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Prime Minister Nguyễn Tấn Dũng's speech at the 4th National Conference on Environment

Law on Sea and Island natural resources and environment - Important institution on sea and island environment protection

The 13th ASEAN Ministerial Meeting on the Environment: Join hands for a green and clean ASEAN Community

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LAW AND POLICY

GREEN SOLUTION & TECHNOLOGY

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GREEN COOPERATION

GREEN DEVELOPMENT

NATURE & ENVIRONMENT OF VIETNAM

The 4th National Conference on Environment
Enhancing state management on environmental protection during 2016 - 2020

▲*Plenary session of the 4th National Environment Conference*

The 4th National Environment Conference was organized by the Ministry of Natural Resources and Environment (MONRE). On September 29 - 30, 2015, at the National Convention Centre. The Conference was attended by more than 2,000 participants, leadership representatives of Party's committees, National Assembly's agencies, Government Office, Ministries, sectors, central socio-political organisations; leadership representatives of Provincial Party's Committees, Provincial People's Committees, Department of Natural Resources and Environment, Environmental Protection Sub-department, Industrial zone management board of 63 provinces; representatives of universities, institutes, research centres and experts in the environment field; some domestic and foreign enterprises, international organisations in Việt Nam; national and local mass media… Particularly, the Conference had the honour to welcome to participation and welcome speech by Prime Minister Nguyễn Tấn Dũng.

At the plenary session of the Conference, synthesis report on environmental protection during 2011 - 2015 and orientation during 2016 - 2020 by MONRE and other reports by departments of Party's and State's agencies were presented including: Leadership role of different party's committee levels in environmental protection by the Central Committee for Propaganda and Education; Monitoring role of the National Assembly and People's Council at all levels for environmental protection by the National Assembly's Science, Technology and Environment Committee; Role and responsibility of enterprise community for environmental protection by the Việt Nam Chamber of Commerce and Industry; Việt Nam with the global environmental issue and international support for environmental protection in Việt Nam by the World Bank Office in Việt Nam; Program on citizen participation in environmental protection and social critics on environment by the Central Việt Nam Fatherland Front; Orientations on green growth and sustainable development in Việt Nam by the Ministry of Planning and Investment; Environmental protection experience in some typical provinces such as Hà Nội, Hồ Chí Minh City, Đà Nẵng …

The Conference also presented recommendation reports from the outcomes of the State Management on Environmental Protection Workshop and Science and Technology on Environmental Protection Workshop organized on September 29, 2015.

After 2 days of active working, the Conference discussed and proposed many important

and practical recommendations for environmental protection of the country in the context of new situation and agreed to endorse the joint statement of the Conference. The Conference assessed the outcomes of environmental protection in the last 5 years and forthrightly outlined weakness and limitations, from which to identify orientations and focal solutions for environmental protection in 5 years during 2016 - 2020 towards sustainable development, at the same time to propose some recommendations and suggestions to the Party, National Assembly, Government, Việt Nam Fatherland Front, Ministry, sectors and localities. The joint statement is the synthesized outcome of intellectuals, passion, responsibilities of many experts, scientists, managers, enterprises, socio-political organisations and communities for environmental protection issues in the upcoming time. MONRE will report to the Prime Minister to instruct ministries and sectors to specify the annual environmental protection plan.

In the closing remark at the Conference, Minister Nguyễn Minh Quang, in order to make the environment to be 1 of 3 pillars of sustainable development, requests ministries, sectors, provincial people's committees to comply with and implement seriously instructive opinions of Prime Minister Nguyễn Tấn Dũng as well as recommendations and suggestions of the Conference endorsed in the joint statement, of which focusing on some important tasks: rapidly developing, promulgating all guiding documents of the Law on Environmental Protection 2014, ensuring provisions of the Law to be seriously and effectively implemented in reality, assessing the implementation of the Biodiversity Law 2008, counselling to the Government to report to the National Assembly for comprehensive revision of this Law as well as revision of some other relevant laws to ensure consistency and unification in biodiversity conversation; enhancing capacities on state management on environmental protection for the natural resources and environment sector, particularly at provincial, district and communal levels; enhancing coordination and unified state management on environment nationwide by environmental state management agencies; prioritizing resource allocation by ministries, sectors and localities for environmental protection to be appropriate with economic growth; studying mechanisms and policies to promote the socialization of environmental protection; enhancing supervision and inspection on environmental protection, particularly of serious environmental polluters; strictly handling violation behaviours, creating deterrence against facilities to change awareness and responsibilities for environmental protection; continuing to promote propaganda and education to a high new level using different methods in order to increase awareness and responsibilities of local people, enterprises, managers and the society on environmental protection, overcoming and eliminating viewpoints favouring short-term growth and neglecting environmental protection and maintenance.

Within a series of activities of the 4th National Environment Conference, there were other important events: State management workshop on environmental protection; Science and technology workshop on environmental protection; Commendation ceremony on advance typical models on environmental protection during 2011 - 2015; International exhibition on environment; Cooperation agreement signing "for a green Việt Nam environment"…

The 4th National Environment Conference once again reflected the joint voice of all agencies, sectors, organisations and communities in commitment and unification in implementation of tasks and solutions on environmental protection in the upcoming time, aiming to achieve environmental targets that set the by the National Assembly in the next 5 years, contributing to effectively prevent environmental pollution escalation, natural resources degradation, improving living standards of citizens, boosting the country towards rapid and sustainable development■

V.Nhung

▲*International exhibition on environmental protection*

Prime Minister Nguyễn Tấn Dũng's speech at the 4th National Conference on Environment

Hà Nội, October 30th, 2015

Ladies and gentlemen and distinguished guests,

Comrades,

Today I was glad to attend the 4th National Environmental Conference to review results achieved over the last 5 years and identify key environmental protection tasks for the next 5 years. I highly recognized the efforts of the Ministry of Natural Resources and Environment (MONRE) in organizing this important event.

Ladies and gentlemen and comrades,

Environmental protection is both the objective and the basic content of sustainable development. Nowadays, climate change, environmental pollution, energy security, water security... have become global problems, but no one country can deal with them alone.

Recognizing the role and significance of environmental protection, the Party and State have issued many guidelines and policies on this important issue. The Resolution on responding to climate change, enhancing resource management and environmental protection was issued at the 11th Plenum of the Central Committee of the Vietnamese Communist Party at its 7th session.

I am pleased to speak about positive results achieved through Việt Nam's environmental protection efforts during the last 5 years. The policy mechanisms system and environmental legislation were reviewed and revised. State management organisations' structure from the central to local levels were strengthened. Management capacity significantly improved. More were interested in the investment budget for environmental protection. Non-business expenditure sources for the environment in 2015 amounted to VND 11,400 billion - nearly double that of 2010. The tools and measures for state management of environmental resources were applied and took effect. Inspections and examinations of environmental protection efforts were promoted, erasing serious environmental pollution establishments and achieving annual targets set by the National Assembly. Investors poured funds into waste treatment and other projects to improve the environment. The percentage of solid waste collection increased over the years. Nature conservation and biodiversity were focused on. International co-operation has been strengthened, technology increased, engineering advanced and critical resources protected.

On behalf of the Government, I highly appreciate the efforts of the comrades and the progress we've made in recent years.

Ladies and gentlemen and comrades,

Aside from its achievements, the sector should also look at the limitations and weaknesses in its environmental protection efforts, as outlined in the Final Report of the MONRE. Pollution and environmental degradation have increased in some areas, which has affected economic and social development. Natural resources are still being overexploited and lack sustainability. The mechanisms, policies and laws on environmental protection overlap, feasibility is not high and law enforcement is not strict. Environmental management staff lack quantity and are limited in expertise and professional skills. The communities and mass organizations are not effective in supervising the implementation of environmental protection regulations. Environmental protection regulations are becoming more serious and sophisticated every day.

The Conference's Draft Final Report has raised warnings from international environmental experts that in the

next 10 years, Việt Nam's GDP could double, but without proper attention environment pollution will triple. By 2025, this figure could increase by 4 or 5 times. If GDP increased by 1% on average, then the losses caused by environmental pollution account for 3% of GDP. This is a warning that we need to pay attention to the reality shown that immediate economic benefits are less important than the task of protecting environmental sustainability in the long-term.

Ladies and gentlemen and comrades,

The tasks for environmental protection in the next 5 years have been mentioned quite comprehensively in the comrades' 2016 - 2020 report. To do good environmental protection work in the future and protect the environment are important elements in the growth model towards sustainable development, protection and physical health. I note that the comrades should focus on some important tasks as follows:

Implementing some important tasks to improve environmental management and protecting the environment is an important element in the activities of renewing the growth model towards sustainable development, protecting health and physical health of future generations. This includes:

First, the 12th Party Congress Resolution, the Central Committee Resolution and legislation on environmental protection should be implemented effectively; improving the system of legal documents to guide the implementation of the Law on Environmental Protection 2014; amending the Law on Biodiversity and relevant laws to improve nature conservation and biodiversity.

Second, increasing media propaganda by directing people to follow the law; engaging people in protecting the environment in their communities; establishing and developing a civilized society; educating people about environmentally friendly lifestyles and behaviour.

Third, improving organizational structures and staff at all levels, especially in local governments, districts and communes to meet demand for state management on environmental protection.

Fourth, strengthening and diversifying financial resources for environment protection; prioritising development funds and ODA to solve current environment problems; persistence, affecting the lives and health of the people; calling on all resources in the society to improve the environment; encouraging socialization and investment in the form of public-private partnerships, especially in the collection and treatment of solid waste; early establishment of the Environmental Protection Fund to proactively resolve environmental issues.

Fifth, promoting research and application of advanced science and technology in response to climate change, natural resource management and environmental protection; promoting innovative technologies for the production of energy saving, efficient use of resources, industrial development "low carbon"; focusing on improving environmental elements in the structure of commodity value, service, product formation of "green" services "green" which are certificated that environmentally friendly; restrict investment in sectors producing pollution and adverse impacts on the environment; thinking carefully the risk of being the outdated technological disposal site of developing countries.

Sixth, promoting and improving the effective and efficient of tool to strategic environmental assessment, environmental databases to predict and prevent the pollution sources which have adverse impact on the environment; speeding up the investigation and having solutions for cases that break environment law and cause serious environment pollution; controlling generation, storage, transportation and disposal of hazardous waste to avoid contaminating the environment.

Seventh, co-operating and integrating into the international environment stream and take advantages of its relationship for improving environment protection; committing the international commitment and efforts to conduct the United Nation's sustainable development goals (SDGs) that are suitable to our country's circumstances. Việt Nam is responsible for joint efforts addressing global environmental issues.

Ladies and gentlemen and comrades,

Protecting the environment is a global problem, and it requires co-operation from every country, every organisation and every citizen. On behalf of Việt Nam's government, I would like to thank and hope to receive more co-operation and effective support from the United Nation agencies, the World Bank, countries, international organizations and friends in the near on this very important issue. Việt Nam is willing to co-operate with and contribute positively in the international community to keep our environment clean■

VEM

The policies on green growth and sustainable development

Phạm Hoàng Mai
Director - Department of Science, Education, Natural Resources and Environment
Ministry of Planning and Investment

Important details were added to the amended Law on Environment Protection issued in 2014 to improve its quality as Việt Nam makes efforts to industrialize and modernize its economy.

This document was updated with requirements to deal with issues arising out of climate change and green growth, which show the efforts exerted by the government, agencies and local authorities.

Being authorized by the government, the Ministry of Investment and Planning (MoIP) has tried to study and combine the National Sustainable Development Plan and the National Green Growth Strategy when the country implements the amended Law of Environment Protection (LEP), and develops and implements socio-economic development plans and strategies.

Environment protection combined with socio-economic development plan

During the early 1990s, the government agencies had paid attention to environment protection to ensure that the 1994 LEP was properly implemented. This was shown in the inter-ministerial Circular 155-TTLB issued on 11/4/1993 by the State Planning Committee and the Ministry of Environment, Science and Technology, to provide a temporary policy on environment protection for other ministries, ministry-level agencies and local authorities, based on which they will develop and implement their own plans to protect local environment.

In 2004, based on the amended LEP, the MoIP saw it as important to combine environment protection and sustainable development issues in the country's socio-economic development plans and strategies, and that action needed to be done via planning and investment procedures and requirements.

The MoIP had developed a set of criteria for environment protection and sustainable development, submitted it to the government for reference so that the latter was able to develop a socio-economic development plan and include it in the 5-year socio-economic development plan 2006 - 2010, as well as include environmental requirements in socio-economic development projects in the country.

In addition, the ministry had proposed to the government the sustainable development strategy to ensure that socio-economic development targets during 2005 and now are reached. The ministry has also worked with other ministries and local authorities to develop and propose to the government several legal frameworks that requires investment projects to take good care of environmental issues, such as Decree 140/2006/ND-CP issued by the Government on environment protection issues in planning and implementing socio-economic development projects, and Decree 92/2006/ND-CP issued on 7/9/2006, by the Government on developing, approving and managing the socio-economic development master plan.

About the adjustment of the LEP: The ministry conducted some assessments on the status of some environmental issues with investment and planning projects, which were an assessment of the strategic environment conditions, assessment of environmental impacts and commitment to environment protection. After the assessments, the ministry saw some issues in those projects needing fixing and improving. These findings were reported by the ministry to responsible government agencies when the government was amending the LEP, and some important issues were added into the LEP 2014.

About monitoring and assessment: each year, based on the environmental impact assessments conducted in previous years, the Ministry of Science and Technology (MOST) develops its own environment protection plan and submits it to the responsible government agency, which is the Ministry of Natural Resources and Environment.

In 2014, the MOST continued to implement its national strategies on climate change and green growth, which had long-term impacts on Việt Nam, to show its commitment to the international community in protecting the environment and dealing with climate change, and the ministry also worked with local authorities

and other ministries to develop the central and local action plans.

About disbursement of the budget for environmental projects based on the ministry's yearly action plan: The MOST conducted environment protection projects as had been assigned by the government. These projects aimed to help the ministry's units with environmental issues in their operations, and help the public sector and private sector combine environment protection and sustainable development with the nation's socio-economic development plan. These projects have been successfully conducted up to now.

Besides, the MOST also actively participated in the discussions held by the United Nations (UN) on climate change, which were good opportunities for Việt Nam to exchange its practices in environment protection with other countries, approach new financial resources and absorb modern technologies. The MOST has been working with responsible government agencies and its partners to improve its qualities and get its organisation and mechanism prepared for being admitted to the Green Climate Fund (GCF).

Recently, the MOST has accomplished its missions assigned by the government, such as the Resolution 35/NQ-CP issued 18/3/2013 by the prime minister on urgent issues in environment protection, and monitored, reviewed and evaluated the standards on environment protection and sustainable development as required by the prime minister.

Socio-economic development status with issues in sustainable development and green growth

In the context that Việt Nam has made a lot of changes in all aspects, the socio-economic and environmental conditions are facing many opportunities and challenges. The economy is becoming less competitive and unstable, natural resources are used inefficiently polluting the environment and leading to exhaustion of resources, the gap between high- and low-income people s widening, and it is getting more difficult to deal with climate change. The global economy is going through volatility with unpredictable happenings which are creating a negative impact on the world's markets, on the materials and natural resources, and on the financial market.

The government has issued the National Strategy on Sustainable Development, Climate Change and Green Growth, and the Master Plan on Restructuring of the Economy combined with Restructuring of Economic Development Model to improve the country's economic quality, efficiency and competitiveness from 2013 - 2020.

Based on the LEP 2014 coming into effect in 2015, and based on its assigned duties, the MOST has issued its environment protection plan for 2016 with major details as below:

Implementing the National Strategy and National Plan on green growth, including working with other ministries, sectors and local authorities to develop their own action plans.

Studying the ways and propose to the government a special policy to attract domestic and foreign financial provisions for environmental projects.

Combining issues on environment protection, climate change and sustainable development with the development of country's socio-economic development plan 2016-2020, with development and assessment of large-scale projects, and with development and implementation of sectorial/regional socio-economic development plans, in addition to development and implementation of provincial socio-economic development plan.

Preparing reports for the Sustainable Development Council and the Green Growth Steering Committee under the National Committee for Climate Change to consult the Prime Minister on green growth and sustainable development.

Working with sectors, local authorities, social organisations and enterprises to develop green growth action plans and Agenda 21 (National policy on sustainable development) for sectors and local authorities.

Improving the quality of the environmental data system.

Assisting media activities on environment protection, green growth, climate change and sustainable development, which are conducted by domestic and foreign organisations.

Studying and proposing a policy to encourage more investments in environment protection. At the moment, there are a small number of private companies that have researched and tested successfully the waste treatment system, as the government has not given any policies to encourage them and protect their initiatives.

Recently, the government issued some regulations that promote public-private sector partnership in all industries. In the field of environment protection, climate change and green growth, the MOST will work with relevant government agencies to develop and propose a new policy to encourage more investments in this sector■

Environmental science and technology research in the period 2011 - 2015

Dr. Nguyễn Thị Thanh Hà
Deputy Director - Department of Natural and Social Science
Ministry of Science and Technology

In the period 2011-2015, Ministry of Science and Technology (MOST) took lead and cooperated with other related ministries including Ministry of Natural Resources and Environment (MONRE), Ministry of Industry and Trade (MOIT) and Ministry of Agriculture and Rural Development (MARD) in conducting research and development projects and applying new environmental technology to ensure effective implementation of state management of environmental protection. In the meantime, policies and mechanisms were developed to encourage organizations and individuals to study and apply research results, use advanced technology, and create products and locally tailored environmental technology for environmental remediation in some hot spots.

1. Scientific and Technological research for Environmental protection

Scientific and technological research activities have been defined in orientations for scientific and technological activities in the environmental sector of the period 2011 - 2015, for examples:

Providing scientific foundation for environmental planning, socioeconomic development planning, environmental planning for river basins;identifying trends and causes of natural resource changes, environmental trends in some key zones and proposing integrated management solutions for wise use of natural resources and environmental protection;

Conducting research and application of environmentally friendly technology, clean technology, waste recycling and treatment technology; developing and scaling up cleaner production model; developing environmental industry; creating market for promoting environmental service, developing environmental economics;

Applying effectively and creating Vietnamese condition tailored and advanced technology for environmental remediation, combining treating and reusing wastes (small and medium scale livestock waste; municipal waste from small towns, agricultural and traditional craft village waste);

Research objectives and contents in this period are under a framework of a national core program on "Natural disaster prevention, environmental protection and wise use of natural resources" coded KC.08/11-15 (2011 - 2015). There are 34 science and technology projects, two pilot programs and five potential research projects with funding of 205 billion VND, of which 15 billion VND is from non-state budgets. Science and technology research program of MONRE "Research and Application of Science and Technology for Environmental Protection in Việt Nam period 2010 - 2015" coded TNMT.04.10-15 has over 60 research projects, funding of about 90 billion VND plus some independent national science and technology projects, some ministerial level research projects and some research projects conducted by enterprises. Scientific and technological measures are studied in Program "Developing Environmental Industry for Việt Nam by 2015, vision by 2025" approved by Prime Minister in Decision No. 1030/QD-TTg dated 20/7/2009 with 58 projects and funding of 138 billion VND.

Science and technology contribution in the past socioeconomic development period focused on two areas: environmental policymaking, regional development planning; environmental technology application to address pollution in some key areas.

Science and technology for environmental policymaking and regional development planning

Environmental research projects focused on addressing macro issues such as environmental planning for key areas (Red River delta, Mekong River Delta and Central key economic zone) and necessity of environmental protection in rural areas, craft villages and farms. In addition, the research projects have integrated environmental issues into natural resource use and socioeconomic development for regional sustainable development (Central Highland, Quảng Bình- Quảng Trị ecologically special zone, and Southern key economic zone) and river basins (Đà

River, Ba River, Côn River, Lô River and Chảy River).

Regarding environmental planning, the research projects have thoroughly analyzed shortcomings and proposed methodology and procedures for regional environmental planning, using the following methods: environmental zoning, matrixes (environmental impact assessment), pollution load calculation, carrying capacity analyses, mathematical modeling for environmental projection, extended cost-benefit analyses, social surveys, mapping, strategic environmental impact assessment and environmental planning, and remote sensing and GIS application. Results of the research projects are environmental planning maps and spatially and time series environmental trends for the studied areas. These are importantly scientific and practical bases for regional planning for socio-economic development and environmental protection.

Regarding rural environment, craft villages and farms, for the first time, these topics are studied in a comprehensive way for both large and small scales, for different ecological and geographical areas. Based on the studies, an overview of rural environment and the environment of craft villages and farms have been established. The studies have identified the most critical environment issues and projected environmental trends for the future. The studies also have evaluated impact of socio-economic development policies on natural resources and environment. Recommendations have been made for improved environmental management policy and measures.

In the environmental economics field, the studies have contributed in terms of methodology and applications of new environmental economic techniques such as market and non-market valuation and extended cost-benefit analyses, correlations between economic growth and waste volumes, and environmental modeling. The research projects have provided scientific bases and concrete evidence in some cases for policymaking relevant to socio-economic development in Southern zone in the industrialization and modernization period for sustainable development.

Research results have helped clarify some aspects of environmental economics which is a relatively new area in Việt Nam, evaluate the economic importance of natural resource and environment degradation, identify economic causes of environmental degradation, interactions among economic activities, and address conflicts between economic growth and environmental protection. Recommendations have been made for integrated environmental protection in the studied sites.

Research projects under the Program have integrated environmental protection and wise use of natural resources into socio-economic development in a sustainable way. These are integrated and intersectoral research areas which are priorities in this period.

Applying and developing relevant environmental technology to address pollution in some hot spots

Environmental technology sector in Việt Nam has been established and developed through domestic production and import to meet sustainable socioeconomic development demands, in particular after the Law on Environmental Protection was enacted. Domestic science and technology organizations have played an important role and made positive contribution to developing environmental technology in Việt Nam. Among the studied technologies, many have been applied effectively such as wastewater treatment (mechanical, chemical, chemical/physical, biochemical, and biological methods), emission treatment using dry methods (depositing com-

▲*Many environmentally friendly and advanced technologies have been applied to treat pollution*

ponents, cyclones, sleeve filtering, static filtering) and wet methods (adsorption, redox), and solid waste treatment (sanitary landfills, solidification, chemical reaction, biological methods, and recycling).

In the past period, the studies developed some effective, user friendly, environmentally friendly technology models for treating water, soil and air pollution. Protocols for treating pollution after flooding, soil and water pollution due to acidic effluents, heavy metal pollution in mining sector and urban air pollution have been developed. These methods used simple technology and environmentally friendly materials and nano materials. The use of these materials has potential for further scale-up, in particular in wastewater treatment.

2. Orientations of Science and Technology for Environmental protection

Science and technology for environmental protection is one of the five priorities of science and technology development approved by Prime Minister in Strategy for Science and Technology Development period 2011 - 2020 at Decision No.418/QD-TTg dated 11/4/2012. The activities include: developing locally suitable technologies for wastewater treatment, solid waste and hazardous waste treatment, and emission treatment, applying cleaner production and environmentally friendly technology in production and trade to mitigate green house gases, and developing waste recycling technology.

Science and technology for environmental protection is continued to be one of the measures for implementing Resolution No. 20-NQ/TW of the 6th Central Meeting of 11th Party Congress on "continuing developing science and technology for industrialization and modernization in the condition of socialist oriented market economy and international integration" and Resolution No. 24/NQ-TW of the 7th Central Meeting of 11th Party Congress on "proactively respond to climate change and enhance natural resource management and environmental protection": boosting research and application of science and technology in responding to climate change and natural resource management and protection, promoting production technology renovation in an environmentally friendly manner, energy saving, effective use of natural resources, low waste and low carbon, research and development and technology transfer to climate change responses, natural resource management and environmental protection.

Point a, Clause 1, Article 27 of Law on Science and Technology 2013 specifies that "based on socio-economic development plans and strategies and a national strategy on developing science and technology, Ministry of Science and Technology (MOST) approved science and technology orientations, objectives and tasks for a 5 year period and annual science and technology tasks". Following this, MOST has developed science and technology orientations and objectives for the period 2016-2020 (Minister's Decision No. 1318/QD-BKHCN dated 5/6/2015). This document highlights measures for mobilizing resources for developing environmental science and technology orientations such as: priorities for developing advanced technologies, high technologies, intersectoral technologies including telecommunication technologies, biotechnologies, new material technologies, smart technologies and environmental technologies; promoting applied research and technology development in agriculture, industry, medicine and pharmacy, transport, construction, energy, marine science and technology, natural resource management science and technology, and spatial science and technology. This is an important basis for developing necessary environmental science and technology projects in the period 2016 - 2020 and promoting sustainable and environmentally friendly socioeconomic development■

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Mobilization of resources for waste management, pollution rehabilitation and environment improvement

Nguyễn Tuấn Anh
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Investment in natural resources and environmental protection, waste management and pollution control and environmental improvement consists of investment activities relating to the wise use and conservation of natural resources and activities that prevent, mitigate and remove adverse impacts of anthropogenic socio-economic activities on the environment.

In development investment, the Government has focused on investments in natural resources and environmental protection. Investment activities have, to some extent, met objectives: improvement of the living environment quality; enhancement of development efficiency and avoidance of GDP losses; livelihoods of future generations.

Investment in natural resources and environmental protection consists of investment expenditures and recurrent expenditures on development of technical infrastructures in prevention and overcoming of natural resources and environment incidents and assurance and promotion of natural resource and environmental protection. Budget spent for the natural resources and environment sector preliminarily consists:

Non-business environment expenditure: For ministries, sectors and localities: recurrent expenditure budget used for environmental protection for ministries coming from the state budget expenditure, in 3 years (2011, 2012, 2013) is 510.0 billion dong, 730.0 billion dong and 980.0 billion dong respectively. According to Decision No. 151/2006/QD-TTg by the Prime Minister, central budget expenditure accounts for 15% of the total annual non-business environment expenditures, 85% belongs to the local budget expenditure.

Development investment budget: investment budget is balanced for natural resources and environment protection allocated for ministries and sectors (details in attached 2010 - 2014 data table)

ODA

State budget for Ministry of Natural Resources and Environment, Ministry of Agriculture and Rural Development (ministries that are mostly relevant to natural resources and environmental protection) consists of domestic and foreign sources in 2010, 2011, 2012 respectively: Ministry of Natural Resources and Environment: 880.479 billion dong, 1,252.216 billion dong and 1,473.936 billion dong; Ministry of Agriculture and Rural Development: 3,153.848 billion dong, 3,678.894 billion dong and 3,589.162 billion dong.

Investment state budget in 2011, 2012 and 2013 corresponding to clean water and rural environment sanitation is 353 billion dong, 400 billion dong and 433.0 billion dong; forest protection and development activities (5 million ha reforestation project) is 610 billion dong, 720 billion dong and 820 billion dong.

Vietnam Environmental Protection Fund gave the loan of approximate 500 billion dong for investments in wastewater treatment system of paper factories and in construction of urban waste treatment factories;

FDI investment in environment

Currently there is no official data on investment of enterprises in environmental protec-

Annex: 2010 - 2014 data on investment (Source: Planning handbook, DSENRE, MPI)

Year	Content	Natural Resource and Environment Sector				Water supply and waste and wastewater treatment			
		Total (billion dong)	Central	Local	Ratio %	Total (billion dong)	Central	Local	Ratio %
2010	**Whole sector**	**2468.9**	**450.0**	**2018.9**	**2.1**	**4,647.8**	**280.0**	**4,367.8**	**4.0**
	Domestic	1301.5	400.0	901.5		4,199.9	230.0	3,969.9	
	Local budget and balance addition	807.4		807.4		3,733.9		3,733.9	
	Outstanding balance for ministries, sectors	400.0	400.0			230.0	230.0		
	Targeted support and addition	94.1		94.1		236.0		236.0	
	Foreign	1167.4	50.0	1117.4		447.9	50.0	397.9	
2011	**Whole sector**	**2,954.3**	**580.0**	**2,374.3**	**2.1**	**5,609.6**	**260.0**	**5,349.6**	**4.0**
	Domestic	2,274.3	550.0	1,724.3		4,894.6	260.0	4,634.6	
	Local budget and balance addition	1,598.2		1,598.2		4,351.0		4,351.0	
	Outstanding balance for ministries, sectors	500.0	500.0			260.0	260.0		
	Targeted support and addition	176.1	50.0	126.1		283.6		283.6	
	Foreign	680.0	30.0	650.0		715.0		715.0	
2012	**Whole sector**	**3,553.2**	**800.0**	**2,753.2**	**2.1**	**6,343.9**	**300.0**	**6,043.9**	**3.7**
	Domestic	2,713.2	750.0	1,963.2		5,553.9	300.0	5,253.9	
	Local budget and balance addition	1,861.2		1,861.2		5,076.0		5,076.0	
	Outstanding balance for ministries, sectors	600.0	600.0			300.0	300.0		
	Targeted support and addition	252.0	150.0	102.0		177.9		177.9	
	Foreign	840.0	50.0	790.0		790.0		790.0	
2013	**Whole sector**	**3,763.3**	**601.0**	**3,162.3**	**2.2**	**6,181.6**	**222.0**	**5,959.6**	**3.7**
	Domestic	2,936.8	540.0	2,390.8		5,610.1	222.0	5,388.1	
	Local budget and balance addition	2,048.2		2,048.2		5,106.0		5,106.0	
	Outstanding balance for ministries, sectors	500.0	500.0			222.0	222.0		
	Targeted support and addition	388.6	46.0	342.6		282.1		282.1	
	Foreign	826.5	55.0	771.5		571.5		571.0	
2014	**Whole sector**	**3,529.3**	**615.0**	**2,914.3**	**2.2**	**5,855.9**	**205.0**	**5,650.9**	**3.7**
	Domestic	2,689.3	545.0	21,144.3		5,085.9	205.0	4,880.9	
	Local budget and balance addition	1,892.0		1,892.0		4,700.8		4,700.8	
	Outstanding balance for ministries, sectors	545.0	545.0			205.0	205.0		
	Targeted support and addition	252.3		252.3		180.1		180.1	
	Foreign	840.0	70.0	770.0		770.0		770.0	

tion activities. Surveys on enterprises by the General Statistics Office of Vietnam in 2002, 2004 and 2005 showed that: the rate of surveyed enterprises investing in environmental protection facilities and works in this period was very low, only 4-7% of the surveyed enterprises. Majority of Vietnamese enterprises are small and medium; investments in environmental protection must be based on own fund while this fund is very limited.

The private sector partici-

pates in providing many environmental sanitation services: wastewater treatment, solid waste treatment and collection, etc. However, currently there is no official statistics on the investments of the private sector.

These above funding have been used for enhancement of the state management capacity on natural resources and environment; renovation or improvement of the national monitoring network on natural resources and environment; strictly handling of serious environmental polluters and overcoming the impacts of hazardous chemicals used by the American during the war in Việt Nam; collection and treatment of solid waste, treatment of wastewater; protection and development of forest; conservation of biodiversity; management of river basin and other tasks. Particularly, thanks to ODA, many projects relating to rehabilitation and treatment of environmental pollution requiring big investments have been implemented, contributing to reduce adverse impacts of the economic development to the ecological environment.

Remaining, weakness

Due to subjective and objective reasons, investments in natural resources and environmental protection have not been paid adequate attention to; therefore, in recent years, many natural resources have been exploited to scarcity, wasted and ineffectively used which are affecting next generations. Natural environment in many areas is being destroyed, polluted and degraded seriously and at an alarming rate. The policy system and legal tools are not synchronized to integrate 3 development areas: economic, social and environmental protection in the socio-economic development plan in an effective manner. Sustainable development objectives have not been paid appropriate attention. In reality, in recent years, investments from the society in general and from the state budget for natural resources and environment are very limited.

The unbalance between the demand and ability to mobilize investment funds, particularly investment from the state budget, while pressures on economic development and addressing of social issues are very high, this requires sectors and provinces to focus more funding on activities that have direct impacts to the socio-economic development, such as establishment of new enterprises, development of projects on transportation, irrigation, schools, hospitals, office construction, etc. pay less attention to invest in natural resources and environmental protection. The budget for this sector is the outstanding amount after being allocated for other works and projects.

On the other hand, the selection of investment projects in natural resources and environment protection is not based on specific criteria, is mostly emotional in prioritisation of projects; the distribution of investment funds for projects in the natural resources and environment protection is scattered; investments are not consistent and in line with plans; investment projects usually last many years that cause thrift and reduce the efficiency of investment funds.

In addition, funds mobilized for investments in natural resources and environmental protection are very low and the decentralisation of investment management in natural resources and environmental protection is not efficient. The Government does not have specific mechanisms to promote and mobilize funds from domestic and foreign economic components for investments in the natural resources and environment sector. Foreign aids for natural resources and environmental protection accounts for a small proportion in the total ODA fund.

Private investors are increasingly participating in providing environment services. This is a positive trend that is appropriate with the socialisation orientation of environmental protection. However, private enterprises have limited financial capacities and scientific and technological knowledge; therefore, the implementation of large-scale projects faces a lot of difficulties.

Compared other countries in the region and in the world, investments for protection and development of natural resources and environment in Việt Nam is very low. State budget spent on environment only accounts for 1% of the total state budget since 2006, of which the investment in environment is about 3 - 4% GDP in China and ASEAN countries■

Some issues in dioxin contamination management in Việt Nam

Assoc.Prof. PhD. MD. Lê Kế Sơn

For more than a half of a century, herbicide dioxin sprayed by the Americans in the Việt Nam war has been discussed, studied and addressed due to its complexity and serious consequences on the environment and people of Việt Nam.

In addition, dioxin from industrial processes, solid waste treatment and other sources has attracted more attention because dioxin emission from these sources and their human exposure has tended to increase. Therefore, dioxin has become "a double issue" in Việt Nam.

Herbicide dioxin

From 1961 - 1972, American military has sprayed herbicides in the southern part of Việt Nam with three objectives: destroying the environment and forests which are bases of the opponents (offensive), establishing safe zones around their camps (defensive) and crop destruction.

Herbicides are marked by colors in their containers: orange, orange 2, purple, pink, green, blue, white and dinoxol. Of these, the main one isAgentOrange which is a combination of 50% n-butylic este 2,4,5-T and 50% n-butylic este 2,4-D.

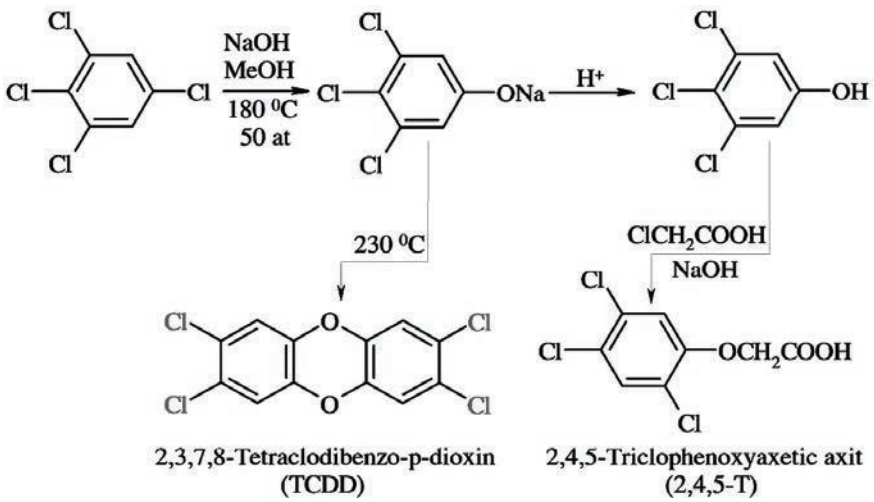
Except for blue and white herbicides, they all contained 2,3,7,8 tetraclodibenzo-p-dioxin (2,3,7,8 TCDD), one of the most toxic chemicals produced by humans. TCDD is a by-product during 2,4,5-T production (Fig.1).

Data on the amount ofherbicides used by the Americans in Việt Nam and the amount of dioxin in herbicides are mixed. According to Westing (1976), 72,354,000 liters of herbicides were sprayed in 2,578,502 ha, containing 170 kg dioxin. According to Stellman (2005), 73,772,262 liters of herbicides were used, containing 366 kg dioxin. Young (2009) estimates that 79,488,240 liters of herbicides used, of which 46,276,880 liters of herbicides containing dioxin (62.4%), or 130 - 144 kg dioxin were released.

Herbicide dioxin residues in the environment

After several decades, dioxin residues in sprayed areas have declined considerably. In A Lưới, ThừaThiên-Huế, only two among 140 samples had a dioxin level of 877 ppt. The other tested soil and sediment samples showed a level of from 0 to 246 ppt (Committee 10-80, Hatfield, 2000). In Sa Thầy, Kon Tum, dioxin levels in soil were from 333 to 845 ppt (three samples), in sediment from 107 to 430 ppt (five samples) (Le Xuan Canh 2010). In other sprayed areas, dioxin levels were found much lower or not detected.

Biên Hòa airport, Đồng Nai is considered as the most dioxin affected spot. In this area, in Ranch Hand campaign (herbicide spraying campaign) and Pacer Ivy campaign (herbicide collection and disposal campaign in 1972), American military stored 170,300 208-litre tanks of herbicides, of which 109,000 tanks contained Agent Orange. From 11/1969 to 3/1970, some accidents happened causing 25,000 liters of Agent Orange and 2,500 liters of agent white to release into the environment. Therefore, dioxin contamination became more complex. According to studies by Việt Nam-Russia Tropical Research Centre (1996), Steering Committee 33's Office (2011) and some other studies, dioxin levels at Biên Hòa Airport ranges from 01 to 962,559 ppt, with an average level of 2,984 ppt with 1,020-9,658 ppt TEQ. It is estimated that 247,000 cm^3 of soil and 236,000 cm^3 of soil and sediment need to be treated for dioxin contamination. In 2009, Ministry of Defense of Việt Nam buried 94,000 cm^3 of dioxin contaminated soil in the area of 4.7ha, of which 3,384 m^3 was properly buried (combined with microbiological technology).



▲ ***Figure 1.****Dioxin formation in 2,4,5-T production*

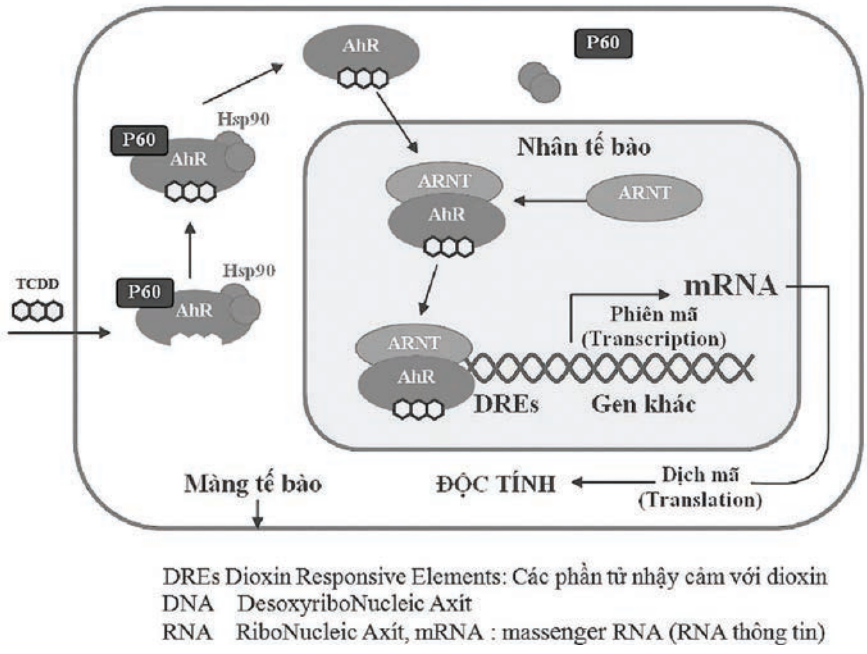
Effectiveness of the properly buried method needs to be further studied.

Đà Nẵng Airport is considered as the second most dioxin affected in Việt Nam. During the War, the US Military stored 94,900 herbicide tanks, of which 52,700 tanks contained Agent Orange. According to a study by USAID (2011), dioxin in contaminated spots in Đà Nẵng airport ranged from 6,820ppt to 365,000ppt. It is estimated that 72,900 m^3 of contaminated soil and sediment needs to be cleaned up. Since 2012, USAID has collaborated with Việt Nam's Ministry of Defense in cleaning up dioxin in Đà Nẵng Airport, using a thermal desorption method. During the clean-up process, the real quantity of contaminated soil which needed to be remedied was double compared with an initially estimated volume. This shows complexity of dioxin contamination in the contaminated sites.

Phù Cát Airport in Bình Định is considered as the third most dioxin affected area in Việt Nam, with about 7,500 m^3 of contaminated soil and the highest concentration of 238,000ppt. In 2012, with support from Global Environment Facility via United Nations Development Programme (UNDP), Steering Committee 33's Office finished landfilling dioxin contaminated soil in this spot.

In addition to the above mentioned spots, some military airports of the former Sài Gòn government storing herbicides in the past also have dioxin contamination but with low concentration and little or no impact on the environment and local people.

Herbicide originated dioxin decontamination is a complex issue because of very high dioxin levels and TCDD (the most toxic and persistent form). Landfilling is only valid in a certain period. Bioremediation needs further research. According to USEPA (2013), success of using bioremediation has been only obtained at laboratories. Thermal adsorption



▲ ***Figure 2.****Dioxin impact on genes*

is being applied in Đà Nẵng but appears some limitation due to dioxin in emission and wastewater are found to exceed permitted levels. At present, within a framework of a national program on dioxin research, Ministry of Defense is studying combination of methods for dioxin decontamination.

Dioxin consequences on human health

Main studies on herbicide dioxin consequences on human health were carried out by National Committee on Investigating American wartime chemical consequences (Committee 10-80) and National Steering Committee on Overcoming American wartime chemical consequences, with participation of some international organizations and scientists. Epidemiological studies show that disease structure and rate of the exposed groups are different from those of controlled groups, in particular birth defect rates in younger generations and maternity complications (Nguyen Thi Ngoc Phuong, Le Bach Quang, and Nguyen Van Tuong).

In addition, Vietnamese scientists have studied hematological changes, hematological production organs and immune systems, in particular generic and ADB changes. The studies show some generic changes in dioxin exposed families that relate to cancers, in particular lung cancers. Dioxin impact mechanisms are shown in Figure 2.

However, so far, cause-effect relations between dioxin and typical diseases have not been well established for determined diagnosis.

Dioxin from other sources

Within a framework of project "Dioxin decontamination in hotspots", scientists have taken samples from some incinerators in Hà Nội, Hải Dương, Thanh Hóaand HCM City. TEQs of air samples were found to range from 14.1 - 46,800 pg WHO-TEQ/Nm^3 (m^3 of air measured in a standard condition). Seven of 18 samples from industrial incinerators had TEQ exceeding 0.6 TEQ/Nm^3. Of these, some samples exceeded permitted levels some thousand times.

The highest dioxin found in the samples mainly is OCDD. TCDDs were found at small concentrations, with TCDD/TEQ ranged from 4.1-25.3%. This is a basic difference between herbicide dioxin and dioxin from other sources.

▲ ***Figure 3.****Since 2012, USAID and Ministry of Defense of Việt Nam have used thermal adsorption for dioxin decontamination in Đà Nẵng Airport*

Wastewater from the above mentioned solid waste treatment facilities was also tested for dioxin. Results showed that TEQ of the tested wastewater ranged from 0.84-50,080pg WHO-TEQ/L. Dioxins with high concentrations in the tested samples mainly were 1,2,3,4,5,6,7,8-HpCDD and OCDD while 2,3,7,8-TCDD was found at a small level. Compared with Japanese permitted levels of dioxin and related compounds of 10pg TEQ/L, up to nine of 15 samples were found to exceed the levels. Some samples even had up to 50,075pg TEQ/L.

Some samples from cement factories, metallurgy factories and thermal power plants had dioxin exceeding permitted levels.

Some soil and sediment samples in Hà Nội, Thái Nguyên and Thanh Hóa were found to have dioxin lower than QCVN45:2012/BTNMT, which was a standard on dioxin in soils.

In Việt Nam, dioxin standards for water have not been established. Dioxin in water samples taken in Hà Nội, Nam Định and Thanh Hóa all were lower than 1pg/L with an average level of 0.76pg/L.

Dioxin and related compound analyses in air samples taken in Hà Nội, Thái Nguyên, Nam Định, HảiDương, QuảngNinh and Thanh Hóa showed that 16 of 17 samples had TEQ lower than 01pg/Nm^3.

Some remarks

Consequences of herbicide dioxin used by the US Army during Việt Nam war are serious. Dioxin decontamination in Đà Nẵng Airport is planned to finish by the end of 2016. However, this deadline seems difficult to be met as some complexity has arisen during treatment process. Decontamination in Biên Hòa Airport is only at an environmental assessment stage. Funding sources and technology types have not been determined.

It is necessary to conduct further studies to have a more comprehensive assessment of herbicide dioxin contaminated sites in some other military airports and select suitable measure to clean up dioxin contaminated soil and sediment.

It is necessary to develop a regular and long term monitoring plan for heavily contaminated sites which have and have not been remedied. Arsenic and dioxin monitoring for groundwater should be paid more attention, as some wartime herbicides contain arsenic.

It is mandatory to have a comprehensive monitoring plan for dioxin from other sources, in particular from industrial and domestic solid waste incinerators. Outdated incinerators should be removed. Dioxin permitted levels at different sources should be reviewed and updated.

It is necessary to continue study and selection for dioxin treatment technologies which are suitable for the Vietnamese context.

For humans, health care and checkup for those who have been exposed to dioxin should be prioritized. Dioxin levels and diseases in these people should be regularly monitored. Further studies on generic, immune and hormone changes should be carried out. Detoxification for dioxin affected people should be expanded.

Law on Environmental Protection 2014 has regulations on dioxin contamination management. Detailed regulations should be issued■

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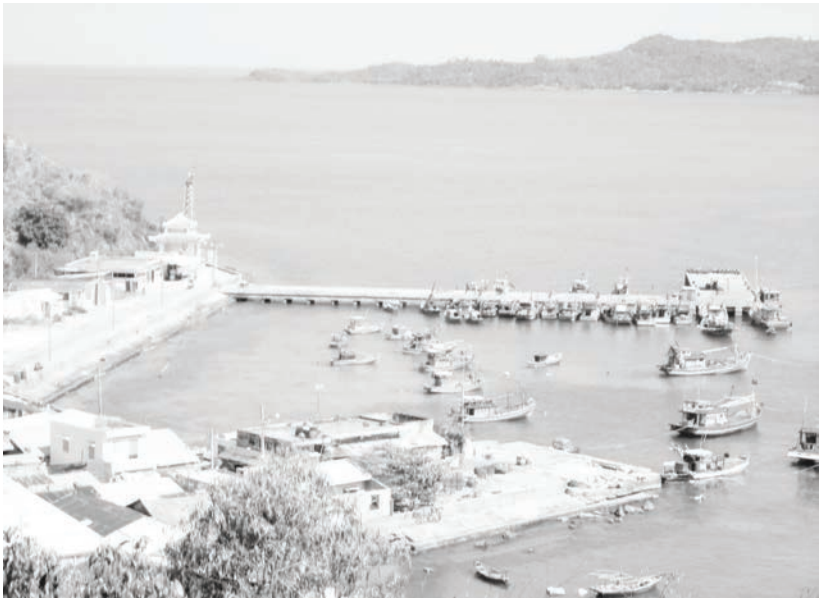
Law on Sea and Island natural resources and environment - Important institution on sea and island environment protection

MSc. Hoàng Nhất Thống
Vietnam Administration of Seas and Islands
Ministry of Natural Resources and Environment

Environmental protection in general, sea and island environmental protection in particular have been paid special attention by the Party and the Government. The Politburo has promulgated Resolution No. 41/NQ-TW dated 15/11/2004 on environmental protection during the industrialization - modernization of the country with the objective of "prevention, restriction of pollution escalation, treatment of pollution, rehabilitation of ecosystems, gradual improvement of environment quality". Later, the Secretariat of the Central Committee Communist Party also promulgated Indicative No. 29/CT-TW dated 21/1/2009 identifying and affirming the criteria "fast, effective and sustainable development, economic development together with assurance of advance, social equality and environmental protection". Particularly, on 3/6/2013, at the 7th meeting of the Central Committee of the Party Tenure XI, Resolution No. 24/NQ-TW on active responding to climate change, enhancing natural resources management and environmental protection was promulgated, of which identifying the objective of "To 2020, basically, active response to climate change, prevention of disasters, reduction of greenhouse gas emission; basic change in exploitation and use of natural resources in an appropriate, effective and sustainable manner, control of environmental pollution increase and biodiversity degradation to ensure the quality of the living environment, ecological balance maintenance, towards environmentally friendly and green economy".



▲ *The Law on Sea and Island natural resources and environment, an important legal tool to implement effectively the integrated and unified management of sea and island natural resources and environment*

The legal system on environmental protection is always reviewed and revised to be appropriate with the new situation. The legal corridor for environmental protection in management of regional, inter-sectoral and local activities is also paid attention. The system of state management agencies on environment is established from central to local levels. During 2002 - 2012, the National Strategy on Environmental Protection to 2010 and Orientation to 2020 has been implemented. The supervision, monitoring and addressing violations of environmental

regulations have been regularly organized nationwide. Pollution treatment and environmental rehabilitation and improvement in river basin have been effectively implemented; strategic environment assessment, environmental impact assessment, biodiversity conservation, environmental monitoring and surveillance are enhanced.

State of the Viet Nam's Sea Environment

Although environmental protection in Viet Nam has been paid attention, the sea and island environment in Viet Nam still suffers negative impacts from pressures of socio-economic development activities as well as natural changes. These are namely: quantitative increase in maritime accidents and oil spills; transboundary sea pollution occurs; untreated waste from river basins and coastal areas discharges to the sea; some coastal beaches are polluted of oil, zinc and domestic wastes; suspended solid waste, Si, NO_3^-, NH_4^+ and PO_4^{3-} are also at concerning levels; coastal seabed sediment - habitat of many aquatic species is also polluted; concentrations of plant protection chemicals andrin and endrin in benthic species in coastal estuaries are higher than the allowed limit; red tidal incident occurs, etc.

Particularly, coastal environment is significantly vulnerable because of terrestrial waste sources. Coastal provinces of Viet Nam are the living area of up to 50% of the country's population, with more than 300 different types of urban areas with ten millions of tourists each year whereas many riverside and coastal landfills are not appropriately designed, lacking of sludge collection treatment facility. There are about 300 industrial manufacturing facilities in the region including marine economic zones, coastal industrial zones, industrial units, processing zones and industrial facilities scattered in the coastal area. Currently, coastal pollution hotspots appear in coastal areas in Quang Ninh - Hai Phong, Da Nang - Quang Nam, Ba Ria - Vung Tau - Ho Chi Minh City.

In Viet Nam, there are 2,345 rivers of more than 10km, flowing to the sea each year about 880 km^3 of water with hundred millions of sand and mud, containing a large volume of organic materials, heavy metals, plant protection chemicals, etc. being washed from natural land, cropping land, residential area, industrial zone and wastewater from upstream sources directly discharges to rivers and coastal seas. At the same time, coastal areas of Viet Nam also suffer from other terrestrial waste sources such as transportation, sea ports, medical wastes, etc. The marine environment also suffers from marine economic activities, climate change impacts, environmental incidents, etc.

Socio - economic development activities as well as natural changes have caused negative impacts to the marine environment of Viet Nam. Seawater quality degrades and pollutes, becomes more turbid; marine ecosystems, marine biodiversity and marine fishery resources reduce.

Law on Sea and Island Natural Resources and Environment – an important legal tool for sea and island environmental protection

On 25/6/2015, at the 9th meeting of the National Assembly Tenure XIII, the Law on Sea and Island Natural Resources and Environment has been enacted with 10 chapters, 81 articles, including regulations on integrated management of sea and island natural resources and environment; rights, obligations, responsibilities of agencies and individuals in integrated management of sea and island natural resources and environment. Of which, Chapter VI with 22 articles (from Article 42 to 63) regulates sea environment protection with following contents:

Sea and island environment pollution control consists of regulations on principles and contents of sea and island environment pollution control (Article 42, Article 43); responsibility of investigation and assessment of sea and island environment (Article 44); sea environment pollution control from marine activities (Article 45) and control of sea environ-

ment pollution from terrestrial activities (Article 46); tools and measures to control sea and island environment pollution (zoning of sea and island environment pollution risks, classification of sea and island environment pollution risks) and assessment of sea and island environment pollution control activities (Article 48 to Article 50); sea and island environment state report (Article 51).

Response to marine oil spills and hazardous chemicals including regulations on principles of incident response and restoration (Article 52); incident response decentralization (Article 53); identification and notification of activity limitation zone (Article 54); temporary suspension of incident causing entities (Article 55); responsibility in responding to spills of oil and hazardous chemicals to the sea (Article 56).

Sea immersion includes regulations on immersion and materials and goods immersed into the sea (Article 57, Article 58); immersion permits; rights and obligations of organizations and individuals granted with immersion permits (Article 59 to Article 61); control of immersion activities (Article 62); immersion beyond the Viet Nam sea sovereignty causing impacts to Viet Nam's sea and island natural resources and environment (Article 63).

In addition to above regulations, the Law on Sea and Island Natural Resources and Environment regulates state policies on sea and island natural resources and environment (Article 4); participation of residential communities, organizations and individuals in integrated management and environmental protection of sea and island natural resources (Article 6); forbidden behavior such as destruction and degradation of marine and island ecosystem and environment; immersion of materials and goods within the Viet Nam's sea sovereignty without permits or against the law (Article 8). In addition, the Law regulates the requirement of sea and island environment protection in sea and island natural resources exploitation and uses; investigation and scientific study of sea and island. The Law also regulates the establishment of the monitoring system of integrated sea and island natural resources and environment; international cooperation on sea and island natural resources and environment; responsibility of integrated management of sea and island natural resources and environmental protection.

The Law on Sea and Island Natural Resources and Environment aims to overcome shortcomings arose during the management, exploitation and use of natural resources, sea and island environmental protection by sectors by using the integrated method on sea and island natural resources and environment management. This management method follows the approach that each sea zone is a unified natural resources system, is managed in an inseparable method to ensure the integrity, considering the sea as an interactive system between nature and society, between biological and non-biological matters; each sea zone is a multifunctional system, needs to be considered to be appropriate with that function and within the carrying capacity of the system and sub-system in the region; vertical management (levels) and horizontal management (relevant stakeholders) to ensure multi-sectoral, multilevel characteristics with close linkage among management policies and management actions. In other words, the Law on Sea and Island Natural Resources and Environment regulates human activities to protect the integrity of functions and structures of ecosystems, maintain and improve the productivity of ecosystems, through which, to ensure sea and island natural resources be managed, explored and used effectively and efficiently; harmonize benefits of relevant stakeholders in exploitation and use of sea and island natural resources and environment.

In other words, together with the Law on Environmental Protection 2014, the approved Law on Sea and Island Natural Resources and Environment has created an important legislation system on environmental protection in general and on sea and island environmental protection in particular■

The need for policies to support and incentivize enterprises to invest in environmental protection

▲ *Mr. Nguyễn Quang Vinh*
Deputy General Secretary of VCCI and
General Secretary of VBCSD

The development of Việt Nam in recent years is the result of many economic components' efforts, of which the enterprise community plays important roles. In the current context of globalization, the effective implementation of corporate social responsibility, particularly environmental protection will support enterprises to enhance their competition capability and penetration into international markets and ensure enterprises' sustainable development. The Environment Magazine had an interview with Mr. Nguyễn Quang Vinh – Deputy General Secretary of Vietnam Chamber of Commerce and Industry (VCCI) and General Secretary of the Vietnam Business Council for Sustainable Development (VBCSD) about this content.

✶ ***Can you tell us the current compliance of enterprises on environmental protection? With its role, does VCCI have any plans to propagate and disseminate the Law on Environmental Protection 2014 to the enterprise community?***

Mr. Nguyễn Quang Vinh: In general, the compliance of environmental protection regulations by Vietnamese enterprises is low. Currently, only some enterprises, mostly big corporations and groups have incorporated environmental protection in their operation programs and strategies. Most enterprises, particularly medium and small enterprises (making up nearly 98% of the total number of enterprises nationwide) have not incorporated environmental protection in their manufacturing and commercial activities or only implemented superficially to deal with functional agencies. Broadcasting on enterprises violating environmental protection regulations is frequent on the mass media. Recently, on August 6th, 2015, the inspection team of the Vietnam Environment Administration suddenly inspected the South East Asia Brewery Ltd. (Minh Khai, Hai Bà Trưng, Hà Nội) and caught red-handed the factory discharging wastewater without any environmental treatment …

In 2013, VCCI consulted enterprises on the draft Law on Environmental Protection (revised), through which contributing to enhance the effectiveness and feasibility of the Law. Following this success, in the future, we will organize more workshops nationwide to disseminate widely new provisions in the Law on Environmental Protection 2014 to the enterprise community.

✶ ***What policies does Việt Nam have to encourage enterprises to invest in environmental protection and sustainable development?***

Mr. Nguyễn Quang Vinh: In recent years, the Government has promulgated many policies to encourage enterprises to participate in environmental protection. Typical is the regulation on taxation exemption and reduction for enterprises working in the field of environmental protection (Law on enterprise income tax); capital incentives for environmental protection investment projects (Decree No. 04/2009/ND-CP dated 14/1/2009 by the Government); incentives on

land (land rent, land use exemption or reduction) for large-scale projects on wastewater treatment, domestic waste treatment (Decree No. 59/2014/ND-CP dated 16th June 2014 revising some articles of the Decree No. 69/2008/ND-CP dated 30th May 2008 by the Government). In addition, in the Action Plan implementing the National Strategy on Green Growth issued in 2014, the Government directly assigned VCCI some tasks to support enterprises to implement cleaner production activities, promoting sustainable development. Specifically, in the National Action Plan on Green Growth during 2014 - 2020, VCCI has been assigned by the Government these tasks: promoting the campaign of sustainable development enterprises; enhancing capacity and markets of technical supporting services and service management for green growth. The Office of the Vietnam Business Council for Sustainable Development has been assigned by the Standing Committee of VCCI to be the focal point of VCCI to prepare the detailed action plan to implement the assigned task.

▲ *Signing Ceremony of the Memorandcem of Understanding between VCCI and MONRE on Response to Climate Change and Environmental Protection*

✶ ***Currently, violations of environmental protection of enterprises are increasing. What is the cause and can you propose and recommend mitigating this situation?***

Mr. Nguyễn Quang Vinh: Firstly, the cause is due to the complicated and overlapping legal system on environmental protection in Việt Nam, for which enterprises meet many difficulties in complying with. For enterprises, one of the main causes is the awareness. With the target to maximize benefits, many enterprises cut "unnecessary" costs such as costs relating to environmental protection, regardless of belonging to environmental dependent groups or contributing to cause many adverse impacts on the environment. However, even the awareness issue is addressed; many enterprises face barriers in resources. For efficient use and saving of materials and energy as well as thorough treatment of wastes, enterprises need to be equipped with modern and comprehensive machines in combination with enough human resources that are capable of managing and operating this system. In reality, many enterprises of Việt Nam are seriously lacking technical and financial capacities to implement cleaner production. Furthermore, investment resources for creating the environmental landscape in the enterprise's areas have not been paid attention to.

To solve the above issues, a holistic solution is needed. On the one hand, it is necessary to regularly review and revise the legal system on environmental protection towards simplification and practicality; continue to improve and develop new policies and mechanisms to promote the participation of enterprises in environmental protection. On the other hand, it is necessary to enhance the propaganda, awareness raising for enterprises on the importance of environmental protection; particularly, to support enterprises to incorporate environmental protection in their manufacturing and operating activities■

Thank you!

VŨ NHUNG
(Implemented)

Projection, prevention and mitigation of pollution sources by agricultural, rural and craft village development activities

Prof. Dr. People's teacher Đặng Kim Chi
Vietnam Association for Conservation of Nature and Environment

Rural areas account for 80% of the total land of the country and are home for 67% of its population. Rural areas play an important role in socioeconomic development. Main rural activities include agricultural production (cropping, livestock and aquaculture), forestry and fishery processing, production in craft villages and livelihood. Apart from economic benefits, these activities have been resulting in pollution and impact on sustainable development of rural areas.

Pressure from socioeconomic development on the rural environment

Agricultural production

In cropping, increasing overuse of pesticides and fertilizers has created considerable pressure on the environment as their residues cause water pollution, eutrophication and land degradation. Intensive cultivation has led to post harvesting by-products such as straws, rice husks, and food wastes being open burned, creating smokes containing CO, CO_2, NOx, particular matters, and aldehyde and air pollution.

Over exploitation and old growth forest conversion into mono industrial cropping have led to forest land degradation and biodiversity losses. These are also causes of flooding, disasters and soil erosion in surrounding areas.

Increasing numbers of farms and livestock have worsened pollution due to increased animal wastes. Animal wastes include solid waste (dung, stall materials, animal feed leftover, animal carcasses) and waste water (urine, stall cleaning water and animal showering water). According to statistics, about 40 - 50% of the solid waste is treated. The remaining is discharged into ponds, lacks and canals.

Cattle and poultry slaughtering has created an alarming situation of pollution, veterinary sanitation situation and food safety. Slaughtering places are scattered in residential areas and on an ad hoc basis. Slaughtering wastes have been directly discharged into rivers and drainage systems, causing serious pollution.

Agriculture, forestry and aquaculture processing

Aquaculture wastes including decayed leftover food; residue chemicals, antibiotics, Sulphur, sludge from pond dredging, aquaculture wastewater with high organic, nutritious and suspended particulars have changed color of receiving water and caused unpleasant smell.

Waste from aquaculture processing include raw material cleaning, food processing, workshop cleaning, equipment cleaning, by-product (bones, intestines and heads), hazardous waste from chemical storage tanks, disinfectant liquid (for example chlorine) and chemicals and chemical products. In addition, aquaculture production also has created pressure on the coastal mangroves.

Most of the processing units are based near the supply areas. The units have been developed on an ad hoc basis, scattered and use small scale and backward technologies. In addition, these units consume a large amount of energy and water. By-products and scraps of the units are not properly collected and treated, causing serious pollution.

Production in craft villages

Over the past years, production activities in craft villages have developed rapidly but mainly spontaneously at a small scale with basic and outdated technology and limited space.

▲*Increasing domestic waste partly due to agricultural, rural and craft village activities*

These factors have created pressure on the environment of rural areas and local human health. In addition, inadequate infrastructure has failed to meet demand for expanded production. Limited space prevents the production facilities from installing waste treatment plants. Landscape has been destroyed due to land conversion to production sites and waste storage areas.

Domestic activities

With rural population of over 67% of the nation's population, rural activities have significant impact on the environment. With industrialization, waste generation continues increasing. Untreated domestic wastewater is polluting water and soil environment, influencing daily lives. Proportion of plastic, rubber chemical storage in domestic solid waste in rural areas has been increasing, creating difficulties in applying traditional waste treatment methods. Spontaneous non-sanitary landfills have been causing air odor pollution, surface and groundwater pollution due to untreated leachate, soil composition change and having negative impact on human health.

Development of residential areas, industrial zones and industrial cluster zones in rural areas and suburban areas has led to decreased areas for cultivation and significant changes in rural traditional life and landscape. Many industrial cluster zones have established without proper waste treatment and environmental protection systems. In addition, some industrial zones and economic zones in adjacent areas have discharged untreated wastes into the rural environment. In particular, climate change has created negative impact on crops, livestock and the rural environment.

Projected socioeconomic pressure in the coming period and orientations for integrated pollution prevention and control in rural areas

Based on approved master plans, plans and strategies for rural development, trends of development in terms ofquantity, areas and productivity in crops, livestock, aquaculture and production in craft villages can be projected. It is foreseen that with the current development strategies and master plans by 2020, vision for 2030, agricultural and rural development will continues to grow at a rate of 4 - 5% per year. It is estimated that in the next 5 - 10 years, with a business as usual scenario, wastes from cropping and livestock will increase by 20 - 40%. This figure is of great concern, as increasing soil, surface water and ground water pollution will have significant impact on the environment and human health.

Together with socioeconomic development, domestic wastes have increased in quantity, composition and type, in particular for wastewater and solid waste. With an assumption that by 2020, rural population remains unchanged, the amount of waste remains unchanged but the compositions and types are more various, it is projected that pressure on the environment will increase significantly. In particular, in rural areas where domestic and industrial wastes are not segregated, the complexity of solid waste composition is augmented. In addition, untreated wastewater will infiltrate into soil and underground water, causing serious problems to human health.

Sustainable development is a main direction for development activities in Việt Nam. This also applies for rural environment. Socio-economic development has integrated environmental protection, ensuring balance between environment and socio-economic development for rural areas. This needs to be clearly realized in implementing policy. Rural environment must not be sacrificed for short term economic growth. Agricultural benefits need to take into account environmental protection benefits so that sustainable development for rural areas can be achieved.

To this end, it is necessary to develop suitable policy measures for agricultural-**rural areas, im**plement policy and regulations on environmental protection in rural areas, develop and strengthen capacity for environmental authorities at different levels, in particular for commune and district levels, select and develop environmental technology solutions for pollution prevention and control, enhance environmental education and awareness raising and increase public participation in environmental protection■

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Eco-industrial Park: The key to green industrial zones in Việt Nam

▲*Mr. Trần Duy Đông*
Director - Department for Economic Zones Management, Ministry of Planning and Investment

Eco-industrial park is a new model, creating incentives for local, regional and territorial industrial economic development, which not only attracts investments, creates jobs but also reduces costs and enhances manufacturing efficiency from materials and energy saving, recycling and reuse, creating a new appearance and a clean and attractive environment for industrial zones. This is the sharing of Mr. Trần Duy Đông – Director General of the Department for Economic Zones Management, Ministry of Planning and Investment (MPI) with Environment Magazine at the workshop introducing the project "Implementation of Eco-Industrial Park Initiative for Sustainable Industrial Zones in Việt Nam".

✶ ***Can you introduce activities of the project implemented in Việt Nam?***

Mr. Trần Duy Đông: Currently, the Prime Minister orients the country development towards sustainable development based on three pillars: economic, social and environmental; industrial zones should be one of those moving towards that direction. Since 2012, MPI collaborated with the United Nations Industrial Development Organisation (UNIDO) to develop the project "Implementation of eco-industrial park initiative for sustainable industrial zones in Việt Nam" and by August 2014, the project was approved by the Prime Minister with the grant of more than 4.5 million USD from the Global Environment Facility (GEF) and the Swiss State Secretariat for Economic Affairs (SECO). The project aims to convert existing industrial zones to become eco-industrial zones (EIZ); piloting in Khánh Phú industrial zone (Ninh Bình), Hòa Khánh industrial zone (Đà Nẵng) and Trà Nóc 1, 2 industrial zone (Cần Thơ). The project will support enterprises to convert technologies and to apply cleaner production processes so as to reduce greenhouse gas emission and to use energy efficiently, particularly to connect enterprises together, contributing to reduce environmental impacts and manufacturing costs. Currently, the project has finalized the re-assessment of manufacturing activities and technologies status of enterprises that are potential to participate in the project, prepared the handbook to guide the access to the green credit fund for enterprises participating in the project and is promoting the rapid implementation of subsequent activities.

With 5 components, in the upcoming time, the project will focus on following activities: development of policies, regulations and criteria of an eco-industrial zone; capacity building in EIZ planning and management for EIZ management agencies at central and local levels; promotion of technology transfer and application of clean and low-carbon technologies as well as safe and resource-efficient production methods for enterprises located in EZs; technical assistance and soft loans access to invest in clean and resource-efficient technologies for enterprises in piloted industrial zones; implementation of, on a pilot basis, EIZ conversion projects; and increasing community awareness about EIZ development.

✶ ***Can you tell us the reason why the project selects three industrial parks: Khánh Phú (Ninh Bình), Hòa Khánh (Đà Nẵng), Trà Nóc 1, 2 (Cần Thơ) to participate in the eco-indus-***

trial park initiative and what criteria do these industrial zones need to meet?

Mr. Trần Duy Đông: Before the selection of industrial parks in three provinces, MPI and UNIDO have carried out studies and assessments during the project preparation and realized that these industrial zones have different types of enterprises so they can apply cleaner production methods in different fields. The survey of enterprises in three industrial zones shows that all enterprises have potentials to implement technology transfer towards sustainability and reduction of waste and wastewater discharge and the project identified 3 industrial zones: Khánh Phú, Hòa Khánh and Trà Nóc 1, 2 as typical industrial zones for implementation. The project commits to collaborate and support enterprises in the provision of information and consultancy to access advanced manufacturing technologies and preferential interest rate loans and implementation of the conversion at an appropriate cost. As a result, this will support enterprises in industrial zones to meet the objectives of revenue increase linked with sustainable development, competition enhancement and global development.

Currently, the concept of eco-industrial park is still new in Việt Nam, regulations and legal documents on eco-industrial parks are almost not available; therefore, in addition to enterprises' benefits, the project also organizes trainings for relevant state management staff at the same time develops specific plans to convert old industrial zones into eco-industrial parks. We hope that from the pilots in these above three industrial zones, legal documents on eco-industrial park can be developed and promulgated, including the definition of eco-industrial park, specific conditions for converting to eco-industrial parks, policies and mechanisms to encourage enterprises and industrial zone infrastructure development companies to convert into eco-industrial parks.

✶For the current situation, the conversion of eco-industrial parks will not be easy. Facing financial, technical and capacity difficulties by enterprises, what are the solutions of the projects to address these issues?

Mr. Trần Duy Đông: we have taken into account of current difficulties and challenges. It could be seen that, in developed countries, the conversion of industrial zones into eco-industrial parks brings many benefits; enterprises in industrial zones cooperate to achieve the efficiency in production, trading, economic development and environmental protection through effective management of energy, water and materials, reduction in manufacturing costs, reduction of waste discharge, collection, recycling and reuse of waste and waste exchange, solutions for environmentally friendly waste treatment. In Việt Nam, the current challenge is how to persuade enterprises in industrial zones to participate in the project and carry out cleaner production methods. To achieve this, national and international experts of the project will advise, guide and support enterprises to show them the benefits of participating in the project; particularly on the methods and procedures to access preferential interest rate loans to invest in cleaner technologies and resource-efficient use. This is also a method to support Vietnamese enterprises to access the international playground, at the same time to enhance the competitiveness capacity and stance of enterprises in the global enterprise network.

Thank you!

PHƯƠNG TÂM

(Implemented)

▲ *Wastewater treatment plant of Hoa Khanh Industrial zone (Đà Nẵng)*

Green tree planning for roads towards sustainable green urban development

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Benefits of green trees to the environment

Green trees are having increasing roles and becoming required criteria for roads crossing residential areas and in sustainable transportation development. This is because green trees have a function in improving the air and climate environment in roads. Green trees at roads' sides can reduce dust in the atmosphere, up to 30-60% in upper-storeys of high-rise buildings. Green trees help reduce greenhouse gas and radiation reflex to the surrounding environment. According to recent studies, on average, 1 ha of forest or dense garden can absorb 1,000kg CO_2 and emits 730kg O_2 daily. Therefore, each urban resident needs an area of about 10m^2 green trees or 25m^2 of grass to ensure clean air for living.

Green trees can also absorb noise depending on dense or loose, wide or narrow, high or low, thick or thin leaves, broad or small leaf tree belts, etc. Green trees have effects in antiseptic, killing germs and harmful bacteria, absorption of hazardous gas and environmental sanitation insurance.

Regarding road landscape, green trees increase aesthetic effects and create a soft impression of colour and pleasant climatic environment.

Green tree planning suitable with the transportation and urban system

In the last 10 years, the transportation infrastructure system has developed towards scope expansion and quality improvement. However, up to now, in Việt Nam, the study or legal documents are not available for street green tree planning. The planting of trees along roads is subject to investors but not according to long-term planning or paying attention to environmental protection solutions.

Tree belts along roads must not develop at a spontaneous manner but must ensure some principles: warranty of green cover, green area and green trees, etc. particularly in sections crossing residential areas - small areas of high population density that cause many issues relating to environmental sanitation. These criteria depend on population, residential distribution, manufacturing activities, construction and volumes of traffic… At the same time, green tree distribution and development must ensure environmental improvement and pay attention to the prevention of the spread of pollutants and noise from factories, enterprises, industrial zones, processing zones, semi-industrial facilities, vehicles and transportation. The continuity of green trees in the whole route should also be paid attention to. Green trees consist of those in pavements, road dividers and road slopes.

It is important to combine with natural conditions and climatic conditions such as wind direction and speed, temperature, rainfall, soil capability, etc. in tree plantation and development for each area, based on "tree for compatible soil", particularly noting that soil structure has changed because of construction works. It is also important to consider historical relics, cultural relics and landscape features as they are parts of entertainment, recreational, cultural and education activities for residents.

The distribution of green trees along roads is not necessarily even but dependent on residential areas. This principle is also a "soft" motto as it should be appropriate with practical conditions of the society, particularly in urban areas - where architectural positions are fundamentally fixed. Existing green trees along roads that are not suitable with climate conditions, soils, transportation safety and residential culture, etc. should be replaced by new trees. New green trees should be planted along new or renovated roads using different tree species to create typical characters of the roads. On the roads in the city centre, green trees along pavements should be paid attention to. If condition allows, huge green tree belts should be

established to separate roads and residential areas. Green trees can include not only timber trees but also shrubs, flowers and grass. They create the landscape but also contribute to prevent noise, vibration and dust and reduce negative impacts on residential areas.

In roundabouts and traffic islands in roads in the city, mobile water works can be built in combination with flower pots or grass to increase the liveliness and create the landscape for urban areas, high trees should not be planted to affect traffic vision. Traffic islands should not be constructed with sole concrete parts. On the other hand, green tree management requires the understanding of green trees (sanitation, climatic renovation, etc.), impacts to the livings and there should be solutions to achieve long-term and sustainable objectives. Some criteria for selection of pavement trees: trees with natural straight stems, good timber, not-crisp, not-easily-broken to avoid accidents. Trees should have canopies, neat branches, taproots and majority of roots are deep down into the soil to stabilize trees and to prevent tree falling. These trees should have no or little surface roots to avoid damages to pavements, road surface and works around the tree roots. Leaves should be large, fruits or flowers should not attract flies and insects for sanitary purposes, etc.

Tree lifecycle should be long to reduce replanting costs. Tree height develops considerably fast and not too slow in order to maximize its effects. Trees have good resistance against natural conditions and insects. Trees have possibilities to prevent bacteria in the air; trees have high economic values. Selection criteria should be flexible as it is difficult to select trees meeting all these criteria. Criteria on stem, roots and leaves should be paid attention to. It is also important to develop particular characteristics for each road using typical species and along one road or one section only one species is planted for easy maintenance, aesthetics and straight line of trees.

The green tree planning should not only be appropriate with the transportation system, it should also be appropriate with urban

areas in Việt Nam. Currently, the area of public green trees in urban areas is very small compared to QCXD 01:2008 of the Ministry of Construction, as well as compared to other big cities of other countries as shown in the below table.

To achieve the above objective, green trees in urban areas must be timber trees with large dense leaves and few leaf falls which are the key trees in street green tree arrangement. Each urban area should plant same tree species creating typical features of each street in the urban area.

In main roads of the urban area, tree gardens can be arranged along highways or roads. In tree gardens, timber trees with canopies must be mixed with shrubs, flower pots and grass. In these areas, mobile water works can be distributed with green trees to create the vivacity. In the square centre where crowded meetings are regularly organised, the usage of grass instead of concrete surface or asphalt surface will significantly reduce air temperature and radiation in the square.

In large squares, green trees and water surface are needed. In pavements surrounding the square, tree gardens can be arranged with the principle of street green tree arrangement. For the traffic island within the square, the principle of green trees and water surface is totally different. To avoid vision limitation, high trees are not allowed in traffic islands; therefore only flower pots and grass can be allowed with an ascending slope to the island centre. In large traffic islands, mobile water works (water spray or water running) can be arranged in the island centre in combination with surrounding flower pots and grass. Nowadays, trends to arrange statues in traffic islands do not exist as mobile water works help diversify the square landscape and reduce air temperature as well as dust in the square.

Orientations on policy development for green tree planning towards sustain-

Table 1. Public green tree space in urban areas in Việt Nam and in the world

No.	Domestic urban areas	Green tree target (m^2/person)		No.	Foreign urban areas	Green tree target (m^2/person)
		Status	QCXD 01:2008			
1	Hà Nội	2	≥ 7	1	Paris (France)	10
2	Hồ Chí Minh City	3.3	≥ 7	2	Moscow (Russia)	26
3	Huế	3.5	≥ 6	3	Washington (USA)	40
4	Đà Nẵng	0.9	≥ 6	4	New York (USA)	29.3
5	Hải Phòng	2.0	≥ 6	5	Nanjing (China)	22
6	Nam Định	1.5	≥ 6	6	Guilin (China)	11
7	Hạ Long	3.1	≥ 6	7	Hangzhou (China)	7.3
8	Vĩnh Yên	3.2	≥ 5	8	London (UK)	26.9
9	Hải Dương	3.7	≥ 5	9	Berlin (Germany)	27.4
10	Bắc Ninh	2.7	≥ 5			
11	Hưng Yên	3.2	≥ 5			

Source: Phạm Ngọc Đăng, 2013

able green urban development

First, the Government needs to promulgate policies and specific regulations on arrangement of green trees on roads to ensure the harmony between the landscape and the transportation system; regulations on planting methods and criteria, maintenance of transportation and urban area green trees. The urban green area should not only be considered as a land area that is covered green but also pays attention to aesthetic and artistic values so the green field in harmony with architecture and natural landscape and at the same time to create the uniqueness and attention of the work.

Second, enhancing the monitoring of the society on green tree protection and maintenance; provide human resources with scientific knowledge and experience in planning and development of urban green trees, identifying land for green trees; developing works linked with protection of existing green trees; strict management of land used for green trees; developing and specifying "green" criteria in assessing and classifying urban areas; regulating clearly which trees are promoted or prohibited for planting in urban areas.

Third, the Government should request domestic and international organizations and individuals to invest in urban green tree development for environmental protection and response to climate change project. Developing a financial supporting mechanism for protection and development of green trees such as materials, seedlings, etc.; having policies supporting the development and construction of infrastructure to protect green trees. In addition, promoting and mobilizing all resources of the society to participate in development and protection of green trees.

Fourth, propagating all citizens to enhance awareness on protection and development of green trees along roads; mainstreaming in the education for primary students to understand and to protect green trees.

Fifth, complying with principles of green tree planning; ensuring transportation safety and environmental sanitation and having the acceptance of local people.

Sixth, selected trees must be appropriate with ecological conditions, soil and environment of roads and urban areas; having mechanism to promote individuals and organizations to participate actively in planting, caring and protecting street trees■

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Bắc Ninh inaugurated a modern wastewater treatment plant

The Từ Sơn wastewater treatment plant has become operational in Bắc Ninh province after its construction was completed in 18 months. The plant is expected to help treat wastewater from the Từ Sơn town's inner area of about 1,890 ha, comprising 6 wards: Đông Ngàn, Đình Bảng, Đồng Nguyên, Tân Hồng, Trang Hạ and Châu Khuê, that are home to about 100,000 people.

It can treat up to 33,000m^3 of wastewater per day and night during its 1st phase, and up to 70,000 m^3/day in the 2nd phase.

The plant uses the best modern technology, using about 150m^2 to treat 1,000 m^3/day, while other plants in Việt Nam need between 450m^2 - 3,000m^2 to deal with the same amount of wastewater.

The plant is a part of the project to improve the town's wastewater treatment system. The project also includes a 40 km-long wastewater collection system and more than 1,000 combined sewer overflows.

The 800-billion VND project's 1st phase has been built under a build-transfer contract by the Phú Điền Construction, Investment and Trading Joint Stocks Company and the SFC Vietnam Environment Investment and Development Joints Stock Company.

Deputy Prime Minister Hoàng Trung Hải said that environmental protection was an important criterion for rating the development of a locality. Also, he applauded Bắc Ninh province for developing models to attract the private sector to environment projects■

Hoàng Dương

First energy and environmental design building project in Việt Nam

The project's investor, Phúc Khang Corporation and Green Consult Asia under the US's Green Building Council have just signed a contract for the Diamond Lotus project meeting the US-based Leadership in Energy and Environment Design (LEED) standards with the total of nearly VND 1.3 trillion.

Accordingly, the project will be blanketed with green. Its apartments were designed to let in direct sunlight, wind and fresh air. Director of Green Consult Asia, Melissa Merryweather said the LEED certification is used to assess building projects in their design, construction and operation, aiming to reduce 30% of energy use and half of total water use, creating environmentally friendly living conditions■

Phương Hạnh

The expansion of low CO_2 rice farming

Lately, a seminar on greener rice cultivation in Việt Nam and across the Greater Mekong Sub-region (GMS) opened in Thái Nguyên with the researches of Việt Nam, Myanmar, Laos, Thailand, Cambodia, and China focusing on sustainable farming methods with the system of rice intensification (SRI), an organic method that opts against herbicides and uses younger seedlings and low water, underscored as a potential model.

In Việt Nam, more than 1.5 million farmers in 29 provinces and cities have thus far applied the SRI on over 500,000 ha of rice paddies. Hoàng Văn Dũng, Deputy Head of the Thái Nguyên Department of Agriculture and Rural Development, said the measure has generated positive outcomes in his province, reflected in strongly growing crops as well as up to 15% yield increases.

According to the Ministry of Agriculture and Rural Development, rice cultivation in Việt Nam produces an average of 27.8 million tonnes of CO_2, accounting for 67% of the total greenhouse gases emitted by the sector. This contributes to making Việt Nam 31st worldwide in terms of emissions. To address the issue, Việt Nam is improving its land and farming management as well as boosting the spread of biomass energy■

Nguyệt Minh

Status and policy on environmental industry development in Việt Nam

MSc. Phạm Sinh Thành
Ministry of Industry and Trade

Việt Nam identifies environmental industry as one of economic sectors supplying technologies, facilities, services and products meeting environmental protection requirements .

Since Resolution No. 41-NQ/TW by the Politburo on environmental protection during the industrialisation and modernisation of the country that established the foundation for the "formation and development of the environmental industry" by now the environmental industry of Việt Nam is still in the period of forming its development and orientation pathway.

1. Finalisation of the legal and policy framework

After the Resolution No. 41-NQ/TW dated 15/11/2004 by the Politburo setting the orientation for "forming and development of the environmental industry", in 2005 the Law on Environmental Protection 52/2005/QH11 assigned the Ministry of Industry (now the Ministry of Industry and Trade) to instruct the development of the environmental industry (Clause 5, Article 121, LEP No. 52/2005/QH11). Only by 2012, the Ministry of Industry and Trade (MOIT) was assigned by the Government to develop the environmental industry at Decree No. 95/2012/ND-CP by the Government regulating the function, mandate and organisational structure of MOIT (Before that, in Decree No. 189/2007/ND-CP by the Government regulating the function, mandate and organisational structure of MOIT there were only 12 sectors and 10 fields without the environmental industry) followed by the establishment of the Pollution Control and Environmental Industry Division at Decision No. 699/QD-BCT by the Minister of MOIT regulating the function, mandate and organisational structure of the Industrial Safety Techniques and Environment Agency, afterwards the state management structure on environmental industry is formed.

MOIT is assigned by the Law on Environmental Protection 52/2005/QH11 to develop the environmental industry, but the "environmental industry sector" concept was not defined in legal documents of Việt Nam leading to many different understandings of adjustment scope and application limitations of the "environmental industry" that MOIT was assigned to "instruct the development". Whether the environmental industry is a green industry linked with cleaner production or it is the industrial sector that manufactures green products, sound environmental products and eco-products? Environmental industry development is the development of a new industry or the conversion of existing structures towards greening existing industries? Does the environmental industry consist of environmental services and recycling industries? Discussion was lessened in 2014 after the environmental industry terminology was defined in the Law on Environmental Protection No. 55/2014/QH13 as "an economic sector supplying technologies, facilities, services and products meeting requirements on environmental protection" and the development of environmental industry (Article 153, LEP 2014) is regulated as "investment in construction, improvement of waste treatment and recycling technical infrastructure; concentrated waste treatment facility establishment and development; production and supply of equipment and products serving for environmental protection".

Environmental industry is an economic sector that is highly policy-driven. Therefore, although by 2014 environmental industry was formally legalised, as a foundation for the formulation of legal documents for environmental industry development, but in the last 10 years (2005-2014), many policies have been used to develop the environmental industry. Of which, Decrees of the Government require the integration of incentives and supporting policies for the environmental industry development such as Decree No. 69/2008/ND-CP, Decree No. 04/2009/ND-CP, Decree No. 59/2014/ND-CP and Decree No. 19/2015/ND-CP; many decisions by the Prime Minister have been promulgated to promote the environmental industry development such as: Decision No. 1030/QD-TTg approving "Environmental industry sector development scheme to 2015, vision to 2025", Decision No. 249/QD-TTg approving "Scheme for environmental service development to 2020", Decision No. 1216/QD-TTg approving the "National environmental protection strategy to 2020", Decision No. 1292/QD-TTg approving the action plan for the environmental industry development and energy savings to implement the industrialisation of Việt Nam within the cooperation framework of Việt Nam - Japan to 2020, vision to 2030.

2. Structure and component forming of the environmental industry sector

In Decision No. 10/2007/QD-TTg by the Prime Minister approving the system of econom-

ic sectors in Việt Nam, the environmental industry sector has no economic codes and products of the environmental industry sector do not have any product codes except some products relating to environmental services listed in E sector group such as: E381 – Waste collection, E382 – Waste treatment and disposal, etc. in Decision No. 39/2010/QD-TTg by the Prime Minister regulating the Việt Nam product sector system.

After the Prime Minister approved Decision No. 1030/QD-TTg approving "Environmental industry sector development scheme to 2015, vision to 2025", the environmental industry sector is viewed as manufacturing, commercial and service provision facilities in three main areas: environmental industry equipment, environmental industry service (waste treatment, waste collection, monitoring, environmental impact assessment, review, etc.); and sustainable natural resource uses and environmental rehabilitation . By now, Việt Nam has about 928 enterprises working in all these three areas, attracting about 82,406 labourers. Together with activities of the Vietnam Environmental Industry Association, a professional social organisation of individuals and organisations participating in environmental industry development activities established in April 23rd, 2011 with the sponsorship of the Ministry of Industry and Trade, the Việt Nam environmental industry sector has officially formed.

2.1. Environmental industry equipment production

By now regarding the field of manufacturing environmental technology equipment, some enterprises with key products have been initially established such as: incineration of solid, industrial, healthcare and hazardous wastes; dust filtration system; waste classification chain and specialized waste transport facility (waste pressing vehicles, vacuum cleaner, oil spill collection ship, etc.). Competitive capacity of national enterprises that manufactures equipment and facilities is weaker than foreign enterprises. About 10 enterprises manufacture and produce environmental technology equipment such as air and dust infiltration system, hazardous and regular waste incineration, waste classification technology equipment, compost manufacturing and fuel pellets.

Environmental technology equipment in waste treatment makes up 40 - 60% of the total investment values, achieving about 700 - 1,000 thousand billion VND/ year. However, the environmental industry equipment manufacturing in Việt Nam only halts at mechanical processing and separate manufacturing assembly but not fulfils the

Box 1. Environmental industry is a terminology having different definitions in other countries in the world

Environmental industry is considered as a relatively new definition in the world although its component has been existed for a long time. This definition was referred to from 1988 in the report of Environmental Business International (EBI), an organisation on market consultancy and investigation operating mostly in the areas of environmental industry and climate change. According to the preliminary definition of OECD, environmental industry or more correctly environmental products and services manufacturing industry consists of goods manufacturing activities and service supply in order to measure, prevent, limit, reduce or restore environmental losses in terms of water, air and land as well as relevant issues relating to waste, noise and ecosystems.

Environmental industry also consists of cleaner production, environment risk reduction products and services, pollution prevention and natural resources uses. OECD changed this definition in 2005, after having consensus with UN, EC, IMF and WB to propose the definition of "groups of manufacturers of environmental products, including cleaner production technologies and products, pollution management service and natural resources management".

This definition is much broader than the original definition of OECD and other definitions that are being used in many developed countries such as eco-industry, environmental goods and services or environmental technology industry. Berg, D.R et. al, 1998 identified "environmental industry consists of activities creating profits in all fields: environmental regulation compliance; environmental assessment, analysis and protection; pollution control, waste management and pollution rehabilitation, natural resources and environment supply, such as water, recycled materials, clean energy; and technologies and techniques to enhance the quality of energy and natural resources uses, productivity increase and sustainable economic growth. DTI/DEFRA, 2006 described environmental industry as a group of enterprises manufacturing market goods and service provision for traditional pollution management (end of pipe cleaning and treatment); and integrated management of natural resources, or ecological production or consumption (including cleaner production).

In general, the definition and delineation of environmental industry up to now is still a difficulty even in developed countries, mostly because of difficulties in delineation and categorisation of environmental fields, together with the advance and development of science and technology. Report of OECD stated that, except some products and services that are definitely grouped into the environmental industry (waste treatment, environmental monitoring, environmental impact assessment), remaining areas intersect with other industries (food, chemistry, mechanics, etc.) and therefore, it is difficult to define environmental industry in an adequate manner. This will lead to certain difficulties in sectoral studies, as well as the forming and orientation of sectoral policies and development planning. This is the point that should be noted for strategizing the young environmental industry development in Việt Nam.

right meaning of environmental industrial equipment manufacturing technology.

Environmental industrial equipment products are also not listed in the Việt Nam environmental industry list and statistics criteria but they are merged with mechanical products or other industrial sectors. Basically this is a supporting industry for the environmental technology sector, originating from different sectors (chemistry, construction, steel, mechanics, electronics, etc).

2.2. Environmental industry service

By now in Việt Nam, there are about 125 enterprises working in the field of water discharge and wastewater treatment, 473 enterprises performing solid waste treatment services. According to Decision No. 1292/QD-TTg by Prime Minister, there are 86 enterprises that are certificated to work in the areas of hazardous waste treatment.

The operating scope of enterprises on environmental industry service is medium and small, with low charter capital and limited capability for big investments; almost no state-owned enterprises on environmental services are strong enough to address enormous and important environmental issues of the country such as: regional, inter-provincial hazardous waste treatment centre; oil spill incident treatment; regional, inter-provincial concentrated domestic solid waste treatment; natural resources and environment loss assessment, environmental technology appraisal.

Equipment and technologies of enterprises used in providing environmental industry services were not invested at an appropriate level. As regulations on conditions for providing environmental industrial services are not available for a long period, many enterprises were formed following "all citizens providing environmental industrial services", the lack of investments in professional services leads to ineffective performance and poor, inadequate and unrealistic consultancy service quality.

2.3. Natural resources sustainable use and environmental rehabilitation

Sustainable use of natural resources and environmental rehabilitation is mostly relevant to the scarcity of natural resources. Therefore, the key point of this sector is the development of the recycling industry.

The recycling industry intersects with the environmental industry services that involve solid waste treatment and hazardous waste treatment and with the manufacturing industry that involves recycled refuse materials such as paper, plastic and steel manufacturing industries.

Paper, plastic and steel manufacturing industries depend mostly on imported recycled materials. On the other hand, paper, plastic and steel refuse collected locally are recycled mostly in traditional craft villages with very backward infrastructure, equipment and technologies of the 1980s, 1990s .

Composting of organic wastes is the priority of ODA investments in recent years mostly with SERAPHIN and ASC technologies with capacities of 50 - 250 tonnes/day.

A majority of industrial wastes can be recycled as construction materials such as ashes

Box 2. Solid waste collection, transportation and treatment service

1. Solid waste collection, transportation and treatment:

In urban areas, increasing each year, in 2010 achieved 81%, 82% in 2011; 83% in 2012 and 83.5-84% in 2013. Recently, the collection and transportation of solid wastes have been socialized; many private enterprises have invested in solid waste collection and transportation.

In suburban areas, the rate is only 40 - 60%; in many areas, many households conduct self-burning of domestic wastes using backward methods.

2. Solid waste treatment: Currently, there are 30 solid waste treatment factories that have been invested with domestic and international technologies, which contributes to protect the environment, reduce landfills, etc. common solid waste treatment technologies are landfills, compost and incineration:

Landfill: The total number of landfills in local areas is about 450, of which the proportion of sanitary solid waste landfill accounts for 20-25%. Some landfills have applied gas collection technologies for electricity generation such as in Nam Sơn – Hà Nội, Hải Phòng, Hồ Chí Minh City, etc.

Composting organic waste: Currently, there are 22 compost factories. Waste treatment factories using foreign technologies and ODA loans are in Hà Nội (Cầu Diễn factory, 50 tonnes/day, Spanish technology), Nam Định (250 tonnes/day, French technology), Hải Phòng (Trang Cat, 200 tonnes/day, Korean technology), etc.; domestic technology factories in some provinces such as Vinh City (Dong Vinh, 200 tonnes/day, Seraphin technology), Huế (Thuy Phuong, 150 tonnes/day, ASC technology), Kiên Giang (200 tonnes/day, ASC technology), Cà Mau (200 tonnes/day), etc.

Concentrated incineration: some factories are operating such as Xuân Sơn, Phương Đình (Hà Nội), Dong Thanh (Hồ Chí Minh City), Phuc Khanh (Thái Bình), Uông Bí (Quảng Ninh), etc. and are being invested in some areas such as Nam Sơn, Đông Anh (Hà Nội), etc. The incineration mostly follows the traditional two-stage combustion, Martin and Plasma incinerators. Combustion requires less land but high investment, management and operation costs.

3. Treatment expense:

Solid waste treatment expense depends on local conditions and treatment technologies; solid waste management and treatment enterprises are paid from the local budget for domestic solid waste treatment: cost for landfill technology is about 60,000 - 140,000 VND/tonnes, compost manufacturing: 210,000-240,000 VND/tonnes, incineration about 320,000 - 360,000 VND/tonnes.

Annually, local budget is allocated for solid waste collection and treatment: in Hồ Chí Minh City and Hà Nội about 1,200 - 1,500 billion VND/year, making up 3.5% of the city budget; other provinces about 20 - 40 billion VND/year, lowest at 3 - 10 billion VND/year.

Expense for hazardous solid waste treatment is, on average, about 6 million VND/tonnes depending on waste types and methods, treatment technologies which is paid by the waste source to treatment facilities through service contracts between the 2 parties.

of coal thermal power factory; appropriate technologies for recycling are not available for blast furnace ashes, electric furnace and dust waste of steelmaking, gypsum based waste of DAP fertiliser manufacturing factory .

In craft recycling villages, electronic wastes are mostly preliminarily recycled and then exported to China. By now, there is no domestic organization that is capable of recycling and collection of original materials enclosed in electronic wastes.

3. Development potential and challenges of the environmental industry

According to the study by the Industrial Policy and Strategy Institute of the Ministry of Industry and Trade at the Strategic Environment Assessment Report of the "Environmental industry sector development planning to 2020, vision to 2030" that has been appraised by the Ministry of Natural Resources and Environment and at the report to the Prime Minister, it is forecasted that by 2020 the demand for the environmental industry development is very high.

The potential is high but the Việt Nam environmental industry sector still faces non-insignificant challenges that are listed by the Prime Minister :

The capacity of environmental industry by now only meets 2 - 3% of the urban wastewater treatment demand, 15% of solid waste treatment, about 14% of hazardous waste treatment; many areas such as oil waste recycling, plastic refuse, electric and electronic waste have not developed.

The attraction of investments in environmental industry sector is low and not corresponding with the requirements of the society. The environmental service sector depends mostly on the budget allocated from the state budget, mostly for urban wastewater treatment services.

Environmental service cost is low and less-attractive for investors. This is the biggest barrier to the development of the environmental industry sector.

Capacity and linkage between research and mass production of environmental equipment is limited. Many state-owned environment enterprises are weak in technology capital investments. In some areas, foreign enterprises play important roles; private enterprises do not have opportunities for development.

Inadequate statistics on the environmental industry sector leads to negative impacts on the monitoring and policy-making of the environmental industry.

The environmental industry development has not focused on economic effectiveness as well as considered the scarcity of natural resources - main incentives for the development of the recycling industry.

4. Conclusion, suggestion and recommendation

In the past few years, many incentives and supporting mechanisms and policies promulgated by the Government and the Prime Minister have been mobilized to bring opportunities and development incentives for the environmental industry in Việt Nam. However, the incentives and supporting meth-

Table 1. Forecast of development demands of the environmental industry sector

No.	Area	To 2020	To 2030
I	**Manufacturing of environmental industry equipment** (Unit: billion VND/year)		
1.1	Wastewater treatment equipment	22,797	70,479
1.2	Urban solid waste treatment equipment	21,414	35,416
1.3	Sludge treatment equipment	2,141	3,542
1.4	Hazardous waste treatment equipment	46,085	110,725
1.5	Air emission treatment equipment	1,000	2,000
	Total value	**93,437**	**222,162**
II	**Environmental industry service**		
2.1	*Total wastewater (Thousand m^3/day night)*	*9,345*	*22,227*
	Urban wastewater	6,145	8,627
	Industrial zone wastewater	3,200	13,600
2.2	*Total volumes of urban solid waste (tonnes/day)*	*96,370*	*200,871*
	Special urban areas	50,906	86,510
	Other urban areas	45,464	114,361
2.3	*Total volumes of industrial zone solid waste (thousand tonnes/year)*	*11,160*	*54,720*
	Non-hazardous solid waste	7,812	38,304
	Hazardous solid waste	3,348	16,416
	Hazardous healthcare waste	50	92
2.4	*Total volume of air emission (million tonnes of equivalent CO_2 /year)*	*320*	*542*
	Energy, industry	251	470
	Agriculture	69	72
III	**Sustainable use of natural resources and environmental rehabilitation**		
	Total volume of recycled solid waste (thousand tonnes/year)	*7,280*	*21,840*
3.1	Incineration of hazardous waste for energy	432	1,296
3.2	Solidified solid waste, and others	288	864
3.3	Solid wastes can be recycled (from urban solid wastes) -10%	15,829	32,993
3.4	Solid waste can be recycled from solid waste in industrial zones	7,280	21,840
3.5	Organic solid waste as compost, energy pellets	17,588	36,659
3.6	Electronic solid waste	89	2,397
3.7	Electric solid waste recycled as construction materials	24,600	51,300
3.8	Recycled waste oil	214	420

ods have not brought outcomes as expected. The environmental industry only meets 2-3% of the urban wastewater treatment requirements, 15% of solid waste treatment, 14% of hazardous waste treatment; many areas such as oil recycling, plastic refuse, electric and electronic wastes have not developed.

The question is whether the recent environmental industry development in Việt Nam is due to incentive and supporting policies? Looking back at incentives (tax, fees) and supporting measures (land, infrastructure, market information, scientific research development and technology transfer, supporting investment in construction of key environmental treatment projects) have been regulated in relevant legal documents, it could be seen that all activities to develop the environmental industry have particular incentives and supporting policies. However, the Ministry of Industry and Trade was assigned the task but not assigned the state management function on the development of the environmental industry sector (as mentioned earlier), the Government has just promulgated regulations on incentive and supporting policies and there are no legal documents as bases for comparison, classification and identification of entities that can obtain incentives and supporting policies. As a result, although incentive and supporting resources are available, both state management agencies and investors meet difficulties in accessing the resources.

Therefore, it is time that the State should not only have incentives and supporting measures but also have a fair and equal playground for investors. Consequently, the Government must have national standards and technical qualifications applied for each product and equipment that are made by the environmental industry. Based on the national standards and technical regulations, the comparison and appraisal of cost and quality is transparent and reliable.

The international integration is occurring at deeper and wider scales. The development of the environmental industry in Việt Nam cannot have the absence of international investors that bring in imported waste recycling treatment equipment, machines and production lines. Therefore, Việt Nam needs to have economic and product codes for the environmental industry of Việt Nam to identify projects and equipment as bases for regulation of export and import tax policies for this sector's products and equipment. In addition, this is the foundation for ministries and sectors to develop corresponding national standards and technical regulations for equipment and products of the environmental industry sector, which are used as standards for assessment and comparison in appraisal, selection and pricing of equipment and products of investment projects in the environmental industry development.

Finally, a more transparent and standardised cost identification of environmental industry products and services that is developed based on standards and criteria on products and goods will be the motivations to promote the socialization of environmental industry service activities and operation handover contracts and to encourage investors to invest in waste treatment. Price of equipment, products and services will be the final determining factor attracting investors■

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Mainstreaming Ecosystem-based Adaptation in Việt Nam: Challenges and Recommendations

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Why Ecosytem-based Adaptation is needed?

Climate change is a real, growing and pervasive threat to Việt Nam's continued socio-economic development, poverty alleviation, and shared prosperity efforts. Việt Nam is considered one of 16 "extreme risk countries", according to the Climate Change Vulnerability Index. The economy suffers from climate change impacts by about USD 15 million/year, especially in the sectors of agriculture, fisheries and tourism. For example, it is projected that an additional 30% total area of the Mekong River Delta, which is the most productive agricultural area and is essential for the country's food security and rice exports, is experiencing and will increasingly face an unprecedented increase in salt intrusion, resulting from a 30-cm sea level rise. Without implementing adaptation measures, rice production could decline by approximately 2.6 million tons/year.

Việt Nam is considered as a world's biodiversity hotspot rich in biodiversity including many rare, precious wildlife species and gene resources, variety of landscapes and natural resources and both the population and the economy rely on the services that these ecosystems provide. However, in the past and until today, pressures like deforestation, land use changes and population growth have led to the degradation of many of these valuable ecosystems. Additionally, the impacts of human induced climate change are increasingly being experienced, especially sea level rise, the increase of annual average temperature, floods, storms and droughts. Hence, there is an urgent and indispensable need for adaptation that decreases vulnerability by strengthening people's resilience and adaptive capacity.

Ecosystem based Adaptation (EbA) uses biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change. However, in many cases EbA measures are more cost-effective, flexible, holistic and applied in all ecosystems, are more accessible by rural and poor communities, and create co-benefits, such as biodiversity conservation, mitigation of greenhouse gas emissions, increased food production, ecotourism, making them in many cases "no regret options" that may also serve to meet development goals. Therefore, EbA has increasingly gained attention internationally in the past years and is put on the policy agenda in many countries.

The Government of Việt Nam has reacted to climate change threats by developing a range of strategies and programs. Action to initiate a national response to climate change started in the late 1990s and progressed to an Initial Communication to the UNFCCC (2003). The response to climate change has developed rapidly since 2008 including the National Climate Change Strategy (NCCS) and the Việt Nam Green Growth Strategy (VGGS) which form the overlying structure as well as sector responses including the National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020 (2007), Law on Natural Disaster Prevention and Control (2013), National Forestry Development Plan 2011 - 2020 (2012)...

Fore-mentioned national and provincial strategies and action plans illustrate the necessity of dealing with resilience through adaptation, as well as the requirement for mitigation in relation to international status and financing. Findings from the Climate Public Expenditure and Investment Review reveal that climate change response spending is heavily focused on adaptation (accounting for around 90% of expenditures). However, a majority of CC-response allocations are driven

by investment in improving the climate resilience of high-cost, large-scale infrastructure projects as Ministry of Agriculture & Rural Development and Ministry of Transport have accounted for a combined 94% of the climate budget over the study period.

The "soft", low-cost, and/or small-scaled adaptation measures, for example in the water resource and agriculture sector like changes in sowing and cultivation practices, erosion control, and changes in cropping patterns, selection of crops that are better suited to a changing climate and give more attention to land and water management should be adequately addressed at policy and ground implementation levels. EbA is considered as soft, low-cost, and small-scaled adaptation measures. The concept of EbA is not sufficiently integrated in current strategies and programs. Moreover, the analysis of the policy framework shows that adaptation is no longer a priority for the planning period 2016 - 2020. This bias may be connected to the focus of international development partners on mitigation rather than adaptation, and the heavy dependence of the Government of Việt Nam on the support of these partners for the implementation of climate change programs. Nonetheless, in a country like Việt Nam that is already heavily impacted by climate change, adaptation needs to be a priority topic and the policy framework should support effective implementation.

EbA integration to adapt to climate change is relatively new. However, several successful practical examples of EbA have been implemented in Việt Nam. Some of them are presented in the following chapter. The case studies show that it is now the time to mainstream EbA from the local to the policy level and to integrate the approach into plans and programs in order to most effectively align the measures from the national to the local level and along different sectors.

Integrated Coastal Management Program (ICMP) - EbA good practices in Việt Nam

In Việt Nam, most of the current EbA projects are located in the Mekong Delta area, helping to adapt people in coastal environments mainly by rehabilitation of mangroves as a buffer against sea-level rise and storms. However, EbA can be applied in many other ecosystems such as forests, wetlands, sand dunes, river catchments or even agro-ecosystems. At stratetegic level, EbA has been mainstreamed into the provincial biodiversity conservation master plan and the socio-economic development master plan of Bến Tre province.

Increasing floods, storms, droughts and sea level rise due to climate change have increasingly severe impacts on the Mekong Delta that is home to 17 million people and where more than half of Việt Nam's rice is produced. Approximately one third of this low-lying flat coastal area would be inundated if the sea level rises by one meter as predicted by 2100 and 1 million people would be at risk of being displaced until 2050. The Integrated Coastal Management Program (ICMP), implemented by GIZ and co-financed by the Australian Government's Department of Foreign Affairs and Trade, aims to increase the resilience in the area using appropriate strategies for coastal protection, water and forest management, agricultural practices and planning.

As part of the program, land is reclaimed for coastal protection through breakwater fences in the sea for the rehabilitation of mangrove forests that pose the best protection against floods and storms. As a second measure, farmers are supported to apply adapted techniques like improved water and pesticide management, technical support for environmentally sound shrimp farming. These methods have led to a reduction of 30% in water use and pesticide application, especially, the abandonment of chemicals in aquaculture practices. To support the water management, a water information system was set up and operational regulations for local irrigation systems were developed including a participatory irrigation management manual.

On a policy level, the project promotes the cooperation across borders by establishing a coordinated approach of authorities on the national and provincial level for climate-resilient development. After developing solutions in the first phase of the project, these activities will be institutionalized. The scaling up is effectuated in three working areas: Turning the local solutions into guidelines and regulations for wider implementation; arranging the funding of necessary measures by the government and international donors; and supporting coordination across provinces.

Conclusions and recommendations

Although EbA as a concept is relatively new, however, traditional conservation approaches, the EbA approach should takes climate factors into consideration. The implementation of EbA can build upon the experience and traditional knowledge that local communities have on ecosystem management and dealing with climate variability. The willingness to participate in the approach is crucial, but again needs a comprehensive policy framework that evidently creates benefits for the participating communities.

The GIZ Project "Strategic Mainstreaming of Ecosystem-based Adaptation in Việt Nam" supports its partner ISPONRE under MONRE to anchor the EbA approach in Việt Nam's national and provincial planning processes. The project includes trainings of trainers for capacity building, the establishment of learning and dialogue platforms including a round table on EbA and the support to access financial sources. Based on the experiences of the project and the presented case studies, the following recommendations for the successful mainstreaming of EbA are given:

Raising awareness and understanding of the importance, potentials and comparative advantages of EbA among national and provincial policy decision makers: EbA is still a new topic for Việt Nam and most of the national and provincial public stakeholders are not fully familiar or work with the concept of EbA. This gap can be addressed by informing them about EbA approaches in form of trainings and the dissemination of practice-oriented documents. Simultaneously,discussion platforms amongst national and local decision makers on best practices in adaptation approaches for Việt Nam need to be initiated. This would help to identify the main knowledge and capacity gaps and implementation barriers and raise awarenessand build up an understanding of how an EbA approach is different from other adaptation measures and how to integrate it into existing national strategies, planning and budgeting processes.

*Capacity building on methodologies for mainstreaming for national and provincial practitioners***:** The up-scaling of EbA should be developed on the basis of existing experiences and pilot measures that rely on scientifically based vulnerability assessments and that include sound cost-benefit analyses. Dialogue platforms need to be set up involving stakeholders from civil society, science, the private sector as well as government institutions from the local, provincial and national level. Their involvement is necessary for knowledge exchange, strategic alliances and for integrating EbA as a cross-cutting issue into adaptation policy.

Building up a way towards mainstreamingEbA approach in the national strategies,policies and plans: So far, an EbA approach is not explicitly mentioned in any national climate change strategies, plans or legislations in Việt Nam. Therefore, entry points for EbA in relevant legal frameworks as well as financing options need to be identified.

Disseminating learning experiences via national and international networks: Online resources, communication networks and events on both national and international level should be used to present experiences of concrete measures and to build cooperation and learning networks on EbA worldwide■

Effort to promote finance for biodiversity conservation

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In 2010, the Ministry of Natural Resources and Environment (MoNRE) together with the United Nations Development Programme (UNDP) and their co-implementing partner, the Ministry of Agriculture and Rural Development (MARD), have launched the project "*Removing Barriers hindering Protected Area Management Effectiveness in Việt Nam*" (PA project). The objective of this cooperative partnership is to "*secure a sustainably financed protected area system to conserve globally significant biodiversity*". The project's objective is consistent with Việt Nam's National Biodiversity Strategy to 2020 and the 2013 Biodiversity Action Plan to implement Convention on Biological Diversity (CBD) and Cartagena Protocol on Biosafety, Strategy on Protected Areas Management in Việt Nam to 2020, all of which identify sustainable conservation financing as a key issue for the effective management of protected areas.

1. Key barriers hindering protected area management effectiveness

In order to achieve the project's objective, at first, key barriers hindering protected area management effectiveness have been identified. Accordingly, barriers can be grouped under four headings: The lack of a comprehensive and harmonized legal and policy framework for protected area financing; The lack of clear and harmonized institutional mandates and processes for protected area financing mechanisms; Little knowledge of sustainable financing options; and The lack of information and information sharing on biodiversity and protected area status.

Given these barriers, the following outcomes will be secured through implementing the project: A comprehensive and harmonized legal and policy framework will be established supporting sustainable protected area financing; Clear and harmonized institutional mandates and processes will be identified supporting sustainable protected area financing mechanisms; Knowledge on and experience in options of sustainable financing will be improved; and Information on biodiversity and protected area status will support protected area management and help building public support for the protected area system.

2. Project development and achievements

2.1 Establishment of a comprehensive and harmonized policy and legal framework supporting sustainable protected area financing

The main objective of the Project is to create a sustainable policy and legal framework for the management of protected areas and to develop guidance for protected area management boards on how

to allocate the available budget.

Reviewing and revising biodiversity conservation legislation

Currently, Biodiversity is regulated in many legal documents, but it focuses mainly on 4 legal systems: Law on Forest Protection and Development, Law on Environmental Protection, Law on Fisheries, Law on Biodiversity. These legal documents have contributed to improvement of legislation systems on biodiversity in Việt Nam. However, there are some differences in scope of regulation, management objective among Law on Forest Protection and Development, Law on Environmental Protection, Law on Fisheries, Law on Biodiversity. Hence, Biodiversity content regulated by these documents which are also different; legal documents remain some confusion; biodiversity, then resulting in a sectoral system for biodiversity conservation differentiating between forest, marine and wetland protected areas, biodiversity on wetland; instead of considering biodiversity as a unified system.

Recognizing that this highly fragmented system hinders effective and sustainable biodiversity management, this Project helps to review and revise the 2008 Law on Biodiversity by identifying contextual overlaps and inconsistencies with other legislation relevant to biodiversity throughout the amendment process and proposing potential modifications. By the end of 2015, a comprehensive report will be completed to fulfill this task.

Guideline on budget allocation

Research under the Project has revealed that the annual state budget granted for protected areas is mainly used for infrastructure development (roughly 51% of total budget) and operational purposes (about 37%) such as the payment of salary for officials, forest patrol, the prevention of forest burnings, etc. Crucial activities for biodiversity conservation like the observation of plant and animal species, updating biodiversity data on a regular basis, research on ecosystems or the application of geoinformation systems and remote sensing are not seriously performed or only on very rare occasions, mostly when additional external technical support is provided. One of many underlying causes for this situation is the lack of guidance on management practices for protected areas. For this reason, the development of guidelines for the allocation of expenditures of protected areas is a matter of priority of this Project. Consequently, under its direction, a Joint Circular of the Ministry of Finance (MoF) and MoNRE on "*Guiding the **management, use and settlement** of the regular expenditures from the State budget in order to implement tasks, projects, schemes, programs of the National Strategy on Biodiversity by 2020 and vision towards 2030*" has been formulated and approved on 29/10/2014 under No. 160/2014/TTLT-BTC-BTMT.

2.2 Clear and harmonized institutional mandates and processes support sustainable protected area financing mechanisms

Memorandum of understanding between MoNRE and MARD

Protected areas are an important tool for the management and protection of biodiversity. As has been indicated, in Viet Nam the unclear distribution of responsibilities for biodiversity management and lack of coordination between MoNRE and other stakeholders hinder effective and sustainable biodiversity conservation. Therefore, there is no doubt that there is a need for improved mutual understanding on protected area management between the two ministries. The signing of a draft Memorandum of Understanding (MOU) on the "coordination of the implementation of state management on biodiversity conservation" has been the "primary accomplishment of the Project". After an internal review process, the MOU would be signed at the end of 2015 .

Training courses on biodiversity management

According to a definition by the Global Environment Facility (GEF) and UNEP, it might be taken as 'the actions needed to enhance the ability of individuals, institutions and systems to make and implement decisions and perform functions in an effective, efficient and sustainable manner'. Part of the Project is therefore to provide training courses for MoNRE and MARD staff as well as for protected area employees on matters, such as biodiversity policies and legislation, biodiversity planning (at national and provincial level), biodiversity financing, the performance of an Environmental Impact Assessment, the management of invasive species, biodiversity observation, monitoring and reporting the current status of biodiversity.

The project has organized 35 training courses with 850 trainees from all over the country. Additionally, in order to ensure the sustainability of the training programme once the Project is formally finalized, 'Training of Trainers' (TOT) is carried out and relevant training material is provided.

Furthermore, according training materials have been developed which will be integrated into post-graduate training programmes of the Center for Resources and Environment Studies (CRES) of Hanoi National University as well as training courses organized by MoNRE and MARD.

Proposing the incentive mechanisms for officers of protected areas

Human resources are one of the decisive factors for the development and protection of natural resources. Under the current regime, forest rangers receive seniority allowance, while officers of management boards of protected areas do not enjoy these benefits even though they handle similar missions on similar scenes. In line with the National Strategy on Biodiversity to 2020 and vision to 2030, Strategy for Management of Special-Use Forests, Marine Protected Areas and Inland Water Protected Areas in Vietnam until 2020 the Project aims to harmonize the seniority allowance mechanism and the salary for 'conservation staff' and forest rangers working in protected areas. Furthermore, an incentive mechanism for civil servants and public employees working in the field of biodiversity conservation with direct impacts on their dedication and motivation is developed. The outcome will be a draft Circular providing for a detailed format of federally recognized titles for civil servants and public employees and for recommendations on rearrangements of policies on salary grade, scale of salary and allowances. It will ensure that the salary policies for civil servants and public employees are in compliance with those of the market economy to prevent the well-known effect of "brain drain" from public services to private markets, where higher incomes and salaries often prevail.

2.3 Knowledge on and skills in sustainable financing from demonstration sites.

An effective financing mechanism for protected areas is a key factor for sustainable biodiversity conservation. Many protected areas in Việt Nam entirely rely on government budget allocations, some benefit significantly from funding from international agencies and foreign donors. Yet, there is a need to find new financial resources to supplement existing funding. However, currently, protected area managers lack the authority to explore options for generating alternative revenue streams. Under the Project, the search for additional sources of funding is therefore encouraged. In order to test different schemes for revenue generation, cooperation agreements with the management boards of three pilot sites, Bidoup-Núi Bà National Park, Cát Bà National Park and Xuân Thủy National Park have been concluded. If they are successful, they will serve as examples to other protected area management boards looking for alternative income sources for biodiversity conservation.

Cát Bà National Park

In order to boost sustainable financing of biodiversity conservation a new ticket pricing system is currently tested at Cát Bà National Park. To enable the increase in ticket fees, the approval of the People's Committee of Hai Phong City had to be obtained. According to its respective Decision No. 1780/2014/QD-UBND dated t /8/2014 Cát Bà National Park is now allowed to increase the entrance fee for visitors from 0.,00s VND to 0.,00s VND per person. The total increase in revenue is estimated at1,.2 billios VND per year.

Furthermore, it is planned to introduce, promote and expand the concept of ecotourism in Cát Bà National Park as an additional source of income. Tourism, in particular ecotourism, is a key economic factor for biodiversity conservation. For Cát Bà National Park, a marketing strategy is developed to attract visitors to the park. For this purpose, visitor desires have been identified and based on these, tourism products and tours have been developed which are unique and interesting to visitors of the Park. For example, a leaflet, a book and a video emphasizing the beauty and ecological value of the site have been created. Moreover, a training programme for National Park employees has been developed aimed at enhancing their marketing and guiding skills. In addition, the internet website of Cát Bà has been updated and is now providing relevant information on the Park's biodiversity and attractions in Vietnamese and in English.

In order to develop sustainable finance mechanism from ecosystem service in Cát Bà National Park, it is necessary to develop coordination regulation on management of tourist activities between Cát Bà National Park and local authorities; to ensure the consistency and consensus between Cát Bà National Park and local authorities. The regulation is therefore developed so as to determine responsibilities of stakeholders. The regulation was consulted Cát Bà National Park, local authorities and other stakeholders and was signed by them.

Bidoup-Núi Bà National Park

Bidoup-Núi Bà National Park is a site implementing program on the payment for forest environmental service (PFES), Bidoup-Núi Bà National Park did not received any budget from its forest area. Thus, the Project helps the National park to develop the scheme on revenue increasing and utilization the revenue from ecosystem. Following Decision No. 2393/QD-UBND dated /11/2014, Lâm Đồng PPC allows Bidoup - Núi Bà National park to increase revenue from payment for forest ecosystem services, entrance fee, ecotourism service and research activities. The resulting increase in the budget is estimated to increase by 3 billion VND per year. In addition, to secure the sustainable implementation of the scheme, technical support has been provided. This includes the development of a regulation and a corresponding plan for forest patrolling, the creation of a leaflet on the Park's biodiversity and attractions, the drafting of a species map, the identification of indicators for monitoring and the creation of a report on the current status of the Park's biodiversity. A meeting with 82 delegates from Universities, travel companies, scientists, and officials from inside and outside the province has been arranged to discuss the promotion of ecotourism.

Xuân Thủy National Park

For the generation of additional funding, for Xuân Thủy National Park, a scheme on increasing and sharing revenues from extensive clam farming has been proposed under the support of the project. The application has been approved by the People's Committee of Nam Định Province under Decision No. 119/QD-UBND. Of particular importance for Xuân Thủy National Park is to balance conservation needs with the interest to generate additional funding by conducting extensive clam farming. The assessment of the current status of biodiversity within the ecological restoration zone is therefore subject to special responsibility and for this reason carried out under the umbrella of the Project. Part of the assessment will be the establishment of a map illustrating the current status of biodiversity and indicating the planned clam farming area including its impacts on the conservation area. In order to ensure the maintenance of the existing biodiversity, technical guidelines on sustainable clam farming are developed.

2.4 Collecting information and data on biodiversity, reporting on the current status of biodiversity in protected areas; Promoting public support for protected areas

Monitoring, data collection and data exchange between protected areas

Currently, Information system, report on biodiversity are limited; information almost has not been updated and shared among protected areas, Departments of Natural Resources and Environment (DONREs), Departments of Agriculture and Rural Development (DARDs), MoNRE, MARD. To resolve this issue, the Project has supported to develop guideline on biodiversity monitoring, guideline on biodiversity report. For this purpose, data on plant and animal species are collected over a period of two years at Xuân Thủy National Park serving as a pilot site. In order to ensure the systematic management of the data collected and allow their exchange, a Clearing House Mechanism (CHM) between Protected areas and DARDs, DONREs and other stakeholders is currently under development.

Raising public awareness and gaining public support

Of vital significance for effective biodiversity conservation is public awareness and mobilization of community support and participation. The project staffs have therefore developed a 'Public Awareness Raising Programme' which is currently implemented at the three pilot sites in 2015. It aims at educating secondary school pupils and first and foremost the population whose life is depending on natural resources within conservation areas.

3.Concluding Remarks

This Project's studies have clearly identified the need for a comprehensive and harmonized legal and policy framework on biodiversity along with clear and harmonized institutional mandates as key priorities for effective biodiversity conservation in Việt Nam. Although many activities have been initiated under the Project such as reviewing and proposed revision oy Law on Biodiversity, the formulation of a draft MOU between MoNRE and MAD…. However, in the context of the project there are some drawbacks that could not be solved; it requires the close coordination between Ministries, sectors and other relevant bodies.

Policies and sustainable finance mechanism for Protected areas only come into effect and are implemented effectively under the unified management. In addition to unified management and specific strategy, criteria on classification, monitoring, assessment of biodiversity in effective way; these factors are enable for budget allocation, sustainable, systematic and effective investment■

Friesland Campina Việt Nam - For green environment

▲*Mr. Arnoud van den Berg - FCV's General Director of receiving the Việt Nam Environmental Award for its excellent achievements in environmental protection from the Ministry of Natural Resources and Environment*

After nearly 20 years of operation in Việt Nam, FrieslandCampina has contributed significantly to community through its nutrition and education programs in order to improve nutritional knowledges as well as to provide access to better education for future generations.

FrieslandCampina Việt Nam (FCV) is one of the companies receiving the Việt Nam Environmental Award for its excellent achievements in environmental protection during the period 2011 - 2015. The Environment Magazine had a talk with Mr. Arnoud van der Berg - General Director of FCV about the operation attaching to environmental protection activities.

✶***Congratulations the FCV's achievements! Could you please share the meaning of the Việt Nam Environmental Award to your company?***

Mr. Arnoud van den Berg: This award has a great meaning to FCV and is an endorsement of FCV's exertions in implementing activities for the benefits of society and communities as well as contributing to sustainable and green growth over the years. At FCV, environmental protection is always our top priorities.

✶***Could you please share the purposes and meaning of the agreement to corporate in a joint program titled "For a green environment in Việt Nam" with the Vietnam Environment Administration (VEA)?***

Mr. Arnoud van den Berg: Over the years, Việt Nam has reached many socio-economic achievements regarding the progress of innovation and integration into the global economy. However, the economic development, industrialization and modernization have had a negative impact on the natural resources and environment of Việt Nam. Taking this into account and wishing to help society to improve the living environment for the current population as well as for future generations, the VEA and FCV signed an agreement to corporate in a joint program titled "For a green environment in Vietnam".

The agreement focuses on education and raising public awareness of the need for environmental protection in Vietnam. This will be done by organizing contests, extracurricular education for the youth and activities to promote the awareness. FCV and the VEA will also encourage organizations and individuals to contribute to the protection of the environment and urge for more drastic action towards environmental protection and reducing harmful activities in Việt Nam.

FCV always has a strong sense of responsibility towards the community. The company believes in the importance of community activities and in connecting partners and constituents of the value chain with the community to carry out social programs, reduce negative impact on the environment, enhance economic benefits, shared values and the competitiveness of each member in the community.

✶***FCV's business strategy to associate specific environmenal protection purposes is always highly appreciated. Can you explain more details of your company's environmental protection solutions over the years?***

Mr. Arnoud van den Berg: All FCV's facilities are well equipped to treat wastewater, solid waste, dust, exhaust fumes and noise. Those systems effectively treat domestic and

industrial solid waste, solid waste and harmful waste. They are designed and built on advanced microbial technology and have a daily treatment capacity of 2,400 m^3. Its systems are also able to separate rainwater from production wastewater. Therefore, wastewater from the factories always meets environmental standards such as grade A of the QCVN 40:2011 (which specifies the highest standards for treating wastewater for daily use) of the Ministry of Natural Resources and Environment. Originating from the awareness of cooperate social responsibility, FCV is strictly compliance with the regulations on environmental protection as well as on other sectors.

FrieslandCampina Việt Nam is a joint venture company between Protrade (Bình Dương province) and Royal FrieslandCampina - a leading dairy company in the Netherlands with more than 140 years of experience over the world. FrieslandCampina has set up business in Việt Nam for nearly 20 years, supplied more than 1.5 billion high quality milk units every year with many favorite brands such as Dutch Lady, Friso, Yomost, Fristi. Its factories in Bình Dương and Hà Nam are invested with the most advance technology, automated management system, completed sewage treatment system, saving-energy measures and using clean energy sources to protect environment.

✶In addition, FCV has a lot of programs to cooperate with farmers. Could you please specify one of outstanding programs with farmers?

Mr. Arnoud van den Berg: The Dairy Development Program (DDP) has been initiated since 1996 which makes endless efforts to enable farmers to develop dairy farming becoming a sustainable agriculture business and ensure the high quality of raw milk. Since the first day of collecting 30kg fresh milk of 15 farmers, FCV has currently purchased over 310 tons of fresh milk of more than 4,500 farmers across the country. In 2014, FCV collected 104,507 tons of fresh milk compared with 82,825 tons in 2013. As a dairy company, FCV is interested in developing dairy zones initiatively. It establishes partnership with farmers who considering raising dairy cows, provides them with access to technical knowledge and preferential loan, connects them to the dairy cattle feed supply chain. These helps maximize the farmers' values into FCV's supply chain and increase their income while constantly improving quality of raw milk.

It is the fact that small dairy households face many issues of dairy cattle feed supply chain, husbandry technical advice, veterinary treatment, developing and establishing procurement and control systems to ensure good milk quality as well as the consumption of fresh milk at competitive prices. FCV recognizes the need to solve these issues and therefore we support farmers through the DDP.

FCV has connected the dairy farmers into the surrounded groups. At the house of the group leader, chilling tanks are installed. The members will transport fresh milk to chilling tank within 45 minutes. Thanks to the on-site quality control equipments, the milk quality of each household is examined before pouring into the tank. Hence, each farm is completely responsible for the fresh milk quality. Simultaneously, we connect the dairy farmers to the livestock technical advice and veterinary treatment services, to the dairy cattle feed supply chain at lower prices. This is a strong foundation of agricultural cooperation in order to develop to the large scale production, a new partnership model based on voluntary, transparency and efficiency■

Phạm Tuyên

▲*Pilot fishing pond with treated wastewater*

Media communication to environment protection

Assoc. Prof, Dr. Đỗ Chí Nghĩa
Editor in Chief - The People's Deputies Newspaper

Environment protection is an essential, urgent issue that needs people in the local and global community to take action. Among many different missions and challenges arising in environment protection, media communication is still an important part and an indispensible link, due to its ability to gather people in the widest range to act together.

Newspaper is a major means of communication. Though the world media is moving more dynamically, with plentiful social networks and information resources, newspapers have still been able to maintain a stable position in the society for its work ethics and political awareness, which helps gain people's trust and confidence in newspapers. It is obviously difficult to earn confidence from people and preserve it from being affected by other rising information resources. There are various aspects of life, so journalists must be able to expose the truth and drive readers to it while having to suffer "time" pressure.

Therefore, journalism is not only an hournorable job that is tied to life and creativity, but also a difficult career with a number of challenges. The late Prime Minister Phạm Văn Đồng once said that journalists should "live deeper and more passionately", which meaned they should experience life more to learn lessons from it. Also, the late General Secretary Nguyễn Văn Linh showed the important and helpfulness of his series of "Things to do now" articles in the *Nhân Dân* to boost economic and societal reforms. He said that it was easy to issue any resolution or directive to solve the problems, but real problems came from inside our agency system. The articles were written to boost pressure from the public and put it on the agency system so the agencies could reform themselves in order to satisfy new requirements and new missions in a new era. The power of publicity makes newspapers more powerful, pushing the society forward. Individuals, even senior-level government officials, junior-level government officials, businessmen, students or workers will pay more attention to newspapers - especially the papers and media channels that focus on environmental protection - if they show concern about the country's development and people's living conditions.

Journalists must consider some ideas while performing their duties:

First, journalists should stress the benefits and obligations that each individual and organization should have in environmental protection and sustainable development

Journalists must stress the benefits that people receive from the environment, as people always care about their interests as individuals and as communities. There are some benefits in environment protection listed below:

Each individual must be responsible for the future of the community and younger generations, as it is the honour and the cause of life. Vietnamese people should be ashamed for failing to protect the country's environment, as a part of ethics, education and culture in a civilised society.

For businessmen, protecting environment goes with better profit. It means that a company spending more money on environmental protection methods could sell a large amount of products and services. On contrary, products polluting the environment or are not environmentally friendly will be ignored in the market. In developed countries where the society is aware of environmental protection, people often favour businesses that notice environmental issues in production. Products that are certified by environmental agencies are more attractive, though their prices may be higher. Any businesses that want to develop further should pay attention to this kind of customer taste.

There are many regulations on industrial production in terms of hygiene,

labour safety, packaging processes, food safety and environment effects to assure consumers' health. Customers now are more aware of how clean the products are - especially how they affect the environment. Spending some more of the budget on environmental issues will help producers overcome the legal framework in overseas markets and improve the competitiveness for their products. Companies will be eliminated from the market if they only want profit and do not want to take care of environmental issues.

Second, journalists should focus on the legal system for environmental issues

Individuals and businesses may face harsh punishments from the legal framework, in addition to some administrative fines, including:

Making compensations for environmental pollution: According to the Civil Procedure Code 2005, the side asking for compensations for environmental pollution must provide evidence for the damages. This side can request an amount of compensation from the side that causes the damage and the two sides will negotiate to reach an agreement. If no agreement is reached, they can bring the case to court and the court will make the final decision after investigating and assessing the damages.

Decree No. 117/2009/ND-CP on administrative fines for environmental pollution and the Law of Environment Protection also state that the factory or company must shut down if it commits serious violations of environmental issues.

The civil procedure code should raise administrative fines to equal the profit that businesses earn from their production. The Criminal Procedure Code should include criminal proceedings in Chapter 17, in addition to administrative fines against those who commit serious environmental damages. However, legislative bodies must differentiate between criminal cases and civil cases.

Third, journalists should praise achievements in environmental protection and criticize wrongdoings in this issue

A lot of Vietnamese individuals and companies taking care of environmental issues have developed and operated efficiently. Many FDI businesses, with comparative advantages in capital, technology and management, have successfully used waste treatment systems before disposing of industrial waste in the environment. These are recognized by Vietnamese government agencies and the society. Some local businesses have been able to operate waste treatment processes in their production and improve their business performances.

In addition, local companies are able to develop "green" products so they can compete in domestic and international markets. When they apply advanced technologies and green production methods in the production process, Vietnamese firms become stronger and win more domestic market shares, and increase their exports to other countries, where they are highly appreciated by overseas customers.

A lot of firms are able to minimize the impacts of industrial waste on the

environment by improving their waste treatment systems and production chains, as well as using environmentally friendly materials. The award for "Green Business" was granted to 11 firms in 2006 and 15 firms in 2008. This award will improve the confidence domestic and international consumers have in those companies. The companies, therefore, will gain more reputation and prestige. They have successfully neither improved their competitiveness, nor preserve the environment.

There are still a lot of things Vietnamese individuals and businesses need to do when it comes to environmental protection issues. In the context of global integration, especially after Việt Nam became a member of the World Trade Organization (WTO), Vietnamese companies now have to face highly competitive players from all around the world. In that context, "green" businesses with "green" products will have the best chance in the market.

Though some businesses have performed very well when it comes to environmental issues, the public still needs to worry about environmental pollution. The media reports those cases almost everyday, most of which are caused by companies disposing waste into water, producing too much smoke and dust, and using backward technologies, having bad effects on the society.

The public's strong reactions toward those environmental violations prove that the media have performed well in the fight against those violations, and to prevent similar cases from happening. The media here also highlights the role of the online newspaper, which is a favourite means of communication for businesses. Online newspapers provide lively visual effects in the minds of business owners, and can make them change their attitudes and actions on environmental issues.

However, journalists should pay attention to how the subject feels when they try to highlight a specific case. The articles must be written with accurate information and speak the truth. If not, businesses will be angry at and disappointed in the media.

Particularly, the online newspaper, which is the fastest news channel, can create different public reactions and arouse wrong and untrue facts that are not good for the public. Too much information about the bad aspects of the story, based on the writer's preconceived ideas, may cause disorder in the public. Entertainment news not only reflects a personal view, but also reflects the strategies in some papers that want to win the "market shares" whatever the cost. While, the readers clearly cannot be optimistic about life if the balance between negative and positive news does not exist.

Recommendations

We highly recommend some solutions to improve the quality of the media based on its activities concerning environmental issues.

First, we need more media channels, which specialize in environmental protection and sustainable development, for different types of readers.

Second, we need to organize more press competitions, and encourage people and journalists to create slogans and videos on environmental protection so people can join in. We can organize competitions and give awards weekly or monthly to create good effects on the society.

Third, we need to improve environmental protection initiatives and technologies, which are compatible with current business conditions.

Fourth, we need to avoid criticising the violators too harshly. We should understand this issue as a long-term process and pay attention to the conditions of each individual and organization so all stakeholders can find solutions for environmental protection and sustainable development■

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Green technology park planned for Long An

The People's Committee of Long An province has granted an investment licence for the establishment of a green environment technology park in Thủ Thừa district.

Planned by Vietnam Waste Solution, Inc. (VWS), the park will cover some 1,760 ha at a cost of US$450 million and the capacity to treat 40,000 tonnes of waste per day.

The project will be carried out in three phases, with the first spanning from 2015 to 2020 and focusing on daily solid waste treatment in Hồ Chí Minh (HCM) City and Long An province, which will then be expanded to key southern economic zones and their vicinities after 2020.

From 2020 - 2025, the project will continue to build and develop waste treatment and recycling areas, as well as environmental technology research and training.

After 2025, the company will complete the construction of waste treatment and residential areas for workers and experts.

Speaking at the licence granting ceremony on September 12, Chairman of the provincial People's Committee, Mr. Do Huu Lam, asked VWS to ensure adequate environmental protection during the implementation of the project.

He said the project is part of the Master Plan for Development of Solid Waste Treatment for focal economic zones of the Northern, Central and Southern regions to 2020. It was approved by the Prime Minister in October 2008.

The huge environmental project is located on an area of lowland mostly used to grow cajuput trees.

▲*CWS/VWS leaders introduce the project.*

"The successful implementation of the project will significantly contribute to the environmental treatment in the Southern region in general and HCM City and Long An in particular. It will also contribute to the State coffers and help boost the province's sustainable development targets," said Lam.

CEO of the California Waste Solution, Inc. (CWS) and VWS David Duong said the green tech park is the second project being built by the CWS/VWS in Viet Nam, following the success of the Đa Phước integrated waste management facility in HCM City.

He pledged to begin construction as soon as possible.

"This year is the 20th anniversary of diplomatic relations between the United States and Việt Nam, and the Green Technology Park project is yet another example of the growing relationship between our two countries," said Nathan Lane, Economic Officer at the US Consulate General in HCM City during the license granting ceremony.

Duong, a Vietnamese American, established CWS in 1991. The company won the first contract, worth tens of millions of dollars, for building waste collection facilities for Oakland, California.

His company has also won a contract worth more than $1 billion to recycle waste in Oakland for 20 year, starting from July 1.

CWS took 37th place in Waste Age magazine's ranking of the top 100 American companies in the waste transportation and treatment industry■

Phạm Đình

The 13th ASEAN Ministerial Meeting on the Environment: Join hands for a green and clean ASEAN Community

On 26 - 30/10/2015, the 13th ASEAN Ministerial Meeting on the Environment (AMME 13) and relevant meetings were solemnly organized with the participation of Ministers and Vice Ministers of ASEAN states and partner states China, Japan and Korea. Prime Minister Nguyễn Tấn Dũng attended and delivered the speech at the Opening Ceremony of the AMME 13.

Within the framework of AMME 13, there are a series of relevant meetings including: ASEAN Senior Officials on Environment Meeting; 14th ASEAN+3 Ministerial Meeting on the Environment; 11th Meeting of Committee under COP of ASEAN Agreement on Transboundary Haze Pollution (COM 11); 11th Meeting of the Conference of the Parties to the ASEAN Agreement on Transboundary Haze Pollution.

In the past few years, climate change response and environmental issues of ASEAN countries have been enhanced and achieved remarkable outcomes: the overall environment of ASEAN is maintained and ensured for healthcare and ecosystem; some ASEAN states achieve high rankings on Environment Productivity Index (EPI); ASEAN completed the implementation of cooperation actions on sustainable environment in the Overall Plan of the ASEAN Socio-Cultural Community during 2009 - 2015… In addition, ASEAN has been receiving precious support and cooperation from partner states, particularly Japan, Korea, and China, contributing to enhance the capacity on environment management and develop policies on sustainable development in each member state.

▲*Minister of Natural Resources and Environment, Nguyễn Minh Quang delivered a speech at the Opening Ceremony of the 13th Ministerial Meeting on the Environment and relevant meetings*

Attending the opening ceremony of AMME 13 on October 28th, 2015, Prime Minister Nguyễn Tấn Dũng stressed that 2015 marks an important historical milestone for Southeast Asian countries when the ASEAN community is established and becomes an entity for political-security linkage; economic connection; socio-cultural cooperation and responsibility sharing; acts a central role in ensuring peace, stability, security, and development in the region. Particularly, for Việt Nam, 2015 is the celebration of 20 years joining ASEAN. Implementing the ASEAN community vision 2025, Việt Nam commits to continuing to contribute to efforts on regional cooperation with the motto "proactive, active, and responsible", contributing to develop a united and unified ASEAN and an ASEAN of increasing important roles in the region and in the world.

At AMME 13, ASEAN states focused on assessing the implementation of environmental cooperation agreements in the re-

gion since AMME 12; discussed and agreed at the ASEAN environmental ministerial level on environmental cooperation, relating to 10 contents raised at the Ministerial Meeting (SOM), including: climate change and global warming; nature conservation and biodiversity conservation; water resources management; urban environment management and governance; environment education… At the same time, member states also discussed new cooperation contents, and new initiatives; recommended and suggested solutions to promote ASEAN environmental cooperation in the upcoming time, particularly for the years post 2015 when the ASEAN community is formed; discussed and endorsed the ASEAN Statement on climate change to prepare for the 21st meeting of the Conference of Parties (COP21) to the United Nations Framework Convention on Climate Change in Paris (France) in December 2015, initiative on statement of agenda on environmental sustainability and climate change post 2015 and Joint Statement of the outcome of the Ministerial meeting.

After 4 days of active and effective meetings, AMME 13 and relevant meeting closed with many strategic outcomes, contributing to bring environmental protection in ASEAN to a new high level. Accordingly, the Meeting endorsed the ASEAN joint statement on climate change post 2015, submitted to the Chairman of the ASEAN Socio-cultural Community for submitting to the 27th ASEAN Summit in November 2015; endorsed the nomination of natural wonder Timpoong Hibok-Hibok Mountain (the Philippines) and Way Kambas National Park (Indonesia) as the 36th and 37th ASEAN heritage parks respectively; endorsed the Integrated Water Resources Management (IWRM) Performance Monitoring Indicators Framework (IWRM)... Particularly, ASEAN member states appreciated the initiative of Việt Nam on developing of a ASEAN joint statement on agenda on environmental sustainability and climate change post 2015, to promote ASEAN environmental cooperation in a comprehensive manner post 2015, covering areas: joint commitment of ASEAN to ensure the linkage, transparency, continuity and effectiveness; implementation of a comprehensive plan of ASEAN socio-cultural community towards a green and clean ASEAN community; ASEAN program on sustainable management of peatland ecosystems (2014 - 2020), ASEAN Agreement on transboundary haze pollution, strategic plan on biodiversity during 2011 - 2020 and Aichi targets on biodiversity, integrated water resources management.

AMME is organized every 3 years within the ASEAN environmental cooperation mechanism, is organized alternatively among member states to review the implementation of environmental cooperation agreements in the region between the two meetings, and to discuss new cooperation contents; at the same time to recommend and suggest solutions to promote ASEAN cooperation activities on environment in the upcoming time.

At the COP11 of the ASEAN Agreement on Transboundary Haze Pollution within the framework of AMME13, ministers and heads of ASEAN states agreed to promulgate many important documents such as: Guideline to implement the monitoring, assessment and coordination to respond to emergency within the ASEAN Agreement on Transboundary Haze Pollution; approval of the development of ASEAN Coordination Centre on controlling transboundary haze pollution in Indonesia, implementation of humanity support activities in risk management to ensure effective and timely response to fires. At the same time, member states committed to developing a roadmap of ASEAN haze non-pollution, of which identifying the timeframe and activities so member states can achieve an ASEAN of no haze in the end of 2020.

In addition, member states highly appreciated supports of neighbouring countries like China, Japan and Korea in addressing environmental issues of the ASEAN region in the past few years. At the ASEAN+3 meeting, ASEAN and partners together committed to strengthening cooperation, finalizing legislations and policies; investing on environmental improvement, energy saving, enhancing awareness for communities on environmental protection, contributing to support ASEAN states to achieve the target of forming a ASEAN community in the end of 2015■

Giáng Hương

The 12th Việt Nam - Korea Environment Ministers Meeting

On October 22nd, 2015, in Jeju, Korea, the 12th Việt Nam - Korea Environment Ministers Meeting was taken place.

At the meeting, Ministers of the 2 countries assessed the achievements of the cooperation program exchanged at the 11th meeting on the implementation of the project "Establishment of the integrated hazardous waste electronic manifest system in Việt Nam" (E-manifest); support to enhance the monitoring capacity; cooperation between associations and private partner.

▲ *Overview of the 12th Việt Nam - Korea Environment Ministers Meeting in Jeju, Korea*

Korean Minister of Environment, Yoon Seong Kyu proposes to strengthen inter-governmental cooperation on sustainable use of biological resources; conservation, management of national parks, and protected areas; cooperation on environmental infrastructure and environmental industry and technology; concentration on joint international cooperation projects on supporting localities that are being implemented in Việt Nam (including: "Development of the water quality monitoring system in Việt Nam through TOC, TN/TP indicators"; "Development of technologies to manufacture biodegradable plastics and environmental friendly plastics"; "Development of wastewater treatment system using ozone in water factories"; "Development of cleaning absorption system for biogas system in Việt Nam"; "Development of professional equipment to supervise wastewater quality in Việt Nam". In addition, Korea also hopes to cooperate with Việt Nam in development of models and projects for the Green Climate Fund (GCF); make use of experience, technologies of Korea for converting waste into energy, water management and hydrometeorology forecasting; capacity building for environmental experts …

Việt Nam Minister of Natural Resources and Environment Nguyễn Minh Quang highly appreciates the Korean efforts in training and capacity building for Việt Nam in the last few years, particularly through short-term and long-term training courses in the environment field. He also supports the proposal on Memorandum of Understanding (MoU) on bilateral cooperation in information and biological resources between the Korea National Institute of Biological Resources (NIBR) and Việt Nam Environment Administration; the Minister hopes that the signing of the MoU will establish a bilateral cooperation framework on a win-win benefit sharing in biodiversity conservation and use between Việt Nam

▲ *Director General Nguyễn Văn Tài and Representative of Korea National Institute of Biological Resources signed the MoU*

and Korea. Regarding the cooperation on conversation and management of national parks and protected areas, Ministry of Natural Resources and Environment (MONRE) hopes Việt Nam representatives able to participate in training programs organized by Korean management agencies on national parks. Regarding the cooperation relating to environmental infrastructure and industry, MONRE totally supports as environmental technology has been effectively reflected through joint cooperation projects supporting provinces in Việt Nam. Regarding the project proposal seeking support of GCF, MONRE supports the development of projects using support sources from GCF and will collaborate with Korea to develop project proposals to combine the support of GCF and the support of the Korean Government.

Minister Nguyễn Minh Quang informed that the cooperation outcome of the implementation of the Project "Pilot of automatic water monitoring system in Thái Nguyên" is very effective, showing that this technology can be implemented well in Việt Nam; therefore, MONRE requests Korea to continue to collaborate and provide financial support to expand the project to the whole Cầu river basin area. In addition, he requests Korea to cooperate and support Việt Nam in following activities: Developing and implementing strategies, policies on environmental protection, climate change response and green growth, including studies on environmental classification; assessing standards and regulations on dioxin risk assessment method; developing electronic waste management framework; enhancing information sharing and experience sharing to develop green belts and green corridors in urban areas.

In addition, MONRE asks Korea to finalize the signing of the equipment hand-over minutes and contents of the e-manifest system software to finalize the project closing procedures, at the same time to continue to support the maintenance and guarantee of the e-manifest software for 1 year. In the upcoming time, MONRE assigns VEA to collaborate with KEITI to promote the implementation of feasibility studies on environment; to support eco-labelling program in Việt Nam; to develop and implement the project "Development of Phú Quốc Island towards green growth, linked with environmental protection, climate change response and biodiversity conservation" (tentatively using ODA fund from Korea) …

With the witness of the 2 Ministers, Director General of Việt Nam Environment Administration Nguyễn Văn Tài and Representative of the Korea National Institute of Biological Resources signed the MoU on cooperation in this field, in order to combine technology and technical strengths of Korea with potentials of diverse biological resources of Việt Nam, through which to find new growth incentives of the 2 countries■

Trần Liêm

UNDP accompanies Việt Nam for successful implementation of sustainable development goals

United Nations Development Programme (UNDP) has supported Việt Nam in substantial achievements in poverty reduction and socio-economic development in the last two decades, at the same time in addressing new challenges that Việt Nam is currently facing, particularly environmental pollution and climate change. To understand more about achievements in environmental protection and recommendations for environmental protection in Việt Nam in the upcoming time, journalist of the Environment Magazine had an interview with Mr. Đào Xuân Lai - UNDP's Assistant Country Director.

▲*Mr. Đào Xuân Lai - UNDP's Assistant Country Director*

✶ ***How do you assess the efforts of Việt Nam in environmental management in the past few years and can you suggest some recommendations on environmental protection of Việt Nam to achieve higher outcomes?***

Mr. Đào Xuân Lai: In the past few years, the Party and the Government have finalized the legal framework and strategic policies on environmental protection, climate change response such as Resolution No. 24-NQ/TW (2013) by the Party Central Committee Tenure XI on proactive response to climate change, enhancing natural resources management and environmental protection, Law on Environmental Protection (2014), Law on Water Resources (2012), Law on Minerals (2010), Law on Biodiversity (2008), and two National strategies on Climate change and Green growth, which are typical achievements.

Environmental protection has been paid more attention by different levels, sectors, organisations and individuals. Important advances have been achieved in organisational structure and capacities for environmental management, particularly the establishment of the National Committee on Climate Change in 2012; the capacity on management, research, implementation monitoring by staff at central and local level has increased noticeably; many staff have become competent experts, having key contributions to environmental protection.

At the same time, Việt Nam has actively participated in regional and international events on environmental protection and climate change as well as Conventions, International Agreements such as Conference of Parties to the United Nations Framework Convention on Climate Change, Stockholm Convention on Persistent Organic Pollutants, and Convention on Biological Diversity, etc.

With the participation of different levels, sectors from central to local, the awareness and responsibility on environmental protection of staff and the awareness and actions by local people on environmental protection in the last five years have showed clear changes. Local people want to live in a clean environment and actively participate in environmental protection activities such as tree planting, rubbish collection, residential common area cleaning, etc.

Particularly, Việt Nam has gained remarkable achievements in hazardous chemical management and treatment, including persistent organic pollutants. Hundreds of tonnes of waste and plant protection products contaminated soil have been environmentally safely treated; thousands of

tonnes of dioxin contaminated soils have been isolated and safely treated.

For higher achievements in environmental protection in the upcoming time, I would like to suggest some recommendations to be considered at the Conference to be put into specific action plans, particularly: the need of conversion from development and finalization of policies and legalisations to focusing resources to implement these policies in an effective, transparent and closely monitored manner.

In the national environmental management, it is necessary to use existing tools such as: strategic environmental assessment and environmental impact assessment in an adequate and transparent manner, to avoid the arising of serious environmental pollution that happened recently. For example, the pollution of Đồng Nai river due to wastewater of Vedan company or the landfill of plant protection chemicals by Thanh Thái Nicotex Company (Thanh Hóa), etc.

It is necessary to fully promulgate environmental standards, as bases for pollution control, waste management, and timely prevention of arose pollution sources.

Regarding biodiversity conservation, it is necessary to review functions, tasks, human resources and coordination among management agencies on biodiversity conservation, to avoid the overlapping and scattering of resources as it is now.

It is necessary to actively and more effectively participate in negotiations on climate change, particularly in the process of proposing a new legalized agreement applied to all countries at the Conference of Parties to the United Nations Framework Convention on Climate Change (COP21) in Paris at the end of 2015. Of which, the development of regulations and the operation of established organisations and mechanism (such as Climate Change Adaptation Fund, Green Climate Fund) will contribute to the development, understanding and mobilization of all resources for response to climate change in Việt Nam.

✶ ***The year of 2015 marks the completion of Millennium Development Goals (MDGs) and prepares for the transition from MDGs to Sustainable Development Goals (SDGs). What kind of roadmap should Việt Nam have to implement the above goals?***

Mr. Đào Xuân Lai: Việt Nam is one of pioneer countries in implementing and achieving almost all MDGs early. Particular MDG 7 - ensure environmental sustainability, Việt Nam has been achieving remarkable advances but by 2015 it is highly likely that Việt Nam hardly achieves MDG 7. This sets many challenges for Việt Nam and the Natural Resources and Environment sector in achieving 17 SDGs targets that have been approved at the United Nations Assembly during 25 - 27/9/2015.

The successful implementation experience of MDGs is an important background for the implementation of SDGs. However, it is necessary to differentiate MDGs and SDGs. MDGs are targets relating to some sectors and some particular public groups and are the framework for developing countries; SDGs, on the other hand, are comprehensive targets with the participation of the whole society in both developed and developing countries.

Due to the comprehensive feature of SDGs, the first action to be taken is to disseminate them to all people and organisations that are living and working in Việt Nam to know, understand and contribute intellectuals and manpower to promulgate, implement and monitor the implementation and achievement of these targets.

According to the experience of MDGs implementation, it is necessary to localise these global targets and indicators into Việt Nam's targets, to mainstream into strategies, plans, programmes, projects in all levels and sectors for implementation. The prioritization and concentrated implementation is important to achieve specific targets and indicators.

In addition, the mobilization of the participation and investment from the private sector is the deciding factor in the implementation of SDGs. Enterprises have investment sources, study capabilities as well as create jobs for the society. In addition, it is necessary to assign clear and specific tasks to organisations, groups, individuals linked with political responsibilities and regular tasks, to ensure effective implementation and monitoring. The surveillance, evaluation and periodic monitoring SDGs as well as annual report on the implementation of MDGs also play important roles in mobilisation and distribution of resources as well as promotion of the implementation of SDGs.

✶ ***The prioritized selection and integration of SGDs into the socio-economic development plan in Việt Nam play an important role to ensure the successful implementation of SDGs. So what prioritized targets and indica-***

tors should Việt Nam select ?

Mr. Đào Xuân Lai: The 4th National Environment Conference is organized at the time when Việt Nam is preparing and finalizing the medium-term 5 year 2016-2020 socio-economic development plan and SDGs were approved by country members of the United Nations.

Some prioritized targets and indicators for integration into socio-economic development plan are as below:

First, it is necessary to integrate environmental quality standards, particularly air, water and forest quality into the socio-economic development plan of Việt Nam to ensure the rights of people "to live in a clean environment" and "the responsibility to protect the environment" that are mentioned in Article 43 of the Constitution of Việt Nam 2013. The 2011 - 2015 socio-economic development plan only has some targets on forest cover and lacks specific indicators on forest quality.

At the same time, the maintenance of good environment quality, conservation of natural resources and nature are necessary to protect the rights and the equality of future generations.

Second, indicators on resilience, response to climate and disaster risks: extreme climatic phenomena have caused impacts on human and properties for Việt Nam, particularly poor residential communities and ethnic minorities in coastal and mountainous areas. On the other hand, it is necessary to enhance climate change resilience for infrastructure, transportation vehicles and industrial zones, as well as ability to rehabilitate of ecosystems, particularly coastal mangroves to maintain socio-economic and environmental benefits that Việt Nam had achieved, continuing to reduce poverty and ensure sustainable development.

▲ *UNDP supports Việt Nam on plant protection products contamination treatment*

Third, green growth indicator: Việt Nam approved the National Strategy on Green Growth during 2012 - 2020 and the Program on economic restructuring towards improving quality, efficiency and competitiveness during 2013 - 2020.

Currently, the intensity of energy use in Việt Nam is highest compared to other economies in the region, this also means high greenhouse gas emissions. Calculations based on the 7th Power Distribution Plan (PDP7) show that to 2030, thermal power plants will make up 85% of the total national greenhouse gas emission, while, Việt Nam has to import coals in the next few years. Opposite to the global trend, Việt Nam seems to plan for a future energy development based on fossil fuels. Therefore, Việt Nam needs to promulgate policies to ensure the stability and transparency during the implementation to attract and to use effectively investments on renewable energy, particularly wind and solar energy.

Within the current international framework, Việt Nam is still not responsible for reducing greenhouse gas emission. The average emission per capita is only 1.46 tonnes of CO_2, lower than most of other average income countries. However the emission of Việt Nam is increasing rapidly compared to neighbouring countries. COP21 Conference aims to achieve a new legally binding agreement for all countries, including developing countries like Việt Nam; accordingly, Việt Nam is responsible for mitigating greenhouse gas emissions.

UNDP has actively supported Việt Nam in implementing and reporting the progress of MGDs implementation in the last 15 years, UNDP is ready to accompany the Government and people of Việt Nam to implement SDGs successfully in the upcoming time■

Thank you!

GIÁNG HƯƠNG

Strengthening capacity of water environmental management in river basin

Water environment conditions in Việt Nam have been degraded due to increase of pollution load accompanied by the rapid urbanization and industrial development, and shortage of wastewater treatment facilities as well as their operation and maintenance capabilities. In the reality, the water environment in Việt Nam has been deteriorating, especially in 3 big river basins including Cầu river, Nhuệ- Đáy river and Đồng Nai river. Over the past few years, the water environmental control and improvement has been receiving the concern and support of many authorities, agencies and the government of different countries, especially Japanese Government. One of outstanding supports provided to Việt Nam by Japanese Government in the field of water environmental protection is *Project for Strengthening Capacity of Water Environmental Management in River Basin* through the Japan International Cooperation Agency (JICA). The project is expected to start in December 2015.

The Ministry of Natural Resources and Environment (MONRE), the project executing agency and counterpart to JICA, will be responsible for the implementation of the project in cooperation with JICA, coordinate with other relevant organizations and ensure that the self-reliant operation of the project is sustained during and after the implementation period in order to contribute toward social and economic development of the Socialist Republic of Việt Nam.

The project will be implemented within the framework of the Agreement on Technical Cooperation signed on 20/10/1998 (hereinafter referred to as "the Agreement") and the Note Verbales exchanged on 10/5/2010, 19/5/2010, 15/1/2015 and 27/1/2015 between the two Governments of Japan and Việt Nam.

The 3-year project shall be implemented in 2 river basins including Đồng Nai river basin (Đồng Nai, Bình Dương and Hồ Chí Minh city), and Cầu river basin (Bắc Ninh, Bắc Giang and Thái Nguyên) with the overall goal as "Enforcement capacity of MONRE/Vietnam Environment Administration (VEA) and Departments of Natural Resources and Environment (DONREs) is strengthened and MONRE/VEA is ready to implement river basin water environment management (RBWEM) system other than the target river basin area." To realize this overall goal, the project shall focus on 3 main Outputs, including:

Output-1: Capacity of MONRE/VEA and target DONREs in legal document development and enforcement on RBWEM is strengthened, and the base of institutionalization of RBWEM mechanism is constructed.

Output-2: Enforcement capacity on RBWEM of MONRE/VEA and target DONREs is strengthened through implementation of pilot projects

Output-3: A road map for improvement of RBWEM is prepared based on the outcomes of Output-1 and Output-2, and MONRE/VEA is ready to implement further steps toward integrated river basin water resources management.

One of important activities is the development of legal documents at central level through the direct Environmental Science Institute and

Department of Waste Management and Environmental Improvement under VEA. 6 Circulars and Regulation shall be developed by the project including Circular (regulation) on coordination mechanism for RBWEM; Circular on assessment of loading capacity and estimation of discharge permit; Circular on main wastewater discharge sources for RBWEM; Circular on information sharing and disclosure system for inter-provincial RBWEM; Circular on guiding format and procedure of requesting environmental compensation for natural environment; and Circular on stipulating selecting criteria and responsibilities of agency providing environmental monitoring and assessment service to collect evidences compensation and environmental damage, and guiding the setting up and operation of councils for appraising data and proof for determining environmental damages.

In order to facilitate this process, the project shall carry out 2 feature contents including "implementation of the pilot projects" and the development of "coordination mechanism". For developing adequate and feasible legal documents, pilot project implementation is designed in target river basin areas and target provinces. Lessons learnt, difficulties, and important findings, which will be founded through the pilot project implementation, should be reflected not only in development of legal documents but also in shaping a "coordination mechanism" that works more effectively in the basin. Concretely, at central level, new Law on Environmental Protection 2014 and Law on Water Resource require further enforcement on river basin water governance; while the 2 existing Committees as well as sub-departments on river basin environment protection have strong demand for strengthening their capacity. At the provincial level, river water pollution remains as the biggest challenge while the need on river water use has been significantly increasing. Moreover, pollution in inter-provincial rivers is far beyond the capacity of one province while the collaboration/coordination mechanism is not always in place and workable. It is also possible to see that the differences in development priorities leading different RBWEM, while the current capacity is yet to meet RBWEM in an integrated manner.

However, with active participation and coordination of MONRE, target provinces, and experiences, expertise of JICA experts, the project is expected to gain a lot of noticeable success, aiming at integrated river basin water resource management.

Currently, the project is in the process of making necessary preparations including taking approval of project document for official start of the project as scheduled■

Ngọc Phần

Hải Phòng got supports in sorting and recycling solid waste

A technology of sorting and recycling solid waste called Eco City Plan will be applied in Hải Phòng with the support and cooperation of the Japan International Cooperation Agency (JICA)

Accordingly, JICA will introduce the experience of waste management under the model named "material circulation", the lesson from Miyagi province of Japan. The model gives the encouragement in management of solid waste in the model 3R (reduce, reuse and recycle).

By applying this model, the waste, after being sorted, will be recycled into raw materials, the waste which cannot be recycled will be processed into fuel for burning to contribute to address environmental problems■

Nam Hưng

Sweden supports An Giang in solid waste management

The project "Strengthening practical capacity in management of solid waste in Long Xuyên in 2015 - 2017 period", with total investment of $US 238,852 from the Swedish International Center for Local Democracy (ICLD), has recently approved by the People's Committee of An Giang province.

Accordingly, the project includes 4 components including the development of a clear structure of the project to ensure effective implementation and management; the development of action plan to manage all waste generated in Long Xuyên; the assessments of environmental conditions carried out by students from Sweden and An Giang University; and, supporting An Giang province in implementation of campaigns to raise awareness of community on solid waste management.

The project aims to strengthen capacity in management of solid waste, strengthen capacity in establishment of a functional solid waste management system by 2017, contributing to sustainable development in the province■

Vũ Hồng

Việt Nam gets support in management of hazardous chemicals

The Prime Minister has approved the project "Safe management of persistent organic pollutants (POP) and hazardous chemicals in Việt Nam" aiming to reduce risks on environment and human health by minimizing POPs and hazardous chemicals. It is funded by the United Nations Development Program (UNDP) from funding of the Global Environment Facility (GEF) with the total amount of $US 13.6 million.

Particularly, the project will document and supplement the legal and institutional frameworks to implement more effectively regulations of the Stockholm Convention on POPs; construct and demonstrate the Pollutant Release and Transfer Register (PRTR) so that it can be applied for at least 20% of industrial waste at selected provinces to manage environmental safety and to report on POP and mercury substance; develop a framework to manage environmental safety with chemicals; strengthen management capacity at POP-contaminated areas; learn from results and experience of other projects at GEF4 period and national projects and programs.

The project shall be implemented in 3 years (2015 - 2018) with 4 components: constructing and implementing the safety management policy framework on environment related to chemicals, including POP and Persistent Toxic Substances (PTS); monitoring and reporting on POP and PTS; managing POP-contaminated areas; inventorying national database on mercury and reducing mercury emission■

Phương Linh

Đà Nẵng find out the solution to reduce greenhouse emissions

Calculator 2050 is a model developed by the UK Department of Energy and Climate Change (DECC), letting people create their own emissions reduction pathway and see the impacts of it using real scientific data.

The application of this tool in Đà Nẵng allows its user to explore all high-level energy and emission pathway options that the country, territory or region faces and for each possible 2050 pathway the user can further investigate its impacts on land use, electricity, energy security, energy flows, costs and so on.

It is expected for Đà Nẵng to finalize in March 2017 as scheduled, with the design corresponding to the city's conditions and interface■

Trần Tân

Danida supports Việt Nam in training water project

The Denmark Danida has just started up a program named "Training for 5 projects of waste water drainage and 1 project of water supply in Việt Nam" aiming to support the country in the training and operating the wastewater treatment and water supply

In details, 5 projects is in waste water treatment including Enlarging the system of waste water treatment and water supply in Buôn Ma Thuột (Dắk Lắk); Waste water treatment plant in Cao Bằng; Water drainage and hygiene Ba Đồn (Quảng Bình); Drainage, collection and treatment of waste water in Hà Giang; Waste water treatment in Vị Thanh (Hậu Giang) and 1 water supply in Lam Sơn Sao Vàng (Thanh Hóa).

The Commercial Counselor of the Danish Embassy, Mr. Bo Monsted stressed that the program is to raise the awareness in renewing the projects of water treatment and supply; transfer of knowledge and basic skill to workers, managers in this industry. Danida has supported Việt Nam in many project to overcome the increasing difficulties in water pollution to contribute to green metropolitan since 1995. Specifically in 2014 to now, the fund has supported Việt Nam 120 million USD to contribute to sustainable economic development, living improvement, flooding prevention and minimizing environmental pollution■

Hồng Cẩm

Germany supports Việt Nam to protect environment in coastal region

The project "Environmental and Water Protection Technologies of Coastal Zones in Việt Nam under climate change conditions" (EWATEC COAST) is being implemented with the sponsor of Germany government, with focus on developing techniques, tools and management system towards the sustainable development of Thị Vải river and Cần Giờ mangrove forest.

Particularly, the project has carried out field visits to check: surface water and groundwater quality; mangrove forest ecology; meteorology, climate change and air pollution; water ecology; coastal protect; wastewater treatment technology; database management system.

Up to now, the project has provided guidance for governmental agencies at relevant provinces to handle with practical problems, especially Department of Natural Resources and Environment of Hồ Chí Minh city, Đồng Nai and Tây Ninh provinces■

Thu Hằng

Hà Nội: Journey to become a Green - Civilized - Modern capital

In the context of climate change and global integration, to hold the opportunities to become a Green - Civilized - Modern capital together with other localities nationwide, Hà Nội has implemented holistically many solutions to enhance the efficiency and effectiveness of environmental protection, contributing to the socio-economic development in a sustainable manner.

This is the sharing of Mr. Nguyễn Trọng Đông - Director of Hà Nội Department of Natural Resources and Environment (DoNRE) with the VEM on the occasion of the 4th National Conference on Environment organized in Hà Nội recently.

▲*Mr. Nguyễn Trọng Đông - Director of Hà Nội DoNRE*

✶ ***Can you share with us some main achievements in environmental protection of Hà Nội during 2011 - 2015?***

Mr. Nguyễn Trọng Đông: in the process of promoting industrialisation and modernisation in the Capital, according to Resolution No. 41 - NQ/TW dated 15/11/2004 by the Politburo and basic orientations on environmental protection according to the overall planning of the Capital to 2030, vision to 2050 approved by the Prime Minister, Party's committees, local authorities and local people of Hà Nội always pay attention to environmental protection and identify environment to be one of fundamental targets of sustainable development.

In recent years, the City has promoted investments in technical infrastructure construction linked with environmental protection and natural resources; approved thematic master plans for the development of a green - civilized - modern city; staff working on environmental management at all levels have been enhanced in quantity and professional quality; awareness of the community on environmental sanitation has increased, with the participation into the socio-political system on environmental protection activities; propaganda and awareness raising activities on environmental protection in the community have been promoted from the city level to local levels; functional agencies have increased the supervision and inspection to discover and handle strictly and seriously with violations on environmental protection and natural resources.

During 2011 - 2015, environmental protection in the city has achieved important outcomes, particularly: effective implementation of solid waste treatment planning in the city, expansion of two concentrated solid waste treatment facilities, construction of a new facility and preparation for investment of one facility so in principle there are four concentrated waste treatment facilities in four zones of the city, at an appropriate transportation distance. At the same time, investments in district or inter-district solid waste treatment facilities that can be self-treated according to the planning are implemented. Projects on using advanced treatment technologies to reduce the volumes of landfill wastes and land areas are prioritised for implementation, particularly applying successful incineration technologies for domestic wastes. Currently, the city has four domestic waste incineration factories, with the total capacity of 1,200 tonnes/day; an industrial waste incineration is being constructed using the advanced technology of Japan and other 10 projects under investment preparation on waste treatment with different technologies applying technical and scientific advances on incineration technology, biological and chemical and rapid rotating aerobic landfill, to ensure by 2020, 50% of waste are subject to sanitary landfills. Models on collection and transport of domestic solid wastes in rural areas are

promoted. Supporting mechanism on capitals, tax incentives, price subsidy for environmental protection activities are developed and promulgated. Particularly, Hà Nội has implemented successfully the environmental socialisation. Currently, in the city, only one state-owned agency is implementing the collection and treatment of waste; the majority of treatment and environmental protection is carried out by non-state owned enterprises (the rate of waste transportation and collection in the whole city is more than 90%);

In addition, Hà Nội also completes the pilot pollution treatment of 12 lakes in the urban area with good results, which was highly supported and appreciated by the people; this lays the foundation for the selection of appropriate technologies for upscaling of lake water pollution treatment in the city. By now, with the principle of socialization, enterprises that participated in renovation of 45 lakes in Hà Nội are actively implementing the scheme "environmental protection management and land use in Nhuệ River basin" and some contents in environmental pollution treatment of Tô Lịch River;

Currently, the city has completed the handling of 25 serious environmental polluters according to Decision No. 64/2003/QD-TTg by the Prime Minister, as well as investment projects on healthcare wastewater treatment stations by the Department of Health. Conservation of natural resources, biodiversity and improvement of environmental quality is gradually paid attention;

In addition, environment at industrial parks has been focused. By now, 8/8 industrial parks construct the concentrated wastewater treatment system. Projects to construct domestic wastewater treatment system and craft village wastewater treatment are gradually implemented, contributing to reduce environmental pollution in urban areas; rural clean water and environmental sanitation program, construction of toilets, sanitary husbandry farms, etc. have achieved some particular results; the status of deforestation, forest fires have constrained; many forest lands are regenerated. Financial resource of environmental protection of Hà Nội is prioritised; total budget allocated for environmental activities is increasing through the years, by now, achieving 3.8% of the total city's budget.

✶ ***With state management role on natural resources and environment, the DoNRE has counselled to Hà Nội People's Committee what solutions to promote effective environmental protection?***

Mr. Nguyễn Trọng Đông: *First*, enhance the leadership of the Party on environmental protection in the City: Party's committees and authorities assess, implement and propose specific solutions to implement tasks of Resolution No. 41-NQ/TW by the Politburo and Directive No. 29-CT/TW by the Central Party Committee Secretariat; bring environmental protection to be one of annual assessment and classification criteria of agencies and organisations.

Second, enhance and renew the propaganda and education, to create a robust change in awareness and actions of Party's committees, authorities, fatherland front, unions, staff, party's members, and citizen on responsibility and awareness on environmental protection: mobilize the whole political system in propaganda and education activities, dissemination of regulations, mechanisms and policies on environmental protection so enterprises, political-socio organisations, unions, manufacturing facilities and people change lifestyles, thinking and behaviours in environmental protection and natural resources; implement the propaganda and dissemination of the Law on Environmental Protection 2014 and Decrees, Circulars guiding the implementation of the Law; develop awareness programs on environment, dissemination by many methods, particularly in the mass media, bringing environmental protection contents and activities into party sub-unit's materials; develop environmental columns in national and Hà Nội's news papers and televisions; publish and disclose organisations and enterprises that cause serious environmental pollution and punishment methods; pay attention to promote environmental protection campaigns among different citizen groups; develop criteria on environmental protection and periodically assess and timely award agencies, families, villages and streets that gain outstanding achievements in environmental protection.

Third, focus to promote the implementation of environmental programs, schemes and projects such as: Environmental protection master plan of Nhuệ - Đáy River Basin to 2020; scheme of focal tasks and solutions on environmen-

tal protection of Hà Nội to 2020, etc.

Fourth, develop and finalize specific regulations on environmental protection in the city regarding manufacturing, commercial, service, construction, health, transportation, etc.; regulations on waste management and pollution control to be appropriate with the Law on Environmental Protection 2014; policies and mechanisms on craft village environment management of Hà Nội in general and typical mechanisms applied for wastewater treatment of craft villages (food, dyeing, textile, paper manufacturing and processing, etc.); incentives and motivation mechanisms for economic components to participate in solid waste treatment, wastewater and environmental service in the city; environmental management decentralisation in Hà Nội.

Fifth, enhance the effectiveness of the appraisal and approval of environmental impact assessment and supervise and conduct post-appraisal of EIA report, at the same time, to enhance the implementation supervision of requirements in EIA report by the project investors during the development, construction and operation phases of investment projects; promote the inspection, supervision, and monitoring of environmental protection, strictly address violations on transportation of construction materials, refuses and serious environmental polluters; promote the tight and effective coordination between environmental management agencies and environmental crime prevention police force in prevention of crimes and violations on environmental protection.

Sixth, prioritise and increase the annual city's budget for environmental protection, unify and manage annual expenses for environmental management of the city into one focal point; develop the action plan to ensure annual increase according to the economic growth rate; diversify investment forms and types of activities, pay attention to mobilize all resources in the society for environmental protection. Encourage the participation of all economic components, and promulgate mechanisms to encourage enterprises to adopt clean technologies and pollution treatment for craft village manufacturing activities to be appropriate with manufacturing scope and capacity of households, implement environmental services, and promote the role of the city's environmental protection fund.

▲ *Waste treatment chain in Xuân Sơn Waste Treatment Factory, Sơn Tây town (Hà Nội)*

Seventh, promote the interregional and interprovincial cooperation according to the planning of Hà Nội and other provinces in Nhuệ - Đáy River basin and Cầu River basin that were approved by the Prime Minister to solve environmental pollution issues, to ensure sustainable development of the city; continue to maintain the cooperation with international environment organisations, actively implement international commitments on environmental protection. Update information, expand the relationships to attract aids, technology investment projects, environmental protection budget, and improvement of staff qualifications; build capacity for programs and projects in effective management and use of the international support budget for environmental protection.

✶ ***In the upcoming time, to enhance the efficiency and effectiveness of state management on environmental protection, which issues will Hà Nội DoNRE continue to focus?***

Mr. Nguyễn Trọng Đông: In the upcoming time, to enhance the efficiency and effectiveness of state management on environmental protection, DONRE will focus on some following tasks:

Control, prevent, and reduce the emission of pollution sources, rehabilitate seriously polluted areas: promote the supervision and inspection of environmental protection

compliance; focus on pollution control for hazardous wastes, control of mineral and water resources exploration and exploitation certification, appraisal of emission license into water sources by organisations and individuals in the city; develop, strengthen the water resource monitoring network in the city; implement the project on development of flood risk map of Hà Nội taking into consideration of climate change impacts (phase 2); develop the environmental protection planning of Hà Nội to 2030 according to the Law on Environmental Protection 2014; focus resources to implement the planning of water discharge system and wastewater treatment in residential areas, industrial zones and units in Nhuệ - Đáy river basin, develop water discharge infrastructure of Hà Nội during 2011-2015 and develop the Plan to develop the system of wastewater collection and treatment of Hà Nội to 2020, etc.; review, and enlist serious environmental polluters for removal and handling according to Decision No. 1788/QD-TTg by the Prime Minister; study, implement and apply waste classification technologies at source in combination with small-scale waste treatment at communes, that can be applied in residential areas that have difficult geological conditions for collection and transportation. Continue to request more investments in applying advanced waste treatment technologies in concentrated treatment facilities of the city so by 2020 to reduce the rate of landfill to below 50%. The treatment of healthcare and hazardous industrial solid wastes is carried out using standardised incineration technologies; continue to maintain and promote the upscaling of achievements and applying technologies that were approved by the city to address and mitigate lake pollution. Develop the system of domestic wastewater collection, gradually separate wastewater and channel to concentrated treatment facility before discharging to lakes; enhance technical support to enhance the efficiency of collection and recycling to reduce environmental pollution in craft villages.

Encourage and support the development of eco-products manufacturing industries and environmental services: Implement the scheme to control environmental pollution due to non-biodegradable nylon bags in domestic activities in an effective manner according to Decision No. 582/QD-TTg by the Prime Minister; study, apply and transfer environmental technologies, clean technologies, and environmentally friendly technologies, develop waste treatment, recycling, and reuse technologies; promote the application of information technology in environmental protection; develop and expand models on cleaner production;

Explore, use natural resources effectively and sustainably: Implement effectively projects on natural resources such as: updating information database for the water resources database; field survey, development of the sanitary protection zone for drilling wells in the expanded Hà Nội; development of the flood map in the city taking into consideration of climate change impacts; survey, additional planning of the water monitoring network in the extended Hà Nội; survey, assessment and identification of forbidden zones, limitation zones and allowance zones for water use exploitation in the city area; monitoring of underground water change in Hà Nội...

Promote socialization of environmental protection: diversify investment methods and types of activities; focus, mobilize all resources in the society to ensure enough resources for environmental protection. Encourage the participation of the private sector, have mechanisms to encourage the participation of enterprises of all economic components to apply clean technologies, pollution treatment for craft village manufacturing activities that are appropriate with the manufacturing scope and capacity of households, implement environmental services, etc.

Consolidate the organizational structure and staff on environmental management: Review, report to the Hanoi People's committee about a unified focal point on environmental management. Finalize the inter-sectoral coordination mechanism to unify targets and actions in state management on environmental protection; continue to consolidate the system of environmental staff at communes; ensure the quantity and qualification of staff. Discover, attract qualified staff, train and educate the key leadership group on environment at all levels in an active, basic and comprehensive manner. Strengthen infrastructures and facilities for environmental management from city to district and commune levels.

Thank you !

Hương Trần

An environmentally sustainable city - the Millennium Goal

Trương Thị Tuyết Nhung
Vietnam Environment Administration

With the initiative of Prime Minister Nguyễn Tấn Dũng at the 3rd East Asia Summit (EAS) in Singapore, on November 2007, Việt Nam agreed to host the next summit.

In this regard, the Environment Ministers Meeting has become a top priority in environmental co-operation among EAS countries towards sustainable development for a green, clean and beautiful environment.

Since then, in the framework of ASEAN co-operation, the ASEAN working group conference on environment has been held annually in one of the member countries.

Việt Nam is the host country for the 13th conference this year and 2 Vietnamese cities, Huế and Đà Lạt were in the list of the ASEAN's award winning environmentally sustainable cities honoured in 2014, which marked a milestone in ASEAN activities on the environment in the process of establishing the ASEAN Community 2015.

To review the ASEAN environment awards from 2008 to the present:

Hạ Long, 2008

To honour and promote the image of the typical city for environment quality as well as raise awareness of the community and leaders at all levels of regional countries about the importance of the work of urban environmental protection, at the first East Asia Summit (EAS) Environment Ministers Meeting held in Hà Nội, October 2008, ministers reached a consensus to grant the award for a sustainable environment to 10 cities from among the ASEAN countries that included Hạ Long city in Quảng Ninh province.

Known as one of the largest coal producers in Việt Nam, Quảng Ninh province has played a leading role in the goods distribution network of the northern region. Nearly 90% of coal output in the country is extracted in this province. Besides, the province is home to Hạ Long Bay, a World Heritage Site which is a good reason for the development of industry here. Thus, the provincial economic development strategy should be harmonised with the environment protection strategy. Recently, provincial authorities and Hạ Long city implemented several solutions to build a green, clean and beautiful environment to hold the title of the ASEAN environmentally sustainable city

Specifically, Quảng Ninh has been approaching a green economy to integrate environmental protection measures with socio-economic development strategy.

Đà Nẵng, 2011

At the 17th ASEAN Summit held on November 23, 2011 in Indonesia, Đà Nẵng was the second city from Việt Nam which was awarded the environmental prize for the cause of protecting the planet. Also, Đà Nẵng was recognized as one of the world's 20 most clean cities due to its lowest carbon emissions.

In addition, Mỹ Khê beach in Đà Nẵng was honoured by Forbes magazine from the United States, as one of the 6 most attractive beaches on the planet thanks to its white sand, peaceful waves, and warm water all year round. Đà Nẵng has become the city which the Vietnamese believe is the one worth living in the most.

After 15 years of becoming a centrally governed city it was recognized as a first-grade city in 2003. The city is one of the economic hubs in the central region, and especially from 2000 - 2010, Đà Nẵng made dramatic progress in socio-economic development, natural resources and environment protection.

Over the years, the city promptly handled environmental issues such as flood, rubbish collection and waste processing as well as taking full use of natural resources in an effective manner.

By doing so, the indication of clean air, clean water, and clean land of Đà Nẵng is much better than other cities in some regional countries.

Đà Nẵng became a pioneer in building a brand "Environmental City" towards 2020

Huế and Đà Lạt, 2014

The Citadel Complex of Huế, set up by Nguyễn Dynasty from 1805 - 1945, is now one amongst the relics of the ancient Capital, capturing much of the attention of tourists.

Huế is recognized by UNESCO as a World Cultural Heritage and the first World Cultural Heritage in Việt Nam, which includes citadel relics, tombs, and temples, along with shrines are being preserved. The ar-

chitecture is built to mix with natural scenery, creating a unique and charming humanistic beauty.

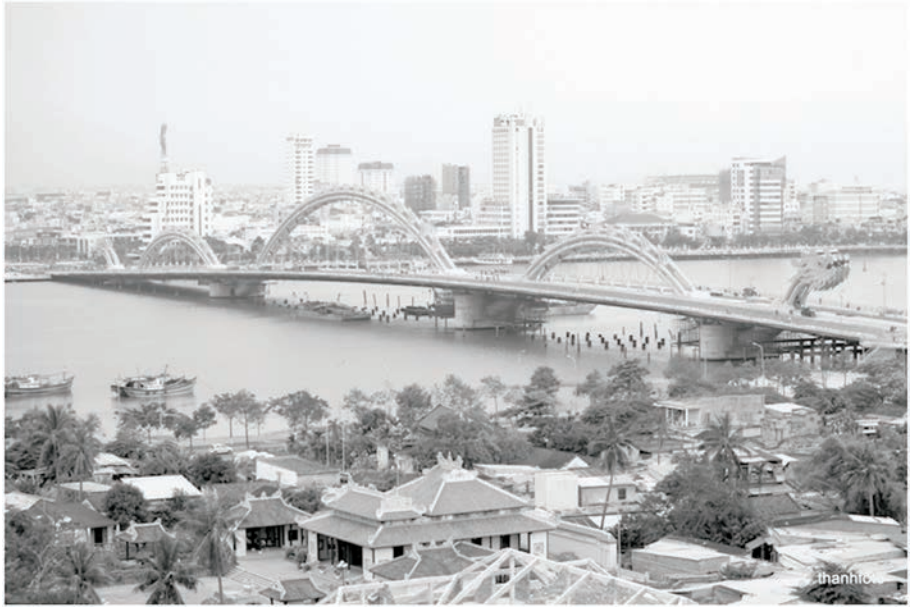
Furthermore, Huế's royal court music, called "Nhã Nhạc Cung Đình", is the first intangible heritage of Việt Nam to be recognized by UNESCO as a "Masterpiece of the Oral and Intangible Heritage of Humanity" in 2003. Thanks to these prominent features, Huế city has become the cultural and tourist centre of Việt Nam.

With available natural landscape, rational exploitation of natural resources and climate change response, and high awareness of environmental protection, Huế has become the first city of Việt Nam supported by the Asian Development Bank (ADB) to develop urban construction at 3 levels (eco-urban, sustainable development, and urban and smart urban and environmentally safe city) to live up to the name of "Green city: Sustainable future of Southeast Asia".

Huế city has also been honoured with the 3rd prize for the environmentally sustainable city from the 14th Informal ASEAN Ministerial Meeting on the Environment (14th IAMME) in Vientiane, Laos from October 26 - 31, 2014.

Currently, Huế city has maintained and protected its clean air, clean water, and clean soil in accordance with the ASEAN criteria of environmentally sustainable cities. To particularly implement the National Green Growth Strategy at the direction of the prime minister, Thừa Thiên-Huế province has developed a national strategy plan to develop the a national strategy for green growth towards 2020, with an objective of sustainable urban development, in which Huế city is the top priority of the province.

The goal aims to develop Huế city into an eco-urban with economic development towards a green economy by efficiently saving energy and natural resources as well as improving the quality of life towards environmentally friendly lifestyle.



▲ *Đà Nẵng is building Environmental City toward 2020*

Đà Lạt - Việt Nam's first city was nominated by ASEAN countries and honoured at the 14th IAMME. It was awarded and certified to be potential city by ASEAN ministers for the clean air award in 2014, and was honoured with the award of recognition for ASEAN clean air 2014.

To achieve this goal, Đà Lạt has always attached much importance to socio-economic development. The city's administration has a long-term policy on environment protection and has built environment treatment works involved in enhancing household waste collection and building waste treatment plants for hazardous waste. The city has also focussed on treating household sewage and taking control of pollution caused by factories and businesses. They are encouraged to apply advanced and clean technology and asked to pay attention to environmental monitoring, enhance the ratio of forest coverage, and educate and raise awareness of environmental protection among locals and tourists.

After taking more than 5 years to become the first class urban in the province, the city's administration and its people have made great efforts in environmental protection. As a result, its quality of environmental protection has improved. It also has high hopes of being chosen and becoming an ASEAN environmentally sustainable city.

To achieve this, the significant contribution made by employees and ASEAN senior officials in environment and ASOEN Vietnam Office should be praised.

Since February, 2014, the ASOEN Vietnam Office has put into place plans to select 1 or 2 cities reaching environmental standards to be awarded the ASEAN Environmentally Sustainable Cities (ESC) Award. The office has outlined the criteria for the selection of eligible cities, based on ASEAN's existing criteria.

In addition, in 2015 the office planned and organised a successful conference of the ASEAN Working Group on Environmentally Sustainable Cities, from July 5 - 10, 2015, in Đà Lạt city■

A revolution of low-cost air quality monitoring device in the fight against outdoor pollution

On 31 August 2015 in Nairobi city (Kenya), A groundbreaking air quality measuring device unveiled by the United Nations Environment Programme (UNEP), expected to cost up to 100 times less than existing solutions, has the potential to revolutionize air quality measurement in developing countries and help prevent deaths from air pollution.

The device, capable of collecting all the vital parameters of air quality costing around $1,500/unit allows governments to establish a countrywide network of mobile and stationary air monitoring stations for as little as $150,000 - 200,000. Currently, roughly the same amount of money is necessary to set up just one monitoring station.

UNEP plans to make the blueprints of its device publically available in order to for governments and organizations to assemble or fabricate the units themselves, creating opportunities for innovation, enterprise development and green job creation.

UNEP Executive Director, Achim Steiner said, "Each year, air pollution causes 7 million wholly preventable premature deaths around the world, with outdoor pollution responsible for more than half of that total. Among of those, 88% of deaths related to outdoor pollution occur in low- and middle-income countries. However, it is these same developing countries that typically lack access to data on their air quality. UNEP's device can build a bid data to help countries reduce the negative effects of air pollution, potentially saving lives that would have been lost due to air pollution related illnesses."

▲*UNEP Executive Director, Achim Steiner and Kenya's Cabinet Secretary for Environment, Prof. Judi Wakhungu launch the pilot air quality monitoring system*

Currently, the UNEP Live platform enables near real-time monitoring of air quality from 2000 stations across the world. However, only few of those are located in developing countries and their setup and calibration varies. The new device can successfully bridge this data gap and contribute to standardization of data collection. For example, one of pilots is conducted in Kenya's capital before spreading in other parts of the country to build air map of pollution hotspots in the urban and rural areas.

UNEP's device can measure the concentration of particulate matter ranging from 1 - 10 µm (PM 1 - PM 10), including PM 2.5, considered by the WHO to have the greatest effect on human health. It also records the concentration of sulphur and nitrogen oxides and can be extended to measure other gases such as ozone. Therefore, this equiment is promising helpful in monitoring air concentration in particular places such as Africa, where poor air quality is mainly due to high levels of particulate matter containing hazardous airborne chemicals as results of fuel combustion, both from vehicles and stationary sources such as power plants, industry and households.

Futhermore, the unit was designed for affordability throughout its lifecycle, with less frequent calibration required and a durability of up to 4 years. High quality has been ensured through rigorous testing in various settings, and a built-in GPS system means that the device can also be used as a mobile unit.

With those high performances as above, the device's low cost and ease of use can also boost community participation in environmental and health monitoring, and increase digital and technological literacy through the participation of schools■

Thanh Liêm

Some models of vertical farms in the United States

Indoor vertical farms is an exciting movement in U.S. food production, providing pesticide-free leafy greens and herbs to a fast-growing population by using LED (light emitting diode) lighting for efficient photosynthesis in place of sunlight. It can grow plants year round in half the time and with far less water compared to outdoor, open-field farms with no risk of genetically modified (GMO) seed contamination or crop failure due to weather conditions like drought.

David Rosenberg, chief executive and co-founder of AeroFarms said: "On average, we're growing in 16 days what otherwise takes 30 days in a field, using 95% less water, about 50% less fertilizers, zero pesticides, herbicides and fungicides".

There are some successful models of vertical farms. One is Aerofarms as known as the world's largest indoor vertical farm with the $30 million, 69,000 square-foot complex in a former steel mill in Newark, New Jersey's Ironbound District and two million pounds of kale, arugula and other greens annually grown up.

The second is Vertical Harvest with 13,500 square-foot vertical farm also now under construction in Jackson Hole, Wyoming. With an average annual snowfall of 450 inches, one might not equate the mountainous region with year-round local food, but Vertical Harvest's tiny 1/10 acre lot next to a parking garage aims to grow up to 100,000 pounds of tomatoes, herbs and greens annually. It would take a traditional outdoor farm 5 acres, or 50 times the land area, to grow that much food that enough to replace food grown and shipped in Mexico or California. Everybody's so much more aware of the need to reduce transportation, and people like to know their farmer and where food's coming from."

The third is FarmedHere opening its vertical farm in an abandoned warehouse in the industrial Chicago suburb of Bedford Park in 2013. It was the first of its kind to receive USDA national organic certification, has been successfully distributing its produce to an extensive array of grocers within the Greater Chicago area, including Whole Foods, Mariano's, Shop & Save and Pete's Fresh Market. FarmedHere reuses 97% of its water, uses no herbicides or pesticides, and takes advantage of indoor growing technology to create optimal-tasting plants.

The plants in these vertical farms are evaluated to have better nutrients, better growing conditions, and actually can be tweaked the taste with lighting and with nutrients, with temperatures, with turning lights on and off at certain times of the day and with humidity■

Luu Trang

▲*Montreal's Lufa Farms grows red cocktail tomatoes and lots of other crops on vertical walls*

Việt Nam leads in renewable energy

The Institute of Chartered Accountants in England and Wales's latest Economic Insight said ASEAN's renewable generation capacity had grown by 83 percent between 2002 and 2012, led by Việt Nam which had added 34 billion kWh of hydropower.

However, the nation still faced green challenges as it continued its transition from an agrarian to a manufacturing economy. Large inflows of foreign investment would increase the industry's output in the medium term.

Last year had marked a positive turning point in climate change where carbon dioxide emissions remained constant for the first time while world output grew.

Environmental degradation generally accompanied economic development up to a point, after which further development relieved environmental pressure.

Figures showed that globally, the point may have been reached where advanced economies had moved to sustained clean growth.

The situation was less bright in ASEAN, where most economies had not reached a stage where the environmental impact of economic activity started to decrease. With the exception of Singapore, which had seen a sustained drop in emissions since 1994, other countries like Indonesia, Malaysia, and the Philippines were only seeing periodic lower emissions when GDP shrank.

An encouraging sign for Việt Nam was its high proportion of electricity generated through renewables instead of fossil fuels, with hydropower accounting for almost half of its entire electricity generation.

Việt Nam was leading in this area, while its ASEAN counterparts still lagged behind in renewable generation capacity.

Over the last decade, environmental policy across ASEAN had been higher on the agenda, but progress remained difficult. While environmental policy in Singapore had been relatively successful, plans in other ASEAN nations such as the Philippines and Thailand had been more modest.

▲*A wind- power system in Bình Thuận Province. Việt Nam leads among ASEAN countries in using green energy.*

As the global economy moved towards cleaner growth, ASEAN needed to keep pace. Across the region, lower environmental impact from its development would make it a more desirable place for individuals and firms to move to.

Scott Corfe, ICAEW economic advisor and Cebr associate director, said, "Manufacturing activities have a strong effect on emissions, since they produce more than three times the carbon emissions - per US$1,000 of output - than service activities. While ASEAN has seen a positive move towards cleaner manufactures, this is undermined by a growing dependence on commodities as China's expansion has kept demand strong.

"It will be helpful for Việt Nam to diversify its exports away from commodities and consider cleaner manufactures. This will reduce its reliance on China as an export market for coal in case the Asian giant's economy slows and also help reduce Việt Nam's environmental footprint."

Mark Billington, regional director, ICAEW South East Asia, said: "Much more is needed to translate environmental policies into reality, including a stronger regulatory environment, political will and funding. Commodity-rich ASEAN nations like Indonesia and Việt Nam may be attracted by the short-term gains in GDP that can be reaped at the expense of natural capital stocks – for example, the natural wealth locked in resources such as forests.

"One way to ensure more sustainable growth is to consider natural capital accounting. By calculating the value of critical assets, their proper use can be measured and managed to ensure long-term sustainability for both organisations and for the environment. "

Economic Insight: South East Asia, produced quarterly for ICAEW by Cebr, its partner and economic forecaster, provides its 144,000 members with a current snapshot of the region's economic performance.

It undertakes a review of Southeast Asian economies, with a focus on Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Việt Nam■

Đỗ Hoàng

The benefits of trees in human life

▲ *Trees scrub pollutants from the air so we breathe easier, and help make us feel better from an emotional standpoint as well*

Trees are known to improve air quality by capturing 6 common air pollutants and toxic gases: ground-level ozone, particulate matter, CO, NOx, SO_2 and lead. In fact, a single tree can absorb 10 pounds of air pollutants/year. According to a study published in 2014, U.S. Forest Service scientists and collaborators calculated that trees are saving more than 850 human lives a year and preventing 670,000 incidents of acute respiratory symptoms. The researchers valued the human health effects of the reduced air pollution at nearly $7 billion every year.

Based on some recent researches, children exposed to more greenery as measured by satellite imagery of their schools and neighborhoods demonstrated better attention skills and memory development. In other while, there are positive effects that exposure to trees and nature has on our mental health. A recent study published in the journal *Nature* combined satellite imagery, individual tree data, and health surveys from 31,109 residents of the greater Toronto, Canada area, and found that people who live in areas with higher street tree density report better health perception compared with their peers living in areas with lower street tree density.

According to the book, The Biophilia Hypothesis, co-edited by Wilson and Yale social ecology professor Stephen R. Kellert, relentless environmental destruction could have a significant impact on our psychological and spiritual quality of life.

With over 80% of Americans living in urban areas, it was proved to implies an indispensable need for growth and implementation in urban tree planting, urban greening and biophilic design in educational institutions and places of business for enriched physical and mental health■

Thanh Liêm

The Great Green Wall of China

▲ *China is building a Great Green Wall of trees to stop desertification*

The Great *Green* Wall of China known as the Three-North Shelter Forest Program is the biggest tree planting project on the planet with the purpose to create a 2,800-mile long green belt to hold back the quickly expanding Gobi Desert and sequester millions tons of CO_2 in the process. It is expected to complete by 2050, thence increase forest cover from 5 - 15% overall of China's.

The Chinese government first conceived of the Green Wall project in the late 1970s to combat desertification along the country's vast northwest rim. Soon thereafter, China's top legislative body passed a resolution requiring every citizen over the age of 11 to plant at least 3 Poplar, Eucalyptus, Larch and other saplings every year to reinforce official reforestation efforts.

However, the situation is only getting worse with overall forest cover by 11,500 square miles (2000 - 2010, with ordinary citizens alone planting upwards of 60 billion trees. According the analysts, China loses just as many square miles of grasslands and farms to desertification every year, so reforestation has proven to be an uphill battle. The encroaching Gobi has swallowed up entire villages and small cities and continues to cause air pollution problems in Beijing and elsewhere while racking up some $50 billion a year in economic losses. And tens of millions of environmental refugees are looking for new homes in other parts of China and beyond in what makes America's Dust Bowl of the 1930s look trivial in comparison.

The Chinese government is already talking up the Great Green Wall as key weapon in its arsenal to fight global warming and as proof to the rest of the world that China is taking strong steps to mitigate carbon emissions. The project has taken on additional importance for its potential as a "carbon sink" to store greenhouse gases that would otherwise find their way into the atmosphere and exacerbate global warming. But critics point out that it's hard to quantify just how much carbon the Green Wall can store, and that plantations of fast-growing non-native trees going in as part of the project don't store as much carbon as more diverse, naturally occurring native forests. With completion of the Great Green Wall still 35 years out, only time will tell how effective it will be as a solution for some of China's (and the world's) most vexing environmental problems■

Huyền Trang

Potential for sea and island ecotourism development in Cà Mau

Cao Văn Khiêm
Viet Nam Sea and Island Project Management Board

Cà Mau is a province in the southern pole of the country, three sides bordered with the sea with the coastline of 254 km, accounting for 7.8% of the total coastline of the country. The Cà Mau sea area is about 80,000 km², one of four key fishery fields of the whole country. Particularly, Cà Mau Cape wetland has been recognized by the Government as an important site for nature conservation, conservation of historical relics and national defense and security protection. On 26/5/2009, Cà Mau Cape National Park was recognized by UNESCO as the world biosphere reserve. On 13/12/2012, it was recognized by RAMSAR Convention as the 2088th Ramsar site in the world and the 5th Ramsar site in Viet Nam. With advantages of natural conditions, Cà Mau can become an area attracting international investments, including ecotourism and community tourism that are important investment orientations.

1. Sea and island ecotourism potential in Cà Mau

Mangrove ecotourism

Cà Mau Cape National Park has an area of 41,862 ha, with typical mangrove forest ecosystem of Việt Nam and the region. Tourists will appreciate marvelous view of Avicennia and Rhizophora forests, etc. and get a sight of many rare and precious fauna species in the area. These are the mangroves with prominent flora plantations of high values of biodiversity, natural landscape and environment. Fauna are diverse with many waterbird species such as storks, spot-billed pelican, painted stork (giang sen), *Numenius madagascariensis* (rẽ mỏ cong hông nâu), white ibis (quắm trắng)... and reptiles such as flower lizards, pythons landmark, leopard python, viper and reptiles such as water monitor (kỳ đà hoa), *Python moiurus Linnaeus* (trăn mốc), *Python reticulatus* (trăn gấm), *Viridovipera vogeli* (rắn lục miền Nam), *Coelognathus radiata* (rắn sọc dưa), *Crocodylus porosus* (cá sấu nước lợ), *Cuora amboinensis* (rùa hộp lưng đen), *Malayemys subtrijuga* (rùa ba gờ), etc. There are also mammals with high population such as bangal rat (chuột dúi bengan), *Herpestes javanicus* (cầy lỏn), *Lutrogale perspicillata* (rái cá họng trắng), water monkey (khỉ nước), black bat, particularly *Macaca fascicularis* (khỉ đuôi dài), etc. Underwater is the population of diverse aquatic animals with many fish and prawn species such as mullet (cá đối), goby (cá bống), threadfin (cá nhụ), *Litopenaneus vannamei* (tôm thẻ), *Litopenaneus monodon* (tôm sú), *Macrobrachium rosenbergii* (tôm càng xanh), etc. and many other species.

▲ *Cà Mau Cape symbol*

In addition, Cà Mau is an attractive destination for tourists to visit the national marker coordinate (Road marker number 0, the endpoint of the country), which is a very special location for Vietnamese. This has the symbol of Cà Mau Cape; tourists can see the Cà Mau Cape from the forest view pavilion, visit the revolutionary forest village model, etc.

Tourism in Cà Mau islands

Cà Mau has three islands: Hòn Khoai, Hòn Chuối and Hòn Đá Bạc. These islands have pristine and unique characteristics of the nature. Cà Mau islands are not far away from terrestrial land, have favorable conditions for island ecotourism development. With green primitive forests in the island, rocky slope trails hanging from the golden sandy beach to the rocky cliff leading to the mountain peak, underground water dissolving into small springs, supplying fresh water for tourists, particularly, Hòn Khoai Island is a famous historical relic with the revolution carried out by teacher Phan Ngọc Hiển on 13/12/1940 within the Nam Kỳ Uprising climax in 1940 against the French colony. On the top of Hòn Khoai, there is a lighthouse, a building constructed by the French in 1902 which is still operating and particularly a spot for marine ships to trace for international maritime direction. The light in Hòn Khoai Island guided "no speed" boats to travel against waves to meet weapon resupply ships for the Southern revolution during the war time.

Also located in Cà Mau islands, Hòn Đá Bạc, with smooth rocks, mysterious seaside underground caves and forest floor covered with trails is being invested to become an ecological tourism island. Natural landscape in Hòn Đá Bạc Island is featured of primitive features with naturally stack-up rocks, interwoven among rocks is the diverse flora system with green old trees. In here, tourists can visit the museum to discover the achievement of CM12 spy plan, a famous victory of the southern end of the country, a national historical relic and see the "National security defense" statue. Particularly, 184 fishery group, Kien Vang… in Hòn Đá Bạc are mangrove conservation and development sites, a harmonious combination between economic development with primitive and regeneration forestry development models, playing important roles in scientific research, nature conservation and ecotourism development. In addition, Cà Mau forest garden has an artificial bird garden and watery birds fly to reside in the city, becoming a recreational site for urban residents to be close to nature with typical landscapes of the province.

In addition to Cà Mau Cape ecotourism site – Khai Long beach – Ong Trang nature conservation site (Ong Trang dune) is also an attractive site. Ong Trang dune area has a very spectacular natural ecological landscape, is a natural accretion area, with typical mangrove biodiversity. Together with the accretion, mangroves form naturally with very diverse fishery resources. Ong Trang Nature Reserve, a Ramsar site, is very appropriate for scientific study activities and findings on typical coastal mangrove ecosystems.

2. Aim and solutions for sea and island ecotourism development in Cà Mau in international integration

On 7/7/2009, Cà Mau Provincial People's Committee approved the sustainable development program of Cà Mau province period 2009-2015 and vision to 2020. Of which, there's a section on Cà Mau tourism development planning with the target that Cà Mau becomes a top attractive destination of the region by 2015; turns into an important destination of the country and is referred more in the world and regional tourism map by 2020 with ecotourism, recreational tourism and exploitation of community tourism with provincial specific characteristics. To implement the above target, the province plans basic investment solutions for the development of Cà Mau ecotourism:

Focusing state budget investments (central and local) towards holistic, targeted and focal approach as a foundation for promoting the development of ecotourism in the province; carrying out the socialization of ecotourism by encouraging and creating favorable conditions for domestic and foreign stakeholders to involve in tourism activities in different forms; having policies and solutions to create funds for ecotourism development, mobilizing all funding to address investment demands, ensuring tourism GDP growth.

Developing the system of accommodation and tourism service works; enhancing quality of tourism human resources; developing the system of recreational and entertainment facilities; studying to revise tourism sites towards adapting to climate change; restoring cultural – historical – revolutionary relics and developing festivals and traditional craft villages for tourism; establishing and developing agencies responsible for forming, propaganda and development of environmentally friendly tourism image of Cà Mau; community ecotourism development, agriculture tourism, etc.

To develop sea and island ecotourism development in international integration, in addition to current potentials, in the upcoming time, Cà Mau will invest in developing many areas such as transportation infrastructure, technical infrastructure, tourism service system to create appropriate development conditions with potentials endured by the nature, making Cà Mau become an important ecotourism site in the Mekong Delta region as well as nationwide■

Green tourism in the Mekong Delta region

An eco-tourism village is a new model of economic development in harmony with natural landscape and the environment associated with traditional culture.

Originating from an idea of a green tourist destination, both fully convergent cultural identities of the Mekong River Delta, it has contributed effectively to the work of local environment protection.

In this respect, Mỹ Khánh Tourist Village was born and became one of the most attractive eco-tourist destinations of Cần Thơ City.

Mỹ Khánh Tourist Village, managed by Mỹ Khánh Eco-Tourism Ltd. Company, is located in Phong Điền of Cần Thơ City, 10km from the city centre, covering an area of over 14 ha. This village tourism project is a convergence of the elite culture with the Southern characteristics. The village has bungalows and hostels mixed alternately in gardens. Tran Minh Luan - manager of the Village Tourism has said that stemming from the practical requirements of the city to develop its tourist potential, in 1986, the tourism village was developed with its first name as an eco-tourism garden.

By 2002, Mỹ Khánh Eco-tourism Co. Ltd was officially established with a total investment capital of VND30 billion. Over 20 types of trees were planted along walkways in the village such as plums, mango, rambutan, and jackfruit, in addition to strawberry and durian, to create greenery and a fresh space for visitors.

With the hope of turning Mỹ Khánh Village into a tourist destination in Cần Thơ city and Mekong River Delta, the company has launched an idea of building a typical traditional village of the Mekong Delta region and improving the cultural values of the region, while preserving and embellishing the typical architecture. The village has been renovated, infrastructure facilities have been upgraded, and roads have been built to connect tourist attractions. Coming to Mỹ Khánh, one find a familiar picture of local people sailing dinghies and four-season fresh and green orchards.

The Mỹ Khánh Tourist Village also has a recreation area with traditional games such as cyclo, jumping sack, pig racing, and terrain dog racing, in addition to monkey circus, fishing pond, and crocodile breeding pond. There is also a wild animal conservation area with more than 40 species.

In particular, there are special programmes such as "One day of a squire", "One day of a farmer", and "Slapping pond to catch fish". In addition, tourists can also visit the ancient house, traditional culture village and try the traditional dishes made by the locals.

Featuring a typical characteristic of a "whaft boat", Mỹ Khánh village has organised river tours everyday by boat or yacht, exploring attractive tourist destinations along canals, by stagecoach or tram, around the village. Every year, hundreds of thousands of domestic and international tourists visit the village, bringing in substantial revenue for the village.

Recognizing the importance of environmental issues, the company has fully complied with the provisions of the law on environmental protection.

The company has carried out the environmental impact assessment (EIA). It has also signed a contract with CầnThơ Urban Works Company to collect household wastes twice a day. The company has placed trash bins along paths in the village. In addition, the company registers with the CầnThơ Department of Environment Protection every 6 months. Currently, the Department of Natural Resource and Environment has approved the company's report on environmental impact assessment to further ex-

pand 20ha of this tourist area.

It is expected that by 2016, the second phase of this project will complete.

Director of the tourist village, Tran Minh Luan said that to make the environment green, clean and beautiful is one of the priorities of the village by working towards a sustainable development model.

To protect the landscape and ecology of this resort, the company always focusses on disseminating media propaganda and calling on the locals and visitors to protect the environment. To create a close, professional and efficient linkage for the village, the company has developed joint activities to develop eco-tourism with 20 local households involved in "tourism on traditional culture and homestay service" under the umbrella of Global Competitiveness Facility (GCF) for Vietnamese enterprises financed by Denmark.

The project will establish four locations for traditional crafts (knitting, apparel, confectionery, and agricultural models) together with homestay services and training, consulting, and technical assistance to local farmers.

The close connection between the Mỹ Khánh Tourist Village and local households help develop sustainable tourism of ecological gardens. Not only does it take care of business services, the company also takes care of social security, thus bringing prosperity to residents. Every year, the company sets aside hundreds of millions of dong for a welfare fund to build cosy houses or deliver rice to poor farmers and families and grant scholarships to poor but outstanding students, as well as develop infrastructure facilities such as bridges and road in the local area.

Thanks to the strenuous and sustained efforts of the travel sector, Mỹ Khánh village has been awarded numerous certificates of merit from the General Department of Tourism, the City People's Committee, Department of Culture, Sports and Tourism and other agencies in the city.

To make Mỹ Khánh a green tourist centre in Cần Thơ city in general and in Mekong Delta region in particular, in the near future, the village will promote its business links with tourist destinations, travel agencies, tour operators in the region and the entire country as well. In addition, it will also construct projects bearing the special characteristics of the Southern people and develop green tourism products to make Mỹ Khánh more attractive to visitors■

Hương Trần

Establishing Đu Già National Park in Đồng Văn Stone Plateau

The Prime Minister has decided to establish the Đu Già National Park - Đồng Văn Stone Plateau in Hà Giang province, consisting of Đu Già Nature Reserves and Khau Ca Species and Habitat Conservation area, located in 3 districts of Bắc Mễ, Đu Già, and Yên Minh, covering an area of over 15,000 ha.

With the aim to protect the forest eco-system, rare and endangered animals and plants, and contribute to stabilize agricultural and industrial production in the area, the park is expected to help boost ecotourism, increase locals' awareness of protecting the environment and encourage them to join tourism activities to improve lives and enhance the province's socio-economic development. Also, the Đu Già National Park is to protect the ecosystem of ever green tropical moist limestone forest, plant species, endangered wildlife.

Moreover, the national park maintains watershed protection function of the Gam river basins and streams in the surroundings of Tuyên Quang hydropower reservoir. That contributes to stabilizing agricultural production in the area; creating good conditions for research and facilitating research activities of conservation for fauna, flora and ecosystems of the park.

Besides, the national park also exploits the strengths of natural landscape of Đồng Văn Stone Plateau to develop ecotourism and education to raise awareness of environmental conservation and protection; creating jobs and encouraging local people to participate in activities of tourism services, improving their lives■

Trung Thảo

New flora species discovered in Khánh Hòa natural reserve

▲*Miguelia Cruenta Aver & Vuong*

A newly-found species in the coffee family has been named Xu huong Yahara, living 1,000m above sea level at the Hòn Bà Natural Reserve (in Khánh Hòa province) was discovered by collaboration between the Institute of Tropical Biology and the centre for Asian ecology conservation under Japan's Kyushu University.

The plant is between 1 - 1.5 m in height with red flowers and egg-shaped fruit.

Before, the Vietnamese institute and the Czech Republic's Prague garden have also jointly uncovered 2 new members of the ginger family named Zingiber discolor and Zingiber yersinii. Meanwhile, Miguelia Cruenta Aver & Vuong - a wild orchid with zigzagged greenish yellow flowers - has been added to Vietnam's book of nature.

Established in 2005, The Hòn Bà Natural Reserve boasts more than 590 species of flora, as a big draw for local and international biologists in the area of 2,000 ha■

Trần Liêm

Phú Quốc listed is on top 10 beautiful Asian islands

▲*Phú Quốc island*

Phú Quốc island (Kiên Giang province) has been named as one of the top 10 most beautiful Asian islands. It is the largest island in Việt Nam, which has rapidly morphed from a sleepy island to a must-visit destination. It's still largely undeveloped as there is plenty of room for exploration.

Dubbed the "Pearl" island in the southern sea, the island has a 150-kilometre long coastline and beautiful beaches.

The number of tourists visiting Phú Quốc island has increased by 12% annually over the last seven years, reaching more than 600,000 last year.

The other islands on the list include Gili (Indonesia), Boracay (Philippines), Havelock (India), and Koh Lipe (Thailand)■

Long Hoàng

Phong Nha - Kẻ Bàng recognized as the most attractive Mekong heritage

Phong Nha - Kẻ Bàng National Park was recently recognized as the most attractive tangible heritage site in 2015 by the Mekong Tourism Alliance.

The award is part of the Mekong Tourism Alliance Awards (MTAA) 2015 for best travel agencies, airlines, 5 Star hotel, resort, and the most attractive tangible heritage site of the year.

The MTAA target to honor prominent achievements of travel agencies in the greater Mekong sub-region (Cambodia, Laos, Myanmar, Thailand and Việt Nam) with quality and excellence in tourism and hospitality.

Earlier, Phong Nha - Kẻ Bàng National on August 14th, 2015 was awarded its second UNESCO certificate as the World Natural Heritage Site.

The Park was first recognized by UNESCO in July 2003 for its outstanding geological and geomorphologic values with over 2,934 species of flora and 800 species of fauna of which some animals are recorded in the International Union for Conservation of Nature Red List.

The National Park is also famous for cave systems with diverse geology, geomorphology and ecosystems, is one of the most popular destinations in Southeast Asia with many tourism sites such as Phong Nha cave, Tiên Sơn Cave, Sơn Đoòng Cave, Thiên Đường Cave, Dark Cave■

Đỗ Hoàng

Sơn Đoòng Cave listed as of 25 great new places in 21st century

▲*Sơn Đoòng Cave in Phong Nha - Kẻ Bàng National Park, Quảng Bình province*

Sơn Đoòng Cave has topped Smithsonian magazine's list of 25 Great New Places to see in the 21st century.

It was found in 2005, in Phong Nha - Kẻ Bàng National Park, in central Quảng Bình province, has been recognized as the largest cave in the world. With the hight of 180m of ceilings, a 747 could fly through its largest cavern.

"Sơn Đoòng Cave in Việt Nam's Phong Nha - Kẻ Bàng National Park has ceilings so high (180m) they could accommodate the Washington Monument," writes on the magazine, adding that a cave is so massive that a 747 could fly through its largest cavern.

A space is so mesmerizing that you can find nowhere else, enormous stalagmites rising from the ground and statuesque stalactites hanging from the ceiling like an alien species, with jungles emerge from inside the cave itself. Misty clouds envelop the whole scene, a result of the cave's own localized weather system. Passages adorned with ancient fossils offer evidence of the millions of years that have passed on this Earth.

The other top 4 great places to see are Home of the God Particle: Cern laboratory in Switzerland; Leaving the Earth: Spaceport America in New Mexico; Gorillas in their midst: mountain trekking in East Africa; and The starriest night: Alma telescope in Chile■

An Bình