

Wastewater production, treatment, and use in Vietnam

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Wastewater production and treatment

Vietnam produces 2,032,000 m³ municipal wastewater per day which is mainly discharge into rivers, lakes, ponds without treatment^[4]. There are only 14 centralized domestic wastewater treatment (WWT) stations in all over the country, located in 6 urban centers. In industrial sector, 1,000,000 m³ wastewater is generated each day^[3]. Among 283 recent industrial and processing zones, there are 43.3% has centralized WWT system; 12.8% has under-construction centralized WWT system; 43.9% does not have centralized WWT system. Main reasons of the above limitation are due to the impact of urbanization which increases construction land and water-resistant surfaces (concretization) but reduces the area of ponds, lakes, rivers in cities. Degraded drainage systems; sluggish-implemented projects; lack of investment capital and limited awareness of community also affect wastewater treatment in Vietnam.

Wastewater use/disposal

In Viet Nam, wastewater has been used for centuries for irrigation; fishery/fed aquaculture; rice and vegetable cultivation at small-scale/household scale based on farmers' experiences. Since early 1960s wastewater also has considerable roles in agriculture and aquaculture through some models such as biogas and VAC (gardens - fish pond - pig sty). In general, the wastewater is continuously used with inadequate treatment or even without treatment. There is a lack of information on area irrigated and/or aqua-cultivated with wastewater in Viet Nam. *There seem to be very few studies and little is known about the use of wastewater in agriculture and aquaculture in Viet Nam, except that it is widespread and unregulated^[1].*



Figure 1: Farmer is cleaning vegetable directly by sewage
(<http://www.thanhvien.com.vn/pages/20121113/on-lanh-rau-muong-ban.aspx>)



Figure 2: Smell wastewater – water source for irrigating clean vegetable
(<http://daidoanket.vn/PrintPreview.aspx?ID=56869>)

Policies and institutional set-up and needs for wastewater management

Wastewater management is currently referred to legal documents on environmental protection related to pollution control, waste management, Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA), river watershed management, environmental monitoring and information, incentives, financial support, technological development, socialization of environmental protection and technical environmental regulations. Besides, there remains overlap and conflicts between the law on environmental protection and other sectoral laws. Significance of wastewater reuse has not received adequate attention.

It is not hard to see Vietnam's lack of policy measures dealing with production, financing, support and extension services, skilled technical staff in the field of wastewater reuse. The same condition is with environmental protection in general: limitation of state budget (0.1% of GDP for environmental protection ~ USD4.5/person whilst that is 1% of GDP in other ASEAN countries in 2010)^[4]; lack of human resources and staff capacity (3 environmental officers/1 million people whilst that is 70/1 million in other ASEAN countries in 2010)^[4];

High incidence and prevalence of eyes and skin diseases in the areas where wastewater is reused for agriculture show that health impacts should be taken into account for a better wastewater management.^[5]

Research/practice on different aspects of wastewater

Wastewater reuse both for agriculture and aquaculture is a centuries old practice in Vietnam and needs no explanation. However, it was clear that there have been quite a few attempts so far made to analyze the issues of wastewater reuse for these purposes in a systematic manner and to document these. In particular, though the potential health and environmental risks related to reuse are well known in general terms, and the economic costs and benefits acknowledged, no effort had been made to integrate these key aspects into an analytical framework which would provide useful information to policy makers in countries like Vietnam, faced with tough trade-off decisions

Status and need for the knowledge and skills on the safe use of wastewater

While wastewater has been used widespread for long time, we nearly have none legal document for the safe use of wastewater. Health risks associated with widespread use of untreated wastewater due to: (i) Lack of finance and technology to provide adequate WWT infrastructure; and (ii) Treated wastewater is less attractive to the Vietnamese farmers as it may reduce the content of nutrients substantially^[2]. That is to say that quality of products utilizing wastewater is truly of concern.

To achieve better wastewater management, government's approach should include: (i) Enhancement of the effectiveness and efficiency of the state management and compliance with environmental laws, regulations and standards; (ii) Strictly dealing with serious polluting establishments; (iii) Priorities must be given to pollution prevention and control;

(iv) Extensive application of Polluter Pays Principle and User Pays Principle; (v) Promotion of the socialization of environmental protection.

In depth, Vietnam has to find out possible solutions such as improvement of the legal framework, institutional arrangement, capacity building; increase in the percentage of environmental expenditure from the state budget and call for other investment sources; enhancement of international collaboration. Scientific research, technological development and application should be promoted. In addition, there must be communication programs that make a profound change in a sense of duty for environmental protection among all stakeholders including authorities, sectoral agencies, institutions, enterprises and community.

References

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