

# DRAINAGE AND WASTEWATER TREATMENT PLANNING IN VIETNAM

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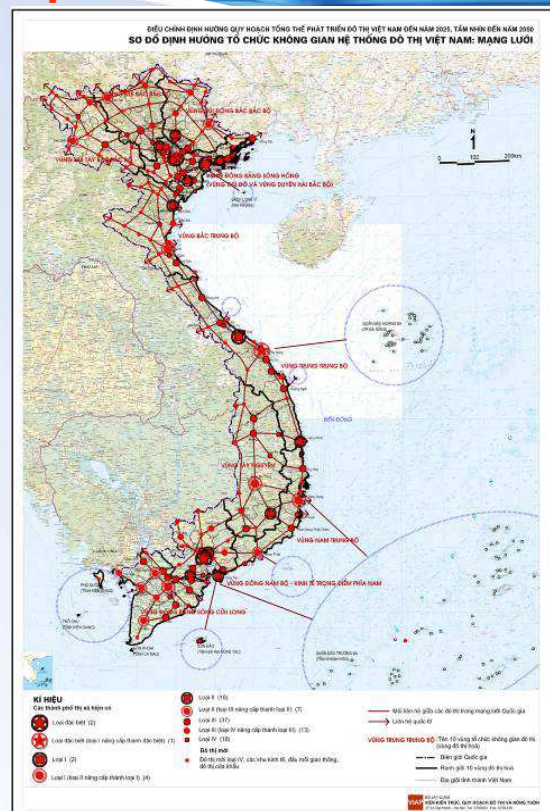
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## I. Overview of urban development in Vietnam

- ❖ 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%.



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## 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 m<sup>3</sup>/ 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.



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## 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...



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## 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
- ❖ Law of Environment Protection 2014

*(Vietnam has not issued Law on Drainage)*

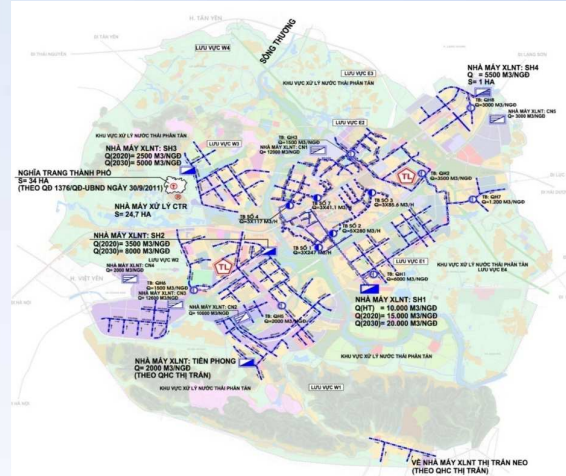
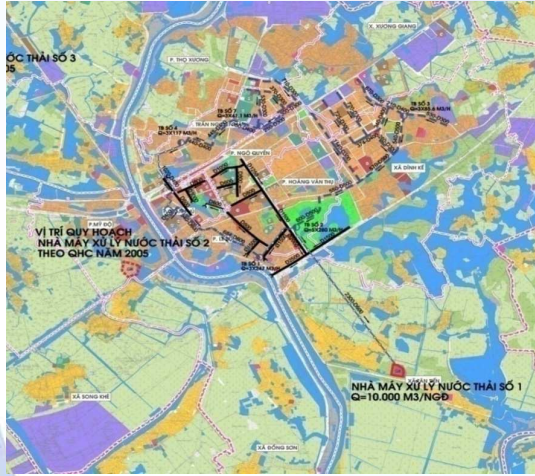
### Decree:

- ❖ 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

### 2. Scope of planning (Law of Construction, Law of Urban Planning)

- ❖- 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

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## SCOPE

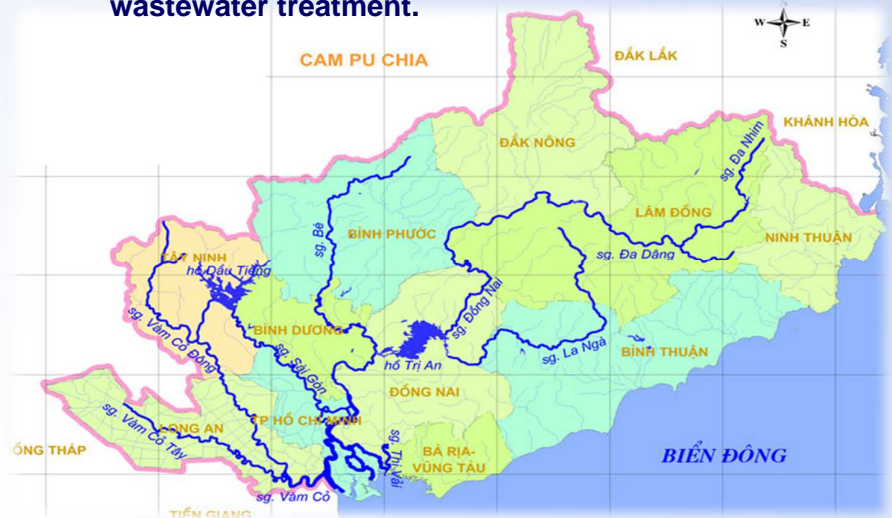
### SCOPE OF THE PLANNING

The whole area of Dong Nai River Basin (approximately 47.000 km<sup>2</sup>) 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

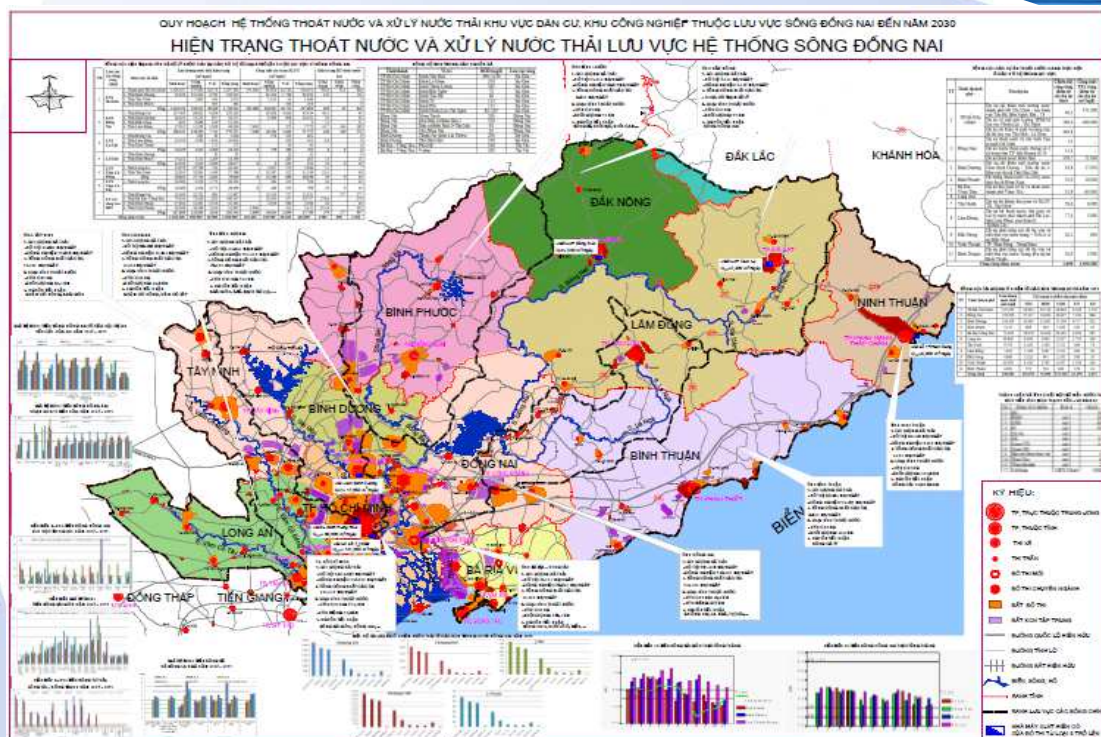
### OBJECTIVE

- + For urban and industrial areas: Drainage and wastewater treatment planning.
- + For rural area: Orientation on drainage and wastewater treatment.

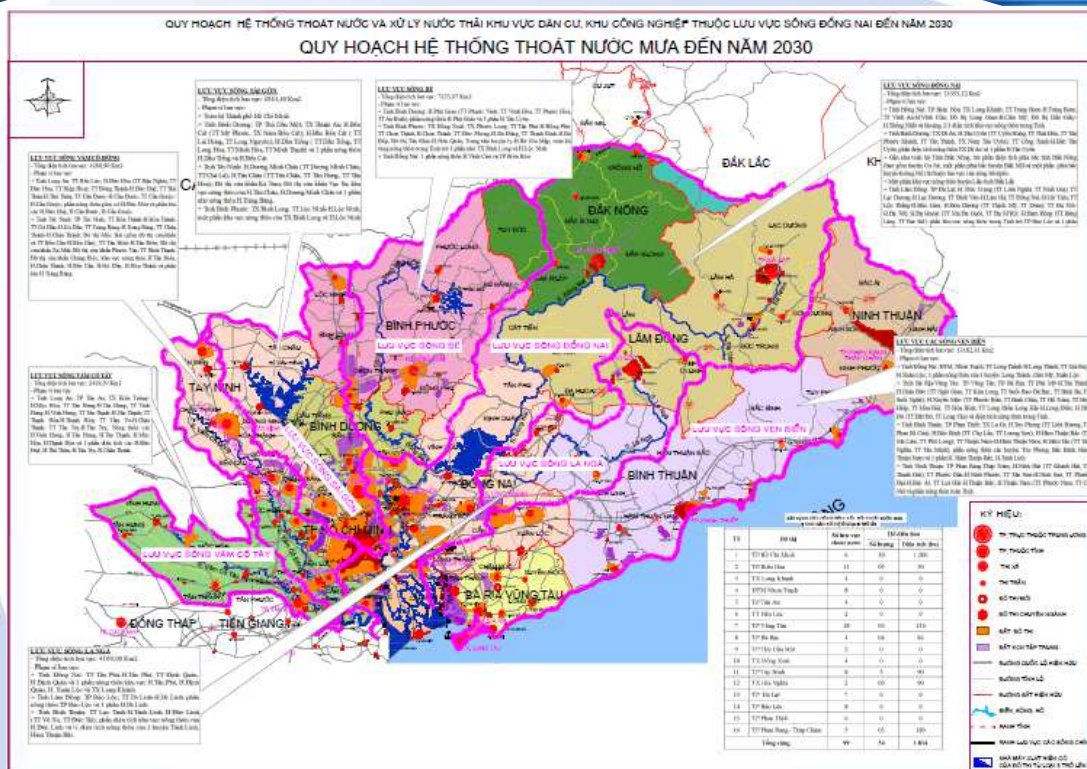


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# V.1. Current status of drainage and wastewater treatment systems in Dong Nai River Basin

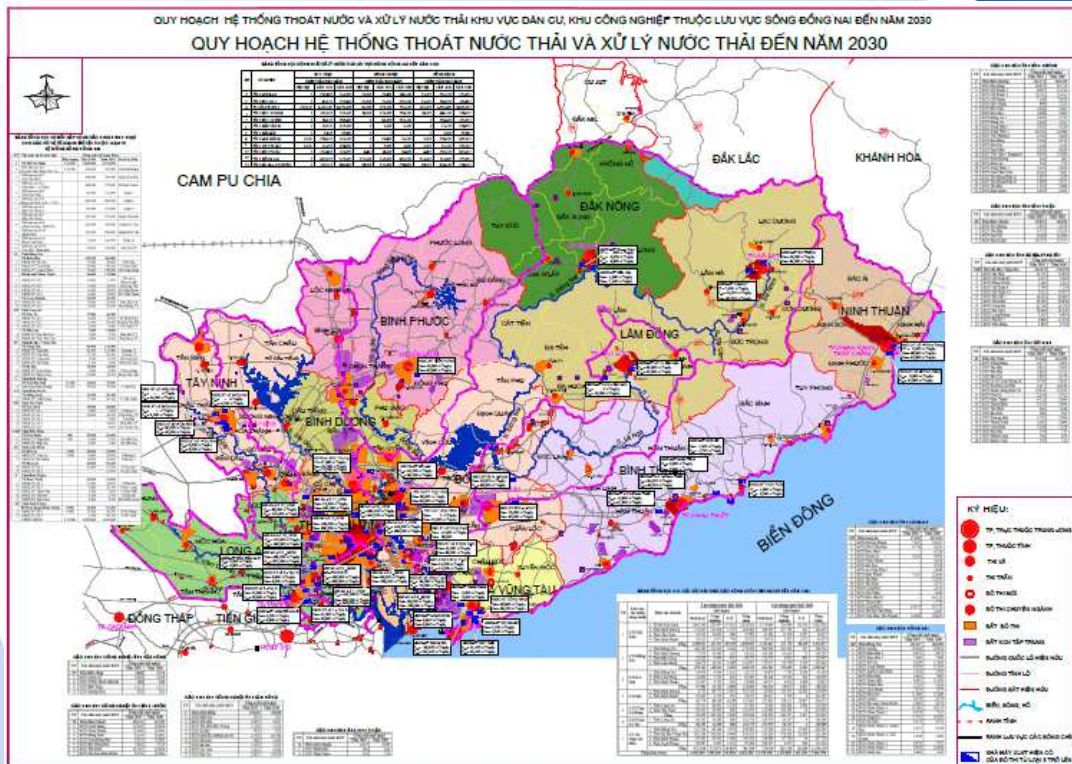


# V.2. Rainwater drainage planning in Dong Nai River Basin





## V.3. Drainage and wastewater treatment planning in Dong Nai River Basin



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## 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

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**Hopefully, we will have more time  
to learn, share and exchange experiences**

**THANK YOU FOR YOUR ATTENTION  
ARIGATO GOZAIMASU**