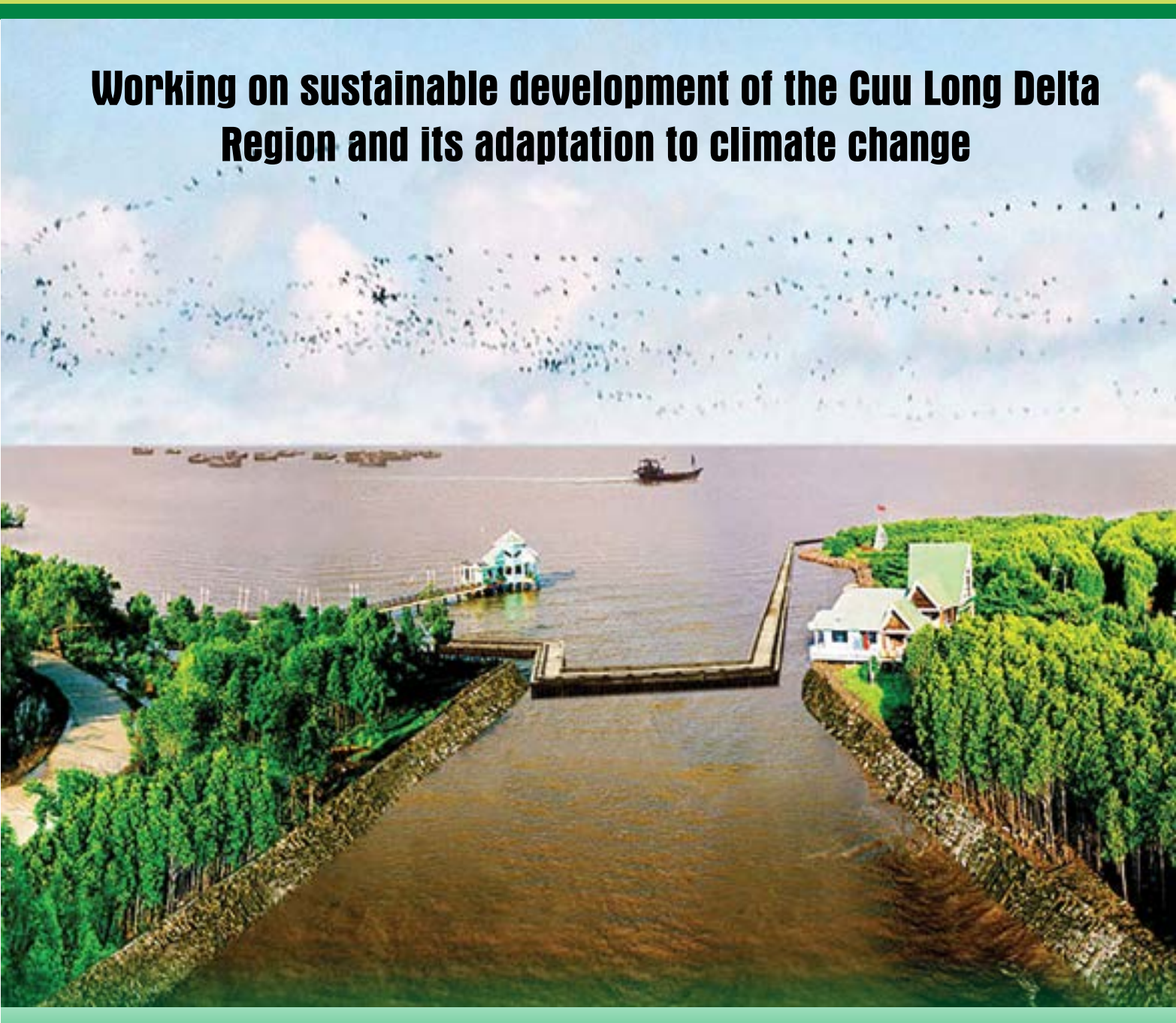
ISSN: 1859 - 042X
English Edition III-2017

Environment

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

Working on sustainable development of the Cuu Long Delta Region and its adaptation to climate change



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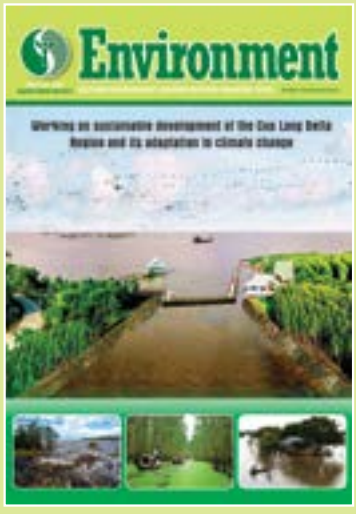

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PUBLICATION PERMIT
№ 1347/GP-BTTTT - Date 23/8/2011

Photo on the cover page: **The Cuu Long Delta Region**

Photo by: **VEA**

Processed & printed by:

Đa Sắc Printed Co., Ltd

English edition III/2017

Price: 30.000VND

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Working on sustainable development of the Cuu Long Delta Region and its adaptation to climate change

The conference on sustainable development of the Cuu Long (Mekong) Delta Region and its adaption to climate change was held on September 26-27 in Cần Thơ City. This was the largest conference ever, and it was billed as the "Dien Hong Meeting" that sought to develop significant ideas to help the Government and local authorities in the Cuu Long Delta Region address strategic solutions on sustainable development in the delta region with a vision to 2100. The preliminary session of the conference was chaired by Prime Minister Nguyễn Xuân Phúc.

Among the participants were Deputy Prime Ministers Vương Đình Huệ and Trịnh Đình Dũng, Minister of Natural Resources and Environment Trần Hồng Hà, Minister of Planning and Investment Nguyễn Chí Dũng, Minister of Agriculture and Rural Development Nguyễn Xuân Cường, local leaders of HCM City authorities and 13 provinces and cities in the Cuu Long Delta Region, and more than 1,000 participants coming from central government agencies, the National Assembly, local authorities, organisations, embassies, international organisations, along with domestic and foreign scientists.

CHALLENGES AND REQUIREMENTS FOR THE CUU LONG DELTA REGION

On September 26, under the chair of deputy prime ministers Vương Đình Huệ and Trịnh Đình Dũng, three discussions were held to (1) provide an overview of the region and address challenges, opportunities and solutions to transform the development model of the Cuu Long Delta Region; (2) provide a master plan on the development of the delta region and on mobilising and distributing resources for the development; and (3) develop sustainable agriculture and irrigation systems, and prevent natural disasters and erosions in the region.

Regarding the overview of the region and the challenges, opportunities and solutions to transform its development model, Minister of Natural Resources and Environment Trần Hồng Hà highlighted the unique features of the southern delta region, addressed its challenges and opportunities, and suggested breakthrough solutions for the region.

Minister Ha said that the development of the Cuu Long Delta Region must be viewed as a whole that connects to other economic zones, such as HCM City. Further, water resources must become the core element in the region's development, thus, local authorities must have supportive, breakthrough policies and regimes that could lure the private sector to develop the infrastructure and industrial zones.

Following the report of minister Ha, participants discussed challenges, opportunities and solutions that could help develop sustainable agriculture for sub-regions in the Cuu Long Delta Region; develop an irrigation system that helps the region adapt to climate change and prevent land erosion; and study a master plan on infrastructure construction for the region.

Regarding the management of the region's development, Minister of Planning and Investment Nguyễn Chí Dũng said local governments would need to re-organise the regional economic structure, with the marine economy becoming the centre of attention.

Minister Dung stressed that the region must review the total area of rice planting, limit local people from unorganised exploration of underground water; re-arrange thermal power plants in the region; and raise people's awareness about

transforming the region's production model to adapt to climate changes. At the discussion, participants proposed that the Government increase the budget for the region to 20% of the country's gross domestic product (GDP) to assure sufficient resources for the region's development; prioritise and speed up the progress of climate change adaptation projects; and study particular regimens for the region to attract official development assistance (ODA) projects.

In order to develop sustainable agriculture, irrigation systems and prevent natural disasters and land erosion, Minister of Agriculture and Rural Development Nguyễn Xuân Cường said that climate changes were unavoidable and adaptation to those changes would need the co-operation of the authorities, the whole country and community, following the theme "active, positive and flexible adaptation to climate changes".

"Therefore, we need to make the best use of our own advantages and the Fourth Industrial Revolution (Revolution 4.0) to turn threats into opportunities. In addition, we need to restructure the agricultural sector so that it becomes more dependent on biodiversity and re-allocates the resources to maximise the sale of the region's key products."

RESOLUTION ON CUU LONG DELTA REGION'S CLIMATE CHANGE ADAPTATION

Prime Minister Nguyễn Xuân Phúc said, during the conference's preliminary meeting on September 27, that he appreciated the results of the discussions and urged the Government and its agencies to acknowledge the ideas, while calling for joint opinions that could help the Cuu Long Delta Region achieve sustainable development and adapt to climate changes.

To conclude the conference, PM Phuc stressed that one of the key factors was to protect the land, water and people; and local authorities must be visionary in turning the delta region from a traditional granary to a hi-tech agriculture region. In the near future, the region must transform its production based on three principles, which are (1) to design sustainable development and prosperity for the region based on adapting and turning challenges into opportunities, assuring good living conditions for local people and preserving the region's traditional values; (2) to change people's thoughts from traditional agricultural production to agricultural economics, in which chemical production methods are replaced by organic and hi-tech methods; and (3) to join processing and supporting industries in agricultural economics.

The PM further said we need to respect the law of nature, and the development model should be consistent with nature and avoid unnecessary intervention in nature, and the sustainable development should enable people to live in harmony with the natural conditions. We must acknowledge that climate change and rising sea levels are indispensable and we have to turn those difficulties into opportunities. Also, seawater and brackish water should be treated as natural resources. The Government and the Communist Party of Viet Nam targets to serve the people first to reduce the poverty gap and leave no one behind.

Regarding financial assistance for climate change adaptation projects, the PM called for the founding of the Cuu Long Delta Region Development Fund, that would be funded by various sources. By 2020, local authorities must disburse at least US$1 billion to construct drainage systems for fields and rivers in the region, such as Cai Lon and Cai Be rivers in Kien Giang Province to prevent the inundation of saltmarsh, and Tra Su and Tha La drains in An Giang Province to control floods and strengthen some heavily-hit areas where erosion has posed negative impacts on people's living conditions.

In addition, the region must enhance its international co-operation; develop a national database on the Cuu Long Delta Region's sustainable development and climate change adaptation; develop a master plan on an adaptive delta programme to keep the region safe, in the long term, and attractive to individuals and organisations who wish to settle in the region. The Government would organise a region-level meeting every two years to discuss plans, review targets, policies and solutions to better develop the region and guide it to a brighter future.

After the conference, the PM also assigned the Ministry of Natural Resources and Environment to work with the Government Office to collect ideas from participants, in order to develop the Government's draft resolution on the Cuu Long Delta Region's sustainable development and climate change adaptation so that the Government could bring the resolution for discussion at its meeting in September 2017■

Nguyễn Hằng

Close monitoring of environmental protection commitments by Lee and Man Paper Manufacturing Ltd. in Hau Giang

Project "Pulp and paper mill with a capacity of 420,000 tons per year" of Viet Nam Lee and Man Paper Manufacturing Ltd. with the investment from the Joint Creation Limited is implemented in an area of 419,957 m² in the Phu Huu A industrial cluster, Mai Dam Town, Chau Thanh District, Hau Giang Province. Its operation duration is 70 years with a total investment of 280 million USD. After a 6 month pilot phase (3-/9/2017) it is expected that in October, 2017, Viet Nam Lee and Man Paper Manufacturing Ltd. will start its full operation after being issued the certificate of having completed environmental protection works by Ministry of Natural Resources and Environment (MONRE).

FIVE REQUIREMENTS FOR HAU GIANG LEE AND MAN PAPER MANUFACTURING LTD

After paying an inspecting visit to the Lee and Man Paper Manufacturing Ltd. for its completion of environmental protection works, on October 19, 2017, MONRE Minister Trần Hồng Hà met with leaders of Hau Giang Provincial People's Committee and related local authorities on environmental protection of the factory in its operation phase.

According to the inspection team's report, the Lee and Man Paper Manufacturing Ltd. has completed environmental protection works as required in its environmental impact assessment (EIA) report approved by MONRE. In the meantime, the mill has followed closely additional requirements of the inspection team to treat emission, wastewater and solid waste properly. All wastes are treated to meet environmental technical regulations. Environmental conditions inside the mill are good. No odor is detected. Environmental hygiene is well maintained.

Based on the inspection results and comments by scientists and experts, Vice Chairman of Hau Giang Provincial People's Committee Trung Canh Tuyen proposed that MONRE approve the mill's full operation and affirmed that the provincial authorities would monitor closely.

To conclude at the meeting, Minister Trần Hồng Hà hailed the inspection team of the Vietnam Environment Administration (VEA) and technical team of Hau Giang Provincial People's Committee, and noted efforts by Lee and Man Paper Manufacturing Ltd. in investing and fulfilling environmental protection requirements. The Minister set five requirements for the factories:

▲ *Minister Trần Hồng Hà met with Hau Giang Province leaders and related local authorities*

First, continuing full and effective operation of waste treatment systems;

Second, issuing procedures which specifies technical staff responsibilities in operating waste treatment systems;

Third, developing and approving technical and economic cost norms for materials, chemicals, energy and water, following ISO standards and publicize for public authority's monitoring;

Fourth, taking measures for controlling odor which could potentially generated during its production;

Fifth, publicizing and monitoring waste treatment contracting businesses, in particular flying ash and bottom ash treatment to ensure that these businesses are legally competent and eligible.

Minister Trần Hồng Hà also requested that environmental protection commitments are specified and assigned VEA to collaborate with Hau Giang government to regularly check, inspect and monitor the commitments by the factory.

For Hau Giang, Minister Trần Hồng Hà assigned Hau Giang Department of Natural Resources and Environment (DONRE) to provide regular supervision of automatic and

continuous monitoring data of the factory, when necessary, conduct regular or sudden inspections, and develop a joint program with the factory to publicize information, disseminate information and raise awareness. In addition, the DONRE shall cooperate with other provincial departments to develop and implement a water quality monitoring program for Hau River, especially the adjacent area of the factory, develop contingent plans for responding to environmental incidents and ensuring environmental security, strengthening environmental inspections at industrial parks and highly polluting facilities, in particular for those discharging directly to Hau River, strictly punish environmental violators, cooperate with upstream provinces to develop a joint monitoring programs and environmental management for the whole river, to ensure sustainable development of the region.

VIET NAM LEE AND MAN PAPER MANUFACTURING LTD. IS READY FOR FULL OPERATION

At present, the mill is operating at 100% of its designed capacity. Its works have finished and started operation, including: Office buildings, an international port and associated warehouses, a high quality hard cover box manufacturer with a capacity of 420,000 tonnes per year, machine group 1 with a capacity of 50 Mw of the coal fired thermal power plant, water supply factory using water from Hau River/1st period of 40,000 m^3/day, and a centralized wastewater treatment facility's 1st period with a capacity of 20,000 m^3/day.

During the testing operation phase, MONRE established an inspection team to supervise waste treatment works at the mill (Decision 369/QD-BTNMT dated 10/3/2017) and Hau Giang Provincial People's Committee established a technical team to supervise (Decision 380/QD-UBND dated 14/3/2017).

For wastewater treatment, the company has met requirements in the approved EIA such as: installing a wastewater treatment facility with a capacity of 20,000 m^3/day, building a lagoon for treated wastewater, installing automatic monitoring stations before and after the lagoon and continuously transmitting monitoring data to Hau Giang DONRE.

▲ *Director General of Hau Giang Lee and Man Paper Mill reported to Minister Trần Hồng Hà and the inspection team on the treated wastewater quality*

▲ *Overview of Hau Giang Lee and Man Paper Mill*

For emission treatment, the company has installed the emission treatment system with a 150m chimney and an emission automatic monitoring station to regularly monitor pollutant levels and deal with problems instantly. So far, the company has installed dust preventing nets in coal warehouses, planted trees in open space areas after coal warehouses, installed odor treatment system using water spraying, ozone treatment and active carbons at A/O tanks and sludge tanks, installed two additional odor treatment towers, and installed noise reduction panels on the 3rd level of the cooling system at the thermal power plant. In paper waste storage area, the company has used canvas covers to prevent odor nuisance to surrounding areas.

The company has collected and transfer wastes to competent agencies. During its operation, the company has reported all issues to local authorities and community.

One of the biggest paper manufacturers in the Mekong Delta, the company's waste volume has received much attention from the public recently. Therefore, the inspecting visit by MONRE is an important step before approving the company's full operation after the 6 month testing phase■

Đinh Hương

Draft Decree on revising and complementing Decrees on providing guidances on implementation of Law on Environmental Protection

Nguyễn Thu Hà, *Deputy Director*
Department of Policy and Legislation, Vietnam Environment Administration

To implement Law on Environmental Protection 2014, the Government issued Decree 18/2015/ND-CP dated 14/2/2015 on environmental planning, strategic environmental assessment, environmental impact assessment; Decree 19/2015/ND-CP dated 14/2/2015 on detailing some contents of the LEP 2014; Decree 38/2015/ND-CP dated 24/4/2015 on waste and scarp management; Decree 03/2015/ND-CP dated 6/1/2015 on determining environmental damage compensation, and Decree 127/2014/ND-CP dated 31/12/2015 on requirements of environmental monitoring service providing organizations. These are important regulations to enhance state management in environmental protection.

In the Government and Prime Minister's work plan in 2017, Ministry of Natural Resources and Environment (MONRE) was assigned to develop a draft Decree of revising and complementing the Decrees providing guidance on implementing the LEP 2014 (draft).

1. RATIONALE FOR ISSUING THE DECREE

In the past years, environmental protection has been paid due attention by the Party and State and considered as one of the three pillars for sustainable development. In this vein, state management of environmental protection from central to local levels have made progress and achieved some first important results. However, pollution continues to rise. Some serious pollution cases have affected people's livelihoods and production. The main cause is limited awareness and responsibilities of sectors, management levels, businesses and community. Many localities have pursued upfront economic benefits and paid undue attention to environmental protection. Roles and responsibilities of community and social organization have not highlighted. Environmental regulations remain shortcomings and infeasibility.

A review of current legal system shows that the majority of necessary regulations have been issued. However, due to a wide range of scope, some regulations are infeasible, contain overlaps and conflicts among regulations while have gaps in regulating social relations arisen from sustainable use of natural resources and environmental protection.

For regulations on EIA, environmental protection plan and environmental protection program

For initial EIA: overlaps remain between the LEP 2014 (Point a, Clause 2, Article 25) and Investment Law (Article 33, 34) causing difficulties for local authorities in developing procedures for investment projects

For subjects responsible for carrying out EIA: Project type and scale requirements for developing EIA are inappropriate, hence it is necessary to review this list.

For time required for revising and complementing EIA reports: The time for revising and resubmitting EAI reports to appraisal councils is not yet regulated.

For compliance with revisions in approved EIA reports: It is necessary to regulate the cases in which revisions need approvals and detailed approval procedures for such revisions.

For piloting environmental protection works: Procedures for asking for extensions of piloting environmental protection works is not yet regulated.

Environmental protection programs and environmental protection options: With current regulations, it is impossible to completely deal with cases of noncompliance with requirements for EIA and environmental protection plans. Therefore, it is necessary to take measures to address these violations. In the meantime, according to Article 68 LEP 2014, facilities shall develop and comply with environmental protection options. However, positions and contents of environmental protection options are not specified yet.

Waste management regulations

Normal solid waste management: Verification of meeting environmental protection requirements for normal industrial solid waste is not yet regulated. Other necessary but unregulated points include siting and rehabilitation and upgrading of normal industrial solid waste treatment facilities, responsibilities of owners of facilities using industrial solid waste as their production input, research and development for industrial solid waste treatment in laboratories and reviewing and appraising solid waste technologies. Regulations on domestic scraps are yet to be issued.

▲ *General Director of Vietnam Environment Administration, Nguyễn Văn Tài delivered speech at the Consultation Workshop on Decree to revise and complement Decrees on implementing LEP 2014 in Ho Chi Minh City on September 8, 2017*

Wastewater management: Typical features of aquaculture sector of producing a large volume of recycling water are yet to be considered. Regulations on thresholds of receiving wastewater from facilities within industrial zones for centralized treatment also are not issued yet.

Emission management: Procedures for registration, inventories and licensing industrial emission are not yet issued.

Scrap import: Regulations at Clause 1, Article 59 of Decree 38/2015/ND-CP are inappropriate because in some cases, import procedures are complete but due to insufficient time for deposit, the import cannot be cleared.

For qualifications of organization requesting being certified as meeting with requirements of environmental monitoring service providers

Stipulations at Form No.2 of Decree 127/2014/ND-CP is incompatible with Prime Minister's Directive 17/CT-TTg dated 20/6/2014 on some measures for addressing an abuse of requesting certified copies of documents and reducing administrative costs for individuals and organizations.

For environmental rehabilitation and restoration requirements: It is necessary to clarify regulations on restoration, rehabilitation and deposit for environmental restoration in mining operations. Regulations on environmental restoration of mineral processing and industrial facilities after their closing or dissolution.

For dealing with serious polluting facilities: regulations on checking and assessing results and certifying the accomplishment of measures for radically dealing with serious polluting facilities have not been available yet.

2. POINT VIEWS AND OUTLINE OF THE DRAFT

The draft was developed to address current shortcomings, in particular those related to state management tools and measures for technical control and supervision of enterprises' emission. The draft was developed with the principles of: legalizing view points and directions of the Party, in particular Prime Minister's Directive 25/CT-TTg dated 31/8/2016 on some urgent tasks and solutions for environmental protection; considering pollution and environmental degradation prevention as the main task; ensuring systematic, comprehensive, scientific and feasible features of environmental regulations; enhancing proactive responsibilities of state authorities in environmental protection; make state management on environmental protection transparent and democratic to heighten community roles; strengthening socialization and attracting social resources for environmental protection and focusing on measures for enhancing environmental compliance.

This draft decree has 5 chapters, 103 Articles and 3 annexes with the following main contents

Chapter 1. Regulations on SEA, EIA and environmental protection plans (from Articles 1-14): Revising and complementing Decree 18/2015/ND-CP dated 14/2/2015 on environmental planning, SEA, EIA, in which requirements for implementing SEA are specified; appraising SEA reports; objects, timing and forms of reporting, appraisal contents of initial EIA; EIA consultation; requirements for EIA report service providers; EIA appraisals, EIA redoing; piloting environmental protection works; and checking and certifying environmental protection works.

Chapter 2. Environmental restoration and rehabilitation of production, trade and service facilities (from Articles 15-39): Revising and comple-

menting Decree 19/2015/ND-CP dated 14/2/2015 on detailing some contents of the LEP 2014 which specifies facilities not subject to requirements of making environmental protection options as regulated by Mineral Law; environmental deposits in mining operations; general requirements for environmental quality improvement and management; requirements of used ship dismantling facilities; environmental protection options; dealing with serious polluters; preferential in environmental protection; and environmental quality improvement and management.

Chapter 3. Regulations on waste and scrap management (Articles 40-49): Revising and complementing Decree 38/2015/ND-CP dated 24/2/2015 on waste and scrap management. This specifies waste management planning in environmental protection planning; investment in hazardous waste management, domestic solid waste, normal solid waste, domestic waste management, domestic scrap management; normal industrial waste; waste treatment technology assessment; industrial emission licensing; mining waste management; scrap management and disposal of preferential cars.

Chapter 4. Regulations on requirements for environmental monitoring service providers (Articles 100-102): Revising and complementing Decree 127/2014/ND-CP dated 31/12/2015 on requirements for environmental monitoring service providers. This revises Section IV, Part A, Form 2 and point 2, Section I, Part B, and Form 2.

Chapter 5. Implementation arrangements: the draft revises and complements Annexes of Decree 18/2015/ND-CP, complementing Annex of Decree 19/2015/ND-CP (serious polluting facilities); and revising and complementing Anex of Decree 38/2015/ND-CP.

At present, the draft is available on Government, MONRE and VEA webpages to seek comments from Ministries, sectors, Provincial People's Committees, political and social organizations and citizens. The MONRE will submit the draft to Prime Minister in November, 2017■

Obstacles and shortcomings in dealing with environmental compensation

Assoc. Prof. Dr. Phạm Văn Lợi
Environmental Science Institute

Việt Nam is developing a multi component market economy toward industrialization and modernization. In this process, economic activities such as investment, industrial zone, export processing zone and industrial cluster development have been boosted. Enterprises under different economic sectors have been established. However, associated with economic development is environmental pollution and degradation. In practice, some enterprises only focus on economic development without proper attention to environmental protection and waste treatment. As a result, pollution is getting worse, impacting on people's heath and livelihood.

To prevent this situation, the State has issued regulations for compensation for environmental pollution and degradation. However, these regulations provide only general principles and hence cannot be easily applied. The practice of dealing with suing cases on environmental compensation shows the following shortcomings and obstacles:

COMPENSATION FOR LIFE, HEALTH AND PROPERTY DAMAGE CAUSED BY ENVIRONMENTAL VIOLATIONS

First, according to current regulations, bases for responsibilities for compensating for live, health and prop-

▲ *It is difficult to request compensation for damage caused by river pollution because it involves multiple subjects and widespread impact*

erty damage include four factors: damage, violations causing damage, people causing damage intentionally or unintentionally, and a cause-effect relationship between damage and the violations. However, legally it is very difficult to prove the cause-effect relationship.

Second, to protect legal rights and benefits of the people, according to regulations, the people have to collect evidence of violations of polluters and determine the level of damage by themselves to put a case. However, in practice, it is difficult for people to collect evidence due to a lack of time, finance, equipment and knowledge. This affects their rights to sue.

Third, it is very difficult to determine and quantify compensation for live and property, in particular compensation for damaged spirit and lives. According to Judging Council of People's Supreme Court's Resolution 03/2006/NQ-HDTP dated 8/7/2006 providing the implementation of Civil Code on non-contract compensation for damage, clause b, point 1.1, section 1, part 1 provides guidance on determining spiritual damage. This regulation promulgates that the maximum for health damage is not exceeding minimum 30 month wages and compensation for spiritual damage of their family members is not exceeding minimum 60 month wages. Determining damage compensation needs to refer to consequences of violations to the affected people. That means the affected people not only suffer from health damage and wounds (physical damage) but also incur spiritual damage (in terms of social relationships and occupations). Spiritual damage also depends on economic status, age, occupational position, and appearance. This is complex spiritual damage.

Fourth, damage caused by environmental violation is widespread and affect a large number of people. However, according to current regulations, people are not allowed to sue collectively to protect their legal rights and benefits.

Fifth, life, health and property damage caused by environmental violations is diverse and complex. Therefore, it is difficult to determine damage values. In addition, regulations on determining damage and compensations in the Civil Code are yet concrete and too general. As a result, judges interpret the regulations differently, leading to inconsistent decisions. Therefore rights and benefits of the affected people are not protected. In many cases, compensations are improper.

Sixth, environmental courts are yet available. Judges' environmental knowledge is at different levels, leading to difficulties in handling the cases.

COMPENSATIONS FOR DAMAGE TO THE NATURAL ENVIRONMENT

First, regulations on compensation for the natural environment (degraded functions and benefits of the environment) are scattered with different legal entities, causing difficulties for organizations and individuals in grasping and complying. Many of the regulations are yet concrete and need guidance for implementation.

Second, environmental pollution, degradation and damage are caused by many environmental violators and the scope of pollution and damage is widespread (rivers, river basins, lakes, ponds, seas, field…) Therefore, it is very difficult to identify direct subjects causing damage. Hence, it is complex to prove the subject directly causing damage who should be responsible for compensation.

Third, environmental violations are diverse and their consequences are at different levels. Therefore, it is difficult to determine damage levels and to collect evidence while it requires highly qualified staff and sophisticated equipment to collect and analyze samples to ensure typical requirements of the environmental sector. This is not yet guided by regulations.

Fourth, according to current regulations, state authorities can hire businesses to collect data and evidence for damage compensation. However, criteria for selecting the businesses have not been regulated. This requires concrete guidance. It is regulated that provincial and district's people's committees are responsible for collecting and appraising data and evidence. However, it is unclear which authorities under the committees are responsible for undertaking this task.

Fifth, current regulations have not specified cost norms for treating a unit of polluted water or soil, restoring a unit of degraded ecosystem, replacing a dead endangered species individual and saving and caring for injured endangered species individual.

Sixth, in case businesses do not agree with the damage compensation requested by competent authorities, the businesses have to prove that they do not cause pollution or the level of caused pollution. Therefore, it is necessary to have regulations on procedures to prove that business do not cause pollution. In addition, Viet Nam has not had data on the background environment; hence it is difficult to determine damage by comparing against the initial environmental state■

Discussion on the Draft Law amending and supplementing some Articles of the Law on Environmental Protection Tax

Assoc. Prof. Dr. Lê Thu Hoa
Faculty of Environment and Urban, National Economics University

The Law on Environmental Protection Tax was passed by the 12th National Assembly on November 15, 2010 at the 8th session, and has taken effect since 1/1/2012. After over 5 years of implementation, many contents of the Law on Environmental Protection Tax 2010 have shown many shortcomings. The amendment and supplementation of the Law on Environmental Protection Tax are necessary to meet the requirements of tax reforms and effectively meet the requirements of environmental protection and socio-economic development in the new context of international integration.

On April 22, 2017, at the 9th meeting session, the Standing Committee of the National Assembly agreed to submit to the National Assembly to add the Draft Law on amending and supplementing some Articles of the Law on Environmental Protection Tax into the National Assembly's Program of law and ordinance development 2017 for comments at the session in October 2017. At present, the draft Law is being submitted to Ministries, sectors, localities, organizations and individuals concerned for comments. This paper puts forward some proposals and discussion to contribute to the amendment and finalization of the draft Law.

VIEWPOINTS AND APPROACHES TO THE DEVELOPMENT/ AMENDMENT OF THE LAW ON ENVIRONMENTAL PROTECTION TAX

Many countries in the world use Environmental Protection Tax as one of the important economic tools for two main purposes: To regulate the behavior of economic actors (producers and consumers) towards environmental friendliness; and to create financial resources for the provision of environmental protection goods/ services.

For many countries, taxes are only regarded as environmental tax/environmental protection tax when they meet 3 criteria: Tax relates to the Government's environ-

▲ *The proposal to increase environmental protection tax on gasoline, oil is particularly drawing a lot of public concern*

Environmental protection taxable objects and absolute tax rates are specified in the following tariff schedule.

No.	Goods	Unit	Tax rate (VND/unit of goods)	
			Law 2010	Proposals in 2017
I	Gasoline, oil, grease			
1	Gasoline (except ethanol)	liter	1,000 - 4,000	3,000 - 8,000
2	Aeronautical fuel	liter	1,000 - 3,000	3,000 - 6,000
3	Diesel	liter	500 - 2,000	1500 - 4000
4	Petroleum	liter	300 - 2,000	No change
5	Mazut oil	liter (kg)	300 - 2,000	900 - 4,000
6	Lubricants	liter	300 - 2,000	900 - 4,000
7	Grease	kg	300 - 2,000	900 - 4,000
II	Coal			
1	Brown coal	ton	10,000 - 30,000	No change
2	Anthracite	ton	20,000 - 50,000	No change
3	Grease	ton	10,000 - 30,000	No change
4	Other coals	ton	10,000 - 30,000	No change
III	Hydro Chlorofluorocarbon (HCFC) Liquid	kg	1,000 - 5,000	4,000 - 20,000
IV	Taxable plastic bags	kg	30,000 - 50,000	40,000 - 200,000
V	Herbicides of restricted use	kg	500 - 2,000	No change
VI	Termiticides of restricted use	kg	1,000 - 3,000	No change
VII	Forest product preservatives of restricted use	kg	1,000 - 3,000	No change
VIII	Warehouse disinfectants of restricted use	kg	1,000 - 3,000	No change

mental targets; the main target of the tax is to encourage positive behavior in terms of environment; tax is structured in line with the "polluter pays" principle and environmental targets, whereby the more pollution and harm to the environment, the higher the tax becomes.

As such, for the so-called environmental tax/environmental protection tax, the primary target which must be achieved is to create positive environmental impacts. If a tax does not reflect this target or is aimed primarily to increase revenues, it will not be regarded as an environmental tax/ environmental protection tax.

In Việt Nam, from the Law on Environmental Protection Tax 2010 to the draft Amended Law of 2017, in the report of the Ministry of Finance, the environmental targets have been quite lightly- presented compared to the target of increasing revenue. Report on the draft Law in 2017 also does not include environmental impact/ efficiency assessment of the implementation of the Law in the past 5 years and the forecast for the next period. There is a lack of practical evidence to support the Ministry of Finance's assessment that "the policy of environmental protection tax has recently contributed to reduce the production and consumption of polluting goods, stimulate the production and the use of environmentally friendly products, reduce pollution at source, raise environmental protection awareness of the whole society".

In order to create trust for people and businesses that "are willing to pay the tax", the draft Law on Environmental Protection Tax (amended) needs to be studied in the direction of extending the tax basis, modifying the taxable scope and objects, the tariff... and at the same time, providing clearer evidence and interpretations of the environmental targets that have been and will be achieved in the implementation of the Law.

TAXABLE OBJECTS AND TAX RATES

Under the provisions of the Law on Environmental Protection Tax 2010 (Draft Law on environmental protection tax 2017 not proposing adjustments), products/goods which have "negative impacts on the environment" are subject to the tax; and "negative impacts on the environment" is an important basis for identifying taxable objects, a measure for tax calculation, and the foundation for determining high or low tax rate for each type of product/goods. In relation to that provision, some issues need to be clarified / supplemented as follows:

Regarding taxable objects: According to the experience of many countries in the world and the reality in Việt Nam, it is now time to research and put products with negative impacts on the environment such as electronic products, household electricity appliances, batteries, tires or synthetic detergents into the list of taxable objects.

Currently, in Việt Nam, electronic products, electric appliances, batteries, tires, detergents... are the products with the volume of usage and disposal increasing rapidly over the years (the disposal of only electronic waste is about

90,000 tons/year), thereby creating a major impact on the environment and human health, both in the short and long terms. Although many of these products are hazardous wastes, they still are discarded arbitrarily with domestic solid wastes while the cost of domestic solid waste collection and treatment services remains low. The taxation of these products is necessary to reduce the consumption level and simultaneously provides funds for the special collection and treatment system with higher cost.

Regarding the low tariff of coal products as compared to petroleum: The correlated comparison between the environmental impacts of petroleum and coal with the environmental protection tariff for these fuels showed the big and irrational difference. This may have been the reason for the high increase in the investment in the development of coal-intensive heavy industries with high pollution risks including coal-fired thermal power, steel-making, cement and chemicals industries in the past time. In addition, that petroleum and coal are substitutes for each other could have an unwanted effect, which is the switch from the use of coal to petroleum.

Tax rates for petroleum and diesel are, respectively, 80 - 100 times and 40 - 50 times higher than the tax rate for coal. According to the draft Law in 2017, this gap will continue to increase. Meanwhile, the contamination and detrimental impacts of coal on the environment is much higher than those of petroleum. In terms of chemical compositions, according to Petrolimex standards (TCCS01: 2015/PLX and TCCS 03: 2015/PLX) and national standards (TCVN8910: 2015), the sulfur and ash contents in coal are, respectively, 35 - 257 times and 300 - 4,500 times higher than those in petroleum. According to the US Energy Information Administration (USEIA), to generate the same energy unit, the air pollutant emissions from combusted coal is higher than that of combusted petroleum: SO_2 is 2.3 times; dust is 32.7 times; CO_2 is 6.3 times and mercury is 2.3 times higher (average emission level can fluctuate depending on type of coal, petroleum as well as combustion technology, operating conditions, longevity of equipments...) According to the International Energy Agency (IEA), total CO_2 emission causing greenhouse effect originated from all fuel combustion activities of Việt Nam is 143.3 million tonnes in 2014, of which the combustion of coal accounted for 55%, petroleum 30% and gas 15%. As such, coal is the largest and dominant source of air pollution in Việt Nam. Not to mention, ash from combusted coal is also a source of environmental pollution and occupies a lot of land.

Although coal exploited domestically is subject to natural resources tax and fees such as environmental protection fees for wastewater, mining fees... but it is only in the stage of exploitation. Therefore, it is necessary to consider raising the tax rate/ tariff of environmental protection for coal consumption, including both domestically exploited and imported coals.

Regarding the high tariff for and the large tax revenues from petroleum: The current tax rate for gasoline is 3,000 VND/l. If converted separately for the CO_2 emissions from gasoline combustion, which is 2.341 kg/l, the equivalent tax rate is 1,281,500 dongs/ton of CO_2 or 56.45 USD/ton CO_2. If it is implemented in accordance with the draft Law on amendment, the tax rate would be 56 - 150 USD/ ton, which is much higher than the highest rate of 130 USD/ton of CO_2 applied in Sweden and the average rate of 10 USD/ton which many countries are applying.

The Ministry of Finance argues that because the tax rate (import tax, special consumption tax, environmental protection tax, value added tax) on the base price of Việt Nam is low (37.49% for gasoline, 20.76% for diesel; 11.59% for fuel, 19.13% for mazut) and the gasoline price is also low compared to many countries such as South Korea, Cambodia, Laos, Philippines, Hong Kong or Thailand, it is necessary to raise the tax rates. This seems not to be convincing. Meanwhile, in some countries such as Malaysia, Indonesia, the US, or Australia, the gasoline price is not as high as that in Việt Nam.

If import tax, special consumption tax (excise tax), and VAT are included, the contribution of the petroleum sector is about 9.8% of total budget revenue. If the maximum new environmental protection tax rate is applied and the import tax is eliminated according to the road map, the contribution of petroleum will increase to 14 - 15% of total budget revenue. If the environmental protection tax increase to compensate for the decrease of import tax, it is necessary to consider that: environmental protection tax rate of 3,000 VND/l was higher than the maximum import tax rate of 35% of the base price (now it is reduced to 12%). Is this "over-compensation" necessary if the impacts on the environment-economy-society are considered?

From a different perspective, it is unreasonable for petroleum to play a key role in the revenue source of environmental protection tax in the past time and expectedly in the coming years. In 2016, the environmental protection tax on petroleum has reached VND 41,062 billion, accounting for over 93% of the total environmental protection tax revenue, of which VND 21,200 billion is collected from gasoline. According to the level of negative impact to environment, financial responsibility for the environment must be shared by many other sectors, and the gasoline can not be "forced" to be responsible for almost all others. The thinking of "choosing easy-to-tax and easy-to-collect areas" to propose the increase of environmental protection tax also needs to be changed.

THE IMPACT OF THE ENVIRONMENTAL PROTECTION TAX INCREASE FOR PETROLEUM

Many international and domestic studies have shown the negative impacts of in-

creasing petroleum price on industries such as agriculture, fisheries, transportation; small and medium-sized enterprises (SMEs), middle-income and low-income groups are also the most negatively affected by petroleum price increase.

As proposed in the draft Environmental Protection Law (amended), the current double tax rate increase, according to the Ministry of Finance's argument, would not affect the price of petrolium and businesses; but clearly, when introduced into the Law and passed, this tariff will be the legal basis for increasing taxes in the upcoming time. Tax increase will result in higher petroleum price. Because petroleum is still an essential input for many economic sectors as well as for people's livelihoods (demand is inelastic to prices), consumption will not decrease significantly, so the level of negative impacts on the environment does not drop. However, the increase in gasoline price will result in higher cost in production, transportation, circulation and distribution... The price rate increase will lead to inflation, reduction in domestic consumption, the competitiveness of enterprises and the attraction of investment environment, increase in inequality among population groups.

In order to receive the support of citizens and businesses to ensure the feasibility of the Law, a more cautionary (socio-economic) impact assessment should be made on proposals in the draft amended Law, in particular, the adjustment of the double tariff for gasoline, oil and grease, to forecast the impacts and measures to prevent negative impacts; evaluation can be conducted before promulgation of tax rate without having to waiting until after the issuance of new tax rates.

THE USE OF ENVIRONMENTAL PROTECTION TAX REVENUE

According to the report by the Ministry of Finance, the environmental protection tax revenue has steadily increased over the years. In 2016, after adjusting the environmental protection tax rate from VND 1,000/l to VND 3,000/l, the total environmental protection tax revenue has reached VND 42,393 billion, accounting for 4.08% of the total budget revenue. However, spending on environmental protection is still lower than the revenue - although the specified level is not less than 1% of total state budget expenditure and gradually increases with economic growth. Specifically, total expenditures for environmental protection in 2015 were VND 11,400 billion (less than half of the revenue of VND 27,020); VND 12,290 billion in 2016 (only over a quarter of the revenue). In the period of 2011 - 2015, expenditures on environmental protection reached VND 47,452 billion, only slightly higher than the total tax revenue in 2016. Among them, there are expenditures for economic activities of the Central budget, such as investigation and evaluation projects on land, geology minerals, water resources, sea and islands, etc. are the areas of natural resources sector and related economic activities. Thus, the actual expenditure for environmental protection is much less.

The Law on Environmental Protection Tax in 2010 and the draft Law on Environmental Protection Tax (amended) in 2017 only regulate the tax collection but do not cover any provisions regulating the management and use of environmental protection tax. It can be seen as a significant shortcoming that could degrade the trust of people and businesses about the transparency in the revenues and expenditure of environmental protection tax in the past time. Although it is possible to increase the environmental protection tax to compensate for the the import tax reduction according to the trend of revenue restructure, the draft Law still needs to supplement the provisions on management and use of revenues, ensuring sufficient expenditures for environmental targets, incentives for research, development and application of energy savings, carbon emission reduction technologies; switching to environmentally-friendly forms of energy and also regulating the transparency of revenues and expenditures from environmental protection tax so that people and businesses can easily follow.

SOME OTHER RECOMMENDATIONS

First, to consider other types of plastic products besides bags but also have environmental impacts as plastic bags; to regulate the equivalent tax rate at 10 - 12 Euros/kg or in bags, 0.7 - 1Euro/bag as many European countries do.

Second, to research on the tax calculation measure according to the environmental impact level of a product unit on pollutants such as SO_2, CO_2, mercury, phosphate. For example, if the tax on CO_2 is calculated at about $10 - 16/ton, the revenue from environmental protection tax from coal can be up to VND 45 trillion, petroleum is about VND 10 trillion, an increase of more than VND 13 trillion in total compared to the present.

Third, to propose to research and develop laws on other taxes than environmental protection tax to compensate for import tax; for example: The amended special consumption tax (excise tax), property tax... have been adopted by many countries, creating a large revenue but no draft law or proposal from the Ministry of Finance is included in the legislative program in the next 1 - 2 years.

Fourth, the amendment of the Law on Environmental Protection Tax will directly, deeply and extensively affect the people, businesses and environmental and socio-economic targets of the country. Therefore, it is not necessary to "race" in terms of time but need to continue to review and evaluate it comprehensively and thoroughly before promulgation. Ministry of Natural Resources and Environment should get opinions from scientists to contribute to the identification and expansion of taxable objects; the clarification of the scientific basis as well as the reality of the tariff and other proposals in the draft Law on Environmental Protection Tax (amended)■

COMMENTS ON THE DRAFT LAW ON FOREST PROTECTION AND DEVELOPMENT (AMENDED):

Consideration should be given to rehabilitation and improvement of biodiversity when changing the purposes of forest use

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▲ *Project owners who are allocated with land or leased land for conversion of forest use purposes shall have to pay money to the Forest Protection and Development Fund to conduct the return and reimbursement of biodiversity.*

Việt Nam is recognized as one of the countries that have high biodiversity in the world, with many types of natural ecosystems, organisms, rich and endemic genetic resources. The biodiversity in Việt Nam brings direct benefits to people and makes a great contribution to the economy, especially in agriculture, forestry and fisheries; it is the basis for ensuring national food security, maintaining genetic sources for breeding animals and plants… especially creating beautiful natural landscapes for the development of tourism. However, Việt Nam is facing the condition of environmental degradation and the decline of the ecosystems that influence the attractiveness of the tourism industry. In fact, there are many potential developmental activities that can cause pollution and environment degradation, the destruction of natural ecosystems and serious damage to biodiversity. Environmental Impact Assessment (EIA) is commonly used as an effective tool to prevent and mitigate these adverse impacts right from the stages of development project proposal and design. The proposed mitigation measures in the EIA are those that both aim at achieving project objectives and ensure the prevention or mitigation of negative impacts to an acceptable level, and to enhance environmental benefits. The purpose of mitigation in the assessment of impacts on biodiversity is to identify measures and options for the protection of biodiversity and associated ecosystem services, in which prevention is the priority, and (monetary) compensation is used as the last resort.

The conversion of forest use purposes, including natural forests, protection forests and production forests, for development activities in many cases is unavoidable to meet the needs of socio-economic development. Projects implemented at the site of converted forest land must comply with regulations on EIA, including the proposed mitigation measures; firstly, to avoid impacts on biodiversity by selecting and adjusting the design and increasing opportunities for biodiversity conservation when possible. If the impact cannot be avoided, it is necessary to determine the best feasible option to minimize the damage on biodiversity, to restore and improve the biodiversity at the affected sites.

Comply with the provisions of the Law on Environmental Protection in 2014 on the implementation of EIA for development projects, Decree No. 23/2006/ND-CP dated 3/3/2006 on the implementation of the Law on Forest Protection and Development of 2004 has a regulation on converting forest use purposes to non-forestry purposes as follows: "The agency that permits the conversion of forest purposes to other purposes must ensure the investment in new plantations to replace the area of forest that will be converted to other uses" (Clause 5, Article 29). This is the regulation on the application of measures to minimize the impacts on biodiversity through recovery of converted forest land area. However, attention has only been paid to the quantity (forest area) but not much to the quality which is the biodiversity value of the lost forest, thus not ensuring proper and adequate implementation of the principle of biodiversity conservation, especially not ensuring the principle of "no loss of real value" on the species composition, habitat structure, ecosystem functions, the use value, and cultural values related to biodiversity.

Biodiversity reimbursement has been applied in many countries in the world

to compensate for the negative impacts on biodiversity after appropriate preventive and mitigation measures have been taken. Biodiversity reimbursement is a special form of loss compensation for ecosystems, species and habitats in one site by increasing biodiversity at the other site with similar ecological characteristics, providing the opportunity to achieve better conservation results and no loss of real value of biodiversity.

Law on Environmental Protection in 2014, Article 35 stipulates that biodiversity reimbursement is one of measures to protect natural resources and environment when exploiting and using natural resources and biodiversity. As expected, biodiversity reimbursement will be stipulated more specifically when amending the Law on Biodiversity 2008.

As a result, the Law on Forest Protection and Development (amended) needs considering, supplementing and adjusting some relevant provisions to comply with the provisions of the Law on Environment Protection in 2014, while meeting the current reality of the Law on Forest Protection and Development in Vietnam.

Some supplementary and revised proposals in the Law on Forest Protection and Development (amended)

Additional explanation on the concept of biodiversity reimbursement is considered the following definitions: Biodiversity reimbursement is a measure designed to compensate for the negative impacts on biodiversity due to the implementation of development projects after appropriate preventive and mitigation measures have been implemented, with the aim of achieving better conservation results and no loss in real value of biodiversity.

To amend and supplement the regulations on the conditions for converting the forest use purposes to other purposes, in which there is the condition of "Having an alternative forest plantation plan approved by the competent state agency" should be changed to "Having plan on return and reimbursement of forest biodiversity according to the law on environmental protection in the exploitation and use of natural resources and the relevant regulations on biodiversity".

To supplement the provision on "Return and reimbursement of biodiversity upon the conversion of forest use purposes" with the stipulations that organizations, individuals or project owners that are allocated land or leased land for conversion of forest use purposes shall have to pay money to the equivalent provincial Forest Protection and Development Fund (PPFF) to conduct the return and reimbursement of biodiversity. Provincial People's Committee shall decide on the plan for return and reimbursement of biodiversity in the province. In the case where the province can not allocate the appropriate return and reimbursement of biodiversity in the province, they must transfer funds to the national Forest Protection and Development Fund (PPFF) for the implementation in other areas■

National plan for Stockholm Convention implementation issued

The Prime Minister has issued a national plan for the implementation of the Stockholm Convention on Persistent Organic Pollutants (POP) by 2025 with a vision to 2030.

The Stockholm Convention on POP is a global treaty, effective from 2004, to protect human health, biodiversity and the environment from chemicals that remain intact in the environment for long periods.

Parties to the convention are required to prohibit and/or eliminate the production and use of the intentionally produced POPs, and reduce or eliminate releases from unintentionally produced POPs.

In compliance with the convention's Article 7, Việt Nam shall develop a plan for the implementation of its obligations under the convention, review and update the plan on a periodic basis and transmit it to the Conference of the Parties. Its overall objectives are to ensure strict safety lifecycle management and proper treatment of the POPs and to reduce disposal and eliminate the production and use of the POPs in Việt Nam for the benefit of human health and the environment and towards the sustainable development.

According to the implementation plan, the government will work to improve institutional capacity and legal framework for the management and elimination of POPs. It will reinforce its expertise in monitoring, detecting and managing POPs and enhance awareness of the POPs and their harmful effects to the environment among involved parties.

The convention will also be integrated into relevant environmental agreements in response to the UN Millennium Development Goals and the country's management of waste and chemical as well as sustainable development strategy■

Trần Tân *(VNA source)*

Assessment of current status of hazardous medical waste management and solutions

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Along with industrialization and modernization of the country, medical environment management has made significant progress. However, the amount of medical waste generated from medical facilities is increasing that requires strengthened management. According to the World Health Organization, about 80% of the waste generated from medical facilities is normal waste and the remaining 20% is hazardous. Therefore, it is necessary to assess the generation, collection and disposal of medical waste to strengthen medical waste management and increase environmental protection.

REGULATIONS ON MEDICAL HAZARDOUS WASTE MANAGEMENT

After the National Assembly enacted the Law on Environmental Protection in 1994, the Government issued Decree 38/2015/ND-CP dated 24/4/2015 on waste and scrap management, in which medical waste is categorized as special waste with seperate and practical regulations. Then the Ministry of Natural Resources and Environment (MONRE) issued Circular 36/2015/TT-BTNMT dated 30/6/2015 on hazardous waste management. In the meantime, MONRE worked with Ministry of Health (MOH) to issue a joint-ministerial circular 58/2015/TTLT-BYT-BTNMT dated 31/12/2015 on medical waste management which provides detailed regulations on classification, collection and transport means of medical waste as well as legal guidance for medical facilities to perform self-treatment of hazardous medical waste treatment, hazardous waste logbooks and environmental records of medical facilities.

According to Clause 4, Article 49 of the Government Decree 38/2015/ND-CP dated 24/4/2015 on waste and scarp management, there are three types of current medical waste treatment.

Centralized treatment: In cities, big residential areas or where hazardous waste treatment facilties are available, medical hazardous waste is collected and treated centralizedly at treatment facilities which meet regulation requirements to ensure that the waste is completely treated causing no pollution. This is a common and effective model in many places. Following this model, hazadous waste treatment facilities shall comply with Circular 36/2015/TT-BTNMT to be eligible for being considered to receive hazardous waste treatment permits from MONRE before their operation.

Clustered treatment: A medical facilitie in the centre provides waste treatment services for other surrounding medical facilities. This is being applied in many places and suitable for small medical facilities which are close to each other. Therefore, it is not subject to complying with hazardous waste treatment procedures. However, it must be approved by Provincial People's Committees in their plans for hazardous medical waste collection, transport and treatment.

Localized treatment: This is applied in the areas without centralized or clustered treatment facilities or remote, isolated and mountainous areas. Legally, this must be approved by provincial Departments of Natural Resources and Environment (DONREs) in hazardous waste owner permits.

To address local shortcomings and obstacles, Circular 36/2015/BTNMT (Article 23) and Joint-ministerial Circular 58/2015/TTLT-BYT-BTNMT (Article 22) assigned DONREs to take

▲ *Hazardous medical waste shall be stored separatey before being transported to treatment facilities*

a leading role and cooperate with Departments of Health to submit to People's Provincial Committees for appoval of plans for hazardous medical waste collection, transport and treatment to tailor local situations and ensure legal compliance. So far, 14 out of 63 provinces and cities have issued plans for hazardous medical waste collection, transport and treatment, contributing to addressing shortcomings and obstacles in hazardous medical waste management at local levels.

Apart from these regulations, waste self-treatment medical facilities shall meet environmental technical standards such as QCVN 02:2012/BTNMT- National Technical Standards on medical waste incinerators, QCVN 55:2012/BTNMT- National Technical Standards on infectious medical waste autoclaving; and QCVN 28:BTNMT- National Technical Standards on medical wastewater.

STATUS OF HAZARDOUS MEDICAL WASTE TREATMENT OUTSIDE MEDICAL FACILITIES

As of 10/2017, MONRE has issued hazardous waste treatment permits for 107 hazardous waste treatment facilities, of which seven facilities have centralized hazardous medical waste treatment (only treat hazardous medical waste) in Hà Nội, Hải Phòng, Nghệ An, Quảng Nam, Bình Định, Hồ Chí Minh City and An Giang. These facilities mostly collect and treat medical waste generated within their provinces with common treatment capacities of 600-2,000 tons per year. In addition, some hazardous waste treatment facilities providing hazardous medical waste collection and incineration have been issued permits in Hải Dương, Quảng Ngãi and Nam Định with the incinerator capacity ranging from 100 kg/h to 2,000 kg/h. In 2016, licensed facilities treated over 11,600 tons of hazardous medical waste. The rest of hazardous medical waste is treated locally or clustered. The advantage of local and clustered treatment is that the waste can be treated right at source. However, the disadvantage is that if poorly managed, this can lead to pollution and negative impact on human health.

To treat hazardous medical waste, the facilities often apply two tier incinerators (primary and secondary). Using this method, hazardous medical waste is treated completely at the high temperature of 650-1,050°C. The emission is cooled down, transferred through dust filtering cyclone and pollutant absorbing towers. Some equipment has additional active carbon absorption towers. These incinerators must meet requirements of National Technical Standards QCVN 02:2012/BTNMT on medical waste incinerators.

▲ *Treating medical waste using microwaves to ensure meeting environmental standards by the General Hopsital of Cao Bằng Province*

In addition, some medical facilities or waste treatment facilities use non-incineration technologies to treat medical waste, include autoclave or microwave. These technologies are environmentally friendly and promoted to minimize toxic emissions such as dioxin and furan due to incineration. Furthermore, these methods reduce investment and operation costs compared to incineration. After being disinfected, the medical waste is treated as normal waste. As big hospitals have microbiology departments, autoclaving method can be easily controlled and applied compared with incineration. However, the disadvantage of this method is that the medical waste is not completely treated. The solid waste needs to be treated as normal waste. At present, one centralized medical waste treatment facility applies this method and has received MONRE's permits of hazardous waste treatment.

Although medical waste management has been promoted and achieved some good results, some shortcomings remain

- It remains difficult for medical facilities to clarify and comply with regulations on normal medical waste management, in particular on recyclable materials after being autoclaved. In addition, it is unclear whether environmental impact assessment is needed for clustered waste treatment facilities. So is the requirement for additional environmental impact assessment for installing environmental protection works for medical waste treatment of the medical facilities.

- Budgets for constructing medical waste treatment facilities are limited while demand for this investment is high. In addition, budgets for regular operation and maintenance for medical waste treatment are in shortage. Specific

regulations and cost norms for medical waste treatment have not been issued.

- Medical waste management is facing difficulties due to a large number of medical facilities (over 13,000 medical facilities at all levels and in various forms). Medical waste treatment staff in many places is part-time and have not met requirements. Regulations on medical waste have not been adequately disseminated.

- Awareness of patients and patients' family members on keeping public places clean and collecting medical waste is limited. In some cases, hazardous medical waste is mixed with normal medical waste. Some medical facilities transfer their waste to non-competent treatment facilities.

PROPOSED SOLUTIONS FOR MEDICAL WASTE MANAGEMENT IN THE FUTURE

To enhance medical waste management in the future, ministries and local authorities need to take the following measures comprehensively

- Continuing developing and completing regulations on medical waste management, in particular regulations on normal medical waste treatment, recycling and reuse of autoclaved medical waste, environmental records of clusters of medical waste treatment facilities and other technical regulations such as national technical regulations on medical waste treatment using microvaves.

- Developing enabling policies to encourage investment in environmentally friendly waste treatment technologies, supporting medical waste treatment in public partnership modalities to improve medical waste treatment capacity.

- Local authorities quickly develop and complete plans for hazaroud medical waste collection, transport and treatment base on their local planning and economic and environmental conditions.

- Enhancing medical waste minimization and source classification to ensure that hazardous and normal medical wastes are separately treated.

- Increasing propaganda and public awareness of governments, medical facilities and the public on medical waste management.

- Enhancing supervision, inspection and proper punishment on individual and organizations who violate medical waste regulations, in particular the discharge of untreated medical waste■

Prime Minister approves climate change, green growth programme

Prime Minister Nguyễn Xuân Phúc has green lighted the target programme to cope with climate change and promote green growth during 2016 - 2020. Its aim to improve local residents' abilities to adapt to climate change, boost green growth and transition towards a low-carbon economy. The programme includes 4 components: Implementing some targets of the Paris Agreement on Climate Change that Việt Nam ratified in November 2016, implementing projects to help local residents to adapt to climate change, issuing policies to assess and supervise green growth, and promoting green growth.

Under the programme, several prioritised projects will assist local residents in coping with natural disasters, especially focusing on Mekong Delta, coastal provinces and northern mountainous provinces. About 42 projects to grow mangrove forests in coastal areas and protective forests in other areas will be implemented during the period. The Ministry of Natural Resources and Environment acts in the lead entity responsible for coordinating with relevant agencies to implement the programme.

The programme, worth VNĐ 15.8 trillion (US $698 million), is financed by the State budget, local budget and other sources■

Bảo Bình *(VNS source)*

Recommendations for improving effectiveness of management and usage of ash, slag and gypsum of thermal power plants

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Developed countries encourage the use of ash, slag and gypsum from thermal power plants which meet technical regulations and standards for construction materials, cement additives, bitumen, ground levelling and road construction. In Việt Nam, some studies on using thermal power plants' ash, slag and gypsum for non fired bricks, cement additives, bitumen and transport works. However, at present, most of the power plants have not taken measures for reuse and treatment of ash, slag and gypsum, causing negative environmental impact.

ENVIRONMENTAL IMPACT BY ASH, SLAG AND GYPSUM FROM THERMAL POWER PLANTS

At present, nationwide 26 thermal power plants are operating with capacity of 13,810 MW, consuming about 47,8 million tons of coals per year and producing 16.4 million of tons of ash, slag and gypsum and gypsum. It is estimated that by 2020, there will have been 15 coal fired thermal power plants more with the capacity of 24,370 MW and the consumption of 60 million of tons of coals per year. Many power plants are discharging ash, slag and gypsum directly to the environment with potential pollution risks. In particular, a large ash, slag and gypsum storage site can cause leachate (wet ash, slag and gypsum), polluting soil and water. The amount of ash, slag and gypsum is increasing while storage capacity is limited. In addition, dust (PM2.5 and PM5) generated during storage and transport can cause air pollution if not properly controlled. Many plants have not finished ash and gypsum transport and storage as regulated, causing pollution. In addition, many plants have not proactively implemented ash usage plans to reduce storing areas and have not cooperated with entities to receive and recycle ash as production input.

In fact, the main reason for over stock of ash and gypsum in thermal power plants is a lack of technical regulation guidance for using ash and gypsum in ground levelling and construction materials. Some plants produce low quality ash which has met technical regulations issued by Ministry of Construction.

▲ *Cement and construction material manufactures need to increase the use of ash from thermal power plants, chemical and fertilizer production as their production input*

RELATED REGULATIONS ON MANAGEMENT AND USAGE OF ASH, SLAG AND GYPSUM

According to Article 40, Government's Decree 24a/2016/ND-CP on construction material management, owners of thermal power plants, chemical, fertilizer, cement production, metallurgy factories which produce ash, slag and gypsum and gypsum are responsible for classification and pre-processing to meet technical regulations. In case the facility owners are incapable of doing the job by themselves, they shall hire competent agencies for classifying and processing ash, slag and gypsum to meet standards of construction materials. At present, some plants are studying and constructing factories for classifying and preprocessing ash, slag and gypsum to meet standards for cement and construction materials.

To promote the use of ash, slag and gypsum of thermal power plants as construction materials, on September 23, 2014, Prime Minister issued Decision 1696/QD-TTg on some measures for treating ash, slag and gypsum and gypsum from thermal power, chemical and fertilizer plants. This regulation stipulates that the use of fly ash and artificial gypsums as construction materials shall follow national technical regulations on construction material products and goods. On 12/4/2017, Prime Minister issued a program for promoting treatment and use of ash and gypsums from thermal power, chemical and fertilizer plants as regulated in Decision 452/QD-TTg. According to this document, ash, slag and gypsum, FGD gypsum, PG gypsum (before or after being treated) meeting technical regulations for construction materials are considered as construction material goods and products and comply with regulations on products and goods.

At present, most of plants having ash have got certification from Construction Material Institute, Ministry of Construction) for using ash as input for cement production and transferred the ash to cement manufacturers. Owners of facilities discharging ash, slag and gypsum and those who treat and use ash, FGD gypsum and PG gypsum as construction materials shall comply with Article 40, Decree 24a/2016/ND-CP. In case ash and FGD and PG gypsums cannot be treated and used as construction materials, they shall be treated as solid wastes which are not recyclable. In addition, to minimize ash pollution, Law on Environmental Protection in 2014, Government's Decree 38/2015/ND-CP dated 24/4/2015 regulate that ash generated from thermal power plants shall be classified and follow MONRE's guidance on normal industrial solid waste. Reuse and recycle of solid waste, including the use of ash as production inputs are encouraged by LEP and Decree 38/2015/ND-CP. Recently, MONRE has issued documents to provide guidance for thermal power plants to implement these activities.

In case thermal power, it is impossible for chemical and fertilizer plants to carry out reuse, recycling and treatment of their ash within their own territories, they shall transfer the waste to competent authorities for transporting and treating normal industrial waste as regulated in Decree 38/2015/ND-CP as well as MONRE technical guidance documents. When transport the ash, the authorities shall not litter, create dust, odor or leachate to the environment and use record for delivery and receiving. Transporting entities shall be responsible for signing contracts and hand over all ash to receiving entities for proper treatment.

For ash receiving and using facilities, they need to comply with the following detailed regulations: receipt and use of ash shall follow the contents in approved environmental impact assessment reports, certified environmental protection plans or equivalent documents, and measures shall be taken to ensure that the ash reuse and recycling shall not create negative impact on the environment components of surface water, groundwater and air.

In addition, MONRE has provided guidance for dealing with the ash which do not meet technical standards for construction materials issued by Ministry of Construction or related agencies. According to regulations at Point a, Clause 12, Article 32 and Clause 2, Article 33 of Decree 38/2015/ND-CP, facilities wishing to expand their operations to include treatment of normal industrial wastes and not being subject to environmental impact assessment requirements shall draft action plans and submit to MONRE for approval before carrying out the plans. At present, MONRE has guided some provinces to assess and ap-

prove proposals on using ash as inputs for non-fired brick and cement production.

MEASURES FOR MANAGING AND USING ASH AND TRASH

For ministries and sectors

Ministry of Construction shall study and issue technical regulations and standards for treatment and use of ash and trash from thermal power plants as input for construction material production; direct cement factories to use ash and trash as substitutes for other convention production inputs. In the meantime, the Ministry of Construction shall publicize the list of thermal power plants producing suitable ash and trash for construction material production as well as the amount of ash and trash which have been used by cement, bitumen and other construction material manufacturers.

Ministry of Industry and Trade directs project owners and emitters and thermal power plant owners to draft ash treatment and management plans to submit to Ministry of Industry and Trade for approval. It is planned that by 2020, the area of landfills is not higher than the average production of two years. More specifically, existing plants shall submit plans by December 31, 2018 and proposed plants shall prepare and submit plans before starting operation. In the meantime, the Ministry shall urgently review the 7th master electricity plan to draft a road map for closing, phasing out and removing ineffective, outdated and polluting thermal power plants, in the meantime, carrying out research and development renewable and clean energy alternatives, reviewing and removing outdated and polluting technologies.

For other ministries: Ministry of Transport shall complete and develop standards, technical guidance and regulations on ash, trash and gypsums for materials for road construction. Ministry of Agriculture and Rural Development shall complete standards, guidance and technical regulations on use of ash, trash and gypsums as materials for irrigation works as well as for other agricultural infrastructure works. MONRE shall review and develop standards, technical guidance and regulations for ash treatment. In case ash cannot be reused and recycled, the ministry shall guide the ash generating and receiving facilities to comply with environmental protection requirements. It shall refuse environmental impact assessment reports if thermal power plants fail to present plans for ash treatment and disposal as regulated in Prime Minister's Decision 452/QD-TTg. Ministry of Science and Technology shall study and issue standards and technical regulations on thermal power plant technologies to scrutinize outdated and polluting technology import.

Provincial people's committees shall lead and cooperate with Ministry of Industry and Trade and other concerned agencies to confiscate landfill areas over two year storage capacity. They shall direct project investment owners using local state budgets to prioritize the use and ash, trash and gypsums. They shall cooperate with line ministries to inspect, supervise and timely deal with violators of regulations on management and use of ash, trash and gypsum as construction materials and works, timely taking measures to respond to obstacles.

For thermal power plants

Existing thermal power plants shall comply with Prime Minister's Decisions 1696/QD-TTg and 452/QD-TTg dated 12/4/2017. The plants shall proactively seek options for treatment and consumption ash and gypsums as construction materials. Proposed thermal power plants shall be requested to develop plans for ash treatment and consumption with a principle that ash and trash are resources. Measures for mitigation of ash impact shall be taken such as water spraying, ash compacting, water infiltration prevention, tree planting as well as other environmental protection measures, notably autonomous environmental monitoring and wastewater treatment.

For cement production, construction material manufactures and building investors

Cement production, construction material manufactures and building investors shall increase the use of ash which are certified to meet technical standards and regulations QCVN 16:2014/BXD- national technical regulations on construction material products) as inputs for cement and bitumen production. They shall need to meet water monitoring requirements■

Environmental standards in development of new-style rural areas: Challenges and prospects

Vũ Ngọc Lân

I recently visited a commune in the rural area of the northern delta region. Compared with the previous trip, this time, I saw that the roads had been concretised, the facilities (the commune's head office, school, clinical centre and meeting house) were upgraded and rebuilt and living conditions had improved for locals. As targeted for 2017, the commune was striving to achieve 19 criteria of the "new-style rural commune" standards. However, as I walked in the commune's fields and on its roads, it was clear environmental conditions had not improved. Along the main road that connects the upper and bottom areas of the commune, there was an exposed dry ditch 2m wide, 400-500m long and 1m deep. Waste water in the ditch was pitch-black as it came from households raising livestock. In addition, at the edge of the commune was a large area of some 100m2, surrounded by a 0.5m-high wall, where waste was collected. The area was filled with plenty of trash.

An environment team was hired to collect trash that was dumped along the way between houses, but the work had not been fully implemented due to several difficulties. People were required to burn the waste, but they could not burn it all, therefore, the waste area was getting filled. In particular, along the canals in the rice and vegetable fields, empty bottles and pesticide containers had been thrown. In addition, no birds could be heard singing in the commune although there were many trees along the roads, as the birds were shot down by the locals.

It is fair to say we have made a lot of achievements after six years of implementing the National Target Programme on New-style Rural Area Development. We have improved awareness of government officials, party members and locals about these issues, mobilised resources and collected ideas from people to strengthen infrastructure, improve the quality of local areas and enhance living conditions of nearly 70% of the country's population. Thanks to the programme, local authorities, organisations and people have gained more lessons on how to resolve difficulties and challenges, especially with considerable support from the Government.

However, during the implementation of the programme, there have been some issues that need fixing. On October 17, 2016, the Prime Minister issued Decision 1980/QD-TTg on the national standards of new-style rural commune for the 2016 - 20 period to amend the standards stated in Decision 49/QD-TTg, issued by the Prime Minister on April 16, 2009. In the latest set of standards, several criteria have been adjusted. The number of criteria on environmental protection has been raised from 5 to 8, including food safety, toilet and bathroom, clean water tank and environmental protection in animal husbandry. The latest set of standards also stresses on some issues such as the percentage of households using regulated clean water. The amendment of environmental protection standards for the development of new-style rural areas proves (1) environmental protection is of importance for the programme; (2) environmental protection criteria vary among communes, districts and provinces as circumstances can change during the development of local areas (industrial zones, handicraft villages, climate change, natural disasters, floods); (3) the Government has paid more attention to environmental protection in the development of new-style rural areas; (4) some updated standards require locals to raise their awareness about production, trading and daily living activities; (5) environmental protection becomes socialised, being able to mobilise resources from political-social organisations and enhancing supervision among local community, organisations, officials, people and party members.

When mentioning environmental protection in new-style rural area development,

▲ *Collecting wastes*

some people say environmental issues should be resolved by the Government and community, and they are not their concern. Till now, not everyone had realised we are breathing the same air, which is the basic need of every human being. Water, rivers, streams, ponds, lakes and underground water are valuable natural resources for every family and individual. Some households have no standardised toilets or the land is covered with pesticide, becoming a source of toxicants and waste, leading to diseases, especially cancer. Despite the Government having added new criteria to the standards of new-style rural area development, some criteria are proved to be qualitative only and not quantitative, such as the percentage of clean water; the percentage of collected waste; the percentage of socialised resources raised for environmental protection; processing wastes in animal husbandry and fishery; collecting and processing pesticide packages; and imposing sanctions on businesses that cause environmental pollution. If localities focus only on achievements or are goal-oriented in building NTM, without taking into account specific development criteria, particularly environment ones, failure is almost certain.

It is difficult for the local community to achieve new-style rural area standards. Awareness of locals is the key, but without deep, profound and inactive acknowledgement to reach the goals in a sustainable way, the work would be undone. If it is quite easy for the local community to meet standards on environmental protection in production, consumption, daily life activities; it is also hard for local authorities and regulators to monitor and supervise implementation and maintenance of the standards. The world market is huge and has a variety of products that are not registered with origin and food safety certificates, and these products will be boycotted. The European Union on October 23, 2017, issued a warning (yellow card) for Vietnamese seafood products as Việt Nam had not put in its best efforts to fight illegal fishing. If Việt Nam fails to improve the situation, its seafood products will be banned from being exported to the EU market. This is a lesson for the Government. Therefore, raising awareness of the local community on living in harmony with nature and protecting rural areas and the nation's traditional culture and activities are of importance for developing new-style rural areas and preserving Vietnamese culture for future generations.

Environmental issues exist in all aspects of society. It is hard for the local community and people to entirely achieve the standards for development of new-style rural areas as they are required to show long-term commitment and best efforts. Thus, for new-style rural area development in particular and society development in general, if the environment is well protected, it will be easy for locals to see great results and achievements■

Hotline launched to receive environmental violation complaints

The Vietnam Environment Administration has publicized a national hotline to receive public reports about environmental issues for anyone who wants to report or make proposals about activities, including releasing of waste into the environment and environmental violations by individuals and organisations, they can call the hotline number, 086.900.0660, or send an email to *duongdaynong@vea.gov.vn*.

The reports will be received by the Vietnam Environment Administration and sent to the administration's relevant agencies and the local environment management agencies to be verified, inspected and punished.

The hotline is open at all times and on all 7 days of the week, including national holidays. The administration will soon publicize the hotline numbers of provinces and cities. The setting up of the hotline number is part of the ministry's efforts in promoting the receipt of environment-related information from individuals and organisations. On October 10, 2017, Minister of Natural Resources and Environment, Trần Hồng Hà, signed a direction to this effect.

Following an increasing number of pollution cases and environmental incidents nationwide, and reports and proposals from the people and the media, the Minister ordered the Vietnam Environment Administration to set up and publicise a hotline number via the media and portals of the ministry and the administration■

Vũ Hồng *(VNS source)*

Historic meeting shows world is serious about mercury menace

As the mercury falls in Geneva with the advent of autumnal chills, the world is for the first time gathering to deal with the rising health impacts of the toxic chemical.

The Minamata Convention on Mercury, which entered into force last month, is holding its first conference of the parties from 24 - 29 September in the Swiss city. The goal is to protect people and the environment - by accelerating action on controlling mercury emissions from industry, banning new mercury mining, and reducing mercury use in artisanal and small-scale gold mining.

"The Minamata Convention shows that our global work to protect our planet and its people can continue to bring nations together," says UN Environment Executive Director Erik Solheim. "Together, we are cleaning up our act."

This concerted international action under the convention, which has 128 signatories and 76 ratifications, is an intensification of previous efforts such UN Environment's Global Mercury Partnership. And it comes not a moment too soon.

Human activities have doubled the amount of mercury in the top 100 metres of the oceans in the last 100 years, and we continue to release an estimated 2,960 tonnes every year. We are poisoning our planet, and so ourselves. The very name of the convention, taken from the worst mercury poisoning disaster in history, highlights the damage that the neurotoxin can cause.

In May 1956, following decades of dumping of industrial wastewaters into Minamata Bay, Japan, villagers who ate fish and shellfish from the waters suffered convulsions, psychosis, loss of consciousness and coma. The poisoning claimed the lives of 900 people, with 2,265 people eventually certified as suffering from mercury poisoning.

While there has not been a repeat of such a dramatic and localized incident, problems persist today across the globe. Several new reports released this year demonstrate the far-reaching and insidious nature of the health threat - which is particularly grave for unborn children and infants.

▲ *The Minamata Convention is holding its first conference of parties to reduce the use of the neurotoxin (Pixabay source)*

MULTIPLE THREATS

A study from IPEN, UN Environment and the Biodiversity Research Institute found mercury levels in women from four Pacific Islands, with a diet rich in fish, up to 11 times greater than the 1 ppm (parts per million) threshold for negative health effects. The study, which analyzed hair samples from women of child-bearing age, found that 96% of the women sampled exceeded the 1 ppm threshold.

"The information revealed to us that Pacific Island women appear to be at significant threat of mercury contamination through their food chain," IPEN researcher Lee Bell says. "This shows there is a global deposition of mercury to oceans, and that where people eat a lot of fish they are being impacted by those mercury emissions."

The problem is bioaccumulation. As inorganic mercury in our air, soil and water enters the oceans, aquatic microbes convert it to methylmercury - a form readily absorbed by sea life. At every step in the food chain, methylmercury loads increase until they reach levels as much as half a million times higher than in the water. And at the top of that food chain, more often than not, is us.

"What it tells us is that we need to dramatically alter and reduce mercury pollution and emission sources," Bell says. "So we need to ensure that all countries who have ratified the Minamata Convention endeavour to take very strong action to reduce their mercury emissions as soon as possible."

Mercury is also a major problem in artisanal and small-scale gold mining, where miners employ it to separate gold from ore - giving off toxic fumes when it is burned away.

According to UN Environment's new report, Global Mercury Supply, Trade and Demand, artisanal and small-scale gold mining has steadily increased (along with the spot price of gold) since about 2000. To meet the demand for gold, new mercury supply chains have emerged since 2011 in Mexico and Indonesia, with their combined mercury mining production estimated at 800-1100 tonnes in 2015.

A new report from the UN Environment-hosted International Environmental Technology Centre, the Global Mercury Waste Assessment, shows that mercury waste management is an additional part of the toxic puzzle.

The review of 30 countries finds many continue to manage mercury waste as part of municipal or industrial waste, and dispose of it as mixed waste in landfills or at open dumping sites - creating another route of exposure.

MULTIPLE SOLUTIONS

The Convention's work on addressing these sources, and many others besides, is particularly crucial given mercury's persistence once released to the environment.

"When mercury is emitted into the environment it can cycle and can impact health and ecosystems for a long time - so the sooner we reduce emissions the more those long-term impacts will be reduced," Ken Davis of UN Environment's Global Mercury Partnership says.

Other moves are afoot to address mercury - as well as other sources of pollution to the air, water, and land. Today, UN Environment is releasing a new report, Towards a Pollution-Free Planet, at the Minamata meeting. It lays out the scale of the challenge and points to solutions, which the UN Environment Assembly will take up later this year.

The assembly, set for early December at the UN Environment headquarters in Nairobi, will serve as a platform for governments, the private sector and civil society to bring the latest insights on how to achieve a pollution-free planet. It represents a critical opportunity to drive bold global commitments to beat pollution.

"The Minamata Convention and the UN Environment Assembly show that world is ready, willing and able to end the mercury menace," says Claudia TenHave, who heads up the Minamata Convention's secretariat. "Now we need to put in the work."■

Nguyên Hằng *(UNEP source)*

Top of the POPs: The world's most dangerous pollutants

Twenty-eight chemicals that cause health problems including cancer and reproductive disorders and sometimes death are banned or restricted under the Stockholm Convention, one of the most critical international agreements administered by UN Environment.

Known as persistent organic pollutants, or POPs, industry and agriculture has released these toxins over decades, and they have spread far and wide, even to the Arctic. They remain intact for years in the environment and "bio-accumulate" in organisms higher up the food web, including large fish and predators. They poison both people and wildlife.

Their effects also include allergies and hypersensitivity, damage to the nervous systems and disruption of the immune system. Some POPs are considered endocrine disrupters: by altering the hormonal system, they can damage the reproductive and immune systems of people and their children.

In force since 2004, the Stockholm Convention is central to global efforts to protect human health and the environment. Combating pollution is the focus of the UN Environment Assembly to be held in Nairobi in December.

DICHLORODIPHENYLTRICHLOROETHANE (DDT)

The discovery of dichlorodiphenyltrichloroethane's effectiveness against insects won Swiss chemist Paul Müller a Nobel prize in 1938. For years, it was used with great results against malaria-carrying mosquitoes, typhus-transmitting lice and on farmers' fields the world over. But, as with other blockbuster pesticides, DDT was too good to be true. Rising concern about its impact on wildlife (it thinned the eggshells of iconic birds including the bald eagle and peregrine falcon) and humans made it a prime target of the emerging environmentalist movement in the 1960s. Identified also as a potential human carcinogen, the US outlawed the use of DDT in agriculture in 1972 and other countries followed suit until the convention extended the ban worldwide. Some exemptions are still allowed for fighting malaria.

▲ *Here are some of the dangerous substances covered by the convention*

POLYCHLORINATED BIPHENYLS (PCBS)

Though banned in some countries as early as the 1970s, the amount and persistence in the environment of polychlorinated biphenyls is so great that these industrial chemicals remain a worry nearly a half-century later. Prized for their stability, they found a wide array of uses including as coolants, hydraulic fluids and lubricants, and as additives in paint, paper and plastics. Large numbers of people have been exposed to them through food contamination. PCB-laced rice oil poisoned thousands of people in Japan in 1968 and in Taiwan in 1979. Symptoms included pigmentation of nails and mucous membranes and swelling of the eyelids, along with fatigue, nausea, and vomiting. In North America, studies showed that children of mothers who ate large amounts of contaminated fish from Lake Michigan had poorer short-term memory function.

HEXOCHLOROBENZENE (HCB)

Introduced in 1945, hexochlorobenzene is a fungicide that was widely used on wheat and other crops. But when people in eastern Turkey ate bread made with treated seed grain in the 1950s, thousands of them fell ill and hundreds died. Many were affected by a liver condition that resulted in skin lesions. Breastfeeding children whose mothers had eaten tainted bread died while suffering from a condition known as "pink sore". Decades later, researchers found that HCB levels in the breast milk of affected women was still elevated. The chemical causes cancer as well as reproductive failure in animals and is therefore considered a possible carcinogen for humans. It has been found in food of all types. One study of Spanish meat found it in all samples.

HEXACHLOROCYCLOHEXANE

Hexachlorocycohexane and related pesticides including Lindane are among the many POPs that have accumulated in the Arctic, many thousands of kilometres from where they were produced. Currents in the atmosphere and the oceans as well as food webs topped by species including seals and whales have deposited them there over decades. Now climate change is causing the release of these toxins from ice, snow and frozen soils, where they have been trapped since the last century. This story could have a worrying epilogue for the Arctic's indigenous peoples. Their diets typically include large amounts of fish and wild foods that are high in fat - exactly where concentrations of these dangerous compounds are highest.

HEXABROMOCYCLODODECANE (HBCD)

Hexabromocyclododecane, or HBCD, is a relatively recent concern, and one of 16 chemicals added to the convention since it came into force. Like several others, it has been prized mainly as a flame retardant. Since the 1980s, it has been added to polystyrene foam insulation boards used in construction. It has also been used on textiles, including tatami mats and bean bags, and in electrical equipment such as fridges. Releases of HBCD to the environment - during manufacturing, use and disposal - were still increasing a few years ago and a lot of it is still out there in buildings. Significant levels of HBCD in human milk and exposure through food has been reported near local sources. The main risks are possible neuroendocrine and developmental disturbances, especially in young children. It is considered very toxic to aquatic organisms and studies suggest it could severely affect neuroendocrine systems in mammals. Researchers have found high concentrations in terns and falcons around the British Isles, in mandarin fish and grass carp in China's Yangtze River, and in Svalbard's polar bears.

Phạm Đình
(UNEP source)

The rights of rivers

History was made in March this year when the high court of Uttarakhand in northern India recognized the rivers Ganges and Yamuna as a living entity "with all corresponding rights, duties and liabilities of a living person".

Both rivers are highly polluted. Every day, an estimated more than 1 billion gallons of waste flow into the Ganges alone, coming from sewer drains, leather tanneries, squat toilets, and elsewhere. The Yamuna, its main tributary, is also tainted with sewage and industrial pollution and has stagnated in some places. Experts say most of the sewage treatment plants near the rivers are not functioning as they were designed to.

Sceptics point out that the high court's decision cannot stop the discharge of waste to the Ganges and Yamuna immediately. Even the Indian Prime Minister Narendra Modi's ambitious Namami Gange (Obeisance to the Ganges) cleanup campaign has met with mixed success. Claims that industrial pollution has already fallen by a third since its launch are contradicted by reports from media on the ground. Some experts have attributed the failure of official campaigns to neglect of the management of river basins, lack of governance of water resources and non-participation by local communities.

Restoring Europe's Rhine, which is half the length of the Ganges, took almost three decades and reportedly cost $45 billion. Yet the budget for Namami Gange is about $3 billion over five years and money allocated since 2014 has been only partially spent.

Environmental activists point out that merely announcing that the Ganges and Yamuna are a living entity will not save them. They say that officials, polluters and citizens need to act in unison to clean up the rivers and stop further pollution. Our foundation's ground-level experience has revealed a dire need for capacity building among all stakeholders in order to keep the river free from pollution. There is a need for specific emphasis on changing cultural attitudes, which have long held the Ganges to have self-purifying properties.

RIVER GANGES

Many environmental activists and legal experts also point out that both central government and the states through which the rivers flow have enacted laws to deal with pollution. They question how the court ruling is going to solve the problem. This also raises the question of whether both the rivers have been suffering for want of legal protection or lack of ability to initiate action against polluters. They also emphasize the need to examine whether the high court, by appointing guardians to sue polluters on behalf of the rivers, has unwittingly enabled victims of pollution and other damage to sue for compensation.

Furthermore, some legal experts say the high court judgment was myopic in granting guardianship of the rivers only to Uttarakhand, along with central government, while ignoring the interests of other states through which they flow. The Ganges flows for 2,525 km through Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal, with just 96 km in Uttarakhand, while just a small part of the 1,376 km Yamuna - which also runs through, Haryana, Himachal Pradesh, Delhi and Uttar Pradesh - is in the state.

Despite scepticism about its impact, the high court's decision does reflect a sense of urgency in endeavouring to rescue two very important rivers from rampant pollution. It provides an opportunity to lay the foundations for progressive and democratic legislation that recognizes that the rivers are commons and need to be seen as an integrated whole rather than owned and managed in pieces by different agencies. and that there must be democratic representation and participation by the communities whose lives are linked with them.

Thus, there is an opportunity to be seized by all stakeholders in pushing for a deeper, wider dialogue, and for appropriate legislation to transform the challenge of pollution into an opportunity to restore the pristine glory of these, and other, rivers■

Châu Long *(UNEP source)*

▲ *Despite drawbacks, a pioneering court judgment in India provides an opportunity to clean up vital rivers*

Impact of transport on the environment and proposed solutions for green house gas mitigation

Phạm Thị Huế
University of Transport Technology

In recent years, the transport sector has made significant contribution to socio-economic development of the nation. However, it is also the third largest greenhouse gas (GHG) generators, following energy and agriculture, accounting for 18.38% of the total GHG. To mitigate GHG, the transport sector has been gearing toward environmentally friendly and sustainable approaches.

TRANSPORT EMISSION - GHG SOURCE

According to Transport Development and Strategy Institute, in the period of 2011 - 2016, transport activities consumed a large amount of energy, accounting for 30% of the national energy demand, 60% of the consumed energy and this increased by 10% per year. The road transport consumes energy the most, accounting for 68% of energy consumption of the sector. About 90% of the transport fuel is petrol and diesel (only 0.3% is clean fuel). With the high energy consumption rate, the transport sector has emitted a large amount of GHG, causing climate change. At present, the transport sector produces about 30 tons of CO_2 per year, of which road transport accounts for 86%, and the rest (railway, waterway and airway) accounting for 14%.

Transport activities generate a large amount of dust, CO, NOx, SOx, petrol fume, lead dust and benzene, causing air pollution. In particular, dust concentration in the 2nd quarter of 2016 in intersections in big cities such as Hà Nội, Hồ Chí Minh, Hải Phòng and Đà Nẵng were 3 - 5 times higher than the permissible levels. CO and NO_2 average daily concentrations in some big intersections also were 1.2 - 1.5 times higher than the permissible levels. Statistics shows that vehicle emissions depend on vehicle quality. Low quality used motored bikes and vehicles have inefficient fuel consumption and generate high levels of air pollutants. These are the main cause of air pollution. In particular, motored bikes are the main polluters of CO. Coaches and trucks generate NO_2 the most. In addition, transport noise also is the main noise pollution source.

GHG MITIGATION SOLUTIONS

To mitigate negative environmental impact by the transport sector, Minister of Transport recommended the implementation of programs and projects on improving fuel consumption by transport means. Notably is the project eco means system control (EMS) implemented in Hà Nội in 2017 with the objective of improving driving skills and eco driving attitude for taxi drivers. In the meantime, a control system will be installed in taxies to monitor and assess feasibility and effectiveness of GHG mitigation. It is estimated that the EMS will help improve 10% of fuel consumption, and hence if 1,000 taxies participate in the program, 1,000 tons of CO_2 will be mitigated per year.

In addition, Ministry of Transport is implementing a project to convert from diesel to compressed natural gas (CNG) for road vehicles with the 1st application for buses in the whole country. The project is being piloted in Hồ Chí Minh city with 50 buses coded 1 using CNG having a route of about 9km between Bến Thành and Chợ Lớn. According to Department of Transport of Hồ Chí Minh City, during the pilot phase, the tested buses are found to go smoothly with the reduction of air pollutants by 53 - 63%, CO_2 by 20%, and no black smoke or dust. The fuel is found to be burn completely, saving 30 - 40%. It is expected that by the end of 2017, there will be 800 buses using CNG in Hồ Chí Minh City.

▲ *Hồ Chí Minh City invests in new buses using clean energy, contributing to pollution mitigation*

To achieve that target that by 2020, the country will have had 5 - 20% of buses and taxies using CNG, liquefied petroleum gas (LPG) and solar energy (as stated in Decision 1456/QD-BGTVT on Ministry of Transport's action plan for responding to climate change period 2016 - 2020, the transport sector need to take the following measures

- Planning for transport infrastructure development towards pollution mitigation: Based on this, road planning for big cities will be completed to facilitate transport commuters. In the meantime, it is necessary to mainstream GHG mitigation into master plans and investment and development plans for the transport sector. In addition, policies and mechanisms for promoting energy saving transport means will need to be issued.

- Implementing transport means emission control and inspection: Strengthening inspection and check points to ensure that motored bikes will be regularly maintained, repaired and checked to meet emission standards. Violators will be issued administrative fines.

- Applying smart transport technologies and green transport technologies to reduce GHG in transport: In the meantime, it is necessary to review and remove step by step outdated and inefficient technologies and equipment. Piloting and scaling up the use of renewable energy and energy saving technology (solar battery and LED lights) in traffic lights.

- Transport sector needs to issue policies to encourage individuals, organizations, and businesses both domestic and overseas to contribute financially for GHG activities.

- Enhancing propaganda and public awareness on GHG mitigation in transport: Disseminating information on GHG mitigation measures such as reducing private transport means and increasing clean energy use■

Geotechnical materials - Effective solutions for landfill pollution

At present, in Việt Nam, landfilling is the most common solid waste treatment method. However, in many localities, landfills are facing a problem of overloading due to increasing amount of solid waste generated while these landfills are unsanitary and needs upgrading. To address landfill pollution and mitigate negative impact on human health, applications of geotechnical materials have been widely applied in many countries. To have better understanding about this issue, Vietnam Environmental Administration Magazine (VEM) has interviewed Chief Representative of GSE Group in Việt Nam, Trần Ngọc Hưng.

▲ **Mr. Trần Ngọc Hưng**
Chief Representative of GSE Group in Việt Nam

✶***VEM: Can you give some information on GSE Group and advantages of its geotechnical materials distributed in Việt Nam?***

Mr. Trần Ngọc Hưng: Established in 1972 with its head office in Texas (US), GSE is the top business in manufacturing and delivering geotechnical materials. Geotechnical materials are synthesized materials used for stabilizing and strengthening soil ground and often are synthesized macromolecules (polymer with big size and weight molecules). Geotechnical materials include geotechnical covers, geotechnical nets, water proof canvas, synthesized clay, permeable nets, and geotechnical cells. Being macromolecule compounds, geotechnical materials are suitable for strengthening soil ground and durable. Geotechnical materials are widely applied in construction, transport, geology, environment, water resources and aquaculture. These materials can be used outdoors or underground.

In the past years, GSE has provided geotechnical materials for many big environmental works and projects in the world such as Peninsular landfill (Malaysia), Duke Energy cinder site (US), Corai Landfill (India), and mineral ore waste site Queensland (Australia). At present, GSE has seven manufacturing sites in America, Europe, Asia and Af-

▲ *Geotechnical materials used for consolidating road grounds in weak soil structure such as wetlands, dykes, irrigation systems and embankments*

rica. In Asia alone, GES has two factories in Thai Land and China. GES is producing pioneering products such as conductive impermeable canvas, mixed permeable panels and thermal power plants solid waste underneath layers.

Geotechnical materials provided by GSE have good quality, stability, endurance (hundreds of years), advanced design and meet technical requirements of each works and mitigate environmental risks. With exceptional production capability, GES can provide geotechnical materials at a short notice to meet requirements of construction periods and other technical requirements. All GSE products are subject to biophysical standard review by internationally standardized laboratories before being delivered to customers. Therefore, GES is the first choice to ensure that landfills meet environmental and health requirements.

✶VEM: What is your assessment about applications of geotechnical materials in landfills in Việt Nam? Compared with other countries, what are advantages and disadvantages for Việt Nam to apply geotechnical materials?

Mr. Trần Ngọc Hưng: Applications of geotechnical materials remain limited. In my opinion, only 25-30% of landfills in Việt Nam meet construction technical standards. These standards are lower than those of Thailand, China, Singapore and Malaysia. In addition, after being closed, the landfills do not receive due attention for their environmental treatment, causing air pollution and bad odor in surrounding community. Việt Nam has advantages in developing geotechnical materials. Given that the Government of Việt Nam attaches importance to environmental protection, geotechnical materials stand a good chance to be more widely applied to help mitigate pollution. Vietnam investors and environmental managers can apply geotechnical materials which have been tested and applied successfully in other countries. However, a challenge is high investment costs. Some investors may reduce the costs by using cheap and low quality materials.

✶VEM: What is your recommendation for promoting applications of geotechnical materials in pollution treatment in landfills?

Mr. Trần Ngọc Hưng: To ensure quality of landfills, it is important to select appropriate materials. Construction contractors should by suitable materials recommended by producers. In addition, they should use materials which could be tested and checked before finishing the contracts.

To promote geotechnical materials in Việt Nam, state management authorities need to issue specific technical regulations on design and building environmental works. These regulations need to be complied with during the whole project cycle. Environmental standards should be mandatory for all projects, in particular for landfills. In addition, domestic production of geotechnical materials needs enabling policies so that it can provide steady supply and reduces the costs. In the meantime, calling for overseas investors and producers to manufacture geotechnical materials in Việt Nam should be made, in particulars for well-known companies, to contribute to green, clean, beautiful and sustainable environment.

✶VEM: Thank you!

Giáng Hương
(Implemented)

GREENING INDUSTRIAL PARKS

A Case Study on South Korea's Eco Industrial Park Program

Special economic zones have played a critical part in South Korea's rapid industrial development over the past few decades, and have contributed to significant economic and social benefits to the country. However, this rapid development has also resulted in severe environmental degradation and consequential challenges to public well-being. Industrial Complexes (ICs), once the symbol of the Korean economic miracle, gradually became areas to avoid due to various forms of pollution, and businesses in those special industrial areas faced increasing public scrutiny and disputes over damages caused by their operation. Stimulated by the United Nations Conference on Sustainable Development in 2012 (Rio+20), the Korean government began introducing new environmental management measures harmonized with industrial growth. The Korean National Cleaner Production Center (KNCPC) launched the National Eco-Industrial Park (EIP) program in 2003, in line with efforts by the Ministry of Trade, Industry, and Economy (MOTIE) to promote innovative industrial development which simultaneously achieves environmental sustainability. A rather top-down implementation approach failed to attract private sector participation during the first two years of the program, resulting in few meaningful outcomes. This changed after the Korea Industrial Complex Corporation (KICOX) took over the role of implementing agency and adopted a new more engaging and business centric strategy. Business participation started picking up in the third year and eventually resulted in a surge in projects. KICOX also revamped the program with more specific goals and a three-phase implementation strategy, covering the period from 2005 to 2019. As of 2015, KICOX had received 595 project proposals, out of which 388 projects were funded for further research and development and 197 were constructed. Direct and indirect benefits of the program were significant. As a result of adopting cleaner production and Industrial Symbiosis (IS) facilities, projects yielded 6.48 million tons of carbon dioxide (CO_2) emission reductions and 1.09 million tons in reductions of other toxic gases from 2005 to 2014. New investments in R&D and industrial infrastructure development created 848 jobs, promoted technology development, and produced 56 new patents and 100 pending patents. As of 2015, participating companies also benefited from a windfall of KRW 1,848 billion (approximately USD 1,680 million) collectively, by saving resources or selling waste and by-products through IS systems. Several factors contributed to the success of the Korean EIP program. First, KICOX effectively utilized local experts and their networks to expand business and civil society engagement in the program. KICOX particularly invested a lot of effort in engaging and attracting resident companies in ICs, since their involvement was critical for the success of the program. Through close working relationships with industries in the ICs, regional EIP centers and designated local coordinators were able to build up communities of stakeholders based on commonalities such as industry or resource types. In order to stimulate business participation and investment in the program, KICOX focused on delivering quick wins and demonstrating economic profitability of EIP projects, especially during the early years of the program implementation. KICOX strategically utilized regional EIP centers to promote the EIP program and its benefits to strengthen business participation in the program. Success stories were widely promoted through both online and offline communications channels. The Korean government also employed an effective funding scheme to facilitate private participation and investment without causing fund recipients to become dependent or avoid accountability. The government provided funding to support R&D needs of selected project proposals, and funding levels were determined based on the size of the recipient company, the scale of potential impact, the degree of technological innovation, and other specific criteria

Also, various government programs supplemented private investments by offering special loans or grants, in most cases to support implementation of proven or innovative technologies or to reduce pollution and conserve resources. Despite its many achievements, the Korean EIP program has potential opportunities to improve. First of all, the program could focus on further enhancing environmental impacts of EIP construction. Emissions of CO_2 could be reduced further relative to from the implementation of the program is not so significant when considering the overall emission from the industrial sector or the national greenhouse gas (GHG) reduction goal. In line with this, stronger measures could be adopted to support projects that are less economically viable but still environmentally beneficial. Lastly, cooperation and collaboration between national EIP implementation agencies and local governments needs to be strengthened and systematized to bring about more effective outcomes. National and subnational policy coordination is essential to make these changes happen■

An Bình

(Global Green Growth Institute source)

VIETNAM TEXTILE AND GARMENT INDUSTRY:

Promoting the implementation of cleaner production solutions to enhance competitiveness

Dr. Phùng Thị Quỳnh Trang
Hanoi Industrial Textile Garment University

With the development of the society over the years, the textile and garment industry has rapidly increased production outputs. This industry attracts a large number of employees, of about more than 2.5 million ones, with more than 5,000 enterprises. However, the development of the textile and garment industry also entails the consequences of environmental pollution. In order to improve production capacity, reduce waste and save on natural resources, the textile and garment industry has applied cleaner production solutions to change production patterns towards becoming more sustainable and environmentally friendly.

Vietnam Textile and Garment Industry is facing the problem of environmental pollution due to dyeing wastewater with large chemical residue. According to the study, in the dyeing textile wastewater there are substances easy for microbial dissolution such as tapioca flour using warp yarns, and those difficult such as polyvinyl acetate, disperse dyes, reactive dyestuffs and substances for fabric bleaching. The more synthetic fibers there are in fabrics, such as polyesters, the more dyes and auxiliaries, which are difficult for microbial dissolution, are used, resulting in higher amount of pollutants in the wastewater. In order to ensure economic and environmental benefits, the application of cleaner production has helped textile and garment enterprises save on energy, reduce wastes and reduce input costs and environmental treatment costs, at the same time, improve the quality and lower the price of products. In fact, many textile and garment enterprises have reduced from 20 to 30% of the pollutant load without any investment cost thanks to the application of gas emission treatment technology through boiler gas collection; using rational consumption norms of dyeing textile material sources. For example, the Hanoi Textile and Garment Joint Stock Corporation (Hanosimex), with its textile-fiber production operations, the primarily concerned environment matter is about emissions, dust and noise when spinning. To minimize pollution, from 2014, Hanosimex has invested 500 million VND to install inverters for ventilating fans and use energy saving bulbs. Thus, Hanosimex has saved over 4 million kwh/year, reducing 4,000 tons of CO2/year. At textile workshops, Hanosimex has invested in dust collector system at boilers using water, reducing 3- 5% air pollution and increasing boiler efficiency. Similarly, Tien Hung Joint Stock Company (Hung Yen) has installed two heat pumps to replace the boilers; used 35 LEDs to replace compact lights; installed inverters for pump system, etc. These devices have helped the company save 177.6 million per year of energy costs.

However, the current rate of application of cleaner production in textile and garment enterprises is not high, due to low awareness of enterprises. Some textile and garment enterprises stated that cleaner production was only related to sanitation and suggested that cleaner production could be costly for enterprises. In addition, because the investment in production (especially water and labours) is still low in many countries in the region, enterprises have not recognized the importance of increasing the efficiency of resource use. In addition, many enterprises do not understand the polluters pay principle and consider environmental protection a matter of the State. Enterprises also have not recognized the benefits of cleaner production and assumed that cleaner production is the construction of waste treatment system, which will increase the

▲ *Implementing cleaner production has helped textile and garment enterprises save energy and reduce waste*

▲ *The textile and garment industry needs to develop and implement a road-map for environmentally friendly technology innovation.*

cost. Besides, many enterprises still maintain the production technology systems that are obsolete and energy consuming, with limited technical capacity, resulting in no energy saving and causing high emissions. On the other hand, technical guidance in cleaner production implementation is often based on a network of consultants, but even cleaner production consultants are lacking in quantity and quality.

In order to become a strong economic sector with high and sustainable growth rate, in the coming years, the textile and garment industry should step up the implementation of cleaner production solutions such as strengthening the implementation of cleaner production consultation support for textile and garment enterprises through the Industrial Extension Centers. The State should adopt policies to encourage textile and garment enterprises to use cleaner production technologies and processes and gradually implement environmental management solutions. For companies, production units, especially private units, joint ventures, or 100% foreign capital companies in the dyeing sector, it is necessary to apply the management sanctions on dyeing textile material and fuel consumption norms; and the control of importation of machinery, materials, especially inert substances and dyes.

In addition, the textile and garment industry must develop an Environmental Impact Assessment reports in line with the sector's development strategy and environmental legislation; concentrate on thoroughly handling establishments which cause serious environmental pollution; set up textile garment industrial zones and clusters with concentrated wastewater treatment systems meeting environmental standards so as to relocate garment and textile establishments that may cause pollution. At the same time, it is necessary to encourage enterprises to apply environmental management standards in accordance with ISO 14000, creating a good working environment for employees according to SA 8000 Standard.

Particularly, the textile and garment industry needs to develop and implement a road-map for environmentally friendly technology innovation, enhancing the capacity of scientific and technological researches on the environment, etc. in order to meet the environmental and technical requirements for international economic integration. In addition, when Vietnam joins TPP, the "passport" for textile and garment enterprises is not only a standard on social responsibility, but also includes environmental standards; among them, the most common are the standards of green production, wastewater treatment, solutions for recycling of by-products arising in production, etc. In addition, it is necessary to encourage textile and garment enterprises to create a good working environment for employees.

However, for the successful implementation of the cleaner production program, one of the most important factors is that textile and garment enterprises need to set up a cleaner production task force. For large enterprises, the cleaner production task force can consist of a core team (including representatives of different departments) and some other members responsible for each specific task. For small and medium enterprises, the cleaner production task force may consist of only the enterprise owner and a manager who monitors daily activities. This group will be responsible for initiating, coordinating and monitoring the cleaner production assessment activity. In order to be effective, the task force basically must have sufficient knowledge to analyze and review current production practices of enterprises. Experts in the task force need to have innovation capacity to explore, develop and evaluate improvements in production practices, as well as implement monitoring and examining measures to increase waste minimization■

Việt Nam to develop natural resources, environment monitoring database

Prime Minister Nguyễn Xuân Phúc has approved a plan on the establishment of a national natural resources and environmental monitoring for 2017 - 2022. It will collect data on natural resources and environment monitoring provided by units under the Ministry of Natural Resources and Environment, other ministries, agencies, organizations and enterprises. Data will be collected from observation stations, periodically monitoring activities and monitoring data outside Vietnam's territory in line with international agreements and conventions.

The plan aims to establish a national natural resources and environment monitoring database, on the basis of the planning for the national natural resources and environment monitoring network from 2016 - 2025, with a vision through 2030.

Advanced technology will be used in data collection and management, facilitating information announcement and sharing, in order to serve policy making, socio-economic development, control and preventing natural disaster, ensuring national defence and security, and responding to climate change■

Phương Linh *(VNA source)*

Hà Nội to install additional 70 air monitoring stations

Hà Nội plans to install an additional 70 air monitoring stations to improve air quality, according to the municipal Department of Natural Resources and Environment.

The Department will work with the Consultant-AirParif Agency of France to invest in the installation of the air monitoring stations and to continue implementing the Technical Assistance Project for assessing the air environment status in Hà Nội, signed between the 2 agencies in 2016.

Department Director Nguyen Trong Dong said the Department had been operating 10 air monitoring stations funded by the Consultant-AirParif Agency. However, the stations did not entirely reflect the real air quality of the city.

Environmental pollution remained a challenge in Hà Nội. Slow implementation of investment projects for environmental protection, together with low public awareness of environmental protection and underdeveloped production technology, affected the environment's quality. In addition, rapid urbanisation and massive construction activities across the city, together with increasing number of vehicles, also contributed to air pollution.

Monitoring results show that many areas in the city have a high level of air pollution, such as Ha Dong, Hoang Mai, Cau Giay and Tu Liem districts. The level is particularly high at craft villages. Results from air monitoring stations show that the concentration of benzene at areas where these stations are located are 1.2 - 2.5 times higher than the permissible level.

To help improve the city's air quality, apart from installing more air monitoring stations, the department will also increase supervision of environmental protection activities and ask large-scale projects and production establishments that release waste to install automatic monitoring stations and transmit the results to the department for examination and supervision, according to director Dong■

Bích Hồng *(VNA source)*

Ninh Thuận lures investment in renewable energy

The south central coastal province of Ninh Thuận is trying to create favourable conditions to lure investment in developing wind and solar power towards ensuring sustainable development of the power sector and contributing to national energy security.

So far the province has granted investment licences to 8 wind power projects with a combined capacity of 514 MW, and total capital of 19.7 trillion VND (866.9 million USD). Construction work has started on four projects, namely Mui Dinh, Cong Hai 1, Trung Nam and Dam Nai.

The 40 MW-Dam Nai wind power plant was connected to the national grid in September with an initial 3 turbines with a combined capacity of 6MW in the first phase. The second phase will see the installation of 13 more turbines, expected to be completed in October 2018, raising the plant's capacity to 40MW.

Besides, the provincial People's Committee has granted approval to investment plans of three solar power plants and allowed 30 other potential investors to survey locations in the province.

The locality is completing its planning for solar power development from 2016 - 2020 with a vision to 2030 to submit it to the Ministry of Industry and Trade for approval, thus laying the legal foundation for attracting investors, and receiving investment from the central budget for the transmission network serving renewable energy production.

Incentives in terms of land, taxes and infrastructure will be offered to investors, according to the provincial Department of Planning and Investment.

Director of the Department Pham Dang Thanh said, renewable energy is identified as an advantage to create a boost to the development of other economic sectors, adding that every investment project has been considered on both socio-economic and environmental aspects.

Ninh Thuận aims to increase local wind power capacity to 1,429 MW, and solar power capacity to 4,848 MW by 2030. A survey by the World Bank has found that Ninh Thuận has the greatest wind speed of the nation, averaging 7.5 metres per second for 10 months a year, an ideal condition for developing wind power. The province also has the average sunshine duration of 7.7 hours a day■

Hồng Cẩm *(VNA source)*

Vietnamese media lauded for role in wildlife protection

The Vietnamese media was lauded for playing an important role in promoting the protection of threatened wildlife, heard a seminar held in Hà Nội on September 22 to reveal how media houses can incorporate social responsibility into their work and contribute to combatting wildlife crime.

Participants to the World Rhino Day seminar organized by TRAFFIC and Intelligent media agreed that a behavioural change was a useful approach to reduce the demand for illegal wildlife products in Việt Nam.

As stated by the Head of TRAFFIC's Việt Nam office, Madelon Willemsen, the media plays an important role in creating and shaping public opinion on topical global issues, such as illegal wildlife trafficking. The Vietnamese media plays a critical role in shaping moral values around the consumption and illegal trade of threatened species and in describing what responsible Vietnamese citizens must do to protect threatened wildlife worldwide.

Vice Director of the Việt Nam Chamber of Commerce and Industry (VCCI)'s Centre for SMEs Promotion, Lê Thị Thu Thủy, said that TRAFFIC and VCCI are creating a culture of zero-tolerance towards wildlife trafficking in the business world by engaging Vietnamese businesses, which will lead their peers in fighting wildlife crime.

Over the last decade, Việt Nam has regularly been identified as a transit country and consumer market for endangered wildlife products, such as rhino horn and elephant ivory. The on-going demand continues to drive wildlife poaching and trafficking, selling, buying and consumption of illegal wildlife products such as rhino horn■

Đức Anh *(VNS source)*

Promoting sustainable business solutions in Việt Nam

To follow the success of Vietnam Corporate Sustainability Forums, Vietnam Business Council for Sustainable Development (VBCSD) and Vietnam Chamber of Commerce and Industry (VCCI) organized in the 4th VCSF Forum with the topic "Scaling-up business solutions to sustainability challenges". On this occasion, Vietnam Environment Administration Magazine (VEM) interviewed Mr. Nguyễn Quang Vinh, VCCI Vice General Secretary cum CBCSD Vice President on sustainable business solutions in Việt Nam.

▲ **Mr. Nguyễn Quang Vinh**
Vice General Secretary of VCCI cum Vice President of VBCSD

✶VEM: In your opinion, what roles do corporates play in implementing Sustainable Development Goals?

Mr. Nguyễn Quang Vinh: First, it can be affirmed that in addition to Governments and international organizations' roles, businesses play a crucial role in implementing 17 Sustainable Development Goals (SDG) because businesses' activities have certain impact on human lives. In other words, SDG will not be implemented without businesses' participation.

Businesses are important and decisive for the national economy transformation. They are main driving forces of economic growth, created jobs and promoted innovation, renovation and technology development. In particular, private sector is one of the main state revenue sources which enable infrastructure development investment and public activities (health, education, poverty reduction…) and environmental protection, towards sustainable development.

At a national level, sustainable development goals are considered as a steering instrument for business development. Sustainable development has always been considered an important and main element of economic development in Viet Nam. Therefore, by working towards SDGs, businesses will heighten their status and gain trust from Government, clients and investors.

✶VEM: What do you think about corporates' SDG implementation in the period 2015 - 2017?

Mr. Nguyễn Quang Vinh: Two years after SDGs were approved by UN members in 2015, corporates' support for SDGs has changed remarkably. So far, 1,500 businesses have joined UN Corporate Sustainability Forum whereas in 2016 only 200 businesses participated. In particular, business community has been more aware about SDGs' opportunities as well as their potential risks. The number of businesses which have sustainability reports has doubled in the last five years with 90% of the total 500 big scale businesses having made sustainability reports. In addition, cooperation networks have been strengthened with close connections among businesses and nations.

However, businesses' influences on sustainable development remain limited, particularly in financial sector. Many businesses are struggling with understanding SDGs and in general sustainability awareness is not high yet at a global level.

✶VEM: In reality, what is the status of implementation of initiatives and models for sustainable business in Việt Nam?

Mr. Nguyễn Quang Vinh: More and more initiatives and models for sustainable business have been developed, including: doing business with low income households, recycling economy, sustainable value chain development, sustainability reports and corporate sustainability index. Many businesses have cut their emission by 99% of CO_2, stopped landfilling, used recyclable energy and recycled 98 - 99% of the byproducts. At present, VCCI and VBCSD are developing a program of supporting business to run a circular economy which is

▲ *Heineken Beer Việt Nam is ranked 3rd most sustainable corporate in production sector in 2016 by VCCI*

a new concept in Việt Nam and the world. It is estimated that this new business model can generate business opportunities the values of 4,500 billion USD per year. Therefore, Vietnamese businesses can benefit from a circular economy. A first activity by the program is an initiative "Stop littering" implemented by VCCI/VBCSD, Unilever Viet Nam, Coca Cola Viet Nam and Dow Chemical Viet Nam. This initiative is aimed at addressing plastic waste issues, mapping for sustainable business model development nationwide, value chain development and making policy recommendations for applying a circular economy.

In addition, social corporate model is a human and sustainable initiative. In Việt Nam, social corporates have become legal and encouraging economy entities. Many businessmen have opted for social corporate model to contribute to community development with the main objective of bringing happiness for everyone.

✶***VEM: To implement SDGs successfully, in addition to efforts by Governments, Ministries/Sectors, what do corporates need to do?***

Mr. Nguyễn Quang Vinh: As mentioned earlier, the global goals will not be achieved without corporates' participation. On the other hand, businesses also benefit from sustainability. According to a study by Sustainability and Business Committee, if sustainable development is considered a business's core strategy, achievements of the SDGs can open market opportunities of at least 12,000 billion USD in the four sectors of food and agriculture, urban areas, energy and materials and health. When estimated in all sectors, the benefit would be higher than 12,000 billion USD. Therefore, corporates should recognize that it will be costly not to follow sustainable development when sustainability benefits are foregone.

In addition, shortcomings of a traditional economy are causing numerous social and environmental problems and compromising future development. Business costs are increasing while business opportunities are decreasing. As governments are putting more pressure of sustainability implementation on corporates, not integrating sustainability into business strategies will pose legal risks in the future. I hope that corporate managers will consider SDGs as their responsibilities and keep up with sustainability information.

In the meantime, corporates need to understand their impacts on economy, society and the environment. They need to apply effective instruments (for example CSI) to run their businesses so that they can have a comprehensive vision in managing risks and develop business strategies in SDG views. This will help corporates with more success and sustainability as well as propaganda of implementation and progress of SDGs.

At a sector level, corporates need to work with each other and related agencies to integrate SDGs into the sector context and then develop a common vision for the sector and implement transformative initiatives. Corporates also need to introduce important policies as well as other support from governments and financial organizations.

✶***VEM: Thank you!***

Vũ Nhung *(Implemented)*

ADB loans support green cities in Việt Nam

The Asian Development Bank's (ADB) Board of Directors has approved US$170 million in loans to help the Government of Việt Nam upgrade urban infrastructure and address climate change, benefiting about 116,000 households in Huế, Vĩnh Yên, and Hà Giang cities.

More than 30 million people live in urban centres in Việt Nam, but the impact of urbanisation is uneven across the country. Unlike the capital Hà Nội and other highly developed urban centres, secondary cities - with populations of between 50,000 to 300,000 - such as Huế in central Việt Nam and Vĩnh Yên and Hà Giang in the northern part of the country are lagging behind. For instance, less than 60% of households in secondary cities have access to clean water and only 10% of wastewater is treated properly.

The Secondary Green Cities Development Project will help make these urban centres become more livable, environmentally friendly, and climate-resilient. Under the project, Vĩnh Yên City will see the construction of a new wastewater treatment system, 66.1km of drainage control being upgraded, the Đầm Vạc lake being dredged, and 44.5ha of new public green space developed.

In Huế, there will be 21.9km of drainage pipelines upgraded, 15.9km of road surface and drainage rehabilitated, and 17.2ha of green spaces developed, among others.

Hà Giang City will have 7km of urban drainage upgraded, 5.6 km of river embankments protected, and the urban road network enhanced to divert increasing traffic.

Apart from the loans, ADB will also administer a total of $14.1 million in technical assistance - with the Ministry of Natural Resources and Environment - and $6 million in grant investment from the Global Environment Facility and the Urban Climate Change Resilience Trust Fund. The technical assistance will mainstream a green and resilient city development approach across Government agencies through policy advice and capacity building, and replicate the approach in other cities in Việt Nam.

ADB, based in Manila, is dedicated to reducing poverty in Asia and the Pacific through inclusive economic growth, environmentally sustainable growth, and regional integration. In 2016, ADB assistance totaled $31.7 billion, including $14 billion in cofinancing■

Hồng Nhung *(VNS source)*

Finland will transfer clean water and renewable energy technology in Hà Nội

Finland will focus on transferring modern technology to provide clean water and renewable energy solutions to Hanoi, said Mr. Petri Peltonen - Deputy Minister of Economic Affairs and Employment of Finland, leader of delegation of the Finnish Democratic Republic at the meeting with the leaders in Hà Nội on November 6.

Vice Chairman of the Hanoi People's Committee Nguyen The Hung emphasized that, Finland's support in the first phase of the "Finnish Water Program in Hà Nội" has brought about good results. Since the 1990s, the Mai Dich clean water plant built by Finland has been still one of the best clean water plants, contributing to supplying clean water in the city in its development process. However, with about 10 million people, the demand for clean water in Hà Nội is still an urgent matter. The city is concentrating its resources to provide clean water with an average capacity of 180 liters/person/day. To ensure water resources, the city is going to stop exploiting groundwater, changing to use surface water and water collection systems from nature.

Therefore, Hà Nội always welcomes qualified investors to work and provides effective solutions to supply clean water. The Vice chairman of the city hopes Dutch investors will actively participate.

Regarding to renewable energy, Hà Nội would like to have clean energy from waste. Today, about 6,000 - 8,000 tons of waste are daily disposed in Hà Nội, mainly using landfill. The city is actively calling for investors, including Finland, to handle with this kind of waste by using modern technology to convert it into electricity and connect to the national grid■

Vũ Nhung

Second Annual Meeting of the Global Platform for Sustainable Cities

The Second Annual Meeting of the Global Platform for Sustainable Cities (GPSC) took place in New Delhi, India from 30/10 2/11/, jointly organized by the World Bank, other multilateral development banks and UN agencies. The meeting aimed to

bring together mayors, city leaders, experts, and representatives from financial institutions, organisations, UN agencies and private sector to learn and share best practices and principles in order to forge a common vision of urban sustainability.

The theme of the GPSC 2017 Meeting is "Innovation & Smart Solutions for Urban Sustainability". The meeting agenda includes a mayor's roundtable, high level panel discussions and a series of in-depth learning events to showcase innovative solutions to providing urban services, financing and investment.

Officials from related agencies and cities of 19 countries attended the GPSC 2017, including those from Brazil, Cameroon, China, Cote D'Ivoire, Denmark, France, Japan, Korea, India, Lebanon, Malaysia, Mexico, the Netherlands, Paraguay, Peru, Senegal, South Africa, Việt Nam and the United States. The Vietnam's delegation consisted of representatives from Ministry of Natural Resources and Environment (MONRE) and representatives from Hue and Ha Giang cities.

As part of a $150 million programme funded by the Global Environment Facility (GEF), the GPSC currently covers 27 cities across 11 pilot countries. In Việt Nam, in order to help 3 cities including Hue, Vinh Yen, and Ha Giang to refine, scale up and strengthen their foundation for promoting green city development, the GEF has funded $10.8 million to the project "Mainstreaming Climate Resilience and Environmental Protection for Secondary Green Cities Development". The project will be implemented in the period 2018 - 2023 and MONRE is the executing agency■

Lê Chính

WB delegation discusses wastewater treatment project in Bình Dương

A World Bank (WB)'s technical working group led by water resources management expert Abedalrazq Khalil held a working session with authorities of southern Bình Dương province on October 13 to discuss a project on wastewater drainage and treatment in Dĩ An town.

At the event, Khalil asked the provincial authorities to step up the progress of bid invitation approval and estimate of ongoing tender packages, as well as properly allocate capital for implementation of the packages.

Agreeing with requests of the WB delegation, Vice Chairman of the provincial People's Committee Tran Thanh Liem said his province always prioritises investing in wastewater treatment projects. The provincial Department of Construction and Bình Dương water supply and drainage company will accelerate bid invitation in line with law.

Invested by the provincial People's Committee, the project costs more than 115 million USD, over 92 million USD of which is provided by the WB. It aims to strengthen water resources pollution control in industrial and residential areas amid climate change, ensuring that Đồng Nai river basin could supply enough water to households in the southern key economic zone, including Hồ Chí Minh City and the provinces of Bình Dương, Đồng Nai and Bà Rịa - Vũng Tàu■

Gia Linh

France helps Hà Nội with air quality assessment

Hà Nội will roll out action programmes and plans to improve air quality in the city based on the outcomes of a French-funded air quality assessment project, said a municipal leader.

Chairman of the Hanoi People's Committee Nguyen Duc Chung made the statement at a reception for French Ambassador to Vietnam Bertrand Lortholary, Director of Airparif Frederic Bouvier, and Director of the French Development Agency (AFD) in Việt Nam Fabrice Richy in Hà Nội on October 17.

▲ *Hà Nội will roll out action programmes and plans to improve air quality in the city (Source: VNA)*

During the meeting, the 2 sides reviewed the one-year-old project, under which air monitoring stations were set up in Hà Nội. Chung called on Airparif, an agency in charge of monitoring air quality in Ile-de-France, to improve the quality of the monitoring stations, while publicising air quality assessments.

In September, Green Innovation and Development Centre (GreenID), a Hanoi-based NGO, released a report on air quality in Việt Nam in the first half of this year. It compared air quality in 2017's first 6 months and in the same period of 2016.

Based on the report, from January to June, Hà Nội suffered 139 days of excessive PM2.5 level, according to international standards. PM, or particulate matter, is a mixture of solid particles and liquid droplets in the air. PM2.5 particulates are about a thirtieth as thick as the width of a human hair and can pass through lung tissue and into the blood, harming human health.

The data showed no relation between the concentration of pollutants and peak traffic hours, meaning air quality has been affected by different pollution sources, notably the energy industry.

The Hanoi People's Committee in January launched an online service with information about weather conditions and environment indexes, including air quality index, rainfall and flooding.

Phạm Đình *(VNA source)*

Hồ Chí Minh City partners with JICA to mitigate gas emission

The People's Committee of Hồ Chí Minh City and the Japan International Cooperation Agency (JICA) held a workshop in the city on October 26 to review a technical cooperation project to support the planning and implementation of nationally appropriate mitigation action in a monitoring, reporting and verification manner.

Since 2015, JICA has partnered with the southern metropolis of Việt Nam to improve awareness and capacity of monitoring greenhouse gas emissions across the city. The amount of CO_2 in HCM City was estimated at 38.5 million tonnes in 2013, making up about 13% of the country.

Director of the municipal Department of Natural Resources and Environment Nguyen Toan Thang said, the department has proposed local authorities monitor greenhouse gas emissions biennially, starting from 2016, based on the guidance of the JICA. The city has joined the C40 Low Emission Vehicle Network to learn experience in coping with climate change from major cities around the world. In addition, HCM City has expanded its cooperative ties with Japan's Osaka city to carry out measures on waste treatment and ensure environmental hygiene.

Director of the Department of Hydrometeorology and Climate Change under the Ministry of Natural Resources and Environment Nguyen Van Tue said the project will be expanded to other localities. The ministry plans to use the JICA guidance as a reference for the implementation of the Decree building a roadmap for greenhouse gas emissions, which will be submitted to the Government in 2018.

An expert from JICA, Yoshihiro Mizuno advised HCM City and other Vietnamese localities to mitigate greenhouse gas emissions by reducing the use of electricity and fuel in buildings while installing solar energy systems on their roofs, using bus rapid transit and urban railways, collecting and recycling waste to create organic fertiliser and biogas■

Nhật Minh *(VNA source)*

ECONOMIC GROWTH IN CONNECTION WITH ENVIRONMENTAL PROTECTION AND IMPROVEMENT

The experience of Việt Nam

Assoc. Prof. Dr. Nguyễn Thế Chinh - *Director*
Institute of Strategy and Policy on Natural Resources and Environment

Economic growth together with environmental protection and improvement has a binding and complementary relationship. In order to protect and improve the environment, it requires to have the economic growth, creating opportunities for investment in environmental protection. Conversely, if environmental protection and improvement is properly done, economic growth is ensured to be stable and sustainable. The view on the close connection between economic growth and environmental protection and improvement, and the linking of these 2 categories for fast and sustainable development, has been directed by the Party since the beginning of industrialization and modernization of the country.

THE PARTY'S POLICY ON ECONOMIC GROWTH AND ENVIRONMENTAL PROTECTION

Sustainable development is a synchronized development among the economy, the society and the environment. To implement all these three pillars, economic growth must be connected with environmental protection and the proper measures for environmental protection issues are also a part of measures for social issues. This perception has become a guiding ideology throughout the policies and direction of the Party over the years.

From the awareness of the importance of economic growth connected with environmental protection and improvement, the Party has had basic policies with the following contents: Environmental protection and improvement must be linked, integrated and reflected in national, sectoral and local socio-economic development strategies and plans; Prevention is put the highest, combined with environmental improvement in the process of innovation, economic development of the country, to pay respect for the rules of the nature; Focusing on mobilizing investment resources for environmental protection and improvement, considering investment for environmental protection as the investment for sustainable development; Promoting the role of corporate social responsibilities and socialization for environmental protection; Harmonious settlement between economic growth and environmental protection and improvement in the process of perfecting the socialist-oriented market economy. The process of perfecting the socialist-oriented market economy requires the observance of the laws of the market and at the same time ensures social justice - placing human welfare in the focus and incorporating closely with the sustainable protection of the environment. This was confirmed in Resolution No. 11-NQ/TW dated 3/6/2017, at the 5th plenary meeting of the 12th Central Committee of the Communist Party of Vietnam on "perfecting the socialist-oriented market economy".

SOME MEASURES TO CONNECT ECONOMIC GROWTH WITH ENVIRONMENTAL PROTECTION AND IMPROVEMENT IN VIỆT NAM

In order to implement the policy for connecting economic growth with environmental protection and improvement, Việt Nam has been implementing a number of measures

To renovate the growth model, restructure the economy, improve the efficiency and quality of economic growth together with improving the environment and quality of life of people: According to the Resolution of the 12th National Party Congress on the 5-year socio-economic development plan (2016 - 2020), Việt Nam will focus on "accelerating the restructuring of the economy in line with the renovation of the growth model, improving productivity, efficiency and competitiveness", focusing more on quality of development beside the scope of development, especially investment in science and technology. In the content of environmental protection and improvement, the quality of life of people is the focus. Economic growth is associated with the use of energy, raw materials and input materials through measures to encourage the use of renewable energies, new and environmentally- friendly materials;

Implementation of sustainable development goals: Since 2004, Việt Nam has developed the Agenda for Sustainable Development in the 21st century, highlighting the role of environmental protection and improvement, and

▲ *VSIP Quang Ngai Industrial-Urban-Service Complex is a synchronous, harmonious and environmentally-friendly combination*

the effective use of natural resources for the economic growth. In December 2015, Việt Nam signed a commitment to implement the "Agenda 2030 for Sustainable Development" launched by the United Nations, and at the same time, deployed the Green Growth Strategy. To achieve the goal of green growth, the Party and the State have asked all levels and sectors to thoroughly grasp and strictly implement the economic growth connected with environmental protection and improvement. On the other hand, to further improve the law in order to enhance the effectiveness and efficiency of supervision, inspection, examination and handling of violations of environmental protection legislation.

To use economic instruments to gradually replace administrative measures for environmental protection and improvement: To apply the above measures in accordance with the market economy institution, as the economic instruments will regulate the behavior of enterprises and the people, ensuring the principle of market that "polluters must pay for causing pollution - or the PPP principle" and "beneficiaries of the environment must pay for the benefits - or the BPP principle".

Environmental damages and benefits must be fully accounted for in the economic growth targets: Environmental components must be accounted for value, including the functions of the environment contributing to the economic growth. Damages caused by pollution and environmental degradation must also be quantified by value. The accounting of the value of environmental components and functions, as well as the damages caused by pollution and environmental degradation, is considered as the basis for the development of satellite accounts in the national accounts system SNA, gradually converts the traditional accounting and GDP index statistics to green GDP based on the new national accounts statistics system, linking the economy with the environment under the new accounting system - SEEA, internalize environmental factors in the annual national economic growth targets. At present, Vietnam is in the process of studying and approaching the SEEA, targeting resources and the environmental components that must be included in the national accounts system for decision making and management.

To strengthen exchanges and learning from international experience, especially developed countries on the resolution on the harmonious relationship between economic growth connected with environmental protection and improvement: To study international experiences and reflect with Vietnam's development practice to take appropriate measures to implement economic growth connected with environmental protection and improvement that has been carried out so far.

SOME EXPERIENCES FROM THE PRACTICE

Over the past 30 years, Vietnamese economy has continued to grow; the issue of environmental protection and improvement is increasingly paid attention to. From the recent development of Việt Nam, it is possible to draw some lessons learned in dealing with the relationship between economic growth in connection with environmental protection and improvement:

To review and assess fully the issues of economic growth associated with environmental protection and improvement, which is the most important basis for identifying the problems to be solved, finding the causes and shortcomings from the reality, capturing the general trend of the region and the world: Regional and international contexts should be considered, in comparison with domestic practices for lessons to be learned and appropriate orientations and approaches to be taken. Việt Nam has signed a number of conventions, agreements, commitments... related to regional and global environmental protection and improvement;

Economic growth in connection with environmental protection and improvement is always a difficult and complicated issue: Although Việt Nam has paid much attention to environmental protection, the efficiency has not been achieved as expected. Pollution and environmental degradation is still on an increasing trend, forest areas and biodiversity have declined, especially the natural forests. The main cause is the high concentration on economic growth, with less attention to environmental protection. Therefore, in the coming time, it is necessary to have a more harmonious solution for both economic growth and environmental protection for ensuring good life for the people;

Initial successes can only be achieved if the correct perception on economic growth in connection with environmental protection and improvement is identified: In fact, in Việt Nam, if the correct market principles are applied in the implementation of economic growth in connection with environmental protection and improvement, the effectiveness could be tremendous. In particular, based on the principle of BPP in payment for forest environmental services, in recent years, Việt Nam has earned thousands of billion dongs to protect forests…

It should be resolved synchronously from awareness, policies and measures: Although there is specific guiding viewpoint, policies and task proposal, the process of implementation in practice is still having big gap in effectively implementing economic growth in connection with environmental protection and improvement. It is a matter of awareness, legalization, decentralization, supervision, inspection, monitoring... This is a series of work to do, each stage requires effective and practical measures to follow;

It is necessary to highlight the role of people, enterprises and economic sectors in the implementation process: Practical implementation of policies of the Party and State shows that the participation of people and enterprises have not brought into full play their internal forces and have not solved the problems brought about by economic institutions. Therefore, along with perfecting the socialist-oriented market economy institutions, there should be strong mechanisms and policies to promote the role of the people and enterprises, at the same time, promote the role of all economic sectors, to enhance social responsibility of enterprises in environmental protection. At present, Việt Nam is pursuing the policy of private economic development under Resolution No. 10-NQ/TW and Resolution No. 12-NQ/TW on further restructuring, renovation and improvement of state enterprise's efficiency in the 5th plenary meeting of the 12th Central Committee of the Communist Party of Việt Nam. Thereby, it will encourage all economic sectors to improve the efficiency of enterprises and at the same time to take responsibility in environmental protection.

To both implement and gain experience and gradually improve: Practices show that the implementation of economic growth in connection with environmental protection and improvement in Việt Nam has been on a trial and error basis. At the same time, to pro-actively prevent, anticipate "incidents", environmental issues must be a key principle for any plan or project of any scale, large or small;

The objectivity of the natural law, the linkage of natural components, especially in the implementation of socio-economic development planning, exploitation and use of natural resources should be emphasized: Việt Nam has had "costly" lessons in mine exploitation and hydro-power dam building. Therefore, in the economic development planning, it is necessary to look at the issue in advance and integrate environmental issues in the implementation of the strategy, planning and action plan. On the other hand, in the context of climate change, development activities must be based on the ecosystems, especially for the awareness of local managers and socio-economic development planners.

Economic growth in connection with environmental protection and improvement is the content of two closely linked, interactive and complementary categories. Therefore, Việt Nam needs to overcome existing constraints, get lessons learned in the future to implement sustainable growth■

Local community is key for biodiversity conservation

Prof. D.Sc. Đặng Huy Huỳnh
Vietnam Association for Conservation of Nature and Environment

In the past few years, the Party and the State have paid more attention to biodiversity conservation. This has been done by issuing policies on the management and conservation of gene sources, zoning and development of national parks and natural conservation areas and other matters.

However, the contribution of the local community is needed, in addition to that of the government to improve biodiversity conservation. The State needs to encourage the local community to grow food crops, herbal plants and raise wild animals to ensure biodiversity conservation in Việt Nam is carried out in a sustainable way.

Ex-situ conservation is one of the most important solutions that reduces the pressure on in-situ conservation and has positive impacts on biodiversity conservation. The government needs to encourage the local community to make more financial and physical efforts to preserve and enlarge the number of species, variety of breed and animalcules, while ensuring that the local community benefits from their actions. The successful expansion of the sika deer population in the 1980s and the preservation of Heritage Trees conducted by the Vietnam Association for Conservation of Nature and Environment have proven that the local community is of importance in biodiversity conservation and development.

At the moment, most animal and plant genes in Việt Nam are stored at local individual farms. A small number of businessmen in local areas have worked with scientists to breed and expand the population of wild animals and plants to develop the economy and preserve genes. They have succeeded in breeding some animals, such as Móng Cái and Tây Nguyên pigs, Phú Quốc ridgeback, ri chicken and Phú Thọ nine-spur chicken, as well as Đông Tảo chicken and Phan Rang sheep.

Besides the government's efforts to expand the population of monkeys and other similar species at the State-funded wild animal rescue centres, the local people also helped save other animals from extinction, including cobras, sika deers and porcupines.

However, this has sparked a debate among scientists and governmental regulators over whether local people should be permitted to breed and raise wild animals. This issue needs to be solved via a practical example from the local community.

▲ *Visitors at the Cúc Phương Primate Conservation Park - One of the centres that store rare genes*

▲ *Sika deer raising brings about high economic values*

In practice, the local people of the two districts of Hương Sơn and Kỳ Anh in the central-region province of Hà Tĩnh in the 1920s and 1930s began capturing wild deers to raise them in local farms. Acknowledging the economic and biological values that deers offer, the Institute of Ecology and Biological Resources under the Vietnam Academy of Science and Technology in 1976 co-operated with the National Institute of Animal Sciences to provide technical assistance for State-run and private farms to breed and raise deers. The career of sika deer raising has undergone many challenges to become an efficient job with the population of the species having increased by a dozen times, as compared to nearly 100 years ago. A similar example is the cobra, which was nearly extinct in the middle of the 20th century. But thanks to the encouragement of local authorities and technical support of scientists from the State's key science programme titled "Biology to serve agricultural economy development", breeding and raising cobras have spread across the country since 1981 and brought about positive economic values and practical benefits to the community.

Therefore, it can be concluded that biodiversity conservation will be sustainable if the relevant authorities are able to encourage the local community to get together and put in their best efforts based on appropriate policies and strict management mechanisms■

Implementation of targets for climate change response and green growth

Assoc. Prof. Dr. Nguyễn Thế Chinh, *Director*
Dr. Nguyễn Sỹ Linh
Institute of Strategy and Policy of Natural Resources and Environment

On October 31, 2017, the Prime Minister issued Decision No. 1670/QĐ-TTg on approving the National Target Program for Climate Change Response and Green Growth for the 2016 - 2020 period, demonstrating the determination of the Government in implementing the National Strategy on Climate Change and the National Strategy on Green Growth. The program aims not only to enhance the capacity for climate change response for people and eco-systems, but also towards the low carbon economy, enriching natural capital for sustainable economic development. On the other hand, the Decision's targets also demonstrate the specific actions to be taken by Vietnam to implement its greenhouse gas (GHG) emissions reduction commitments after 2020 at COP21 and in the Nationally- Determined Contributions (NDC).

Accordingly, by 2020, Vietnam strives to complete 30 transitional projects in the Official Letter No. 1443/TTg-QHQT dated 19/9/2012 of the Prime Minister approving the priority list under the Support Program to Respond to Climate Change (SP-RCC); to implement some urgent projects in Document No. 78/TTg-QHQT dated 16/1/2015 of the Prime Minister; to plant, rehabilitate 10,000 hectares of coastal mangrove forests, watershed protection forests, in order to adapt to climate change and absorb 2 million tons of CO2 per year, and create a stable livelihood for the people of the afforestation area.

In addition, Decision 1670/QĐ-TTg also sets out specific objectives for the 2 components

Climate Change component has 5 objectives: To continue implementing Decision No. 90/QĐ-TTg dated 12/1/2016 to build 1 climate change monitoring system and 1 salinity intrusion monitoring and forecasting system under the Master Plan on national monitoring network of natural resource and environment for the 2016 - 2025 period; To build and upgrade from 6 - 10 lakes with capacity of 100 m^3 for water regulation in the rainy season and prevent droughts in the dry season; To build and upgrade 6 - 8 salinity control systems in the Mekong Delta, 2 - 3 systems in the coastal areas; To upgrade 200 km of dykes, river embankments and critical coasts in areas of highly - vulnerable production and livelihood of over 3 million people in river and coastal areas; To develop a national database system on climate change and update national Action Plan to respond to climate change.

▲ *Works to mitigate the effects of high tides, floods and salinity intrusion due to the impacts of climate change in Kiên Giang*

Green Growth component has 6 objectives: By 2020, to reduce GHG emissions by 8 - 10% compared to 2010, reduce energy consumption per GDP by 1 - 1.5% per year; To build the Center for research, training, application and transfer of green building technologies in Việt Nam with the scale of 50 hectares; To replace 1,000 inland waterway signaling buoys using solar lights; To complete the intra-field technical infrastructure of irrigation area of 100 hectares, model of irrigation system towards Green Growth for rice production, experimental model research on the crops on land of 25 hectares; To invest 25 energy testing and auditing equipment units for the mining industry and 29 equipment units for other industries; To develop action plans for sectoral, regional and local green growth.

For the scope and components of the Program, Decision 1670/QĐ-TTg also specifies for each component: The implementation includes Ministries, sectors, socio-political organizations,

▲ *Construction of solar- powered light system in inland waterways*

the media, some research institutes, regions and provinces affected by climate change- induced natural disasters. Notably, in the Decision, there are 4 component projects in which the Ministry of Natural Resources and Environment is responsible for implementation of the Component Projects 1 and 2 related to Climate change; The Ministry of Planning and Investment is responsible for implementation of the Component Projects 3 and 4 related to Green Growth. Based on component projects, the Decision also contains annexes to specify detail tasks for 2016 - 2020 period for each component.

The implementation of Decision 1670/QĐ-TTg is mainly under the Ministry of Natural Resources and Environment and Ministry of Planning and Investment. In addition, it also involves the Ministry of Finance, the Ministry of Agriculture and Rural Development and the coordination of local ministries and sectors: Ministry of Construction, Ministry of Industry and Trade, Ministry of Transport and People's Committees of provinces and centrally- run cities.

The promulgation of the Prime Minister's Decision No. 1670/QĐ-TTg is significantly important in the period 2016 - 2020, indicating the work to be done, creating the premise for the next years in the implementation of the National Strategy on Climate Change and the National Strategy on Green Growth. On the other hand, the promulgation of the Decision also shows that the responsibility for fulfilling Vietnam's commitments at COP21 for climate change mitigation, being a country responsible for global issues related to Climate Change■

China's Green Special Economic Zone Policies - Development and Implementation

Over the past few decades, the People's Republic of China (China) has arguably experienced the largest economic expansion of any country in history, and this has been largely as a result of its efforts to launch and develop Special Economic Zones.

When China introduced the ground-breaking 'Reform and Open-Door' policy in 1979, SEZs were devised as the main tool to materialize the new experimental strategy. Initially set up in four coastal cities, SEZs quickly proved their success in attracting foreign investments and stimulating trade and industrial development. National and sub-national level SEZs and SEZ variants mushroomed across the country following the success of the initial models, and they eventually became the locomotive of the rapid economic advancement which brought China to its current economic prominence.

Rapid industrialization, however, has had devastating effects on the environment and on public health, particularly in most industrialized cities in China. This created high pressure on the Chinese government to take more substantial measures to promote more innovative and green economic development. Increasing competition for resources and weakened price competitiveness of Chinese products in the international market also pressed industries to adopt more sustainable means of production.

The Chinese government implemented a series of programs to stimulate green transition of industries and the entire economic value chain. The first, the Eco Industrial Park (EIP) demonstration program, started in 2003, aimed to promote transformation of conventional industrial zones into a resource efficient and clean model or construction of new industrial zones based on industrial symbiosis and clean production principles.

The Circular Economy Demonstration Industrial Parks (CEDIP), launched in 2005, was based on the same principles as the EIP program, including promotion of Reduce, Reuse and Recycle (3R) and emission reductions. However, it aimed to ap-

▲ *A special economic zone in Guangzhou City, China*

proach the Circular Economy within the broader context of promoting sustainable urban development around SEZs. China's adoption of Circular Economy as one of main themes in China's 11th Five Year Plan (FYP), China's mid-term development strategy for 2006 - 2010, further bolstered support for the CEDIP program. In 2012, the CEDIP program was replaced with the Circular Transformation of Industrial Parks (CTIP) program to support the 12th FYP and China's global climate change commitments, placing a strong emphasis not only on sustainable industrial zone development but also on the promotion of clean and high added-value industries such as new energy, clean vehicles, and information technology.

In parallel with CTIP, in 2013 the government launched the Low-Carbon Industrial Park (LCIP) demonstration program to operationalize China's new constitutional goal of 'ecological civilization'. The program stressed carbon monitoring and accounting and relevant infrastructure development in the context of promoting low carbon industrial zones.

Primarily thanks to strong national-level promotion by the central government, all of these programs have been deemed successes. The theme of Circular Economy and green industrial transition regularly appeared in the FYPs, providing a clear, high-visibility signal of the central government's support for these policies. These consistent messages facilitated uptake of the programs in the private sector, as well as voluntary participation by local governments. In addition, successful implementers and participants in all of the three programs received official certifications. Increasing participation in the programs created added incentives, as the growing number of SEZs generated greater competition among the SEZs to attract investment. Overall, an estimated 13% of 1,568 national and provincial-level SEZs now belong to one of the three programs, and 33 SEZs were participating in at least 2 programs as of 2013. The collective benefits of these SEZs were substantial, such as reduced toxic discharges, reduced greenhouse gas (GHG) emissions, and job creation.

Another success factor of China's green SEZ programs has been the central government's efforts to simultaneously build up appropriate policies and relevant market mechanisms, instead of focusing only on direct financial subsidies and tax benefits. The Chinese government began a project to mainstream environmental records as a principal criterion in accessing financial services and products, and has also concentrated its efforts in nurturing the Clean Development Mechanism under the United Nations Framework Convention on Climate Change. The government's effort to promote clear monitoring and evaluation standards and indicators also helped program participants understand and follow program requirements, and enabled the central government effectively review progress and determine how best to award subsidies or certification.

There have been some challenges in China's SEZ programs. Overlapping mandates between the three green SEZ programs and the lack of clear coordination mechanisms among participating ministries represent a few of these challenges. Additionally, local government capacity for managing GHG emission monitoring and accounting also needs to improve to more effectively integrate green industry programs with China's national climate change goals■

Huy Hoàng

(Global Green Growth Institute source)

In 10 years time trains could be solar powered

A technique has been devised that allows electricity to flow directly from solar panels to electrified train tracks to the trains themselves making solar powered trains more feasible than ever before.

▲ *An illustration of a solar train in action (Photograph: Esther Griffin)*

In the UK, solar could power 20% of the Merseyrail network in Liverpool, as well as 15% of commuter routes in Kent, Sussex and Wessex. There's scope for solar trams in Edinburgh, Glasgow, Nottingham, London and Manchester too, and there's no reason it should just be a British thing either. We're especially excited about possibilities in San Francisco, Mexico City, India and Spain, but trains and trams all over the world could be running on sun in a few years time.

There are a few solar stations - Blackfriars Bridge being by far the coolest - and some trains in India even have solar panels on their roofs, but that's just to power equipment like lights and fans. No one's moving the trains themselves with solar.

What's especially interesting is how our new innovation came about - in particular the role community energy groups have played in its development (often despite policy support, not because of it, or in response to policy constraints). As we know, there are also important questions to be asked about what role these community groups might play in its deployment.

The idea came from a community solar group in Balcombe, West Sussex who decided they wanted local, community-owned energy, and also that they wanted to go solar. Looking into places to site a solar farm, they initially found the local grid didn't have the capacity to take more solar. Searching for a way to solve that problem, they looked at the local railway and asked an engineering professor who happened to live locally, however the technical challenges to get there were a bit too much for a small scale community group to grapple with. So they found another solar site that could plug into the grid, nearby.

But when solar cuts hit the UK in 2015, we dug out the idea. What had been a possible local solution to Balcombe's grid capacity issues a while back could build into a larger opportunity for renewable energy everywhere. Community energy shouldn't have had to innovate at that point - renewable energy tech's pretty great as it is - but with the solar cuts so deep, and onshore wind effectively banned in England, the solar trains idea gave us options.

Looking ahead, it will be a few years yet before we're able to deploy the tech necessary to plug solar into trains. It needs building, and it needs testing. What's less clear is whether community groups will be involved as solar railways roll out. As they've been part of this from the get-go, they're super-keen. But it's all too easy for the public to be shunted to the sidelines when the big budgets and complexity of infrastructure projects get going.

It's common for public involvement to be seen as an inefficiency - in science, politics, finance, technology and more - a "nice to have" that takes too much time and effort when we're in the serious business of things like climate change, economics and keeping the trains running on time.

But the opposite is true, especially when it comes to climate action. It's the public who are driving change, often despite the actions of policy-makers.

Community energy offers a particularly powerful way to give members of the public a role in decarbonisation. Moreover, by tapping into their energy, enthusiasm and ability to bring other members of the public with them, we'll get it done faster, as well as fairer. If it wasn't for community energy groups coming up with this idea, pushing it forward and scoping out the places it could be utilised, solar trains would still be far more than a few years away■

Thu Hà

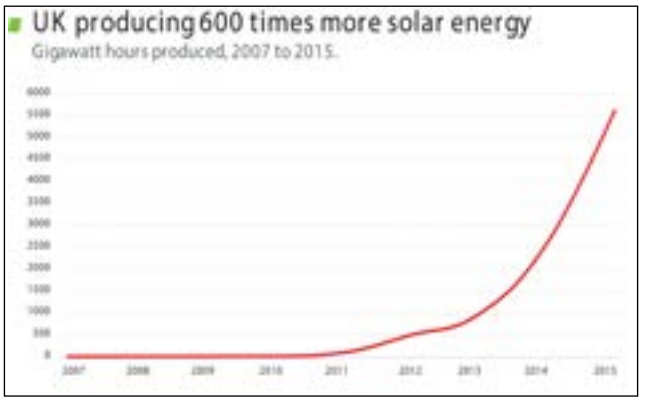
(The guardian source)

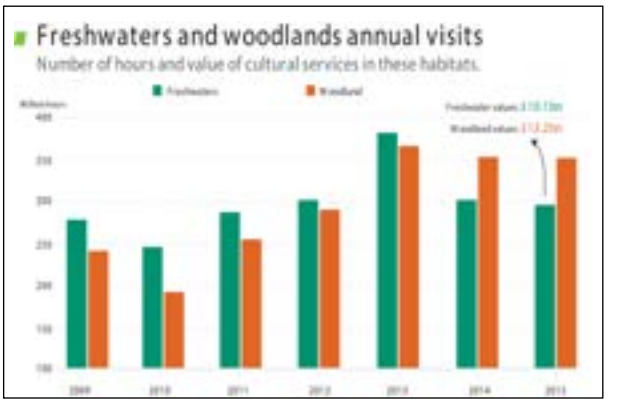
How Britain's ecosystems are cutting pollution, creating energy and growing the economy

The UK's ecosystems have helped the country in its energy production strategies, reducing pollution and increasing revenues from services provided, according to the latest data released by the Department for Environment, Food and Rural Affairs.

Farmland all over the country has been widely used to produce solar energy. The UK is required to meet an EU renewable energy target, producing 15% of its energy from renewable sources by 2020. The energy flow from these habitats has increased massively, with the UK producing 600 times more solar energy than in 2007, topping 5,647.9 GW hours.

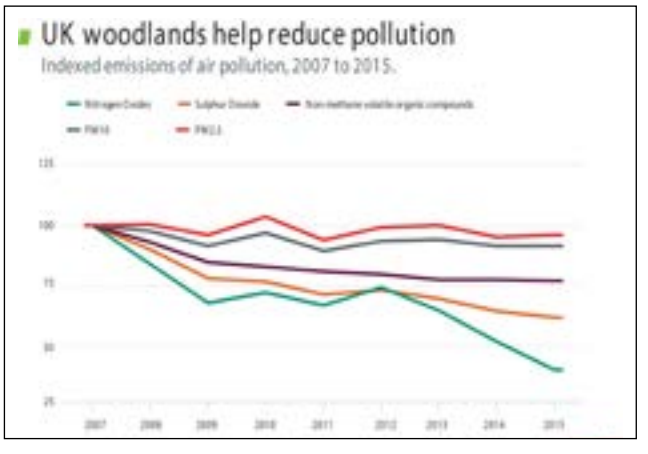
However, the government has recently reduced its financial support for solar farms and this could have an impact.





POLLUTION

Two other habitats have contributed to the reduction of pollution - freshwaters and woodlands. Freshwater habitats include reservoirs, canals, ponds, lakes and rivers, which cover 12% of the total environment. Woodlands covered 3.16 million hectares in 2015.



New data reveals that woodlands have removed an estimated £1.8bn worth of harmful pollutants from the atmosphere, with an overall reduction of the most dangerous chemical agents.

However, freshwaters have seen a deterioration in the quality of the habitats. Since 2008 the number of rivers and lakes classed as in poor condition has increased. In 2014, 69% of rivers and 62% of lakes did not meet all the criteria to receive a 'good' status.

Farmlands have also shrunk with a reduction in organic farming. The June Survey of Agriculture and Horticulture records 17.6 million hectares of land in the UK as farmland with a decrease of 2.6% since 2007.

Despite the ecosystem problems, the amount of time spent on visits to woodlands in the UK has increased.

Subsequently, the revenue from these activities has increased, with freshwaters total from cultural services now at £10.1bn and woodlands at £13.2bn■

Nam Việt *(IBT source)*

Mangrove conservation in Kenya

A project on mangrove conservation and restoration in Gazi Bay on the Kenyan coast is turning heads: It's the world's first conservation project to link mangrove forests to the global carbon market.

The project raises money by selling carbon credits to people and organizations eager to reduce their carbon footprint, through the Scottish charity ACES. This supports the planting and conservation of mangrove trees. The payments for "mangrove carbon" are also used to benefit the local community.

"We have provided fresh water to the community either by installing water points or by bringing piped water to people's houses," says Ann Wanjiru, a local officer involved with the project. "We have bought about 700 textbooks for local schools, and we have improved the infrastructure in the schools by renovating classrooms that were previously leaking."

International carbon markets can play a key role in reducing global greenhouse gas emissions in a cost effective manner, and the number of emissions trading systems around the world is increasing. This project, however, relies on voluntary contributions.

The project is a "Blue Forests" initiative called Mikoko Pamoja ("mangroves together" in Swahili) in Gazi Bay. It's a community-based mangrove carbon offset project. In an ongoing process around 4,000 mangrove seedlings get planted every year, which results in carbon savings to generate direct income for the community. This enhances understanding of the value of "blue carbon" and helps research and further reforestation.

It has involved Edinburgh Napier University staff in the United Kingdom and students working with the Kenya Marine and Fisheries Research Institute (KMFRI) to explore the ecological value of mangroves and methods of helping the ecosystem recover.

"We are hoping the scientific community, the policymakers, the financial institutions come together and develop bigger Mikoko Pamojas, implement bigger carbon offsets such that we have triple win of biodiversity, of community and the climate change," says James Kairo, assistant director of KMFRI.

THE PROJECT HAS JUST WON THE EQUATOR PRIZE

"This year, Mikoko Pamoja was nominated (for the prize) and was among 15 initiatives chosen as winners among 806 contestants from about 120 countries. It's such an honor and a big success," says Wanjiru.

This gives kudos and recognition to those involved in it, as well as much-needed publicity. Because the project has been so successful in Gazi, neighbouring communities are also interested in replicating the activities. UN Environment is providing support to make sure this can happen. The model is being replicated in nearby Vanga Bay.

"Mikoko Pamoja is a global first and a model to follow and replicate," says Gabriel Grimsditch, a UN environment Blue Forests expert. Other Blue Forests projects - from Abu Dhabi to Ecuador, Indonesia, Madagascar and Mozambique - are helping to raise the profile of mangrove carbon finance and conservation.

"UN Environment is working closely with Mikoko Pamoja to make possible their dream of expanding and creating even more environmental and social benefits for coastal peoples in Kenya," says Grimsditch.

Mangrove forests protect coastal communities from storms and tsunamis and are efficient natural carbon sinks, locking and storing carbon dioxide at up to 5 times the rate of tropical rainforests. They also form an important habitat for fish and wildlife.

"Despite their widely recognized socioeconomic and ecological value, mangroves are among the world's most threatened vegetation types. More than a fifth of the world's mangroves have been lost over the past 30 years alone, and many surviving forests are degraded. Safeguarding them will require urgent interventions aimed at ensuring that their vital ecosystem services and non-market benefits are adequately incorporated in policy and development choices." (Governance of Africa's Resources Programme)

It is important for governments to recognize the value of intact mangrove forests, and to develop plans and policies to ensure they are not destroyed or harvested unsustainably. Sustainable management of mangroves can be incorporated into REDD+ (Reducing Emissions from Deforestation and Forest Degradation) action plans and strategies, or into Nationally Determined Contributions to the UN Framework Convention on Climate Change, to help countries meet their emissions reductions targets■

Nguyệt Minh
(UNEP source)

The potential for development of eco-tourism in Chi Lăng Nam Stork Island

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Chi Lăng Nam Stock Island is located in Chi Lăng Nam Commune, Thanh Mien District, with an area of 31.67 ha, with about 16,000 storks and 6,000 bitterns, among which, there are 9 types of storks: White, Lua, Bo, Duoi, Black, Huong, Nghenh, Ngang, Diec; and blue, grey, star back bitterns. Located in the middle of the vast An Duong lake and surrounded by many pagodas and temples in the area, the island has a great potential to develop eco-tourism.

To develop Stock Island eco-tourism, in 2012, the People's Committee of Hai Duong province issued Decision No. 2009/QD-UBND approving the Scheme of developing model of community- based tourism development in Chi Lăng Nam Stock Island, Thanh Mien district until 2020. In particular, the basic orientation of the Scheme focuses on the development of eco-tourism model in the Stock Island and the development of additional tourism sites. The system of tourism facilities in the Stock Island is built in a synchronous and qualified manner such as: home-stay; community yard to organize cultural, entertainment, and sports activities; means of transportation for tourists and other services to facilitate tourists to visit and participate in the farmer and community activities. The total estimated budget for implementing the Scheme is over VND 15 billion.

According to the Scheme, the model of community - based tourism in the Stock Island is divided into 2 separate sections that interact with each other. Stock Island area for visiting tourists includes An Duong Lake, Trieu Duong Lake and other works: management center, display house, car park, tourist area... The main tourism activities for visitors are to: introduction to biodiversity conservation activities and bird species in exhibition room; visits to island; bird - watching; participation in entertainment activities on the island such as: Fishing and boat- rowing. In addition, more community tourism routes shall be developed in Chi Lăng Nam commune, including: Local houses - Stock Island - An Duong pagoda - Trieu Duong temple - Giao market - Hoi Yen dry pancake trade village, Trieu Trang temple, pagoda; tourism connecting routes between Stock Island and spots of Ninh Giang district includes: Khuc Thua Du Temple - Hong Phong Water Puppetry, Bo Duong Pagoda - Tranh Temple.

Stock Island was officially recognized as a National Monument for natural beauty of Hai Duong province in 2014, marking the historical milestone for the development of tourism in the area. Accordingly, Thanh Mien District People's Committee has established two management boards (MB): Stock Island tourism and ecological conservation project is chaired by the Vice Chairman of the District People's Committee, the relevant divisions and units as members to manage all activities related to tourist area; for the Stock Island National Monument in Chi Lang Nam commune, leaders of communal People's Council, People's Committee, Fatherland Front and other agencies and unions directly manage the construction and exploitation activities in the area. At the same time, a number of works in the Stock Island including Nam Pagoda, Center for Environmental Education, pagoda area, banyan tree, boat station... are invested for upgrading. In addition, the People's Committee of Chi Lăng Nam commune consolidates the organization, builds the operating regulations of the service team, rearranges exhibition areas and ensures environmental hygiene in the Stock Island tourist area; deploys the signing of commitments with the An Duong village households on the implementation of the regulations of tourist area management of the District People's Committee...

Thanks to these above efforts, tourists to Stock Island has increased from 30,000 visits (2011) to 45,000 (2015). The domestic market is mainly tourists in the province and the provinces of Hung

▲ *Tourists to Stock Island*

▲ *Chi Lăng Nam Stock Island landscape*

Yen, Hanoi, Hai Phong... In the 2012 - 2015 period, according to the data of Stock Island Management Board, the revenue from entry ticket collection, boating and vehicle keeping is about VND 400 million per year; the revenue of the households doing business in catering, accommodation and sales of souvenirs is estimated at over VND 1 billion. Although the number of visitors as well as revenue is still limited, this is a positive sign for the development of eco-tourism products.

Stock Island is newly exploited tourist area with primitive landscape, so the attraction of investors has many difficulties. Along with that, the management of the tourist area is not effective; the staff of tourist service lacks in number and has weak knowledge of tourism development; tourism planning and management are limited; the Stock Island has not been reinforced with embankment, so the island is increasingly eroded with shrinking area in size and poorly growing islander plants, while the number of storks and bitterns is increasing.

Eco-tourism potential in Stock Island is very high due to its favorable location, developed socio-economic conditions, rich and diversified tourism resources. In the coming time, to further the development of eco-tourism in the Stock Island, authorities of Thanh Mien district need to exploit cultural and historical values to design different tours; at the same time, to promote and educate all levels, sectors and people for awareness raising of economic tourism industry. Besides, to promote the dynamics, actively explore and call for socialized funding, invest effectively in exploiting the existing potentials, considering it as an effective breakthrough to develop Stock Island eco-tourism to make the best use of the potential and advantages, and to create a focus and spill-over effects■

New plant species is discovered in Việt Nam

▲ *The life form of Elatostema kim hyense*

According to the Vietnam National Museum of Nature (under the Vietnam Academy of Science and Technology), in collaboration with the Guangxi Institute of Botany (under the Chinese Academy of Sciences) to study the diversity of some groups of plants in Việt Nam, the scientists have discovered and described a new plant species under the Urticaceae family. Its scientific name is Elatostema kim hyense Y. G. Wei & V. T. Do.

This finding was published in the Bulletin of Botanical Research. The species is named according to the sampling site - Kim Hy Nature Reserve, Bac Kan, Vietnam.

Elatostema kim hyense Y. G. Wei & V. T. Do has morphological characteristics similar to Elatostema vietnamense Q. Lin & L. D. Duan but can be distinguished through its live forms as herbaceous with no branches. There are bristle hair sunder the leaves;the stalk of male flower is shorter, about 1.5 - 3 mm; and the flower pattern is 5.

The new species is found in slits or rock niches where are humus and moist under broadleaved evergreen forest on limestone mountains in some special-use forests of North Việt Nam such as Kim Hy Nature Reserve (Bac Kan), Bat Dai Son Nature Reserve (Ha Giang), Pu Luong Nature Reserve (Thanh Hoa).

According to science, all parts of the plant can be used as drugs for diseases such as rheumatism, gout and tendinitis■

Quỳnh Như

THUA THIEN-HUE PARK

Ideal home to wild animals

Hoa Vũ
Vietnam National University of Forestry

▲ *The first saola individual was founded in the province of Thua Thien-Hue in 1998*

▲ *The view of the Thua Thien-Hue Saola Preservation Park*

The Thua Thien-Hue Preservation Park of Saola (known as siola, Vu Quang ox, spindlehorn or Asian bicorn) boasts of a unique biodiversity.

Founded in 2013, the park has a total area of over 15,500 hectares and is located in the 3 communes of Huong Nguyen (A Luoi District), Thuong Quang and Thuong Long (both in Nam Dong District).

HOME TO RARE ANIMALS

The Thua Thien-Hue Preservation Park of Saola comprises 200 kinds of animals and plants. The park is covered with a large area of tropical forest, and is home to many rare animals and birds, primitive forest, waterfalls and abysses.

Besides, it is also home to animals recognized for their value across the world, such as the giant muntjac and Truong Son muntjac. The park is also home to the saola - One of the most mysterious animals in the world. Being discovered in 1992 in a joint survey that was carried out by a group of scientists from the Vietnam Ministry of Forestry (now the Ministry of Agriculture and Rural Development) and the World Wildlife Fund (WWF) at the Hà Tĩnh Province's Vu Quang National Park, the saola lived along the Truong Son Mountains (Annamite Range). That was the world's first large mammal discovery in over 50 years and one of the most spectacular zoological discoveries of the 20th century.

Saola is a kind of hollow-horn animal, similar to an antelope. This species is also called the Asian bicorn, recognized by 2 parallel horns with sharp ends, which can reach 50cm in length. The International Union for Conservation of Nature's (IUCN) Red List of Threatened Species and Việt Nam have termed the saola as an animal in very high threat of extinction. At the moment, the saola population is estimated at below 250 across the world, while the actual number might be much lower. In the province of Thua Thien-Hue, two saolas were found in 1998, marking an important stage for the allocation of the species in the province's biodiversity map. One of the two was a 52kg male in the Ho Hamlet, Duong Hoa Commune, Huong Thuy District, and the other was an 80kg pregnant female in the forest of Huong Nguyen Commune, A Luoi District. In 1999, a 10kg baby saola appeared in But Hamlet, Huong Nguyen Commune. The findings have made a great contribution to both Việt Nam and the world's biodiversity conservation.

EFFORTS IN BIODIVERSITY CONSERVATION UNDERWAY

On March 30, 2014, the People's Committee of Thua Thien-Hue Province decided to establish the Saola Preser-

vation Park Ranger County and put the force under direct management of the province's forest ranger. The county is responsible for preserving the saola community, the two ungulate mammals - giant muntjac and Truong Son muntjac - and other rare animals and plants, protecting the primitive forest area that is left in the Truong Son Range's middle region, carrying out biodiversity conservation activities and preserving species, genes and the environment of the forest area.

To prevent saola and other animals from being trapped by hunters, forest rangers were hired, with support of the WWF. In the five years of their deployment, the rangers have patrolled and disassembled 60,000 traps, destroyed dozens of illegal camps, saved and released a lot of rare animals such as leaf monkeys, Truong Son muntjac and chamois. These have been some of the remarkable efforts of the rangers in preserving wild animals and protecting the forest environment.

In addition to patrolling to protect the forest, rangers have worked with specialists to monitor the biodiversity system, carried out surveys and research, maintained the 50 camera trap programme to track rare animals and collected samples of turd and leech blood. These actions have helped discover a lot of rare animals such as striped rabbit, giant muntjac and Truong Son muntjac, marking important steps for preserving the saola in particular and the biodiversity system in general in Việt Nam.

Despite having achieved some success in biodiversity conservation, challenges have remained for the Thua Thien-Hue Saola Preservation Park. The question is, how can the local authorities balance socio-economic development benefits and protect primitive forests - home to wild animals? Hopefully, the preservation park will remain the ideal habitat for wild animals in the near future■

New project to preserve ancient red pine trees in Quảng Ninh

▲ *The ancient red pine trees at the Yên Tử National Forest in Quảng Ninh province (Photo: www.laodong.vn)*

The Prime Minister Nguyễn Xuân Phúc has approved a project to preserve ancient red pine trees at the Yên Tử National Forest in Uông Bí city of the northern province of Quảng Ninh.

The project will be implemented at a cost of about 26.26 billion VND (1.16 million USD) in 2017 - 2021. The funding will be used to care for the 237 living red pine trees, upgrade infrastructure of existing nursery gardens, cultivate seedlings of the species and collect red pine trees that grow in the wild. It aims to develop the precious tree species at the Yên Tử National Forest for scientific research and studies, as well as increase forest coverage and improve ecology.

At the same time, the effort is expected to contribute to promoting the biological values and cultural and historical values of the Yên Tử relic site and raising public awareness of environmental protection, as well as help with local tourism development■

Thu Hà *(VNA source)*

THE FIRST BẢN GIỐC WATERFALL TOURISM FESTIVAL 2017:

Sustainable tourism development in association with solid national security and defense

Recently, the first Bản Giốc Waterfall Tourism Festival and Then folklore singing - Tinh gourd lute festival in 2017 took place in 2 days of October 7 - 8, attracting nearly 10 thousand visits by tourists. The first tourism festival was held in Trung Khanh district and was a series of events aimed at promoting tourism and attracting more and more tourists to the locality. To better understand the results of the Festival, as well as orientations for development of tourism and exploitation of the potentials and strengths of the locality, the Vietnam Environment Administration Magazine (VEM) has a conversation with Vice Chairman of the Trung Khanh District People's Committee Nguyen Manh Hung.

▲ **Mr. Nguyễn Mạnh Hùng**
Vice Chairman of Trung Khanh District People's Committee

✶***VEM: Could you please tell us the idea of organizing the first Bản Giốc waterfall tourism festival and the Then folklore singing - Tinh gourd lute festival in 2017?***

Mr. Nguyễn Mạnh Hùng: Implementing the Action Program of the District Party Committee on tourism development in the period 2015 - 2020, the People's Committee of Trung Khanh district has pro-actively drafted the Plan on organizing the festival.

After being approved by the provincial People's Committee and putting the Festival program into the Program of 5 Major Provincial Events in 2017, the task was assigned to Trung Khanh district to coordinate with the Department of Culture, Sports and Tourism to organize the first Then folklore singing and Tinh gourd lute festival of Cao Bang province as a joint event of the whole province. Based on that, the District People's Committee has issued the Plan on the festival preparation, and at the same time advised the District Party Committee to issue a Decision establishing the Steering Committee to direct the preparation of the festival.

Bản Giốc Waterfall tourism festival is held concurrently with the Then folklore singing and Tinh gourd lute festival of the whole province in order to honor, preserve and develop the special folklore art forms of the Tay - Nung ethnic groups. This is also an opportunity to meet, exchange experiences between regions; to raise, honor, develop folk songs, folk dance and sports of different ethnic groups; to educate patriotism and national pride tradition. "The festival is also an opportunity to promote tourism development of the province; to attract investment, promote border trading activities; to contribute to strengthening of international neighboring relations, promoting the process of gradually - extended and sustainable international integration of the district."

✶***VEM: Could you please tell me some of the main results of this festival?***

Mr. Nguyễn Mạnh Hùng: It can be said, the Festival was successful beyond the expectation of the Organizing Committee. Accordingly, the Festival attracted nearly 10,000 participants and 13 public art troupes (13 districts/cities in the province) with a large number of ethnic minorities joining in the Then folklore singing and Tinh gourd lute festival.

The festival is divided into 2 main sections: The ceremony was held at Phat Tich pagoda at Truc Lam, Bản Giốc with rituals such as: The sacred water procession from the Bản Giốc waterfall to the Pagoda, the national peace blessing ceremony, expressing the sincere respect, gratitude to the founders of the nation, heroic martyrs, etc. And the festival is the program of entertainment opening the festival with the activities of dragon dance,

▲ *Performers are honored at the first Bản Giốc Waterfall Tourism Festival and Then folklore singing and Tinh gourd lute festival in 2017*

Trung Khanh District of Cao Bang province is blessed with ideal climate conditions, poetic natural landscapes such as: Bản Giốc waterfall and Nguom Ngao cave, which have been ranked as National Landscapes.

About 20 km northeast from the center of Trung Khanh district, Bản Giốc waterfall is in Dam Thuy commune, Trung Khanh district, Cao Bang province, and is the natural border of Việt Nam and China. With a width of about 208m and a height of 60 - 70m, Bản Giốc waterfall is classified as the fourth largest border waterfall in the world, following some famous waterfalls such as: Niagara Falls between Canada and the United States; Victoria Falls between Zambia-Zimbabwe and Iguazu Falls between Brazil - Argentina.

lion dance, folk games, traditional sports, local tourism products, local specialties introduction, photo exhibitions, introducing newly discovered landscapes, etc. for tourists to explore and discover. All activities are simultaneously organized at multiple locations in Bản Giốc Waterfall Tourist Area.

Especially, this year's Festival has an International cultural exchange program between Trung Khanh district (Việt Nam) and Tinh Tay and Dai Tan districts (China), in order to promote cultural knowledge and exchanges among people to strengthen the solidarity between the two border regions, as well as between the 2 neighboring countries.

✶***VEM: Please tell us the plan on preparing the festival in the coming years?***

Mr. Nguyễn Mạnh Hùng: As a result of the success of this festival, the Festival Organizing Committee proposes to Cao Bang province leaders to put in the province's plan to organize the annual festival of the district in October (ripe rice season, chestnut season) at Bản Giốc waterfall, Trung Khanh district.

If the Provincial People's Committee approves to put

▲ *Rituals of the sacred water procession from Bản Giốc waterfall to the Pagoda*

▲ *The beauty of Bản Giốc waterfall, Cao Bang Province*

the festival into the Annual festival program of the province and the district, the People's Committee of Trung Khanh district will continue to advise and develop plans to organize the festival every year with its own characteristics. Moreover, it is an opportunity to make tourists know more about Bản Giốc Waterfall and other outstanding tourist attractions of Cao Bang province, in general, and Trung Khanh district, in particular.

With the advantages of local tourism development potential, Trung Khanh district is determined to develop tourism as an important economic sector of the district in the coming years, and to make Trung Khanh district become the highlighted spot for tourism development of Cao Bang province.

✶VEM: Through this festival, has Trung Khanh district had the orientation to develop tourism and exploit the potential advantages of the locality in the future?

Mr. Nguyễn Mạnh Hùng: The orientation for tourism development in the locality has initially achieved certain results: The management has been strengthened; the international cooperation activities for tourism development have been promoted; the tourism promotion continues to be carried out more extensively; and the number of tourists has increased sharply compared to previous years.

The target is to develop high quality tourism products and services in Trung Khanh district, from which, to develop the key tourism route of Cao Bang province and to become special tours products with high attractiveness to tourists. At the same time, to develop sustainable tourism with high socio-economic efficiency in association with solid security and national defense; to diversify tourism products, extend tourists' length of stay, and increase the business efficiency and attractiveness of Trung Khanh district tourism. To promote the tradition of national cultural identity, embellish and preserve cultural and historical relics and environmental landscapes, contributing to promoting the development of tourism.

Step by step to raise the professionalism in the management and operation of tourist spots in order to improve the quality, and diversify tourism products; specifically, to pay attention to the development of local cultural products and specialties to attract tourists.

Particularly, attention should be paid to the management and monitoring of the environment, especially the maintenance ecological environment and tourism resources hygiene, so as not to cause incidents of environmental pollution at tourist spots.

✶VEM: Thank you!

Đức Trí

(Implemented)

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