ISSN: 1859 - 042X
English Edition I-2016

Environment

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

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Need for continuing investment and mobilization for climate change mitigation and adaptation

Improving effectiveness and efficiency of state management for reform in environmental protection

Integrated and unified management of sea and island to ensure sustainable development in Việt Nam

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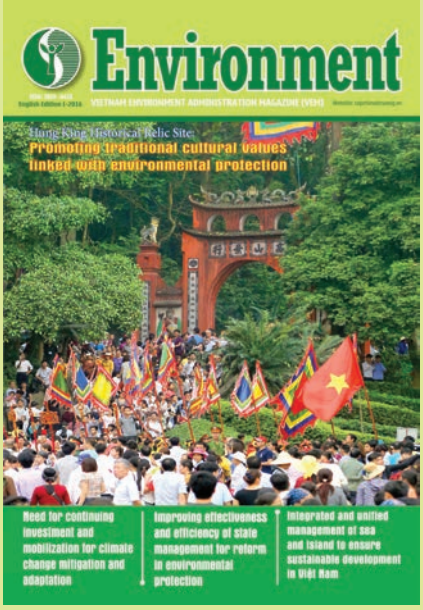

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PUBLICATION PERMIT
Nº 1347/GP-BTTTT - Date 23/8/2011

Photo on the cover page:
Hung Temple Festival
Photo by: **VNA**
Design by: Nguyễn Mạnh Tuấn
Processed & printed by:
Đa Sắc Printed Co., Ltd

English Edition I - 2016

Price: 30.000VND

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Need for continuing investment and mobilization for climate change mitigation and adaptation

▲ **Mr. Phan Xuân Dũng**
Chairman of National Assembly Committee for Science, Technology and Environment

Being of one of the most vulnerable countries to climate change, over the past years, Việt Nam has been proactively implementing concrete activities to respond to climate change. However, responding to climate change is a long term and complex task which needs involvement of entire political and social systems. This is quoted from an interview by Environmental Magazine with Mr. Phan Xuân Dũng, Central Party member, Chairman of National Assembly's Science, Technology and Environment Committee.

✶ ***Would you please let us know about some main achievements in responding to climate change in Việt Nam?***

Mr. Phan Xuân Dũng: Recognizing serious impact by climate change on sustainable development of the country, the Party, the National Assembly and the Government have issued many orientations and policies on climate change responses, for example, 11th Central Party Standing Committee's Resolution 24-NQ-TW in 2013 on proactively responding to climate change, National Assembly Standing Committee's Resolution 853/NQ-UBTVQH on supervision results and enhancing implementation to policies and regulations on responding to climate change in Mekong River Delta (MRD), Law on Environmental Protection 2014 with a separate chapter on climate change, and National Strategy on Climate Change.

To implement these policies, ministries, sectors and localities have carried out a series of actions. These include developing and updating climate change and sea level rise scenarios to provide orientations for ministries, sectors and localities in developing and implementing master plans and plans for socio-economic development, and assessing climate change impact on each sector and area and proposing relevant response measures and developing action plans for each ministry, sector and locality. Via education and propaganda, awareness, attitude and responsibilities for climate change responses of people have been raised, especially those who live in coastal areas and the MRD where face direct impact of sea level rise. In the meantime, competent authorities have taken measures to promote livelihood for local people. Public investment in climate change response has been paid attention. Many national programs have been implemented such as National Target Program for Climate Change Responses, Supporting Program for Responding to Climate Change (SPRCC) and National Science and Technology Program on Climate Change.

In addition, Vietnamese proactive participation in global activities has been highly regarded by international community and received considerable financial and technological support. Moreover, many policies on climate change mitigation and adaptation have been developed and issued. Many pilot projects on climate change adaptation and investment projects have been carried out to contribute to maintain stability of livelihood of local people, especially for those living in coastal areas. These have proved participation of the entire political system in responding to climate change.

✶ ***Would you please share difficulties and challenges in integrating climate change responses into socioeconomic development in Việt Nam?***

Mr. Phan Xuân Dũng: Climate change impact is enormous and rapid. The difficulties reside not only in integrating climate change responses into socioeconomic development but also requires long and short terms scientific solutions, resources and high political will.

Integrating climate change responses into socioeconomic development has been carried out in ministries, sectors and localities. However, this has faced some difficulties. More specifically, the integration is not yet comprehensive and lacks a long term vi-

sion. Climate change responses have mainly focused on addressing consequences and not adequately on prevention. This is due to limited awareness of sectors and different management levels, unclear identification of climate change impact, limited and scattered resources for climate change, and improper resource allocation mechanisms. Reduction and late budget disbursement in the National Target Program has led to unfinished projects that causes inefficiency and resource wasting.

The integration has not created regional and sector linkages. In addition, climate officers have not received specialization training. Activities of provincial climate change steering committees remain limited.

✶ What is your evaluation of funding usage for local climate change responses?

Mr. Phan Xuân Dũng: In the past period, the state has allocated a budget of 1,771 billion VND for climate change responses through National Target Program period 2012-2015. In addition, Việt Nam has mobilized from international organizations and donors a considerable budget of above 1.3 billion USD.

Our supervision of climate change responses in provinces, in particular the MRD, has revealed that the allocated budget has been used quite effectively at local levels. The budget has been allocated to three categories: planting and restoration of coastal mangroves to provide a soft measure for preventing high tides and sea level rise, increase CO_2 sequestration and improve local livelihood; building and improving fresh water reservoirs, sea dykes and embankments; and developing soft measures in heavily impacted areas.

However, being one of the most climate change affected countries, Việt Nam has a huge demand for investment in climate change responses, in particular for highly vulnerable areas such as MRD, central coastal areas and Red River Delta. Therefore, to respond to climate change effectively, we need to maintain proper funding for climate change responses. Apart from central, local and donor funding sources, it is necessary to have financial contribution from private sectors and investment from the community.

▲*Supervision team of National Assembly Standing Committee working in Tiền Giang on implementation of policies and regulations on climate change in March 2014*

✶ Recently, climate change has strong impact on people in the MRD and the whole country. In your opinion, what are measures to improve effectiveness of climate change responses in the future?

Mr. Phan Xuân Dũng: Climate change has occurred more rapidly than forecasted, especially in MDR. Therefore, we need to take many measures, including reviewing and completing policies and regulations on climate change for being consistent with socioeconomic development strategies to take advantages of strength of the entire political system and community with a leading and proactive role of the state. The regulations should mention climate change responses specifically.

It is necessary to strengthen management and usage of state budget and other funding sources for climate change responses. Close supervision and inspection of domestic and international funding sources for climate change is also needed. Priorities should be given to urgent projects such as preventing and redressing coastal and river bank erosions to mitigate impact on people livelihood and production.

It is important to implement the following measures: proactively participating in international cooperative programs on climate change responses and environmental protection; issuing policies and mechanisms to encourage individuals, organizations and enterprises to invest and transfer technology for climate change responses, and developing policies and mechanism to promote socialization in responding to climate change, in particular mangrove restoration and plantation. It also necessary to boosting research and development for updating and completing climate and sea level rise scenarios, encourage biofuel use, develop urban planning towards climate resilient, reducing flooding, green house gas mitigation and promoting green growth and sustainable development■

Thank you!

P. Linh

(Implemented)

Improving effectiveness and efficiency of state management for reform in environmental protection

Dr. Nguyễn Văn Tài
Director General of
Vietnam Environment Administration

Vietnamese economic growth is gradually recovering with continued stable macro economy. However, economic development has been associated with negative impact on the environment. Many pressing issues have remained unsettled while new problems arise. Environmental pollution and degradation continue increasing. The risk for Viet Nam to become a world old technology landfill remains high. Illegal waste dumping and unsanitary landfills have formed many serious polluting hotspots. Untreated domestic wastewater has polluted most of the rivers, lakes, ponds and rivers running through urban areas. In some areas, pollution is serious and threatening people lives and production. Climate change, trans-boundary pollution and international economic integration have put significant pressure on the environment and worsened environmental issues.

In this context, although environmental protection has taken advantages of opportunities to overcome challenges and to result in achievements, capacity for state management remains limited and insufficient for catching up with rapid and complex development of environmental issues. Public environmental awareness, attitude and behavior have not been changed. Resources for environmental protection are only able to partially meet demand. Shortcomings still exist in cooperation between central and local levels. Effective and unified coordination of environmental protection is still lacking. To address these issues, in 2016, state management of environmental protection needs to focus on the following three measures:

First, raising awareness and changing behavior of the public and community on rights and responsibilities for environmental protection, improving quality and reforming methods of education and propaganda on environmental regulations, introducing environmental education in secondary education curriculum, and developing effective cooperative mechanisms between central and local levels in organizing environmental events and campaigns.

Second, improving effectiveness and efficiency of environmental management instruments. These include improving efficiency and effectiveness of strategic environmental assessment and en-

▲*Nhiêu Lộc - Thị Nghè canal after cleaning*

vironmental impact assessment; enhancing inspection and supervision on environmental compliance, preventing and combating environmental crime; preventing import of polluting and outdated technology, machines and equipment; strengthening control of waste generation, storage, transport and disposal of, especially for hazardous waste; developing and improving national environmental monitoring systems; building capacity for early warning, forecasting and proactively addressing disasters, adapting climate change; proactively participate in environmental and biodiversity assessment; developing a roadmap for transformation to an economy which is based on less and then non-polluting production patterns.

Third, creating mechanisms for mobilizing funding for environmental protection from society; enhancing and diversifying funding sources for environmental protection, with focuses on investment in development of centralized solid waste treatment facilities, and remediation of chemical pesticide and wartime dioxin contaminated sites; and completing mechanisms and policies on mobilizing funding from various sources and socialization of environmental protection. The "polluters pay principle" shall be fully comprehended and implemented to provide funding for pollution remediation and environmental restoration. Beneficiaries from natural resources and environment shall be obliged to pay taxes for reinvestment in natural resource management and environmental protection.

▲ *Encouraging and supporting enterprises investing in environmental protection works*

2 In addition to focusing on addressing the current shortcomings, to improve efficiency and effectiveness of state management of environmental protection, in 2016, the environmental sector needs to take measures to increase cooperation and coordination between central and local agencies. It is one of the priorities and could be accomplished through the following measure groups:

First, improving quality, feasibility and practicality of environmental regulations to meeting requirements of international integration and development; priorities shall be given to developing and issuing regulations providing guidance on implementation of Law on Environmental Protection 2014; reviewing and developing economic and technical norms in environmental protection; gradually completing mechanism and policies to promote socialization in environmental protection; developing environmental services; rapidly introducing economic instruments in environmental protection;

Second, improving effectiveness of current investment funding sources for environmental protection, including effective combination of central and local resources, state budgets and funding resources from other economic sectors and society; issuing enabling mechanism for enterprises and community to participate in environmental protection;

Third, strengthening effectiveness and enforcement of state management instruments via enhanced cooperation between VEA and provincial Department of Natural Resources and Environment, via dialogues, cooperation in inspection and supervision, sharing environmental data in states of the environment reports, and connecting environmental monitoring systems.

In 2016, an important year of gearing up for targets of 2016-2020, it is necessary to have joint effort and determination by all sectors and levels to implement tasks and measures. In the near future, VEA will advise Minister to propose to the Government solutions for better integration of environmental protection into socioeconomic development and natural resource exploitation; using environment as a measuring instrument of quality of growth and a criterion for evaluating socioeconomic performance of localities based on sustainable development goals adopted by United Nations Assembly■

Develop action plan toward COP21

Deputy Prime Minister Hoàng Trung Hải assigned the concerned ministries and agencies to urgently build an action plan to implement the outcome of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 21), along with the construction of target programs on Climate Change Adaptation and Green Growth in the period 2016-2020.

Accordingly, the Deputy Prime Minister stressed the need to pay special attention to the final content of institutions and policies on adaptation to climate change; gradually building institutions and policies on green growth. While, allocate mid-term sources of capital, non-business capital and project-sponsored capital to be deployed in the field of infrastructure, capacity building of disaster forecast and warnings, monitoring network of climate change and sea level rise. Promote communications, enhance public awareness of climate change and green growth.

So far, the national target program to cope with climate change has built important legal document system on climate change; established, updated and published climate change and sea level rise scenarios as a guide for the sectors and localities during deployment of socio-economic development plan. At the same time, assess the impact of climate change on each sector, each area; deploy a number of adaptation model, infrastructure projects; raise awareness, knowledge and responsibility of the community in response to Climate Change■

Sơn Tùng

Tax incentive for enterprises implementing environmental protection

The Ministry of Finance has recently issued the Circular 212/2015/TT-BTC for guidance on implementation of enterprise income tax policy for environmental protection activities that stipulated by the Decree 19/2015/ND-CP dated on 14/02/2015 on implementation of a number of articles of the Environmental Protection Law.

Accordingly, the enterprises can receive tax incentive level of 10% within 15 years and can be extended up to 30 years for large-scaled projects that need special investment attraction or use high technology. The former case will be decided by the Prime Minister on the proposal of the Minister of Finance. The projects meet the requirements of environmental protection socialization will be applied the tax preference of 10% for the whole life of the project.

Particularly, the cost paid for environmental protection will be eliminated from its enterprise income tax (EIT). The incentive is taken into account for new investment projects such as centralized domestic wastewater treatment system with its capacity of over 2500m^3/day; collection, transport and treatment of solid waste; treatment and improvement of polluted environment in public areas; etc.

The new projects in production of environmentally-friendly products which received Green Label of Ministry of Natural Resources and Environment will be also the subjects of this policy. The preferential tax and duration will be accounted from the moment that enterprises received Green Label■

Hoàng Đàn

Reduction of fines for environmental, land use violations

The MONRE punished 520 companies for violating environmental laws with total fines reaching nearly 60 billion VND (2.6 million USD) in 2015. Last year, MONRE received about 3,400 complaints and allegations involving violations in natural resources and environmental laws, of which 3,200 related to land use violations.

The ministry performed 94 inspections and investigations with the number of organizations and individuals inspected up to 1400, a 45 % increase compared to the previous year. The most serious violation category is environmental contamination with 602 organizations and individuals fined more than 1.57 million USD. Companies violating land and natural resources laws had to pay fines of 680,000 USD and 623,000 USD, respectively. As many as 8,525 ha of land, along with 89 certificates of land use rights have been revoked. About 22 companies have been banned from operating natural resource exploitation. 20 others were fined for violating water resource laws such as using underground water without licences and illegal discharging of waste water. Another 22 organizations paid fines of 13,300 USD for not abiding by provisions of geodesy and cartography.

Based on inspections' opinion, provincial agencies in charge have not tightened the management and inspection of local projects and private sector's operations■

Phạm Đình

Is air pollution in Việt Nam really concerned?

Dr. Hoàng Dương Tùng
Vietnam Environment Administration

Impacts of air pollution on human health

Air pollution not only increases greenhouse gases that cause climate change and degrade ecosystems, but also acts as the main factor that cause adverse impacts on human health. By the end of 2015, for the first time, the World Health Organization (WHO) issued the warning that air pollution is the main factor causing lung cancer based on scientific studies in many years and in many countries. Statistically, millions of people are killed annually because of cancer due to air pollution. India is a country that has the highest mortality rate due to air pollution. In addition, China is also a country that is famous for air pollution, particularly in Beijing and some major cities. Annually, in the world's most populous country, about 1.6 million of people die early due to air pollution. In EU countries, a nine-month reduction in average life expectancy is due to this reason.

According to the US Environmental Protection Agency, measures that change diesel engine technologies can reduce 12,000 children deaths, 15,000 heart-stroke cases, 6,000 emergency cases due to asthma, 8,900 cases hospitalised due to respiratory related issues in the US. WHO also warns that a majority of lung cancer cases caused by air pollution are found in low income or medium income countries, mostly in Southeast Asia and in the Western Pacific. According

▲*Air pollution from straw burning*

AIR POLLUTION AND HEALTH

Air pollution is mainly due to: CO, ozone, lead, NOx, particulate matter, SO_2.

Carbon Monoxide (CO): from the fuel burning process from engines, including motorbikes that reduce oxygen in breathing and cause heart, lung diseases and other diseases.

Lower atmosphere ozone (O_3): is formed from chemical reactions of volatile organic compounds (VOC) and nitrogen oxides (NO_x) under the impacts of the sunlight, causing lung disease, coughing, and asthma.

Lead (Pb): come from metal processing factories, from engines using lead petrol, waste incineration kilns, battery manufacturing factories, that affect the neural system, reduce IQ, reduce memory and intelligence of children, and cause anaemia.

Nitrogen dioxide (NO_2): come from fuel burning process (motorbike engine, power plant, large-scale boilers) and wood burning, causing lung disease.

Particulate matter ($PM_{2,5}$, PM_{10}: Particulate matter has diameters equal or lesser than 2.5μm, 10μm): formed from chemical reactions and fuel burning (coal burning, wood, straw, thatch, diesel oil), industrial activities (thermal power, cement …), agricultural waste (straw and thatch burning), waste burning, construction activities, dust from transport roads, causing lung diseases, asthma, which can lead to lung cancer and cause mortality in children.

Sulphur dioxide (SO_2) come from fuel burning, particularly coal that has high sulphur concentration, thermal power plant and industrial activities, natural activities such as volcanoes, cause asthma, and breathing problems, at the same time create particulate matter affecting health.

to medical specialists, pollutants go through the lung filter, then come to blood and be absorbed into blood vessels that cause atherosclerosis and immediate impacts such as pneumonia, rhinitis and asthma even in the long-term cause lung cancer. Particularly, people working in polluted environment such as coal mines and cement factories can suffer pulmonary fibrosis.

In Việt Nam, according to incomplete statistics, in recent years, the number of patients relating to air pollution is increasing. The number of children hospitalised for asthma treatment, respiratory bacteria, and cough in some hospitals in Hà Nội and Hồ Chí Minh Cities has increased many times. According to medicinal specialists' forecast, the number of cancer cases including lung cancer in Việt Nam will increase significantly in the next 5 years.

Status and cause of air pollution

According to the monitoring data in recent years, in some big urban areas in Việt Nam, the continuous automatic monitoring system shows that, the $PM_{2.5}$ pollution is the most serious problem for air pollution. It is a **very difficult issue** not only for Việt Nam but also of many Asian countries. The pollution assessment can be carried out through the comparison of average daily monitoring data and average annual monitoring data to the allowed levels.

To compare years, days which have average values higher than the regulation are compared. It could be seen through years that, average daily value (24 hours) of many days within a year in some locations in big cities is 1.5 - 2 times higher than the allowed levels (the allowed level of 50 μ/m^3); the number of days having average daily value higher than the allowed level is increasing through years; average hourly value within a day changes, mostly highest in peak hours when the density of cars and motorbikes is high in the streets. In some days, the value is even three to four times higher than the allowed level 50$\mu g/m^3$.

It could be seen that, air pollution issue ($PM_{2.5}$) in some urban areas of Việt Nam is very problematic when the average value and the annual value higher than the allowed level increase. Particularly, in recent days, a lot of people are concerned whether Hà Nội is as polluted as Beijing.

To understand more about the status of air pollution in Việt Nam, there are some possible causes:

Number of cars and motorbikes is increasing, while local people do not have the habit to walk. In Hà Nội, there are currently about 5 million motorbikes and 500,000 cars. Every day, additional 1,000 cars and motorbikes are newly registered. In Ho Chi Minh City, there are about 6.8 million motorbikes and 700,000 cars and there are additional 1,200 cars and motorbikes each day. In addition, there are many old cars and motorbikes that are not properly maintained. Clean fuel such as E5 petrol is initially encouraged for use.

Public traffic is limited; buses only meet 5-10% of travelling demands of local people. In addition, buses are factors that cause pollution, have not used clean fuels or environmentally friendly alternative fuels such as CNG or LPG which are used for taxis and buses in many other countries. The metro and sky-train system has just initially constructed in some routes in Hà Nội and Hồ Chí Minh City.

The construction of apartments, high-storey buildings and works in cities also cause dust pollution if vehicles going in and out of these construction sites are not properly managed.

The burning of post-harvest straw and thatch, burning of wastes in suburban and rural areas has caused significant impacts on the air quality. The post-harvest haze incident is occurring more frequent.

In the electricity manufacturing structure, the proportion of coal thermal power plants in Việt Nam is relatively high, more than 50% with about 20 factories. In addition, 50 cement factories and 40 steel processing factories are major air pollution sources in the country.

Solution implementation

In recent years, Việt Nam has been implementing some measures to solve air pollution issues:

- *Finalising the legal system relating to air quality management* such as air quality regulations for manufacturing sectors and waste incineration; at the same time requesting factories that create big waste source must be equipped with automatic monitoring equipment to be connected to management agencies. Particularly, increasing the penalty levels against violating entities and requesting environmental protection programs for transportation vehicles (roadmap for applying EURO 4 for new cars, inspection, supervision and maintenance of old cars, E5 petrol use …)

▲*Air automatic monitoring station in the Environment Monitoring Centre – Vietnam Environment Administration in 556 Nguyễn Văn Cừ, Long Biên, Hà Nội*

Constructing some works to enhance the public transportation system in Hà Nội and Hồ Chí Minh City, particularly the underground transport system, overhead transport system, enhanced bus network; re-distributing the transport system, constructing cross-over bridges at transport junctions to prevent traffic jams…Initially managing construction materials carrying vehicles, inside and outside urban construction works.

Selecting some clean technologies for thermal power plants, steel processing factors, and cement factors to reduce dust. At the same time to strictly close manual brick kilns in localities.

Developing automatic air monitoring network in big cities, and disseminating air quality through AQI indicators in the public.

Propagating and enhancing community awareness, mobilizing communities to participate in environmental protection in general and in protecting the air quality in particular through energy saving programs, public transport usage, no waste burning and no straw and thatch burning …

However, it could be seen that although there are many measures to improve the air quality but the outcome is not very positive. Air pollution probably increases with economic development unless there are no specific measures. Therefore, priorities should be paid to implement these solutions:

Cities rapidly construct the air quality management plan (AQM) in order to specifically identify pollution sources and pollution levels to propose proper and specific solutions.

Enhancing the control and reduction programs of air emitted from transportation vehicles. Tightening the air emission standards for import used vehicles and vehicles in circulation; enhancing the control of air transmitting in the streets; establishing car inspection stations nationwide; developing the road mechanical transportation vehicle air testing centres; expanding entities implementing air standard inspection …

Implementing the motorbike air emission control scheme in big cities and provinces. The objective of the scheme during 2013-2015 is 80% - 90% of motorbikes operating in Hồ Chí Minh City and Hà Nội meeting the air quality standard inspection.

+ *Rapidly developing and putting into operation of public transport systems* such as buses, sky-train, and metro. Using clean fuels and alternative fuels for public transport vehicles

Using clean technology for industries to reduce chimney emission, enhancing the management of domestic and hazardous waste incineration. Conducting inventory of industrial emission, installing automatic systems for big waste sources.

Planning high-storey buildings, streets; enhancing the energy use productivity.

Enhancing the use of low-emission fuels, renewable energy (wind energy, solar energy).

Installing continuous automatic monitoring stations in cities and urban areas in Việt Nam to closely control the air quality and provide information for the community.

Conduct the study of impacts on health of some new pollutants such as mercury■

Integrated and unified management of sea and island to ensure sustainable development in Việt Nam

MSc. Đoàn Thị Thanh Mỹ
Ministry of Natural Resources and Environment

Sea plays a very special role in socio-economic development and security-defence. The Việt Nam Sea Strategy to 2020 requests the integrated and unified management of marine resources. On 25/6/2015, the National Assembly endorsed the Law no. 82/2015/QH13 on Sea and Island Natural Resources and Environment, regulating the integrated management of sea and island natural resources and environmental protection; rights, tasks and responsibilities of entities, organisations and individuals in integrated management of sea and island natural resources and environmental protection as orientations for the integrated management of sea and island natural resources of Việt Nam.

Integrated and unified management of sea and island

Integrated and unified sea and island management is a broad spectrum, including many subjects and fields covering research, basic investigation, assessment of potentials of marine zones, and exploitation of marine resource advantages for socio-economic development linked with sustainable sea environmental protection.

Integrated management is a basis for the integrated management of natural elements and exploitation and usage activities of human to ensure sustainable development in marine, coastal and island areas. Integrated management approach is the unification in terms of geography, policy institution, development planning and management in exploitation and use of sea and island natural resources. At the same time, it is the unification of sustainable financial mechanisms for territory management in all facets of exploitation, use, protection and development of marine natural resources and environment. In other words, the integrated management will ensure the comprehensive and sustainable exploitation, use and development of resources (natural and human) as well as marine environmental protection. Integrated management approach is the systematic and ecosystem-based approach.

The integrated and unified sea and island state management is the administrative management of authorised state management agencies through legal institutions to better collaborate and coordinate among state management agencies at central and local levels in development and implementation of strategies, planning and plans on the use, exploitation, and protection of marine resources and environment to be appropriate with the orientations and requirements of sustainable development, simultaneously to protect the sovereignty and territory of Việt Nam.

The nature of the integrated sea and island management is the increase in the quality of marine resource management and environmental protection to be appropriate with the sustainable development requirements through the democracy in management processes (from planning to implementing policies), based on the identification of a management mechanism with active and fair participation of communities associated with the marine spatial environment to share and develop marine economic benefits among sectors and localities in a harmonious manner, at the same time to ensure the integrity of national benefits.

In the integrated sea and island management, the community is not only a management subject but also a management partner of authorities; the community has an equal relationship in terms of rights and benefits; therefore, the coastal local authorities have to respect and ensure local people to have democracy and direct participation in coastal natural resources management and environmental protection. In other words, integrated sea and island management is the management method based on continuous planning and consensus in order to reach agreement on economic, social and environmental benefit sharing in coastal and marine areas, to be managed appropriately with sustainable

▲*Integrated and unified sea and island management is the ecosystem-based and systematic approach*

development objectives.

Requirements of integrated sea and island management

Multisectoral coordination: The integrated management requests multi-sectoral and multi-disciplinary management mechanism approach and continuous processing (from planning to implementing, operating and monitoring), it's impossible to consider the system as a simple collection of individual sectoral management functions.

Cooperation among coastal areas requests the linkage that ensures all policy processes not to be totally bonded to territory administrative borders but to management processes that have regional linkage at different levels (interprovincial, inter-district, inter-commune).

Highly open marine management policy planning and implementation process, requiring the participation, critics and social monitoring of the community in the planning, implementation and assessment of strategies, plans and development policies linked with coastal areas rather than being a close procedure among state administrative agencies.

Spatial marine management to be appropriate with nature of the marine natural resource system (marine spatial system or marine and coastal ecosystem). Applying marine functional zoning to support marine spatial planning and consequently to conduct marine exploration and use planning in 5-10 years plans or longer term. Based on the marine exploitation and use plans approved by the authorised authority, licence and fee collection can be applied to marine resource uses...

Commitment and interdependence on rights and tasks in implementing sustainable development goals between authorities, social organisations and enterprises.

Coordination mechanism towards integrated management method

The integrated management is very complicated as many parties involve in the management process. Therefore, the coordination mechanism is very important to ensure the active participation in resource exploitation by state management sectors such as finance, agriculture, planning – investment, industry, trade, tourism and transport. Due to its complexity, the coastal and marine sector requires authorities' great efforts into coordination. The integrated marine resource management requests the participation of all levels, of which local authorities play key roles.

The Law on Sea and Island Natural Resources and Environment 2015 regulates unified management of the Government on sea and island natural resources and environment. The Ministry of Natural Resources and Environment (MONRE) is responsible to the Government to implement the integrated management of sea and island natural resources and environmental protection. In other words, the coordination role is assigned to MONRE. However, the coordination mechanism between MONRE and other ministries and sectors as well as the relationships with coastal provinces are not clearly regulated in this document. The coordination

mechanism must overcome sector's internal benefits, to create the linkage and cooperation among sectors relating to marine and coastal natural resources and environment. This is an important issue that should be paid special attention during the development of guiding documents of the Law on Sea and Island Natural Resources and Environment.

The integrated and unified sea and island management is the management method that has been applied successfully in many coastal countries in the world. This is a new management method and approach for Việt Nam, playing the role of linkage and adjustment of development behaviours of sectors and activities on sea and island exploitation and uses within the national jurisdiction waters (provincial management) through the intersectoral coordination mechanism and other integrated tools.

Therefore, for the integrated and unified state management of sea and island, it is necessary to develop, apply and implement intersectoral, inter-departmental, inter-regional and community-linked solutions and ecosystem-based marine spatial management. The final common goal of the integrated and unified marine and island management is to ensure multisectoral development, multi-purpose use (maximization) and multi-benefit assurance (mutual interest) among state, private sector, relevant stakeholders and local communities, as well as to reduce the conflict of interests among sectors in exploitation and uses of marine, coastal and island natural resources - environment systems. To implement this, a coordination mechanism among relevant stakeholders needs to be studied and considered to ensure the objectives of protection and sustainable exploitation of marine and island resources of Việt Nam■

The 7th seminar on environmentally sustainable cities opens

The 7th High Level Seminar on Environmentally Sustainable Cities (HLS ESC) has opened recently in Hà Nội with representatives from Japan, Cambodia, the U.S., and Việt Nam. The event has marked a new development in the cooperation of East Asian nations on environmentally sustainable cities. It was a change for delegates exchanged experience on the formation and maintenance of a regional sustainable city network, new orientations for coming seminars to make comprehensive analysis on challenges on city development, including environmental pollution, climate change, biodiversity, water security and contribute to sustainable development goals.

According to Deputy Minister of Natural Resources and Environment, Võ Tuấn Nhân, Việt Nam has received useful support from modal of the ASEAN environmentally sustainable cities. Đà Nẵng, Đà Lạt and Cao Lãnh cities joined the modal. So far, 3 cities received awards of ASEAN environmental sustainable city awards including Hạ Long (2008), Đà Nẵng (2001) and Huế (2014).

The HLS ESC is the flagship collaborative initiative by 18 East Asia Summit (EAS) participating countries to foster concrete activities on ESC in the region. It provides a platform to gather a broad range of stakeholders from government ministries, local governments, international organizations, NGOs, academe and front-line experts on urban environmental management to discuss current issues and explore opportunities for collaborative actions■

Trần Hương

National action plan on sustainable production and consumption

MSc. Lê Minh Ánh
Vietnam Environment Administration

Việt Nam is in the process of promoting industrialization, modernization and urbanization. Industrial production – main pillar of the economy has been and will continue to grow. Together with the development of industrial production is the expansion and forming of new urban areas. Industrial production development and urban development are parallel processes, having organic relationships and following development rules. These two processes result in the increase in consumption: production consumption and individual consumption. Currently, the increase in consumption is leading to the increase in environmental pollution level. All Vietnam's State of Environment reports warn about the increase in environmental pollution, particularly in new urban areas; main causes are manufacturing development and consumption increase in manufacturing and domestic activities in urban areas accompanied with the increase of waste types (solid, liquid, air…).

Unsustainable consumption and production tends to become a substantial barrier to the international economic integration of the country. The international economic integration has technical barriers that countries accessing the international integration have to follow. Coping with unsustainable consumption, a specific action programme needs to be proposed. On 11/1/2016, the Prime Minister has approved the National action plan on sustainable production and consumption to 2020, vision to 2030 (Program).

1. Contents of the program

The program is developed based on the viewpoint of rapid and effective economic development; contributing to environmental protection, poverty reduction and economy restructuring. Sustainable production and consumption activities are carried out comprehensively and focus on breakthrough actions, at the same time are integrated into existing programs; implement sustainable production and consumption towards approaching the product lifecycle, promoting the linkage in different phases of the product's life cycle; apply and renew technologies, improve facility and management process for more efficient resource use, minimise waste and environmental pollution; change behaviour of consumers during the consumption, use and disposal of products; implement sustainable production and consumption based on the mobilization of the participation and contribution of all members in the society, of which enterprises and consumers play central roles.

The overall objective of the Program is to gradually change the production and consumption model towards better resource and energy use efficiency; enhance the use of environmentally friendly materials and products and renewable energy; reduce, reuse and recycle wastes; maintain the sustainability of ecosystems in all phases of the product's lifecycle from exploitation, material supply to manufacturing, processing, distribution, consumption and disposal.

Accordingly, during 2016 - 2020, mechanisms and policies on sustainable production and consumption will be finalized. The proportion of enterprises in different sectors that use intensive energy and have high risk of environmental pollution, developing and implementing the roadmap to apply new technologies towards clean technologies is up to 60% - 70%; the proportion of industrial processing entities applying cleaner production and energy saving solutions is up

▲*Greening the distribution system and developing the supply chain of environmental friendly products and services is one of the key tasks of the Program*

to 50%. At the same time, wastes in distribution activities should mitigate. About 50% of enterprises in the distribution field is aware of, is guided and applies solutions on cleaner production and energy saving; about 65% uses biodegradable packaging at supermarkets, trade centers and up to 50% in residential markets. In addition, consumers and communities are adequately provided with information on environmentally friendly products, sustainable production and consumption activities.

During 2021 - 2030, to comprehensively implement activities to promote sustainable production and consumption; models and practices on sustainable production and consumption are disseminated and applied widespread in communities and enterprises. To fundamentally change the current production and consumption models towards sustainability.

2. Some major tasks

Develop, finalize the legal framework and policies on sustainable production and consumption: Integrate sustainable production and consumption into national, sectoral and local strategies, planning, development plan, sustainable development programs, socio-economic development, environmental protection and poverty reduction plans; develop and finalise the policies incentivising investments on production, trading and distribution of environmentally friendly products and services; finalise policies to promote green public procurement activities; promulgate the list of environmentally friendly products and services prioritized for public procurement; develop international trade policies, policies on export tax, import tax for environmentally friendly products and services to be appropriate with the international integration roadmap, bilateral and multilateral trade agreements; develop and finalize the legal framework to promote waste reduction, reuse and recycling activities.

Promote production and economic structure transition towards sustainability: Sustainably exploit, use natural resources; promote the replacement of non-re-

newable natural resources by new and renewable natural resources and energy; continue to implement cleaner production, energy saving and efficiency; study and apply clean production and environmentally friendly technology; change technologies and eliminate awkward, energy-intensive, environmental pollution technologies; develop human resources meeting the requirements for implementing sustainable production activities; apply the method of product's lifecycle method in implementing ecological renewal activities in enterprises, industrial zones, industrial units to improve the efficiency in natural resources use, prevention and mitigation of wastes; develop the production of environmentally friendly products and services; continue to promote the development of environmental industries.

Greening the distribution system and developing the environmentally friendly product and service supply chain: Apply cleaner production and energy saving and efficiency in the distribution of products and services; reduce the use of non-degradable packaging in supermarkets, trade centres, local markets; promote the use of environmentally friendly packaging instead of non-degradable packaging; study, support the pilot, disseminate and upscale some distribution models of environmentally friendly products and services; promote the sustainable connection among material suppliers - manufacturers - distributors - consumers in production, distribution and use of environmentally friendly products and services; propagate, enhance awareness on sustainable production and consumption for stakeholders involving in the distribution system and the supply chain of products.

Enhance the ability of market access and promotion of export of key export products of Việt Nam towards sustainability: assess the market potentials and ability to provide environmentally friendly products by export enterprises of Việt Nam; study opportunities for export, participate in global supply chain with key export products of Vietnam which are labelled Việt Nam green label, energy saving label and other ecological label; support trade promotion, market access to products labelled Việt Nam green label, energy saving label and other ecological labels; enhance competitive capacity of key export products; enhance the market access capability and ability to meet regulations on environment and sustainable development of key export products of Việt Nam; guide and provide technical support to enterprises in developing the application and certification of international standard system and standards of exporters on environment and sustainable development; develop the sustainable export enterprise model;

Change behaviour in consumption and implement the sustainable lifestyle: Propagate and promote to develop the environmentally friendly lifestyle, sustainable consumption, form environmental protection awareness, towards developing a society of low waste, low carbon, environmentally friendly status and harmony; have information channels and propagate environmentally friendly products and services to consumers; enhance trainings and disseminate knowledge, policies and legislations on sustainable production and consumption to staff, enterprises and labourers to enhance human resources for the implementation of sustainable production and consumption practices; enhance the support roles of social organisations to protect the rights of consumers in propaganda, dissemination, education on legislations and knowledge on sustainable production and consumption to consumers; continue to implement Việt Nam green label, energy saving label and other ecological labels; promote the assessment and certification of environmentally friendly products and services; conduct green procurement activities, prioritise to promote green public procurement activities; study to pilot and upscale the green public procurement models; develop and disseminate models on sustainable lifestyle practices.

Implement waste reduction, recycling and reuse: Organise activities on propaganda and awareness raising on waste recycling and reuse for communities and enterprises; conduct solid waste integrated management following the market mechanism, fee collection based on solid waste volumes; guide, provide technical support to solid waste reduction, recycling and reuse activities in domestic activities, production and trade, services; enhance the control of refuse imports; pilot and upscale models of waste reduction, recycling and reuse in communities■

Results of five-year plan implementation for treatment, control and prevention of environmental pollution due to contaminated pesticides

MSc. Hồ Kiên Trung
Deputy Director - Department of Waste Management and Environmental Improvement
Vietnam Environment Administration

On 30/12/2010, the Ministry of Natural Resources and Environment (MONRE) promulgated the Program to implement Decision no. 1946/QD-TTg of the Prime Minister on approving the Plan for treatment, control and prevention of environmental pollution due to contaminated plant pesticides nationwide (Plan). Accordingly, MONRE established the office to coordinate the Plan's activities and assigned the Vietnam Environment Administration (VEA) to implement, supervise, monitor, orientate and guide provinces to implement the Plan. At the same time, the Ministry has integrated the contents of the Plan into the Law on Environmental Protection 2014; Decree no. 19/2015/ND-CP of the Government regulating in details some provisions of the Law on Environmental Protection 2014; developed and submitted to the Prime Minister to approve Decision no. 38/2011/QD-TTg, which consists of the financial mechanism to handle areas contaminated with plant pesticide chemicals.

According to the investigation and survey results by MONRE in 2010, there were 1,153 areas contaminated with plant pesticide chemicals in 18 cities and provinces, of which there were 240 serious and very serious environmental polluted areas which are subject to strictly treatment to 2015. However, according to investigation results of provinces, by December 2015, additional 326 areas contaminated with plant pesticide chemicals were discovered in the location of 23 cities and provinces. Of which, provinces that have the highest number of polluted areas are Hà Tĩnh (113), Quảng Bình (68), Thanh Hóa (34), Quảng Ninh (26)…

By the end of 2015, more than 60 areas contaminated with plant pesticide chemicals have been treated, rehabilitated and restored. By now, 32 areas are being treated using the State budget (environmental expenditure). This budget is implemented following the supporting mechanism as regulated in Decision no. 58/2008/QD-TTg and Decision no. 38/2011/QD-TTg; 21 areas have been treated using the budget of the National Target Programme on pollution overcoming and environmental improvement during 2012 – 2015 in 7 cities and provinces Bắc Giang (1 project), Nam Định (1 project), Thanh Hóa (3 projects), Nghệ An (8 projects), Hà Tĩnh (3 projects), Quảng Bình (3 projects) and Quảng Trị (2 projects), with the total supporting budget of 126.35 billion dong; 7 areas with about 1,000 tonnes of wastes/sources contaminated as POP that were eliminated supported by the Project "Building capacity to eliminate POP pesticides stockpiles in Việt Nam" (POP Pesticides project).

Some outstanding results

Five-year implementation of treatment, control and prevention of environmental pollution caused by contaminated plant pesticide chemicals has achieved some particular outcomes, contributing to solve urgent environmental protection issues mentioned in Resolution no. 35/NQ-CP of the Government; at the same time supporting Việt Nam to successfully implement the international commitments as a party to the Stockholm Convention on Persistent Organic Pollutants (POPs). Consequently, clear change in awareness of authorities, localities and local peoples on the impacts of environmental pollution caused of contaminated plant pesticide chemicals was generated. Through the implementation of the Plan, together with the support of international organisations, the

▲ *Plant pesticide polluted soil sample collection in Hòn Trơ, Nghệ An*

▲*Collection of plant pesticide chemicals for disposal in Lộc Hà warehouse (Nam Định)*

management capacity of localities on soil environment protection in general as well as the management of contaminated plant pesticide areas in particular have been significantly increased; policy mechanisms have been gradually finalized and synchronized in order to implement the Plan in an effective manner. Particularly, the capacity to treat contaminated plant pesticides has been clearly improved which is illustrated through the increase in quantity and quality of entities that is capable of treatment of plant pesticides chemicals such as: Fenton technology, TAML iron technology, ball milling technology, technologies on thermal absorption, incineration, treatment of waste in cement kilns.

In addition to achievements, the implementation of the Plan also faces difficulties and challenges. Particularly, in terms of the mechanism to mobilise resources and budget to support the Decision no.58/2008/QD-TTg and Decision no. 38/2011/QD-TTg, for projects on treatment of environmental pollution due to contaminated pesticides, the central budget supports 50%, the remaining 50% comes from the local budget. However, almost all provinces having contaminated plant pesticides are difficult provinces that could not balance the budget so there were delays in providing the co-financing.

On the other hand, almost all projects at local areas focus on treatment of environmental pollution caused by contaminated pesticides but not focus on prevention and control of new pesticide pollution that originates from manufacturing, business activities and chemical export and import. The collaboration between authorities in addressing seized illegal imported pesticides is slow and ineffective, which leads to pesticides to be kept in the warehouses for a long time, causing environmental pollution. Change in land use purpose of contaminated pesticide landfills (construction of schools, residents, playing ground ...) causes difficulties in zoning of pollution areas, impact levels assessment, land clearance and implementation of pollution treatment and overcoming options. Applied technologies have not thoroughly addressed pollution, causing secondary pollution incidents. Impacts of pesticides are not fully aware; therefore, the widespread use of pesticides and the poor collection of pesticide packaging have caused negative impacts to the environment. Roles of the community on environmental protection have not been significantly promoted.

Recommendations, suggestions

To overcome difficulties and challenges, particularly to finalize the Plan during 2016 - 2020, MONRE proposes some recommendations and suggestions: The Government promulgates "List of prioritised tasks to implement the Plan for treatment, control and prevention of environmental pollution caused by contaminated pesticides nationwide" during 2016 - 2020; periodically approve the updated list of environmental pollution areas in Annex I and Annex II of Decision 1946/QD-TTg; enlarge contents on management and treatment of nearby environmental pollution areas as a group to reduce treatment and monitoring expenses; add and clarify contents on prevention and control of environmental pollution caused by pesticides originating from manufacturing, business and illegal import and assign responsibilities to agencies in dealing with seized pesticides.

The Ministry of Finance takes lead, collaborates with MONRE to develop and submit to the Government in 2016 the support mechanism from the central state budget towards supporting 100% budget for environmental treatment, rehabilitation and restoration caused by contaminated pesticides in provinces and cities that are unable to balance the budget.

Provinces that have many contaminated pesticides sites such as Thanh Hóa, Nghệ An, Hà Tĩnh, Quảng Bình need to quickly develop the management master plan, firstly select and construct the central warehouse area, load contaminated plant pesticide chemicals in seriously polluted area and critically seriously polluted areas to the central warehouse for further treatment; separate and prevent pollution spread in high pollution risk areas; develop projects on environmental treatment, rehabilitation and restoration in polluted areas to eliminate treatment and monitoring expenses■

Strengthen the collaboration to prevent illegal import of hazardous waste into Việt Nam

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Together with the industrialization and modernization, the demand of using recycled materials increases the volumes of hazardous waste in production as well as in refuse import into Việt Nam. Therefore, currently the management and control of hazardous waste is an urgent task in environmental protection.

Regarding regulations on hazardous waste management, currently there are some documents directly regulating the management of hazardous waste and refuse import such as: The Law on Environmental Protection 2014, Decree no. 38/2015/ND-CP, Decision no. 73/2014/QD-TTg, Circular no. 36/2015/TT-BTNMT, Circular no. 41/2015/TT-BTNMT and some other relevant documents which are considered to be detailed and adequate.

However, according to reports of the Việt Nam Customs, the illegal import of hazardous waste into the territory of Việt Nam tends to increase quantitatively; in most cases, it is impossible to identify the owner of the goods or after the identification of the owner, it is impossible to identify the address and the company at countries that export those goods. Therefore, to address the illegal import of hazardous waste into Việt Nam, in addition to the development of a full and rigid legal system, it is important to have a close and effective collaboration between environmental police, investigation police, and Interpol office to prevent "unreal" enterprises to illegally export hazardous wastes into Việt Nam.

During 2013 - 2015, the number of enterprises involving in refuse export and import was about 200 - 250, of which almost all of them imported refuse such as: iron, steel, paper, plastics, zinc, copper...

According to statistics of the Environmental Crime Prevention and Fighting Police Department (C49), the number of criminal cases and environmental protection violation cases in hazardous waste management during 2007 - 2013 increased rapidly, 137 cases discovered in 2007 and 651 cases in 2013.

Recent illegal import of refuse and waste in seaports in Việt Nam shows that reasons for stockpiles and disquali-

Volumes of refuse import into Việt Nam during 2011 - 2013

No.	Refuse type	Import volume (tonnes/year)		
		Quarter IV/2011	2012	2013
1	Metal	277,430	2,958,495	3,455,943
2	Plastics	23,980	313,262	1,604,872
3	Paper/package	36,550	228,600	4,282,131
4	Gypsum	19,903	33,331	
5	Slag sand	27,250	96,988	56,422
9	Other refuse			1,466,679
	Total	385,113	3,630,676	10,866,047

(Source: Vietnam Environment Administration)

Number of environmental violation cases in hazardous waste management during 2007 - 2013

Year	Discovered case	Subject	Prosecution, prosecution request		Administrative penalty		
			Case	Subject	Individual	Organisation	EP penalty and fee payment (billion dong)
2007 - 2008	137	151	0		101	50	1.25
2009	322	411	0		271	140	1.75
2010	346	423	0		270	153	2.1
2011	388	429	0		282	147	2.35
2012	422	451	0		293	158	2.91
2013	651	596	0		235	361	2.15
Total	2,176	2,461	0		1,452	1,009	12.42

(Source: C49, Ministry of Public Affairs)

Number of specialized cases on hazardous wastes implemented by C49

Year	2008	2009	2010	2011	2012	2013
Number of implemented specialized cases	4	9	7	5	11	15

(Source: C49, Ministry of Public Affairs)

fied circulation are mostly because the name holders do not collect the goods as they do not correspond to those stated in the contract; enterprises as the intermediary for foreign enterprises do not collect goods as they do not have relevant papers; temporary re-export goods to a third country are unable to export to the third country as they are ineligible for export to these countries. Stockpile goods in seaports are mostly machines, old equipment, used rubber tires, refuse, old clothes, and used electronic and electronic equipment...

In recent years, almost all violation cases of illegal import of hazardous waste into Vietnam are discovered thanks to the participation and investigation of the environmental police and investigation police. According to C49 of the Ministry of Public Security, of 120 violation cases, the number of corporation violators (enterprises) is 87, including Vietnamese enterprises, foreign enterprises and joint venture enterprises. The proportion of corporation is 72.5% (87/120 cases), of which foreign-invested enterprises accounts for 26.4%, Vietnamese enterprises makes up 73.6%. Individuals have 23 cases with 84 subjects, including Vietnamese of 59 (making up 70.2%), foreign nationalities of 25 (accounting for 29.8%) mainly from Korea, China, and Malaysia. Typical example is the discovery and handling of illegal export of refuse and wastes into Việt Nam such as the Longtech Precision Limited Company with 100% capital of Taiwan (Bắc Ninh); the environmental crime prevention and control police has collaborated with the economic security force (PA81) and Bắc Ninh province police to identify the origin and violation tricks of the Company, reveal behaviours of export of iron and steel that are dirty, and of refuse consisting of hazardous elements.

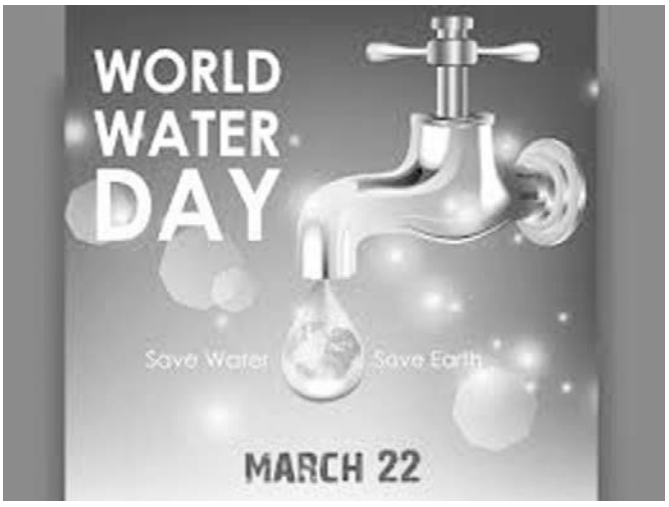
On the other hand, the environmental crime prevention force has collaborated with the Interpol Office to identify foreign partners and companies that export goods into Việt Nam that have violation symptoms. During 2008 - 2013, the Interpol has supported and collaborated to discover tens of "unreal" enterprises that export hazardous wastes into Việt Nam; consequently, to identify many subjects operating in the hazardous waste management field coming from overseas and to timely inform relevant agencies.

Simultaneously, international cooperation also plays important roles in preventing illegal import of hazardous wastes. In recent years, some typical cases of illegal import of hazardous wastes have been prevented such as: Vu Hai Limited Company (Quang Ninh) imported 63,040 tonnes of lead battery plates but declared in customs as lead ore; Mega Star one member limited company and Vong Trong Limited company imported 86 containers (equivalent of 1,782 tonnes) of steel refuse mixed with oil and impurities through ports in Hồ Chí Minh City; Vinashin Cuu Long company under the title of importing equipment used for Red River Thermal Power Plant Project imported old electricity generators manufactured since 1960 in Korea, including one transformer containing about 4,000 litres of polychlorinated biphennyls oil (PCB)...

It could be said that, currently, Việt Nam only addresses cases that illegally imported goods at the ports but not focuses on preventing goods before arriving at the ports. Therefore, in the upcoming time, together with the formulation and implementation of legal documents, the coordination among environmental police and investigation police, Interpol Office, and relevant departments in preventing illegal import of hazardous wastes in Việt Nam plays necessary roles■

▲*Functional force discovered the illegal storage of hazardous wastes in LongTech Precision Viet Nam Limited Company*

Half the world could face severe water stress by 2030



According to a new report from the International Resource Panel (IRP), demand for water set to outstrip supply by 40%, highlighting urgent need to improve how humans use the precious resource. Without altering current levels of water consumption and pollution, almost half of the world's population will suffer severe water stress by 2030, damaging the well-being of millions of people. The current trends could force governments to spend $200 billion/year on upstream water supply as demand outstrips cheaper forms of supply - up from historic averages of $40 - $45billion. As the global population rises, increased urbanization, climate change and a shift in how food is consumed are likely to dramatically increase future demand for water. Especially, in sub-Saharan Africa, a region struggling to cope with the impacts of climate change and poverty, water demand is expected to rise by 283% over 2005 levels by 2030. If the world is to stave off the looming crisis, then efforts to decouple water use from economic growth will need to be strengthened. Some countries have already proven that decoupling water use from economic growth is possible. For example, in Australia, water consumption declined by 40% between 2001-2009 while the economy grew by more than 30%.

Achim Steiner, Executive Director of the United Nations Environment Programme (UNEP) said: "Reliable access to clean water is a cornerstone of sustainable development. When clean water is consistently unavailable, the world's poorest must spend much of their disposable income buying it, or a large amount of time transporting it, which limits development. And since only half of one per cent of the world's freshwater is available for the needs of both humanity and ecosystems, we will need to do more and better with less if we are to ensure healthy ecosystems, healthy populations and economic development."

The report also lists a number of factors that will increase demand for water in the future and presents tools and policy recommendations that can improve the situation. For example, the agricultural sector accounts for 70% of all global freshwater withdrawals. As the global population increases, agriculture will exert growing pressure on water resources. However, in India, the expected gap between water supply and demand could be reduced by up to 80% if techniques such as crop rotation, much and organic fertilizer are used and improved to increase crop yields. In South Africa, the gap between water supply and demand is up to 2,970 million cubic metres. By improving water productivity, the country could save $150 million/year by 2030.

In urban centres around the world, about 100-120 billion cubic metres of water could be saved in 2030 by reducing leaks in the supply of bulk water in commercial, residential and public premises. Despite the importance of water, many countries have a "mixed track record" in managing their water resources, the report says. Governments have tended to invest heavily in mega-projects like dams, canals, aqueducts, pipelines and water reservoirs, the report says. With a few exceptions, these solutions are inefficient and many of them are neither environmentally sustainable nor economically viable. The most cost-effective way of achieving water decoupling, according to the report, is for governments to create holistic water management plans that take into account the entire water cycle: from source to distribution, economic use, treatment, recycling, reuse and return to the environment. To achieve water decoupling, the IRP recommends: Investing more in research and development to improve technology that reduces water waste; Building sustainable infrastructure to improve the efficiency of water use and eliminate water contamination and pollution; Introducing policies to curb water demand and re-allocate water to sectors where it produces goods and services most beneficial to society while ensuring vulnerable groups are protected; Strengthening research into the value of ecosystem services and water to human welfare and economic development. Doing more to assess "virtual water" (the water used to manufacture goods that are traded internationally), water footprints and related impacts to better understand how international trade patterns could be used to support decoupling where it is most needed■

Luu Trang

(UNEP source)

Earth Hour 2016

To put the world in order we must first cultivate our personal life and set our hearts right

Ms. Li Bingbing
Goodwill Ambassador of the United Nations Environment Programme

Every day, every person on this planet makes thousands of decisions. From the moment we wake up to the moment we fall asleep, we make choices that range from what we will wear, to how we will get to work, to where we will shop. More than a dozens of these decisions will be about food: what to eat, where to buy food and how to cook it.

Today, as people all over the world get ready to show their commitment to the health of the planet by turning off their lights for one hour, it has never been more important that we realize how each of these decisions can have an immense impact on the world we share.

The need for this is as clear as we want the air in our cities to be. Within the next 35 years there will be an extra one and half billion people to feed, each with their own dreams and aspirations. By 2030, humanity will need the equivalent of two Earths to support itself. This is clearly not viable in a world where climate change will make it even harder for the natural world to provide for our needs.

It is tempting to ignore these problems, partly because we feel that one person cannot make a difference. But we are not alone on this world, and individual action forms part of a greater whole. As Xunzi, the famous Confucian philosopher, once said, "No river or sea can be formed without the streams."

But how can we make our individual streams flow the way they should? A large part of the answer lies in making wise decisions about the things we do every day.

For example, we can think about how and what we eat. I was shocked to learn that it takes more than 16,000 litres of precious water to produce just one kilogram of beef. Most of the forests we chop down are destroyed to make way for animal agriculture, which makes meat production the leading cause of species and biodiversity loss. And, as if this wasn't bad enough, the meat industry generates almost one-fifth of all the man-made greenhouse gas emissions that drive climate change.

So, something as simple as eating less meat can help save two of the world's most precious resources - our water and our forests - while weakening climate change.

We also need to be better at conserving food. Every year, humans throw away about one-third of all the food we produce - about 1.3 billion tonnes. This is particularly horrifying when you think of the millions of people who don't have enough to eat. By shopping smartly, planning our meals and creatively cooking our leftovers we can prevent this shocking food waste and save money too.

Another way of saving money and the environment is to change the light bulbs in our homes and offices to more energy-efficient ones. If everyone on the planet did this tomorrow, we'd stop the equivalent of 138 coal-fired power stations from spewing out harmful CO_2 into the world every year.

With China's electric car market set to more than double in 2016, we can also think about buying an electric car when it's time to trade in our old one. Or we can choose to ride to work on a bicycle, use public transport or share a ride to work.

Each day here in China we face the consequences of failing to make these simple, educated choices: we are reminded of this failure every time the government issues a smog alert and every time our children can't go to school because of the harmful pollution in our air. For our health and wellbeing, the cost of failing to act is as damaging as the smog that shrouds our cities.

Confucius taught us about frugality and thriftiness and these two philosophies need to be in our minds whenever we go out shopping - we need to use our financial and natural resources wisely as "Green Consumers." When we need to buy new appliances and goods - be it a washing machine, fridge, car, cosmetics or electronics - we need to buy ones that carry the government's eco-label.

By making these small, smart and simple changes to the way we live, we can start to enjoy better health, a better environment and a better bank balance.

Today, as the world marks Earth Hour, we must realise that making the world a better place isn't just about switching off our lights for a short time. It's about changing the way we live; it's about changing the way we consume so that the billions of decisions we make collectively don't destroy the planet but help to protect it instead.

By setting our hearts right and by cultivating our personal life, we can put the world in order. This is not only about being kind to future generations; it's about being kind to ourselves and our communities today■

Nguyên Hằng

(Chinadaily.com.cn source)

World Health Day, 7 April

The Greatest Wealth is Health

healthy for life™

On World Health Day, we could reflect upon thousands of sayings related to health. Perhaps, however, the one that best defines how central well-being is to human happiness and prosperity was coined over 2,000 years ago by the Roman poet Virgil, when he said, "The greatest wealth is health."

One would hope that two millennia would be long enough for such simple wisdom to sink in-and we have made progress in eradicating diseases and reducing the poverty that damages our ability to live long, happy and productive lives. Yet human society is still managing to invent new ways to harm itself.

High on the culprit list are environmental health risks, such as pollution, chemical exposure and climate change-the majority of which are unintended consequences of the way the world has developed. According to the World Health Organization (WHO), 12.6 million people died as a result of living or working in an unhealthy environment in 2012, nearly 1 in 4 of total global deaths. The sad fact is that many, if not all, of these deaths could have been avoided through better environmental management.

This is where the 2030 Agenda for Sustainable Development and the United Nations Environment Programme (UNEP) come in. The 2030 Agenda has set 17 Sustainable Development Goals (SDGs) that aim to create a better future for people and planet. The environment cuts across virtually all of the goals, as it should: the Earth's natural resources support much of human existence-providing agricultural land and fisheries, livelihoods, air, water, energy and so much more. But nowhere is the importance of a well-managed environment as clear as in human health-which is simultaneously a standalone goal (number 3), a key factor in other goals such as those on education, economy and societies, and a way of measuring how

sustainable development is progressing.

The 2030 Agenda has come in the nick of time. As a result of the damage humanity's rapid development has done to the environment, our planet is straining to sustain human life in good health. Take the example of indoor and outdoor air pollution, the single biggest environmental killer. WHO figures show 8.2 million people died in 2012 from air pollution, which is due in no small measure to a fossil-fuel based economy that pumps harmful materials into the air.

A century or so ago, we had the excuse of ignorance and a lack of alternative technologies. Today, we do not. We have examples of sustainable urban transport systems across the globe. We have access to cleaner fuels and more-efficient vehicles. We have more renewable energy and energy-efficient technologies. We can produce clean cookstoves to slash the millions of deaths from indoor air pollution.

Happily, many of these initiatives are spreading, most notably renewables. Last year, for the first time, renewables accounted for a majority of new electricity-generating capacity added around the world, at an investment of $286 billion, according to recent research by UNEP, Bloomberg and the Frankfurt School. With further expansion of renewable energy, we can provide universal access to clean energy without compromising human health.

There are similar challenges and opportunities in chemicals, which are an integral part of today's world. Global chemical output was valued at $171 billion in the 1970s, and grew to $4.12 trillion by 2010. But the gains that chemicals provide must not come at the expense of human health and the environment.

Take lead, for example. Childhood lead poisoning can have lifelong health impacts. According to the WHO, childhood lead exposure contributes to about 600,000 new cases of children with intellectual disabilities every year. In addition to the obvious suffering this causes, the economic cost due to lower IQ points translates to over $900 billion each year. We are tackling this challenge. In 2002, lead was used in fuels in 82 countries. Today, with UNEP and its partners' support, only three countries still have leaded fuels. Lead in paint is still a problem-which is why UNEP and WHO, leading the Global Alliance to Eliminate Lead Paint, are working across the globe to replicate the success with fuel. In the Philippines, for example, legislation now prohibits the use, manufacture, import, export and sale of paints with total lead content above 90 ppm.

This is just one strand of the many efforts to ensure chemicals are used safely for the benefit of humanity. Under the Montreal Protocol, for example, the world phased out chemicals that were depleting the ozone layer. We are now on track for ozone layer recovery, and the benefits are astonishing: data released by the US Environmental Protection Agency showed that actions under the Montreal Protocol will prevent 283 million cases of skin cancer up to 2100. Extrapolated across the globe, this means billions of cases, and millions of lives saved.

So, we have reason to be optimistic about the world's ability to face down major threats to our health. But challenges also emerge from environmental issues that are not so obvious-climate change amongst them. Evidence from the Intergovernmental Panel on Climate Change shows that climate change has altered the distribution of some infectious diseases, altered the seasonal distribution of some allergenic pollen species, and increased heatwave-related deaths.

This is why the Paris Agreement on climate change is also so important for human health. If we do not reduce greenhouse gas emissions, extreme weather events will claim lives, while changing weather patterns will increasingly affect agricultural production. In Africa alone, climate change could reduce crop yields by up to 20% by 2050 as the population nearly doubles. The health consequences of such a scenario are obvious.

There are so many other areas we could explore: how human health is supported by biodiversity and ecosystem services; growing plastic contamination in the oceans and food chain; the ever-increasing amounts of e-waste that expose workers to hazardous substances. But it is surely already clear that how we manage and use the planet's resources has a big impact on our health.

UNEP, WHO and many other committed organizations, governments and individuals have come a long way in addressing the links between health and environment. With implementation of the 2030 Agenda about to hit full swing, we have a golden opportunity to do even more. Should we waste it, both our health and wealth will suffer■

Châu Long

(UNEP source)

Creating green growth in Canada

Ms. Catherine McKenna
Minister of Environment and Climate Change, Canada

"The push towards a low-carbon sustainable economy will produce a new prosperity."

Economic growth and environmental responsibility are intertwined. World economies are shifting towards cleaner growth, and the global push toward a low-carbon, sustainable economy will produce new companies and new prosperity. The world economy stands ready to reward those who produce carbon-free energy that meets our collective worldwide needs for transportation and heating, and those who can help the world transition to a net-zero carbon economy.

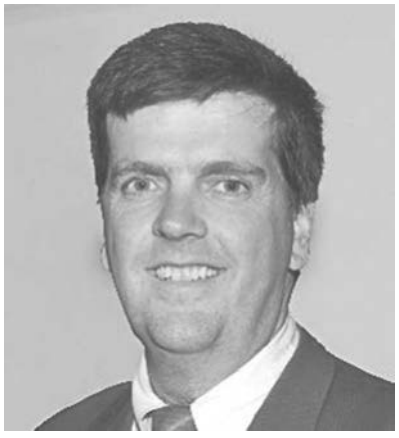
Canada plans to be involved in this transformation by innovating at home and helping to implement lower-carbon alternatives around the world. Canada is already a leader in clean electricity, with the largest percentage of renewable electricity in the G7 and with 79% of its electricity generated from non-emitting sources, but also well positioned to do more. Canada recently pledged $2.65 billion to support developing countries' transition to low-carbon economies that are greener and more climate resilient. The country will foster expertise in clean energy technologies, including energy efficiency, carbon capture and storage, renewable energy, fuel cells, transportation technology, energy storage and smart grids. Its clean tech sector is growing quickly and can help Canada's energy sector become stronger and more sustainable, and can help transition us to a low-carbon economy, creating opportunities for generations to come.

Within Canada's federal system of government, jurisdiction over energy resources and the environment is shared among the federal government, provinces and territories. The Ministry of Canadian Environment and Climate Change (MCEC) is collaborating with the provinces and territories on a pan-Canadian framework on climate change and clean growth, and developing a Canadian energy strategy that will protect Canada's energy security, encourage energy conservation, and bring cleaner renewable energy onto the electricity grid.

The Minister of MCEC said we will support our communities and economy by making new strategic investments in green infrastructure, clean technologies, transit and innovation. In fact, the Government of Canada has committed to creating a $2 billion Low Carbon Economy Trust to fund projects that reduce emissions and contribute to transforming our economy. The low-carbon innovations we make can be commercialized, scaled up and exported. Done right, this will create good middle class jobs, grow our economy and reduce pollution. Businesses need to be part of the solution.

Canada has notable experience working collaboratively with multilateral organizations to support clean energy deployment, particularly through Canadian facilities established at multilateral development banks that aim to catalyze investments in renewable, low-carbon technologies in developing countries. For example, we are working with the international community through innovative partnerships and investments to deploy clean energy technology to developing countries. Canada recently pledged $2.65 billion to support developing countries' transition to low-carbon economies that are greener and more climate resilient. This included a contribution of $150 million to support renewable energy in Africa through the Africa Renew-

Pollution - The greatest killer



Mr. Richard Fuller
CEO of Pure Earth/Blacksmith Institute, New York

"Tackling the health effects of pollution should be a core focus of development."

Pollution is scourge that has not yet received enough focus, which kills slowly, silently, but massively, and takes far more human lives than malaria, tuberculosis and HIV combined. According to data from the World Health Organization (WHO) and the Institute for Health Metrics and Evaluation Contaminated air, water and soil were responsible for 8.9 million deaths in 2012. That's more than one in seven deaths worldwide, a greater number than is due to smoking, war or malnutrition. Pollution has been steadily growing, as has its health impact, so that it is now the leading cause of death. And, of course, it also damages economies, slowing down development in countries that sorely need to grow.

Pollution comes in many forms, including particulates in smoke from wood-burning cookstoves, contaminated water from mining effluent, sewage in poor slums and belching smokestacks from poorly run industry. It rarely kills directly, but it causes a range of diseases, from cancer to asthma, and wreaks gastrointestinal, cardiovascular, immunological and neurological damage. One in seven deaths occur every year because of the damage we inflict on our environment. But they are preventable.

This is first and foremost a development issue: 94% of these deaths occur in low- and middle-income countries, and most of the 6% that take place in high-income countries are in the poorer Eastern European Member States of the European Union (EU). Wealthy nations have generally managed pollution well in the last few decades. They have safe drinking water, clean air for the most part and good sewerage systems-especially compared to poorer countries, many of which have been industrializing with few or inadequate pollution controls. The results can be seen in pictures of Beijing (China) and Delhi (India) shrouded in toxic particles, in rivers filled with chemicals, garbage and sewage, and in poisoned fish and contaminated food around the globe.

It is possible to have clean and green economies: richer countries

25% of global deaths caused by pollution

According to the World Health Organization, a quarter of all global deaths annually are related to environmental pollution and the death rate is increasing significantly. The report also stressed that chemical substances and waste discharged by humans into the air, water and land has a serious and widespread impact on health. Illnesses related to environmental pollution, like heart disease and cancer, are increasing rapidly. Last year 7.3 million people died due to pollution in Southeast Asia, India, Bangladesh, China, and the West Pacific.

As stated by the General Director of WHO, Margaret Chan "Developing nations suffer the most serious consequences of environmental pollution. If governments do not clean up the environment, more people will get diseases and die young".

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able Energy Initiative, which will feed into the goal, supported by G7 Leaders, of unlocking 10 Gigawatts (GW) of new renewable energy in Africa by 2020, and 300 GW by 2030.

During COP21, Canada also announced its participation in Mission Innovation, a global partnership of 20 countries aimed at doubling government investment in clean energy innovation over five years, while encouraging private sector leadership in clean energy. The initiative also seeks to better coordinate and report on clean energy efforts. Respecting our obligation to help protect our planet does not mean sacrificing economic growth. To the contrary, Canada has the potential to prosper in clean energy, technology and other growing industries that are less impactful than many staples of the high-carbon economy. Beyond that, Canada has the tools to demonstrate throughout the world how a resource-based economy can be developed responsibly, and with the low-carbon future in mind■

Uyên Hoàng
(*UNEP source)*

are already on such a trajectory. It is also possible to clean up the messes that have already been made. We could solve this issue in our lifetimes, saving millions of lives each year, and ensuring that children achieve their full potential. Part of the reason we have not done this so far is that we have abdicated responsibility for pollution to sectors other than health. Many think it should instead be considered as a focus of transportation, energy or climate change. Health systems focus on health service, such as treating diseases, and prevention rarely features in national strategies. Meanwhile, pollution has been fragmented into a list of innocent-sounding categories that fail to communicate the severity of the problem; the death and disease.

At first glance, tackling pollution appears overwhelmingly complex, but solutions are quite doable, and most are very cost effective. Communities blighted by chemicals from weapons manufacturing have also been made safe again. There have been successful efforts by many actors to bring clean water to cities and villages across the globe. Policies to control air emissions have worked in the richer countries, and should be replicable in the developing world. In general, it is not large international companies that cause the majority of these problems. Most of the pollution is created locally, by small-scale artisans or smaller domestic companies, or result from abandoned toxic sites.

Important things can be done on a strategic international level to make progress in managing pollution and improving health. While affected countries need to do the majority of the work, local capacities are usually inadequate. Donors can help with technical assistance and projects that build real on-the-ground capacity through learning by doing. The Global Alliance on Health and Pollution brings together agencies around the world to provide help to willing countries, and its efforts should be expanded and supported. Pollution must also be a focus of the Sustainable Development Goals. An International Commission on Pollution and Health (along the lines of the Stern Report on Climate Change) should define the economic and health costs, and bring attention to the problem.

Therefore, we need to evolve the way we think about pollution, seeing it as an interdisciplinary issue impacting health, the environment and economic growth, and thus a core focus in development assistance on to biodiversity or climate change. The global community has a chance to do something that is practical, doable and solvable. This is a problem with well-known and proven solutions, where we can really make a difference■

Hồng Nhung
(UNEP source)

Breathtaking challenge to Europeans

"Air pollution still harms Europeans' health, and shortens their life expectancy"

Mr. Hans Bruyninckx
Executive Director, European Environment Agency

Europe has clearly improved its air quality in the last decades. This has been achieved through a combination of direct and indirect measures, including effective legislation, technology and higher public awareness. As a result, the concentrations in the air of many pollutants, including sulphur dioxide, carbon monoxide, lead and benzene, have decreased significantly. But despite these achievements, air pollution, especially of particulate matter (PM), ground-level ozone (O_3) and nitrogen dioxide (NO_2), continues to impact the health of Europeans. Air pollution affects everyone, particularly people breathing higher levels of it in urban areas. Some are especially vulnerable, including those suffering from cardiovascular and respiratory diseases, people with airway allergies, the elderly and infants.

The effects of air pollution on heart disease and respiratory illnesses are well known, but new studies show that it can also affect our health in other ways, from fetal development to illnesses late in life. According to recent research, co-funded by the European Union (EU), air pollution in Europe reduces life expectancy by around 8.6 months per person. To a large extent, this is caused by fine particulate matter (PM 2.5).

Particulate matter is the single pollutant causing the greatest harm to human health in Europe. Some of these particles are so small that they not only penetrate deep into lungs they also pass into bloodstream. According to the European Environment Agency (EEA), fine particu-

late matter concentrations in 2011 were responsible for around 430,000 premature deaths in the EU.

Particulate matter is formed in different ways. Some particles are emitted directly into the atmosphere. Others come about as a result of subsequent chemical reactions of different precursor gases in the atmosphere, namely sulphur dioxide, nitrogen oxides, ammonia and volatile organic compounds. These particles can be composed of many components, with their impact on health and the environment depending on their chemical composition.

In the last decade, Europe has reduced emissions both of PM and its precursors. But these reductions have not always resulted in lower exposures. The share of the EU urban population exposed to concentration levels of PM10 above the values set by EU legislation remains high: between 21 - 30% (2010 - 2012). Under the World Health Organization's (WHO) stricter guidelines, 64 - 83% of the urban population in the EU was exposed to excessive PM10 concentrations.

Similarly, the amounts of ozone precursors emitted into the atmosphere have dropped significantly in the last decade, but the exposure of urban populations still remains high. For example, in the period 2010 - 2012, between 14 - 17% of the EU urban population was exposed to ozone levels above EU target values, mostly in southern Europe where warmer summer temperatures lead to higher rates of ozone formation. By WHO's stricter guidelines, more than 95% of EU urban residents were exposed to excessive levels. The EEA has estimated that exposure to high-levels of ground-level O_3 concentrations in 2011 caused 16,160 premature deaths in the EU.

A considerable number of EU countries fail to achieve their emission targets set by EU or international legislation for one or more air pollutants (particularly nitrogen oxides). Limiting the concentrations of air pollutants is also a challenge. Many urban areas struggle with levels of particulate matter, ground-level and nitrogen dioxide ozone higher than the thresholds set in legislation. There are different reasons why controlling air pollution remains challenging. For example, nitrogen dioxide has not fallen as fast as expected. This is partly because vehicles are an important source of NO_2, and vehicle emission standards have not always led to reductions in the real world. Air pollution is also a local, pan-European and global issue. Air pollutants released in one country may be transported in the atmosphere, contributing to or resulting in poor air quality elsewhere.

The consumption patterns can also contribute to high concentrations of certain pollutants. Overall, fuel combustion is clearly a key contributor, arising from energy demand across various economic sectors, from road transport and households to energy use and production. Besides road transport sources, coal and wood burning in small stoves for home heating in some urban and rural areas constitutes a major local source of pollution. The choices made by individual households for heating can depend on several factors, including the affordability of fuel, and can have significant impacts on local air quality■

Gia Linh

(UNEP source)

An important option for Mekong River region's countries

Marc Goichot
WWF's Advisor on Water and Energy Security
At The Greater Mekong Subregion (GMS)

The 2015 United Nations Climate Change Conference, or COP 21, and a new convention on global climate change, are opportunities that allow GMS countries to double their efforts in protecting Southeast Asia's rice fields.

GMS countries, located in one of the most vulnerable regions in the world due to the impact of global climate change, have seen droughts reduce the quantity of fish in Tonlé Sap lake - causing a decline of one-third of the protein supply for 15 million Cambodian people. Productive rice fields in the Cuu Long River Delta Region are also being threatened by rising sea levels, floods and storms, along with other difficult weather conditions.

The impact of climate change can be multiplied by the construction of unsustainable hydropower plants. Dozens of dams have been built along the Mekong River and its branches. Xayaburi and Don Sahong - two of the controversial dams - are being built in Laos, while other dam projects are being discussed. This is an increasing problem because the development of hydropower plants has caused a significant effect on the environment. Once completed, the dams will block fish from moving between areas and reduce the largest quantity of fish caught in the Mekong River, having negative effects on regional food security. Further, rice production may face similar impacts, as nutrition and alluvial sediment are held back at the dams.

▲ *The construction of Xayaburi hydropower plant on Mekong River's mainstream has caused a lot of environmental consequences*

Therefore, it is easy to see that the development of hydropower plants will generate issues in food security and cause a depression in the ecosystem, possibly causing local residents to lose their livelihoods, and enhance the impact of climate change. In order to co-ordinate with the climate change agreement, regional countries must consider better solutions, such as solar and wind energy - which are always available and become less expensive - along with reforestation projects.

More seriously, recent research has shown that large hydropower dams have increased climate change impacts for reasons, including the dams weakening the natural river flow, which works as a tank to eliminate some 200 million tons of carbon gas in the air every year, and produces methane, a greenhouse gas generated from rotten vegetation found at the bottom of rivers, which is 34 times stronger than carbon gas. These dams also reduce the chance that people in the Cuu Long River region are able to earn a living,

▲*Mekong catfish is endangered due to dam construction and over-harvesting*

and erode the coast, making the river's delta region more vulnerable to increasing climate change impacts caused by rising sea levels, as well as stronger and more frequent storms.

The Mekong River Commission (MRC) is now the organization in charge of related issues, which works to push co-operation between nations in the region on sustainable development of the Mekong River. At the recent meeting held in Phnom Penh, ministers of natural resources and environment from Cambodia, Laos, Thailand and Việt Nam discussed challenges that had earlier prevented them from coming together. The Mekong Agreement, a foundation for the establishment of the Commission, was signed 20 years ago when most regional Governments were not aware of the importance of climate change. However, major decisions involved in the regional co-operation have shown their weaknesses. MRC has not resolved rising challenges, such as the damage of natural fishery production, as well as the shrinking and downsizing of the delta region due to conflicts in procedures and regulations on the impact on the downstream river caused by major dams. All of these, connected with increasing climate change impacts, will generate serious irreversible consequences for the delta region.

In spite of being a priceless regional accord, the Mekong Agreement needs changing to match with new movements of the 21th century. However, there is another appropriate solution, which is the UN Watercourses Convention (UNWC). On May 19, 2014, Vietnam approved the UNWC and became the 35th member of the Convention. UNWC is an agreement which sets up rules between members in managing cross-border water resources.

Being approved by the UN in 1997, the UNWC provides basic rules and best practices in the world's legal system on water resources in written documents to strengthen current river-related conventions, such as the Mekong Agreement, without replacing them. None of the Convention's items disables nor conflicts with those of the Mekong Agreement.

So what extra values does UNWC add to the existing MRC? First, UNWC provides a clear mechanism and instruction to settle disputes, which is a major weakness of MRC. Secondly, the Convention helps clarify rules and procedures, which are vaguely described, causing confusion in explanations and worsening the relationship between MRC members, especially in discussions on hydropower dams and their impacts on the downstream area. Unlike the Mekong Agreement, UNWC applies equal principles for all dams built in the mainstream and branches, and helps seal the conflict between nations in the Mekong Agreement. By promoting the Mekong Agreement to the international level, UNWC has raised the members' accountability for complying with the Agreement, without making too many changes.

The approval of UNWC made by Laos, Cambodia and Thailand does not mean these countries will give up unsustainable projects, but instead will improve the quality of the action and ease the conflicts between nations, forcing them to consider their benefits and other energy solutions based on available best options.

At the COP 21 in Paris, governments finally reached an agreement to confront climate change. MRC's ministers also need to develop a solution for those issues related to air and water, and should have a long-term vision beyond the nations' narrow interests to see that building dams along the river is not the best way to lead to a bright future with a secured environment for 60 million residents in the Mekong River region■

Promoting mechanisms and policies for adoption of cleaner production in Việt Nam

MSc. Phùng Thị Quỳnh Trang
Economics and Trade Technical College

Over the years, the adoption of cleaner production methods in Việt Nam has brought economic efficiency, reduced waste and saved natural resources. The government has implemented many policies to assist enterprises in applying cleaner technologies.

To further promote the use of cleaner production methods in industry to achieve the goal of sustainable development, Việt Nam must initiate measures to encourage the ministries, the branches and the localities to build and deploy models for cleaner production to change the existing pattern of production towards a more sustainable and environment-friendly business.

State policies encourage the application of cleaner production in Việt Nam

Vietnam's National Strategy for Environmental Protection until 2020 and Vision towards 2030 was approved by the prime minister under Decision no.1216 /QD-TTg, dated 5/12/2012. It states that the promotion of environment protection must follow the ISO 14000 standard, including cleaner production, waste control, assessment of the product cycle and advanced environment management models.

Cleaner production is one of the main contents and is, therefore, given priority in industrial production.

In addition, the State also promulgated the National Strategy for Green Growth under Decision no.1393/QD-TTg, dated 25/12/2012. According to this strategy document, in the period 2011-2020, Việt Nam must reduce the intensity of greenhouse gas emissions by 8-10%, compared with 2010, and decrease energy consumption per GDP by 1-1.5% annually.

▲*Applion of cleaner production helps businesses save energy and protect the environment*

Under the strategy of using clean technology until 2020 and vision till 2030, a target of having some 60-70% producers using energy that is capable of causing serious environment pollution, such as textile, dyeing, production of fertilizers and pesticides, as well as steel, mineral exploitation, processing and thermal power, in addition to paper, cement and sugar, has been set.

The producers have been asked to build and implement a roadmap for technology innovation towards using cleaner technology by 2030. 100% of the producers in the industry must apply technical standards and regulations on clean technology.

A comprehensive and meaningful policy aims to stimulate the use of cleaner production measures in industrial production, mentioned under decision no.432/QD_TTg, dated 12/4/2012, on the sustainable development strategy for 2011-2020 that was approved by the prime minister. It states that promoting the widespread use of cleaner production methods to improve the efficient use of natural resources, raw materials, energy and water, as well as to reduce emissions, limit pollution, protect environment qual-

ity, human health and ensure sustainable development, is essential.

Over the years, some industrial production facilities have applied cleaner production measures. The facilities have already approached various funds to get loans, such as the Environmental Protection Fund, the Support Fund for Small and Medium Enterprises and the Development Fund for Science and Technology, and have enjoyed incentives. The money in these funds is mainly contributed by the State budget. Many of these funds, such as the Environment Protection Fund, regularly collect money through tax and fee collections. This fund's operational principle is to preserve capital, making it suitable for cleaner production projects.

Thanks to legal documents and strategies on cleaner production by 2020 and the vision towards 2030, the application of cleaner production methods will continue to be recommended and given priority in Vietnam's industrial development roadmap.

Some models and typical enterprises have applied cleaner production methods successfully

Thai Nguyen Paper JSC is an example of an enterprise that has applied cleaner production methods efficiently to manufacture pulp and paper. The company produces votive paper, which is exported to Taiwan, using raw materials, mainly wood and bamboo, with an annual capacity of 6,500 tonnes per year.

The company, which has 200 employees, has carried out a number of measures to ensure cleaner production, including technology renovation, replacement of high-quality raw material, application of advanced technologies and the recirculation and reuse of waste water.

After adopting these innovative methods, the company gained several economic benefits. The company invested VND 2.5 billion and earned VND 1.5 billion in revenue in 2014. With the use of cleaner production processes, the company minimised greenhouse gas emissions amounting to 125 tonnes of CO_2 per year, reduced 114,400 cu.m. of wastewater per year and decreased dust emissions amounting to 5.19 tonnes per year.

Saigon Dong Xuan Beer JSC is an example from the brewery industry. The plant has a designed capacity for the annual production of 30 million litres of beer, 1.5 million litres of ethanol and three million bottles of wine. The company employs 310 people. By adopting measures to improve production efficiency, the company has used materials, water and energy more efficiently and reduced the cost of processing solid waste, waste water and gas emissions. The company has also improved its environment and labour safety. As a result of these measures, the company, which had invested VND 1.9 billion, earned a profit of VND 2.3 billion in 2015. Cleaner production processes also helped reduce water consumption and waste water by 558,900 cu.m. per year, greenhouse gas emissions amounting to 238 tonnes of CO_2 per year and 75 tonnes of dust emissions per year.

Nam Hung Mannufacturing and Trading Co. Ltd, from the textile sector, specialises in producing bleached, dyed and cotton fabric, has an annual production capacity of 1.1 million metres of fabric a year and employs 20 people. The adoption of cleaner production methods benefitted the company economically. The company invested VND 32.3 million and earned a profit of VBD 69.4 million in 2015. Greenhouse gas emissions amounting to 136.2 tonnes of CO_2 per year were reduced by minimising power consumption and cutting down on the use of firewood. Working conditions have also improved.

Proposed solutions for the adoption of cleaner production methods

The assessment and the review of the cleaner production project aims to find shortcomings in the scheme's implementation and to adjust financial resources in a timely manner.

There is a need to assess the current incentives and to work out specific solutions to promote cleaner production, including efficient solutions to assist businesses in transferring technology, especially for technology renovation in industrial production, pollution reduction technology and the efficient utilization of raw materials for cleaner production projects. A review of the relevant documents to extend the scheme to 2030 is also required.

Furthermore, the advisory support from the State for those who are using cleaner production must be strengthened. The evaluation and the review of industry promotion policies is especially needed. Attention should be paid to industry promotion centres, particularly those which have assisted industrial businesses in implementing cleaner production solutions.

There is also a need to review the relevant documents of those enterprises that have adopted cleaner production methods, especially documents related to loan preferential, tax, fee, land lease and fee, with a view to encouraging enterprises that are actively engaging in the process.

The state should assist enterprises in training technicians and raising awareness on cleaner production. Businesses that have implemented cleaner production processes can advise others and spread the message.

It is necessary to strongly boost international cooperation, not only for traditional media partners, including UNIDO and UNDP, but also to expand to new financial institutions and other international organizations■

Cooperation of agencies and companies for environmental protection

▲ *The Vietnam Environment Administration and Coca-Cola Vietnam sign a partnership agreement on the environment*

The Vietnam Environment Administration (VEA) under the Ministry of Natural Resources and Environment with Coca-Cola Vietnam has agreed to jointly implement a green programme in Việt Nam. It comprises numerous activities, including a smart litter bin design contest, green festivals, and environmental protection activities at schools and universities. The Administration has also actively worked with other organizations and enterprises on a wide range of initiatives contributing to raising the public awareness of environmental protection and sustainable development. Among the initiatives are the "one million trees for Vietnam" initiated by the Vietnam Diary Vinamilk Company, the "Panasonic - for a green Vietnam" Programme by Panasonic, and the "green creative contest" by the Friesland Campina Vietnam■

Giáng Hương

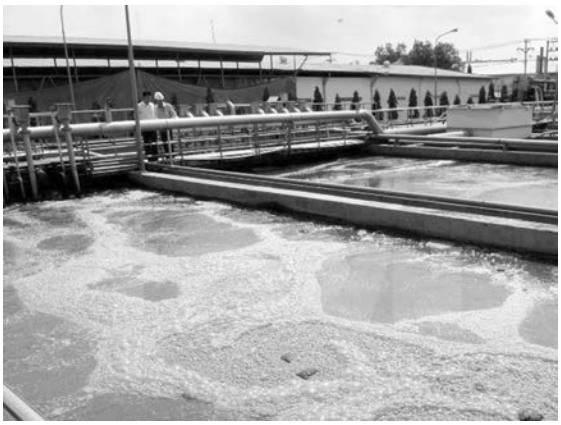
Approval of wastewater treatment project in Bình Dương

The Prime Minister has just approved a "Sewage and wastewater treatment in Dĩ An town area" project to be implemented in the south of Binh Duong to ensure a safe water supply from the Dong Nai River for key southern economic zones including HCM City, Bình Dương, Dong Nai and Ba Ria - Vung Tau. It is a part of the World Bank-funded project titled "Urban water supply and wastewater - phase I", with a total investment of 115 million USD, of those, 92 million USD from the International Development Association (IDA) and the International Bank for Reconstruction and Development of the World Bank, and the rest of about 23 million USD from Bình Dương's counterpart capital.

The project is scheduled to be carried out for 3 years with 3 components including collection and treatment of wastewater from Dĩ An town, upgrades to the rainwater drainage system in the town, and technical assistance for the province and the project's management board■

Phương Hạnh

Automatic wastewater monitoring system in HCM City



The Department of Natural Resources and Environment in HCM City on January has recently inaugurated an automatic wastewater monitoring system in 16 local industrial parks and export processing zones. The system will collect and store post-treatment wastewater samples from the industrial parks and export processing zones for further monitoring.

According to a programme on pollution reduction 2016-2020 approved by the municipal People's Committee, all industrial parks and export processing zones in the locality will get concentrated wastewater treatment systems that meet national standards in 2016. As stated by the HCM City Steering Centre of the Urban Flood Control Programme, treated wastewater now accounts for a low 13.2% of the total amount of wastewater discharged in the city. The city is calling for investment in 12 plants to treat 3 million m^3 of wastewater per day■

Nguyệt Minh

Hậu Giang:
Will have a solar power plant

As stated by provincial People's Committee Vice Chairman of Hậu Giang Le Canh Tuyen, the Mekong Delta of the province has granted approval to the construction of a 36MW solar power plant. It is estimated to cost over VND 1.5 trillion (US$ 67.5 million), invested by Petro Viet Nam Song Hong Investment and Trading Corporation, covering an area of 55 ha in Hoa An commune, Phung Hiep district and being operational in the second quarter of 2017.

The solar power plant project is being constructed in line with the Government's strategy to develop renewable resources by 2030 with a vision to 2050. It is expected to help reduce the loss of electricity transmission and distribution for power systems. Also, it is a pilot model for similar projects in the province and Mekong Delta region as a whole■

Vũ Hồng

Hà Nội:
Promotes environmental protection of handicraft villages

To mitigate the pollution and improve environmental conditions at about handicraft and trade villages in Hà Nội, the People's Committee of Hà Nội will assist 100% of cost for construction of centralized wastewater treatment systems, solid waste dumping areas at the most 20 serious environmental pollution villages. In addition, the city will also distribute no less than 10% of total environmental career expense for environmental protection at trade villages, especially traditional handicraft villages and the ones recognized in 2016.

According to the directive of the Prime Minister, the People's Committee has assigned Hà Nội Department of Natural Resources and Environment and in collaboration with other Departments, Sectors and People's Committee of districts, during two years (2016-2017), review and classify trade villages; appraise and approve its environmental impact assessment reports; monitor and supervise environment; evaluate environmental pollution at these villages; investigate, inventory and classify trade villages based on 8 different types of production, including: food processing, handicraft, dyeing, tanning, waste recycling, mechanic, construction material, husbandry and slaughter■

Trần Tân

Hà Nội:
Welcomes Asia's second EkoCenter

The Women's Union of Thường Tín district in cooperation with the People's Committee of Duyên Thái commune and Coca-Cola Beverages Vietnam Limited officially has recently launched Asia's second EkoCenter in Hanoi. It is equipped with a roof covered entirely with solar panels, supplied by Solarkiosk. The green energy produced by the center's solar panels produce approximately 8kW of electricity per day, enough to power all of the center's activities. It includes the EkoCenter's water treatment system that daily can purify about 6,000 liters of water to serve the needs of 3,000 local people.

The Vietnam Environment Administration and Coca-Cola Vietnam signed a partnership agreement on the environment to extend environmental activities already being implemented and further consolidate the partnership between the parties, as well. The agreement will encourage companies, the community and other organizations to actively participate and pay attention to environmentally sustainable activities■

Thu Hà

Wilmar Agro Viet Nam Ltd. Company: **Sustainable development based on environmental protection**

Wilmar Agro Vietnam Co., Ltd., formerly named Cai Lan Oils & Fats Industries Company Ltd. - Can Tho Branch, was founded in 2003. Located in Hung Phu 1 Industrial Park, Tan Phu Ward, Cai Rang District, Can Tho City, its business activities include oil extraction, sourcing and processing food and agricultural products.

In October 2008, Wilmar Agro Vietnam Co., Ltd., officially became a totally foreign-invested company belonging to Wilmar International Group, a top corporation involved in producing, processing and trading all types of oils and fats, food and agricultural products from its headquarters in Singapore. At present, Wilmar Agro Vietnam Co., Ltd., is focused on the rice bran trade and rice-bran oil extraction, with a production capacity of 500 tonnes of material per day. This company is a leader in the field of agricultural products in the Vietnamese market.

According to Vo Van Nghiem, manager of rice-bran oil extraction, there are abundant raw materials in the form of fresh rice bran in the Cuu Long (Mekong) Delta region, but the resource is not tapped efficiently. The company has taken advantage of this raw material to extract high-quality rice-bran oil for the cooking oil industry, making use of domestic production for local consumption and exports.

By using advanced German extraction technology and applying the management methods of the Quality Management System ISO 9001:2008 and Food Safety Management System, Wilmar Agro Vietnam Co., Ltd., has been able to exploit the abundant resource of raw rice bran in the Mekong Delta. Defatted rice bran, the product of oil extraction, is a premium material for animal feed and the aquaculture production industry. Producing brands such as Cam Vang, Kim Ngu and Kim Tru has made the company an important supplier of good quality rice bran for feed and poultry production mills and factories across the country, especially in the Mekong Delta and the Southeast region. Due to its relentless efforts to ensure quality, Wilmar Agro Vietnam was selected as the long-term partner of feed production mills and ranks amongst the leading export enterprises in the country, such as Proconco and Vinh Hoan 1.

▲ *The green environment maintenance is always implemented by the Company*

Apart from its rice-bran oil extraction plant, which covers 4ha of land in Hung Phu 1 Industrial Zone Park, the company has two other branches in Thot Not Industrial Park of Can Tho City and Cai Be District of Tien Giang Province, with a total capacity of 2,400 tonnes of rice bran per day. To meet the requirement of raw materials to ensure this capacity, the company plans to open more collection and processing rice bran centers in Mekong Delta. Besides this, sales and distribution activities for these products have been promoted throughout the country based on the company's vision of becoming the leading enterprise in

the field of oil extraction from rice bran and in the rice bran and oil sector in Việt Nam, in general.

In addition, Wilmar Agro Vietnam has taken a leading role not only in production but also in environmental protection and the conservation of green values. The companys oil extraction plants are also equipped with a standard wastewater treatment system and are connected to the centralised sewage treatment system of the industrial park. In production and business, the company has always updated itself and complied with the regulations and laws of the State and local government on environmental protection, security and fire safety.

Regarding solid waste, the company has signed a contract with an environmental company to collect and transport some 5,000 kg of solid waste per month. Each plant has its own environmental safety board, with five employees and warehouses for storing hazardous waste in accordance with regulations to limit the impact on the environment. The company was recognised as one of the Top 40 green businesses of Việt Nam by *Saigontimes*, a reputable economic magazine, for its successful application of a husk boiler system. This system replaced diesel oil with husks, saving both fuel and production costs and helping to solve the problem of waste husk causing river pollution. The system also reduces emissions into the environment.

In addition to expanding its production capacity and business, the company also focuses on pursuing corporate social responsibility initiatives. Its activities include supporting victims of Agent Orange, supporting the lives of the lonely elderly and families experiencing hardships, building houses for poor families, awarding scholarships to poor but intelligent students and offering gifts to handicapped children. The company strives to provide the most practical benefits that not only contribute to helping people overcome their difficulties but also give them hope for a brighter future.

Human resources is the pride of the company and part of its development strategy, affirming its core values of leadership, integrity, cooperation and innovation, as well as quality and people. Wilmar Agro Vietnam provides high remuneration and a safe workplace for its professional, enthusiastic workforce, as well as domestic training programs and useful outdoor activities that help the employees improve their skills, boost their creativity and bolster their confidence and long-term commitment to the company.

A successful development strategy built on a foundation of large-scale production, modern technology and a professional workforce has helped Wilmar Agro Vietnam affirm the value of a leading enterprise contributing to the national livestock industry and making strides towards improving integration■

Giáng Hương

Waste treatment factory using plasma technology in HCM City

The project "Construction of waste treatment factory using plasma technology" will be implemented by Trisun Green Energy Company at the Northwest solid waste treatment site in Phước Hiệp commune, Củ Chi district, HCM City. The company commits to construct the factory within 33 months on an area of 10-15 ha, the total investment cost of 520 million USD completely funded by the Government of Australia and treatment capacity of about 2,000 ton waste/day. It is expected to incinerate all kinds of waste at the temperature of 3000^0C.

According to the investor, the operation time of the factory is 50 years. As predicted, about 2000 ton of domestic waste, 700-1000 ton of industrial and hazardous waste, and 1000-2000 ton waste-sludge will be treated by the factory a day. Heat obtained from the plasma technology-based incineration process will be converted to electricity and then sold to the Vietnam Electricity. The slug collected from the treatment process is non-hazardous, can be used as construction material■

Thu Hằng

Green supply chain - a sustainable and environmentally friendly business solution

Nguyễn Bình Minh
University of Economics and Business
Vietnam National University

As the world's economy is now transforming into a green economy, the Green Supply Chain (GSC) could become a novel approach for enterprises to improve their competitiveness and reputations.

GSC and its advantages

A supply chain involves enterprises that directly and indirectly meet customer demands by showing the process to deliver materials to the end customer from the initial supplier. A supply chain includes not only producers and suppliers but also transport companies, warehouses, retailers and customers.

A supply chain involves enterprises that directly and indirectly meet customer demands through a process to deliver materials to the end customer from the initial supplier. A supply chain includes not only producers and suppliers but also transport companies, warehouses, retailers and customers.

In the early 1990s, producers encountered environmental issues in their supply chains. GSC is defined as a method that minimises the impact of a product or service on the environment, including all stages of a product's lifecycle, such as importing raw materials, designing, producing, delivering the product to the end customers and managing how the product is consumed.

The management of GSC involves combining environmental issues with the management of the supply chain stages, such as designing the product, seeking out and selecting raw materials, producing and delivering the product to customers and managing the product during its usage. The management of GSC also involves managing the traditional supply chain, which is now integrated with environmental standards, organised purchase decisions and long-term relationships with suppliers. GSC management is associated with managing the chains, including green design, green operation, green purchasing and green input and output logistics, as well as waste management and green production.

Today, GSC and GSC management are considered an effective method of resolving environmental issues that arise from the global supply chain, helping to reduce pollution, protect people's health and efficiently utilise natural resources and energy.

Facing international challenges in energy security, water shortage and climate change, GSC requires enterprises to follow all rules and regulations developed by local governments, regional authorities and world leaders on environmental issues and sanitation. Companies must also ask suppliers to follow their environmental requirements, and both sides must follow them strictly.

In 2015, Walmart - the largest US-based retailer - asked suppliers to submit reports on the use of 10 toxic chemicals in production. Giant computer producer HP requested suppliers to reduce the amount of carbon dioxide in production and transportation by 20%, and the Japanese Fujitsu Corp applied a green purchasing policy to its entire supply chain and for all its suppliers. Many enterprises also co-operated with their suppliers to design green products and develop business strategies, allowing these suppliers to understand their responsibility towards the environment and society, thus forming a long-term relationship between them.

In practice, GSC may protect the people's health and the environment, raise productivity and encourage people to be creative, as well as boost corporate earnings, save energy, reduce costs and improve the competitiveness of companies. With all these benefits, companies see GSC as a strategic analysis tool and push each agent of the supply chain to meet environmental standards to create products that satisfy the market demand. A great deal of research has pointed out that managing GSC is part of the

▲*IKEA always pays attention to environment protection in the GSC*

company's commitment to protecting the environment and achieving sustainable development, which will boost competitiveness, raise productivity, improve the company's administration and retain the loyalty of employees. However, GSC management also brings with it certain difficulties for the companies in terms of maintaining or reducing the current level of financial costs and in evaluating the competence of suppliers and customers.

Standard model of GSC and examples of effective development

According to the Supply Chain Council (SCC) – a non-profit organization that provides standard tools and methods to assist company develop and operate supply chain – the Supply Chain Operations Reference-Model (SCOR) is a closed model of supply chain, in which all production stages are tightly connected by exchanging information regularly between all links of the supply chain in all stages: Planning; importing materials; producing; distributing products; retrieving products; and retrieving recycled materials.

According to the Supply Chain Council (SCC) – a non-profit organisation that provides standard tools and methods to assist companies in developing and operating their supply chains – the Supply Chain Operations Reference Model (SCOR) is a closed supply chain model, in which all production stages are tightly connected by exchanging information regularly between all the links of the supply chain, from planning, importing materials and producing and distributing products to retrieving products and recycled materials.

On the basis of this model, the SCC has developed a new model called the GreenSCOR Model, with additional environment protection activities. More specifically, in the planning stage, an enterprise needs to design environmentally friendly products, calculate the related costs and analyse the environmental lifecycle. In the stage of importing materials, the enterprise needs to locate the source of the materials, check the information, purchase clean materials and work with a third party to inspect the suppliers. In the production stage, the enterprise will perform activities that are related to environmental protection, provide management tools to suppliers and monitor their impact on the environment. In the distribution stage, the enterprise must select partners who have vehicles that save fuel and eject a low amount of carbon dioxide into the air. During the stage of retrieving the used products for recycling, the enterprise needs to work with the recycling companies to develop a recycling process to deal with toxic chemicals and waste.

With this standard model, many of the world's largest enterprises have established an efficient and sustainable GSC network, which benefits themselves and other companies involved

in their supply chain. One example is the Sweden-based IKEA Group, the world's third-largest wood-consuming company. Established in 1943, IKEA is present in 31 nations, with 76,000 employees, and earns annual revenue of EUR12 billion.

IKEA has effectively implemented its concept "suppliers and customers are friends" by developing a network of 1,800 suppliers in 55 countries and setting up a successful GSC program based on a partnership and friendship-focused relationship with customers. Besides this, IKEA also pays attention to protecting the environment and refuses to use toxic chemicals and types of wood exploited from damaged rainforests. The group issues standards for suppliers on the quality of products and services it will purchase and their responsibility towards the environment and society. It also works with its suppliers to resolve these issues.

In 2000, IKEA released a new standard called the IKEA Way on Purchasing Home Furnishings Products (IWAY) for all its suppliers around the world and asked them to comply with it. IWAY includes 19 categories, which are subdivided into 90 items that are adjusted every two years to reflect the current environmental and social changes in the world. IKEA has also founded the IWAY Council, which is responsible for resolving issues that violate the principles of IWAY.. In its business dealings, IKEA always tries to co-operate closely with its suppliers to successfully implement the IWAY standard. On the global front, the group has set up a unit that works to monitor and ensure that IWAY is well managed and implemented. Suppliers' compliance is evaluated by this unit. All employees in the group and all its suppliers are well-versed in environmental issues, society's needs and the standards to be followed. The information is provided in training programs that are organised by IKEA. Through this approach, IKEA expects its strategic partners to play an important role in accepting their responsibility towards society and developing a more environmentally friendly supply chain.

The key component of IKEA's successful business is the flexible use of GSC, which turns suppliers and customers into friends, and together, they create benefits and value for both sides■

Environmentally-friendly waste treatment park in Long An province

An environmentally-friendly waste treatment park will be developed in Tan Lap commune, Thu Thua district, southern Long An province. The park will cover about 1,760 ha and be capable of treating 40,000 tonnes of waste a day when operating in 2020. The project will be carried out in 3 phases, with the first spanning from 2015 - 2020 with an investment of 500 million USD and focusing on treating solid waste collected from Ho Chi Minh City and Long An province, and then the 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 environmental technology research and training. After 2025, the company will complete the construction of waste treatment and residential areas for workers and experts.

A principal contract for the work was signed on April 19 in the locality between the Long An People's Committee and the Vietnam Waste Solution, Inc. (VWS). According to Vice Chairman of the provincial People's CommitteeNguyen Van Duoc, the construction of the park is essential and important to ensure a green living environment for locals■

Coca-Cola Việt Nam:
Creating trust based on responsibility for environmental protection and social security

Corporate social responsibility (CSR) initiatives by Coca-Cola Beverages Vietnam Ltd., Co. (Coca-Cola VN) in recent years have not only helped manage environmental issues and social security and contributed to making people's lives better but have also allowed the sustainable development of the foreign company in Việt Nam. This information was shared by Lê Từ Cẩm Ly, head of Legal and Public Affairs for Coca-Cola Beverages Vietnam, at a recent signing ceremony for a cooperative agreement on environmental protection between the Vietnam Environment Administration (VEA) and Coca-Cola VN.

✶ ***As a leading global beverage brand, what measures have Coca-Cola adopted to protect the environment during production and business activities in Việt Nam?***

Environmental protection is part of Coca-Cola's global mandate to ensure sustainable development. In Việt Nam, Coca-Cola has invested in developing infrastructure and systems for advanced production lines, achieving strong performance at its 3 factories in Hà Nội, Đà Nẵng and Hồ Chí Minh cities and building an LEED-certified facility. At the same time, the company has also changed its production processes to save energy, water and packaging materials, thus contributing to protecting natural resources and minimizing carbon emissions by replacing fuel oil with compressed natural gas cleaner, improving production processes to reduce the required energy consumption, reducing water consumption by using clean rainwater and building an on-site clean recycling system to minimize the use of groundwater.

Besides this, Coca-Cola VN uses environmentally friendly technology as part of its marketing efforts (e.g., the CO_2 refrigerator) and is now leading the industry in this initiative. In addition, Coca-Cola has built large warehouses to store hazardous waste and has signed contracts with relevant companies to collect the waste each month.

✶ ***It is said that Coca-Cola has actively conducted many community projects to bring positive changes to the lives of many people in recent years. Can you brief us on these projects?***

On CSR initiatives related to the environment, Coca-Cola VN has always paid a great deal of attention to the environment. Since 2004, the company has invested more than US $100,000 annually to support local communities in Việt Nam, providing access to clean water and sanitation. Coca-Cola has also worked with the World Wildlife Fund to adopt management strategies on hydrology, water storage and freshwater filtration in Tràm Chim and Đồng Tháp. One popular CSR project is the Eko-center (Community Support Center), which aims to bring positive changes to the com-

▲ *Thousands of local people have accessed to safe drinking water conducted by Coca-Cola VN*

munity and to provide safe drinking water for thousands of locals in many provinces throughout the country. The highlight of this project is the use of solar energy. The Ekocenter offers benefits ranging from education to healthcare, thus improving living standards in the community.

The Ekocenter was first launched in Hồ Chí Minh City. The model is expected to be launched at seven locations across the country in 2016, including in Hà Nội and Đà Nẵng.

✶ ***Recently, the VEA and Coca-Cola Việt Nam signed an agreement on environmental protection and sustainable development. What does this mean for the community and how will the deal be realized in the near future?***

Coca-Cola Việt Nam is honored to participate in the public-private partnership resulting from the signing of this cooperative agreement on environmental protection. The agreement marks a major step forward in strengthening the commitment of the company in investing in and conducting CSR initiatives in general and initiatives on environmental protection in particular. Through this agreement, Coca-Cola Việt Nam will ensure greater cooperation with environmental protection efforts in the future■

Thank you!

Phương Tâm

(Implemented)

US helps Việt Nam combat wildlife trafficking

According to the statement by US Ambassador in Việt Nam Ted Osius recently at the workshop to assess the efficiency of campaigns to change public perceptions and behaviour on wildlife trafficking and consumption in Việt Nam, co-organized by the US Agency for International Development (USAID) and the Freeland fund., the US will support Việt Nam in making laws and policies related to wildlife trade and consumption in accordance with international standards and help build an alliance of ministries, localities and foreign organizations to educate young generations on the protection of wild animals. Wildlife trading is a high-profit business which threatens many species in the world, therefore, Việt Nam needs to act more strongly against the crime, as the country is one of the hotspots for wild animal consumption, he suggested.

At the event, the representative of Bio-diversity Conservation Department Nguyễn Thị Vân Anh shared her office's experience in implementing the "Wildlife Consumption in Việt Nam" (WLC) and the Asia Regional Response to Endangered Species Trafficking (ARREST) projects. She emphasized the necessity to increase inter-sectoral coordination, encourage the involvement of the private sector, strengthen the enforcement of laws and policies, and popularize effective initiatives in the fight against illegal wildlife trafficking■

Phạm Đình

JICA supports to improve water environment in Việt Nam

According to Vietnam Environment Administration, strengthening the capacity of water environment management in river basins is the important content of a project supported by the Japan International Cooperation Agency (JICA), with the aims to enhance building and implementing the ministry's legal policies to improve the water environment at Vietnamese river basins. The planning framework to implement the project between 2016 and 2018 at central and local levels on the Cau and Đồng Nai rivers also drew the panels' attention.

The VEA and the Japanese agency has hold a workshop in Hanoi lately to discuss the solutions to cope with any problems arising during the implementation of the project, as well as create a premise for long-term cooperation in environment management, including the water environment at river basins. As stated by Deputy Minister of Natural Resources and Environment Võ Tuấn Nhân, the Party and State have paid attention to water environmental protection at river basins by promulgating policies, mechanisms, and normative legal documents in the field, including the use of international assistance. For example, the technical cooperation agreement between the Vietnamese and Japanese Governments signed in October 1998 is a vivid demonstration. Under the signed agreement, two agencies have jointly investigated, analyzed and evaluated the real situation in water environment management of rivers in Việt Nam■

Thanh Huyền

Hà Nội and Amsterdam towards cooperation in climate change adaptation

▲*Chairman of Hanoi People's Committee Nguyễn Đức Chung receives Dutch Ambassador to Vietnam Nienke Trooster*

As said by Chairman of the municipal People's Committee Nguyễn Đức Chung, Hà Nội wishes to receive Amsterdam city's assistance in building an environment monitoring system, clean energies and sharing of experience in climate change adaptation.

According to Dutch Ambassador to Vietnam Nienke Trooster, Hà Nội and Amsterdam hold great cooperation potential in fresh water supply, wastewater treatment, urban planning and climate change response, following contents of a Memorandum of Understanding signed between them. The two sides implemented a project on improving the To Lich river and a research on underground water for local residents. Amsterdam has also supported Hà Nội in lighting the Hang Dau water tower, built during the French domination, since 2015. However, these collaboration activities have yet to meet potential of the bilateral relations, she said.

Mr. Chung told that in its development plan for 2016-2020, Hà Nội still has various areas that can be joined by Amsterdam. The two sides should expand projects related to the environment, wastewater treatment, urban landscape improvement, culture and education, he added■

Huy Hoàng

World Bank supports Đà Nẵng in developing green growth indicators

The World Bank (WB) has requested to support Đà Nẵng in developing indicators of green growth and sustainable development towards Vietnam National green growth strategy. As reported, WB will help Đà Nẵng become an environment city, ensuring quality of soil, water, air and health for people as well as international and domestic tourists. Đà Nẵng specific indicators and threshold in green growth and sustainability developed by phases with 8 "green" themes such as green transportation, clean drinking water, solid waste management, clean air, renewable energy and CO_2, green land use, wastewater management, healthy economy. The 8 themes obtains 3 fundamental objectives of sustainable environment, healthy economic competitiveness, equal and rational social conditions.

Vice Chairman of Đà Nẵng Municipal People Committee, Nguyen Ngoc Tuan said Đà Nẵng desired that this set of indicators would soon be formed. The City will become the first city to develop and apply the set of indicators in green grow and sustainability in the hope that it will be the effective tool in identifying goals and implementing steps to become a city of green growth, sustainability, environment and be livable city in 2025■

An Bình

World Bank supports Nha Trang improving wastewater treatment

With support from World Bank (WB), the sub-project "Environmental sanitation improvement in Nha Trang (Khánh Hòa province)" is one of the 3 sub-projects on improvement of environmental sanitation for coastal cities. This sub-project is expected to help improve living condition of local residents, improve urban landscape to meet the developing demand of this focal tourist city.

In this sub-project, the SCADA automatic control system made by Schneider Electric is considered a "technological bright point" that helps control remotely the wastewater treatment for the city. This system will control the satellite pumping stations and wastewater treatment system located at the operation center. It will ensure to operate safely, economically, and effectively as well as update regularly the recorded data. Moreover, it has been selected due to its economic feasibility and professional support of technical team for technological transfer and operation. It is one favorable condition for effective operation of the system.

According to Director of management board of developing projects of Khánh Hòa province, Chau Ngo Anh Nhan, the system has shown its effective and stable operation, meeting the proposed factors on management and automation. It also helps staffs of the operation center update frequently information and have timely action to ensure the safe and stable operation of the system. At the same time, it will regulate its suitable load for optimizing energy consumption of the system■

Nam Việt

ASOEN Vietnam:
Journey towards a sustainable ASEAN community

Nguyễn Thị Thanh Trâm
Vice Head of ASOEN Vietnam Office

2015 is an important year, ASEAN cooperation relationship has been enhanced to a new high level with the establishment of the ASEAN Community on 31st December 2015. For Việt Nam, 2015 marks the 20 years of membership to ASEAN. Together with common activities of the region in the three political security, economic, socio-cultural pillars, Việt Nam has made important contributions to promote cooperation activities on environment.

Promoting cooperation activities in ASEAN Region

In order to improve the quality and effectiveness of Vietnam's cooperation relationship with ASEAN, on 31/1/2009, the Prime Minister approved Decision no. 142/QD-TTg promulgating the regulation on implementation and cooperation between agencies participating in ASEAN cooperation in Việt Nam. To implement this Decision, the Minister of MONRE promulgated Decision 727/QD-BTNMT dated 19/4/2010 on establishing the Office of Việt Nam ASEAN Senior Officials on Environment) and approved the operation regulations of the Office.

The completion of the ASEAN Socio-cultural Community Master Plan 2009 - 2015 is the time of the ASEAN Community establishment, bringing ASEAN cooperation to a high level. To prepare for a new period in the integration into ASEAN, ASEAN member states have put efforts to promote cooperation activities in sectoral areas. Within this trend, the capacity building scheme for ASOEN Việt Nam was developed on 15/12/2014, the Minister of Natural Resources and Environment signed the decision strengthening the organizational structure of ASOEN Việt Nam.

▲*4th High Level Seminar on Environmentally Sustainable Cities in Hanoi, 21 - 22/3/2013*

To promote annual environmental activities, according to the common plan of the region, the Việt Nam Environment Administration has finalized the Draft Việt Nam Action Plan to participate in ASEAN cooperation on environment during 2014 - 2015. This is the legal basis to propose and develop the plan for implementing Việt Nam's activities to participate in ASEAN cooperation on environment. The Action Plan was promulgated by MONRE on 31/7/2014.

To strengthen the network, unify the focal point on organizing and managing Vietnam's ASEAN co-

operation activities on environment, on 6/7/2015, the Minister of MONRE signed Decision 1806/QD-BTNMT on strengthening ASOEN Việt Nam Office.

Some outstanding activities of ASOEN Vietnam office

During 2010 - 2015, the ASOEN Vietnam Office has collaborated with provinces, cities and ASEAN region to implement projects and programmes within the ASEAN framework and achieved many remarkable outcomes. Particularly, the Rehabilitation and Sustainable Use of Peatland Forests in South East Asia Project (Peatland project); Technical assistance project for small and medium cities in ASEAN supported by GIZ; ASEAN environmental model city supported by Japan; ASEAN environmentally sustainable city awards and ASEAN eco-school awards; projects on biodiversity within ASEAN and ASEAN+3 cooperation have been successfully developed and implemented.

In addition to annual meetings during 2010 - 2015, the ASOEN Office also collaborated with relevant agencies within and outside MONRE, ASEAN Secretariat to establish delegations to attend workshops, trainings on green growth, green economy, youth forum, youth international conference on environmental protection. Particularly, the ASOEN Việt Nam office has successfully chaired many conferences and workshops within the cooperation framework of ASEAN on environment and climate change, of which were the most important meetings namely: The 21st ASEAN Senior Officials on Environment Meeting (ASOEN 21) in 2010; the 13th ASEAN Environment Ministers Meeting and relevant meetings in 2015 (AMME 13). At these meetings, Việt Nam had many initiatives and proposals that were highly appreciated by ASEAN Member States and the international community.

To implement the master plan of the ASEAN Socio-Cultural Community, ASOEN Vietnam Office has collaborated with relevant Ministries and sectors to implement, review the implementation of statements, agreements and initiatives of ASEAN, ASEAN+3 on environment; and to integrate agreements and initiatives into national programmes and action plans; at the same time, to participate and contribute to the development of the ASEAN Vision post 2015 and the Master Plan of the ASEAN Socio-Cultural Community post-2015.

In other words, having close instructions of Leaders of MONRE and VEA, the ASOEN Vietnam Office has met the requirements of the focal point for ASEAN cooperation on environment. The establishment and placing of ASOEN office within the Department of International Cooperation, Science and Technology under the Vietnam Environment Administration is a substantial turning point in capacity building and making ASOEN activities to become more professional. On the other hand, this helps to link activities of the Office with general international cooperation activities of the Vietnam Environment Administration, at the same time to promote the science and technology resources.

However, during implementation, the ASOEN Vietnam Office also faces particular difficulties. ASEAN cooperation demands (within and outside the region) are increasing; whereas, the demands for updating, storing, finding and synthesizing information for counselling and collaborating cooperation activities between relevant different working groups and ministries, sectors, organisations and individuals are growing and getting complex; budget is limited, not meeting the requirements of necessary activities. In addition, awareness on ASEAN integration of MONRE's staff and the community is insufficient. This is one of the biggest challenges, causing difficulties to the performance of staff implementing ASEAN's activities.

To meet the requirements of cooperation in the full integration of ASEAN, the development and consolidation of staff of the ASOEN Vietnam office, and the timely guidance and instruction of leaders are determining factors to decide the success of ASEAN cooperation on environment in the upcoming time■

On World Wildlife Day UN Implores Urgent Action to End Poaching Crisis

▲*Levels of rhinos poaching in Africa remain alarmingly high, says CITES*

The United Nations has announced plans for a Global Coalition campaign to end the illegal trade in wildlife under the theme "The future of wildlife is in our hands" on the third World Wildlife Day. UN Secretary-General Ban Ki-moon has called on UN agencies, CITES and partners to provide a coordinated response to wildlife crime and spread the message that there should be zero tolerance for poaching. He said: "Time is running out to save some of the world's most iconic species. Much more needs to be done by key actors on all continents and across sectors to combat poaching and address both the demand and supply of illegal wildlife products."

Driven by growing demand for illegally sourced wildlife products, the illicit trade has in recent years escalated into a global environmental crisis, pushing several species to the brink of extinction. It is estimated that rhino poaching in South Africa has increased by as much as 8,000% between 2007-2014. The pangolin, also known as the scaly anteater, is considered to be the most trafficked mammal on earth, with over a million animals taken from the wild in the past decade. Trade in live great apes, such as chimpanzees, gorillas and orangutans, is also of concern, especially as for every live animal illegally taken from the wild there are many more killed during capture and transport. The global effort to end illegal trade in wildlife received a boost last year, as the UN General Assembly adopted a resolution urging member states to classify illicit trafficking in wildlife as a serious criminal offence. This year, the UN calls for strong political commitments to be put into action through collective efforts of governments and citizens around the world. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has made substantial progress to combat illegal trade in ivory through the preparation, implementation and review of National Ivory Action Plans by 19 key countries affected by the illicit trade.

In May 2015, the cross-continent Operation Cobra III brought together enforcement agencies from range, transit and destination countries, resulting in 139 arrests and more than 247 seizures, which included elephant ivory, medicinal plants, rhino horns, pangolins and many more. But more remains to be done. According to the latest analysis of illegal killing of elephants for 2015 has released recently by the CITES Secretariat, the overall poaching levels of African elephants remains alarmingly high. The Global Coalition campaign announced today is a joint effort by the UN Environment Programme (UNEP), the UN Development Programme (UNDP), the UN Office on Drugs and Crime (UNODC), CITES and other partners. The campaign will call on individuals, businesses, civil society and academia to use their spheres of influence to end the illicit trade in wildlife and for governments to meet and scale up their recent commitments. Global celebration of World Wildlife Day in New York also saw the announcement of the winners of the International Elephant Film Festival, selected from over 250 entries in 7 categories. Supporting the day's sub-theme "The future of elephants is in our hands", the winning movies will be screened around the world throughout 2016■

Thu Hằng
(UNDP source)

UNEP - China cooperation to cope with illegal wildlife trading

Illegal trade in wildlife, which has killed hundreds of thousands of some of the world's most iconic and lesser known species, driving some to local extinction while threatening livelihoods in communities that depend on tourism. To highlight the danger facing elephants and to raise awareness about the damage done by the illegal trade in wildlife, the president of China's state news agency, Xinhua News Agency recently has had first official visit to Kenya.

The trafficking of wildlife is now the 4th largest illegal trade in the world after drugs, weapons and people. Driven by growing demand for wildlife products like ivory and rhino horn, especially from countries in Asia, the illicit trade has escalated into a global environmental crisis in recent years, pushing several species to the brink of extinction. The number of elephants killed in Africa ranges from 20,000 - 25,000/year out of a population of 420,000 - 650,000. It is estimated that rhino poaching in South Africa increased by about 9,000 between 2007 - 2015. Last year, 1,175 rhinos were poached in the country - roughly one rhino every eight hours.

In Việt Nam, rhino horn, which can cost more per kilo than gold, is seen as a luxury item, a post-party cleanser and a cure for cancer. These beliefs are driving demand for rhino horn among the region's increasingly wealthy urban middle class. The pangolin, also known as the scaly anteater, is considered one of the most trafficked animals on earth, with more than one million animals taken from the wild in the past decade. These pre-historic-looking animals are killed for their meat and scales but most people on the planet have never even heard of them.

To bolster efforts to end the illicit trade in wildlife, Xinhua has agreed to support UNEP in its efforts to engage and educate consumers of wildlife products. Both organizations have agreed to combine resources to bring greater attention to the illegal trade in wildlife in an effort to reduce demand, so that consumers understand the damage their purchases cause. The deal also aims to foster collaboration between the two organizations to boost media coverage and awareness of UNEP's critical work on environmental issues. Aside from further collaboration with Xinhua, UNEP's Deputy Executive Director Ibrahim Thiaw also discussed with President Cai the upcoming gathering of the world's most powerful decision-making body on the environment - the United Nations Environment Assembly (UNEA), which will be held in Nairobi in May.

▲*New agency could save a lot of elephants from illegal trading*

The illegal trade in wildlife and wildlife products will be the focus of one of the many resolutions up for discussion at UNEA. Other issues discussed during President Cai's visit included UNEP's work on tackling marine litter, its work on sustainable tourism ahead of the upcoming Olympics in Brazil and air pollution in Beijing. "We would like to further strengthen our cooperation with UNEP," said President Cai in a meeting with Mr Thiaw in Nairobi. "I believe the illegal wildlife trade is an incredibly important issue that is relevant to all human beings on this planet. Through storytelling people are more informed about the issue and the choices they can make to improve the situation. That's why we want to continue partnering with UNEP."■

Lê Chính
(UNDP source)

Việt Nam joins TPP - Problems related to the environment and the use of natural resources in agriculture

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Development of agriculture, international integration and environmental issues

Since the Renewal Process from 1986, Việt Nam has actively integrated into the world economy. The country has signed bilateral trade agreements, including with the US, the Strategic Partnership with Russia, and the Economic Partnership Agreement with Japan. Lately, Việt Nam has signed 12 free trade agreements and has become the 150th member of the World Trade Organization (WTO). Việt Nam has so far maintained economic and trade relations with more than 230 countries and territories.

Along with integration, agricultural exports have seen strong growth, making an important contribution to maintaining the GDP growth rate of the agricultural industry (agriculture, forestry and fisheries) with an average increase of 3.7% per year in the period 1986-2013.

The export value of the agricultural industry saw an average increase of 13.5% per year between 1995-2013, from US$2.5 billion to US$24.5 billion. Agriculture is the only sector to consistently maintain its export surpluses. Currently, Việt Nam is one of the world's leading exporters of many farm products, including rice, seafood, coffee, pepper and cashew.

However, the Vietnamese model of agricultural development mostly focuses on intensive farming - improving productivity and volume by extreme exploitation of natural resources - that has gradually exposed its shortcomings. Most of the country's natural resources have been extremely exploited in recent years.

According to the Ministry of Natural Resources and Environment, currently there are about 2 million hectares of seriously degraded land and 9.3 million hectares of land (about 20% of the total land area) where around 22 million farmers are faced with degradation.

Agriculture accounts for 80% of the fresh water (surface water and groundwater) use for irrigation. Along with rapid development, the volume of fresh water used annually in Việt Nam has increased significantly (from 12.6% in 1997 to 22.8% in 2011 of total reserves).

Therefore, ensuring water security is one of the major challenges for agricultural development amid climate change and upstream interventions on the Mekong River. Deforestation, the overexploitation of onshore and inshore fishing resources along with plantations of some major crops have caused negative consequences for biodiversity and ecosystems.

The overuse of pesticides and chemical fertilizers has reached an alarming level - much higher than the world average. This has resulted in serious pollution of air and water resources in the agricultural sector, affecting people's health and food quality. Agriculture in general and rice production in particular has been a major source of emissions, contributing to the greenhouse effect. According to the latest Food and Agriculture Organization (FAO) statistics, in the 50 years from 1961 to 2011, farming in Việt Nam generated higher greenhouse gas emissions per hectare than any other country.

TPP commitments related to the environment and the use of natural resources in agriculture

From 2010 until now, the

country's international economic integration reached a new height with the signing of the Trans-Pacific Partnership (TPP) in October, 2015. In comparision with previous free trade agreements, which mostly focused on tariffs, the TPP aims to establish trade rules covering almost all aspects of international trade.

It can be said, the TPP brings major benefits to Việt Nam in improving the environment and sustainable utilisation of natural resources. The requirements of food safety and sanitary and phytosanitary (SPS) levels means its technical barriers to trade (TBT) are stricter than WTO rules.

The key importers of Việt Namese farm products, such as the US and Japan, require strict SPS and TBT. The requirements of enviromental satisfaction – including origins, conservation of biodiversity, conservation of genetic resources, technical barriers, sanitary and phytosanitary levels – are an opportunity to produce quality products and ensure environmental sustainability. In the domestic market, the Việt Namese government has gradually synchronized SPS and TBT standards in line with international commitments so as to protect Việt Namese businesses and manufacturers from high competition of imported products from countries with high levels of agriculture efficiency. The TPP provisions on transparency and risk analysis mechanisms based on scientific evidence are very tight. To survive, Việt Nam producers and manufacturers have to improve their quality and food safety.

Standards of product origin also contribute to the development of sustainable agriculture. For example, regulations on the sources of timber for export products in the forestry industry ensure transparency and legality of origin. If Việt Nam fails to meet regulations, it can not export products to TPP countries. This will help prevent deforestation and illegal logging.

In the environment chapter of the TPP, member countries pledge to ensure fairness for all stakeholders. The TPP emphasizes the enforcement of three international treaties on environment: the Montreal Protocol on Substances that Deplete the Ozone Layer; International Convention for the Prevention of Pollution from Ships; the Convention on International Trade in Endangered Species (CITES).

Under this chapter, TPP countries are asked to eliminate harmful fisheries subsidies that cause negative impacts on marine resources, such as overfishing. The high requirement and obligatory commitment of this Chapter will become a basis for Việt Nam to continue to study, propose and improve its policies and laws related to the environment, thus contributing to joint efforts in environmental protection activities and sustainable development. Besides, Việt Nam is likely to receive support from TPP member countries in promoting the application of science and technology and enhancing production methods as well as promoting environmental protection and social justice.

Proposed solutions on policy

The TPP will help Việt Nam to improve environmental issues and the use of natural resource in agriculture with more strict regulations on SPS, TBT, origins and environmental commitments. However, realizing these benefits is still a big challenge for Việt Namese agriculture which is now based on a small and scattered production scale and overexploitation of natural resources.

The following suggestions aim to promote the TPP commitments related to the environment and sustainable utilization of natural resources.

- To disseminate information and knowledge about the commitments of SPS, TBT, origins and environmental commitments for State bodies at local levels, throughout the business community and among farmers. This is a key factor in the process of agricultural development in Việt Nam. An understanding of the commitments will help interested parties deal with challenges and make the best of opportunities in the agricultural industry brought about by the TPP.
- To gradually bring the SPS and TBT standards of Việt Nam into line with international regulations.
- To review agricultural commodities for export that have serious impacts on the environment, natural resources and food hygiene.
- To continue promoting the implementation of a scheme on agriculture restructuring by working towards added value and sustainable development in line with Decision No. 899/2013 / QD-TTg of the Prime Minister. This scheme will further contribute to improving the competitiveness of Việt Nam's farm produces and ensuring the sustainability of the ecological environment.

Việt Nam must continue to fornulate policies and ways to integrate the TPP commitments on the environment and the use of natural resources■

Harmonious combination between conservation and sustainable development of Xuân Thủy National Park

Nguyễn Viết Cách
Director - Xuân Thủy National Park

Addressing problems of conservation management at the Cồn Lu ecological rehabilitation zone - recognized as an important bird area (IBA) of the country as well as the main location for mollusc farming in northern Việt Nam has been a long-time concern of the Xuân Thủy National Park and local communities. In 2006, based on lessons learnt from co-management mechanism for wise and sustainable use of natural clam genetic resources in Red River estuary, the Xuân Thủy National Park has proposed to implement the model on co-management, benefit sharing of sustainable extensive clam farming in Cồn Lu ecological rehabilitation zone in Xuân Thủy National Park.

▲*Sustainable extensive clam farming model with local community in Xuân Thủy National Park*

On 2/2/2012 in Decision no. 126/QD-TTg, the Prime Minister has allowed Xuân Thủy National Park to pilot the benefit sharing mechanism, including the model of extensive clam farming in Cồn Lu ecological rehabilitation zone with local communities. Since then, the National Park has received supports from the Project "Removing Barriers Hindering Protected Areas Management Effectiveness in Việt Nam" (PA Project) supported by the Global Environment Facility (GEF) implemented by the United Nation Development Program (UNDP) and approved by the Ministry of Natural Resources and Environment at Decision no. 2328/QD-BTNMT to implement a component on: "Develop and organize the implementation of the pilot on co-management and benefit sharing of sustainable extensive clam farming for local communities"; from which to develop a new financial mechanism for Xuân Thủy National Park and surrounding communities, from the collection of environmental services in land use for extensive clam farming to form environmental accounts, subsequently pay this money to receiving subjects according to the decision by Nam Định Provincial People's Committee.

After the development of the proposal and some consultation workshops with relevant stakeholders, on 23/1/2015, Nam Định Provincial People's Committee promulgated Decision no. 119/QD-UBND approving the pilot of co-management on extensive clam farming in Cồn Lu ecological rehabilitation zone in Xuân Thủy National Park.

According to the pilot scheme, the co-management

mechanism between Xuân Thủy National Park and the local authority and community has been established during the implementation of the extensive clam farming model in Cồn Lu ecological rehabilitation zone. With this co-management mechanism, benefits and responsibilities of stakeholders implementing the Scheme have been clearly institutionalized. Also within this scheme, Giao Thủy District People's Committee was assigned by Nam Định Provincial People's Committee to support the National Park to sign contracts of benefit sharing through allowing the community to use surface water areas for extensive clam farming in the region, and also to collect payment for forest environmental services according to the agreement, hand in the environmental fund to the Xuân Thủy National Park. This environment fund will then be paid to beneficiaries according to the decision of the Provincial People's Committee.

However, even when the Decision approving the scheme was promulgated by the Provincial People's Committee, during the implementation, there are still arising difficulties and challenges, particularly the fee collection as a new financial mechanism for the Xuân Thủy National Park and the local community as there is a new policy in Decree no. 67/2014/ND-CP by the Government relating to the exemption of fees to support the fishery in the new context. While in Decision no. 01/QD-TTg dated 2/1/2003, the Prime Minister has assigned the whole area of 7,100 ha in the tidal area of the Red River estuary to the Xuân Thủy National Park for nature conservation, including the areas for extensive clam farming in Cồn Lu ecological rehabilitation zone that the local community is conducting the farming.

To solve this issue, on 5/10/2015, the Government Office issued Document no. 7991 /VPCP-KTN on piloting the benefit sharing in protection and sustainable development of special use forests, in which allows the Xuân Thủy National Park and other national parks to pilot the benefit sharing in conservation of special use forests to continue the implementation of the benefit sharing mechanism according to Decision no. 126/QD-TTg by the Prime Minister.

Accordingly, on 7/10/2015, the National Park Management Board and Giao Thủy District People's Committee organized a community consultation workshop on agreement for payment for forest environment services regarding mollusc farming households in the region. The workshop achieved a consensus so as the Management Board prepared a proposal to Nam Định Provincial People's Committee to approve the pilot scheme. On 23/10/2015, in Decision 34/2015/QD-UBND, Nam Định Provincial People's Committee allowed the National Park to implement the pilot scheme on co-management of extensive clam farming in Cồn Lu ecological rehabilitation zone. This is a legal document with long-term impacts, supporting the National Park and local communities to implement the co-management mechanism, benefit sharing and pilot the new financial mechanism in the region in a sustainable way.

Currently, Giao Thủy District People's Committee together with relevant parties have made great efforts to finish the remaining tasks of the Scheme. Therefore, an old barrier existing many years in Xuân Thủy National Park was removed. This is a proof on the effectiveness of adaptive policies, meeting practical requirements and harmoniously combining conservation and development in Xuân Thủy National Park.

Hopefully, this model on co-management, benefit sharing and piloting of new financial mechanism for Xuân Thủy National Park will be the key to support the National Park to finalise the appropriate management mechanism, meeting the requirement of harmonious combination between conservation and development in the region; at the same time, to support the Government to implement international commitments at the National Park – Ramsar Site –Xuân Thủy National Park and the cross-provincial World Biosphere Reserve wetland in the red River delta. Lessons learnt from the new management mechanism in Xuân Thủy will support central management agencies to develop policies on wetland conservation policies to be more effective and feasible in the future■

Illegal wildlife trading poses risks to public health

According to environment experts, wildlife trading and the high demand for exotic meat, jewelry, medicine and even pets is a threat not only to bio-diversity, but also to public health. The products has both domestic and international origins, increases the risk of spreading diseases because trafficked animals are not quarantined.

According to the Forest Protection Department under the Ministry of Agriculture and Rural Development, about 5,400 violations related to wildlife management and protection were reported across the country over the last five years. Nearly 60,000 endangered wildlife species were seized.

According to the Wildlife Conservation Society (WCS), there is a trend among young people to raise wild species as pets. The WCS warns that rodents like squirrels and rats carry the potential risk of plague. Reptiles often carry Salmonella, the name of a group of bacteria that causes food poisoning and diarrhea, and imported birds can carry the flu virus.

However, the problem is difficult to handle due to most of the wildlife trafficking cases detected during the customs processing procedure at seaports, but recipients of the goods denied their involvement when contacted by investigators. Though, it is difficult to identify goods senders overseas because of the limitations of international judicial assistance. In addition, destroying the products requires funding and, at times, many agencies have to get involved.

The amended Criminal Code 2015, effective in July 2016, mandates a stricter punishment of 15 years in jail and fines up to $90,000 to violators involved in trafficking endangered wildlife species, hopefully, will help curb the wildlife trade in Việt Nam■

Quang Ngọc

Using moss as a bioindicator of air pollution

Based on a U.S. Forest Service Pacific Northwest Research Station-led study published in Science of the Total Environment Journal, moss growing on urban trees is a useful bio-indicator of cadmium air pollution in Portland, Oregon. Moss has been used as bioindicators living organisms that can help monitor environmental health by the Forest Service and other agencies for decades. Because moss lack roots, they absorb all of their water and nutrients from the atmosphere, inadvertently taking up and storing whatever compounds happen to be in the air.

According to a research lichenologist, Sarah Jovan, the study shows that moss bioindicators have the potential to improve air-quality monitoring by serving as a screening tool to help cities strategically place their air-quality monitors. The heavy metals analysis for moss costs us $50 per site, a low cost that makes it possible to sample extensively and flag hotspots for follow up instrumental monitoring■

Minh Viễn

Bạc Liêu inaugurated a wind-power facility

▲ *Wind turbins of the wind-power plant in Bạc Liêu*

Bạc Liêu province already has inaugurated a 99.2 MW wind-power plant. It covering more than 100 ha, is situated in Vinh Trach Dong commune, Bạc Liêu City. Construction began in September 2010 with an investment of over 7

$234 million, which was sourced from the Export-Import Bank of the United States and the Bank for Investment and Development of Vietnam (BIDV).

With 62 wind turbines, the plant is capable of generating 320 million kilowatt hours per year. It joined the national grid in May 2013 when its first 10 turbines were completed. According to BIDV, the large-scale project plays a pioneering role in promoting the use of renewable energy across the Mekong Delta■

Quỳnh Như

Scotland shut down the last coal-fired electric power

▲*Longannet closure marks end of coal generation in Scotland*

After nearly 50 years of service, Scotland's last coal-fired power plant -Longannet Power Station - has finally gone offline, putting an end to over 100 years of burning coal for electricity. Brought online in 1969, it was only designed to be used for 25 years. It had 4 generating units producing 2,400 MWs at maximum capacity enough to power 25% of Scottish homes. It was the largest coal-fired plant in Europe remaining a critical element of Scotland's energy plan - one reason why it took so long to decommission. Scottish Power had to move carefully to ensure that they didn't jeopardize the power supply during the transition.

It's an important moment for Scottish Power, which looks ahead to clean power initiatives with the goal of going all-renewable by 2020. But it's also a very symbolic action for the world. Hopefully other nations will follow suit, creating a domino effect as country by country eliminates its coal plants in favor of renewable alternatives■

Châu Loan

Energy efficiency powers Latin America's development

▲*The region could save up to 10% in energy consumption by switching to cleaner technologies*

In Latin America alone, en.lighten activities have reduced electricity consumption by 2.4 gigawatt hours and energy costs by more than US$ 400 million. This reduced demand means an extra US$ 660 million does not have to be invested in new power generation plants and can be used for other vital development projects. The key to this success was a combination of minimum energy performance standards, energy labeling, product certification and the enforcement of regulations.

According to United for Efficiency, if all Latin American and Caribbean countries were to adopt and implement energy efficiency standards for refrigerators, air conditioners and ceiling fans that feature the best available technology, 140 terawatt hours of energy could be saved annually. This represents about 11% of the region's current electricity consumption. Greenhouse gas emissions could thus be reduced by 44 million tonnes, which is equivalent to taking 24 million passenger cars off the road■

Đức Anh

New world record set in renewable energy

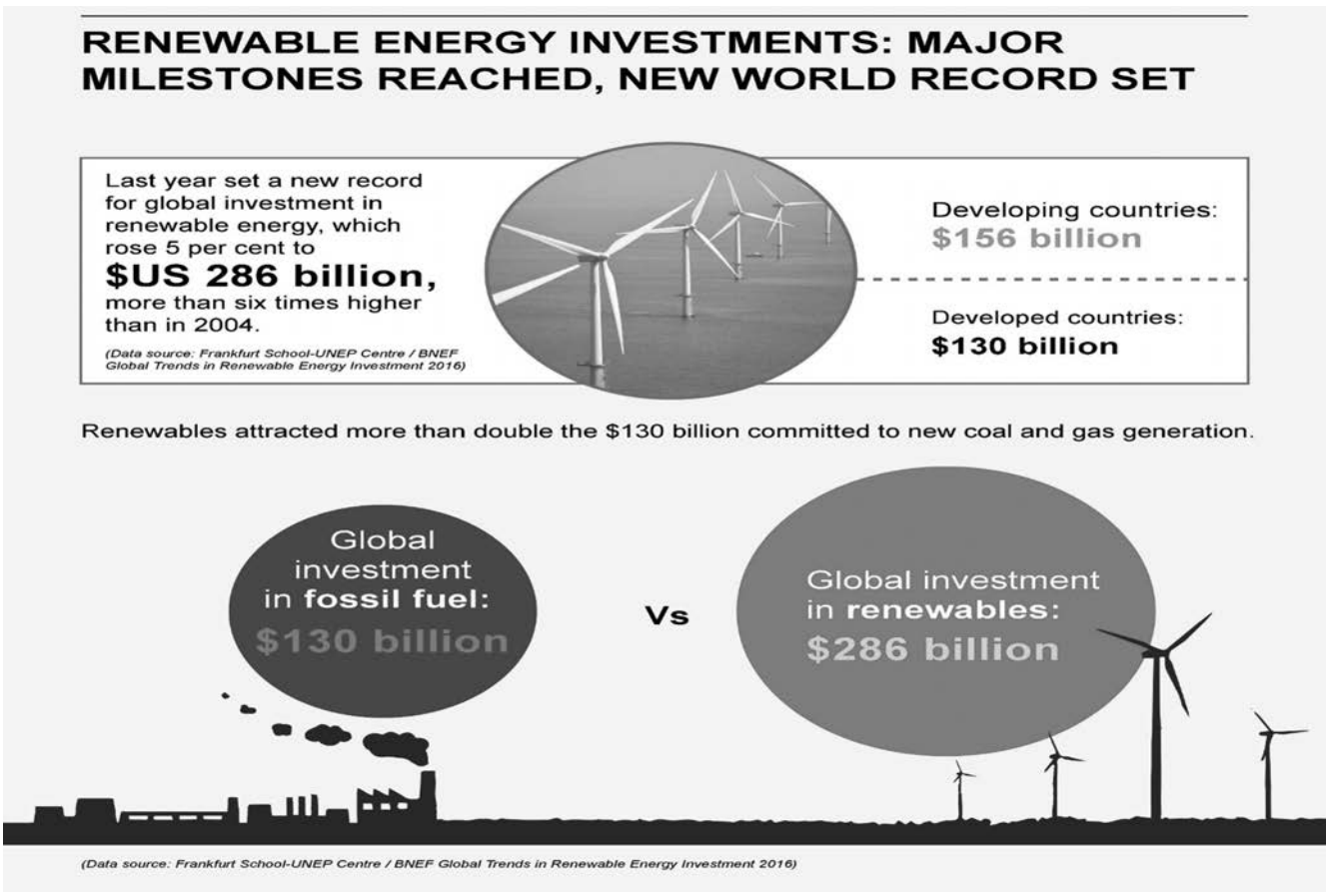
Global Trends in Renewable Energy Investment 2016, the 10th edition of the UN Environment Programme's (UNEP's) annual publication has launched recently by the Frankfurt School-UNEP Collaborating Centre for Climate & Sustainable Energy Finance and Bloomberg New Energy Finance (BNEF), says the annual global investment in new renewables capacity, at $266 billion, was more than double the estimated $130 billion invested in coal and gas power stations in 2015.

All investments in renewables, including early-stage technology and research and development as well as spending on new capacity, totalled $286 billion in 2015, some 3% higher than the previous record in 2011. Since 2004, the world has invested $2.3 trillion in renewable energy.

Just as significantly, developing world investments in renewables topped those of developed nations for the first time in 2015. Helped by further falls in generating costs per megawatt-hour, particularly in solar photovoltaics, renewables excluding large hydro made up 54% of added gigawatt capacity of all technologies last year. It marks the first time new installed renewables have topped the capacity added from all conventional technologies. The 134 gigawatts (GW) of renewable power added worldwide in 2015 compares to 106 GW in 2014 and 87 GW in 2013.

Were it not for renewables excluding large hydro, annual global CO_2 emissions would have been an estimated 1.5 gigatonnes higher in 2015. UNEP Executive Director Achim Steiner said, "Renewables are becoming ever more central to our low-carbon lifestyles, and the record-setting investments in 2015 are further proof of this trend. Importantly, for the first time in 2015, renewables in investments were higher in developing countries than developed."

Access to clean, modern energy is of enormous value



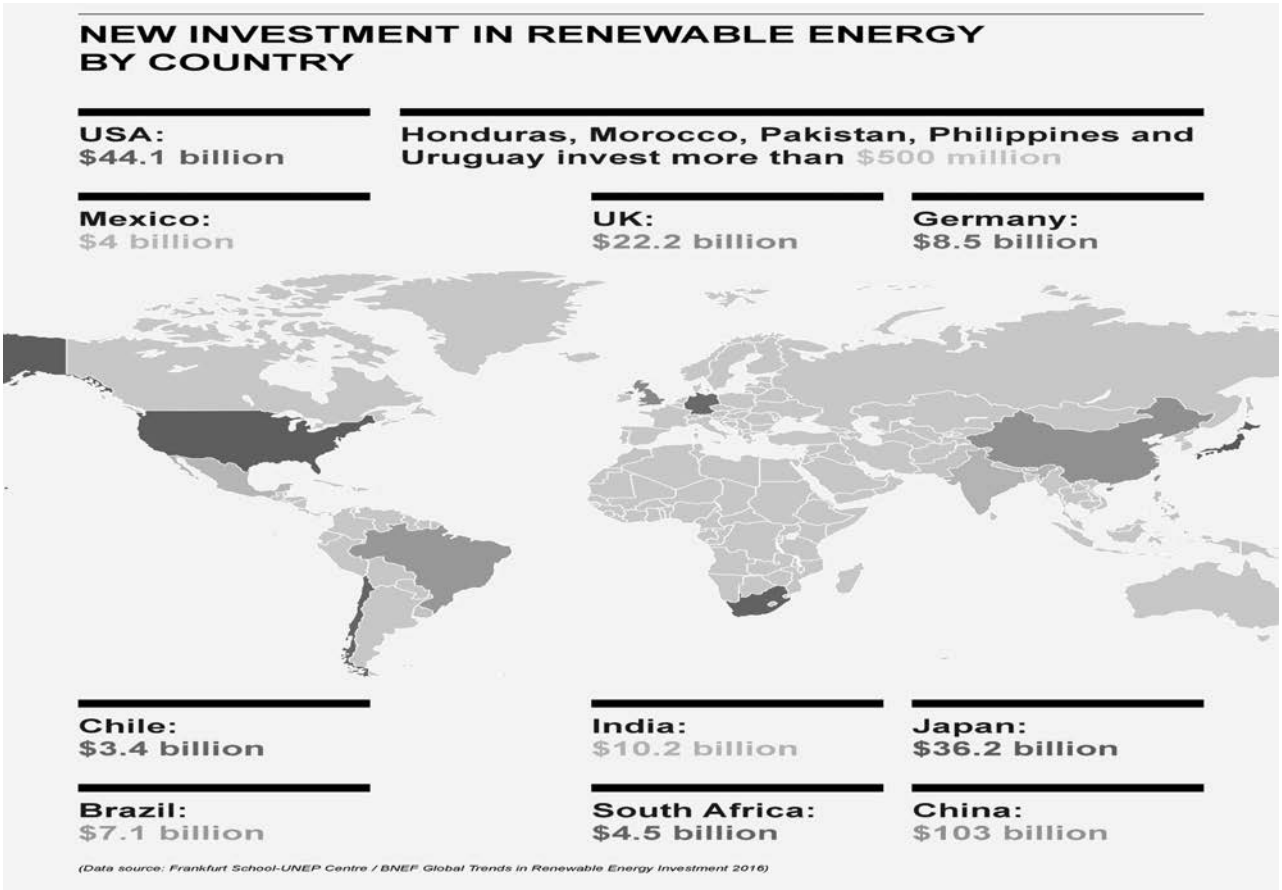
▲*Coal and gas-fired electricity generation last year drew less than half the record investment made in solar, wind and other renewables capacity*

for all societies, but especially so in regions where reliable energy can offer profound improvements in quality of life, economic development and environmental sustainability. Continued and increased investment in renewables is not only good for people and planet, but will be a key element in achieving international targets on climate change and sustainable development. By adopting the Sustainable Development Goals last year, the world pledged to end poverty, promote sustainable development, and to ensure healthier lives and access to affordable, sustainable, clean energy for all. Continued and increased investment in renewables will be a significant part of delivering on that promise. Also, said Michael Liebreich, Chairman of the Advisory Board at BNEF: "Global investment in renewables capacity hit a new record in 2015, far outpacing that in fossil fuel generating capacity despite falling oil, gas and coal prices. It has broadened out to a wider and wider array of developing countries, helped by sharply reduced costs and by the benefits of local power production over reliance on imported commodities."

As in previous years, the report shows the 2015 renewable energy market was dominated by solar photovoltaics and wind, which together added 118GW in generating capacity, far above the previous record of 94GW set in 2014. Wind added 62GW and photovoltaics 56GW. More modest amounts were provided by biomass and waste-to-power, geothermal, solar thermal and small hydro. In 2015, more attention was drawn to battery storage as an adjunct to solar and wind projects and to small-scale PV systems. Energy storage is of significant importance as it is one way of providing fast-responding balancing to the grid, whether to deal with demand spikes or variable renewable power generation from wind and solar. Last year, some 250MW of utility-scale electricity storage (excluding pumped hydro and lead-acid batteries) was installed worldwide, up from 160MW in 2014.

Developing countries on the rise led by China and India

In 2015, for the first time, investments in renewable energy in developing and emerging economy nations ($156 billion, up 19% compared to 2014) surpassed those in developed countries ($130 billion, down 8% from 2014). Much of these record-breaking developing world investments took place in China (up 17% to $102.9 billion, or 36% of the world total). Other developing countries showing increased investment included India (up 22% to $10.2 billion), South Africa (up 329% to $4.5 billion), Mexico (up 105% to $4 billion) and Chile (up 151% to $3.4 billion). Morocco, Turkey and Uruguay all joined the list of countries investing more than $1 billion. While, overall developing country investments last year were 17-times higher than in 2004. Among developed countries, investment in Europe was down 21%, from $62 billion



in 2014 to $48.8 billion in 2015, the continent's lowest figure for nine years despite record investments in offshore wind projects.

The United States was up 19% to $44.1 billion, and in Japan investment was much the same as the previous year at $36.2 billion. The shift in investment towards developing countries and away from developed economies may be attributed to several factors: China's dash for wind and solar, fast-rising electricity demand in emerging countries, the reduced cost of choosing renewables to meet that demand, sluggish economic growth in the developed world and cutbacks in subsidy support in Europe.

Still a long way to go

The power generation capacity added by renewables exceeded new capacity added from conventional sources in 2015 shows that structural change is under way. Renewables, excluding large hydro, still represent a small minority of the world's total installed power capacity (about 1/6, or 16.2%) but that figure continues to climb (up from 15.2% in 2014). Meanwhile actual electricity generated by those renewables was 10.3% of global generation in 2015 (up from 9.1% in 2014).

Prof. Dr. Udo Steffens, President of the Frankfurt School of Finance & Management said, despite the ambitious signals from COP 21 in Paris and the growing capacity of new installed renewable energy, there is still a long way to go. Coal-fired power stations and other conventional power plants have long lifetimes. Without further policy interventions, climate altering emissions of carbon dioxide will increase for at least another decade. The recent big fall in coal, oil and gas prices makes conventional electricity generation more attractive. However, the commitments made by all nations at the Paris climate summit in December, echoing statements from last-year's G7 summit, require a very low- or no-carbon electricity system■

Uyên Hoàng
(UNEP source)

Singapore's remarkable water 'decoupling'

This was a necessary measure as, despite an annual rainfall of 2,400 milimetres per year, Singapore has no large water catchments external to the city or groundwater aquifers from which to draw water to meet its needs and is considered a water-scarce country.

In May, countries will meet in Nairobi for UNEA 2 - the world's de facto "Parliament for the Environment" - to discuss how the United Nations Environment Programme can deliver on the environmental dimension of the 2030 Agenda for Sustainable Development. Decoupling water use from economic growth is one of the ways to ensure the availability and sustainable management of water and sanitation for all –a key goal of the 2030 Agenda.

Singapore's example is striking. To overcome this major obstacle in the country's development, Singapore's water utility, the Public Utilities Board (PUB) invested in measures to reduce demand for water by improving efficiency, cutting waste and expanding alternative sources of supply. This resulted in significant levels of decoupling of water use from economic growth.

Over the last 40 years, Singapore's economy has grown by a factor of 25. It has managed one of the fastest transitions from a 'developing' to a 'leading first-world' country in history, with one of the highest per capita incomes in Asia.

In the same period, its population has grown by a factor of 2.5, from 1.7 million to 4.4 million today, yet water use has only increased five-fold. In terms of water consumption in absolute terms this represents a five-fold relative decoupling for the whole Singapore economy. This has been achieved through effective, purposeful and long-term demand management, water efficiency and water-leakage prevention programmes.

Per capita residential water use has fallen consistently for the last 15 years providing an exception to a worldwide increase. This result is no accident. The Singapore government is one of the few with a publically stated target for residential sector per capita water use of 140 litres per person per day by 2030.

Singapore and its Public Utilities Board have also reduced growth in water consumption by minimizing water leakage throughout the city's water infrastructure which is tracked by measuring the level of 'unaccounted for water'. This has been reduced from 9.5% of total water production in 1990 to 5% by 2002.

This is a level that no other country can match at present and contrasts with the fact that unaccounted for water in most Asian urban centres now ranges between 40 and 60%.

Singapore has also reduced absolute freshwater consumption by 60% through the development of alternative sources such as extensive stormwater harvesting, treatment and reuse, treated and recycled municipal water, and desalination. Today, 35% of Singapore's water comes from rainfall captured on its own limited territory, about 15% is high-quality recycled water produced from wastewater by its 'NEWater' treatment plants, 10% comes from desalinated water, and only around 40% is imported from Malaysia.

In 2010, the Singapore government and its Public Utilities Board announced that they have committed to replacing the final 40% of imported freshwater usage with further water efficiency improvements as well as the development of greater levels of water recycling and desalination so as to eliminate the need for imports from Malaysia by 2060.

This remarkably integrated and holistic approach to sustainable urban water management was made easier by the fact that Singapore's Public Utilities Board currently manages the entire water cycle of Singapore, as well as electricity and gas. This includes sewerage, protection and expansion of water sources, stormwater management, desalination, demand management, pricing, community-driven programmes, catchment management, and public education and awareness programmes, leading to wastewater treatment and reuse on an unprecedented scale■

Bùi Hằng
(*UNEP source)*

Hung King Historical Relic Site: **Promoting traditional cultural values linked with environmental protection**

▲*Mr. Lưu Quang Huy – Director of the Hung King Historical Relic Site*

Hung King historical relic site located in Nghĩa Linh Mountain, ancient Phong Châu area, now is in the location of Hy Cương commune, Việt Trì city, Phú Thọ province. Annually, on the festival (from the 1st to 10th March Lunar Calendar), a large number tourists visit the site, illustrating the traditional cultural characters and the philosophy "when you drink water, remember the source". To find out about the preparation for this year festival and the assurance of environmental sanitation in the relic site, the Environment Magazine had an interview with Mr. Lưu Quang Huy, Director of the Relic Site.

✶***Reporter: Can you tell us some outstanding results of the Hung King Historical Relic Site in environmental protection linked with the maintenance and promotion of traditional cultural values?***

Mr. Lưu Quang Huy: In recent years, with the attention, leadership and instruction of the Provincial Party Committee, People's Council, People's Committee, the Ministry of Culture, Sports and Tourism, the Ministry of Natural Resources and Environment, the Management Board of the Hung King Historical Relic Site has collaborated with functional agencies to realize and implement effectively policies and guidance of the Party and environmental protection legislations; to implement guiding documents and propagate the Inter-ministerial Circular guiding environmental protection in tourism, festivals, protection and promotion of relic values; collaborated with the Phú Thọ Department of Natural Resources and Environment to implement the environmental protection plan during the festival.

During the festival from the 1st to 10th lunar March, the number of tourists is very high, could be 2 million people in peak days, the Relic Site Management Board has collaborated with local authorities to propagate, educate and mobilize local people to seriously implement regulations on business and environmental protection; assigned staff to patrol and guard 24h/day in the temple, pagoda, Hung King museum and Hung Temple National Forest to remind and guide tourists to throw rubbish in appropriate areas… In addition, the Board assigned the Center for environmental service and technical infrastructure to provide 200 rubbish bins and 10 public toilets with signposts to support tourists; established the environmental sanitation team consisting of 60 people to collect wastes two times a day and transport to storage areas as regulated. All wastes are classified, some transported to the provincial waste treatment facility, some sent to landfills

▲*Hung King Historical Relic Site*

or incineration in empty land areas; the Board has also prepared vehicles and necessary conditions for response to environmental incidents…to create clean - beautiful environmental landscape but ensure the solemnity.

With achieved results, the Hung King historical relic site was awarded the Second Class Labour Medal (in 2012) by the President, Emulation Flag of the Ministry of Culture, Sports and Tourism (in 2012) and many merits of the Ministry of Culture, Sports and Tourism and Phu Tho People's Committee. Particularly, in 2015, the Hung King historical relic site was awarded the merit and commemoration cup by the Ministry of Natural Resources and Environment as a typical advanced entity on environmental protection during 2011 - 2015.

✶***Reporter: Does the Hung King Festival 2016 have new activities compared to previous years?***

Mr. Lưu Quang Huy: This year, the Hung King Festival will take place from 12 - 16/4/2016 (6th - 10th lunar March) under the chairmanship of the Phu Tho Provincial People's Committee and with the participation of three provinces: Hưng Yên, Bình Thuận and Cà Mau according to the Yearly Hung King Anniversary Organization Scheme approved by the Prime Minister.

Similar to previous years, this year festival consists of "Worship" and "Game". At the "Worship", there will be the incense offering to memorialize Hung Kings organized on 10th lunar March according to the traditional ceremony, to ensure the solemnity, importance and community characteristics, in order to honour the heritage "Hung King worship belief - fatherland". A new aspect of this year festival is the document by the Phu Tho Provincial People's Committee sent to the Ministry of Culture, Sports and Tourism to request provinces and cities in Việt Nam where are the home of Hung King temples to conduct the incense offering on the 10th lunar March. The "game" is organized in Việt Trì city and Hung King historical relic site. In addition to traditional cultural activities such as copper drum beat and pounding; chung cake making competition, glutinous rice dumpling pounding; cultural camps... there is a photo exhibition with the topic on "Hung King worship belief - traditional characteristics" in Hung King Museum; an exhibition of "Phu Tho tourism beautiful pictures" to exhibit, introduce and advertise Phu Tho tourism; arts programs to welcome the festival with the topic "Traditional sacredness - Hung King Fatherland " on 8 p.m, 12th April 2016 (6th lunar March). Furthermore, there is an open Viet Tri swimming festival in Van Lang Lake; exhibitions of pictures, photos and poem works of Phu Tho artists; street festival; traditional swimming in Lo River... Particularly, to ensure the safety and comfort of tourists, the Organization Committee will implement "five No": No traffic jam; no tourist scramble, no fake products; No overpriced, No environmental

pollution and no beggars at the festival.

✶ ***Reporter: Currently, many relics are developing towards ecological and spiritual tourism linked with conservation of traditional culture. Is this content integrated in the development plan of the Hung King Historical Relic Site?***

Mr. Lưu Quang Huy: Hung King Historical Relic Site is a spiritual relic; therefore, the development towards ecological and spiritual tourism linked with traditional culture conservation is an evitable trend. We want, through the mass media, to propagate and advertise the potentials and the look of Phú Thọ tourism in general and of the Hung King historical relic site in particular, at same time to call for projects investing on humanity tourism resources, to conserve and develop the non-material cultural values of Phú Thọ hát xoan (singing) and the belief in Hung King worship. Accordingly, Phú Thọ has developed three major cultural - festival tourism products; Relaxation, food, entertainment; Ecology, landscape and relaxation with nuclear focus of the Hung Temple with Hung King dynasty cultural values (Hung Temple, Au Co temple, Lac Long Quan temple, relics worshipping wives, children and generals of Hung King…); Thanh Thuy hot mineral water tourism site, Xuan Son National Park... simultaneously, are connected to tours and tourism routes by developing internal tourism routes (routes connecting Viet Tri tourism centre to key tourism areas in the province) and inter-provincial tourism routes (connecting with famous sites in three provinces Phú Thọ - Yên Bái – Lào Cai and Northeast and Northwest provinces)…

✶ ***Reporter: Can you share with us solutions to conserve and sustainably develop the Hung King Historical Relic Site in the upcoming time?***

Mr. Lưu Quang Huy: in the upcoming time, the Hung King historical relic site will continue to finalize policies and mechanisms on protection and promotion of cultural heritage values, of which to focus on developing and specifying the Master Plan on conservation and promotion of the Hung King historical relic site during 2015 - 2025, submitted to the Prime Minister for approval; the Project "conservation and promotion of Hung King worship belief values during 2015 - 2020, vision to 2025" approved by the Provincial People's Committee as premises for infrastructure and techniques to meet the increasing demands of domestic and international tourists to visit the relic site. In addition, capacity will be increased to ensure the professionality and competitiveness and international integration. In the short-term, the Management Board of the Hung King historical relic site organises trainings on skills, knowledge, expertise on heritage, foreign languages for staff, business entities and communities within the Relic, aiming to develop cultural and friendly characters; has policies to attract, encourage and create conditions for enterprises to participate in investing in management and exploitation of tourism services; organises training classes on heritages; introduces the potentials and strengths of the historical relic site in the mass media; collaborates with the Viet Nam National Administration of Tourism, Viet Nam Tourism Association, Viet Nam Society of Travel Agents, Phu Tho Department of Culture, Sports and Tourism to promote and advertise the tourism potentials in key markets nationwide.

In addition, the Management Board of the Hung King historical relic site continues to promote the propaganda, education and awareness raising of the community on conservation and development of cultural heritages; disseminate viewpoints and policies of the Party and the State on the roles and positions of cultural heritages in the national economy sector system; develop and promulgate mechanisms, policies and legal documents to increase the role of state management, to ensure security, safety and environmental sanitation in relic sites; enhance the supervision and monitoring of the compliance with regulations on tourism, social order and safety, food sanitation and safety, and green - clean - beautiful environment maintenance■

Bùi Hằng

(Implemented)

500 grey-shanked douc langurs were discovered

▲ *Two of the 500 grey-shanked doucs are found in Việt Nam*

Vietnamese primatologists and their foreign partners from Fauna & Flora International (FFI) have discovered more than 500 grey-shanked douc langurs, an extremely rare primate species, in the Central Highlands region. The langur was one of the largest populations of the extremely rare primates ever found in the country.

FFI-Việt Nam Programme Country Director Dr Ben Rawson admitted the rare langur species had never been spotted outside of Việt Nam. The discovery had raised new hopes amongst FFI scientists in protecting and recovering the rare primate species

According to the FFI, the population of grey-shanked doucs in Việt Nam is being threatened by deforestation, poaching and the trafficking of wild animals for meat or medicine. Doucs are native to Southeast Asia and are categorized in 3 species: red-shanked, grey-shanked and black-shanked. The grey-shanked doucs generally have dappled grey bodies, black hands and feet and white cheeks. It is native to the Vietnamese provinces of Quảng Nam, Quảng Ngãi, Bình Định, Kon Tum and Gia Lai, feeding primarily on leaves and live in tribes comprising up to 50 individuals, though individual tribe population numbers have fallen significantly to only 4-15 individuals in recent years. Grey-shanked doucs, along with three other primates that are native to Việt Nam, have consistently been listed among the world's 25 most endangered primates since 2000 by the International Union for Conservation of Nature's (IUCN's) Species Survival Commission's Primate Specialist Group, the International Primatological Society and Conservation International■

Hồng Điển

Giant muntjac discovered in central Việt Nam

▲ *The animals found in Pu Hu Nature Reserve*

The rare species of giant muntjac has suddenly appeared in the Pu Hu Nature Reserve in Quan Hóa district, Thanh Hóa province.

Director of the Management Board of Pu Hu Nature Reserve Mr. Nguyen Phuong Dong said the natural reserve had detected the presence of the giant muntjac thanks to camera traps (automatic photography). These camera traps were set by experts in some places in the nature reserve, at the height of 758 m above sea level. The pictures were recorded 10 minutes from each other showing that these are images of the giant muntjac which were announced in 1994 in Vũ Quang district (Hà Tĩnh province).

This species is listed as endangered in Việt Nam. The discovery of the 2 giant muntjacs in the same location prove the development of this rare species. Also, it confirms the existence of the populations of giant muntjacs in the Pu Hu Nature Reserve. This is a key finding for nature conservation and biodiversity values in the nature reserve■

Sơn Tùng

Rare animals found in Pu Hu Nature Reserve

Rare animals belonging to the deer family has been discovered recently in the forests of central Việt Nam. The giant muntjacs, scientifically named Muntiacus vuquangensis are classified as rare and endangered animal in the red book. The scientists found a pair of the mamals in the Pu Hu Nature Reserve in Thanh Hóa province.

The animal was first discovered in 1994 in the Vu Quang Forest of the central province of Hà Tĩnh. The newly detected individuals were found during the implementation of a project to investigate and monitor rare animals and plants in the Pu Hu Nature Reserve.

Trần Hương

(VNA source)

Chu Yang Sin National Park
A green pearl in landscape

Chu Yang Sin National Park is located in Đắk Lắk province, established according to Decision no. 92/2002/QD-TTg by the Prime Minister on converting the Chu Yang Sin Nature Reserve to the Chu Yang Sin National Park with main tasks of protection of forest ecosystems and conservation of rare and threatened flora and fauna. The total area of the National Park is 58,947 ha, consisting of three functional zones: strictly protection zone (19,401 ha), ecological rehabilitation zone (39,526 ha) and administrative service zone (20 ha). In addition, the park has a buffer zone of 183,479 ha, in the location of four districts Lac Duong, Dam Rong (Lâm Đồng), Lac, Krong Bong (Đắk Lắk).

Located in the final section of the Truong Son Mountain in southern Central Highlands and as a part of the Đà Lạt highland, the Chu Yang Sin National Park has a diverse natural landscape with more than 40 mountain ranges, immense forest vegetation, and many intertwined springs and waterfalls. Of which, the Chu Yang Sin runs towards east-west direction, dividing the national park into north and south parts with the highest mountain peak of 2,442 m. The Chu Yang Sin peak was named as the second roof of the Central Highland, after Ngoc Linh peak in Kon Tum.

The National park has a special and unique flora ecosystem, consisting of 887 vascular plants in 140 families, 591 genera, of which there are 81 rare and threatened flora species in the Viet Nam Red Book and the World Red Book such as: Cốt toái đá (*Polypodium fortunei Kunze*), bách xanh (*Calocedrus macrolepis*), pơ mu (*Fokienia*), du sam núi (*Keteleeria evelyniana*), sao cát (*Hopea odorata*), chò đen (*Parashorea stellate*), cẩm lai (*Dalbergia oliveri*), giáng hương (*Pterocarpus macrocarpus*) …

With nine forest types formed in the seasonal tropical climate, the Chu Yang Sin National Park has a relatively diverse ecosystem, which are: tropical moist rain evergreen close forest; low mountainous sub-tropical rain evergreen close forest (dominated with sao đen (*Hopea odorata*), dầu con rái (*Dipterocarpus alatus*), dầu con quay (*Dipterocarpus turbinatus*)…); medium high mountainous sub-tropical moist rain evergreen close forest (dominated with species of Fagaceae, Lauraceae, coniferous trees such as thông Đà Lạt (*Pinus dalatensis*), thông hai lá dẹt (*Pinus krempfii*), thông ba lá (*Pinus kesiya*) and pơ mu (*Fokienia*); sub-tropical dry coniferous scattered forest (mostly loài thông ba lá (*Pinus kesiya*)); pygmy forest (with different types of bamboo); half deciduous evergreen forest (dominated with cây bằng lăng ổi (*Lagerstroemia calyculata Kurz*), chiêu liêu gân đen (*Terminalia nigrovenulosa Pierre ex Laness*); monoculture bamboo forest, shrubs and scattered timber trees. Of flora species, there are more than 300 medicinal plants, mostly belonging to families of cúc (Asteraceae), ngũ gia bì (Araliaceae), bạc hà (Lamiaceae), cà phê (Rubiaceae), đậu (Leguminosae)...; 97 species can be used for food, 288 species used for ornamental purposes.

▲*Flora system of the Chu Yang Sin National Park*

The flora system of the National Park is also very diverse, with 515 species, including 64 mammals, 258 birds, 81 fishes, 248 day butterflies, 54 amphibians and 58 reptiles. Of which, 68 species are threatened to extinction, many species are in the Viet Nam Red Book and the World Red Book such as: Sói đỏ (*Cuon alpinus*), tiger, gaur, Asian golden cat, black-shanked douc, yellow-cheeked gibbon, collared laughing thrush, giant kingfisher, great hornbill, white-crowned hornbill, quạ khách đuôi cờ (*Temnurus temnurus*), ếch cây (*Rhacophoridae*)…

Particularly, scientists have recently discovered the mi núi Bà (*Crocias langbianis*) in Chu Yang Sin National Park. This bird can mostly be found in low canopy of

broadleaf trees mixed with coniferous trees. Mi núi Bà usually eats small pests and insects. This is the rarest bird in the world and is in the list of species having high danger of extinction in nature, due to the loss of the living environment.

Together with the magnificent natural landscape, the Park has unique cultural characteristics of the community of 25 ethnic minorities resided in the buffer zone. Of which, two indigenous groups are Êđê and M'Nông, the remaining are Mường, H' Mông, Tày, Thái, Nùng… migrated from northern provinces in 1980s, creating a colourful cultural picture, exceptionally the Central Highlands gong culture – humane non-material cultural heritage and historical epics.

However, in recent years, the increasing population in the buffer zone, statistically with more than 80,000 people (21,000 households) has threatened the natural resources in the National Park. Livelihoods of local people living the buffer zone depend mostly on agricultural production and available natural resources. Due to illegal logging, slash and burn farming and wildlife hunting... the forest ecosystem is seriously degrading; the natural forest area is getting smaller, which cause habitat loss for wildlife, particularly for tigers, elephants and gaurs …

To increase forest management and protection, the National Park Management Board has actively collaborated with agencies, forest owners and localities to patrol the forest. In 2015, 484 short-term and long-term patrols were organized, through which to expel 420 subjects out of the forest; discover 22 violation cases, seize 2 electric saws, 1 animal, 722 trap lines, 23 hunting guns, 17 tools and vehicles, and destroy 13 camps.

In addition, the National Park has contracted more than 21,000 households in the buffer zone to implement forest management and protection according to Decree no. 99/2010/ND-CP on payment for forest environmental services, with an amount of 5,844,285,000 dong, contributing to enhance forestry socialization, and reduce pressures of local people towards forest protection and sustainable development.

Furthermore, awarded with natural and climatic favourable conditions, in recent years, the National Park has developed many types of ecotourism, contributing to increase the income and to improve the livelihoods of local people such as rock visit, waterfall and highest mountain peak trekking… Besides, tourists can visit gaurs, watch mammals in the evening in the pine forests, camp, and bathe in Dac Gui spring… In the upcoming time, the Đắk Lắk tourism will explore different types of natural and adventurous tours in the National Park and connect the National Park with

▲*Mi núi Bà* (*Crocias langbianis*), *an endemic bird in the National Park is being threatened to extinction*

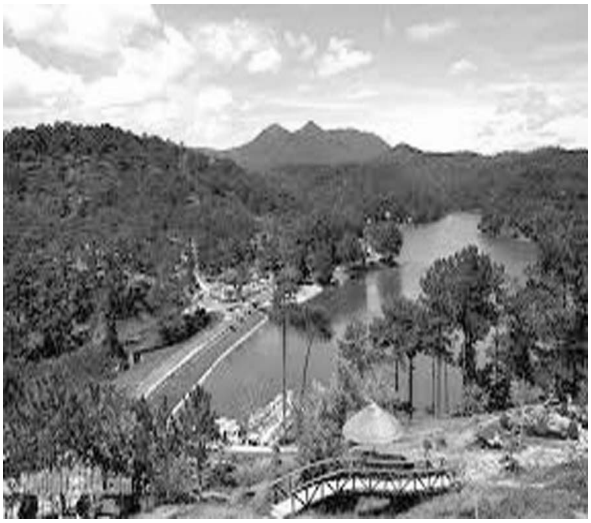
many other routes and places in the province such as Lac Lake, Krong Kmar waterfall, Dac Tuor cave...

To implement sustainable development goals, during 2011-2020, the Đắk Lắk province has proposed solutions to conserve biodiversity in the National Park such as: protect, maintain and develop wildlife, of which focusing on developing ecotourism in harmony with environmental protection; select appropriate tourism types and scopes and have specific plans in the tourism development strategy; enhance the quality and create unique characteristics of tourism products and cultural festivals ….

In addition, the province assigns the National Park Management Board to develop the "co-management and community-based management" to build capacity of staff on flora and fauna conservation, natural resources and environment management, create stable jobs and improve livelihoods for local people, reduce pressures and negative impacts on forest resources and biodiversity; collaborate with research institutes, universities, and international organisations to develop schemes on biodiversity studies, particularly effective solutions on protection and conservation of rare animals and birds; prevent illegal animal hunting affecting the sustainability and integrity of ecosystems and biodiversity of the National Park; collaborate with departments and sectors in the province and domestic and international professional organisations in scientific study, sustainable management of forest ecosystems and buffer zone community development; promote the propaganda about forest environmental protection to young generations, particularly schools' pupils in the buffer zone of the National Park; organize to integrate forest protection into relevant development plans, programs and projects …■

Nhật Minh

Đà Lạt - One of world's destinations in 2016



▲ *The city of Đà Lạt*

Đà Lạt, a romantic town with kaleidoscopic patch works of flower in the Central Highlands province of Lâm Đồng, is one of 52 places to visit in 2016 as selected by the New York Times. The city was described as a former French-colonial hill station with eternal spring weather and an agricultural El Dorado, growing asparagus, strawberries, coffee, artichokes, roses and more.

The US daily newspaper also highlighted vibrant outdoor activities in the city, including golf, white-water rafting, mountain biking, canyoning and splashing under the roaring Elephant Falls or terraced Pongour Falls.j Besides, itt is also well-known for such beautiful French architectures as King Bao Dai's Palace, Ngo Dinh Diem and Nguyen Cao Ky's villas and the Hang Nga villas.

In this year's list, the tourist city ranked 30th. Last year, it stood in 42nd position. The top destinations in the list are Mexico city (Mexico), Bordeaux (France), Malta (the Mediterranean), Coral Bay (St. John, the US Virgin Island), and the Theodore Roosevelt National Park (North Dakota, US.) Besides Đà Lạt, some City in Southeast Asia included in the list are Phnom Penh (Cambodia) and Ubud town (Indonesia)■

Phương Tâm

Lâm Đồng province will build a safari

The Highland Safari with a total area of 490 ha will be built in Lạc Dương district in Lâm Đồng province with an investment of VND 1,000 billion (nearly $50 million), the total capital of VND1,000 billion, of those VND350 billion is from the state budget. The park is expected to be completed in 2020. The construction area is within the protective forest area.

The Safari will be the home to rare animals as a semi-wild park where animals are free in nature, but are taken care of by humans.

Lâm Đồng Province People's Committee has approved the project in principle. The investors hired consultants from Austria and Singapore to develop ideas based on surveys of the terrain, climate and rare animals of Lâm Đồng and models of large zoos in the world.

The Ministry of Planning - Investment has agreed to fund the project. It is estimated that each year 1.2 million people will visit the Highland Safari, yielding a turnover of around $15 million/year■

Phạm Tuyên

Eight new orchid species found in Central Highlands

Dr. Nong Van Duy from the Central Highlands Science Institute and his team discovered the species while they were conducting a 2 year project on orchid preservation. The species are Schoenorchis hangianae Aver, Taeniophyllum phitamii Aver, Sarcolyphis tichii Aver, Ludisia phongii Aver, Cymbidium repens Aver& Thinh, Dendrobium thinhii Aver, Trichoglottis canhii Aver, and Octarrhena minucscula Aver.

So far, 1,184 species of orchid have been found in Việt Nam, with 325 of them discovered in the Central Highlands region. Orchids are facing a huge threat of extinction due to the rate of mass deforestation. According to the team, the area has 72 unnamed orchid species that have not been listed in Vietnam's Red Book. Earlier, the researcher, in cooperation with his Russian and Chinese counterparts, found four new orchid species in the region. Vietnam has identified 1,184 orchid species, and the Central Highlands is home to 325 of them, belonging to 107 genera■

Giáng Hương

Outstanding biodiversity values of Lang Sen Wetland Protected Area and U Minh Thuong National Park

Trần Ngọc Cường - Nguyễn Tự Nam
Vietnam Environment Administration

Việt Nam has a diverse wetland ecosystem, distributing mostly in the Red River Delta and the Mekong River Delta, along more than 3,260km coastline and in some islands of diverse ecosystems. In 2015, the Secretariat of the Convention on Wetlands of International Importance (Ramsar Convention) recognized Lang Sen Wetland Reserve and U Minh Thuong National Park as the 7th and 8th Ramsar Sites respectively. In other words, currently Việt Nam has eight Ramsar sites including: Xuan Thuy National Park, Bau Sau wetland within Cat Tien National Park, Ba Be National Park, Tram Chim National Park, Mui Ca Mau National Park, Con Dao National Park, Lang Sen Wetland Reserve and U Minh Thuong National Park.

▲*Bird species in Lang Sen wetland protected area (WWF picture)*

U Minh Thuong National Park – typical model of Melaleuca forest ecosystem in peatland

U Minh Thuong National Park is one of the two most important places of the remaining peatland areas in Việt Nam (the second area is U Minh Ha) and is recognized as one of the three most prioritized areas for wetland conservation in the Mekong Delta. In Việt Nam, in terms of pyrite melaleuca ecosystems, only the vegetation of U Minh Thuong National Park has features of primitive forest with the combination of mixed forest and melaleuca forest with the area of 3,000 ha.

Melaleuca forest ecosystem in peatlands becomes a particularly important ecosystem, is the breeding area and habitat of many wildlife, with the appearance of 32 mammals, 187 bird species, 34 reptiles and amphibians, 37 fish species, 203 insects and many aquatic species distributed in different depth layers of the ecosystem. U Minh Thuong peatland swamp forest plays an important role in preventing the acidification of surface soil layers and storage of freshwater and is the breeding area of freshwater fish species.

Melaleuca forest ecosystem and inundated grassland in U Minh Thuong National Park is the habitat of one of the most diverse bird system in the Mekong Delta. U Minh Thuong National Park has a diverse component of birds and is the largest breeding bird garden for watery birds in the region. U Minh Thuong National Park is one of three locations in the world that is known for the appearance of the hairy-nosed otter.

Lang Sen wetland protected area – typical ecosystem of Dong Thap Muoi (Plain of Reeds) Wetland

▲*Open landscape – flora and aquatic species in U Minh Thuong National Park (WWF picture)*

Lang Sen wetland protected area is located in the centre and is considered as the inland lowland of the Dong Thap Muoi in the downstream of the Mekong River. Although located in the lowland of the Dong Thap Muoi, Lang Sen is close to the ancient delta area running along the Việt Nam – Cambodia border. As located in the lowland area, this region is directly affected by the hydrology pattern of the Mekong River and is flooded annually.

Lang Sen wetland protected area is diverse in terms of landscapes, of which melaleuca forest landscape dominates with high proportion, followed by seasonal inundated grassland ecosystem with four types of communities, as well as landscapes dominated by lotus, lily, pistia... Lang Sen wetland protected area is the place providing important landscape for water birds, identified as an important bird area and the habitat of many fish species being taken into consideration for conservation and for have high economic values.

Lang Sen wetland protected area is one of the two remaining typical landscape of the Dong Thap Muoi wetland. The vegetation in Lang Sen is quite diverse with 156 flora species belonging to 60 families. Lang Sen is the only region having the semi-natural melaleuca forest habitat running along natural channels of high special biodiversity values. In addition to melaleuca forest, Lang Sen is diverse with floating flora communities such as lotus, lily, pistia, riverside mixed vegetation and seasonal inundated grassland.

Lang Sen is one of eight important bird regions in the freshwater wetlands in Việt Nam. Of 122 recognized bird species, in addition to global threatened species, there are nearly threatened species such as giang sen - painted stork (*Mycteria leucocephala*) and điểng điểng (*Anhinga melanogaster*). Out of six mammal species, a nearly threatened species is the otter. Out of 17 recognized reptiles, in addition to three global threatened species, the python (*Python molurus)* is nearly threatened.

Việt Nam has eight Ramsar sites which is the pride, honour and responsibility of the country in keeping the wetland to implement the mission of the Ramsar Convention: "The conservation and wise use of all wetlands through local, regional and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world"■

▲ *Mr. Lee Doo Yeoul, Chief Representative Representative Office of Korea Environment Corporation (KECO) in Vietnam*

한국환경공단
Korea Environment Corporation

KECO Representative Office in Hanoi: 04-2220-8205
Website: http://www.keco.or.kr/ http://www.keco.vn

Establishment basis & History

KECO is largest public organization belonging to Korea Ministry of Environment (KMoE), a leading Korea's environmental policy maker by engaging in business areas including climate, air, water, resources circulation & environmental health. Since our establishment in 2010, KECO has developed into a global environmental service provider through our continuous innovation and an excellent sustainability management.

Sept.1980: Korea Resources Recovery and Reutilization Corporation (KORECO) established
Mar.1987: Environmental Pollution Control Agency established
Nov.1987: The Environmental Management Corporation Act enacted
July.2004: The Korea Environment & Resources Corporation Act enacted
August.2008: Korea Environment & Resources Corporation (ENVICO and Environmental Management Corporation (EMC) merged)
Feb. 2009: The Korea Environment Corporation Act enacted and proclaimed
Jan.2010: Korea Environment Cooperation established

Currently, KECO has over 2,000 qualified staffs (including 86 professors, 103 experts, 485 masters and 1,326 environmental engineers) which strengthens our competence to participate in nationwide and international environmental projects, cooperates with KOICA and other non-governmental aids.

With over 35 years experiencing in environmental field, KECO has conducted many projects in the world including China, Laos, Cambodia, Vietnam, Nepal, Srilanka, India, Indonesia, Bhutan, Bangladesh in South Pacific; Uzbekistan, Azerbaijan, Mongolia in Mid-Asia, Egypt and Tunisia in Africa. Beside the representative office in Hanoi, KECO also established another office in Beijing, China.

Major functions

- Installation and operation of the environmental monitoring network and control center for air /water quality
- Installation and operation of environmental complex facility such as wastewater & sewerage disposal and waste energy recovery facilities.
- Promotion and technology development of energy business such as minimization of carbon emissions.
- Waste reduction prevention, waste recycling and environment-friendly waste disposal business
- Inspection and analysis of environmentally hazardous chemicals and test and assessment of their harmfulness
- Respond to the international conventions on the environment such as climate change and reduction in greenhouse gas emission.
- Research and development for policy study on pollution prevention, environmental improvement and resources circulation

▲ *The 2012 9th Vietnam – Korea Environment Ministerial Meeting in Hanoi*

KECO's activities and contribution in Vietnam

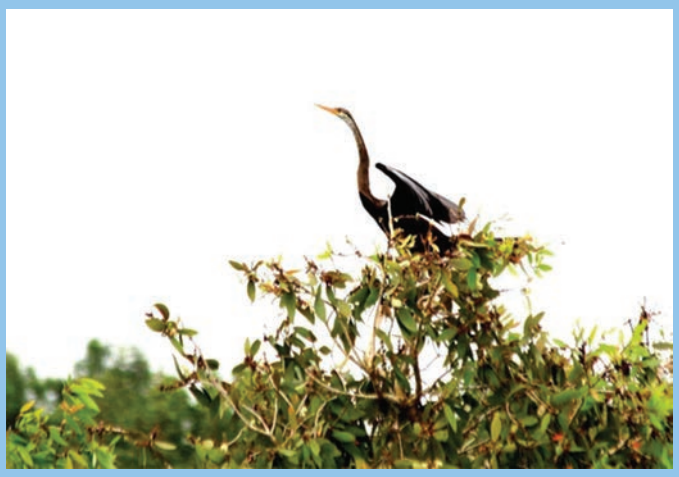
- KECO's new chief LEE DOO YEOUL is qualified expert and has 24 years' experience in wastewater treatment and water supply and drainage.
- Received award and prize from government and Prime Minister for the contribution to the economic and industry of the country.
- Contribute to the development of environmental policies, management, operation and technical evaluation on water works, treatment plant and drainage.

With the desire to contribute knowledge and experience learning from a developed country, Mr. Lee Doo Yeoul expects that KECO VIETNAM office shall operate more efficiently and practical.

In Vietnam, KECO is actively participating in environmental field and establishing and developing the environmental policy frame. On the other hand, on behalf of Korea Ministry of Environment, we create the relationship network with local environmental government offices & agencies such as Institute of Environment Technology (IET), Vietnam Environment Administration (VEA), Tong cong ty moi truong Vietnam (TMV), Science Agency of Technology Innovation (SATI)… and other strategic provinces from North to South such as Hue, Ba Ria Vung Tau, Kien Giang, Phu Tho, Nam Dinh, Hai Phong…

WILD BEAUTY of U Minh Thượng National Park

▲*Small white storks in their nest in U Minh Thuong*



▲*A Dien dien - oriental darter in U Minh Thuong*

▲*Bats hang on tree branches*

▲*A sunda pangolin*

▲*The park also serves as a spawning and nursery area for fish and shellfish, while filtering surface water*

▲*The U Minh Thuong National Park harbours 243 species of plants*