National environmental monitoring master plan for the period of 2021-2030 with a vision to 2050

TRƯƠNG MẠNH TUẤN
Ministry of Natural Resources and Environment

In Viet Nam, the environmental monitoring network was formed in the 90s of the last century after the first Law on Environmental Protection (LEP) was promulgated in 1993. On 7th March 2024, Deputy Prime Minister Tran Hong Ha signed Decision No.224/QĐ-TTg approving the National environmental monitoring master plan for the period of 2021-2030 with a vision to 2050. This is a specialized technical master plan, complementing previous provisions in Decision No.16/2007/QĐ-TTg and Decision No.90/QĐ-TTg to continue perfecting the national environmental monitoring network.

1. TOWARDS BUILDING A SYNCHRONOUS, MODERN NATIONAL ENVIRONMENTAL MONITORING SYSTEM

With the view that the planned national environmental monitoring network must comply with the provisions of the LEP, be consistent with the national planning system and the country's socio-economic development practices; ensuring monitoring of the baseline environment and impact environment in inter-regional, inter-provincial, and transboundary areas, contributing to assessing the load-bearing capacity of the environment, giving priority to improving national environmental warning and forecasting capacity. In particular, the national environmental monitoring network is planned on the basis of inheriting the contents of environmental monitoring in the national natural resources and environment monitoring network master plan for the period of 2016-2025 with a vision to 2030, with the integration between fields, while taking advantage of the existing technical facilities and monitoring teams, in particular, must overcome the inadequacies in previous master plans, further strengthen the advanced, modern monitoring tools, equipment, digital transformation and concentration of resources for processing and evaluating environmental quality monitoring data. This is an open system, regularly adjusted and supplemented to meet the requirements for monitoring data to serve the evaluation of environmental quality in inter-regional, inter-provincial, and transboundary areas.

In order to build a synchronous, advanced and modern national environmental monitoring system, monitoring key areas of inter-regional, inter-provincial, transboundary nature, areas with many sources of waste and monitoring biodiversity in nature reserves, biodiversity corridors, and high biodiversity areas; strengthen connectivity with provincial environmental monitoring systems; ensure monitoring of environmental quality developments; meet the requirements of providing, announcing, and publicizing environmental monitoring information and data and improving capacity for environmental warning and forecasting, the Ministry of Natural Resources and Environment has submitted to the Prime Minister the National environmental monitoring master plan for the period of 2021-2030 with a vision to 2050 for approval.

According to the master plan, the period of 2021-2030 will maintain 19 continuous automatic air quality monitoring stations that have been in operation; complete investment and installation of 18 continuous automatic air quality monitoring stations being deployed at monitoring locations inherited from previous master plans; continue to invest and add new ones to complete 31 continuous automatic air environment monitoring stations across the country, including 6 continuous automatic monitoring stations of baseline air quality in 6 socio-economic regions; establish and complete a continuous automatic monitoring network of inter-provincial river and lake water environmental quality at upstream locations, across borders and bordering locations between provinces; develop periodic surface water quality monitoring networks in the main streams of inter-provincial rivers and lakes that play an important role in socio-economic development and environmental protection. At the same time, maintain and expand monitoring at river estuaries and coastal points according to previous master plans; establish a sea water quality monitoring network in sea areas under Vietnam sovereignty, sovereign rights and jurisdiction in accordance with the legislation of Vietnam; invest, upgrade and modernize existing laboratories and environmental quality monitoring stations; complete investment and construction of a laboratory under the Environmental

Monitoring Station of the Southeast region; design and build the national environmental monitoring information and database system, integrate the entire environmental quality monitoring data system into a common system across the country...

Objectives of the master plan to 2050: Increase investment, expand continuous automatic air quality and water quality monitoring stations, apply new monitoring technology towards gradually replacing periodic air and surface water quality monitoring points by continuous automatic air quality and water quality monitoring stations; organize to conduct biodiversity monitoring in biodiversity corridors and high biodiversity areas established. In addition, by 2050, will research and apply modern information processing technologies, models using artificial intelligence, and comprehensively deploy digital transformation models in environmental monitoring data management and analysis for environmental quality forecasting activities; strengthen socialization work for the implementation of the master plan, develop priority mechanisms, encourage organizations and individuals to invest in continuous automatic environmental quality monitoring stations and participate in the periodic environmental monitoring programs to take advantage of resources and facilities of units outside the State.

2. ENVIRONMENTAL MONITORING NETWORK SYSTEM

The Master plan clearly indicates the location of points, forms and frequency of monitoring.

For the air quality monitoring network: Continue to maintain and expand the ambient air quality monitoring network at 216 air quality monitoring points on the basis of continuing to maintain monitoring at 106 points already established in the previous planning period and expanded to new 110 air quality monitoring points. Among 216 planned points, there will be 103 monitoring points being implemented, 98 monitoring points planned to be implemented in the period of 2021-2030 and 15 continuous automatic air quality monitoring stations newly built after 2030. At the same time, expand and build 68 continuous automatic air quality monitoring stations with 6 baseline air quality monitoring stations and 62 impact air quality monitoring stations. Baseline air quality monitoring stations representing 6 socio-economic development regions are located in 6 localities including: Lai Chau, Hai Phong, Quang Nam, Dak Nong, Dong Nai and Dong Thap. *For the periodic air quality monitoring points:* Carry out impact monitoring at 148 monitoring points focusing on provinces/cities in regions and cities with important socio-political significance.

For the surface water quality monitoring network: Continue to maintain and expand the surface water quality monitoring network at 499 surface water quality monitoring points on the basis of continuing to maintain

monitoring at the 368 points already in the previous master plans and expanded to 131 new surface water quality monitoring points. Of the 499 planned surface water quality monitoring points including 260 monitoring points being implemented, 216 monitoring points planned for implementation in the period of 2021-2030, 23 new continuous automatic surface water quality monitoring stations will continuously be built after 2030; expand and build 59 continuous automatic surface water quality monitoring stations with 6 baseline monitoring stations and 53 continuous and impact monitoring stations, using 4 continuous automatic surface water quality monitoring stations for the purpose of monitoring transboundary impacts; carry out impact monitoring at 440 monitoring points on the main stream of large rivers, inter-provincial, transboundary rivers with important socio-political significance...

For the coastal sea water quality monitoring network: Continue to maintain and expand the coastal sea water quality monitoring network at 70 monitoring points on the basis of continuing to maintain monitoring at the existing 43 points and 27 new additional monitoring points planned for the period of 2021-2030. For continuous automatic sea water quality monitoring stations: Add to the master plan 6 continuous automatic coastal sea water quality monitoring stations operation in the coastal areas of Ha Tinh, Quang Binh, Quang Tri and Thua Thien - Hue; carry out impact monitoring at 64 periodic coastal surface water quality monitoring points in coastal provinces; continue to maintain integration of coastal sea water monitoring with 6 existing oceanographic monitoring stations.

In addition, based on the objectives of the monitoring program, monitoring parameters and frequency are encouraged to be expanded to increase the thickness of the monitoring data series, ensuring good service for state management of environmental protection, environmental quality warning and forecasting. The master plan also points out the network of units carrying out monitoring and the development orientation is to focus on investing and upgrading the system of advanced and modern laboratories with full capacity and resources to carry out implementation of national environmental monitoring programs.

3. MAJOR SOLUTIONS TO IMPLEMENT THE MASTER PLAN

Firstly, developing *solutions on legal policies and strengthening organizational structures:* Complete and promulgate synchronous environmental monitoring processes, norms and targets, meeting the practical requirements of the field of environmental monitoring; develop policies to strengthen socialization of environmental monitoring, mobilize the participation of social resources to invest in the implementation of the national environmental monitoring network; develop regulations on economic-technical norms for environmental monitoring activities in accordance with the current state of socio-economic development; review and develop additional standards to guide technical methods for implementing environmental monitoring activities; strengthen the organizational structure, staffing and complete the functions and tasks of units in the environmental monitoring network to ensure the implementation of the master plan.

Secondly, strengthen research and application of science and technology for environmental monitoring activities: Increase the application of automatic monitoring technology and equipment to meet technical requirements to supplement the environmental monitoring network, improve the capacity to process and store environmental monitoring data to create data application effectiveness; promote technical facilities, field equipment, tools, and technology to serve biodiversity monitoring activities; prioritize geographic information systems, maps and remote sensing images, camera traps, sound traps, satellite positioning devices... and new technology solutions in smart receiving, transmitting and processing data to optimize transmission, exploitation, and use of biodiversity monitoring data...; research and apply new monitoring technology in the direction of using mobile monitoring devices attached to vehicles moving on rivers and at sea to monitor water quality...

Thirdly, promote investment and mobilize financial resources: Investment in construction and equipment - mobilize maximum financial resources from economic sectors to invest in modern technical facilities and equipment,

▲ *Automatic air quality monitoring station in Quang Nam*

technology for environmental monitoring activities. The network of continuous automatic monitoring stations needs to continue to be expanded and invested according to the new master plan to ensure the density of monitoring data transmitted to the national data network to meet the requirements of timely warning and forecasting developments in environmental quality; arrange funding for investment in infrastructure/software networks to connect, transmit/receive, process, and manage data.

Fourthly, expand international cooperation: Cooperate with international research organizations and monitoring networks to bring programs of exchanging experiences, monitoring information, and data according to international standards on performing environmental analysis into contents related to implementing environmental monitoring planning, for example, East Asia acid rain monitoring network, clean air network, transboundary pollution monitoring programs (water, air...); promote, prioritize the development and implementation of scientific research and international cooperation programs and projects to mobilize resources and experiences for biodiversity monitoring; continue to expand international cooperation in the fields of environmental monitoring technology, technique research, improvement with experienced organizations in the region and advanced countries.

Fifthly, strengthen training: Recruit, train and retrain domestically and abroad to build a team of highly specialized monitoring and analysis staff, ensuring a successor workforce; research and innovate the environmental monitor training program in a selective manner, ensuring that trained monitors can perform many types of monitoring, with some receiving specialized training as technicians; promote retraining to improve the professionalism and skills of existing staff, technicians and monitors with focus on improving the practical capacity of monitors to meet the operating requirements of each monitoring station and point and the entire network... ∎