

**MINISTRY OF CONSTRUCTION OF VIETNAM
ADMINISTRATION OF TECHNICAL INFRASTRUCTURE**

**DRAINAGE MANAGEMENT AND
WASTEWATER TREATMENT IN VIETNAM**

Yangon, 2017

**Administration of technical infrastructure
Ministry of Construction**

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SITUATION OF DRAINAGE AND WASTE WATER TREATMENT IN VIETNAM

1. Drainage network:

- 92% general drainage network;
- Concentrated mainly in the big cities, the ratio of coverage is about 60%;
- Many old pipelines which were improved over time, are being degraded.

2. Urban flood:

- It is happened when the heavy rain occurs;
- Being impacted by climate change: rising of sea level, rain, tide;
- Drainage planning, investment design of drainage construction have not been timely updated as in climate change scenario;
 - The drainage system is overloaded; it does not meet the demand of drainage;
 - Other causes: encroachment, lacking of the people awareness (littering, dumping the construction waste illegally, the original situation of the pipelines are not being done after the construction of buildings...), lacking of sanction...

SITUATION OF DRAINAGE AND WASTEWATER TREATMENT IN VIETNAM

3. Urban wastewater treatment:

- Presently, Vietnam has about 37 concentrated wastewater treatment plants with the designed capacity of 885.000m³/day and night, equivalent to about 13% of urban wastewater volume that was collected and treated.
- More than 40 plants with a total designed capacity of 1,600,000 m³ / day and night are in the process of design and construction
- The decentralized waste water treatment are gradually formed and developed.
- Most of the waste water treatment plants have not yet been reached the design capacity.
- The influent waste water in the plants: BOD and COD are low.
- Limitations of treatment technologies application suitable to the quality of influent wastewater and socio-economic and environmental conditions for each urban.

4. Wastewater treatment in industrial zones:

There are about 214 industrial zones operating in Vietnam, with 166 industrial zones having the wastewater treatment systems have been invested to construct, it accounts for 78%. In which:

- 95% of industrial zones located in the key economic regions in the North;
- 83% of industrial zones located in the Mekong Delta;
- 74,5 % of industrial zones located in the Red River Delta that the concentrated wastewater stations were constructed and operated

5. Drainage planning:

- To the river basins: Presently, the Government has approved the drainage planning river basins of Cau, Nhue - Day and Dong Nai.
- To the locals: About one third of the provinces and cities across the country have been making the specialized drainage planning.
- The other locals, the drainage plannings are being in the master plan for construction.

6. Local drainage regulation and drainage service tariff

- The local drainage regulations have been issued in 27/63 of provinces and cities defining the management, operation, development and use of drainage systems in the urban and industrial zones.
- One third of the provinces have issued Decision of collecting the fees / tariffs for drainage services

CHALLENGES, DIFFICULTIES

1. The capital:

- With the rapid speed of urbanization as present, it is needed about 800 million to 2 billion US dollars yearly to invest in the construction of waste water treatment system in Vietnam (ADB source).
- However, the investment capital for the construction and rehabilitation of rain water drainage systems, wastewater connection and collection and wastewater treatment plants are mostly from the State budget and ODA capital, have not yet been met the real demand.

2. Climate change and currently technical infrastructure affects the drainage and flooding of urban.

- Peak rainfall intensity (60 minutes of rainfall per 100 mm)
- Small sewer; hollow terrain; upstream flood.
- The drainage system is inadequate, the embankment and tide control systems have not yet sufficiently invested.
- The relevant technical infrastructure system has not been fully and synchronously invested.
- The design parameters of rain data have not been adjusted timely basing on the climate change scenarios and available update data.

CHALLENGES, DIFFICULTIES

3. Management organization of drainage system

- The organizational and operational structure of the drainage system is not united in localities: having 10 enterprises of drainage, 20 enterprises of water supply and drainage, others include urban environment ones in the forms: typically, drainage companies, water supply and drainage companies, urban project companies, urban environmental companies, etc. They are authorized to manage assets, as investor of the projects of drainage and urban environmental sanitation, are directly allocated or tendered for the management and operation of drainage and wastewater facilities.

4. Human resource training

- There are many training centers for management and operation of water supply plants in Vietnam, but so far, to the wastewater treatment, there's almost no training institution that have enough quality to systematic train the human resources with skill and high technique for this field

CHALLENGES, DIFFICULTIES

5. Technology

- Wastewater treatment plants operate under 50% of designed capacity.
- 59% of wastewater treatment plants currently apply activated sludge technology for treatment.
- 84% of wastewater treatment plants are being designated and constructed that also apply the activated sludge technology .
- Treatment of sludge and odor has not been thoroughly invested.

6. Drainage management and wastewater treatment and in industrial zones.

- The implementation of planning and investment in the industry in some industrial zones is not uniform.
- The monitoring of overcoming the consequences of environmental pollution in industrial zones with investor is provincial People's Committee is not effective (According to the Vietnam Environment Administration, 2014)

SOLUTIONS

1. Planning and development plan for drainage system:

- Revising the specialized plannings of drainage and wastewater treatment of the urbans under the central, considering factors related to the impacts of climate change on drainage systems.
- Developing and managing the map of flood.
- Identifying the role and location of Detension Basin in the priority of rainwater drainage and reducing the urban flooding.
- Provincial People's Committees issue and direct the implementation of local water drainage regulations.

2. Invest the development of drainage systems

- Investing the drainage systems and construction projects, developing the synchronous drainage systems, including the construction of a collection and transfer network and a wastewater treatment plant to ensure the wastewater treatment plant may operate as the capacity designed.
- Having a plan to develop and issue a roadmap to collect the fee of appropriate wastewater treatment services in order to improve the quality of services and enough expense of management and operation of the drainage system of the locality and reduce the burden of the budget.

SOLUTIONS

3. Mechanisms and policies for drainage:

- The priority is given to the allocation of capital sources from the central budget (including ODA capital) for investment in the development of drainage systems in big cities and urban in river basins affected by natural disaster (flood, tide, etc.), causing great impacts on the environment and people's life.
- Socialization of investment, construction, management and operation of drainage system, gradually change the subsidy mechanism to the form of business services according to the market mechanism under the control of the State, creating the attractive environment for investors involved in the drainage sector to develop sustainable drainage system.
 - Developing technologies, equipment and materials in the drainage sector following the direction of approaching new technologies with friendly environment.
 - Developing the human resource.
 - Enhancing communication and education, international cooperation, the community awareness.

COOPERATION BETWEEN VIETNAM - JAPAN

1. Implement the signed agreement between MoC and MLIT:

- On December 15, 2013, the Ministry of Construction and MLIT signed renewal of the agreement to continue the cooperation between the two ministries in drainage and waste water treatment.
- The 8th meeting is held every six months between MoC and MLIT dated on October 16, 2015 in Hanoi to review and evaluate technical cooperation activities within the framework of the agreement.
- Organizing seminars to enhance the exchange of experiences on the drainage and waste water treatment
- Organize training courses to enhance the capacity for the Vietnamese side.
- The Japanese side supports the Ministry of Construction to provide and develop a set of standards for tube drilling.
- MLIT supports the Ministry of Construction to establish training centers of drainage in Vietnam.
- Supporting MoC in the studying and proposal of developing the drainage Law.

COOPERATION BETWEEN VIETNAM - JAPAN

2. Collaborative programs / projects are being implemented:

- Program assists the experts on institution and policy of drainage and wastewater treatment – period of 2017-2019 (expert on institution and policy who are working at the Administration of technical infrastructure - Ministry of Construction).
- Project "Establishment of a training center and drainage development in Vietnam to improve the management ability of drainage and wastewater treatment".
- Supporting to complete the regulations related to the use and application of underground pipe drilling technology for the construction of water drainage works.

COOPERATION PROPOSALS IN FUTURE

Proposals to Japan in the coming time:

- Continuing to support completing the institution of the drainage management and wastewater treatment.
- Supporting the transfer of technology for construction of technical infrastructure works (new technology in construction, wastewater treatment technology ...) in accordance with Vietnamese standards.

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THANK YOU FOR YOUR ATTENTION