ISSN: 1859 - 042X
English Edition II-2016

Environment

VIETNAM ENVIRONMENT ADMINISTRATION MAGAZINE (VEM)
Website: tapchimoitruong.vn

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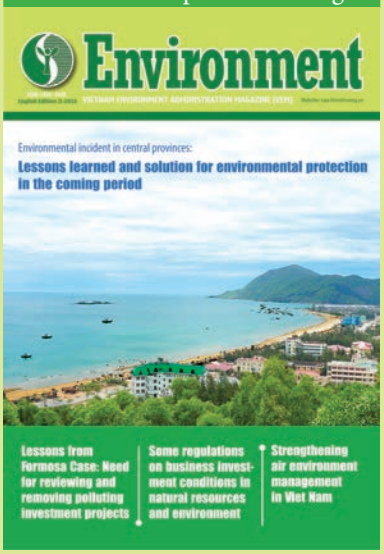

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PUBLICATION PERMIT
Nº 1347/GP-BTTTT - Date 23/8/2011

Photo on the cover page: *Thiên Cầm Beach, Hà Tĩnh Province*
Photo by: *VNA*
Design by: Nguyễn Mạnh Tuấn
Processed & printed by:
Đa Sắc Printed Co., Ltd

English Edition II - 2016

Price: 30.000VND

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Vietnam puts proposals to promote global green growth

▲*Minister of Natural Resources and Environment Trần Hồng Hà (first from left) participated in the Forum.*

The Vietnamese delegation led by the Minister of Natural Resources and Environment Trần Hồng Hà has participated in the Global Green Growth Forum (3GF) in Copenhagen, Denmark.

The 3GF summit with its theme "A call for action" focuses on discussion on prioritized issues such as: removing barriers at national, local and enterprise levels; manners to shift the economy; sharing experience in enhance green growth while responding to climate change. The summit took place in 2 days, from June 6th to 7th 2016 with three main topics: City, nature, and energy.

Việt Nam with the role of official member of 3GF had the participation of Ministry of Natural Resources and Environment, Ministry of Foreign Affairs, Ministry of Planning and Investment, Ministry of Construction, Vietnam Chamber of Commerce and Industry, and a number of enterprises operating in renewable energy.

At the launching session, the Minister Trần Hồng Hà puts three proposals to promote activities of 3GF all over the world. Accordingly, Việt Nam considers that it is necessary to establish effective mechanisms on investment enhancement, promote cooperation between Government and private sector related to global green growth; strengthen capacity and institution; remove barriers on institution and market; develop and transfer technology for member countries, especially developing ones. All these actions will contribute to implement successfully sustainable development targets as well as Paris Agreement on climate change.

At the same time, it is needed to develop specific guidelines on development of proposal of projects, search investment sources for member countries with the global finance mechanisms; develop technology transfer centers to encourage member countries in propose and implement projects that suitable with their capacity, demand and priority.

It is also necessary to enhance propagandizing and sharing information on the 3GF's cooperation mechanisms on implementing green growth activities, programs and projects with various manners such as: global forum, annual regional forum, technical meeting organized at member countries.

The Minister Trần Hồng Hà highlighted that Vietnam commits to be a responsible and active member of 3GF; to collaborate closely and cooperate effectively with other member countries in implementation of initiatives and solutions given by the Forum; to promote the participation of Ministries, sectors, localities and enterprises in 3GF as well as propose and implement co-benefit projects under 3GF framework.

On the occasion of this event, Vietnamese delegation also participated in meeting sessions, of which the leader of Vietnam delegation and the Prime Minister of Denmark had speech at the discussion session "A Call to Action - Enabling Solutions at. Speed & Scale". The Vietnam delegation also had bilateral meeting with the Director of the Global Green Growth Institute (GGGI) and Minister of Environment and Food of Denmark to discuss on strengthening cooperation on environment, green growth and climate change■

Lưu Trang

Environmental incident in Central provinces: **Lessons learned and solutions for environmental protection in the coming period**

Dr. Nguyễn Văn Tài - *Director General*
Vietnam Environment Administration

An abnormal fish death incident started on 6th April 2016 in Hà Tĩnh and then spread to Quảng Bình on 10th April 2016, Thừa Thiên Huế on 15th April 2016 and Quảng Trị on 16th April 2016. From 4th to 7th May 2016, the fish death incident declined with some dead fish was observed in Cửa Tùng, Quảng Trị. From 8th May 2016 to present, the dead fish incident has stopped. Also during this period, many environmental pollution cases happened in other localities nationwide, attracting public interest and causing social outrage.

To follow directives by Prime Minister, competent authorities have taken serious actions to identify causes and culprits based on scientific evidence, legal foundation and international practices. Measures taken include involving a large number of scientists and leading experts, regularly updating situations from the sites, collecting samples and retrieving information on natural conditions at the sites, analyzing meteorological data, maritime currents, remote sensing, and applying maritime pollution diffusion modelling to retrieve pollution sources. In addition, dead fish and sediment samples were collected and analyzed with advice from international scientists in methodology and analyses to increase objectiveness and reliability of the findings.

▲*Minister Trần Hồng Hà (second from right) heads a taskforce in investigating the mass dead fish (Source: Hà Tĩnh Newspaper)*

Ministry of Science and Technology (MOST) has collaborated with Viet Nam Academy of Science and Technology (VAST), Ministry of Natural Resources and Environment (MONRE) and other related Ministries to establish a national council of science and technology with participants of more than 100 scientists from over 30 research institutions and universities. Task forces have been developed to be on call in the four provinces to cooperate with ministries, sectors and localities to investigate, take and analyze samples and solve some problems on site. Consultative meetings for scrutiny and determination of causes of the fish death were held. It was concluded that toxic chemicals (phenol and cyanide) were the causes of the fish death in the four provinces. Simulation modeling, remote sensing analyses, waste audits and collected samples have proven that a large waste source from Vũng Áng (Hà Tĩnh) containing a mixture of Ferron, phenol, cyanide, heavy metals and multi cycle hydrocarbon transported along with maritime currents and caused the mass dead fish.

MONRE cooperated with other ministries, sectors and the four coastal provinces in reviewing all major sources of waste

▲*Prime Minister Nguyễn Xuân Phúc meets with affected localities (Source: VGP)*

being discharged into the sea. It was found that big waste sources were from Vũng Áng Economic Zone of Hà Tĩnh province. In the meantime, MONRE established an inter-ministerial taskforce to inspect environmental protection and water resource compliance of facilities discharging their wastes into the sea in Vũng Áng Economic Zone. The facilities include Hà Tĩnh Formosa, Hà Tĩnh Petrol Electricity Company and Hà Tĩnh Centre for Economic Zone Infrastructure. Seventy two officers, scientists, and leading experts in the fields of environment, remote sensing, hydrometeorology, oceanography, ecology, chemistry and steel production participated in the taskforce, divided into six groups which were headed by directors and deputy directors of scientific institutions. The inspection revealed that Hà Tĩnh Formosa Company had administrative violations in environmental protection and water resources. Some signs of causes of the environmental incidents were found. Taking into accounts findings from waste inventories of facilities in the four provinces from Hà Tĩnh to Thừa Thiên - Huế, MONRE determined that only wastes from Hà Tĩnh Formosa Company contained phenol and cyanide.

Based on findings of surveys and inspections, MONRE, MOST, VAST and related ministries/sectors agreed on the causes of the abnormal dead fish incident being phenol and cyanide from Hà Tĩnh Formosa Company.

Through legal arguments, Hà Tĩnh Formosa Company accepted its responsibility for the environmental incidents which caused mass dead fish in the four provinces from Hà Tĩnh to Thừa Thiên - Huế. It is also committed to: publically apologizing the Government and the people of Việt Nam for the serious environmental incident; paying the local people for the damages and occupational transfer, and paying for pollution remediation and environmental restoration in the four Central coastal provinces with a total budget of over 11,500 billion VND (500 million USD); radically addressing shortcomings and problems of the waste and waste water treatment systems, completing production technology and ensuring that all toxic agents are properly treated before being discharged into the environment as required by national and provincial environment authorities and that similar incidents will not reoccur; working with Vietnamese ministries/sectors and the Central provinces in developing comprehensive measures for maritime pollution control to prevent future incidents and to build trusts among the Vietnamese people and the international community; and fulfilling all commitments and ensuring no further environmental incidents.

Identification of causes and agents of the incidents was a result of prompt and assertive directions by the Party and State leaders and active participation of Ministries and related localities. In practice, it is usually very time consuming to detect causes and agents of similar environmental incidents, even in developed countries. In some cases, it is impossible to identify causes and culprits of the incidents.

In addition to investigation of the causes and culprits, Prime Minister issued Decision no. 772/QD-TTg dated 9th May 2016 on urgently supporting affected people in Hà Tĩnh, Quảng Bình, Quảng Trị and Thừa Thiên-Huế, Decision no. 1138/QD-TTg dated 25th June 2016 on extending supporting periods for the local farmers as stated in Decision no. 772/QD-TTg. According to these documents, supports were given to affected farmers, fishmen,

aquaculture farm owners and cooperatives via disaster relief mechanisms. Each person in families of owners or workers in fishing boats received 15 kg of rice per month in six months. A lumpsum of maximum of 5 million USD was given to both on-shore and off-shore ships which had to cease operation due to the incident. Credit loans were given 100% support in fish storing enterprises from 5th May to 5th July 2016. Up to 70% of the values of the dead fish products subject to being destroyed due to safety reasons were compensated for. So far, the Government has allocated about 4,182 tons of rice from a national reserve. Vietnam Environmental Protection Fund has supported the localities to destroy the dead fish (about 4 billion VND). The Central Committee of Viet Nam Fatherland's Front has granted over 5 billion VND for the affected farmers.

▲*Government's press conference on causes of abnormal fish dead incident in the four Central provinces (Source: VGP)*

Right after the fish death incident and after receiving reports from local authorities, MONRE conducted environmental monitoring in the affected areas from 21st April to 2nd May 2016. In the meantime, MONRE issued guiding documents for the four provinces from Hà Tĩnh to Thừa Thiên - Huế to conduct daily monitoring at beaches since 29th April 2016. The monitoring has been continuous and followed National Regulations on onshore coastal water quality of beaches and water sport activities (QCVN 10-MT:2015/BTNMT). Monitoring results have been publicized daily on MONRE's internet portal, VEA's website and disseminated via 300 mass media agencies (Viet Nam Television, Voice of Viet Nam, People's Newspaper, Labor's Newspaper, and Pioneers' Newspaper) for public access.

MONRE has mobilized all maritime environment monitoring stations of the national monitoring networks and four affected provinces in implementing a coastal onshore and offshore water quality monitoring program from Thanh Hoa to Quang Nam with maximum density and frequency as regulated in Decision no. 977/QD-BTNMT. In this program, monitoring was conducted at 50 near shore sites, 27 on shore sites and 16 off shore sites. Sediment monitoring was 14 conducted for on shore sites. Monitored parameters followed National Regulation on maritime water quality (QCVN 10-MT:2015/BTNMT) and National Regulation on Sediment Quality (QCVN 43:2012/BTNMT). Monitoring results showed that when the incident happened, some parameters such as Ferron, phenol and ammonia in on shore and near shore sea water exceeded permitted levels. However, the water quality has gradually restored. So far, most of the parameters have reached permitted levels.

At present, MONRE is implementing a program of surveying, investigating and assessing maritime pollution in the four coastal provinces. In this program, 36 marine routes were surveyed with a total 146 monitoring points of 348 km length. Subjects of the survey include water environment (surface, middle and seabed parts); sediments, maritime creatures, coral reefs, see weeds, and materials attached on coral reefs and seabeds. Survey methods include surface water survey, seabed diving survey and video recording. This program is aimed at providing further information on the state of marine environment in the four provinces so that pollution remediation and ecological restoration measures could be developed.

The mass fish dead incident in the central coastal provinces is the most serious unprecedented maritime environment incident. Initial responses appeared slow and ineffective.

However, after Prime Minister and Deputy Prime Ministers had directed, the Ministries/sectors and localities took assertive, rapid, cautious, objective and scientific actions in a well-coordinated manner. With active participation of a large numbers of Government officials, experts and scientists, using theoretical approaches, remote sensing, simulation modelling, surveys, sampling, analysis, investigations of large projects and legal arguments, within nearly three months, the causes of the fish dead has been identified. Culprits have admitted the responsibilities for the incident and committed to paying compensation for damages and administrative fines. In addition to investigation for causes and culprits, the Government, Ministries/sectors and localities issued policies and taken actions to support livelihood of the local people and restore production and trade activities in the affected areas. In the meantime, MONRE closely worked with other Ministries/sectors and people's committees in the four provinces to survey, investigate and assess pollution and damage to maritime ecological systems as well as maritime water and sediment quality. The findings were publicized. Restoration measures were taken accordingly.

After this environmental incident, we have drawn many lessons in directing and cooperating in solving intersectoral and interprovincial environmental problems, in mobilizing a large number of scientists and experts, in cooperation among Ministries and central and provincial authorities, in timely supporting affected people, in using legal arguments to urge Hà Tĩnh Formosa Company to accept their responsibilities and compensate for damages, and timely taking actions to assess the damage and restoring measures.

The mass fish dead incident in the four coastal provinces and recent environmental problems in some other hotspots in Việt Nam have resulted from rapid and unstainable development. Many localities have aimed at economic growth without due attention to environmental protection. To address the many environmental challenges at the same time requires comprehensive measures of prevention and short term and long term responses. For the time being, it is necessary to take the following measures:

Firstly, conducting pollution inventories for large emission and high risk facilities, and applying strict pollution controls (monitoring, automatic sampling, stabilizing tanks after waste treatment, and using biological indicators and automatic camera in monitoring); increasing supervision and inspection to timely detect shortcomings and environmental violation and give early warnings for environmental pollution and incidents; strictly handling environmental violations;

Secondly, strengthening capacity in monitoring and assessing the state of the environment, giving early warning and responding timely, in particular in key economic zones with many large waste sources and in environmentally sensitive areas. In addition, capacity for monitoring data analyses and information sharing mechanism should be strengthened;

Thirdly, developing and issuing protocols for responding to environmental incidents with clear responsibilities of Ministries/sectors and national and provincial authorities, with a motto "nationally coordinated and directed and locally acted", (human resources, equipment and resources). This protocol is also applied for dealing with serious emerging environmental pollution problems;

Fourthly, seriously following the direction of sustainable development without scarifying the environment for economic growth and eradicating the thoughts of investment at all costs; developing and completing policies, regulations and technical barriers to prevent and screen outdated technologies, resources consuming and polluting projects, in particular in environmentally sensitive areas;

Fifthly, overcoming shortcomings in the state management of environmental protection, in particular applying pollution prevention and control from strategic environmental assessment, environmental impact assessment, supervision and verification of environmental protection measures, pollution source inspection and monitoring; ensuring effectiveness of these measures;

Sixthly, reviewing and improving organizational structure, strengthening capacity in environmental management at both national and local levels to meet an increasing demand for solving outbreaking environmental pollution problems■

Formosa compensates 500 million USD for causing environmental problem in Việt Nam

On June 30th, 2016, the Government of Việt Nam organized an official press conference to announce: the Formosa Hatinh Steel Corporation caused the environmental problem leading to the mass of dead fish along the coastal of four Central provinces.

The scientists determined that a huge amount of wastewater was generated from Vũng Áng, Hà Tĩnh province. The wastewater contains extremely toxic substances such as phenol and cyanide in combination with iron hydroxide to form a compound which has higher density than sea water. Then it moves with sea current from Hà Tĩnh to Thừa Thiên - Huế province. This compound is the reason for the mass of dead fish and other sea species, especially at the seabed. The extremely toxic compound had polluted over 200 km of coastal, leading to the death of nearly 100 tons of natural fish and 70 tons of farming seafood, causing seriously economic losses.

Formosa had to admit a breakdown in their wastewater treatment system related to activation of microorganism. It leads to the wastewater discharged into the sea without treatment. Formosa admitted their violation and publicly apologized to the Party, State, National Assembly, Government and Vietnamese.

5 commitments of Formosa

Besides the official apology, the Formosa Hatinh Steel Corporation also pronounced 4 commitments: compensation for economic losses and supporting for employment change; responsibility for pollution treatment and environmental recovery in the coastal of four Central provinces of Việt Nam with total amount of 11,500 billion VND (about 500 million USD); complete improvement and strict solving limitations of wastewater treatment system, improvement of production and guarantee for strict treatment of waste before discharging into the environment to meet the environmental standards, regulations of authorities at both central and provincial levels.

▲*Representative of Formosa Company publicly appologized Vietnamese*

At the same time, Formosa will coordinate closely with Ministries and sectors at Central and provincial levels to implement comprehensive solutions for controlling pollution on coastal regions, preventing pollution. For long term, Formosa will fully and exactly implement the mentioned commitments, not repeating the violation. If not, the Company will have to receive strict penalties according to Vietnam's law and regulations.

Continue to repair the damages and recover environment

To gradually recover environment and production activities, the Prime Minister Nguyễn Xuân Phúc requested relevant Ministries, sectors and provincial authorities urgently and comprehensively carry out: compensation and supporting for changing employment of local residents in accordance with regulations andpractical situation; ensure transparency; with participation and supervision of community. In addition, the Prime Minister asked the Formosa Hatinh Steel Corporation to fully and strictly implement their commitments; install environmental monitoring system in the coastal region of four Central provinces; publicize information on environmental quality; carry out solutions to recover polluted coastal environment; develop local economy; protect proper benefits of residents and enterprises■

Phạm Đình

International experts help Vietnam find dead fish reason

▲*Minister of Natural Resources and Environment Trần Hồng Hà were welcoming international scientists*

According to the Ministry of Natural Resources and Environment (MONRE), scentists and experts in the sectors of oceanography, coastal geology, coastal engineering and environment from Germany, United States and Isreal coordinate with MONRE to find reasons for dead fish in the Middle of Việt Nam. The international experts affirmed their consideration and supports to investigate and confirm whether the dead-fish caused by environmental pollution.

MONRE would facilitate scientists and experts to participate in assessing operation of the factories which discharging wastewater into Vũng Áng sea as well as to monitor water quality of this region. It is known that about nearly 100 experts from over 30 domestic institutes and universities were participating to find reasons for the phenomenon of abnormal dead fish at 4 provinces of the Middle of Việt Nam■

Tố Uyên

MONRE takes lead in implementation of MARPOL Convention

The Prime Minister of Việt Nam has recently approved the plan to implement the Annex III, IV, V and VI of the MARPOL Convention (International Convention for the Prevention of Pollution from Ships). To implement this plan, MONRE was assigned to take the lead in collaboration with relevant agencies to amend and supplement legal documents on environmental protection in marine activities and respond to environmental problems on sea.

MONRE also has responsibility in issuance of the environmental technical standards on prevention of pollution caused by shipping activities, national technical standards on specific air pollution parameters emitted by ships. MONRE will take the lead in development and operation of environmental pollution warning and monitoring system in harbor locations.

According to this plan, from 2016 to 2020, Việt Nam will review and finalize legal document system on prevention of environmental pollution caused by marine transportation, oil survey and exploitation; investigate and handle with marine violations and accidents, in order to implement comprehensively and fully requirements of the MARPOL Convention■

Uyên Hoàng

New decree on environmental protection charges for mineral exploitation

Decree no. 12/2016/ ND-CP of the Government regulating on environmental protection charges for mineral exploitation came into effect from May 1st, 2016.

According to the Decree, environmental protection charges for mineral exploitation will be applied to crude oil, natural gas, coal gas, metallic minerals and non-metallic minerals, for organizations and individuals doing which are mining operations and for involved State agencies, other organizations and individuals.

Accordingly, the fee level of environmental protection for crude oil is VND 100,000 per ton, natural and coal gas - VND 50 per cubic meter, and associated gas (gas collected during crude oil exploitation) - VND 35 per cubic meter.

The Decree also specifies in detail the price range of environmental protection fees for exploiting the metal mineral ores from VND 10,000 to 270,000 per ton, non-metallic minerals from VND 1,000 to 90,000 per cubic meter or ton. The environmental protection fees for exploiting taked all minerals accounted by 60 percent of fee level of the respective minerals.

In each locality, based on the charge rates enclosed to this Decree, the provincial/cities People's Committees decide the rate of charges for environmental protection suitable with the actual situation in each period■

Nam Việt

The national action plan on air quality control by 2020

The National Action Plan on Air Quality Control by 2020 approved by the Prime Minister, which aimed to strictly monitor sources of exhaust fumes, especially industrial fumes.

Under the plan, 80 percent of steel, chemical and fertiliser producers across the country will run national-standard systems to treat dust and exhaust fumes, including sulfur dioxide (SO_2), mono-nitrogen oxides (NOx) and carbon monoxide (CO), and 90 percent of thermal power plants nationwide will install emission observation systems in the next four years.

The four-year plan also targets to identify the levels of dust pollution in urban areas and then determine the solution.

To achieve the plan's goals, authorised agencies have been told to quickly perfect policies related to air quality control, strengthen international co-operation, mobilise financial support and raise public awareness of air pollution■

Trần Hương

Action plan executes integrated coastal zone management strategy

The Prime Minister has signed off on an action plan for an integrated coastal zone management (ICZM) strategy in Việt Nam up to 2020.

The ICZM strategy until 2020, with a vision to 2030, was approved in December 2014. Under the plan, authorised Ministries and localities will issue policies and regulations on ICZM, use natural resources sustainably and preserve biodiversity. They will work to prevent and control pollution while mitigating losses caused by natural disasters and tackle climate change.

Relevant sectors will investigate and assess the influence of waste sources from the mainland and at sea on the coastal zone environment, build a database on the waste and its impact, and suggest countermeasures■

Gia Linh

Approval of World Bank-funded coastal environment project

The Prime Minister has approved a project on environmental sustainability in coastal cities funded by loans from the World Bank (WB).

The project is aimed at improving sanitation and quality of life for the residents of the cities by upgrading infrastructure and urban landscapes in line with increasing awareness of environmental protection.

It will be implemented in four coastal cities including Phan Rang - Tháp Chàm city (Ninh Thuận province), Nha Trang city (Khánh Hòa province), Quy Nhơn city (Bình Định province), and Đồng Hới city (Quảng Bình province).

The total cost of this project estimated at approximately 273.6 million USD, nearly 87 percent of which, or 237.5 million USD■

Vũ Hồng

Lower greenhouse gas emission project gets approval

The Prime Minister has approved a technical assistance project on mainstreaming climate change mitigation into national infrastructure in the areas of energy and transport under the framework of the Clean Technology Fund (CTF). The Asian Development Bank (ADB) - funded project aims at providing assistance to relevant bodies to effectively implement measures to lower greenhouse gas emissions in energy and transport.

The project's activities include developing and strengthening measuring, reporting and verification systems (MRVs) for CTF projects, preparing and implementing transport and energy sector mitigation guidelines, enhancing and coordinating agencies' capacity in climate change mitigation.

The project will be implemented in three years after approval. It has a total cost of 1,052,000 million USD, 952,000 USD of which comes from non-refundable official development assistance (ODA), with the remainder from corresponding funds■

Thu Hà

Strengthening air environmental management in Việt Nam

MSc. Lê Hoài Nam
Director of Pollution Control Department
Vietnam Environment Administration

A national action plan for air quality management by 2020, vision to 2025 was approved by Prime Minister at Decision no. 985a/QD-TTg on 1st June 2016. It plays an important role in strengthening air pollution management, particularly implementing Law on Environmental Protection 2014 and Decree no. 38/2015/ND-CP on waste and scarp management suitable for the Vietnamese context.

In recent years, in Việt Nam, air pollution has created significant impacts on public health and other socioeconomic aspects. However, air quality management is facing challenges and obstacles. Air pollution prevention and mitigation have not been conducted properly. Monitoring and information on air pollution have failed to meet practical requirements.

Law on Environmental Protection 2014 and Decree no. 38/2015/ND-CP have some regulations on air quality management. To strengthen air quality management, Prime Minister has enacted a national action plan for air quality management by 2020, visions to 2025.

▲*Objectives of the national action plan for air quality management is emission control and air quality monitoring*

The national action plan's goal is strengthening air quality management via emission control and ambient air quality monitoring in order to improve air quality and protect human health. Priorities are given to controlling emission from industry, energy and transport sectors. By 2020, 80% of steel, chemical and fertilizer production facilities will have treated dust SO_2, NO_x and CO emission to meet with national regulations; 90% of thermal power plans, 80% of cement factories, 70% of steel, chemical and fertilizer production facilities will have installed automatic emission monitoring equipment to continuously supervise parameters regulated in national technical regulations. Emission inventories will have been conducted in 90% of thermal power plants, 80% of cement factories, and 70% of steel, chemical and fertilizer production. Mitigation measures for PM_{10} and $PM_{2.5}$ will have been conducted for major emission sources. Implementation of Prime Minister's Decision no. 909/QD-TTg dated 17/6/2010 on approving a program on vehicle emission control in provinces and cities, Prime Minister's Decision no. 49/2011/QD-TTg dated 1/9/2011 on a road map for applying newly manufactured, assembled and imported cars and motorbikes' emission standards, and strengthening national capacity on greenhouse gas control, contributing to Vietnam's greenhouse gas reduction will have been completed.

In addition to emission control, the national action plan sets out objectives of supervising and monitoring ambient air quality. More specifically, the current status of PM_{10} and $PM_{2.5}$ pollution in special urban areas and central level cities will be assessed and the number of automatic air monitoring stations will be increased following a national master plan for environmental

▲*Good control of emission form cars and motorbikes in provinces and cities*

monitoring networks. Parameters set out in national technical regulations and VOCs and HC will be regularly monitored.

The national action plan highlights the view that air quality management should be suitable with the Vietnamese socioeconomic conditions to ensure effectiveness and use prevention as a guiding principle, combined with pollution remediation and gradually improving ambient air quality. Air quality management shall be based on cost-benefit analyses which are regularly conducted with a management roadmap suitable in the Vietnamese context. Air quality management is the responsibilities of emission owners and state management authorities with people's supervision.

To achieve these objectives, the national action plan sets out the following tasks and measures: completing mechanisms, policies and regulations on air quality management; completing organizational structure and strengthening capacity in air quality management; preventing and mitigating emission pollution; completing financial mechanisms, diversifying resources for air quality management; international cooperation and science and technology in air quality management; inspecting and supervising compliance in air quality management; and education and raising awareness on air quality management.

In the meantime, the national action plan requires participation and cooperation from Ministries/sectors, in particular those of Ministry of Natural Resources and Environment (MONRE), Ministry of Industry and Trade, Ministry of Transport and authorities from Central to local levels. In addition, the national action plan sets out specific programs and priority tasks to implement the action plan with clear timeframes, implementing agencies and expected results.

Air quality management is the responsibilities of not only Central and provincial state management agencies but also individuals, organizations and enterprises. Therefore, it is necessary to have joint efforts of the whole society in raising awareness and increasing cooperation in protecting the air for public health. The national action plan is a foundation for implementing air quality management in Việt Nam in a comprehensive, systematical and locally customized manner and in line with global trends in managing air quality.

At present, as a leading agency, MONRE is urgently developing a detailed program for implementing Prime Minister's Decision no. 985a/QD-TTg. However, to implement the Decision effectively, in the coming period, in addition to domestic resources, Việt Nam will need assistances from other countries and international organizations in completing mechanisms and policies, strengthening capacity in air pollution control and in developing database on emission. Participation by scientists and research institutions in research and development for applying advanced technology in air quality management is also needed■

Regulations on environmental crimes relating to biodiversity in the Penal Code 2015

MSc. Mai Hồng Quân
MSc. Trần Trọng Anh Tuấn
Vietnam Environment Administration

On 27th November 2015, at the 10th meeting of the Việt Nam National Assembly Tenure XIII, National Assembly delegates endorsed the amended Penal Code (the Penal Code 2015). The Penal Code 2015 was the highest legal document, took effect on 1st July 2016.

Chapter XVII of the amended Penal Code 1999 (supplemented in 2009) consists of 11 articles (from Article 182 - 191a) regulating environmental crimes. The practical implementation of regulations has arisen many challenges and shortcomings which significantly affect the work on prevention and combat against environmental crimes, of which due to regulations on constituting a crime, such as regulations on constituting materials, are general and are difficult for applying; subjects of crimes are not regulated as legal entities.

The Penal Code 2015 consists of 26 chapters with 426 articles, with an increase of 2 chapters and 72 articles compared to the Penal Code 1999. Of which, Chapter XIX on environmental crime consists of 12 articles (from Article 235 - 246). To overcome shortcomings relating to environmental crimes in general and biodiversity in particular, the Penal Code 2015 has significant amendments such as on constituting environmental crimes; addition of two new crimes; expansion of application scopes and penalty levels; regulations on criminal responsibility of legal entities for some environmental crimes.

▲*The Penal Code 2015 has incorporated criminal responsibilities of legal entities on forest destruction*

Some new points on environmental crimes

Amending the constitution of biodiversity crimes towards specifying behaviors and quantitatively regulating violation levels to ensure feasibilities and conditions for agencies to conduct the prosecution. In addition, the Penal Code 2015 has added two new crimes which are violations of regulations on protection of irrigation works and dyke safety and prevention of disasters and violations of regulations on river bank protection (Article 238).

Due to the severity of environmental crimes and the main objectives of violation behaviors are about economic benefits, the application scope of the penalty is expanded, the penalty level is higher to ensure deterrence against violation behaviors. This is also one of important points of the amended Penal Code.

Expanding the application scope of the penalty level: The penalty level is regulated in the

Penal Code 2015 in the aggravation frame of some crimes such as causing environmental pollution; violation of regulations on prevention, response and rehabilitation of environment incidents; bringing wastes into Vietnam's territory; violation of regulations on protection of fauna in the list of endangered and rare species prioritized for protection.

Increasing the penalty level in different provisions: Provisions are adjusted towards increasing the penalty level against violation behaviors; the penalty is regulated to be very high, appropriate with the danger nature and the level of violation behaviors.

Some amendments on environmental crimes relating to biodiversity

Crime to transmit dangerous disease to fauna and flora (Article 241): This incorporates the behavior "to allow to bring inside and outside the area that is under transportation restriction of fauna, flora, flora and fauna products or other products that are infected with diseases or infection factors" and clearly regulates the subject of this crime to be the authorized personnel.

Crime to destroy fishery resources (Article 242): To prevent the status of fishery resources destruction, there are basic adjustments in sanctions. The maximum penalty at Clause 1 is tripled, from 100 million VND to 300 million VND, non-custodial reform up to three years, or imprisonment from six months to three years. The penalty in aggravation scale for individuals is up to 400 million VND. The maximum prison penalty also increases from five years to ten years.

Provisions also regulate criminal responsibilities of entities; accordingly, criminal legal entities regulated in Clause 1, Article 242 will be penalized at a higher amount from one to three times of that applied for individuals; if crimes fall under cases regulated in Clause 2, Article 242 the penalty is about three to five times of that applied for individuals or license use rights are temporarily deprived or operation is terminated from six months to three years. In addition, entities are also prohibited from commercial activities and from operating in some particular areas from one to three years or from mobilizing funds from 1 to 3 years.

Crime to destroy forests (Article 243): The crime forming which is generally regulated at Article 189 of the Penal Code 2009 as "individuals that conduct illegal forest burning, destruction or have other forest destroying behaviors which cause serious impacts", "destroy a specially large area of forests" has been replaced with quantitative regulations such as: destruction of vegetation not yet classified as a forest or natural regeneration forest with an area from to 30,000 m^2 - 50,000 m^2; production forest with an area from 5,000 m^2 - 10,000 m^2; protection forest with an area from 3,000 m^2 - 7,000 m^2; special use forest with an area from 1,000 m^2 - 3,000 m^2, crimes relating to endangered, rare, prioritized for protection flora species and other flora species in group 1A.

Article 243 of the Penal Code 2015 also regulates criminal responsibility of entities for these crimes; accordingly, violated entities will be penalized with an amount which is a few times higher compared to that of individuals. Imprisonment is from one to five years; three to seven years; seven to fifteen years. In addition, they are deprived of license use rights temporarily or cease of operation from six months to three years; deprived of license use rights permanently or cease of operation permanently. Entities are also prohibited from commercial activities, operating in some particular areas from one to five years or from mobilizing funds from one to three years.

Violation of regulations on protection of fauna in the list of rare, endangered and prioritized for protection species (Article 244): The Penal Code 2015 regulates details of the aggravation scale for "transboundary trade and transport", "illegal goods of high number or high illegal income" in order to strictly regulate and address violation cases. At the same time, it adds and specifies the level and scale of penalties against violations on management and protection of fauna in the list of endangered, rare and prioritized for protection species; endangered, rare species of group 1B or Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES Convention). Clause 3 also regulates illegal trade and transport of fauna or body parts of fauna in the list of endangered, rare prioritized for protection species in one of following cases: illegal goods of very high number or special high number; very high and special high illegal income or causing very serious or special serious impacts. Penalties regulated in Clause 3 are strictly regulated, from 10 to 15 years in prison.

Regulations also consist of criminal responsibilities of entities for behaviors of illegal transport and trade of fauna species and body parts of fauna species in the list of endangered, rare, prioritized for protection species with sanctions from one billion to 15 billion VND, temporary deprivation of license use rights or temporary cease of operation from one to three years, permanent deprivation of license use rights or permanent cease of operation. In addition, entities are prohibited from commercial activities or operating in some

particular areas from one to three years or from mobilizing funds from one to three years.

Violation of regulations on management of protected areas (Article 245): Similarly to Article 243, Article 245 also replaces general regulations by specific regulations such as damages on properties from 50 million to 200 million VND; from 200 million VND and higher… The highest penalty is up to one billion VND. Depending on the level of violations, there are different sanctions: three levels of imprisonment: six months to three years; three years to seven years, temporary deprivation of license use rights or cease of operation from six months to three years, permanent deprivation of license use rights or permanent cease of operation. In addition, entities can also be prohibited from commercial activities, operating in some particular areas from one to five years or mobilizing funds from one to three years.

Crime to import and spread invasive alien species (Article 246): Article 246 of the Penal Code 2015 regulates specific violation behaviors such as "illegal import of known invasive alien fauna and flora species or potential invasive alien fauna and flora species if the violation exhibits worth more than 250 million VND or if the violation exhibits worth less than 250 million VND but the behavior was previously administratively penalized", "spread of known invasive alien fauna and flora species or alien fauna and flora species that threaten to cause serious impacts". Article 246 differentiates in policies addressing import behavior and spread of invasive alien species, according to which spread behavior is only subject to criminal penalty if consequences are found. The penalty level is between 100 million VND to one billion VND; the highest imprisonment is from three years to seven years.

The Penal Code 2015 has many new contents, of which amending and adding environmental crimes towards specifying violation behaviors, regulating strict sanctions against environment crimes. The Penal Code 2015 also regulates commercial entities to be subject to criminal responsibilities for nine environmental pollution crimes and destroying fauna and flora species which cause serious impacts to biodiversity and ecological balance. With appropriate and practical amendements and addition, the Penal Code 2015 will be a useful tool contributing to enforce crimes on environment and biodiversity■

Party's directions and State policies on medical waste management

Dr. Nguyễn Thị Liên Hương - *Director General*
Health Environment Management Agency
Ministry of Health

In the past years, environmental management in health sector has made significant achievements, in particular in completing institutions and developing policies and legal documents in medical waste management. Year 2014 marked an important change in environmental regulations in general and environmental regulations for the health sector in particular. Law on Environmental Protection (LEP) 2014 was enacted by the Việt Nam's National Assembly on 23rd June 2014 and took its effect on 1st January 2015. The Government then issued decrees providing guidance on implementing the LEP. Line Ministries issued circulars guiding the implementation of the decrees in environmental protection and medical waste management.

LEP 2014, Chapter XIV, Article 142 regulates responsibilities of authorities of state management on environmental protection including Ministry of Natural Resources and Environment (MONRE), Ministry of Health, other line Ministries and people's committees. According to this regulation, Minister of Health shall lead and coordinate with Minister of Natural Resources and Environment, Ministers and Heads of Governmental level agencies and Chairs of Provincial People's Committees in organizing the implementation of environmental protection in medical activities, waste inventories, pollution assessment, treatment of wastes from hospitals and medical facilities and other related activities.

Regarding to medical waste management, Article 72, Chapter VII, of LEP 2014 regulates that hospitals and medical facilities shall collect and treat medical wastewater in compliance with environmental technical regulations; segregate waste at source; collect, transport, store and treat medical waste in compliance with environmental technical regulations; develop plans and equipment for preventing and responding to environmental incidents caused by medical waste; preliminarily treat medical waste so that contagious elements shall be removed from the waste before the waste is transported to centralized treatment plants; and treat emission properly. In particular, the LEP 2014 regulates that investors of hospitals and medi-

cal facilities shall be responsible for allocating sufficient budget for building sanitation facilities, waste collection, and treatment systems in compliance with environmental regulations. In the meantime, heads of hospitals and medical facilities shall be responsible for complying with environmental regulations and related regulations.

To provide guidance for implementing LEP 2014, Government has issued Decree No. 38/2015/ND-CP dated 24/4/2015 on waste and scarp management. Article 49 regulates that Minister of Natural Resources and Environment shall provide details on medical waste transport and treatment, and that Minister of Health shall lead and cooperate with Minister of Natural Resources and Environment in guiding segregation, storage and management of medical waste within health facilities. Decree No. 38/2015/ND-CP regulates that medical waste, except for wastewater which goes into wastewater treatment systems of health facilities, shall be segregated into hazardous waste (contagious waste, non-contagious hazardous waste and radioactive waste) and normal waste (domestics solid waste and wastewater). In particular, contagious waste shall be strictly managed at the highest alerting level, ensuring that contagious elements shall not be spread and affect human health and the environment. In case contagious waste is mixed with domestic waste, it shall be treated as hazardous waste. In treating hazardous waste, priorities shall be given to environmentally - friendly and non-incineration methods which ensure environmental compliance. After being sterilized, contagious waste shall be treated as domestic waste with suitable methods.

On the 3rd June 2013, at the 7th session of Party's 11th Standing Committee, Resolution No. 24/NQ-TW on proactively responding to climate change and enhancing natural resources and environmental management was approved. According to this Resolution, environmental protection objectives are by 2020, there shall have been no additional serious environmental polluters, and 100% of medical waste and 85% of hazardous waste shall have been treated. Then, on 1st October 2013, Vietnam's Government approved an action plan for radically dealing with serious polluters by 2020 which requests that all serious polluters shall have been properly treated. During the treatment process, serious polluters shall immediately apply mitigation measures under close monitoring of state management agencies for environmental protection and the public. According to this plan, the Prime Minister assigns provincial people's committees with a task of directing the treatment process and allocating local budgets for treating public service serious polluters and allocating environmental expenditure for regular environmental inspection and supervision and reviewing lists of serious polluters.

With a task of being responsible to the Government in unifying state management of environmental protection nationwide, MONRE shall be responsible for leading the development and submission to the Government and Prime Minister for issuing legal documents, policies, strategies, master plans, plans, programs and national projects on environmental protection; leading the development and issuance of other legal documents including national technical regulations and technical guidance documents. MONRE has issued Circular No. 36/2015/TT-BTNMT dated 30th June, 2015 on hazardous waste management in which technical requirements, management processes and waste owner registration were specified. MONRE is responsible for issuing permits and managing transport and treatment of hazardous waste, including medical waste. In addition, MONRE has issued Viet Nam's Technical Regulations on medical waste, including QCVN 28:2010/BTNMT - National Technical Regulation on medical waste water, QCVN 02:2012/BTNMT - National Technical Regulation on medical waste incinerators and QCVN 55:2013/BTNMT - National Technical Regulation on medical waste autoclaving.

To enhance cooperation between health and natural resources and environment sectors in state management of environmental protection of health facilities, Ministry of Health and MONRE have developed and issued Joint Circular No. 48/2014/TTLT-BYT-BTNMT on 22nd December 2014 which specifies responsibilities and cooperative mechanism between the two Ministries as well as between Provincial Departments of Health and Departments of Natural Resources and Environment. On 31st December 2015, the two Ministries issued Joint Circular No. 58/TTLT-BYT-BTNMT on medical waste management, which specifies segregation, col-

▲*Segregating sharp medical waste at source in hospitals*

lection, temporary storage, transport and treatment of medical waste, and responsibilities of heads of hospitals and health facilities and related agencies in medical waste management.

Ministry of Health has also proactively developed and submitted to Prime Minister for approval of a master plan for medical waste treatment for the period of 2011 - 2015 and vision to 2020. According to this master plan, by 2020, 100% of health facilities shall have treated medical waste in compliance with environmental regulations. To further strengthen medical waste management in hospitals, Ministry of Health issued Directive No. 05/CT-BYT on 6th July 2015 which states that hospitals shall assign a task of waste management and environmental protection to a specific department/division; appoint one staff member in charge of waste management and environmental protection to assist a hospital director in managing medical waste; allocate budget for purchasing equipment for collection, transport, temporary storage in hospitals and purchasing materials for waste treatment and other expenditures for waste treatment to ensure compliance; strictly handle individuals and units violating regulations on medical waste segregation, collection, transport and treatment; regularly inspect and supervise medical waste management to ensure full control of hazardous waste; and integrate medical waste management and environmental protection into annual rewarding criteria.

To increase mobilization for investments in forms of public private partnership (PPP), Government issued Decree No. 15/2015/ND-CP on 14th February 2015 on PPP investment. To implement this Decree, Ministry of Health is developing a special mechanism for PPP investment in medical waste management. Government also issued Decree No. 85/2012/ND-CP on 15th October 2012 on operating and financing mechanism for medical public service enterprises as well as check up and treatment pricing in public health facilities. According to this Decree, since 2018, health check-up and treatment prices will include expenditure for medical waste treatment and sanitation.

In general, regulations on medical waste management are fairly complete. To increase effectiveness of medical waste management, it is necessary to concurrently implement the following measures: Continuing to improve regulations on medical waste management, in particular special mechanism and policy for PPP in medical waste management and amending environmental technical regulations and standards related to medical waste management in compliance with LEP 2014 and practical requirements; Mobilizing resources for investment in building medical waste treatment systems. The budget sources include earmarked state budget for provinces, ODA loans from World Bank and other donors and PPP; Increasing inspection and supervision of environmental compliance in health facilities; Strictly handing environmental violation in health facilities and holding heads of health facilities for responsibilities, specifying responsibilities of heads of health facilities in managing their medical waste, integrating medical waste management and environmental protection into criteria for annual performance rewarding of the facilities as well as heads of facilities;

Increasing propaganda and dissemination on environmental regulations in health facilities, raising awareness of different management levels, medical staff, patients and their accompanies, rewarding good compliance and performance and strict punishment of violations■

Some regulations on business investment conditions in natural resources and environment

Lê Minh Ánh
Vietnam Environment Administration

On 1/7/2016, the Prime Minister promulgated Decree no. 60/2016/ND-CP regulating some business investment conditions in the field of natural resources and environment (Decree). The Decree regulates some business conditions in water resources, minerals and environmental protection.

The Decree consists of 5 chapters, 33 provisions and 5 annexes and was developed based on viewpoints: in compliance with legislations on investments and other relevant sectoral legal documents; in consistence with regulations on business investment conditions stated in other Circulars of the Ministry of Natural Resources and Environment (MONRE) meeting the requirements of state management on natural resources and environment; the Decree amends and removes inappropriate business investment conditions, in order to create the investment environment for enterprises.

Business investment conditions in water resources

Based on business investment conditions regulated in Circular no. 40/2014/TT-BTNMT and Circular no. 56/2014/TT-BTNM of the MONRE, the Decree regulates conditions on underground water drilling profession; conditions on capacity of organisations and individuals conducting baseline investigations of water resources, consultancy for planning of water resources, preparation of schemes and reports of the profile applying for water resources licenses....

According to the Decree, the extent of underground drilling profession is classified into three types: small-scale extent refers to drilling and construction of underground water wells with well casing or well diameters of less than 110 mm and the capacity of less than 200 m^3/day; medium-scale extent refers to drilling and construction of underground water wells with well casing or well diameters of less than 250 mm and the capacity between 200 m^3/day and 3,000 m^3/day; large-scale extent refers to those not belonging to above two types.

In order to get the licence for underground drilling, organisations and individuals conducting underground water drilling must fulfil adequately following conditions: having the establishment decision by an authorised agency or having one of these certificates including business registration certificate, business registration certificate and tax registration, enterprises registration certificate for organisations or household business registration certificate for individuals and households granted by authorised agencies; the head of the organisations (Director or General Director) or the main technical responsible person of the organisations and households, must meet required conditions; drills and drilling equipment must ensure technical features to meet the requirements.

Conditions for organisations conducting mineral exploration

According to the Decree, when organisations that implement mineral exploration sign contracts conducting mineral exploration with organisations and individuals that have the mineral exploration licence, they must meet regulations of Article 35 of the Mineral Law and other regulations: Enterprises established according to the Enterprise Law; Scientific and technological organisations established by the Law on Science and Technology; Cooperatives, cooperative associations established according to the Cooperative Law; Geology professional organisations es-

tablished by authorised state agencies with mandate and tasks of mineral exploration.

The mineral exploration task team leader must meet the requirements regulated at point b, Clause 1, Article 35 of the Mineral Law and regulations: Under graduate degree or higher of geology, mineral exploration or equivalent; for mineral water exploration project, mineral water is the hydrology geology - work geology; having at least five years of experience in implementing projects on investigating geology, mineral exploration; having the certificate of mineral exploration task team leader granted by the MONRE...

Equipment and tools used for mineral exploration implementation must ensure quantity, quality, and technical features to be appropriate with items and works in the exploration project appraised while applying for the mineral exploration certificate; to explore radioactive minerals and rare earth, it is obligatory to have professional equipment and tools and the technical staff that meet requirements on radioactive safety according to legislations on nuclear radiation safety.

Conditions for business investment in environmental protection

Based on business investment conditions regulated in Circular no. 19/2010/TT-BTNMT, Circular no. 52/2013/TT-BTNMT; Circular no. 43/2014/TT-BTNMT and Circular no. 35/2015/TT-BTNMT of the MONRE, the Decree regulates business conditions on bio-products in waste treatment in Việt Nam; conditions on transportation of dangerous goods inducing toxic and contaminant matters; conditions for licencing of hazardous waste treatment.

Business conditions on bio-products in waste treatment

Bio-products in waste treatment are biological-originated products used in waste treatment including: microorganisms, enzymes and extracts from animals, flora, microorganisms, excluding genetic-modified organisms. Some bio-products are considerably sensitive; in some situations, they are contagious and spreading and become hazardous in suitable conditions; therefore, it is necessary to have strict controls.

According to the Decree, organisations and individuals trading and importing bio-products in waste treatment must be granted with bio-product circulation certificate by the Vietnam Environment Administration (VEA), MONRE as regulated. Bio-products already included in the bio-product circulation certificate that have changes in components or concentrations of constituents of bio-products which affect the treatment efficiency and safety to human health are subject to applying for a new bio-product circulation certificate as regulated.

Bio-product circulation certificate will be confiscated if they were granted inappropriately; if there are changes in components of bio-products; if there is a confirmation of the authorised agency on industrial ownership right violations of registered bio-products. Organisations and individuals that have bio-product circulation certificates confiscated are responsible for collection and treatment of bio-products which were produced, imported and circulated according to regulations. When the bio-product circulation certificate is confiscated, the VEA is responsible for removing this bio-product out of the List of bio-products in waste treatment in Việt Nam and publishing the information on the website of the VEA and of the MONRE.

For bio-product trials, trial facilities must be an organisation that has functions in biological research and transfer or environmental technology;

▲ *Hazardous waste transportation vehicle must meet technical requirements*

have adequate equipment, materials and human resources to implement field applications according to bio-products use manual. Furthermore, trial facilities can select a collaboration agency during the trial process and are responsible for keeping the results at least 60 months after the trial. Organisations and individuals that register the circulation of bio-products can select trial agencies and locations and pay trial expense according to the agreed contracts.

Conditions for trade and transportation of dangerous goods including hazardous and contagious matters

Organisations and individuals when transport dangerous goods by road vehicles with the amount equal to or higher than the limit regulated in column 5, Appendix 3 of this Decree must have the transportation licence. When the volume of each dangerous goods is less than the amount required for the transportation licence, but the total volume of dangerous and contagious goods transported in a road vehicle is more than 1 tonne/vehicle (excluding packaging volume), the transportation license is also required.

Organisations and individuals do not need a licence for dangerous goods transportation in following cases: transport by road vehicles with the amount under the allowed limits, but there must be a plan for environmental incident prevention and response and compliance with transportation conditions; transport by waterway or railway vehicles, but strictly follow regulations in Decree no. 29/2005/ND-CP or Decree no. 14/2015/ND-CP and follow transportation conditions.

Road, waterway and railway vehicles transporting dangerous goods must meet following conditions: in the same vehicle do not transport dangerous goods together with passengers, domestic animals and other goods, do not transport dangerous goods that potentially react with each other to cause fires and explosions or to create new dangerous matters that cause harm to the environment and human health; have appropriate equipment, cover fully the cargo section; ensure adequate equipment and materials responding to incidents during the transportation; meet the regulations, qualifications and standards on transportation of dangerous chemicals or dangerous goods, conditions on fire safety, fire rescue as regulated...

Conditions on licencing of hazardous waste treatment

Organisations and individuals that register hazardous waste treatment licence must meet the requirements regulated in Article 9, Decree no. 38/2015/ND-CP dated 24/4/2015 by the Government on waste and refuse management and technical requirements and management procedures relating to licencing of hazardous waste treatment including:

Facilities and equipment for storage, transportation and treatment of hazardous waste must meet technical requirements, management procedures at Annex V of the Decree; transportation vehicles must have GPS connected with the online information system for location identification and record of the transportation route of hazardous wastes; one vehicle, one equipment is registered with only one hazardous waste treatment licence, except for maritime, railway and airway vehicles; environmental protection facility at hazardous waste treatment entity and hazardous waste transportation stop-over (if any) must meet technical requirements, management procedures regulated in Annex V of the Decree.

Organisations and individuals that register hazardous waste treatment licence must adequately develop contents on safe operation procedures of systems, vehicles and equipment; plans on pollution control and environmental protection, labour safety and health protection, incident prevention and response, annual periodic training, pollution treatment and environmental protection after operation cease; environmental monitoring program, monitoring of hazardous waste treatment operation and assessment of hazardous waste treatment effectiveness.

Organisations and individuals that register hazardous waste treatment licence must prepare a short guideline or a chart on safe operation procedure regulated in Clause 5 of this Article with appropriate dimension and have them posted in a proper location for viewing in transport vehicles, in treatment entities and stop-over (if any).

The Decree regulating some conditions on business investment in natural resources and environment is to ensure the consistency and unification of the legal system, creating favourable conditions for the increasing development of investment and trade activities in the natural resources and environment sector■

Enhancing effective implementation of environmental criteria in new rural development

Nguyễn Hoàng Ánh
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After five-years implementation of the National Target Program on New Rural Development in many provinces, environmental protection in Việt Nam has been paid attention and achieved considerable outcomes: clean water supply system has been invested and put into operation; rural area landscape has been renovated and upgraded; good models in development of rural environment are in place… In addition, environmental protection of commercial and service entities, animal husbandry entities, industrial units and craft villages have been strengthened and better managed. However, the outcome and efficiency in implementing environmental criteria are limited compared to the set targets.

▲*Phong Điền (Cần Thơ province) - A new rural district*

According to statistics by the end of April 2016, there are 1,834 communes achieving the new rural areas standards nationwide (making up 20.5% of the total communes in the country) and 23 districts receiving the Prime Minister's Decision on achieving the new rural areas standards, of which 42.38% of communes achieve environmental criteria. This is one of the criteria currently having the lowest achievement. Moreover, through meetings and pilot surveys in some typical new rural communes, the reality shows that the proportion of communes meeting five environmental indexes is much lower than that in the report.

In terms of the criterion on the proportion of households using sanitary clean water according to regulations, in general, new rural communes meet this indicator; however, the quality of clean water should be tested by Ministry of Health and Ministry of Agriculture and Rural Development. In addition, the volume of sanitary clean water supplied to households in rural areas meeting the demand or not should also be examined.

With this criterion, 90% of production - commercial enterprises in the area meeting environmental standards (10% remaining violating but having overcoming actions), the appraisal result in some provinces only takes into consideration of the number of production and commercial enterprises having profiles on environment (environmental protection commitment, environmental impact assessment, environmental protection scheme…). In addition, almost all localities do not have information on the status whether waste treatment is carried out in production and commercial enterprises in the area. Furthermore, almost all production entities operating in the rural area

have not strictly followed regulations on environmental protection, particularly small-scale entities or household business.

In terms of the criterion on green - clean - beautiful village roads, lanes, landscape, having no environmental degradation activities, many localities usually organize Green Sundays, tree plantation, sanitation, community linkage… However, this criterion is non-quantitative and mostly objective, hence in practice, the implementation and assessment is not consistently implemented in localities.

In terms of the criterion on cemetery that it is included in a plan and managed according to the plan, majority of localities have paid attention to. However, due to domestic habits and spiritual views, tombs have not been moved to the planned area in many localities.

In terms of the criterion on collection and treatment of waste and wastewater, the implementation result in practice is limited. Majority of localities only have "water discharge planning" and invest in water discharge system, but not pay attention to investments in wastewater treatment; waste of animal husbandry entities have not been treated to meet the regulated standards; the proportion of central solid waste collection in many localities is low (below 50%). Some localities apply insanitary treatment methods such as unsafe landfills, small-scale incinerators, and open burning (many localities in the Mekong Delta). While according to National Technical Regulations on domestic waste incinerators (QCVN 61-MT:2016/BTNMT), the capacity of domestic solid waste incinerator must not be less than 300 kg/h.

Main causes leading to these issues are limited resources; localities usually prioritise to implement infrastructure criteria, invest in basic construction, change in production models… not focus on environmental indicators. Due to time pressure, many activities that have periodic manners, are not regularly and continuously supervised and inspected. In addition, some environmental indicators at communes are not quantitative; criteria for new rural districts have not been adequately assessed and the achievement is the physical calculation from the achieved communes. Majority of people in rural areas only focus on economic development, production expansion according to the market demands and consider the collection and treatment of waste to be the state responsibility while the local authorities have not paid proper attention and priorities for rural environmental protection…

To enhance rural environmental protection through the implementation of environmental criteria in the National Target Program on New Rural Development, in the upcoming time, it is necessary to focus on some specific solutions:

Enhancing environmental protection in new rural construction; guiding, supervising the implementation status in localities through which to enhance and promote the roles of departments of natural resources and environment.

Adding specific guidance on environmental criteria so communes and districts can implement and regulating responsibilities of state management agencies on environment at localities on guiding, monitoring and assessing the implementation of these criteria.

Enhancing the roles and responsibilities of natural resources and environment agencies at all levels in guiding, monitoring and assessing environmental criteria in new rural recognition process; conducting prior-review and post-review for recognized localities and for those are being considered for new rural communes/districts.

Enhancing environmental supervision and assessment of those communes and districts that are recognized as meeting national standards to maintain and enhance achievements on rural environment.

Revising contents of criterion 17 on environment and detailed regulations on implementation criteria. Accordingly, promoting the development of traditional and environmentally - friendly craft products; discouraging the model of "one craft one village" using chemicals that potentially cause environmental pollution such as refuse recycling, leather… Environmentally - friendly traditional craft villages will be prioritized to be recognized; recycling villages that cause environmental pollution must have pollution treatment plans, to be considered as a condition for consideration and recognition of new rural areas.

Rural environment has been suffered the pressures of agriculture production, daily activities, craft villages… for many years; therefore, thorough treatment is always a significant challenge. Therefore, it is necessary to have efforts of authorities from central to local levels, particularly close coordination and unification in views and implementation methods among Ministries, sectors and localities. In addition, it is necessary to enhance awareness, responsibility and mobilization of active participation of people in rural areas■

Policies and solutions to promote renewable energy in Việt Nam

On March 18th, 2016, the Vietnam's Prime Minister issued Decision No. 428/QĐ-TTg on approving Adjusting National Power Development Plan from 2011 to 2020, with vision towards 2030 (referred to as Adjustment Power Plan VII), with a view to develop renewable energy (RE) is a breakthrough towards ensuring national energy security and reducing negative impacts on the environment. Environment Magazine had an interview with Dr. Dương Duy Hoạt - Member of Science Council, the Vietnam's Institute of Energy Science on this issue.

▲*Dr. Dương Duy Hoạt*
Member of Science Council,
Vietnam's Institute of Energy Science

✶ ***Can you tell us the prior content for the development of RE in the National Adjustment Power Planning VII ?***

Dr. Dương Duy Hoạt: The Adjustment Power Plan VII is the national power development plan from 2011 to 2020, with a vision to 2030 which was approved by the Prime Minister at Decision No. 1208/QD-TTg, dated July 21th, 2011. After five years of implementation, apart from its positive contribution towards ensuring power supply in Việt Nam, the Plan has shown some shortcomings. It is not adapted to the reality of Việt Nam and the world. On the other hand, the Plan does not deal with the problem of global warming due to greenhouse gas emissions. As a result, the Plan had to be amended to be adapted to the reality. After collecting the opinion of Ministries, branches, localities and scientists, the Adjustment Power Plan VII was approved by the Prime Minister. With the goal is to supply electricity for socio-economic development and achieve GDP growth of about 7% per year in the 2016 - 2030 period, the Adjustment Power Plan VII will be preferred to develop RE for electricity production and gradually increase the proportion of electricity produced by RE sources (hydro, wind, solar and biomass) in the structure of the power development plan. RE production will reach about 7% per year by 2020 and more than 10% per year by 2030. Particularly, priority will be given to the development of hydropower, and projects such as flood control, water supply and electricity production. There is also a plan to put into operation a pumped storage hydropower plant in line the development of the national power grid to improve operational efficiency. The total capacity of hydropower plants (including small and medium hydropower plants and pumped storage hydropower plants) will be increased from the current 17,000MW to about 21,600MW by 2020, and 24,600MW by 2025 (1,200MW of pumped storage hydropower plants) and 27,800MW by 2030 (2,400MW of pumped storage hydropower plants). Electricity production from hydroelectric sources will account for about 29.5% in 2020, 20.5% in 2025 and 15.5% in 2030.

The Plan also aims to raise the total capacity of wind power production from the existing 140MW to 800MW by 2020 (electricity production accounting for 0.8%), or 2,000MW (1%) by 2025 and 6,000MW (2.1%) by 2030.

On the other hand, biomass energy is being used in sugar, food and foodstuff processing plants, and along with coal at coal-fired power plants to generate electricity from solid waste. The proportion of electricity production from biomass will reach about one percent by 2020, 1.2 percent by 2025 and 2.1 percent by 2030.

In addition, solar energy will be promoted, such as by installing solar energy equipment on the ground and scattered equipment the roofs of buildings. The Plan also aims to raise the total capacity of solar power production from a modest ratio to about 850MW (0.5%) in 2020, 4,000MW (1.6%) in 2025 and 12,000 MW (3.3%) in 2030.

✶ ***What are the challenges and opportunities that Việt Nam faces while implementing policies to increase the ratio of electricity from RE sources?***

▲ *Việt Nam needs to have a mechanism to encourage enterprises to use and develop solar energy*

Dr. Dương Duy Hoạt: Việt Nam has great potential in developing RE sources, such as wind and solar power, and biomass. Việt Nam also has international commitments of developing RE sources to reduce greenhouse gas emissions and is capable of acquiring experience and applying advanced RE technology from many countries. In addition, Việt Nam has also received financial support from the international community for the development of RE.

However, Việt Nam will also have to cope with challenges such as developing RE that fails to meet its potential and use available advantages. RE is a clean energy resource, but still can have negative impact on the environment. As a result, businesses need to invest in research to reduce negative factors, such as the impact of hydropower plants on the environment.

In addition, Việt Nam does not have appropriate policies to attract local and foreign investors to the development of RE. Scientific manpower does not yet have formal training and they do not have a good knowledge of RE.

✶What are your suggestions for encouraging businesses to develop RE sources?

Dr. Dương Huy Hoạt: To develop Việt Nam's RE sustainably and efficiently, there should be a consensus. At the same time, Ministries, branches and localities should be instructed by the Government to implement their plans and schemes for the development of RE. They need to respond to the demand and supply of RE as well as build schemes and develop RE sources.

Simultaneously, Việt Nam needs to build a law on RE. Currently, it has the Law on Electricity, Law on Saving and Using Efficient Energy. Learning from the success of other countries and preparing a law on RE will become a key and prerequisite solution. The Ministry of Science and Technology should be asked to work on this law.

In addition, the formulation of standards and national standards on RE are a must and the building of a key laboratory on RE is also a need. Moreover, a fund for sustainable energy development can be established that will use money from the state budget, environment tax on fossil fuels, aid, and financial contribution of organisations and individuals, both local and international, as well as legal financial sources. This fund can be used for the development of RE conducting pilot projects and gradually expanding them, such as the construction of green houses, green buildings and green urban and rural areas.

On the other hand, businesses can be asked to participate in RE development. The State needs to offer preferential finance policies to manufacturers involved in the assembly and repair of things such as water boilers, small hydropower plants, wind turbines and biogas. Import and production tariff incentives should be given for the purchase of advanced technology and copyright protection for inventions or technical innovations in the field of valuable RE. The list of investment projects has to be made publicly and every economic sector should be encouraged to invest in RE.

Finally, dissemination of knowledge and propaganda about the importance and effectiveness of economic, social and environmental protection and development and utilisation of RE in the process of sustainable development are important to implement practical action, contributing to the development and use of this energy resource■

Thank you!

Châu Loan

(Implemented)

Formulating policy on environmental service development in Việt Nam

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Dr. Nguyễn Thị Phương Mai
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In the past years, Việt Nam has made significant socio-economic achievements. However, it has also faced numerous challenges of environmental degradation and pollution. Therefore, it is necessary to develop environmental services to meet increasing demand for pollution control, waste treatment and environmental improvement. So far, an environmental service system has been established and attracted initial participation from a private sector. Diverse forms of environmental services have been developed, including waste collection, transport and treatment and environmental consultancy. However, in practice, the environmental service system has not yet met demand for environmental protection. Delivery capacity remains low and heterogeneous in provinces throughout the country.

The reasons for this shortcoming are multiple. First, a legal framework for environmental service development has not been completed. Second, policies for promoting environmental services remain unclear. Third, regulations on quality of environmental services have not received due attention. Individuals and organizations participating in environmental services are numerous while their capacities for delivering high service quality are insufficient. Regulations on eligibility of registry for providing environmental services are unclear. As a result, environmental service providers are uncontrolled.

▲ *Waste collection, transport and treatment is among common environmental service activities in Việt Nam*

To address these obstacles, significant efforts have been made by state management agencies to establish a clear legal framework for environmental protection and environmental services. Mechanisms for promoting environmental services have been mainstreamed into environmental regulations, financial incentives and investment enabling conditions. These have provided some basic foundation for the establishment and development of environmental services.

Besides policies and regulations, Ministry of Natural Resources and Environment (MONRE) has developed a draft legal and policy framework for promoting environmental services in Việt Nam to promote the environmental service system nationwide. The draft has three main focuses:

Policies for promoting environmental services: Developing and issuing policies and regulations to encourage organizations and individuals in establishing

Some policies on developing environmental services in vietnam

Law on Environmental Protection (LEP) 2014 has regulations on environmental services (Article 150) and support and enabling conditions for environmental protection (Article 151)

Chapter VII, Decree no.19/2015/ND-CP on guiding the implementation of LEP 2014 regulates support and enabling conditions for environmental protection. These include support on land and capital, tax exemption, price subsidy, and support for output consumption and other support forms.

National Strategy on Environmental Protection until 2020, and vision toward 2030 emphasizes that environmental socialization is one of the important measures for enhancing and diversifying investment for environmental protection.

Decree no. 38/2015/ND-CP on waste and scarp management affirms that state encourages socialization in collection, transport, recycling, reuse and treatment of waste and energy recovery.

A master plan for developing environmental services by 2020 states its objective of developing environmental services to meet demand from sectors and localities, increasing contribution to economy, generating jobs and contributing to sustainable development of the country.

environmental service enterprises thorough bidding and public private partnership; developing and issuing policies on supporting development some special forms of environmental services; developing a roadmap for removing state subsidy via prices, fees, in particular in public environmental services.

Regulations on managing quality of environmental services: Developing and issuing regulations on eligibility for providing environmental services; developing and completing technical environmental regulations; developing and completing technical economic norms for environmental protection; and completing regulations for punishing violations by environmental service providers.

Policies on establishing some state owned organizations and enterprises that are capable of addressing large scale environmental issues:

In addition, MONRE has developed and submitted to Prime Minister for issuing a master plan for developing environmental service networks by 2020, vision to 2030. Objectives of the master plan are establishing and developing environmental service networks to meet demand for environmental services, increasing contribution to national economy development, generating jobs and ensuring social security. The master plan has identified four task measures: Completing institutions and regulations for developing environmental services; Developing plans for formulating local environmental service networks; Reorganizing and establishing or co-sharing investment in environmental services in some special sectors; and Implementing Program on Supporting Competitiveness of environmental service enterprises.

In particular, MONRE has coordinated with Ministry of Finance to develop and submit to Prime Minister to issue Decision on financial mechanisms for promoting some forms of environmental services. The Decision is aimed at encouraging and facilitation international, domestic individuals, organizations to participate in environmental services. The Decision focuses on five types of services: municipal solid waste collection and treatment; centralized waste water treatment; environmental review; environmental accident responses and environmental audit.

To promote environmental services, MONRE proposes that Prime Minister reviews and issues legal documents for promoting environmental services. The proposed documents include a legal and policy framework for promoting environmental services in Việt Nam, a master plan for developing environmental service enterprises by 2020, vision to 2030; and financial mechanisms for some special types of environmental services and related documents. MONRE also proposes that Prime Minister directs Ministries, sectors and state agencies to continue studying and developing legal foundations for promoting environmental services which are suitable in the Vietnam's context and focus on facilitating and attracting private involvement in this area■

LESSONS FROM FORMOSA CASE:

Need for reviewing and removing polluting investment projects

A serious environmental incident caused by Formosa Hà Tĩnh once again raises an issue of Việt Nam's "right to choose" in attracting FDI. To better understand Việt Nam's recent FDI attracting policies, Environment Magazine has interviewed Prof. Nguyễn Mại - Chairman of Vietnam Association of Foreign Investment Enterprises (VAFIE)

▲*Prof. Nguyễn Mại - Chairman of VAFIE*

✶ ***Would you let us know about Vietnamese recent FDI attracting and utilizing policies ?***

Prof. Nguyễn Mại: On 27th March 2013 in Hà Nội, Ministry of Planning and Investment held a conference on reviewing 25 years of FDI operation (1987-2012). Following this conference, the Government issued Resolution no.103/NQ-CP on new directions and measures on increasing FDI's roles in socio-economic structure, quality and effectiveness. The Resolution emphasizes that priorities shall be given to projects with modern, low carbon and greenhouse gas emission, energy saving and environmentally - friendly technologies and contributing to develop high quality human resources and green and sustainable economy. In the meantime, the resolution revises and complements some preferential treatment for FDI projects and integrates sectoral preferential treatment into that of the region. Projects using a large number of workers are eligible for preferential treatment only if they are carried out in low economy localities, not in cities as before.

In practice, during 25 years of attracting FDI, many localities said no to backward technology and polluting projects. However, illusions of attaining economic growth at all costs have made the localities give more priorities to big investment projects without taking into account potentially environmental risks.

✶ ***What do you think about the recent Formosa induced environmental incident in Central coastal provinces of Việt Nam?***

Prof. Nguyễn Mại: I agree with Minister, Chair of Government's Office that we should not refuse those with good will of redemption. Leaders of Formosa Hà Tĩnh Company have apologized for the mistake and committed to restoring the polluted environment and supported local people in occupational transition which may be also costly, in addition to 500 million of USD for damage compensation. In my view, the Government has handled the case scientifically and objectively.

However, we should not jump to a conclusion as some people requested, when convincing evidence was insufficient. Therefore, it is correct that the operation license was not withdrawn. In the meantime, the Prime Minister has strongly stated that it would be intolerable if Formosa violates again. Many good lessons have been learned after this case.

✶ ***After the Formosa pollution incident, what should Việt Nam do to continue attracting high quality FDI capitals?***

Prof. Nguyễn Mại: Attracting FDI remains important for our economy. However, it is crucial that we should exercise the right of selecting projects and investors that ensure a direction of rapid and sustainable economic development towards a green economy as stated in Resolutions of the Party's 12th Congress. This is a task of the Government, enterprises and people, and it should

▲*Formosa Steel Production Complex - a culprit of the serious environmental incident*

be paid due attention right at the stage of selecting FID projects and investors.

Following this direction, I recommend that the Government should consider and direct localities to be more cautious in selecting environmentally high risk projects such as: oil refinery, cements, steel and textile and dying. Oil refinery and cement projects are potentially polluting and already abundant at the moment in Việt Nam, thus it is necessary to temporarily stop deployment of new projects in these sectors. Besides, steel projects should also be postponed, learning from Chinese lessons in pollution and oversupply of steels. Therefore, Việt Nam could switch priorities to advanced metal mix production. For textile and dying, to prevent environmental disasters, Ministry of Trade and Industry should cooperate with MONRE in studying and developing environmental standards and requirements for investment in environmental protection for specific projects. Only projects meeting environmental standards will receive operation permits. I believe that pursuing industrialization at a later stage, Việt Nam should learn from other countries' lessons and avoid their mistakes.

✶ ***What can Việt Nam learn about environmental management after this incident ?***

Prof. Nguyễn Mại: It should be noted that mistakes are not only of Formosa but also of state management authorities. Although environmental management has been decentralized to localities, including environmental polices, it is regrettable that serious environmental incidents still happened.

If the authorities had performed well and effectively with high spirits for community and with adequate monitoring equipment to be able to report timely to competent agencies, such a serious environmental disaster would not have happened.

At present, environmental impact assessment is mainly based on reports by investors. Such reports seem impractical and receive little attention after projects enter operation. Therefore, in the coming period, attention should switch from ex-ante to ex-post supervision. It would be difficult to have ex-post supervision without good experts and modern equipment. Therefore, to switch to ex-post supervision, we need to prepare well.

The Formosa causing dead fish incident was detected late because of a lack of monitoring. The province depended on Formosa's reports. Therefore, it is necessary to have monitoring equipment connected between the factory and competent authorities and supervised by qualified experts. However, switching to ex-post supervision means a radical change and completion of current pitfalls■

Thank you!

Phạm Đình

(Implemented)

Improving corporate social responsibility for sustainable development

The Vietnam Chamber of Commerce and Industry (VCCI) has recently organised a ceremony to launch the Programme of Sustainable Corporate Evaluation and Classification 2016 (SCECP). The Programme was conducted in accordance with the Việt Nam Government's Announcement no.398/TB-VPCP issued on December 15th on ranking sustainable companies, beginning in 2016. The Environment Magazine has talked to Mr. Nguyễn Quang Vinh - VCCI's Deputy Secretary General, to learn about the impact of the Programme.

▲*Mr. Nguyễn Quang Vinh - Member of the Standing Committee, Deputy Secretary General of VCCI*

✶ ***This is the first year VCCI organises the 2016 SCECP, in accordance with the Government's policies. Could you list some criteria and requirements for a company that wants to become involved in this Programme?***

Mr. Nguyễn Quang Vinh: The SCECP is conducted based upon the Corporate Sustainability Index (CSI). CSI is the measure of the true value of corporations using criteria focusing on corporations' socio-economic development and environmental protection. CSI contained 14 indicators to gather corporations' general information, 137 indicators on corporations' activities and their effects on the economy, environment and society, of which CSI included 20 indicators to assess corporations' sustainable production and consumption, 32 indicators to evaluate how corporations comply with Vietnam's regulations on protecting and improving the local environments, preventing pollution, saving natural resources and dealing with the impact of climate change, and 85 indicators to assess those corporate activities related to social development, human rights and labour rights.

After the completion, CSI was piloted in 20 local enterprises that operate in different business sectors in the Việt Nam's North and South. Those enterprises saw CSI as being well-designed, comprehensive, understandable and helpful in raising their awareness of environmental protections.

All Vietnamese enterprises can sign up for the Evaluation Programme if they meet the following requirements: The corporation has a comprehensive plan for sustainable development; the corporation understands that environmental protection is the major framework to develop its operating mechanism, production and supply chain; the corporation has performed well in the market.

✶ What does the Sustainable Corporate Evaluation Programme mean in order to promote sustainable development among local enterprises and realise Việt Nam's Green Growth Strategy?

Mr. Nguyễn Quang Vinh: At the moment, consumers pay more attention to products and producers that commit to achieve sustainable development. An enterprise caring more about its sustainable development activities becomes comparatively competitive on the market. The Sustainable Corporate Evaluation Programme aims to assess how much an enterprise complies with sustainable development goals and encourages those enterprises to conduct sustainable business activities. Taking part in the Programme may help local enterprises improve their images on the market, define possible business opportunities and risks, improve their competitiveness and contribute their efforts to help Việt Nam accomplish the Green Growth Strategy.

✶ To implement the Programme effectively, what solutions should VCCI provide to support local enterprises as they seek to maintain and improve their brands in the context of international economic integration?

Mr. Nguyễn Quang Vinh: The Việt Nam's Government has assigned VCCI and the Vietnam Business Council for Sustainable Development (VBCSD) to lead other units in conducting activities to achieve 17 sustainable development goals in Việt Nam. In 2016, VCCI prioritised the implementation of Resolution no.19/2015/NQ-CP on major missions and solutions to improve the business environment and the nation's competitiveness during the period 2015 - 2016. The 16th goal deals with improving the mechanism and creating an attractive and competitive business environment. If you are concerned over how foreign investors feel about Việt Nam's economic investment environment, you should realise that there is no other way, except increasing workers' productivity in all sectors. VCCI has recently published a report, which mentions the status and factors that weigh on corporate competitiveness in the rubber, tea and coffee industries. Based on that report, VCCI will develop plans and recommendations for the Government to help strengthen the competitiveness of companies in these three sectors. This is also the way VCCI supports local businesses to achieve their sustainable development goals.

▲ *Việt Nam Sustainable Development Enterprises Forum 2015*

Firstly, VCCI does not impose its philosophy on local companies. VCCI works with local businesses to address their strengths, problems and solutions for those problems. Companies that are evaluated, appreciate this type of interaction.

Secondly, VCCI focuses on actions to promote an honest and transparent business environment for the 2015 - 2019 period and to create a united bloc of businesses. Companies that operate in the same sector sign transparency and honesty agreements with other organizations, including tax agencies, customs agencies and banks, then promote the agreements through the media to seek attention from the public in order to improve the business environment and enhance both the corporations' and nation's competitiveness.

Thirdly, VCCI aims to achieve those goals related to food security and sustainable agriculture. VCCI has been working to award "green tags" for farmers and agricultural firms, turning them from "invisible" to "visible" in the global value chain.

Fourthly, VCCI applies the Sustainable Development Index to evaluate and classify local companies.

Fifthly, VCCI continues to promote activities on the efficient use of energy and dealing with climate change■

Thank you !

Phạm Đình

(Implemented)

Reducing impacts of development activities on biodiversity in Việt Nam

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Located in the monsoonal tropical area, Việt Nam is one of the world's biodiversity centres with diverse natural ecosystems. Forest, wetland, marine, limestone, hill, coastal sand ecosystems… with typical tropical peninsula features, are the habitats and development areas of many unique and rare wildlife; are the areas that contain valuable wildlife genetic sources, particularly medicinal plants, flower trees and tropical ornamental trees.

Biodiversity resources of Việt Nam have been facing many threats. Population growth, poverty, economic development pressures, alien species invasion and introduction, climate change… have degraded ecosystems and wildlife populations; many flora and fauna species become endangered, even threatened to be extinct in the wild.

Policies and legislations on Việt Nam's biodiversity conservation

The Việt Nam Biodiversity Action Plan 1995 approved by the Prime Minister at Decision no. 845/TTg on 22th December 2016 was considered as the first founding policy of Việt Nam on biodiversity conservation. After 20 years of implementation and development, biodiversity conservation in Việt Nam has achieved important outcomes on system development, organization structure on conservation management, legislation framework, research and training, information and social awareness raising, international cooperation and investment resource mobilization. A system of national parks and protected areas has been planned and established nationwide with 164 special use forests (2.2 million ha) and up to 176 projected by 2020 (2.4 million ha). Special use forests and marine protected areas, wetlands, and inland waters are the most important subjects for biodiversity conservation in Việt Nam.

The policies system on environmental protection and biodiversity conservation are continuously strengthened in parallel with the socio-economic development trend and international integration of Việt Nam. In 2007, the Government approved the Việt Nam Biodiversity Action Plan to 2010 and orientations towards 2020 to implement the Convention on Biological Diversity and Cartagena Protocol on Biosafety. In 2013, the Việt Nam National Strategy on Biodiversity to 2020, vision to 2030 which was approved by the Prime Minister with a new vision on biodiversity is the foundation for green economy and biodiversity conservation to be solutions for response to climate change.

However, the most important milestone is the Law on Biodiversity endorsed by the National Assembly in November 2008 and implemented since 1st July, 2009. This is the first legal framework in Việt Nam which have regulation on biodiversity conservation and sustainable development; rights and responsibilities of organizations, households, and individuals on biodiversity conservation and sustainable development based on the approach that biodiversity is a unified comprehensive subject (ecosystem, species and genetic resources). In addition, other sectoral laws such as Law on Forest Protection and Development (2004), Law on Fishery (2003), and Law on Water Resources (2012) create a diverse and multi-sectoral system for biological resources protection. The Law on Environmental Protection 2014 provides mechanisms supporting biodiversity conservation such as regulations on environmental impacts assessment (EIA)… Regarding by-law documents, between 2009 and 2014 after the effectiveness of the Law on Biodiversity, 8 decrees, 9 decisions and 12 circulars have been promulgated to institutionalise strategies, planning, and mechanisms on biodiversity conservation and sustainable development in Việt Nam.

Development investment activities and environmental protection requirements

Following the development trends, legislations on investments in Việt Nam are becoming more specific and requiring the compliance of environmental protection regulations towards sustainable development. The Law on Investment 2005

regulates to investment activities in Việt Nam and investments from Việt Nam to overseas, which applies to domestic and foreign investors as well as organisations and individuals relating to investment activities. Regarding investment activities in Việt Nam, projects that destroy natural resources and environment are prohibited (Article 30) and regulations on environmental protection such as EIA must be carried out (Article 20). Therefore, during the investment project preparation, implementation and management, investors must prepare environmental protection commitments (investment registration phase), solutions on environment (investment project appraisal phase).

Law on Investments 2014 (amended) took effect on 1st July 2015 which clearly regulated (compared to Law on Investment 2005) requirements on environmental protection for some project types. Particularly, Article 30 assigns the National Assembly to decide the investment policy of projects that cause significant impacts on the environment or potentially, bring serious impacts to the environment, including: nuclear power plant; change in land use in national parks, protected areas, landscape protection areas, research and scientific forests of more than 50 ha; watershed protection forest of more than 50 ha; production forests of more than 1,000 ha. This Law also prohibits investment and trading activities of wild flora and fauna samples according to Annex 1 of the Convention on International Trade in Endangered Species of Wild Fauna and Flora and Fauna; samples of rare and endangered wild fauna and flora of Group I originated from nature as regulated (Article 6).

The Law on Public Investment 2014 took effect from 1st January 2015 which regulates different types of State's public investments on socio-economic infrastructure structure construction projects and programs and investments on socio-economic development programs and projects. Article 7 of this Law which is similar to Article 30 of the Law on Investment 2014 regulates projects that cause significant impacts on the environment or potentially cause serious impacts on the environment to be listed in the national important project group, in addition to other project types (A, B, C). With each project type, the Law also requests the analysis and EIA during the preparation of pre-feasibility studies (regarding national important projects or projects in group A) or investment proposing reports (concerning projects in group B and C).

Contents and requirements of analysis and EIA of investment projects are regulated in the Law on Environmental Protection 2014 (amended and implemented since 2015) and Decree no. 18/2015/ND-CP dated 14th February 2015 on environmental planning, strategic environmental assessment (SEA), EIA and environmental protection plan. Before 2015, this requirement was implemented according to Decree no. 29/2011/ND-CP dated 18th April 2011 on SEA, EIA and environmental protection commitment as well as other relevant circulars.

Integration of biodiversity into EIA

Although the assessment of impacts on biodiversity caused by development projects is considered technically difficult, financially and human costly and time-consuming. However, the institutionalisation of the assessment of biodiversity impacts in EIA is necessary to prevent biological resource loss and degradation in Việt Nam. When it is compulsory, it will create conditions for state management agencies on biodiversity to promote the standardization of criteria system and the national biodiversity database, to establish the biodiversity monitoring system in priority areas (protected areas, sensitive ecosystems), to support development of initiatives, valuation policy, biodiversity tradeoffs and ecosystem services.

Due to the diversity and complexity of biodiversity as well as limitations on awareness on the mobilization of local natural ecosystems, the identification of contents and criteria for assessment of biodiversity impacts in a comprehensive and feasible manner is not easy. Based on current regulations and policies relating to natural resources management and biodiversity, EIA practice in Việt Nam, as well as experience in application of environmental safeguards policies of foreign loan projects, the authors propose a framework of contents and criteria on biodiversity impact assessment to be integrated into EIA and other project procedures in Việt Nam. The proposed framework consists of 17 assessment criteria belonging to four impact levels relating to biodiversity.

Level of impacts on typical biodiversity values of the region (ecological zone, landscape, ecosystem, species): Legislations on environmental protection of Việt Nam have specific indicators for this criterion, mostly focusing on natural values of biodiversity, including: protected areas (national park, nature reserve…), sensitive ecosystems (wetlands, protection forest…), rare and unique species; trend in area and quality changes of landscapes and ecosystems; trend in quantity changes of rare and unique species.

Level of impacts on ecosystem services/environment of the region: This criterion clarifies the impacts of the project on roles/benefits of biodiversity to the region. It is necessary to clearly identify negative impacts of the projects on ecosystem values such as water sup-

▲*Assessment of biodiversity impacts in EIA is to prevent biological resources loss and degradation in Việt Nam*

ply, oxygen supply, and greenhouse gas emission reduction. The specification of this criterion is very important to ensure that projects do not change or cause any adverse impacts on ecosystems in the region.

Level of impacts on rights and status of biodiversity use/dependence of relevant stakeholders, including benefit sharing: This criterion clarifies the impacts of the project on benefit sharing of biodiversity among local communities. Generally, local communities in high biodiversity areas depend on natural resources (forest, soil, and water). Therefore, it is necessary to clarify if the project is implemented, what are the impacts of the project on local communities? Adverse impacts must be accompanied with compensation and mitigation measures.

Level of impacts on interference on biodiversity conservation in the region (law, policy, strategy, plan, program at watershed, corridor/region, national park/protected area levels): This criterion clarifies the possibility and levels of impacts of the project on policies and budget spent on biodiversity conservation in the region. It is necessary to clarify if the project is implemented in the region, how are approved policies on biodiversity protection affected? Increase or decrease in biodiversity conservation activities, including patrolling, propaganda activities…? Change in budget spent on biodiversity conservation policy implementation? Affected financial source come from which source?

Some recommendations and suggestions to ensure biodiversity conservation policies to be implemented in development projects

First, clearly regulating the structure and contents on biodiversity in EIA; biodiversity management plan and monitoring during project construction and operation. Specifying biodiversity contents through biodiversity criteria as basis for assessing and appraising EIA. Structure and contents on biodiversity should be specified in details. If project affects sensitive areas such as national park, nature reserve, the independent assessment of biodiversity impacts beside the general EIA is required.

Second, developing standard regulations on methodology on assessment of impacts on biodiversity, including data collection, impact assessment and forecast (direct, indirect and accumulative impacts). In addition to standard regulations on methodology, it is also necessary to promulgate a detailed technical guideline on biodiversity information collection, ecosystem service evaluation, detailed assessment of impact types and suggestion of appropriate mitigation solutions.

Third, consulting in details with relevant stakeholders (local community, local authority, management boards of national parks, protected areas…) on project impacts, mitigation measures, ecosystem service values and biodiversity trade-off.

Fourth, developing and completing the national database on biodiversity. This is the formal information source for reference on biodiversity status in the project area. The use of national database is to ensure the unification on biodiversity in EIA procedure, EIA report, and is the foundation for comparison of impacts on biodiversity with and without the project.

Fifth, publishing information on the project and the EIA report; regulating the responsibility of the EIA appraisal committee, involving social communities in EIA appraisal.

Sixth, changing the procedures for licence granting for development projects; considering EIA as a necessary document while considering to grante the investment license■

An index to evaluate the implementation green growth of businesses in industry

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At the moment, there are no set of criteria that can be used to evaluate the status of green growth in countries. They only gave some criteria to evaluate and classify green businesses, sustainable businesses and social enterprises. Moreover, the evaluation of businesses only focuses on how the firms use natural resources and how clean the production is. For example, UNIDO and UNEP suggested a set of criteria in 2010, which could be used to evaluate small and medium enterprises. The criteria were developed upon quantitative indicators, which are inputs such as materials, energy and water, and outputs such as products and waste (solid waste, exhaust emissions and waste water).

However, a number of countries have been unable to put those criteria to use because local companies have been unwilling to provide reports on their production and Government agencies lack equipment and resources to perform well.

The two coastal provinces of Việt Nam (Bình Dương and Bình Định provinces) have evaluated local enterprises based on three groups of quantitative criteria for green enterprises, which are firms' compliance with the Law on Environmental Protection; compliance with environmental regulations and standards; and compliance with environmental protection procedures and other relevant issues.

The assessment did not include factors such as applied technologies, energy saving and production of green outputs. However, in order to reflect the green growth activities of firms, the standards need to pay more attention to how advanced technologies are used in production, how firms use less natural resources to achieve higher production, and how firms transform to produce green outputs.

Within the study "The main solutions to promote green growth of local enterprises in Hà Nội by 2020, vision to 2030", the Central Institute for Economic Management (CIEM) has developed an index that evaluates green growth activities in local enterprises, or the Green Enterprise Index (GEI). The GEI ensures that those activities are fair, public and transparent, and helps local enterprises transform their current production models to the green one when they become public on the media.

Development of GEI

GEI formula:

$$GEI=\frac{1}{10^m}\left(\sum_{i=1}^{n} q_i\, w_i\right)^2 \mp a$$

Of which:

GEI : Green Enterprise Index

i : group of indicators

q_i : sum of scoring of indicators i

w_i : weight of the indicators i

a, m: constant to adjust the index back to the scale of 100.

SET OF CRITERIA

In order to calculate the GEI, the authors developed a set of criteria, including four major groups of 30 criteria. The criteria are consulted by 223 specialists from Ministries, sectors and local enterprises in Hà Nội, and evaluated on the scale of 5 points, of which, 0 is: unnecessary to be included in the assessment; 1 is: not important; 2 is: less important; 3 is: important; 4 is: very important; and 5 is: extremely important. The following are criteria used to calculate the GEI:

The first group of criteria: *Enterprises' awareness of environmental protection.* This is the most important group because it reflects the awareness levels of enterprises in complying with the regulations on environmental protection. The group is made up of 11 component criteria, which are evaluated in two levels - "very important" and "extremely important". The level of "very important" includes three criteria is that enterprises implement measurement and analysis of key environmental parameters and reach standards and technical regulations before emitting into the environment; How do enterprises have measurement results and classification of solid waste before storing or transporting it to the treatment area in accordance with the regulation? ; Whether enterprises declare, pay the environmental charges for wastewater and receive a wastewater discharge licence in accordance with the regulations.

The other eight criteria are evaluated on the level of "important", including: How do enterprises co-operate with Government agencies and local authorities on environment protection?;

▲*Raising awareness and actions on environmental protection for local enterprises is a criterion to evaluate the implemention green growth of business*

Whether enterprises provide reports on their environmental protection activities at least twice a year; If enterprises are granted with their ISO14.000 certificates on environmental protection; How many enterprises plant trees that cover 10 percent of their total area?; Enterprises recognised for applying more environment-friendly production methods; Enterprises which participate in local community activities on climate change and environment protection; How many enterprises have their own divisions to deal with environmental issues?; How many enterprises have managers taking part in training courses and workshops on green growth?

The second group of criteria: *Enterprises use innovative technologies to transform production model.* This group reflects green growth activities such as using advanced technologies, producing more outputs from less natural resources and energy, disposing less waste and protecting the environment.

The criteria are: Enterprises with plans to invest in energy-saving technologies in order to reduce greenhouse gas emissions and protect the environment; Enterprises investment in new technologies to save input materials and energy and in technologies to process and reduce industrial waste and greenhouse gas emissions; Enterprises were able to increase the amount of outputs made from the same amount of input materials compared to the previous year; Total reduction in carbon per output unit in comparison to the previous year; Total amount of solid waste per output unit decreases in comparison to the previous year; Total amount of waste water per output unit decreases in comparison to the previous year; Total output produced from using $1m^3$ of water increasing in comparison to the previous year; Enterprises plan to change production technologies from those that consume a lot of energy and natural resources, generate greenhouse gas emissions and pollute the environment to those that consume less energy and natural resources and are friendly to the environment.

The third group: *Efficient use of energy.* This group of criteria assesses corporate activities, in which firms can manage and use energy in an efficient way. The criteria include: Enterprises conduct annual reports on energy and environment protection; Total amount of carbon generated from using a unit of energy (electricity, coal, gas, oil) decreases in comparison to the previous year; Total amount of outputs generated from using a unit of energy (electricity, coal, gas, oil) increases in comparison to the previous year; Enterprises receive the certificate ISO 50.001 on energy saving; Total amount of solid waste generated from using a unit of energy (electricity, coal, gas, oil) decreases in comparison to the previous year; Enterprises win prizes on energy saving.

The fourth group: *Enterprises transforming their production model to friendly - environmentaly, energy-saving and green model.* This group shows willingness of firms to transform their production and products as well as their efforts to achieve certificates for green products. The criteria are: Enterprises with plans to transform their production models and products into green ones, and commit to implementing their plans; Enterprises achieving national certificates for green products; Enterprises achieving international certificates for green products.

Weight of the criteria: Besides scoring each criterion, the four groups of criteria are scored as percentage point to be the GEI weight. The results showed that, the group of criteria on awareness and actions on environment protection by enterprises is the most important with the scoring of 30.9 percentage points; the second one is the group of crite-

ria on technology improvement with the scoring of 26.6 percentage points; the group of energy consumption is the third important one with the scoring of 23.1 percentage points; and the group of criteria on product transformation received the scoring of 19.4 percentage points.

Scoring result: The GEI is scored on the scale of 100 points, and divided into five different levels: Very Good level for the range of 90 points to 100 points, proving that most of enterprises are trying to achieve green growth; Good level for the range of 80 points to 89 points, proving that enterprises have done a lot of green growth activities; Average level for the range of 70 points to 79 points, proving that enterprises have done several of green growth activities but those are not sufficient; Bad level for the range of 50 points to 69 points, proving that enterprises have done few of green growth activities; and Very Bad level for the range of below 50 points, proving that enterprises have done no or very few green growth activities.

Besides giving a general score to each enterprise, GEI also displays the scoring of all four groups of criteria, which reflect fully the actions by enterprises to achieve green growth development. The GEI provides information to the community, consumers and Government agencies in the shortest, most memorable and most understandable way, thus putting pressure on the firms to change their production model to improve their images and ensure sustainable development.

The GEI also helps Ministries, sectors and local authorities to evaluate and classify all Việt Nam's enterprises. The evaluation and classification depend on the capability of each Ministry, sector and local authority, and can be conducted every year or every two to three years■

Expansion of U Minh Hạ National Park

The Prime Minister has approved the expansion of the U Minh Hạ National Park in Cà Mau province by nearly 250 hectares from the original acreage stipulated in Decision No. 112/QD-TTg.

Accordingly, the enlarged National Park will have a total area of 8,527.8 hectares. More than 2,590 ha are designated as the core zone subject to strict protection, mostly forest on peatland, while 5,190.5 hectares are zoned off for preserving and restoring the cajeput forest biological systems. The remaining area, 743 ha, is used for administrative and support facilities as well as eco-tourism activities.

Scientific research conducted in 2010 revealed that the National Park was home to distinctive flora and fauna including 32 mammal species and 74 bird species. The National Park is currently home to 700 - 800 heads of deer, hundreds of wild boars and a variety of precious birds like painted storks and pelicans.

U Minh Hạ National Park was recognised by UNESCO as one of the three core zones of the Cà Mau World Biosphere Reserve in 2009■

Nguyệt Minh

Establishing task force on implementation of natural resource and environment commitments

The Minister of Natural Resources and Environment Trần Hồng Hà has recently issued the Decision No. 1520/QD-BTNMT on establishing task force to implement natural resources and environment (NRE) commitments under the Trans-Pacific Partnership Agreement (TTP) and the EU-Vietnam Free Trade Agreement (EVFTA).

Besides, representatives of agencies under the Ministry of Natural Resources and Environment (MONRE), Ministry of Agriculture and Rural Development, Ministry of Transportation, Ministry of Industry and Trade, Ministry of Foreign Affairs, Ministry of Justice, and Vietnam Chamber of Commerce and Industry.

The task force will implement missions, including: reviewing NRE commitments of Việt Nam under TTP, EVFTA; assessing compatibility and impacts of TTP, EVFTA on legal system of Việt Nam related to NRE; and making a list of legal documents and regulations which need to be amended and supplemented as well as issuing route map for the amendment and supplement.

The task force also makes plan and assigns responsibility for implementation and conformation to NRE commitments under TTP and EVFTA; establishes procedures, receives and handles with recommendations and questions of domestic and foreign investors related to legal issues; establishes mechanisms for legal information transparency and legal compliance; and solves conflicts under framework of TTP and EVFTA■

Sơn Tùng

Development's Healthy Heartbeat

▲*Mrs. Maria Neira - Director for Public Health, Social and Environmental Determinants of Health, World Health Organization*

Over 80 per cent of the disease and injury conditions monitored by WHO are influenced somehow by environmental or occupational factors.

World Health Organization (WHO) estimates released in 2015 reported that in 2012, around 7 million people died-one in eight of total global deaths-as a result of exposure to air pollution. This finding more than doubles previous estimates and confirms that air pollution is now the world's largest single environmental health risk. Reducing it could save millions of lives. The new data particularly reinforce evidence about the links between air pollution exposure and cardiovascular diseases, such as stroke and ischaemic heart disease. This is in addition to air pollution's role in developing respiratory diseases, including acute respiratory infections and chronic obstructive pulmonary diseases, as well as cancers.

The estimates are based both on more knowledge about the diseases caused by air pollution, and on better assessment of human exposure to it, enabling scientists to make a more detailed analysis of health risks from a wider demographic spread that now includes rural as well as urban areas.

As our world faces an unprecedented epidemic of noncommunicable diseases (NCDs), health and environment policymakers need to understand how health risks are exacerbated by air pollution, as well as more broadly by unhealthy home and urban environments.

Some 3.7 million deaths globally are attributed to outdoor air pollution. Among the key sources are traffic emissions, power generation, outdoor waste, biomass burning and the use of energy in buildings. Another 4.3 million deaths are linked to household air pollution, mostly from exposures to smoke emissions from rudimentary biomass and coal cookstoves and fires, upon which nearly 3 billion people worldwide primarily depend. Many people are exposed to both indoor and outdoor air pollution. Due to this overlap, mortality attributed to the two sources cannot simply be added together, hence the total estimate of around 7 million deaths in 2012.

Most morbidity and mortality assessments related to air pollution are made on the basis of airborne concentrations of $PM_{2.5}$- (particulate matter less than 2.5 microns (μm) in diameter). Meanwhile, ground level ozone, formed from a mix of urban air pollution emissions, is a factor in chronic asthma and respiratory disease.

Many of the air pollutants that are most harmful to health also damage the climate. These include the so-called short-lived climate pollutants such as ozone and black carbon (the sooty component of small particulate matter that is emitted by both diesel engines and cookstoves) that get their name from their short lifespan in the atmosphere. Cleaning up these, in particular, can generate immediate health and near-term climate benefits.

Many air pollution sources also generate other health risks. Unbridled urban traffic, for example, exacerbates the risk of injury and creates barriers to walking and cycling, which in turn inhibits people's access to outdoor space for physical activity.

Households with inefficient cookstoves are often poor, and may be vulnerable to a range of other environmental health risks, including lack of clean drinking water, sanitation and structural deficits that make

inhabitants more vulnerable to extreme weather or natural disasters related to climate change. The need for ensuring structurally safe construction in rapidly developing cities has been particularly evident in the aftermath of Nepal's recent earthquake, where widespread building collapses have claimed thousands of lives.

Unhealthy diets may include excessive consumption of processed foods and red meats that may both be "carbon intensive" and increase risks of obesity and obesity-related NCDs. Dietary choices may, in turn, be heavily influenced by urban environmental factors such as the decline of neighbourhood fresh food markets and the predominance of fast food chains.

Unhealthy urban and rural environments also remain a major source of communicable diseases. Indoor smoke from rudimentary cookstoves, for example, is a cause of over one-half of childhood pneumonia deaths. Unsafe drinking water, sanitation and hygiene (WASH) remains a factor in 58 per cent of under-five deaths from diarrhoeal disease despite significant declines in both WASH-related and overall mortality. Tuberculosis is transmitted in crowded housing with inadequate ventilation. Vector-borne diseases, such as malaria and dengue, may be combated through environmental measures like screens on doors, windows and water containers, as well as sustainable irrigation. Undernourished or malnourished children are more vulnerable to a range of infectious diseases. Changing climate conditions-leading to drought, floods, increased heat and changed patterns of infectious disease transmission-can also increase vulnerabilities.

All in all, WHO estimates that about one-quarter of the global burden of death and disease is due to unhealthy environmental factors that could be addressed with proven, affordable development strategies. Over 80 per cent of the disease and injury conditions monitored by WHO are influenced somehow by environmental or occupational factors.

While framing the problems is an important first step, doing something about them is the greater long-term challenge. Public policies can help shape a healthy environment in which to live, work and raise families through all stages of the life cycle. WHO works to promote such policies for primary prevention in housing, energy, transport and food production through a range of upstream activities such as:

Quantifying death, disease and disability from different environmental and, where feasible, social risks. WHO is updating its (2005) estimates of the proportion of diseases caused by environmental and occupational factors through a systematic review and synthesis of the literature on risk conditions and diseases, as well as of evidence about available interventions.

Health-linked sustainability indicators. WHO has documented health-linked indicators that could contribute to monitoring post-2015 Sustainable Development Goals. Examples include reduced urban air pollution concentrations as an indicator for healthy and sustainable cities; reduced household air pollution as an indicator for "sustainable energy"; and reduced childhood stunting and obesity as dual indicators of improved nutrition from sustainable food production.

WHO norms and guidelines. WHO guidelines for indoor air quality, household fuel combustion, ambient air pollution concentrations, safe drinking water, radiation and chemical exposures are used by countries around the world as the basis for national legislation, standards and enforcement.

Leadership and advocacy. We join with our fellow United Nations agencies, national governments and ministries, and civil society in campaigns and coalitions. Examples include the UNEP-hosted Climate and Clean Air Coalition to Reduce Short-lived Climate Pollutants, where WHO is a leader of a new health initiative. WHO has also long been active in United Nations-supported campaigns to phase out lead in gasoline and paint; end the use of asbestos; eliminate mercury from medical devices; and support safer management of chemicals.

Together, all these activities touch every one across the planet-rich and poor, newborns and elderly. They help support health and well-being in our journey through life by avoiding and eliminating unnecessary illness, injury and death. This is the healthy heartbeat of sustainable development■

Hoàng Đàn

(UNEP source)

Clear and Present Danger

New research is identifying threats to health and nutrition from the Great Transformation being forced on natural systems

▲*Mr. Samuel S Myers - Senior Research Scientist, Harvard School of Public Health*

Human civilization has flourished during the uniquely stable biophysical conditions of the Holocene. But over the past decades, the combination of rapid population growth and rapid increases in per capita consumption have led to an extraordinary ballooning of humanity's ecological footprint. We have converted roughly half the ice-free, desert-free land surface to croplands and pastures. We have cut down 50 per cent of the world's tropical and temperate forests. We have dammed 60 per cent of the world's rivers and exploit 85 - 90 per cent of monitored fisheries at, or beyond, sustainable limits. Our activities have reduced the populations of vertebrate wildlife species by roughly 50 per cent since 1970 and are driving species extinct at 100 - 1,000 times the baseline rate. Our greenhouse gas emissions are increasingly disrupting the global climate system. And most of these trends are accelerating.

We have tended to view this Great Transformation of Earth's natural systems as an environmental problem - a threat to birds and fish, but not so much to us. But increasingly, our group at Harvard is learning that this couldn't be more wrong.

Recently, for example, we've learned that emissions of carbon dioxide into the atmosphere are driving not just global climatic disruption, but also significant reductions in the nutritional value of food. We grew 41 cultivars of rice, wheat, corn, soy, sorghum and field peas in open field conditions in seven locations on three continents over 10 years using free air carbon dioxide enrichment methods. Comparing crops grown at ambient CO_2 with those grown under identical conditions but at 550 parts per million (ppm) CO_2 (concentrations that our atmosphere is expected to reach in roughly 40 years), we found that the edible portion of the ones grown at elevated CO_2 had significant reductions in protein, iron and zinc. This is important because roughly 2 billion people suffer from zinc and iron deficiencies at an estimated cost of 63 million life years lost annually. We also found that 2.75 billion people live in countries whose populations consume at least 70 per cent of their dietary zinc and/or iron from the type of crops showing strong reductions. Additional analyses suggest that these CO_2 - induced nutrient changes will drive hundreds of millions of people into zinc deficiency, while exacerbating the condition for billions already suffering from it.

We have also developed a new approach to estimating the importance of animal pollinators for human nutrition around the world, through overlaying data on the pollinator dependence of all food crops, the estimated consumption of each food per capita and the concentration of 23 different nutrients found in each food. Thus we can model how pollinator declines would alter intake of different foods and what these changes in dietary intake would mean in terms of the total amount of a particular nutrient available per capita per country. In research published in January 2015, we showed that pollinator declines would significantly increase the risk of vitamin A deficiency for populations in Mozambique and Uganda, with smaller effects in Bangladesh and Zambia. More recently, we have conducted a global analysis of how such declines around the world would impact the global burden of disease by increasing the risk of vitamin A deficiency, folate deficiency and low intake of fruits, vegetables, and nuts and seeds. In total, we found that pollinator declines could lead to over 1 million deaths annually and a very large global burden of disease.

▲*In total, scientist found that pollinator declines could lead to over 1 million deaths annually and a very large global burden of disease.*

Loss of animal pollinators is only one of many ways that biodiversity loss is likely to impact human nutrition and health. We also have been investigating an even more direct one- the loss of access to both terrestrial and marine wildlife for food. My colleague Chris Golden has shown that bushmeat is an important source of dietary iron in Madagascar and that removing it from the diet of the population he works with would lead to a 30 per cent increase in anemia in children - an outcome of enormous public health importance as iron - deficiency anemia leads to increased maternal and neonatal death, reduced IQ and reduced work capacity. We are now investigating more comprehensively the role bushmeat plays in the diet as a source of other important micronutrients like zinc, omega-3 fatty acids, and vitamins A and B12. We are concerned that what we are finding in Madagascar is occurring in populations around the world - the quiet erosion of a nutritional cornerstone as access to wild-caught meat becomes scarcer.

Access to seafood is likely to be of similar, or even greater importance, for coastal populations, and we have started investigating relationships between it, fisheries management, micro- and macronutrient status of local populations and health outcomes. We have put together a strong team of fisheries ecologists, economists and nutritional epidemiologists to begin quantifying the role that global fisheries play in nutrient intakes and nutritional status around the world. In this way, we can explore the extent to which sustainable fisheries management is not just a conservation imperative, but also a public health one.

These issues impact billions of people, but are just the tip of the iceberg. Enormous questions remain: How will the combination of increasing water scarcity, land degradation, pollinator declines, fisheries degradation and climate change interact to alter the quality and quantity of food when we need to roughly double production over the next 40 years? What will be the associated nutritional and health outcomes for different populations around the world? How many people will need to find new homes as a result of changes in climate, food production, natural hazards and sea level?

Such questions are finally beginning to receive the attention they deserve. A group of universities, NGOs and other organizations is coalescing to support the growth of a robust, policy-focused, research field addressing such topics-Health & Ecosystems: Analysis of Linkages (HEAL). It aims to help build a community of practice, identify or construct core educational materials, disseminate research methodologies, provide links to policy communities and communicate developments in the field. In July, 2015, The Lancet will publish a commissioned report of the Rockefeller-Lancet Commission on Planetary Health, detailing the human health risks associated with the accelerating transformation of Earth's natural systems and emphasizing a set of actions to address them.

The Great Transformation poses a clear and potent danger to human health. It is more important than ever to understand and quantify the relationships between our management of Earth's natural systems and the health of populations around the world. Only then can we manage them to optimize both health and conservation outcomes for future generations ?■

Hoàng Đàn
(UNEP source)

Promoting public-private partnership model in medical waste treatment

Nguyễn Hữu Hùng
Ministry of Health

Public - private partnership (PPP) investment in medical waste treatment is a model applied by many countries to encourage every economic sector to participate in it. The experience of other countries shows that waste collection and treatment through the PPP model is effective, thus stimulating every economic sector to spend funds on renewing infrastructure facilities and technology and training human resources to improve the quality of healthcare services at health centers.

Over the years, great attention has been given to environmental protection by the Việt Nam's Communist Party, National Assembly and the Government. This was emphasized in the Politburo Resolution No.41-NQ/TW on environmental protection taking into account the country's accelerated pace of industrialisation and modernization. To protect the environment effectively, the State encourages every individual, organisation and community to participate in relevant activities, particularly in services such as waste collection, reuse, transport and recycling, besides waste disposal.

Medical waste treatment under the PPP model was developed nearly 10 years ago, and piloted in accordance with Government's Decision No.71/2010/QĐ-TTg, dated September 1st, 2010. In 2015, the relationship between "public and private" was recently legalised by Decree No.15/2015/NĐ-CP, dated February 14th, 2015, regarding investment in the PPP models.

Investment: Medical waste treament system at health centres

According to statistics of the Ministry of Health, the total amount of solid waste generated by health centres is about 450 tonnes a day. Of this figure, 47 tonnes per day are hazardous waste, while the volume of medical wastewater generated is 125.000 m^3 per day.

However, about 15% of the health centres in Việt Nam do not yet handle medical waste treatment in accordance with regulations; 42% of health centres' wastewater treatment systems are degraded, damaged or have not been operated properly; and some do not have any medical waste treatment system. About 172 health centres are on the black list for causing serious environment pollution that needs to be treated thoroughly. In general, medical waste treatment is being processed in various forms:

Medical wastewater: Health centres have invested in building waste treatment plants and waste collection systems. An unpopular model to collect medical waste is to hire authorised private companies to treat wastewater by investing and operating a wastewater treatment system.

Health centres have to reserve some land and pay fees to these companies (the contracts signed are for 10 years and then the project is handled by the health centres).

Finance sources: Health centres use state funds for medical waste treatment. However, the funds are very limited and several health centres have to borrow capital to invest in wastewater treatment plants under the build-operate-transfer (BOT) model. In Hồ Chí Minh city, hospitals such as Nhi Đồng I, Hùng Vương, Nhân Dân 115 and Hồ Chí Minh's National Hospital of Odonto-Stomatology have applied this method by investing in wastewater treatment plants, with an average capacity of treating 250 m^3 to 1,000 m^3 per day for an average 10,000 VND per m^3.

Private companies, who want to sign the BOT contracts, will be offered preferential loans of up to 60 percent of the total investment capital at zero percent interest for seven years from the funds of the Hà Nội People's Committee.

Medical solid waste: There are two forms of treatment

The first form is to process it on site: health centres at grassroot levels will treat solid waste on site by burning it or hiring authorised companies to process it.

According to statistics, most waste incinerators fail to reach Vietnamese standards or technical regulations on environ-

mental protection such as QCVN 02:2012/ BTNMT. In some places, the condition of incinerators is deteriorating, posing a high risk of environment pollution or generating hazardous waste.

The second model is to hire authorised companies to use centralised waste treatment units. This model is commonly applied in health centres in urban areas.

Financial mechanism: Health services centres pay the transport fee and handle the volume of solid waste arising from daily use. In addition, the centres do not have their own facilities for treating biological waste. On the other hand, they still use rudimentary vehicles to transport medical solid waste that pose a high risk of environmental pollution.

Medical waste treatment under PPP- advantages and disadvantages

Over the years, the increasing number of health centres and inappropriate waste treatment equipment or systems have made it difficult to conduct waste treatment activities and environmental protection at the centres. In addition, there is limited regular funding for waste management activities of health centres, leading to the risk of environment pollution and affecting the health of patients, medical staff and the community.

To deal with this situation, the Ministry of Health, in collaboration with Ministries, branches and people's committees of cities and provinces, has taken the initiative of implementing solutions, socialised projects as well as mobilising and effectively using every finance source for healthcare services and medical waste treatment activities

Health centres have started investing in medical waste treatment facilities under the PPP model. Medical waste treatment, particularly of wastewater, has always been strictly in compliance with current regulations and environment standards. On the other hand, health centres have rights and obligations to invest in medical waste treatment facilities under the PPP model, involving no conflict of interest.

▲*Mobilizing all economic sectors to participate in medical waste treatment*

The financial mechanism of health centres under the PPP model is quite feasible to minimise their financial burden. Under this model, 7, 310 VND is needed for medical waste treatment per patient bed per day, which includes solid waste and wastewater. In addition, health centres have the right to manage medical waste treatment facilities and are capable of receiving or attracting preferential investment capital.

Companies conducting PPP projects on medical waste treatment facilities need to ensure that they provide continuous, stable and quality services to meet the demand of health centres. Private investment in medical waste treatment facilities will particularly help to reduce the heavy financial burden on them and the state budget.

Apart from advantages, PPP projects in medical waste treatment facilities have to deal with difficulties such as: Many health centres are not highly aware of their responsibility to protect the environment and fight diseases and epidemic outbreaks. They still rely on State's investment for building medical waste treatment facilities.

In addition, expenditure on construction, equipment purchase and operation of medical waste treatment facilities is quite high, while investment in these facilities under the PPP model requires long-time capital redemption and several administrative procedures.

To boost the PPP model in medical waste treatment, the Ministry of Health will soon improve its policy on medical waste treatment. It will work with Ministries and relevant agencies to develop and submit for the Prime Minister's approval a special mechanism for medical waste treatment, making it suitable for the current situation. In addition, the Ministry of Health wants to generate a legal corridor and a fair, transparent and effective mechanism to encourage investors to invest greatly in medical waste treatment facilities under the PPP model■

Application of advanced technology in air quality management

Currently, air quality is having signs of pollution due to socio-economic development activities. Therefore, enhancement in application of advanced scientific and technological results in air quality management is necessary. In recent years, the Environmental Source Samplers Incs Company (ESS) has promoted the cooperation with Việt Nam on scientific and technological transfer in air emission control, which contributes towards sustainable environmental protection. To find out about the development of the monitoring service, Environment Magazine had an interview with Mr. Mark D.Looney - Chairman of the Management Board and Chief Representative of ESS Company in Việt Nam on this issue.

▲*Mr. Mark Looney, Chairman of the Management Board and Chief Representative of the ESS Company in Việt Nam*

✶***Can you tell us some activities of the Company on air monitoring service development?***

Mr. Mark D.Looney: ESS is an international consultancy firm on environment, established in 1979 in the United States (North Carolina). Currently, the Company has six representative offices located in four countries: Việt Nam (two offices in Hà Nội and Hồ Chí Minh city), the Philippines (Manila), China (Guangzhou), and Korea (Seoul). ESS Company specializes in providing air emission monitoring service and measurement at source, application of advanced technology, with modern equipment system, data collection software and air conditioning system.

In Asia, ESS Company implements the installation of sample collection facilities from chimneys of industrial factories; inside and outside air environmental analysis of industrial entities; assess the productivity in thermal power factories; install continuous air monitoring system at source, a compulsory system for industrial factories; design, install, and operate the continuous surrounding environmental monitoring system; organize training courses for environmental monitoring staff on industrial waste measurement… The equipment system of the Company always follow strictly the International Standards on Environment such as the volume and turbidity monitoring system follows the regulations of emission and monitoring procedures (CEMS AMP - cherokee); dust density continuous monitoring system (CEMS); air quality sensor measurement equipment (Aeroqal)… On the other hand, environmental monitoring equipment of the Company can continuously measure popular air pollutants such as O_3, NO_2, CO… and provide meteorological parameters such as rain, temperature, humidity, wind speed and direction. This equipment system is installed in connection with a network, in combination with remote data collection to form the surrounding environment monitoring system, which is appropriate for cities or industrial zones. In addition, the Company also provides 24/24 electronic data systems, sends monitoring reports direct to customers with contents: findings, sample location, field data

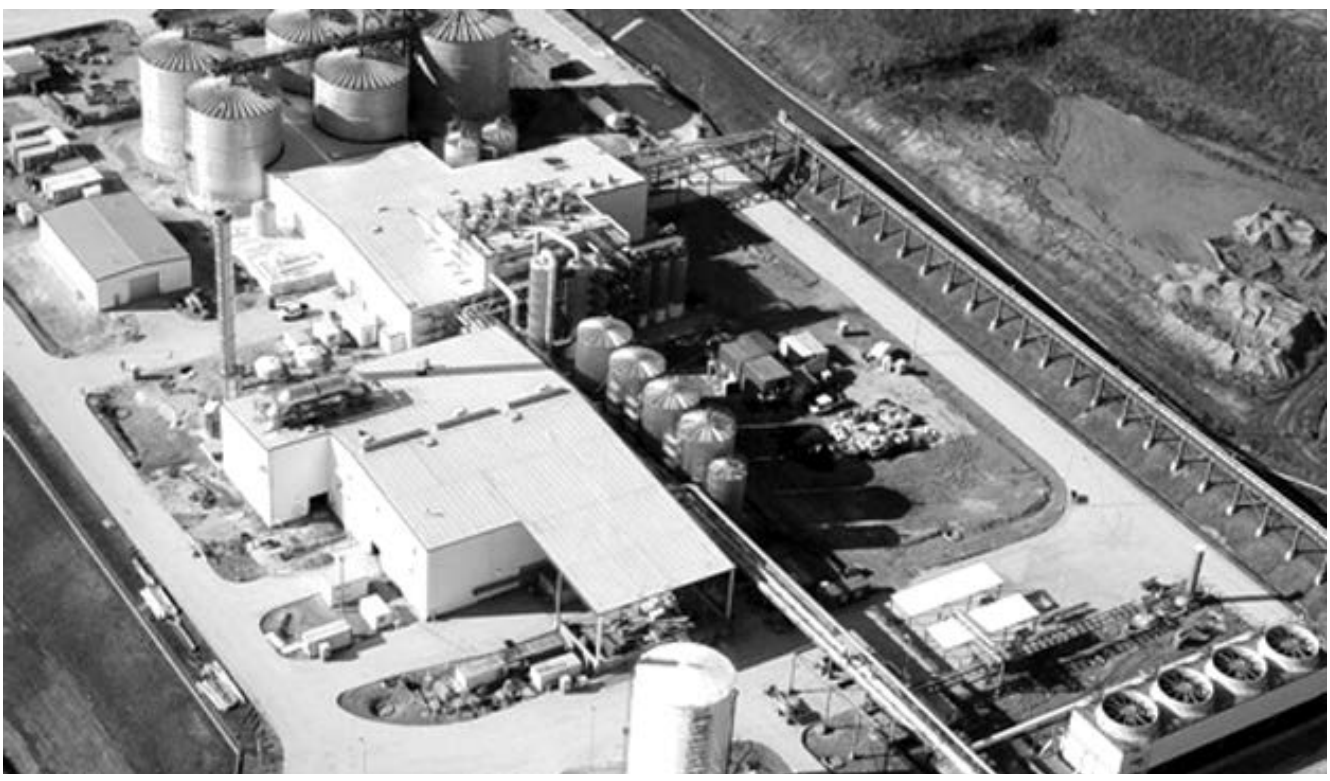
table, operation data, laboratory data and calibration.

To ensure quality requirements, the Company has a laboratory located in Hà Nội of 21 m^2 meeting requirements of sample analysis such as: dust, metal, mercury analysis; calibration of SO_2, H_2S, H_2SO_4; compounds analysis by ion and identification of reaction constituents of compounds. With the objective of having air quality testing, sampling and reporting in accordance with international standards, the Company will ensure strict confidential data according to ISO/IEC 17025 technical parameter.

✶ To manage air quality, Việt Nam needs to enhance advanced scientific and technological application. Can you introduce some technologies on air monitoring and surveillance system applied by the Company in Việt Nam?

Mr. Mark D.Looney: Việt Nam is at the level of serious air pollution, which directly affects human health, particularly in dense populated areas such as Hà Nội and Hồ Chí Minh city. In Hà Nội, the air pollution is increasing due to many causes, including mostly due to the increase in the number of cars and motorbikes. In addition, construction works also contribute to increase the dust concentration. According to data of the Environment Monitoring Centre (VietNam Environment Administration), the level of PM_{10} and $PM_{2,5}$ increases significantly in some periods.

Therefore, to manage air quality, Hà Nội in particular and Việt Nam in general need to install the continuous surrounding air environment monitoring system to monitor pollution factors. Currently, the ESS Company has established the air environment monitoring system at the US Embassy in Hà Nội and Hồ Chí Minh city; United Nations International School in Ciputra - Hà Nội; Natural Resources and Environment Institute in Bình Dương province; Outstanding advantage of this system is to support schools and organisations to update surrounding environment indicators that directly affect health such as TSP, $PM_{2,5}$, PM_{10}… from which to set plans or measures to adjust daily activities; through which contributing to enhance awareness of local people on the importance of air quality and to support managers to develop effective environmental protection policies and solutions.



▲ *Ethanol Factory in East Europe was tested by the ESS Company on air emission before puting into operation*

✶ In recent years, the Company has implemented many typical projects on treatment of particularly hazardous air samples which bring many benefits to the community. Can you tell us the results as well as challenges, difficulties of the Company when implement this project?

Mr. Mark D.Looney: From 2005 until now, ESS Company has implemented many projects on environmental monitoring, typically the project of collecting special and hazardous air emission samples in off-shore areas. The project was contracted by the United States Environmental Monitoring Centre, with the objective to classify affected land areas, measure air emission from the treatment process, monitor the surrounding air monitoring in contaminated land area, package and transport samples, and to report parameters that reach safe levels. When implementing the project, the Company also faced some challenges such as: the project located in a far area, hot climate, temperature pressures on engineers, no commercial services. This is a project having strict surveillance from the management agency. After one year of implementation, the project has gained positive results; toxic chemicals and pollutants in this area were treated reaching safe levels and causing no effects on human, flora and fauna.

Another project was also highly assessed which is the project on testing air emission before putting the Ethanol Factory in East Europe into operation. This project was funded by the Multilateral Development Bank (America) and the Overseas Private Investment Corporation (OPIC). The objective of the project is to test the air emission before putting into operation of different components of the Factory, including: biological ethanol manufacturing area, Power Factory, Drying, truck frame and thermal oxidization, CO_2 absorption factories; study on the environment surrounding the Factory area. However, when implementing, the project faced some challenges such as: the project is located in a remote area of East Europe, with difficult topography therefore equipment transportation and traffic is difficult. However, the results of collected samples and the air environment surrounding the Factory all meet safe levels. When under operation, every year, the Factory consumes 575 thousand tonnes of corns, produces 240 litres of biological ethanol and produces 175 thousand tonnes of dry distilled corn seeds, creates jobs for 680 labourers.

✶ In the upcoming time, what activities the Company will implement to promote scientific and technological transfer in air control in Việt Nam?

Mr. Mark D.Looney: Việt Nam has improved legislations on environmental monitoring service development, while creating a healthy competitive environment, to be appropriate with the socialization orientation of environmental monitoring services. These are favourable conditions for the Company to implement its long-term plan in Việt Nam. Particularly, recently in Hà Nội, the Vietnam Environment Administration and ESS Company have collaborated to organize the workshop on application of advance technology in air quality management.

In the upcoming time, ESS Company will implement the environmental monitoring cooperation program with Việt Nam, in order to enhance exchanges with advanced technologies and techniques in the environmental area; through which promoting technological transfer cooperation in air emission control in Việt Nam, as well as finding opportunities for development and capacity enhancement of each side.

Furthermore, annually, the Company will regularly organize workshops, which are connections to new equipment and methods on environmental monitoring from different organisations in the United States or Europe for further development in Asia in general and in Việt Nam in particular. In addition, the Company will organize training courses for environmental monitoring staff of Việt Nam conducted by leading environment engineers from the United States.

On the other hand, ESS Company has developed dialogue channels with Viet Nam environment managers, from which ESS can provide consultancy for effective environmental protection policies to management organisations and agencies■

Thank you!

Châu Loan
(Implemented)

Enhancing the roles of enterprises in development of environmental industry in Việt Nam

Dr. Nguyễn Văn Phương
Hanoi Law University

▲*Compost Production from Waste in Việt Nam Waste Solutions Inc*

According to surveys of the Vietnam Environmental Industry Association of 493 enterprises working in the environmental industry, the proportion of enterprises implementing waste treatment and environmental sanitation services measures up to 43%; of which state enterprises account for 7%, joint stock enterprises 24%, private enterprises 67%, other enterprises contribute the remaining 2%. In general, enterprises working in the environmental industry have many advantages such as high market demands, diverse human resources, yet the quality of services by these enterprises is not high, some works are ineffective. To support enterprises in the environmental industry to meet the demands of environmental services, which contribute to environmental protection while increase the contribution of environmental enterprises to the economy, the State needs to promulgate mechanisms and policies to create favourable and fair conditions for these enterprises to develop.

Roles of enterprises in environmental industry development in Việt Nam

In recent years, the economic growth has laid out conditions for manufacturing and commercial enterprises to develop rapidly. Therefore, goods and services by enterprises are significantly diverse, and quality of goods and services is improving, which meets fundamental consumption demands of the whole society.

However, the economic growth is also a cause of environmental pollution. To solve this problem, in the last few years, the Law on Environmental Protection and guide documents for implementation of the Law have been promulgated, which identify the obligations of enterprises in environmental protection. This is one of important content for the development of the environmental industry.

In the past, the collection, transportation and landfill of domestic wastes are mostlycarried out by state enterprises; however, currently, these enterprises are in the process of equitization. Models of environmental sanitation service joint stock companies are developing widespread in Hà Nội, Hồ Chí Minh city, Nha Trang... In addition, there are private company models such as Huy Hoàng Company (Lạng Sơn), Nam Thanh Company (Phan Rang), Hiệp Hòa Environmental Sanitation Service Cooperation (Bắc Giang), Ngô Mây (Bình Định)... These are effective models which are being up-scaled.

The collection, trading and recycling of scraps is a long-time profession in Việt Nam and is being considered as an economic activity that is effective and environmentally important. In addition to waste re-

cycling enterprise types, hundreds of craft villages are operating in recycling scraps. However, it is necessary to control the operation of scrap trading and to control negative environmental impacts.

In recent years, the participation of enterprises in cleaner production has created many models on environmental protection. Typical examples are Xuân Đức Paper Company, Linh Xuân Paper Company, Phước Long Textile Company, Thuận Thiên Textile and Dying Company, Thiên Hương Food Company, Visa Factory, Nestle Company, Chanshin Company…

However, these above activities are "local initiatives". Therefore, it is necessary to develop strategies, planning, plans at national, regional and provincial levels in the upcoming time. Bases on this, enterprises invest in the environmental industry.

Some recommendations to increase the role of enterprises in the environmental industry development

The State needs to consult enterprises when developing policies and legislations relating to environmental industry; to ensure the equality among enterprises; to create a favourable mechanism in environmental industry science transfer; to create financial incentive mechanisms (tax and fee reduction, soft loans), land… for enterprises working in the areas of environmental protection, manufacturing by-products, exporting environmental industry equipment and technology.

Furthermore, the State needs to have appropriate incentive policies for enterprises that use products and services of the environmental industry; to promote the establishment and development of the environmental industry market.

In the context of international economic integration, enterprises needs to enhance their self-reliance in developing production and commercial potentials through improvement and accession to modern technologies, access to advanced science and technology; creation of the trading environment and the product market, making use of scientific and technological linkage activities; creation of the linkage in the relationship among State - Scientists - Enterprises. Simultaneously, environmental protection should be identified as a corporate social responsibility; collaboration should be carried out with training institutes to develop good human resources for manufacturing activities of the enterprises■

Renewable energy may meet fully power needs for Việt Nam by 2050

This information has been given by a new report of World Wide Fund for Nature (WWF) - Vietnam and Vietnam Sustainable Energy Alliance.

The "Sustainable Scenario for the Vietnamese power sector until 2050" report offers an overview of the country's power sector within the global energy framework and suggests various scenarios from which Việt Nam could choose its energy sector development strategy.

According to the report, there are numerous renewable energy sources available in Việt Nam like solar, wind, water, geothermal, bio-mass and ocean waves. For example, solar power can provide at least 35 percent of Vietnam's electricity needs while wind power can account for at least 13 percent. The report offers three options: Business As Usual, Sustainable Energy Scenario and Advanced Sustainable Energy Scenario. Business As Usual shows what will happen if Việt Nam continues to rely on fossil fuels and outdated, inefficient technologies, including a rise in carbon dioxide emissions.

The two sustainable energy scenarios demonstrate it is technically and economically feasible by 2050 to supply everyone with the electricity, they need with 81- 100 percent coming from renewable energy sources and carbon dioxide emissions reduced by over 80 percent. Carbon dioxide emissions from burning coal and other fossil fuels are the leading cause of climate change.

Also according to the report, renewable energy and energy efficiency could help Việt Nam significantly reduce its dependence on fossil fuel and coal imports, ensure stable electricity prices for decades to come, increase job creation, strengthen co-operation in the region, and reduce environmental and social impacts.

Minh Viễn

Calculator 2050 - an instrument in calculating greenhouse emission reduction

In its Intended Nationally Determined Contribution (INDC) report, Việt Nam commits that by 2030, it will have reduced its greenhouse gas (GHG) emission by 8%. To this end, Ministry of Industry and Trade (MOIT) has implemented a large number of projects on energy saving to finite CO_2 emission. Among these is the Project of Improving and Developing 2050 Calculator for Vietnam's provinces for policymaking in energy field and GHG emission management (the 2050 Calculator Project). Environment Magazine had an interview with Mr. Hoàng Văn Tâm - Deputy Director of the 2050 Calculator Project on contribution to environmental protection.

▲ *Workshop on launching Updated Version of Viet Nam 2050 Calculator on March 3rd, 2016 in Hà Nội*

✶Can you please have some introduction on the 2050 Calculator Project of Việt Nam?

Mr. Hoàng Văn Tâm: The 2050 Calculator is developed by the UK's Department of Energy and Climate Change (DECC) to reduce GHG and mitigate climate change impacts. So far, this instrument has been transferred to 16 countries including Japan, India, China, Korea, Thailand and Indonesia. In 2014, with support from DECC, MOIT has received the transfer and developed a Vietnamese version of the 2050 Calculator Pathways which is modified from DECC's original version. The Vietnam 2050 Calculator is a web based instrument which estimates Vietnamese energy demand and supply with different energy development and GHG emission reduction scenarios by 2050. Data are collected and selected to meet with requirements of the original version and tailored to suit the local context. Based on it, the most possible scenarios for the future are forecasted to provide input for relevant policymaking to reduce emission, improve air quality, limit energy import and contribute to sustainable development.

In 2015, through the Commonwealth Fund, the UK's Department of Foreign Affairs assisted MOIT in implementing the 2050 Calculator for provinces to help developing policies and action plans on CO_2 reduction in compliance with national policies and objectives. An updated version has been introduced to Ministries, sectors, localities, enterprises, non-governmental organizations, research institutions and universities.

✶Would you please let us know who are the main beneficiaries of the Vietnam 2050 Calculator Project and its advantages in energy and environment sectors?

Mr. Hoàng Văn Tâm: The 2050 Calculator is written in Vietnamese which is convenient for local users to search, study and use information on energy scenarios, linkages between the scenarios and GHG emission. So far, the instrument has been updated to reflect the most recent policies on energy and specific data on energy consumption in industrial sectors, households and commercial sectors. The in-

strument covers all types of energy (oil, gas, biomass and electricity) and emission activities (fossil fuel burning and industrial production). In the meantime, it estimates costs of different scenarios and provide associated assumptions and GHG emission reduction measures.

The development of such scientific, transparent and helpful instrument has assisted policymakers to come up with suitable policies on energy, GHG emission reduction and contribute to responding to climate change and green growth.

Development of such a scientific, transparent and helpful this instrument has enabled policymakers to come up with relevant policy measures in energy and GHG emission, contributing to responding to climate change and green growth. The Vietnam 2050 Calculator is available online so that everyone can access and search for information on energy and GHG emission. This is also a helpful instrument in developing Việt Nam's INDC report and studying measures for implementing Paris Agreement in the following time.

✶ What province has been selected to pilot the 2050 Calculator Project?

Mr. Hoàng Văn Tâm: With support from the UK Embassy in Hà Nội, the Project is assisting Đà Nẵng city in piloting a provincial 2050 Calculator version. It is expected that in March 2017, the 2050 Calculator for Đà Nẵng will be finished. This will be the first local version. Hopefully, it will help provide local policymakers with relevant information for achieving local climate change objectives and green growth. In the coming period, the Project will continue propaganda, dissemination and technical assistance for other provinces to scale up the 2050 Calculator usage and contribute to sustainable development of our country■

Thank you!

Phương Linh
(Implemented)

Đà Nẵng: Using facebook to make city smart and green

▲ *The Da Nang Urban Management Facebook page*

The Facebook page - Quan ly do thi Da Nang: Tien nghi - Xanh - Sach - Dep (Da Nang Urban Management: Comfortable-Green-Clean-Beautiful), with the participation of 20,000 online members and 11 managers from departments and agencies of Đà Nẵng city, has helped the city to address issues on environmental pollution, social disorder, traffic, tourism and illegal actions. The Facebook page was founded in 2013 which has served as an effective link between the community and the city's leadership, and helped speed up solutions to problems.

According to the Deputy Head of the city's Urban Management office Nguyễn Văn Duy, all input was either sent directly to managers or forwarded to 11 key members from departments in the city to deal with urban infrastructure, communications, security and traffic. He said that poor management or a slow reaction from any department would reflect on the capacity of managers or servants, and any issues would result in deductions from their monthly pay.

The Facebook Managing Board said it received 454 messages from local people last year, and 154 issues were resolved. In addition, 2,500 violations at public sites were addressed after the administration received alerts from local people via Facebook. Local people often reported issues related to road damage, pollution, forest fire risks, hazardous workshops, tourism harassment and robberies that occur in their living quarters or surrounding areas.

As stated by Director of the Nature Resources and Environment Department of Đà Nẵng Nguyễn Điểu, they have been online around-the-clock to get complaints and opinions from residents on the quality of water, poor sewage treatment and polluted factories, they have had to solve the problem fast, rather than be criticised by the city's leaders. He added Facebook and other social networks helped Việt Nam undergo an online facelift in a "green and smart" way■

Nguyệt Minh

ADB to supports Việt Nam in sustainable development

The Prime Minister Nguyễn Xuân Phúc expected that Mr. Eric Sidgwick and the Asian Development Bank (ADB) representative office in Việt Nam will work for enhancing Việt Nam - ADB relations in the coming time.

The Vietnamese Government will continue stabilizing the macro-economy, controlling inflation, accelerating growth, enhancing the development of the private sector, upgrading the infrastructure and responding to climate change, the Prime Minister asserted, asking for the assistance from the ADB to assist Việt Nam in overcoming difficulties and challenges.

Việt Nam has been highly appraised by the international community for its socio-economic development over recent years, said Mr. Eric Sidgwick, announcing that the ADB is launching programs in Việt Nam in such areas as sustainable development, infrastructure, environment and climate change.

The two sides talked about activities to celebrate the 50th founding anniversary of ADB (December 19th, 1966) and the 20th anniversary of the establishment of ADB representative office in Việt Nam (December 19th, 1996) as well as the future visit of the ADB President to Việt Nam■

Thu Hằng

World Bank supports Việt Nam to access to preferential funds for renewable energy development

Congratulating Ms. Victoria Kwakwa, the Prime Minister proposed that World Bank with its international prestige will further cooperate and support Việt Nam, especially in accessing to preferential ODA funds, so that Việt Nam can solve the existing difficulties. The Vice President of World Bank, Ms. Victoria Kwakwa affirmed that World Bank usually supports Việt Nam as well as tightens the cooperation relation with Việt Nam to face with challenges of the country. Besides, World Bank commits to support Việt Nam in accessing to preferential funds for renewable energy development, together with international community to mitigate climate change impacts■

Phương Linh

UNODC press conference on combating wildlife crime

The United Nations Office on Drugs and Crime (UNODC) already held a conference in Hà Nội on "Zero Tolerance for Wildlife Crime".

The conference is part of activities marking World Environment Day 2016 (June 5th) themed "The fight against illegal trade in wildlife".

United Nations Resident Coordinator Pratibha Mehta said that the United Nations (UN) in Việt Nam has been working very closely with the Government and international and national NGOs to combat wildlife crime through various initiatives and they will continue to collaborate and support these efforts in addressing very important issues.

Vietnamese relevant agencies need to join hands in carrying out comprehensive investigations with inter-sector investigation teams.

Việt Nam should intensify international law to forbid and criminalise the possession of any wild species, organs or products hunted and traded illegally, regardless of the crime taking place in Việt Nam or anywhere else in the world■

Quỳnh Như

International organizations support biodiversity conservation at Sao La Reserve

▲*Sao La - endangered species*

Sao La Reserve (Thừa Thiên - Huế province) has received the cooperation and support of about 5 international organizations such as World Bank, World Wide Fund for Nature, International Organization for Conservation of Nature, Vietnam Conservation Fund. Due to the help of international organizations, the local conservation of biodiversity brings high efficiency.

Sao La Reserve receives much international attention because of the appearance of Sao La - critically endangered species on the list of the Red Book of International Union for Conservation of Nature (IUCN) and Việt Nam.

In Thừa Thiên - Huế, Sao La was found 3 times in 1998, 1999 in Hương Thủy town and A Lưới district. The area of Sao La Reserve is 15,519 ha, with a large portion of natural old-growth forest in the Central Trường Sơn. This is one of the places with the most biodiversity in the region and worldwide, it is the home of rare and endemic animals such as Sao La, Trường Sơn muntjac, giant muntjac, striped rabbit and many other plant and animal species■

Huy Hoàng

The 26th ASEAN Working Group on Nature Conservation Conference

▲*Logo of the 26th ASEAN Working Group on Biodiversity Conservation Conference*

The 26th ASEAN Working Group on Nature Conservation Conference (AWGNCB 26) was held in Hà Nội recently.

The conference focused on discussions: Status of ASEAN Heritage Garden; Operation of ACB; Preparation and development of a draft of the announcement of ASEAN Environment Ministers at the 13th Meeting of the conference of the Parties to the Convention on Biodiversity (CBD COP13) that will be held in Cancun city, Mexico in December, 2016; "Restoration of declined forest ecosystem in ASEAN's tropical regions" project; Biodiversity management and conservation in ASEAN's protected areas; China-ASEAN Partnership on development of eco-urban areas; ASEAN view to 2025 (discussion on ASEAN strategic draft on environment); a draft of ASEAN-UN working plan on environment and climate change in 2016 - 2020 period. Especially, the conference developed an ASEAN working group action plan on biodiversity conservation in 2016 - 2020 period.

Besides AWGNCB-26, other conferences were also organized, including: preparation for the 13th Meeting of the Conference of the Parties to the Convention on Biodiversity; ASEAN working group action plan on biodiversity conservation in 2016 - 2020 period; orientation to implement ASEAN community vision after 2015■

Quang Ngọc

Việt Nam - United States:
Cooperation on coping with illegal trading of wild fauna and flora species

On the occasion of the President of the United States Barack Obama's visited to Việt Nam from May 23rd to May 25th, the two Governments established the United States - Việt Nam partnership on coping with illegal trading of wild fauna and flora, based on the principals as below: The illegal trading and consumption of wild fauna, flora species and its originated products have been threatening to the unreplaceable global biodiversity, affecting economy and community in the world.

The two countries commited to enhance efforts and reinforce their collaboration in 4 strategic sectors: minimizing demand of consumption of wild fauna and flora species and its originated products; intensifying prosecution and legal implementation; consolidating and implementing legal document system related to crime on wildlife; and strengthening international cooperation.

In addition, the two countries plan a new 5-year bilateral cooperation on coping with illegal trading of wild fauna and flora species which implemented through the United States Agency for International Development (USAID).

The two countries commited to consider the trading of wild fauna and flora species is a serious crime according to the Resolution No. A/RES/69/314 issued by the General Assembly of the United Nations on coping with illegal trading of wild fauna and flora species■

Thanh Huyền

Việt Nam - United States beef up renewable energy cooperation

The Vietnamese Ministry of Industry and Trade and General Electric Group (GE), a US based global corporation already signed a Memorandum of Understanding (MoU) on development of 1,000MW wind energy by 2025 in Việt Nam.

The MoU called for collaboration in accelerating the development of renewable energy in Việt Nam. Accordingly, by 2025, the two sides will produce a minimum of 1,000MW of new wind farms by 2025. This represents enough energy to power approximately 1.8 million Vietnamese homes.

▲*Illustration photo*

Under the agreement, GE will utilize its global wind development expertise and work with local developers to identify potential projects. Furthermore, GE will support the implementation of Việt Nam's National Target Program through local manufacturing of wind turbine equipment components at GE's Hải Phòng facility, plus collaboration with other local suppliers. Việt Nam is endowed with great potential wind resources distributed throughout the country■

Châu Loan

TOA Paint focuses on environment protection, product quality for environment safety and public health

▲*Mr. Phạm Thế Kiệt - Director of the Production Plant of TOA Paint Company of Việt Nam*

TOA Paint Company in Việt Nam not only focuses on business, but also offers Corporate Social Responsibility (CSR) through social welfare programmes and environment protection, TOA Paint Vietnam Manufacturing Plant Director Phạm Thế Kiệt said. He spoke to Environment Magazine on the sidelines of a ceremony held to present the Green Brand Award to 50 enterprises from across the country that achieved green growth in 2015.

✶ ***What measures have your Company applied to develop a sustainable business strategy after entering Việt Nam in 1995?***

Mr. Phạm Thế Kiệt: The Company was founded by TOA Paint Corporation in 1995. This is a premium brand in Thailand in the field of decorative paints. The first factory was launched in 1998 and in 2006, the Company invested in expanding a new manufacturing plant in Tân Đông Hiệp A industrial zone in Dĩ An district, Bình Dương province. The new Plant is fully equipped with an automated paint production line to produce decorative, industrial, car and wood paints and chemicals for construction.

In the Vietnamese market, TOA Paint Corporation has focused on building a sustainable business strategy, raising product quality and limiting impacts on environment. To that end, TOA Paint Corporation applied hybrid nano technology in TOA nanoshield paint production (super premium grade paint) in 2008. With nano technology, users can easily clean the surface. In 2009, after the success of the nano paint, the Company launched a premium interior paint known as TOA Nano-Clean and increased investment capital to expand its warehouse in Hà Nội.

To bring high-quality products that are adapted to the weather conditions in Việt Nam, the Company manufactured NanoShield Sunblock and NanoClean from 2010 to 2012, especially TOA Eco-care, a green technology that restricts the use of organic compounds in paint, helps to protect the environment and avoids the harmful effects of carcinogenic elements. In 2013, the Company launched TOA 4 Seasons, which is durable and fungus-resistant, with no added lead or mercury. All products manufactured by TOA Paint Company have achieved customer satisfaction.

✶ ***Being a company that makes paint, which poses a high risk of environmental pollution, what does your firm do to protect the environment during the manufacturing process?***

Mr. Phạm Thế Kiệt: Paint production relates to the chemical industry. We always pay great attention to environment issues. Apart from continuously improving product quality, seeking clean solutions and

▲*An agreement was signed at a ceremony between the Company and ChildFund Vietnam to provide paint via the "Paint Happiness and Draw Love" Programme*

clean production and environment-friendly technology, the Company has invested 5 billion VND in building an advanced wastewater treatment system. In addition, the Company is fully complying with environmental protection and fire safety policies and regulations, both domestic and international. At the same time, the Company has also sent technicians to participate in training courses on fighting and preventing fires, chemical safety and environment incidents. Over the years, the Company has got environmental management systems standard certificates for quality management such as ISO 9001, ISO 14000, ISO 5000 and OHSAS 18001 for occupational health.

Thanks to its relentless efforts and contributions to the community, TOA Vietnam Paint Company has been recognised by consumers and has received many awards, such as "Top 10 famous brands for sustainable development in Asean", "Top Ten Brands in Việt Nam", the business confidence index (BCI) and Trusted Brand Index 2015, besides certification for Sustainable Development Business 2015 and Top 50 Green Brands, chosen by customers.

✶***To maintain sustainable development, apart from environmental protection, how does the Company implement social responsibility?***

Mr. Phạm Thế Kiệt: The Company's criteria are to see the value of community first, besides making efforts to bring consumers high-quality products that are safe for human health. The Company has also set aside a part of its benefits for volunteer activities. It has implemented many social welfare projects and charity programmes, and built cosy houses and schools for the poor in Bình Dương province and Cửu Long Mekong Delta region.

Over the last two years, the Company's two products, known as "Duck" and "Homecote", have become ambassadors of a charitable programme called "Love Spring," which has raised hundreds of millions of dong, bringing joy to the community. In 2015, the Company implemented various social programmes such as providing paints to ChildFund Vietnam in a "Paint Happiness and Draw Love" programme. The programme has provided 71,5000 litres of paint, worth 3 billion VND, for the painting of buildings such as primary schools and hospitals for children. So, TOA Paint Company has been recognised and trusted by consumers. Carrying the message of "We Paint Happiness," TOA Paint Company will always strive to bring love to all Vietnamese people in the country■

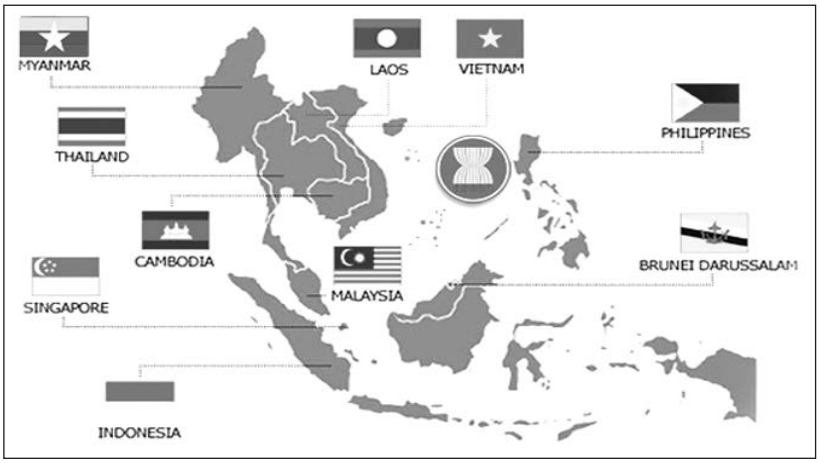
Thank you!

H.Trần

(Implemented)

Declaration on ASEAN post 2015 Environmental sustainability and Climate change Agenda

Declaration was approved by the Heads of State/Government of the Association of Southeast Asian Nations (ASEAN), on the occasion of the 27th ASEAN Summit in Kuala Lumpur, Malaysia, on 21st November 2015.



Welcoming the successful convening of the 13th ASEAN Ministerial Meeting on Environment (AMME) held in Hà Nội (Việt Nam) on 28th October 2015; the ASEAN Environment Year (AEY) 2015 celebration with the theme "Empowering the Youth for a Green ASEAN Community" and the 2nd ASEAN Eco-schools Award Presentation Ceremony on 29th - 30th July 2015 in Nay Pyi Taw (Myanmar); and presentation ceremony of the 3rd ASEAN Environmentally Sustainable Cities (ESC) Award and 2nd Certificates of Recognition for Clean Air, Clean Water and Clean Land at the 15th Informal ASEAN Ministerial Meeting on Environment (IAMME) on 30th October 2014 in Vientiane (Lao PDR);

Taking cognizance of the growing need to address global and transboundary environmental concerns and ASEAN's obligations to its people in ensuring environmental sustainability for their region and to achieve sustainable development;

Affirming our commitment to strengthen international cooperation to move the Sustainable Development Agenda forward through the achievement of the internationally agreed development goals, including the Post-2015 Development Agenda and the Sustainable Development Goals (SDG); also affirming a commitment to support global efforts to address climate change at the UNFCCC and biodiversity conservation at the Convention on Biological Diversity (CBD), in particular to achieve the Strategic Plan for Biodiversity 2011 - 2020 and the Aichi Biodiversity Targets;

Recalling ASEAN's countries commitment made in the Kuala Lumpur Declaration on a People-Oriented, People-Centred ASEAN (2015); the Declaration on Institutionalising the Resilience of ASEAN and its Communities and Peoples to Disasters and Climate Change (2015); the Nay Pyi Taw Declaration on Realisation of the ASEAN Community by 2015 (2014); the Bandar Seri Begawan Declaration on the ASEAN Community's Post-2015 Vision (2013); the Phnom Penh Agenda for ASEAN Community Building (2012); the Bali Declaration on an ASEAN Community in a Global Community of Nations (Bali Concord III) (2011); the ASEAN Declaration on Environmental Sustainability (2007); and the ASEAN Declaration on Heritage Parks (2003);

Further recalling the regional commitments demonstrated in the Joint Communique of the 48th ASEAN Foreign

Ministers Meeting (2015); the Bangkok Resolution on ASEAN Environmental Cooperation (2012); the Singapore Resolution on Environmental Sustainability and Climate Change (2009); the Cebu Resolution on Sustainable Development (2006); and the Yangon Resolution on Sustainable Development (2003);

Welcoming Futher the ASEAN Joint Statement on Climate Change to the 21st Session of the COP to the UNFCCC (2015);

Noting improving environmental quality, and the adverse impact of climate change on socio-economic development, health and the environment in our region;

Noting also that, rapid economic development, while contributing to sustainable development and poverty eradication in the region, poses challenges in dealing with unsustainable consumption and production patterns, regional food and energy security concerns; and that growing urbanization increases the need for sustainable environmental management;

Recognizing the need to take an integrated and holistic framework for strategic decision-making in the face of global change to effectively address the challenges of environmental issues in this region including global warming, transboundary pollution, limited safe water supply, biodiversity loss, chemicals and waste, and coastal environmental degradation;

Emphasizing the importance of concerted efforts to strengthen regional and international cooperation on the adaptation to and mitigation of climate change, the stemming of the loss of biodiversity, the management and control of water-related disasters as well as the enhancement of environmental education and public awareness on these issues;

Acknowledging the significance of ASEAN's role in addressing environmental sustainability challenges such as climate change, biodiversity conservation, water resources management, sustainable cities, chemical safety, and transboundary pollution;

Welcoming the omnibus decision adopted by the ASEAN Member States to the ASEAN Agreement on Transboundary Haze Pollution (AATHP) and the Alert Levels, Trigger Points and Actions on Fire Suppression to complement and enhance the existing Standard Operating Procedure for Monitoring, Assessment and Joint Emergency Response under the ASEAN Agreement on Transboundary Haze Pollution; and recognizing the need for further concrete measures in this regard;

Welcoming also the initiatives by the Sub-Regional Ministerial Steering Committee on Transboundary Haze Pollution (MSC) for countries to take the necessary actions in order to solve the transboundary haze pollution issues in a concerted manner through the operationalization of the ASEAN Sub-Regional Haze Monitoring System (HMS). We encourage MSC countries to share information on a Government-to-Government basis on hotspot areas that cause transboundary haze.

Commending the successful conclusion of the ASEAN Project on Rehabilitation and Sustainable Use of Peatland Forests in South East Asia (2009 - 2014) and the Sustainable Management of Peatland Forests in Southeast Asia Project (2010 - 2015) which contributed to the implementation of ASEAN Peatland Management Strategy; and the endorsement of successor ASEAN Programme on Sustainable Management of Peatland Ecosystems (2014 - 2020) at the 9th Meeting of the Conference of the Parties to the ASEAN Agreement on Transboundary Haze Pollution in 2013;

Reaffirming the importance of the ASEAN State of Environment Report and process as a framework to promote environmental sustainability and to support decision-making for the relevant sectoral bodies, Governments and other stakeholders and, in that regard, lauding efforts to prepare the Fourth ASEAN State of Environment Report (2009) and welcoming the participation of the United Nations Environment Programme and other development partners in that process;

Expressing appreciation for the efforts and support of ASEAN Member States and all partners to promote environmental management for sustainable development in ASEAN;

Emphasizing the important role that the ASEAN Member States can play in carrying out collective action to address these challenges for mutual benefit and the common good;

DO HEREBY DECLARE OUR COMMITMENT TO:

Implement decisions by the ASEAN Summit and the ASEAN Ministerial Meeting on Environment to ensure the coherence, transparency, continuity and effectiveness of the representation of ASEAN Member Stateswhere a common position exists, in the negotiations under the United Nations Framework Convention on Climate Change UNFCCC, Convention on Biological Diversity, and the chemicals-related international conventions such as the Basel Convention, the Rotterdam Convention, the Stockholm Convention, and the Minamata Convention on Mercury, subject to where applicable that have been ratified by Parties, as well as an internationally agreed-upon system such as the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) there to;

Continue our efforts to establish a balance among economic growth, social development and environmental sustainability as well as to strengthen ASEAN's commitments for the realization of the Post 2015 Development Agenda and the attainment of the Sustainable Development Goals (SDGs);

Continue to implement the action lines on environmental sustainability in the ASEAN Socio-Cultural Community Blueprint in an effective and timely manner towards a clean and green ASEAN Community, while streamlining our efforts to ensure the achievement of the ASEAN Community Post-2015 Vision and ASCC Blueprint goals, key results areas, and corresponding strategic measures through the adoption and implementation of sub-sectoral action plans;

Accelerate the development and implementation of the ASEAN Programme on Sustainable Management of Peatland Ecosystems (2014 - 2020) to eliminate transboundary haze pollution in the ASEAN region by further intensifying regional and international cooperation on preventing land and forest fires and reducing the impact of transboundary air pollution through joint efforts in continuously monitoring weather and ground conditions, implementing preventive activities including those under the ASEAN Agreement on Transboundary Haze Pollution (AATHP), and promoting efforts among ASEAN Member States to ensure that companies adopt zero burning techniques in land clearing;

▲*Strengthening cooperation among ASEAN Member States and partners to solve general environmental issues*

Agree to explore means of further enhancing regional cooperation efforts for delivering demonstrable improvements in achieving a vision of haze-free ASEAN by 2020 through development of an ASEAN Haze-Free Roadmap which is a clear and time-bound roadmap for a haze-free environment as called for under the ASEAN Agreement on Transboundary Haze Pollution and the establishment of the ASEAN Coordinating Centre for Transboundary Haze Pollution Control;

Encourage ASEAN Member States to address climate change through the implementation of mitigation and adaptation measures in line with their respective country policies and priority as well as expertise, technical, technology and financial support; and to strengthen regional cooperation efforts in this regard, including through the implementation of the ASEAN Action Plan on Joint Response to Climate Change;

Encourage innovative financing options to promote investment in research and development of climate-friendly technologies for deployment in the ASEAN countries, in line with their respective national priorities; and mainstreaming of sustainable development at all levels and integrate sustainable consumption and production (SCP) patterns into our national policies which is fundamental in addressing all aspects of environmental sustainability;

Intensify efforts to effectively implement the Strategic Plan for Biodiversity 2011 - 2020 and the Aichi Biodiversity Targets; and to

increase the efficiency and effectiveness of support from the Global Environment Facility and other possible sources of funding for the implementation of National Biodiversity Strategy and Action Plans (NBSAPs);

Take steps forward to complete the ratification of the Establishment Agreement of the ASEAN Centre for Biodiversity and contribute to the ASEAN Biodiversity Fund;

Promote programmes on protected areas in the ASEAN region and ASEAN Heritage Parks as exemplary networks for effective protected area management;

Strengthen cooperation on sustainable forest and peatland ecosystem management in ASEAN to reduce deforestation and land degradation;

Achieve by 2020, the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks and agreements, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment in the ASEAN region;

Promote sustainable water resources management through Integrated Water Resources Management (IWRM), Integrated River Basin Management (IRBM) and transboundary water cooperation initiatives within ASEAN by enhancing efforts to implement the new ASEAN Strategic Plan of Action on Water Resources Management to be developed in line with the ASEAN Community Post-2015 Vision;

Carry out individual and collective actions, in a broad range of sectors, to address water-related disasters in the Southeast Asia region by strengthening cooperation among ASEAN Member States and their partners in the prevention of flood and drought and the relief and rehabilitation of its impacts, including through the ASEAN Agreement on Disaster Management and Emergency Response (AADMER);

Enhance coordination and collaboration among ASEAN Member States and partner organizations to provide continuous support for creating opportunities to share and exchange information and knowledge on sustainable urban issues to further establish and scaling up environmentally sustainable cities (ESC) in ASEAN region; and to promote environmentally sustainable practices through presentation of the ASEAN Environmentally Sustainable Cities (ESC) Awards and Certificates of Recognition;

Improve capacity to promote conservation and sustainable management and utilization of marine and coastal ecosystems;

Incorporate environmental education (EE) and education for sustainable development (ESD) in the curricula, materials and resources; and the promotion of public awareness on the importance of sustainable development and environmentally sustainable practices;

Strengthen implementation of the ASEAN Environmental Education Action Plan (AEEAP) 2014 - 2018 to enhance public awareness on environmental management for sustainable development and accelerate the development and advancement of environmental education as a key integrating component for achieving sustainable development in the region;

Mobilize financial support and cooperating to build capacity for ASEAN Member States in achieving environmentally sustainability and climate resilience; and to develop a sustainable plan to streamline funding and maximize contributions towards effectively addressing the environment and climate change issues at both national and regional levels;

Encourage the exchange of scientific and technical expertise in partnership with regional and global experts, and enhance cooperation towards joint research and development of appropriate measures to minimize the impact of environmental degradation and climate change; and pool our experiences, expertise and technology in areas such as urban planning including green cities, climate change and water-related disaster resilience, water resources management, biodiversity conservation, chemicals and waste management, and transboundary pollution control;

Continue to work closely with Dialogue Partners, within the frameworks of ASEAN Plus One, ASEAN Plus Three and East Asia Summit including through the mechanisms of ASEAN Plus Three Environment Ministers' Meeting and EAS Environment Ministers' Meeting to address both existing and emerging global environmental issues;

Support the Initiative for ASEAN Integration (IAI) and sub-regional cooperation such as the Greater Mekong Sub-region Economic Cooperation (GMS), the Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT), the Ayeyawady-Chao-Phraya-Mekong Economic Cooperation Strategy (ACMECES), the Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area (BIMP-EAGA) and the Heart of Borneo Initiatives (HOB) between Brunei Darussalam, Malaysia and Indonesia, which are relevant to natural resources and environmental aspects, without prejudice to any ongoing territorial claims■

UNEP calls for end to illegal poaching, trade of migratory birds

Millions of migratory birds are being lost each year as a result of illegal killing, taking and trade, United Nations (UN) officials warned on World Migratory Bird Day, calling for concerted action to end the threats to migratory birds and urging everyone to step outside and "listen to the birds chirping" to appreciate how important they are to our planet.

The motives behind these illicit activities are various and the toll that they are taking is incredible - millions of birds are being killed each year - numbers that are totally unsustainable and which alongside other pressures such as habitat loss and climate change are leading to many once common species being at risk of extinction.

Ahead of the Day, the Convention on Migratory Species (CMS) announced the creation of the Intergovernmental Task Force on Illegal Killing, Taking and Trade of Migratory Birds in the Mediterranean composed of Governments and the European Commission. UN organizations such as the UN Environment Programme (UNEP), the UN Office on Drugs and Crime (UNODC), international environmental treaties, INTERPOL, law enforcement and judiciary organizations, hunting communities and non governmental organizations will also be part of the coalition.

"I fully support the global campaign to raise awareness about the threats to migratory birds from habitat destruction, over-exploitation, pollution and climate change, UN Secretary-General Ban Ki-moon said. "I call for greater international efforts to restore and preserve migratory birds and the network of sites they need to survive as an important part of the environment on which we all depend."

UNEP Executive Director Achim Steiner said: "During their long journeys, migratory birds run afoul of any number of natural obstacles, from predators to weather. They shouldn't also have to duck the grasping claws of the illegal wildlife trade. Illegal taking and killing of birds threaten not only the survival of bird species, but ecosystems, communities and livelihoods as well. So, World Migratory Bird Day is not strictly for the birds; it's to remind us of the part they play for planet and people alike."

Bird hunting has been traditionally practiced in the Mediterranean for centuries, but the recent surge in illegal activities, such as poaching and trapping, is endangering many threatened species that are already subject to other pressures, such as climate change and habitat loss.

Migrating birds are facing increasing pressures along their journeys and habitat losses and degradation are the most difficult to tackle. But the birds are also exposed to illegal killing, taking and trade. The nylon mist nets are now almost invisible to birds. As a result more birds are taken from declining populations. We must stop the illegal killing now, if we don't want our skies to fall silent.

Each year, up to 6.2 million exhausted birds, migrating between their breeding and wintering grounds, are caught in illegally set nets stretching for hundreds of kilometres along the North African coastline. The less lucky ones suffer an agonizing death on lime stick traps - twigs covered with extremely sticky glue. It is estimated that up to 2 million Blackcaps die in such traps each year.

The Inter - governmental Task Force will add new momentum to international efforts to tackle the illegal killing, taking and trade in birds by agreeing on new guidelines, recommendations and action plans to address the causes of poaching.

The Task Force will work towards changing the hunting practices in the region to make them compliant with national and international laws. It will also aim to enhance the enforcement of these laws through training of local police and judiciary, information exchange, promoting deterrence and prevention policies to end the large-scale killings of migratory birds taking place today.

Tackling illegal killing and trade in wildlife, including birds, and mobilizing global action around the issue also is the focus of the 2016 World Environment Day, under the slogan "Go Wild for Life." A global UN campaign to garner support for stopping the trade in many species and their products will also be launched.

Migratory birds need our action

Migratory birds travel thousands of kilometres each year to find the best ecological conditions and habitats for feeding, breeding and raising their young. Migration is a perilous journey and involves a wide range of threats, often caused by human activities. Growing human population, rapid urbanization, pollution, climate change and unsustainable use of landscapes are causing the loss, fragmentation and degradation of the natural habitats upon which migratory birds depend.

As we celebrate these birds on 10th May 2016, World Migratory Bird Day, keep in mind that all is not lost. While migratory birds - which include eagles, storks and cranes-are struggling, there are things we can do to help.

The UNEP suggests we pressure our elected leaders to build sustainable energy infrastructures in our cities:

Turning off non-essential lights in cities to help birds navigate their annual migration routes; placing power lines underground, or retro-fitting them to prevent fatal bird collisions and electrocutions are all examples of measures being taken to make the world's expanding use of energy safer for migratory birds. These measures should be complemented by effective national legislation, planning guidance and policies that ensure the protection of birds from adverse effects of energy developments■

Đỗ Hoàng

(UNEP source)

Launching ceremony of photo and poster contest on environmental protection

The Vietnam Environment Administration in collaboration with United Nations Industrial Development Organization (UNIDO) and the Global Environment Fund (GEF) organized a launching ceremony of photo and poster contest with the theme "Open burning - Impact on health and environment" and "3R - For a brighter future" in Hà Nội.

The contest is in the framework of implementing Stockholm Convention on persistent organic pollutants (POPs), which aims to feature the environmental pollution situation in Việt Nam as well as seek reasonable and prompt solutions to protect the environment. It is also expected to contribute to raising public awareness about POP, hazardous waste, the problem of outdoor and environmental solutions to reduce, reuse, recycle (3R) and the environmental protection in Việt Nam.

Participants include Vietnamese youth aged 10 - 20 years old. The contest is held for two categories: photos and posters in two months, from July 2016 to August 2016 on a national scale■

An Bình

New IUCN - TOYOTA partnership to expand knowledge of threats to global biodiversity

The International Union for Conservation of Nature (IUCN) and Toyota Motor Corporation (Toyota) announced a five-year partnership to provide funding to broaden the scope of The IUCN Red List of threatened species. This will significantly increase knowledge on the extinction risk of more than 28,000 species, including many that are key food sources for a significant portion of the global population.

With our planet experiencing extinctions at the fastest rate in its history, IUCN and Toyota believe that there has never been a greater need to understand the current status of the species upon which our survival depends.

This new knowledge will provide a roadmap to guide conservation - concrete action which could positively affect the livelihoods of hundreds of millions of people worldwide. Toyota's support for the IUCN Red List is the first project to preserve species to be implemented under the Company's scheme to reduce the environmental impact of automobiles, the Toyota Environmental Challenge 2050. This year alone, the Company will provide grants amounting to approximately US$ 1.2 million toward the project.

"The Toyota Environmental Challenge 2050 addresses not only climate change, but also biodiversity. They are two sides of the same coin which can't be dealt with separately," says Mr. Inger Andersen, IUCN Director General. "This generous grant from Toyota will enable our Red List researchers to take a big leap towards reaching our goal of assessing 160,000 species by 2020. This would also help IUCN's work in supporting the implementation of the Sustainability Development Goals adopted last year by all the members of the United Nations, particularly the Zero Hunger goal."

Executive Vice President of Toyota Motor Corporation Didier Leroy says "When tackling threats to the global environment, it is important to act early and boldly with concrete steps that will make a difference in people's lives. We did it in 1997 with Prius, and more recently with the hydrogen fuel cell Mirai. But protecting the environment is not just about CO and emissions: biodiversity is equally important to human lives. By entering this partnership with IUCN, we are very proud to take an additional step toward the challenge of establishing a future society in harmony with nature."

IUCN's "barometer of life"

The IUCN Red List assesses the risk of extinction of wild species based on past, present and projected threats. To date, 79,837 species have been assessed and more than 23,000 have been found to be threatened with extinction. The collaboration with Toyota will enable at least 28,000 more species to be assessed over the next five years.

"By doubling the scope of The IUCN Red List, it will become a more complete 'barometer of life'" says Global Director of IUCN's Biodiversity Conservation Group, Jane Smart. Toyota's grant will enhance the Red List's invaluable role in helping determine conservation policies; tracking progress toward reducing biodiversity loss; providing data for scientific research; and raising public awareness about species.

Toyota Environmental Challenge 2050

Toyota is keenly aware of the importance of biodiversity in achieving sustainability, and has taken substantial steps to preserve and support plant and animal species around the world. In order to address these and other key environmental issues, the Toyota Environmental Challenge 2050 was announced in October 2015. The Program aims to reduce the negative impacts associated with automobiles to as close to zero as possible, whilst simultaneously making positive impacts on society. In order to help establish a future society in which humans live in harmony with nature, Toyota plans to globalize its long-running environmental grant program, and to create environmental preservation projects in collaboration with organizations that engage in such activities on a global scale■

Lưu Trang

Sustainable Consumption and Production
Individual Decisions, Collective Impact

On the occasion of World Environment Day 2015, UNEP Executive Director Achim Steiner had an speech at Expo Milano, Italy. He emphasized the strength of individual's action in the fight against environmental challenges we face - from climate change to pollution to the degradation of natural resources. It is our personal choices that shape the world.

▲ *UNEP Executive Director, Achim Steiner had an speech at Expo Milano, Italy*

This is apparent in the theme *"Seven Billion Dreams. One Planet. Consume With Care",* which focuses on the need to transform unsustainable consumption and production patterns - a set of global practices that account for the majority of economic activities in the world and feed into every environmental challenge we face. Our daily decisions as consumers and producers, multiplied by billions, have a colossal impact on the environment. Some of them contribute to the further depletion of natural resources, others help to protect fragile ecosystems. As a result, the future of the Earth depends on the way we consum and produce goods, in other words, it is in our hand.

Between 1900 and 2009, annual extraction of resources grew from 7 billion tonnes to 68 billion tonnes. Under current trends of population growth and expanding middle classes, global extraction of resources is set to reach 140 billion tonnes by 2050. By 2030, humanity will need the equivalent of two Earths to support itself. This is clearly untenable.

This consumption has caused severe environmental, social and economic impacts, as research by the International Resource Panel (IRP) and others has shown. More than 20 per cent of all cultivated land, 30 per cent of forests and 10 per cent of grasslands are undergoing degradation, reducing our global capacity to produce food.

According to the UN Development Programme, on the current trajectory the global Human Development Index will fall by as much as 15 per cent by the year 2050.

From 2000 to 2012, the price of metals rose by 176 per cent - signalling a potentially crippling trend of increasing costs. A shortage of key metals may restrict our economy within the next 50 years.

However, the issue of food loss and waste is probably the most striking example of the profound imbalances in consumption and production patterns. The UN Food and Agriculture Organization (FAO) recently announced that the number of people suffering from hunger in the world fell below 800 million for the first time. However, the number of clinically obese people across the world is increasing, reaching 600 million adults in 2014.

In the fact that the world already produces enough food for everyone. Worldwide, about one-third of all food produced (estimated by the FAO) at a staggering 1.3 billion tonnes, worth around $1 trillion - is lost or wasted and it also has serious impacts on the environment.

Globally, the food system accounts for nearly 30 percent of end-user available energy, more than 70 percent of freshwater consumption and 80 percent of deforestation. It is the largest single cause of species and biodiversity loss. Considering as much as 1.4 billion hectares of land is used to produce the food that is lost and wasted each year, many of these impacts are simply unnecessary.

This is why UNEP and FAO run the "*Think. Eat. Save: Reduce Your Foodprint*" campaign, aimed at educating consumers and producers on ways they can reduce food waste.

"We must collectively drive a shift to a more sustainable

future, both as consumers and as the essential human elements that make up governments, businesses and the investment industry. At the same time, we must decouple economic growth from environmental degradation. This means rethinking resource use in the production, distribution and use of products.

We must eco-innovate new ways to meet people's needs by placing a strong focus on consumption, which drives production and shapes our national economies for example, consumption can add up to 50 per cent of GDP in countries such as China.

The market for more sustainable products is there and waiting. A UNEP survey showed that youth, the market of the future, increasingly recognize the importance of sustainability issues. Companies can eco-innovate and develop new business strategies and models to meet the growing demand for more sustainable choices.

By changing our practices, we can increase resource security, enhance productivity, boost development, and create new business opportunities that bring jobs, drive innovation and fight climate change".

There are enormous opportunities to be seized at all levels, just some of which include:

Harnessing existing technologies and appropriate policies to increase resource productivity could save up to $3.7 trillion globally each year. For example, the enlighten initiative has shown that a switch to efficient lighting would save over $140 billion and reduce CO_2 emissions by 580 million tonnes every year.

Electrical and electronic equipment waste is estimated at 20 to 50 million tonnes each year. Recycling rates are low - less than one-third of some 60 metals studied by the IRP have an end-of-life recycling rate above 50 per cent and 34 elements are below one per cent. This represents huge potential for financial and environmental savings.

Businesses that consistently consider sustainability factors in decision-making have achieved on average 15 per cent annual growth, while the rest of the market has been in recession.

Many nations and businesses are already seizing the benefits

Germany has made increasing resource efficiency a cornerstone of its G7 leadership, while recycling in the UK generates more than £13 billion in annual sales of recycled products. Household recycling rates have increased from 11 per cent in 2001 to 43 per cent in 2013 - proof that individual action makes a difference.

In Brazil, Cosmetics Firm Natura experienced annual growth of 26 per cent from 2005 - 2010, and doubled in size from 2007 - 2011, by taking an eco-innovation life-cycle approach. The socio-environmental benefits of selecting suppliers based on high sustainability performance were worth over $750,000 to the company in 2012.

Meanwhile, we are seeing growth in renewable energy. Global investment in renewable power and fuels (excluding large hydro-electric projects) reached $279.2 billion in 2014, nearly 17 per cent higher than the previous year, with almost half of the investment in developing countries.

A growing number of global initiatives

The 10YFP, adopted by governments at Rio+20 and hosted by UNEP, is developing and implementing multi-stakeholder solutions through its first five programmes - which are engaging 143 governments, non-governmental organizations and business associations.

Today, 65 countries have embarked on green economy and related strategies. This includes many countries engaged with the Partnership for Action on Green Economy (PAGE) to shift investment and policies towards clean technologies, resource-efficient infrastructure and well-functioning ecosystems.

Financing

We must also consider how to finance the transition to a sustainable world. The focus on shifting to SCP patterns in the proposed SDGs should be matched by a commitment to invest in this shift at the Third Financing for Development Conference in Addis Ababa.

Evidence shows that when investments are targeted towards greening key economic sectors, they can produce multiple benefits for society, for the economy, and for the environment.

For example, Sustainable Public Procurement (SPP), which represents between 15 and 25 percent of Gross Domestic Product, offers a tremendous opportunity for green innovation and sustainability. In one case, replacing incandescent traffic lights with LEDs in Hong Kong generated savings of $240,000 over the lifespan of LED modules, which also allow for projected annual savings of 7.88 million KWh of electricity and a reduction of 5,500 tonnes of CO_2 emissions.

The 10YFP's Sustainable Public Procurement programme is supporting governments in designing and implementing the necessary SPP policies. Its first three projects, in Uruguay, South Africa, and the Philippines, have just been launched.

Mobilizing private sector finance will also be crucial, particularly when one considers that global private savings amount to around $17 trillion - a massive amount of money that can be directed toward sustainable development.

Public-private collaborations are key here. For example, the Seed Capital Assistance Facility (SCAF), managed by UNEP with the Asian Development Bank and the African Development Bank, works with private equity funds to finance renewable energy project developments in Africa and Asia.

In India, South Africa and Brazil, auction tariff systems have proven effective at attracting renewable energy developers. In November 2013, South Africa used an auction to select 1.5 GW of renewable energy projects, with winning bids averaging $72 per MWh for wind plants, and $97 per MWh for photovoltaic plants.

These are encouraging signs, but much work needs to be done as more markets step into this new world. This is why UNEP created the Inquiry into Design Options for a Sustainable Financial System - to explore exactly how the financial system can be better aligned with sustainable development.

Decision-makers can implement macroeconomic policies that promote efficiency and sustainable goods and services. They can create ambitious standards and norms, legislation and fiscal remedies that provide incentives to businesses and consumers to promote resource efficiency, productivity and sustainable lifestyles.

Consumers and businesses can choose to be less wasteful - by not throwing out perfectly good food, by looking at more energy-efficient practices, and by taking a host of other simple measures. Investors can choose to put their money into more sustainable, and ultimately more profitable, investments.

In summary, the message is that *"no action is too small to make a difference. We all know what we have to do. Let's start today, and through our individual decisions create a collective impact that will change the world"*■

Giáng Hương

World Heritage sites at risk from climate change

According to a new report of the United Nations (UN), some 31 natural and cultural World Heritage sites in 29 countries across the world are becoming increasingly vulnerable to the effects of climate change. The report was prepared by UNEP, the UN Educational, Scientific and Cultural Organization (UNESCO) and the Union of Concerned Scientists (UCS).

The report documents climate impacts including increasing temperatures, melting glaciers, rising seas, intensifying weather events, worsening droughts and longer wildfire seasons, at iconic tourism sites such as Venice, Stonehenge and the Galapagos Islands. It also covers other World Heritage sites such as South Africa's Cape Floral Kingdom; the port city of Cartagena, Colombia; and Shiretoko National Park in Japan.

As said by Head of UNEP's Responsible Industry and Value Chains Unit Elisa Tonda, countries governments, the private sector and tourists all need to coordinate their efforts to reduce carbon emissions and protect the world's most treasured cultural and natural resources from the impact of tourism activities. She added that policies to decouple tourism from natural resource impacts, carbon emissions and environmental harm would engage a responsible private sector and promote change in tourists' behaviour to realize the sectors' potential in some of the world's most visited places.

In particular, the report highlights the urgent need to identify the World Heritage sites that are most vulnerable to climate change, and to implement policies and provide resources to increase resilience at those sites. In addition, the report urges increased global efforts to meet the Paris Agreement climate change pledges in order to preserve World Heritage sites for future generations. The report also recommends engaging the tourism sector in efforts to manage and protect vulnerable sites in the face of climate change, and to educate visitors about climate threats. The report includes a complete list of World Heritage sites that are at risk■

Thanh Tuấn

Forests still large enough to double the world's tiger population

Conservationists warn "tiger corridors" connecting habitats across Asia are crucial for the survival of the species satellite maps show tiger habitat is being lost but still adequate for meeting international goal of doubling tiger numbers by 2022.

▲*A tiger wades into the waters of Raj Bagh lake in Ranthambhore tiger in Rajasthan, India. (Photograph: Aditya Singh/Alamy)*

Forests that harbour tigers are being lost but are still large enough to take double the world's tiger population in the next six years, according to a study using new satellite mapping technology.

But the internationally agreed goal can only be achieved if no further habitat across Asia is lost and if the "corridors" that connect tiger populations are protected, researchers warn in the paper, published in the journal of Science Advances.

The tiger is the most endangered big cat, with as few as 3,200 left in the wild in the forests, swamps and jungles of 13 Asian countries. Logging, agricultural expansion and infrastructure development have all cut their habitat and they are also under severe pressure from hunting and poaching for their body parts, which are used in traditional Asian pseudo-medicine.

By 2010, the rate of loss was so great that a high-level summit was convened in Russia, where tiger nations agreed on a goal called Tx2 to double the world's wild tiger population by 2022.

Since the meeting, Nepal and India have reported an increase in tiger populations, Amur tiger numbers are rising in Russia and there are indications that tigers are settling and breeding in North-eastern China. Later in April, India will host a ministerial conference where countries will report on their progress.

The new analysis done by the University of Minnesota in St Paul, in the United States, shows that despite an overall decline in habitat between 2001 and 2014, enough wild habitat remains to meet the goal.

The researchers used Google Earth Engine's cloud computing platform to process huge amounts of high-resolution, real-time satellite imagery and 14 years of forest loss data from Global Forest Watch. This allowed them to calculate changes in tiger habitat to the level of detail of 30 m in a single wildlife corridor and at a wider scale across 76 landscapes that have been prioritised for the conservation of wild tigers.

Previously, monitoring tiger habitat could only be done once a decade because of limited access and expertise in satellite monitoring technology. Using the new technology, conservationists can pinpoint exactly where habitat loss is occurring and potentially curb future losses.

"The tiger countries have set the goal to double numbers - we are bringing them the tools to plan and meet their target", said the research team leader. "We have developed a tool that anyone in those countries can use without having remote sensing expertise. Now we can monitor forests annually and provide this info directly over the web, making people more accountable".

Altogether, around 80,000 km^2 of forest was lost across all 76 of the tiger landscapes studied, with more than 58,000 km^2 occurring in 29 priority areas.

They found that forest loss in the areas studied - 7.7% between 2001 - 2014 - was far less than anticipated, something they found "remarkable and unexpected" given that the 13 tiger range states represent some of the fastest-growing economies in the world, with US$750 billion expected to be invested in infrastructure projects annually over the next decade.

"Most encouraging was that loss was less than expected in the 51 tiger reserves" the paper said. "This suggests that if future habitat loss is prevented, the tiger recovery in some range states will accelerate. In these promising locales of enhanced protection, a doubling of the tiger population could be attainable by 2022".

Among the 29 landscapes deemed most critical for increasing tiger numbers, 10 accounted for more than 98% of the loss, with the greatest loss in Malaysia and Sumatra and extensive loss in areas of oil palm expansion.

The impact in those 1o areas was deemed "devastating". For example, the Cambodian Northern plains landscape, which contains five large reserves of tropical dry forest, has lost habitat that would support more than 170 tigers.

▲*A Sumatran tiger snared by poachers in the Kerinci Seblat National Park in Indonesia (Photograph: Kerinci Seblat National Park/AFP/Getty Images)*

"There are three important things for the conservation of tigers: Habitat, anti-poaching efforts and maintaining tiger prey species. This study to encourage people to think that doubling numbers is possible but we don't want to paint too rosy a picture."

Ms. Rebecca May, from WWF-UK's Tiger Programme, who was not involved in the research said: "This year is a critical halfway point in the Tx2 goal. We know that populations have been increasing in some countries, proving tiger population recovery is possible when governments, environmental organisations and local communities work together. However, we still have a long way to go, as tigers remain seriously threatened by poaching and habitat loss."■

Đỗ Hoàng
(UNEP source)

Huế city takes National Green City 2016 title

Huế city (Thừa Thiên - Huế province) was honoured as the National Green City 2016 under a vote campaign initiated by the World Wide Fund for Nature (WWF) at a ceremony in the Central city. The WWF's Earth Hour City Challenge Programme aims to call on cities around the world to act towards a climate-friendly planet and develop action plans to mitigate and adapt to climate change.

Huế has undertaken some low-carbon development actions. The city is implementing a project aiming at reducing carbon emissions by 20 percent by 2020. The efforts include planting more trees, promoting green tourism, improving waste and wastewater treatment and management, using a smart public lighting system, renewable energy and environmentally-friendly building materials.

Huế city is committed to further efforts to become a healthy environment city. To become a green city, Huế implements an action plan including: implementing seven action plans, focusing on green areas, green tourism development, effective water and waste treatment, community intelligent lighting systems, using renewable energy and environmentally - friendly construction materials■

Thanh Tùng

Biodiversity's role in underpinning development

▲*Loss of biodiversity affects to sectors, including agriculture, fisheries, forestry*

According to United Nations (UN) Secretary-General Ban Ki-moon, biodiversity and the ecosystem services it supports are the foundations for life on Earth and the livelihoods and well-being of people everywhere. He said in his message that protecting biodiversity and preventing further losses is an essential investment in our collective future. He urged all Governments and stakeholders to preserve and sustainably manage the variety of life on Earth for the benefit of current and future generations. In his message, the Secretary-General Ban Ki-moon highlighted that biodiversity is an important cross-cutting issue in the message marking the 2030 Agenda for Sustainable Development.

In addition, he noted that Sustainable Development Goal (SDG) 15 explicitly recognizes the importance of halting biodiversity loss, and other SDGs recognize the importance of biological diversity for eradicating poverty, providing food and fresh water, and improving life in cities.

Mr. Ban Ki-moon noted that despite numerous commitments, biodiversity loss continues to accelerate in all regions. Only 15 percent of countries are on track to achieve the Aichi Biodiversity Targets by the agreed-upon date of 2020. He said that the anticipated expansion of sectors that both depend on and affect biodiversity - including agriculture, forestry, fisheries and aquaculture - will pose a significant challenge to halting biodiversity loss in the coming decades.

Reversing these trends will require action by all sectors and stakeholders, from UN Member States and agencies to civil society, academia and business. Mr. Ban Ki-moon also emphasized that the responsible use of natural resources is essential to sustainable development, as mainstreaming biodiversity will ensure that addressing development needs and protecting the environment are mutually supportive. Preserving biological diversity is a vital part of our compact with each other and the planet.

According to Executive Director of the UN Environment Programme (UNEP) Achim Steiner while marvel at iconic species in other parts of the world and on our digital screens, such as elephants, tigers and pandas, many of us are much less familiar with the sheer magnitude of diversity of plants and animals on this planet or the habitats that support them. He said that awareness about current global challenge of biodiversity loss is also low - a challenge that will expand along with the sectors affecting biodiversity, such as agriculture or forestry. The indirect and direct drivers of biodiversity loss requires a focus on primary sectors, such as agriculture, forestry, fisheries and aquaculture.

These sectors both impact biodiversity and are dependent on biodiversity. The demand for the goods and services produced by these sectors is projected to increase over the coming decades as a result of population growth, increasing average wealth, and other demographic changes. That demand for food, wood, water and energy is projected to increase 1.5 to two times by 2050 due to increasing population and average wealth, with a concomitant and negative effect on biodiversity.

Therefore, mainstreaming biodiversity considerations across these sectors is essential in ensuring not only the conservation and sustainable use of biodiversity but also the continued vitality of these sectors■

Trần Tân

Bidoup - Núi Bà National Park: **Toward objective "conservation for development, development for conservation"**

With diverse ecosystems and flora and fauna systems, the Bidoup - Núi Bà National Park is the core zone of the Langbiang Biosphere Reserve which is a typical location and an amazing experience for tourists and scientists to this area. The Langbiang Biosphere Reserve contributes to make Đà Lạt city (Lâm Đồng province) to become a center for tourism, education and scientific research in Việt Nam as well as an international research center on tropical forests. On the occasion of the International Day for Biological Diversity (22th May, 2016), Environment Magazine had an interview with Mr. Lê Văn Hương - Director of the Bidoup - Núi Bà National Park on forest protection, biodiversity conservation in this area.

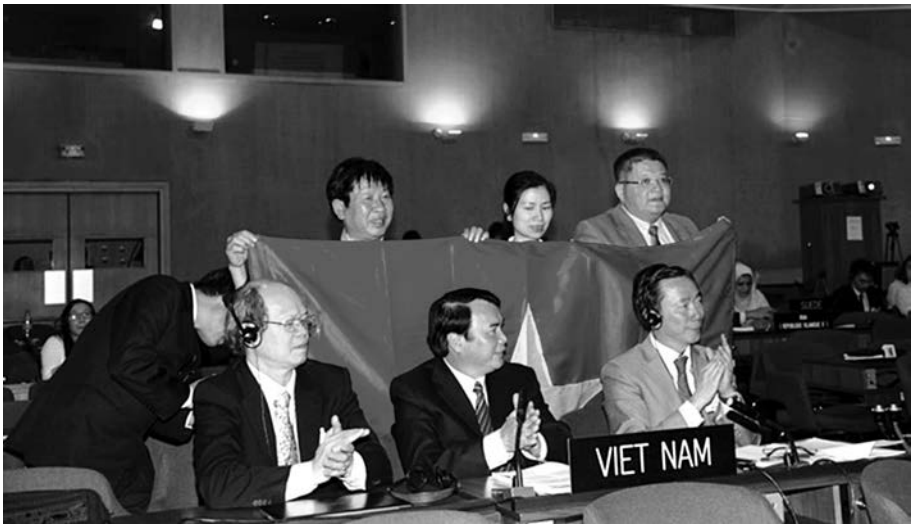
▲*Mr. Lê Văn Hương - Director of the Bidoup - Núi Bà National Park*

✶***Can you tell us about some results of forest resources management and protection and biodiversity conservation in Bidoup - Núi Bà National Park in recent years as well as current difficulties and challenges?***

Mr. Lê Văn Hương: Currently, Bidoup - Núi Bà National Park is assigned to manage 70,038 ha forest and forestland. Since its establishment in November 2004, the National Park has achieved some results in forest management and protection, as well as biodiversity conservation.

During the period 2005 - 2010, violation cases of forest management and protection reduce from 260 cases in 2005 to 105 in 2010 and 30 in 2015; violation scope is less serious; particularly big or complicated violation cases are increasingly reducing which is reflected through seized goods and violation fines. In 2015, the administrative fines submitted to the state budget by the Bidoup - Núi Bà National Park is 56.6 million VND. According to data of the first five months in 2016, the number of violation cases tends to decrease compared to that in the same period in 2015 (10 cases compared to 12 cases in 2015). Currently, the National Park has contracted 58,058.06 ha forest to 1,482 ethnic minority households for protection with the payment up to more than 20 billion VND/year, from the payment for forest environmental services.

Forest management and protection is the most important content of biodiversity conservation. Population, species and genetic resources conservation only achieves its results when forests are well protected and have the active participation of the local communities. To achieve conservation targets, other contents are also important such as scientific studies, environment explanation and international cooperation. In recent years, despite limited resources, the National Park has collaborated with domestic and international organizations to implement scientific schemes such as: isolate and select extracellular microbial enzymes; conduct the survey on avian, amphibian and reptile systems; study the distribution of the flora system and bats; site mapping, study biodiversity of terrestrial fauna and freshwater fish; study the diversity of insects; survey the diversity of ferns in the Central and Southern regions; survey and collect samples for flora genetic resources conservation in the National Park. In 2015, the Bidoup - Núi Bà National Park has discovered five new species, including: two flora species (*Billoliviatichii, Billoliviakyi*); two insects (*Lobofemorabidoupensis; Aegosomageorge*); one fish species (*Onychostomakrongnoensis*). Currently, the Bidoup - Núi Bà National Park has had cooperation relationships with more than 20 domestic and international organizations on scientific study for conservation.

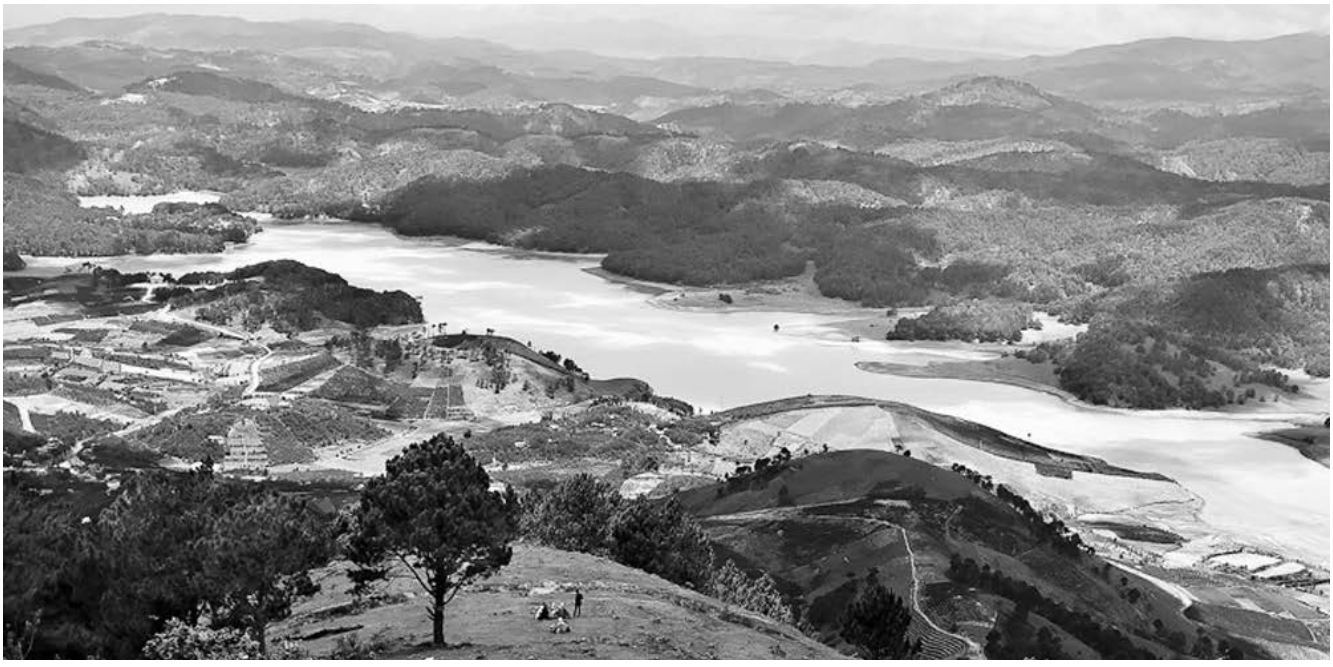


▲*The Việt Nam Delegation attendance at the 27th annual meeting of the ICC-MAB/ UNESCO from 5 to 15/6/2015 in Paris (France) to recognize Langbiang as the 9th World's Biosphere Reserve in Việt Nam*

However, in recent years, the expansion of illegal agriculture cultivation, illegal logging and wildlife hunting, the over exploitation of forest products and forest fires... are challenges in forest management and protection and biodiversity conservation. In addition, the lacks of human resources and investment sources are barriers to achieve management objectives in conservation not only in Việt Nam.

✶***Langbiang Biosphere Reserve is recognized as the world biosphere reserve, so does Lâm Đồng province have any plans to connect with domestic and international biosphere networks, in order to share conservation experience and promote biodiversity values?***

Mr. Lê Văn Hương: Bidoup - Núi Bà National Park was assigned by the Lâm Đồng Provincial People's Committee (PPC) to develop the proposal to submit with UNESCO to recognize the Langbiang area, including the core zone of the National Park as the world biosphere reserve. At the 27th annual meeting of the International Coordinating Council of the Man and Biosphere Programme (ICC-MAB/UNESCO) took place from 5th to 15th June, 2015 in Paris (France), the Langbiang Biosphere Reserve proposed by the People's Committee of Lâm Đồng province (hereinafter referred as PPC), Vietnam National Commission for UNESCO and the Viet Nam Man and Biosphere National Committee (MAB Viet Nam) was recognized as the 9th World Biosphere Reserve of Việt Nam. Currently, Lâm Đồng PPC is preparing to establish the Management Board as requested by the Vietnam National Commission for UNESCO and MAB Viet Nam. According to the pro-



▲*Langbiang World's Biosphere Reserve*

posal by the National Park, one international counselling committee will be established to support the Biosphere Reserve Management Board to connect with the biosphere reverse network in the world to share conservation experience and to promote biodiversity values of the Langbiang Biosphere Reserve according to the slogan "Conservation for development, development for conservation". The executing management plan of the Lambiang Biosphere Reserve's Management Board proposed by the National Park was submitted to Lâm Đồng PPC for approval; a scientific study scheme in the Lambiang Biosphere Reserve according to the National Park's initiative has been approved by the Ministry of Science and Technology and is being implemented from 2015 to 2017; a plan on biodiversity survey and monitoring and development of the marketing strategy for local products in the Lambiang Biosphere Reserve is being studied by JICA and implemented during the period 2016 - 2020.

▲*Awards by Bidoup - Núi Bà National Park to outstanding students in the Environment Competition*

✶***To promote landscape values and biodiversity, what are the plans that Bidoup - Núi Bà National Park Management Board implement in the future?***

Mr. Lê Văn Hương: Management cooperation model in forest management according to the proposal by Bidoup - Núi Bà National Park is being implemented within the framework of the Sustainable Natural Resources Management Project supported by JICA. This is a new model in forest management in Việt Nam, of which local people are the focus and the partners to implement forest management activities with relevant stakeholders including the National Park. The management cooperation model in forest management is that stakeholders jointly discuss and negotiate to get consensus on roles, tasks, responsibilities and rights in order to achieve the objectives of forest management and protection and biodiversity conservation. Integrated values of ecosystem services will be shared to local people who actively participate in maintaining the ability to provide ecosystem services. To implement commitments of Việt Nam with the international community on conservation, ex-situ conservation activities have been implemented such as the establishment of the Vegetation Garden, the establishment of the Central Highlands Wildlife Conservation Park. To sustainably use biodiversity and ecosystem services, to promote values of the Langbiang Biosphere Reserve, tourism activities will be promoted according to the ecotourism development planning scheme of the Bidoup - Núi Bà National Park which was approved by Lâm Đồng PPC. Tourism development is to promote socio-economic development through which to create jobs as well as to meet the principles of the Convention on Biological Diversity which are also the objectives in the upcoming years of the National Park.

✶***On the occasion of the International Day on Biological Diversity and the World Environment Day, did the National Park have any activities on raising community awareness about environmental protection, biodiversity conservation?***

Mr. Lê Văn Hương: Forest management and protection propaganda and biodiversity conservation is one of nine operation programs of the Bidoup - Núi Bà National Park. In 2016, some activities have been put into plans for implementation including: maintaining the operation of the Green Club at secondary schools in Lạc Dương district, bell ringing contest on environment understanding; organizing the visit to the National Park for 12 schools in Đà Lạt and Lạc Dương to discover biodiversity; dissemination for the communities on regulations on forest management and protection; providing propaganda products and designs for entertainment programs relating to environmental education. On the occasion of the International Day on Biological Diversity on 22nd May 2016 and the World's Environment Day on 5th June 2016, the National Park organized a meeting with the participation of 300 - 500 people (communities, tourists, youths and students). The objective was to support communities and students to enhance awareness and have practical actions in tree planting and protection, forest management and protection, biodiversity conservation, minimization of negative impacts on forest and environment. The meeting was also an opportunity to ask people to protect the Earth by specific actions such as nolittering, planting trees, saving clean water sources such as a commitment to sustainable development of the Langbiang Biosphere Reserve■

Thank you!

Phạm Tuyên

(Implemented)

Nature as source of life

Environmentally - friendly tourism has been favoured in developed countries and paid attention by tourism companies in Việt Nam. Linked with the ideology - nature as source of life, Mai Châu Ecolodge resort (Hòa Bình province) is not only a new product, but also a contribution to diversify tourism products in Mai Châu and bring a new and interesting experience for tourists to this area.

▲*Peaceful scenery of Mai Châu Ecolodge*

To develop a resort which can meet nature harmony criteria and minimize impacts on the environment, experts have studied and surveyed to maximum use local materials to honour the specific beauty of the resort. Mai Châu Ecolodge use "cây lội" (a forest tree) to decorate and construct details in the guest rooms. This tree is usually used by the ethnic minorities to make the lining under the tilt house roof, which have the ability to prevent termites without using chemicals that cause negative impacts on the environment. Gardens in the resort are paved with stones and rocks that are found in rivers and springs in the region, which ensures aesthetic values and creates typical features and environmentally - friendly feelings. Wall bricks in guest rooms come from by - products ofthe mountain demolition for roads in order to reduce costs…

The outdoor lighting system in Mai Châu Ecolodge uses solar energy, electricity accumulation during the day and lighting in the night. Lighting system and hot water tanks in guest rooms also use solar energy. Water supply to Mai Châu Ecolodge is an interesting story. To find natural water source in this high mountain is not easy as Pòm Pu hill where the resort is located has no groundwater basin. However, after many surveys and drillings, finally the clean water for the resort is supplied from a natural well under a limestone mountain foot, 1,000 m away from the resort. Domestic wastewater from the resort is also strictly treated and controlled before discharging to the environment. Fuels for cooking meals in the resort are biological gas which do not cause environmental pollution and make usage of available materials in the area.

Strictly following principles of sustainable tourism, Mai Châu Ecolodge does not only pay attention to environmental protection but also take into consideration of conservation and promotion of traditional cultures of ethnic minorities. From tiniest things such as free provision of ethnic minority clothes upon request or organizing cultural and traditional art performance in the evenings… Mai Châu Ecolodge is contributing to maintain and propagate traditional cultural beauty to domestic and international tourists.

With the development of local tourism, Mai Châu Ecolodge has created jobs for more than 60 people, while enhances awareness and skills on environmentally friendly tourism, through which to propagate home stay tourism (stay, eat with local people). In addition, Mai Châu Ecolodge regularly organizes charity activities such as scholarships for difficult students, supports for poor students to overcome difficulty in mountainous districts and ethnic minority areas; organises "Mai Châu Clean Day" to encourage tourists to participate in environmental protection...

Isolated from Mai Châu town which is towards the urbanisation pathway, Mai Châu Ecolodge resort is constructed on Pòm Pu hill - a prime location for tourists to have a spectacular view of splendid mountains and romantic Mai Châu valley. From a distance, Mai Châu Ecolodge is like a Thai ethnic minority village nestled in pristine grass, trees and leaves, with layers of palm roofing tilt houses in harmony between ethnic minority architectural tradition with modern features and amenities of a luxury resort■

Trang Đạo

Detection of 300 individuals of precious Sồi ba cạnh in Vũ Quang National Park

Recently, researchers from the Kyushu University (Japan), Đà Lạt University, the Silviculture Research Institute, and Vũ Quang National Park (Hà Tĩnh) have detected over 300 individuals of precious Sồi ba cạnh (scientist name is *Trigonobalanus verticillata Forman*) in the Vũ Quang National Park.

This flora species was found at the sub-sector no. 224 with its elevation of 1650 - 1800 m with about 300 - 400 individuals. This plant has the height of 14 - 25 m and diameter of 30 - 70 cm. However, it can reach until more than 100m.

The Sồi ba cạnh belongs to Gie Fagaceae Group but has different features such as circle-raised leaves, and triangle seed.

The Vũ Quang National Park is the fifth location found out with this species in Việt Nam. The experts recommend that the appropriate policies should be issued to preserve and develop sustainably the Vũ Quang National Park in the coming time■

Sơn Tùng

Plan of building second Safari Park in Lâm Đồng

▲*A jungle in Lâm Đồng province which has been planned as a site for a Safari Park*

According to Director of the Bidoup - Núi Bà National Park (Lâm Đồng province) Lê Văn Hương, they were cooperating with local travel firm Dalat Tourist to set up Highland Safari in Lạc Dương district. He said, the Company will foot 65 percent of the cost of one trillion VND (US$ 45 million) and the rest will come from the State budget to build the 490-hectare Safari Park.

The first phase of the project will complete in 2020, placing rare animals in natural conditions with human care. The project is expected to earn around VND 300 billion by drawing 1.2 million visitors every year.

The Ministry of Investment and Planning has approved funding for the project, which if seen through will be the second Safari Park in Việt Nam■

Mai Hương

Bái Tử Long National Park nominated to be 38th ASEAN Heritage Park

▲*Bái Tử Long National Park nominated to be the 30th ASEAN Heritage Park*

At the 26th Meeting of the ASEAN Working Group on Nature Conservation and Biodiversity which took place recently, the delegations have agreed to nominate Bái Tử Long National Park (Quảng Ninh province) to be 38th ASEAN's Heritage Park. They have approved of through technical dossier for submission to the Central Executive Committee and the ACB of the ASEAN Summit on Environment (ASOEN) for consideration and decision.

Located in Bái Tử Long Bay area and adjacent to the World Natural Heritage Site of Hạ Long Bay, Bái Tử Long National Park is seen a "treasure" in the biosphere in the Northeastern coast of Việt Nam.

The National Park has a total area of 15.783 hectares, of which sea area account for 9.658 hectares, areas of floating islands account for 6.125 hectares including 1,909 species of flora and fauna, including 72 species and 30 plant species listed in the Vietnam Red Book■

Đinh Hương

Endangered Asian openbill storks spotted in Lào Cai

▲*An Asian openbill stork*

Endangered Asian openbill storks, which are listed as especially rare birds in Vietnam's Red Book, have been spotted in Bản Qua and Bản Vược communes (Bát Xát district, Lào Cai province).

In recent years, flocks of Asian openbill storks have appeared in the Northern mountainous provinces of Hà Nam, Ninh Bình, Điện Biên and Lai Châu of Việt Nam.

Scientifically called Anastomus Oscitans, the storks inhabit South and Southeast Asian countries including India, Sri Lanka, Nepal, Myanmar, Thailand, Laos, Cambodia and Việt Nam.

In Việt Nam, they are known as Cò nhạn (*swallow*) or Cò ốc (*snail storks*) since they mainly eat snails. They also eat frogs, crabs, large insects and other small living things. They are mostly seen in the country's Southwestern region.

According to the Vietnam Association for the Conservation of Nature and Environment, the number of storks has decreased sharply over the past few years, putting them on the verge of extinction. These storks are an easy target as they seek food in the rice fields■

Vũ Hồng

Attractions of Cù Lao Chàm World Biosphere Reserve

Trần Thanh
Cù Lao Chàm Marine Protected Area

Cù Lao Chàm (Hội An city) was recognized by UNESCO as the World Biosphere Reserve on 26th May, 2009 with exceptional values on biodiversity, culture, history and particularly as a distinctive and strong proof of the combination and interactions between nature and humans in conservation and promotion of global values.

Cù Lao Chàm is endowed by the nature with poetic and rare beauty, of which the most impressive landscapes are nine pristine and charming beaches with blue water, white sand and gold sunlight shadowed by green coconut trees of many fruits.

The coral reef is typical of the tropical oceans and has typical features of the island, which are rare resources of Việt Nam and the region. With 311 ha of coral reefs, more than 300 species of 15 hard coral reef families; 15 species in 11 genus of six soft coral families which are the habitats of 200 fish species in 85 genus of 36 families; sea landscape of Cù Lao Chàm is colourful, beautiful and attractive.

Cù Lao Chàm is one of islands in Việt Nam that still has high forest cover; the forest is the place of many rare fauna and flora genetic resources. Of which, there are medicinal plants (116 species), ornamental trees, orchids in the Northeast side with *Renanthera species* (huyết hung tía) and in the Southeast side with *Cycas revoluta* of around three hundred years old. In addition, there is *Erythrina variegata* species (vông nem) with a diameter of 2 m; some banyans with roots anchoring into rock cliff or around other timber trees which create a primitive, elegant and beautiful appearance. Vietnam Association for Conservation of Nature and Environment has awarded the Heritage Tree Title to three banyans in the east side of the island, sánh tree and *Casearia grewiaefolia* (cây kén) in the bird net and the endemic *Firmiana colorata R.Br* forest in the island.

The primitive forest makes up 95% of the area in the island with a diverse vegetation cover which is a habitat of many rare fauna and flora species: 12 mammals, 13 avian, 130 reptiles,

▲*Coral reef is a typical characteristic of Cù Lao Chàm sea*

including Aerodramus fuciphagus (yến hàng) and long-tailed macaque which are two species listed in the Việtnam Red Book. As a place for bird's staying and nesting, the bird net is located in rocky cliffs and in open cracks, about tens of metres height, has become an attractive destination for tourists to Cù Lao Chàm in many years.

Being inhabited more than 3,000 years and having had commercial relations with the Middle East, China, India, Southeast Asia for more than 1000 years ago, going through Sa Huỳnh, Chăm Pa, Đại Việt, Việt Nam cultural eras, Cù Lao Chàm people have been continuing sharing, changing and developing to create a diverse, typical and characteristic cultural value of the island. With seven national relics, traditional legends, folklores, folksongs, lullaby melodies; festivals, traditional customs and social experience and professions of island residents have illustrated profound indigenous knowledge and humanity cultural characteristics.

Located in the central heritage tourism route including Huế - Đà Nẵng - Hội An - Mỹ Sơn, Cù Lao Chàm has been a very attractive destination, hundred thousands of guests visit the area; the number of guests is increasing. As in 2009, Cù Lao Chàm attracts 26,691 tourists, as in 2015 the number is 400,931 tourists. Currently, Cù Lao Chàm is having large-scale investment projects to improve the infrastructure and enhance the service to become a high-class resort centreas well as a place for scientific studies and research, training linkage and workshop and conference venues…

Not only being a wonderful ecological landscape, Cù Lao Chàm leaves good impressions in tourists with unique features: No nylon bags in the island; ecologically labelled stone crab; in addition, the tourism capacity is being studied to meet the increasing demands of entertainment and relaxation of tourists■

▲*Cù Lao Chàm is one of few islands in Việt Nam that still maintains high vegetation cover*

Center of Global Green Network

Hạt n Hân của mạng lưới xan H toàn cầu

KEITI
한국환경산업기술원
Korea Environmental Industry & Technology Institute

환경부
Ministry of Environment

KEITI tạo dựng một thế giới xanh và sạch bằng cách phổ biến công nghệ thân thiện môi trường và thiết lập các mạng lưới hợp tác toàn cầu để mỗi quốc gia đều có thể tận hưởng những lợi ích mà môi trường đem lại.

Trung tâm Hợp tác Môi trường Việt Hàn (Vietnam – Korea Environmental Cooperation Center, VKECC) là cơ quan do Bộ Môi trường Hàn Quốc thành lập và giao Viện Công nghệ và Công nghiệp Môi trường Hàn Quốc (KEITI) quản lý và tổ chức hoạt động. Trung tâm được giao các chức năng và nhiệm vụ sau:

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