

Policy and Effort on decentralized domestic wastewater treatment in Vietnam

Presented by: Dr. Dang Thi Thanh Huyen

OUTLINE

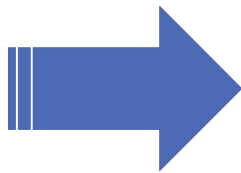
- **Brief review on WW management in Vietnam**
- **DEWATS development in Vietnam**
- **Policy adjustment in DEWATS promotion**
- **Other efforts: Technologies and Public Awareness Raise**
- **Concluding Remarks**

RECENT WW MANAGEMENT IN VIETNAM

- **About 15%** of collected drainage/sewerage treated by nearly 40 centralized wastewater treatment plants (WWTP)
- **More than 40 centralized WWTPs** are under construction/design
- **Only 03 WWTPs** received SSS-based flow (Buon Ma Thuot, Da Lat, Thu Dau Mot plants). So, **>90% of WWTPs** received CSS-based flow
- **Nearly \$4 billion dollars** has been invested in wastewater management during the past two decades

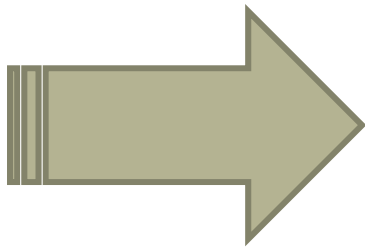
RECENT WW MANAGEMENT IN VIETNAM

- **About 35% WW will be treated** (based on treatment capacity) as of 2020.
- **Another 80 WW projects** are under call-for-investment or waiting-for-approval
- **About \$6 billion dollars** will be needed to invest in this sector towards 2025
- **Reduce from 90% to 85% ODA loan for WW projects**



Financial constrains!

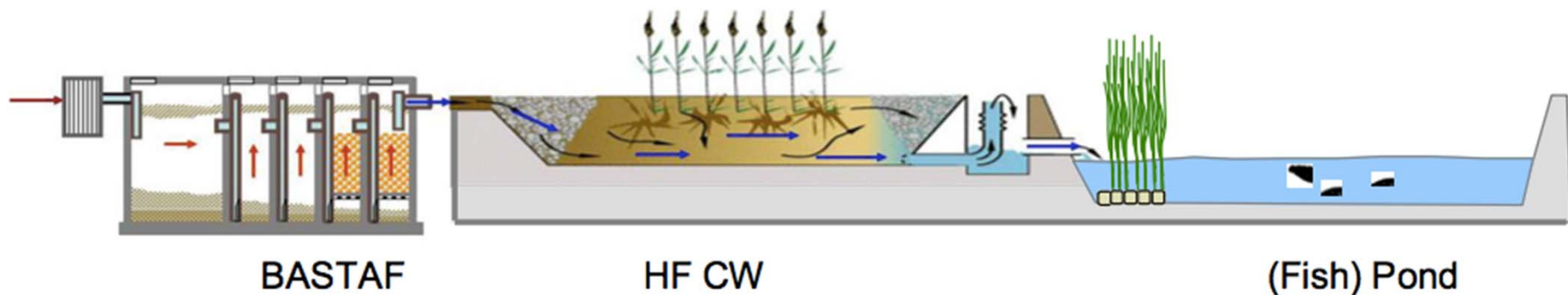
RECENT WW MANAGEMENT IN VIETNAM



**Stronger Promoting
DEWATS as a cheaper
approach for treatment
of WW (in some
potential cases)**

DEWATS IN VIETNAM

- **Introduced 30 years ago**
- **Advantages**
 - More affordable
 - Less investment and O&M costs
 - On-site reuse
 - Encouraging participation
 - Low-cost technologies
 - Step-wise approach...



DEWATS IN VIETNAM

- **Main current applications:** office buildings, public toilets, hotels, factories, hospitals, new communities, trade villages, etc. ($Q < 1000 \text{ m}^3/\text{d}$)
- **Thousands of DEWATS Projects:**
 - by DESA group, IESE
 - projects of GIZ and KfW, ADB
 - BORDA (about 20 projects in Vietnam)
 - private investors and firms

DEWATS IN VIETNAM



Hanoi –
office bldg.



Hai Phong –
Island resort



Hanoi –
new apartment

Source: VA Nguyen, 2010

DEWATS IN VIETNAM



Hanoi –
new living quarter



Hanoi - village



Bac Ninh – living quarter



Bac Kan – small town



Hanoi - school

DEWATS IN VIETNAM

Barriers for applications

- No promotion policy
- No incentives
- Lack of knowledge of decentralized options
- Low rate of household connection,
- Traditional acceptance of untreated wastewater disposal by most of people



DEWATS IN VIETNAM

Barriers for applications

- There are still very few decentralized **technical options** developed and applied.
- Systematic review has not been conducted in terms of performance and cost,
- Lack of detail guidelines for DEWATS
- Quality of design and construction, associated with
 - consultants' competency,
 - administrative appraisal procedures,
- Capacity building component during project implementation is poor
- Problems in O&M, M&E (qualified work force for O&M)

POLICY ADJUSTMENT IN DEWATS PROMOTION

- **New policy: Decree No 80/2014/ND-CP dated 06 August 2014 on drainage, sewerage and wastewater treatment**

Article 4. Issue National Technical Regulations (NTR) on Wastewater

Based on the water receivers, MONRE promulgates NTR for DEWATS to meet the requirement of effluent quality, easier for O&M.

POLICY ADJUSTMENT IN DEWATS PROMOTION

- **New policy: Decree No 80/2014/ND-CP dated 06 August 2014 on drainage, sewerage and wastewater treatment**

Article 7. Local regulations on wastewater management

In each province, there must have regulations on application of centralized and decentralized wastewater treatment;

POLICY ADJUSTMENT IN DEWATS PROMOTION

- **New policy: Decree No 80/2014/ND-CP dated 06 August 2014 on drainage, sewerage and wastewater treatment**

Article 23. Provisions on decentralized wastewater treatment

1. The decentralized wastewater treatment solution is **applicable to residential complexes or clusters, new urban centers, households, production, business, service and cottage industry production establishments, craft villages, markets, schools, tourist resorts** or areas which cannot or have not been connected to centralized water drainage systems due to geographical and terrain difficulties.
2. The application of the decentralized wastewater treatment solution must **ensure economic efficiency and environmental protection** and reduce polluting wastewater sources and direct impacts of wastewater on the environment.

POLICY ADJUSTMENT IN DEWATS PROMOTION

- **New policy: Decree No 80/2014/ND-CP dated 06 August 2014 on drainage, sewerage and wastewater treatment**

Article 23. Provisions on decentralized wastewater treatment

3. The application of the decentralized wastewater treatment solution must take into account **the possibility for future connection to centralized wastewater treatment systems and conform with approved planning.**

4. The Ministry of Construction shall guide the management of decentralized wastewater treatment.

POLICY ADJUSTMENT IN DEWATS PROMOTION

- **New policy: Circular No 04/2015/TT-BXD dated 03 April, 2015 on implementation guideline of Decree 80/2014/ND-CP**

Article 1. Management of decentralized wastewater treatment

2. Options for decentralized wastewater treatment:

a) On-site decentralized wastewater treatment: shall be applied for ***individual discharger with total generated wastewater volume of less than 50m³/day***; wastewater treatment facilities/equipment shall be placed within the property of the discharger.

b) Cluster-based decentralized wastewater treatment: ***shall be applied for neighbouring dischargers with total generated wastewater volume from 50 – 200 m³/day***. Based on the actual situation, the treatment facilities can be placed at the property of a discharger or a separate location, making it convenient for collection of wastewater from the dischargers.

POLICY ADJUSTMENT IN DEWATS PROMOTION

- **New policy: Circular No 04/2015/TT-BXD dated 03 April, 2015 on implementation guideline of Decree 80/2014/ND-CP**

Article 1. Management of decentralized wastewater treatment

2. Options for decentralized wastewater treatment:

c) Regional decentralized wastewater treatment: ***shall be applied in a particular administration area with total generated wastewater volume from 200 to 1,000 m³/day.*** The location of the decentralized wastewater treatment plant/facilities shall be in line with the construction planning or drainage planning approved by the competent agency.

PPC, based on the wastewater generation sources and receiving sources, economic conditions, topography, local capacity in operation and management of drainage and sewerage system, shall make decision on selection of appropriate decentralized wastewater treatment options.

POLICY ADJUSTMENT IN DEWATS PROMOTION

- **New policy: Circular No 04/2015/TT-BXD dated 03 April, 2015 on implementation guideline of Decree 80/2014/ND-CP**

Article 1. Management of decentralized wastewater treatment

4. Technologies applied for decentralized wastewater treatment:

- a) Septic tanks;
- b) Baffled anaerobic tank;
- c) Improved baffled septic tank with anaerobic
- d) Anaerobic ponds, aerobic-anaerobic ponds, facultative lagoons;
- e) Wetlands;
- f) Sequencing batch reactor;
- g) Others.

DEWATS in Vietnam

POLICY ADJUSTMENT IN DEWATS PROMOTION

- **New policy: Decision No 589/QD-TTg issued on 06 April, 2016 on Amended Orientation on Urban and Industrial Development towards 2025 and vision 2050**

Point of View:

- Combination between Centralization WWT (CWAT) and Decentralization WWT (DEWATS) to improve the rate of ww treatment before discharging to the environment.
- Application of DEWATS or improved ON-SITE treatment for areas without WW collection system and CWAT.

POLICY ADJUSTMENT IN DEWATS PROMOTION

- **New policy: Decision No 589/QD-TTg issued on 06 April, 2016 on Amended Orientation on Urban and Industrial Development towards 2025 and vision 2050**

Implementation:

Application of CWATS and DEWATS, rainwater harvesting, wastewater reuse, sludge reuse that is appropriate with local natural, socio-economical conditions and complies with National Technical Regulations.

OTHER EFFORTS

- **Organize frequent workshops on DEWATS to promoting DEWATS in provinces: by BORDA – Vietnam Agriculture Water Research (VAWR), ADB, MOC**
- **Introduced some DEWATS projects in priority list of WW projects 2016-2025**

CONCLUDING REMARKS

BEFORE (in 2010)

Lack of Commitment

Vietnamese environmental standards are still not fully developed

Less experience in design and construction of DEWATS projects

Inexperience in O&M

Few decentralized technical options

Financial aspect is an issue

AFTER (at present)

Still Lack of Commitment even though it has mentioned in Law (Decree 80 and Circular 04)

Has developed National Technical Regulation for DEWATS

Has earned some experience via thousands of projects

Still inexperience in O&M

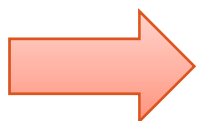
Still few decentralized technical options

Still an issue

CONCLUDING REMARKS

At present, DEWATS technology can not meet the requirement of stricter effluent quality!

TT	Thông số	Đơn vị	Giá trị giới hạn	
			A	B
1	PH		5-9	5-9
3	Tổng chất rắn lơ lửng	mg/l	50	100
5	BOD ₅ (20°C)	mg/l	30	50
6	Amoni (NH ₄ ⁺) (tính theo N)	mg/l	5	10
7	Phosphat (PO ₄ ³⁻) (theo P)	mg/l	6	10



WHAT SOLUTIONS SHOULD BE ?

THANK YOU!



Dr. Dang Thi Thanh Huyen

Email: huyendtt@nuce.edu.vn

Hanoi, Vietnam

DEWATS in Vietnam