I. Overview of urban development in Vietnam

- As of December 2015, Vietnam has 787 urban centers:
  - 2 (special grade), 15 (grade 1),
  - 25 (grade 2), 42 (grade 3), 75 (grade 4), 628 (grade 5)
- Rate of urbanization: 35.7%
- Forecast to 2020: Urban population of 44 millions; Rate of urbanization of 45%
- Forecast to 2025: Number of urban centers of 1000; Urban population of 52 millions; Rate of urbanization of 50%.
II. Current situation of drainage and wastewater treatment (1)

- Number of urban centers which has wastewater treatment plants is still low (35 wastewater treatment plants with a total design capacity of approximately 850,000 m³/ day&night).
- Many urban centers are building or have no treatment plants; household waste water is pre-treated through septic tanks, then follow the sewers and discharged directly into the environment.
- The proportion of households connected to the urban drainage network in many places is still very low.

II. Current situation of drainage and wastewater treatment (2)

- Many culverts have insufficient drainage section; concreted canals, sewers contributed to the limited drainage
- Urban inundation frequently occurs in Ho Chi Minh City, in Hanoi when heavy rains happen, and in other cities of Vietnam such as: Da Nang, Can Tho, Quy Nhon, Hai Phong, Nha Trang...
II. Current situation of drainage and wastewater treatment (3)

Reason:
- 1. Impact of urbanization:
  - Increased construction land in urban areas
  - Area of the lakes, rivers is reduced
  - Increased impervious surfaces (concreted surface...)
- 2. Drainage system is degraded, the implementation progress of projects is very slow
- 3. Impact of climate change: More frequent storms, hurricanes, sea level rise, early rain, flooding...
- 4. Quality of planning is low and incomprehensive; forecasting is still limited
- 5. Lack of investment capital
- 6. Many shortcomings in management
- 7. Awareness of the community.

III. Regulations related to drainage and wastewater treatment

Law:
- Law of Urban Planning 2009
- Law of Construction 2014
  (Vietnam has not issued Law on Drainage)

Decree:
- Decree No 37/2010/ND-CP on formulation, approval and management of urban planning
- Decree No 44/2015/ND-CP on urban planning
- Decree No 80/2014/ND-CP on drainage and wastewater treatment

Orientation:
- Decision No 589/QD-TTg on Approving the revised orientations for water drainage in urban centers and industrial parks through 2025, with a vision toward 2050
IV. DRAINAGE AND WASTEWATER TREATMENT PLANNING IN VIETNAM

IV. 1. The order of formulation, appraisal, approval of planning and responsibility

I. The order of formulation, appraisal, approval of planning
   1. Making the task of planning
   2. Appraisal, approval of the task of planning
   3. Making the planning
   4. Appraisal, approval of the planning

II. Responsibility
   - Community
   - Consultant
   - People Committee at all levels
   - Ministry of Construction
   - Prime Minister
IV. 2. Basic information on drainage and wastewater treatment planning in Vietnam (1)

1. Objective of planning
   - Drainage (rain water, inundation, wastewater)
   - Wastewater treatment

   - Inter-provincial region: from 2 or more provinces (For example: Drainage planning for 4 key economic regions…)
   - River basin region: Vietnam has 3 river basin regions (Cau River Basin, Nhue-Day River Basin and Dong Nai River Basin)
   - Provincial region: In the boundary of a province
   - Urban centers: In the boundary of an urban center.

3. Planning duration (Law of Urban Planning)
   - From 20 to 25 years
   - Vision to 50 years

IV. 2. Basic information on drainage and wastewater treatment planning in Vietnam (2)

4. Fundamental information on drainage and wastewater treatment planning
   a. Investigation, inclusive assessment of natural conditions and socio-economic status, technical infrastructure of the planning area.
   b. Investigation, assessment of the status of drainage including source, capable of receiving and the ability to drain rainwater and wastewater; drainage system, flood situation and impact of climate change on regional planning.
   c. Review and assessment of drainage planning, drainage projects which have been deployed in the area.
IV. 2. Fundamental information on drainage and wastewater treatment planning in Vietnam (3)

d. Assessment of ability, relationship, connection (if any) of the drainage system of the surrounding area of the planned area.
e. Identification of indicators, economic and technical drainage and wastewater treatment systems.
g. Determination of the drainage basin, source and receiving capacity, and forecast of the total wastewater for each planning phase.
h. Proposal of sewerage treatment solutions (centralized and decentralized); location, size of storm water pumping stations and sewage treatment plants; location, size of the drainage line level 1, level 2.

IV. 2. Basic information on drainage and wastewater treatment planning in Vietnam (4)

i. Forecast of flooding, impact of climate change and proposal of solutions to prevent flooding as well as other relevant measures to reduce the impact of climate change.
k. Estimation of investment cost and investment phases; capital source and mobilization capacity for planning implementation; Proposal of solutions, mechanisms and policies on investment, management and protection of water drainage, waste water treatment systems.
l. Strategic environmental assessment.
m. Identification of priority projects and implementation plans.
V. REVIEW
DRAINAGE AND WASTEWATER TREATMENT PLANNING IN DONG NAI RIVER BASIN

SCOPE

SCOPE OF THE PLANNING
The whole area of Dong Nai River Basin (approximately 47,000 km²) including 12 provinces, cities as follows:
1. Ho Chi Minh City
2. Dong Nai
3. Binh Duong
4. Binh Phuoc
5. Ba Ria – Vung Tau
6. Long An
7. Tay Ninh
8. Lam Dong
9. Dak Nong
10. Ninh Thuan
11. Binh Thuan
12. Part of Dak Lak

OBJECTIVE
+ For urban and industrial areas: Drainage and wastewater treatment planning.
+ For rural area: Orientation on drainage and wastewater treatment.
V.1. Current status of drainage and wastewater treatment systems in Dong Nai River Basin

V.2. Rainwater drainage planning in Dong Nai River Basin
V.3. Drainage and wastewater treatment planning in Dong Nai River Basin

Issue and challenges

1. Lack and asynchronous database
2. Large scope, difficult in site survey
3. Socio-economic development is not stable; Inaccurate and difficult forecast…
4. Unpredictable impact of climate change
5. Planning methods have not been renewed
6. Advisory capacity remains limited; Management capacity is still inadequate
7. Difficult in calling for investment... Planning implementation is not good
Hopefully, we will have more time to learn, share and exchange experiences

THANK YOU FOR YOUR ATTENTION
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