie B. Surtani said.

The Project is the largest single operating solar power plant in Việt Nam and one of the largest in Southeast Asia. It will help to reduce 123,000 tonnes of carbon dioxide annually. The Solar Power Plant will deliver electricity to Quảng Ngãi and Nha Trang cities, as well as surrounding areas in a region that is emerging as one of Việt Nam's key tourist centres.

B.Grimm Power Company's President Preeyanart Soontornwata said this transaction will support the development of clean and sustainable energy in Việt Nam and help promote the green loan market in Southeast Asia. "This project is a further demonstration of B.Grimm Power Company adopting international best practices, and this landmark green transaction is proof of our focus on doing business sustainably. We would like to express our sincere appreciation to ADB for their leadership role in the transaction and to our B loan lenders whose invaluable support builds on our long-standing relationships forged over multiple transactions", Mr. Preeyanart Soontornw said.

TTVN Chairman Đặng Trung Kiên said TTVN had successfully worked with B.Grimm from day one to reach commercial operation within a short period, thereby contributing to the energy security goals of Việt Nam. "We are pleased to see the project operating very well and value the partnership and support from ADB and participating commercial lenders in achieving this financing milestone in the Vietnamese renewables market", he said▪

TRẦN TÂN

▲ *The Solar Power Plant in Hòa Hội (Phú Yên)*

Minister of Natural Resources and Environment calls for urgent joint actions to conserve biodiversity

▲ *Participants at the seminar*

Vietnam's Minister of Natural Resources and Environment Trần Hồng Hà, on behalf of the Vietnamese Government, has called on countries to combine strength and coordinate actions in a more urgent, drastic and practical manner to protect biodiversity - a priceless natural resource. The Minister Trần Hồng Hà made the appeal at the online UN Biodiversity Summit, themed "Urgent Action on Biodiversity for Sustainable Development", on October 1st 2020, which was held as part of the 75th session of the UN General Assembly.

The event aimed to affirm the commitment to improving the human-nature relationship, work out orientations for addressing causes of biodiversity loss, and underscore the importance of biodiversity conservation in sustainable development activities and climate change response. It also looked to raise ambition for the development of the post-2020 global biodiversity framework to be adopted at the 15th meeting of the Conference of Parties to the Convention on Biological Diversity in 2021.

Speaking at the Summit's plenary session, Ha said biodiversity is facing serious threats posed by human actions, especially the increasing wildlife trafficking, shrinking natural forests due to fire and logging, and global warming triggered by climate change.

Such activities, with socio-economic development purposes, have severely affected biodiversity in both the mainland and oceans on the global scale, he pointed out. The Minister stressed that it's time for all, from leaders to civilians, besides using political and legal tools, to consider biodiversity conservation a moral issue.

Urging joint actions to protect biodiversity, the official also suggested several actions such as building a green economy based on investing in natural capital instead of the current economy that mainly relies on the over-exploitation of natural resources, integrating biodiversity-related issues into development projects, viewing biodiversity as a crucial part of economic and climate change response solutions and as the measurement of sustainable development efforts, carrying out effective solutions to urgently prevent marine plastic pollution, encouraging the formation of and actively implementing regional and global initiatives to deal with environmental changes and setting up a harmonious relationship between humans and the nature▪

CHÍ VIỄN

Summary of ASOEN Vietnam activities in 2020

On 17th December 2020, the Việt Nam Environment Administration (VEA) organized the seminar on review of ASOEN Vietnam's cooperation activities in 2020 to evaluate Việt Nam's cooperation activities in the past year and propose solutions to increase performance of ASOEN Vietnam in the coming time. Attending the Seminar were Mr. Nguyễn Văn Tài, ASOEN Vietnam Chairman, Director General of VEA, representatives of ASOEN Vietnam Working Groups and related units under the Ministry of Natural Resources and Environment (MONRE).

▲ *Participants at the seminar*

Speaking at the opening of the seminar, Mr. Nguyễn Văn Tài said ASEAN's cooperation in the field of environment is increasingly interested in member countries. In 2020, in the difficult context of COVID-19 epidemic, ASEAN member countries joined hands to implement solutions to minimize the impacts of the epidemic while continuing to work closely to solve prioritized environmental problems in the region such as climate change, marine and coastal environment, chemicals and wastes, water resources management, environmental education, city of environmental sustainability, nature and biodiversity conservation.

2020 was also the first year that Việt Nam concurrently undertook the mission of the ASEAN Chairmanship Year and the Non-Permanent Member of the United Nations Security Council. Việt Nam has undertaken the 2020 ASEAN Chairmanship Year with the theme "ASEAN's cohesion and proactive adaptation" in a context requiring new skills and creativity unprecedented by ASEAN and the world.

Fulfilling the responsibilities of the ASEAN Chairmanship, Việt Nam has successfully organized many important online meetings and conferences. ASOEN Việt Nam has also actively promoted the implementation of cooperation activities, actively contributing to regional activities and the success of the 2020 ASEAN Chairmanship Year.

At the seminar, representatives of ASOEN Vietnam Office evaluated the results achieved in 2020 of the ASOEN Vietnam Working Group, specifically: ASOEN Vietnam has actively and fully participated in the regional and national activities such as sending representatives to key meetings in the framework of ASEAN environmental cooperation, including: ASOEN Working Group, 31st Meeting of ASOEN and other related meetings; participating in the development of and comment on ASEAN environmental cooperation documents (ASEAN Framework of Action on Marine Debris; ASEAN Joint Statement on Climate Change to the UNFCCC COP26; ASEAN Joint Statement on Biodiversity Conservation to the CBD COP15); Drafting ASEAN-China Environmental Cooperation Strategic Framework for the period of 2021 - 2025...

It is expected that in 2021, ASOEN Vietnam will focus on implementing the following tasks: Promote activities within the framework of 7 ASEAN Working Groups on Environment such as climate change, environmental education, city of environmental sustainability, chemicals and wastes, nature and biodiversity conservation, water resources management...; participate in the development of ASEAN cooperation documents expected to be submitted to the high level for approval in 2021, including: Draft ASEAN Joint Statement on Climate Change to the UNFCCC COP26; Draft ASEAN Joint Statement on Biodiversity Conservation to the CBD COP15; Draft ASEAN Joint Statement on Chemicals and Wastes to the Conferences of the Parties to the Basel, Rotterdam and Stockholm Conventions...

Along with that, continue to participate in activities within the framework of environmental cooperation with ASEAN+3, East Asia, partner countries and international organizations; cooperate closely with Japan and other member countries to implement ASEAN-Japan cooperation activities and projects on environment, climate change and marine wastes; implement ASEAN environmental cooperation activities, especially with Norway, Germany, EU, GIZ, PEMSEA.

In addition, ASOEN Vietnam will review and propose to promulgate a Regulation on the Organization of ASEAN Environmental Awards in Việt Nam, including: Awards for Cities of Environmental Sustainability; Awards for ASEAN Ecological Schools; Awards for ASEAN Youth for Environment▪

CHÂU LOAN

HSBC, WWF VIETNAM JOIN HANDS TO RECOVER SUBMERGED FORESTS

HSBC Bank Vietnam Limited (HSBC Vietnam) has teamed up with World Wide Fund For Nature (WWF) Vietnam in rolling out a project worth 10 billion VND (431,800 USD) to recover submerged forests at the Cà Mau Cape National Park in the Southernmost Province of Ca Mau.

The five-year Project strives to retrieve 150 ha of natural submerged forests, in the hope of handling severe challenges on climate change, water security, water pollution and food security, together with health care and natural hazard risk management.

HSBC Vietnam CEO Tim Evans said that his group has endorsed environmental conservation activities for the sake of future generations. The Project is expected to support Việt Nam to fulfil its commitment on greenhouse gas emission reduction in keeping with the Paris Agreement. In addition, it will help the country raise nationwide forest coverage.

▲ *The Cà Mau Cape National Park*

The impact of climate change would severely affect the biodiversity of mangrove forests across the country. Việt Nam is one of the five countries most vulnerable to climate change while the Mekong Delta region, Vietnam's rice granary, is among the three large deltas in the world worst hit by that weather phenomenon▪

BÙI HẰNG

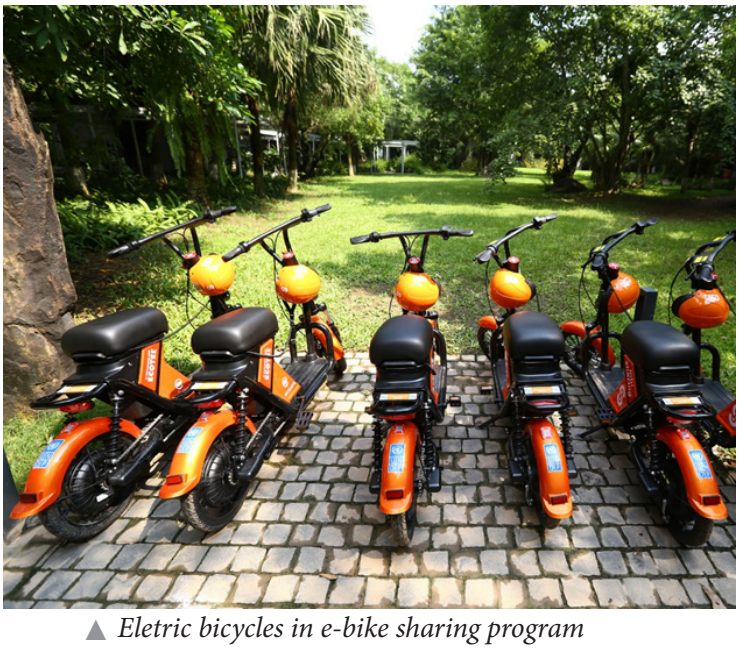
UNDP LAUNCHES GREEN E-TRANSPORTATION INITIATIVE IN VIỆT NAM

The United Nations Development Program (UNDP) and MBI Motors Vietnamheld a ceremony to announce the Green E-transportation Initiative at Ecopark, Hưng Yên

This Green E-transportation Initiative is a public - private initiative jointly planned and implemented by UNDP, MBI Motors Vietnam, Ecopark, Ecotek and Huế City. This is an activity within the framework of the UNDP Climate Business Index and the Ministry of Planning and Investment - a system that encourages companies to take action to respond to climate change.

The overall objective of the Green E-Transportation initiative is to raise awareness about the importance of green transport in addressing the problems of climate change and air quality in Việt Nam; promote green mobility to reduce air pollution and the health risks posed by pollution

Under the initiative, over the next two months, a pilot test of the e-bike sharing program will be conducted at Ecopark with about 500 electric bicycles, 50 charging stations and an operator center.



▲ *Eletric bicycles in e-bike sharing program*

After the trial period, UNDP will analyze all the data in detail and prepare a report on the impact assessment of greenhouse gas reduction as well as improvement of air quality. On that basis, MBI Motors Vietnam and UNDP will expand this e-bike sharing program in Huế City. In the future, the e-bike sharing program could also be expanded to other cities ▪

PHƯƠNG LINH

Green bond market development in Việt Nam - potentials and challenges

PHÍ THỊ MINH NGUYỆT
Climate Bonds Initiative
ĐỖ THỊ HỒNG NHUNG
Academy of Finance

Climate change with major impacts such as droughts, floods, sea level rise ... has seriously affected the global socio-economy. Therefore, countries around the world have now paid more attention to environmental factors, set out the Green Growth orientation and developed a circular economy.

To implement Green Growth, countries need a large capital source to implement green projects for the environment, to fight against and adapt to climate change. According to the International Energy Agency (IEA), to halve global gas emissions by 2050, the world will need 46 trillion USD, equivalent to 1 trillion USD/year. To meet that demand, the "Green bonds (GBs)" initiative was established, becoming one of the new and effective channels to attract capital to mobilize hundreds of billions of USD for green economic development in the world.

OPPORTUNITIES, POTENTIALS

Việt Nam is one of the countries having great opportunities to develop the GB market. These opportunities stem from both international environmental conditions and its own internal conditions. Along with that, investors, especially those interested in environmental issues, have great demand for GBs. The GB market started to open from 2007 to 2008 with 2 major issues, including: Europe Development Bank with a volume of 600 million USD; World Bank (WB) with a volume of 300 million USD. In 2019, about 250 billion USD of GBs were issued. However, to achieve the goal of financing climate change solutions, on a worldwide scale, we will need trillions of USD. Thus, compared with the volume of 100 trillion USD, this is still a relatively modest number. This shows the great potential and space of GBs. In general, international investors have great demand for GBs and have not been fully met, so the market is waiting for next issues.

Meanwhile, the green financial market is increasingly completing and thus increasing liquidity for green instruments. The milestone driving the global GB market to develop is 2014, with a strong growth (nearly 80% compared to 2013), since then, the average growth rate of the international GB market has always been approximately at 50%. If in the early time, development assistance organizations such as the WB or regional development banks were the main issuers with the aim of promoting the market, in recent years, large organizations, banks and governments have also participated in issuing GBs, boosting the strong growth of the GB market. In Southeast Asia alone, the GB market has been developing strongly in recent years. Singapore is the lead, followed by the Philippines and Indonesia. Besides, Malaysia and Thailand are also two countries on a strong growth momentum.

Việt Nam is also receiving strong attention and support from international organizations. In its commitment to nationally determined contributions (NDCs) under the Paris Agreement, by 2030, Việt Nam has committed to reducing its greenhouse gas emissions by 8% or perhaps 25% with international assistance compared to the Business as Usual scenario (BAU). Việt Nam is one of the 10 countries most affected by climate change, so we have received and are receiving great attention from international development assistance organizations. For example, the WB has just granted a green credit to Vietnam Prosperity Joint Stock Commercial Bank (VPBank) worth 212 million USD to finance green projects. Or recently, the Asian Development Bank (ADB) supported with the first green certified loan to Việt Nam worth 186 million USD for the 257 MW solar power plant project invested by Phú Yên TTP Company (Phú Yên Province).

In addition, the driving force for the rapid development of the GB market comes from the need for capital from the issuers and the commitments of investors for climate finance, as well as the dual benefits that it brings to investors, issuers and, even more, the whole society. The consequences of climate change have not only increased pressure on governments, but also increased production costs of the private sector. Meanwhile, the resources of governments are not sufficient for environmental restoration and dealing with energy threats, and resource scarcity. In Việt Nam, every year, the Government allocates about 6% of GDP to necessary infrastructure development, and to meet 100% of the need for infrastructure, an additional 605 billion USD is required. With its transition to a green economy, Việt Nam will need about 31 billion USD more by the end of this year and 21.2 billion USD in the next 10 years.

Thus, if only depending on the state budget, these investments will pose a long-term fiscal challenge for the government. Therefore, the companionship of the private sector with the government in the fight against climate change is extremely

important. GBs are considered as an effective instrument to attract green investment flows in the economy, through the financial market. GBs both bring financial resources to countries implementing clean energy projects, minimizing impacts and adapting to climate change, while providing investors with high quality credit, return on investments with positive environmental benefits. Besides, green technology and green productivity are also a trend chosen by investors due to concerns about climate change risks and environmental issues.

Việt Nam is in the period of a forced green transition and also possesses a lot of potentials to develop green energy resources for that transition. Việt Nam has a fossil fuel-intensive economy, with nearly two-thirds of its energy supplied from coal, oil and gas. The increasing demand for energy in recent years has made the country a coal importer since 2015. However, Việt Nam is a potential country with abundant renewable energy sources, especially solar energy and wind energy. Excessive reliance on fossil fuels is threatening energy security as well as environmental issues related to climate change and environmental pollution. Research by international organizations shows that climate change can cost Việt Nam 15 billion USD/year, equivalent to 5% of GDP. All of these problems require Việt Nam to gradually replace fossil fuels with environmentally friendly energy sources. As such, the country needs to establish a green policy framework and create green financial instruments to mobilize funding for sustainable development, promote green energy and implement solutions to adapt and mitigate the impacts of climate change in Việt Nam.

Recognizing the significance of green growth, the Government has issued many guiding policy mechanisms to issue the green capital market in general and the green capital mobilization instrument in particular. At present, the legal framework of green finance in Việt Nam is quite complete, allowing different types of GBs, issued by the Government, local Governments, enterprises (including financial institutions).

DEVELOPMENT STATUS

Legal framework

The Prime Minister has issued the National Strategy on Green Growth and the National Action Plan on Green Growth. The Ministry of Finance also issued the Action Plan of the Finance sector to implement the National Strategy on Green Growth. By 2017, the Prime Minister has approved the Bond Market Development Roadmap for the 2017 -2020 period, with a vision towards 2030, which deals with green capital market development and capital mobilization for green projects through issuing GBs. This is considered an important legal basis for the GB market development in Việt Nam.

Corporate GBs, on 4th December 2018, the Government issued Decree No. 163/2018/ND-CP on issuance of corporate bonds. This is the first legal framework on corporate GBs, which stipulates the issuance of corporate GBs, including principles for issuing, using capital and disclosing information. The organization for issuing, registering, depositing, listing and trading corporate GBs is the same as that of ordinary corporate bonds. Next, on 9th July 2020, the Government issued Decree No. 81/2020/ND-CP amending Decree No. 163/2018/ND-CP, in which the new Decree stipulates that the issuers of corporate GBs must disclose information on the process of management and disbursement of capital issued from GBs and must have a report on the use of capital from the source of GBs, with opinions from review of the audit organization and the environmental impact report.

Local Government GBs, on 30th June 2018, the Prime Minister issued Decree No. 93/ND-CP, which stipulates that local governments can issue local government GBs and must comply with the same regulations as for ordinary local government bond issuance and the provincial People's Committees must report on the catalogue of projects using capital sources of green local Government bonds under the guidance of the Ministry of Finance.

▲ *ADB has just supported with the first green certified loan to enter Việt Nam for a solar power plant project in Phú Yên Province*

Government GBs, the Government issued Decree No. 95/ND-CP on Government bonds, which stipulates that GBs are a type of Government bonds issued to invest in projects related to environmental protection activities in accordance the Law on Environmental Protection (green projects) and in the catalogue of projects with public investment capital allocation in accordance with the Law on Public Investment and the Law on State Budget.

In addition, the Government also assigned the Ministry of Finance, in coordination with the Ministry of Planning and Investment, the Ministry of Natural Resources and Environment to develop a Government GB issuance scheme to report to the Prime Minister for approval. If this scheme is approved, there will be 500 million USD of Government GBs expected to be issued in the near future.

Market

The GB market in Việt Nam is in the forming stage. Up to now, it has witnessed 2 issues of local Government GBs by 2 provinces and cities, which are Hồ Chí Minh City and Bà Rịa - Vũng Tàu. These issues are in the framework of the Scheme of pilot issuance of local government GBs of the Ministry of Finance. Accordingly, in 2016 - 2017, Hồ Chí Minh City issued 5,000 billion VND, a 15-year term for 34 projects related to sustainable water management and climate change adaptation, of which 17 green projects were approved based on the "Green project catalogue" of the State Bank, with a total amount of about 500 billion VND. In 2016, Bà Rịa - Vũng Tàu issued 500 billion VND, 5-year term, of which 80 billion was allocated to a green project related to sustainable water management. The success of these 2 pilot issues also showed positive signs in the market. However, the Government has only issued guiding and general development documents for the green capital market but there are still no specific legal documents to guide the GB market.

Currently, the Climate Bonds Initiative is also coordinating with IFC and the State Securities Commission of Việt Nam, under the funding of the Swedish Government, to study and release a manual to issue GBs with orientation towards corporate issuers that helps provide clear and detailed information about the GB issuance process and some experiences in GB issuance of some countries in the region.

DIFFICULTIES, CHALLENGES

Currently, the bond market of Việt Nam in general is not really developed. The economy still has a long-term challenge with the imbalance between the capital market and the currency market. By 2018, the credit system is estimated to still have to "carry" up to 86% of the capital supplied to the economy, while the bond has not yet performed its best role as a capital mobilization channel. Besides, the basic foundations for issuing GBs such as the size of the bond market are small (accounting for about 25% of GDP, corporate bonds only account for about 9% of GDP); organizations providing intermediary services such as credit rating agencies, independent evaluation organizations are few; the diversity of investors in the market is very limited, mainly commercial banks ... also significantly affects the development of the GB market.

On the other hand, there are still 3 challenges from important markets that affect the development of GBs in developing countries, which is the minimum scale issue, in which many small-scale projects do not satisfy major banks, financial institutions in the world; the currency issued, which is a non-convertible currency, leads to the possibility of issuing foreign currency bonds if a large volume is to be issued; Issuance costs are high, as issuers incur additional costs to obtain GB certification from an independent evaluation agencies, information disclosure and reporting activities on the distribution of proceeds from GBs throughout the project life cycle. Meanwhile, the Government and relevant ministries, agencies and sectors have not yet had a written regulation to create a mechanism for the development of the GB market, nor have a special incentive mechanism for GBs to attract issuers.

RECOMMENDATIONS TO DEVELOP GB MARKET IN VIỆT NAM

For the Government, it is necessary to consistently implement solutions, bring green finance, especially GBs into the overall development strategy of the country in the direction of transforming to a low-carbon green economy model and being agreed to implement from central to local levels. In the early stage of developing the GB market, the Government needs to implement incentive measures to attract GBs for the economy.

The Government needs to cooperate with foreign organizations such as WB, United Nations Environment Program (UNEP), German Agency for International Cooperation (GIZ)... for advice and guidance in GB issuance and development in the market. These institutions' knowledge and experience in developing green capital markets over the years will be useful for Việt Nam in the process of building and developing this type of financial asset. In particular, the Government needs more incentive policies to encourage GB issuers and attract investors interested in this type of asset. The State should offer tax, fee and other incentives for issuers, as well as domestic and foreign investors.

For the Ministry of Finance, the State Securities Commission and the finance sector need to soon complete the fi-

nancial policy framework to develop the GB market and other green financial products for all social stakeholders in a practical, effective and broad manner. Also, efforts to attract social capital for green development are made through the GB market.

The Ministry of Finance and the State Securities Commission have specific guidance on 4 international standards on GB principles (GBPs) in Việt Nam.

The Ministry of Finance should allow a number of large localities to issue project GBs and guaranteed GBs, this will create opportunities to mobilize greater capital for green projects, promoting a stronger GB market in Việt Nam.

For the State Bank, to increase liquidity for GBs, the State Bank can develop a mechanism to accept the use of some types of GBs as compulsory reserve. This will create a good impact on encouraging banks to own GBs in their asset portfolios, contributing to promoting the development of the GB market. Some procedures related to project implementation also need to be shortened for the process of project appraisal as well as project financing to be quick▪

DISCRIMINATION IN THE AIR

Over 40 percent of the United States (US) population - about 134 million people - face health risks resulting from air pollution, according to the American Lung Association. The burden is far from evenly shared. Studies show that in the US, people of color and low-income communities face a significantly higher risk of environmental health effects, highlighting that the impacts of air pollution are experienced unequally throughout the country.

People of color are more likely to live in areas affected by pollution and high road traffic density, increasing risks to their health. As prominent American environmental justice activist and leader Robert D. Bullard emphasizes, race and place matter.

For example, along the Mississippi River in the Southern US, there is an area with some of the worst air pollution in the country. In the stretch between New Orleans and Baton Rouge Louisiana, many people live right next to several high-polluting industrial plants. Residents, who are predominately Black, have seen significant cancer clusters, with cancer risks in the area reaching up to 50% more than the national average. In St. John the Baptist parish alone, an area of about 2 square miles, the cancer rate is about 800 times higher than the American average.

Similarly, New York City neighborhood Mott Haven, home to mainly LatinX and Black families, has a very high level of air pollution from traffic, warehouses and industry. Residents in Mott Haven face some of the highest rates of asthma cases and asthma-related hospitalizations in the country, especially among children.

▲ *About 134 million US's people face health risks resulting from air pollution*

Often, communities experiencing high levels of air pollution are among the most vulnerable, facing poor access to health services, limited economic opportunity, more polluted work environments and racial injustices. Comprehensive policies are needed to address these interrelated challenges. "There is a strong correlation between socioeconomic factors and risk of air pollution. Recognizing this and the disproportionate impacts of air pollution throughout the United States is a critical part of developing effective solutions", said Dr. Barbara Hendrie - Regional Director for UN Environment Program North America.

On the first-ever International Day of Clean Air for blue skies in September, the UN Environment Program called upon Governments, corporations, to civil society and individuals, to take action to reduce air pollution and bring about transformative change. Air pollution does not have to be a part of our collective future. We have the solutions and must take the necessary actions to address this environmental menace and provide Clean Air for all▪

HOÀNG ĐÀN

10 years to restore our planet: 10 actions that count

Against a backdrop of environmental crisis, the UN Decade on Ecosystem Restoration is a chance to revive the natural world that supports us all. But scientists say that these next ten years will count most in the fight to avert climate change and the loss of millions of species. Here are ten actions in the strategy of the UN Decade on Ecosystem Restoration.

1. EMPOWER A GLOBAL MOVEMENT

The UN Decade aims to stop and reverse the destruction and degradation of billions of hectares of ecosystems. It is a daunting task, made more complicated by the diversity of ecosystems and the threats they are facing from lush forests threatened by wildfires to agricultural soils so eroded that they may only carry a few more years of harvests. No single entity can steer the course in this endeavour. The UN Decade thus connects and empowers the actions of the many. Groups and individuals can get informed about restoration opportunities in their area, joining initiatives already underway, or start their own.

2. INVEST IN RESTORATION

Restoration takes resources. Organizations driving activities on the ground are often underfunded and face financial insecurity. While the benefits of restoration far outweigh the costs, it can only happen with long-term financing. Governments, international lenders, development agencies, the private sector and individuals will have to ramp up their support.

3. SET THE RIGHT INCENTIVES

In the long-term, healthier ecosystems can produce bigger harvests, more secure incomes and a healthier environment. But caring for nature can also mean foregoing some of the financial gains of less sustainable practices. There are ways to change this by incentivizing restoration activities and reducing subsidies that finance harmful practices, in the agriculture and fishing industries, for example.

4. CELEBRATE LEADERSHIP

Over the past years, we have witnessed incredible momentum around restoration. Campaigns to plant trillions of trees have captured the imagination of many communities. Under the Bonn Challenge, more than 60 countries have committed to bringing 350 million hectares of forest landscapes back to life. Indigenous peoples have acted as defenders of their ecosystems for generations. The UN Decade will celebrate leadership and encourage others to step up.

▲ *Restoration takes resources*

5. SHIFT BEHAVIOURS

Deforestation, the depletion of fish stocks and the degradation of agricultural soils are all caused by global consumption patterns. The UN Decade will work with all partners to identify and encourage restoration-friendly consumption. This can range from changes in diets to promoting restoration-based products.

6. INVEST IN RESEARCH

Restoration is complex. Practices that work in one ecosystem may have adverse impacts on another. As the climate changes, new uncertainties arise. Returning to a former state may not be desirable as hotter temperatures or shifting rainfall call for more resilient plants and crops. Scientific understanding of how to restore and adapt ecosystems is still developing. Considerable investments are needed to identify the best practices to restore our planet – one plot at a time.

7. BUILD CAPACITY

Thousands of conservation and restoration initiatives are already underway. The UN Decade will be fuelled by their vision, expertise and dedication. However, practitioners often face barriers that keep them from taking their projects to scale. Other critical sectors, such as finance, require more data and insights to make informed decisions. The UN Decade's strategy seeks to build the capacity of marginalized groups that stand to lose most from the destruction of ecosystems – such as indigenous peoples, women and youth to take an active role in restoration.

8. CELEBRATE A CULTURE OF RESTORATION

The power to revive our environment does not lie only with governments, experts and practitioners alone. Healing the planet is a cultural challenge. The UN Decade's strategy, therefore, calls on artists, storytellers, producers, musicians and connectors to join The UN Decade's Strategy.

9. BUILD UP THE NEXT GENERATION

Youth and future generations are most impacted by the current rapid destruction of ecosystems - they also stand to benefit the most from a restoration economy. The UN Decade's Strategy links the wellbeing of youth and the goals of restoration. Education for restoration will turn today's children into ecosystem ambassadors and provide skills for sustainable jobs.

10. LISTEN AND LEARN

Take a quick survey to help us learn more about you and how you want to be involved▪

ĐỖ HƯƠNG

VIETNAM'S LEADING COMPANIES TAKE STEPS TO REDUCE WASTE

More companies in Việt Nam are carrying out programs to reduce waste and achieve sustainable, environmentally friendly operations. The campaign "Go Green" from TikiNOW Smart Logistics (TNSL), for example, has contributed to sustainable and eco-friendly operations after one year of implementation.

In September 2019, TNSL Tiki's logistics entity, kicked off "Go Green", which focuses on two key approaches: replacement and reduction. The first step is to replace non-compostable plastic packaging materials with eco-friendly ones with a much shorter decomposition time. Specifically, bubble wraps, commonly used to protect fragile items but need 100 years to completely decompose, are now replaced with carton papers, which need only two months for decomposition.

Foams that hold products in place and take as long as one million years to decompose are replaced with thick papers. Bulky goods are covered with 2 to 3 layers of protective papers and with biodegradable plastic wraps to help minimize damages from impacts during transportation. Together with replacement, reduction is also applied as another major approach in TNSL's green operations chain. Before the campaign began, there were 16 kinds of packaging boxes with different sizes at Tiki warehouses. The box sizes, however, did not fit the items' actual sizes. This resulted in items being packed in much larger boxes, which required extra amounts of material such as foam or plastic during transportation. Mr. Henry Low, CEO of TNSL said: "This not only requires much more packaging material than actual demand, but also causes excess air in transportation, which leads to neither environmentally friendly nor efficient operations".

Since the "Go Green" campaign was launched, TNSL has optimized packaging box sizes at all fulfilment centers. All products before being warehoused are scanned for size measurement and storage by Cubiscan machines. When packing, warehouse workers scan the code of a single product or of all the products in one order, and the system recommends the most suitable box size. This not only cuts down packaging time but also saves a large portion of other extra materials. The size and weight of transport are also better optimized. The number of box sizes at TNSL warehouses has been reduced to nine types. And 85 percent of packaging materials at TNSL are now eco-friendly. The proportion of packaging materials in use has also halved, which has led to a decline in cost of 50 percent.

In order to accomplish these results and progress to further improvement in the coming time, commitment by all staff and management is essential. Human resource training is considered a key factor in the success of the campaign. Personnel at the TNSL Fulfillment Center are equipped with knowledge about limiting plastic waste and practical skills that align with the new packaging standards. Mr. Henry Low said: "Conducting this campaign is not about catching temporary trends but is about our long-term strategy in building and developing a sustainable and responsible supply chain".

Another company pursuing waste reduction is Coca-Cola Beverages Vietnam Limited, which wants to have all of its packaging to be recyclable by 2025, and to have at least 50 percent recycled material used in its packaging by 2030. The Company has also launched a program to remove plastic shrink film on Dasani bottled water and aims to collect and recycle a bottle or can for each one sold by 2030. The Company said these actions reflect its commitment to its long-term strategy for managing plastic waste, as part of Coca-Cola's global strategy called "World Without Waste".

▲ *85% of packaging materials at TikiNOW Smart Logistics are eco-friendly*

▲ *9 leading companies in the consumer goods and packaging sectors in Việt Nam has signed a partnership to establish the PRO Vietnam*

Coca-Cola is co-operating with the Vietnam Business Council for Sustainable Development, Vietnam Chamber of Commerce & Industry, Unilever and Dow to carry out a "Zero Waste to Nature" program which promotes a circular economy and raises public awareness, seeks effective recycling technology, and builds new habits of responsible waste management in society.

Coca-Cola Vietnam is one of the founding members of the Packaging Recycling Organization Vietnam (PRO Vietnam), which shares their goals, vision and responsibilities in promoting a circular economy in Việt Nam through activities of reducing, sorting, collecting and recycling waste.

PRO Vietnam is a coalition of leading FDI and Vietnamese companies with high prestige, diverse experiences and especially an earnest responsibility to Vietnamese consumers and to the environment. This includes the consumer goods and packaging industries, united in a vision to work with the Government in providing a long-term impetus to packaging and recycling in the country, making Vietnam green, clean and beautiful. According to PRO Vietnam, rapid urbanization and consumerism combined with the lack of an anti-litter culture and absence of recycling mindset among the population is building up to a large-scale litter and ecological problem in Việt Nam.

Most of Vietnam's mismanaged packaging waste is ending up in landfills and spoiling the country's long coastline, according to PRO Vietnam.

Việt Nam ranks among the top four countries with the largest volume of mismanaged plastic waste in the world. A huge portion of inorganic waste in Việt Nam is packaging, which does not get treated properly.

PRO Vietnam is supporting the Government in the "Recycle" aspect of the 3Rs (Reduce - Reuse - Recycle).

The focus of PRO Vietnam is to build partnerships between local governments and stakeholders in the value chain for packaging in order to increase recycling. PRO Vietnam is focused on incentivizing the recycling industry to increase packaging collections via the informal and formal sectors, in addition to education and awareness to drive behavior change by promoting the circular economy for packaging. PRO Vietnam aims to collaborate with the recycling business, driving a circular economy of packaging in Vietnam by 2030. This model will recreate an entire ecosystem of consumer good packages, from design and manufacture to collection after usage, recycling and reuse, giving a second life to packaging waste.

URC, a leading food and beverage manufacturer in Việt Nam, was a founding member of PRO Vietnam. As part of the group's strategy outlined last year, it wants PRO Vietnam to contribute to a green, clean and beautiful Vietnam by promoting a circular economy model through the product packaging and recycling process. Mr. Laurent Levan, President and General Director of URC Vietnam said on the Pro Vietnam website: "We understand that packaging can bring convenience as well as guarantee food hygiene, but it also creates a burden of waste if not handled properly". Acknowledging its responsibility in the plastic waste crisis, Mr. Laurent Levan said that PRO Vietnam "wants to join hands with the community to become part of the solution". Maintaining sustainable development and accompanying the community to adapt to climate change and prevent pollution are not only the company's responsibility to society, but also offer competitive advantages that help URC build a resilient value chain and closer relationships with consumers, the company said▪

PHẠM ĐÌNH

Global Commitment 2020: Progress made, but acceleration needed to meet targets on reducing plastic waste and pollution

The Ellen MacArthur Foundation and UN Environment Program (UNEP) have recently published their second annual New Plastics Economy Global Commitment Progress report, together with detailed data on the progress of individual business and government signatories. The Global Commitment 2020 Progress Report shows there has been significant progress in two key areas: The incorporation of recycled content in plastic packaging and the phase out of the most identified problematic items, such as PS and PVC packaging, undetectable carbon black pigments and single-use plastic bags and straws.

However, there has been limited progress on increasing recyclability of plastic packaging and on reducing the need for single-use packaging altogether: progress on shifting towards reusable packaging is limited and elimination efforts remain focused on a relatively small set of materials and formats. There are also significant differences in the rate of progress between signatories - while some have taken big steps forward, others have shown little to no progress against quantitative targets.

It is encouraging to see initial progress being made by signatories in year one after signing the Global Commitment, but a substantial acceleration of progress will be needed to achieve the 2025 targets.

Key findings

Recycled content in plastic packaging grew by 22% year on year, to 6.2% on average for packaged goods and retail signatories; 31% of packaged goods and retail signatories - 18 in total - now have targets in place to reduce virgin plastic in packaging or reduce plastic packaging altogether; Elimination efforts remain focused on a relatively small set of materials and formats, and are being delivered primarily through substitution towards other plastics or paper, or light weighting (often by reducing thickness, for example), rather than by reducing the need for single-use packaging altogether' Reusable packaging increased marginally from the prior year (by 0.1 percentage points) and remains low at 1.9% for packaged goods and retail signatories, while we do see a further increase in reuse plotting activity; Substantial investments towards achieving the 2025 targets have been reported, bringing the total amount publicly committed by Global Commitment signatories to more than USD 10 billion.

There are substantial differences in progress between signatories – while some have taken big steps forward, others have shown little to no progress against quantitative targets. Mr. Sander Defruyt - New Plastics Economy Lead at the Ellen MacArthur Foundation said: "This report shows encouraging progress towards the vision for a circular economy for plastic in some areas, particularly in the use of recycled plastic. But, going forward it will be crucial to also see major steps forward in rethinking what packaging is put on the market in the first place. We are calling on industry to rapidly increase efforts to reduce single-use packaging and eliminate packaging types that have no credible pathway to making recycling work in practice and at scale. We know industry cannot deliver the change alone and we are calling on policymakers to put in place the enabling conditions, incentives and international framework to accelerate this transition".

▲ *The report shows there has been significant progress on increasing recyclability of plastic packaging*

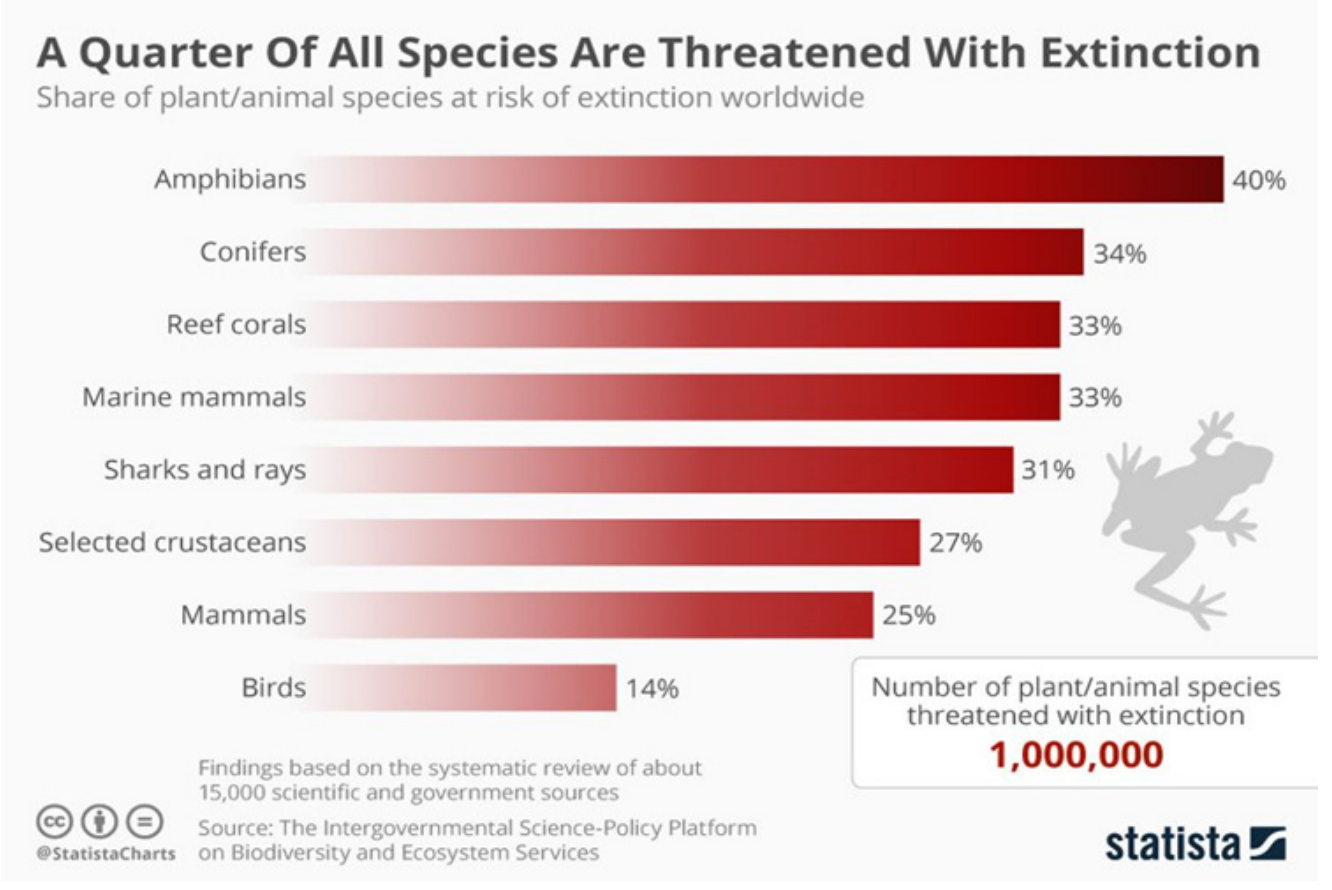
The Ellen MacArthur Foundation and UN Environment Program have made four calls to action that are vital to eradicating plastic pollution.

Businesses: Take bold action on packaging types that are not recyclable today - either developing and executing a credible roadmap to make recycling work, or decisively innovating away from them; Set ambitious reduction targets; Recognizing that voluntary action by industry alone cannot deliver change on the scale and at the pace needed,

Governments: Establish policies and mechanisms, that provide dedicated and stable funding for collection and sorting, through fair industry contributions, such as EPR, without which recycling is unlikely to ever scale; Set a global direction and create an international framework for action, through the UN Environment Assembly, building on the vision for a circular economy for plastics▪

NAM VIỆT

10 animals that were rediscovered after they were believed to be extinct



As many as one million species of animal and plant could face extinction. This dramatic decline in the health of global biodiversity is a crisis as well as a threat to the wellbeing of the planet's population, the UN warns. Plus, it poses a very immediate risk to global food security and economic activity. Since the 16th Century, hundreds of species of vertebrates have disappeared – almost all due to human-related changes such as loss of habitat or over-hunting. That threat remains present with around 40% of amphibians, 33% of marine mammals and 14% of birds all facing an uncertain future.

Human activity is responsible for 99% of currently threatened species through habitat loss, introduction of exotic species and global warming. Freshwater ecosystems are now one of the most endangered habitats in the world due to human activity. There are several species that were rediscovered after being declared extinct - sometimes for centuries.

After falling extinct due to hunting, climate change and loss of habitat, it is surprising when species resurface. These are 10 animals that have, figuratively, come back from the dead.

1. TAKAHE

This flightless bird is indigenous to New Zealand and went missing for nearly 50 years before being rediscovered near Lake Obell in Fiordland National Park. Their population dwindled when rats, cats, dogs, and pigs were introduced to New Zealand by Polynesian and European colonists, and it was believed the last of the population died out in 1898. In 1948, a team of explorers came across a takahe in the Murchosin Mountains. The shiny-backed, red-beaked birds are being protected within refuges on seven islands and many inland shelters in New Zealand to ensure their species is not lost a second time. There are now close to 300 takahes and in 2018, 30 of the birds were released into the wild for the first time in over a century.

▲ *Takahe at Orokonui Ecosanctuary in New Zealand*

2. THE CHACOAN PECCARY

The peccary is similar in appearance to a pig but cannot be domesticated. When a fossil of the animal was discovered in Argentina in 1930, it was believed to have been extinct for thousands of years. However, in 1975 researchers found a live peccary in the Chaco region of Paraguay, and today there are 3,000 known animals. It turned out the indigenous people of the Chaco region had known of its presence for years, but it had taken decades for scientists to learn it was still living. The Chacoan peccary is still listed as endangered.

▲ *The Chacoan peccary or tagua (Catagonus wagneri) is the last extant species of the genus Catagonus.*

▲ *Bermuda Petrel from the Crossley ID Guide Eastern Birds*

3. BERMUDA PETREL

Known as one of the most inspiring discoveries in the world of natural conservation, the Bermuda petrel was rediscovered after being presumed extinct for 330 years. The bird had not been seen since the 1620s before 18 nesting pairs were discovered in 1951 on remote islets in Castle Harbor. Centuries ago, the birds were so abundant explorers from Europe called Bermuda an island of demons and feared the mating calls of the birds would inspire sailors - but soon they discovered the birds' eggs were a reliable food source found easily in ground-level nesting sites. Soon afterwards domestic animals brought by European settlers also found the eggs and the population was devastated. Today, after half a century of work to manage nests and pests, the Bermuda petrel is slowly on the rise, with an estimated 250 birds in existence.

4. VENOMOUS CUBAN SOLENODON

The venomous Cuban solendon is one of the few mammals to use poisonous saliva as defense. Originally discovered in 1861, it was declared extinct when evidence of the mole-like creature had not been seen for more than 80 years due to habitat destruction. But in 1973 and 1974, three different specimens were found by researchers and are still living in Cuba today. Another venomous Cuban solendon was found in 2003, and after being captured and named Alejandrito, the animal was studied and then released back into the wild.

▲ *Specimen of a Cuban solenodon at the New York Zoo*

▲ *La Palma lizard*

5. LA PALMA GIANT LIZARD

The La Palma giant lizard was believed to be extinct for 500 years before it was rediscovered in 2007, in the La Palma region of the Canary Islands. Its population was decimated by hunting and the introduction of cats into its environment. The lone lizard was about one foot long and an estimated four years old, and new expeditions are still being planned in hopes of finding a breeding population of the long-lost lizard.

6. FERNANDINA GIANT TORTOISE

In 2019, a female Fernandina giant tortoise was found in the Galapagos Islands - more than a century after the last known tortoise was seen in 1906. Her age is estimated at over 100 years old, meaning she's been wandering the island since before extinction was declared. There have been more scents and tracks found around the Fernandina Island where she was found, giving researchers reason to believe she's not the only tortoise remaining.

▲ *A Fernandina giant tortoise*

7. THE TERROR SKINK

A lone terror skink was spotted on an island off the coast of French archipelago New Calendonia, in the south Pacific Ocean, and it wasn't rediscovered until 2003. Called a terror skink because it is a meat-eater equipped with long, sharp, curved teeth, the lizard has now been confirmed to exist on similar small islands in the south Pacific and is considered a top predator.

▲ *The terror skink*

▲ *Naked-backed fruit bats*

8. PHILIPPINES NAKED-BACKED FRUIT BAT

Naked-backed fruit bats were declared extinct in 1996, when not even one of the animals had been seen since 1964, but the Philippines native resurfaced in 2001. When its population was abundant the guano it produced was mined and used as fertilizer, but its numbers declined partly because of hunting for its meat, and mainly because the fruit-filled forests it relied on for sustenance were replaced by sugar cane fields. The fruit bat is now threatened as its habitat on the Cebu and Negros Islands remains unprotected.

9. NEW GUINEA HIGHLAND WILD DOG

The New Guinea highland wild dog, the rarest and most ancient canine species in the world, is a distant relative of the Australian dingo that went extinct 50 years ago. About 15 of the dogs were found in 2017 in the remote Sudirman Mountains in Indonesia, which researchers said was enough to make up one thriving pack.

▲ *New Guinea highland wild dog*

▲ *Coelacanth off Pumula on the KwaZulu-Natal South Coast, South Africa*

10. COELACANTH

Thought to have gone extinct 65 million years ago by way of the meteor impact that killed the dinosaurs, the coelacanth, a six-foot-long, 200-pound, lobe-finned fish, was caught off the coast of South Africa in 1938. In 1998, a second fish was caught near Indonesia. They typically live up to 2,300 feet below sea level and dwell in deep water caves. Though it is estimated about 500 coelacanths are left alive, the fish is still listed as critically endangered, facing the threat of oil exploration off the coast of South Africa▪

NHẬT MINH

DISCOVERED 3 NEW PLANT SPECIES IN CENTRAL HIGHLANDS

Japanese and Vietnamese Scientists have just announced 1 species of the Cotton family discovered in Đắk Nông Province and 2 species of the Coffee family discovered in Gia Lai Province. These 3 new species have the full scientific name: Helicteres daknongensis V.S.Dang & D.T.Bui - Đắk Nông cocoon nest; Psydrax gialaiensis B.H.Quang, T.B.Tran & V.S.Dang - Căng Gia Lai; Lasianthus konchurangensis V.S.Dang, T.B.Tran & T.D.Ha - Xú Hương Kon Chư Răng.

In which, Đắk Nông cocoon group belonging to Cotton family (Malvaceae) was discovered at an altitude of 750m in Nghĩa Đức Commune, Gia Nghia, Đắk Nông. Meanwhile, the Căng Gia Lai belonging to the Coffee family (Rubiaceae) was discovered at an altitude of 989m in the evergreen forest habitat of Kon Chư Răng Nature Reserve, Gia Lai Province. The species name "gialaiensis" was named after Gia Lai Province. Xú Hương Kon Chư Răng, also in the coffee family (Rubiaceae), was discovered at an altitude of 1,012m in the primary forest of Kon Chư Răng Nature Reserve, Gia Lai Province.

The findings above were published in the Taiwania and Phytokeys Journals, June 2020.

Scientists have also discovered a new species of giant mantis in Truong Son. The team described this mantis species to be about 99.6mm - 102.2mm long.

Scientists named the mantis the Titanodula attenboroughi, after the British naturalist David Attenborough. The results have just been published by the Royal Society of Insects of Belgium (Belgium) in the Belgian Journal of Entomology▪

GIA LINH

▲ *The Căng Gia Lai*

▲ *Đắk Nông cocoon nest*

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