

CIRCULAR ECONOMY OF WATER AND WATER REUSE IN VIETNAM



Garden in Vieba Garment Company Ltd. using wastewater treated from pilot

Background

In the last three decades, Vietnam has modernized its economic policy, resulting in an annual economic growth rate averaging 5.9% from 2011 to 2020. However, along with rapid economic growth and industrialization, Vietnam is facing environmental problems, including water sources contamination due to industrial wastewater discharges and the over-use of chemical fertilizers and pesticides in agriculture.

Vietnam must act on several fronts to attain sustainable development, including preserving water resources and their proper use. There are several measures available for addressing environmental issues, such as environmental and economic policies, laws and regulations, technology, public participation, and efforts to increase environmental awareness among stakeholders.

- Embed **circular economy in water resources (CEW)** and water reuse in policies in different stages
- Consider **water recycling** on micro-, meso-, and macro- levels/ scales
- Disseminate information on **specific standards on wastewater after treatment and water reuse** for awareness and use by different consumers
- Develop **incentive mechanisms** to promote circular economy (CE) in water reuse

KEY TAKEAWAYS

Appropriate economic and environmental policies and their effective implementation can help mitigate much of the environmental damage caused by economic activities.

CEW is an economic framework that reduces, conserves, and optimizes water use through efficient use and maintenance to ensure water quality and environmental protection.¹ Transitioning from a traditional economy to a CEW framework maintains economic development while minimizing adverse impacts on water resources. Many countries have adopted this approach, which was recently introduced in Vietnam.

THE LACK OF REGULATIONS AND TECHNICAL GUIDELINES THAT ALLOW FARM OWNERS TO TREAT LIVESTOCK WASTEWATER IN THE DIRECTION OF REUSING IT FOR CULTIVATION PURPOSES HAS MADE IT DIFFICULT FOR FARMERS TO INVEST IN LIVESTOCK WASTEWATER REUSE. FARMERS LOOK FORWARD TO THE MANAGEMENT AGENCIES HAVING POLICIES TO REMOVE OBSTACLES AND CREATE CONDITIONS FOR THE REUSE OF HUGE LIVESTOCK WASTEWATER RESOURCES

- NGUYEN THE HINH
(JOURNAL OF ENVIRONMENT (VIETNAM) (2023) 41-43.

Despite a common understanding of the benefits of CEW and the need to conserve water in Vietnam, water resources continue to be degraded due to development activities. Water scarcity has directly threatened the environment because of pollution and over-exploitation. The value and services provided by water resources must be recognized and embodied in the planning and decision-making regarding conservation, use, and reuse of water resources. Context-specific policies, regulations, and institutional arrangements are indispensable to lessen the pressure on water resources and promote their prudent use. Existing policies and regulations in Vietnam related to water

resources reveal gaps, overlaps, and a need for clarity on roles and responsibilities across agencies and institutions, resulting in a lack of coordination in water resource management.

The “**Decentralized water resource circulation as a sustainable solution for plantation**” project implemented activities focused on developing practices that promote decentralized water circulation to reuse water and nutrients in domestic wastewater to support greenifying local areas without excessively exploiting local natural resources.

The research team reviewed general CEW literature, existing decrees, regulations, guidelines, and organized stakeholder consultations/ interviews to identify potential applications of CEW. The team also assessed the current regulatory barriers and challenges associated with the application of CEW concerning water use and reuse.

This brief identifies potential CEW applications and existing challenges in Vietnam while providing specific recommendations to policymakers while government reviews are ongoing.

Potential opportunities for applying Circular Economy (CE) and CEW in Vietnam

The opportunities of CE application identified provide a context to examine the opportunities of CEW applications in Vietnam.

- Increasing interest in CE on the part of government and stakeholders to respond to

¹ Morseletto, P., Moonren, C.E., Munaretto, S. 2022. Circular Economy of Water: Definition, Strategies and

Challenges. Circular Economy and Sustainability (2022) 2:1463–1477

environmental pollution and the depletion of natural resources, especially water resources.

- Increasing consumer attention to environmental and sustainable consumption practices.
- Increasing use of data, connectivity, analysis, and mechanization to transform manufacturing and other industries fostered by the Fourth Industrial Revolution (4IR).
- Increasing government attention to CE as it develops new economic development policies, strategies, and guidelines, and improving consensus and support across sectors.

The opportunities to apply CEW at different economic levels are more relevant as Vietnam promotes the application of CE. Based on the national economy, Vietnam can apply the CEW approach at three levels:

- **Micro- level (enterprise, factory):** Clean production practices by a factory allows reuse of water for different purposes within the factory itself or other factories in the vicinity.
- **Meso- level (symbiotic groups, industrial zones - industrial zones):** Industries on shared properties can gain a competitive advantage through the physical exchange of materials, energy, water, and by-products to foster sustainable development.
- **Macro- level (municipality, province, and region):** CEW practices are relevant for development activities related to industrial systems, large-scale construction projects with environmental considerations, urban infrastructure, and other ecological preservation and restoration.

Challenges for the application of CEW in Vietnam

Despite the opportunities for Vietnam to apply and benefit from CEW practices at different levels, specific guidelines to address the following are lacking:

- A growing water demand resulting from agricultural production, aquaculture, urbanization, industrialization, tourism related development, and population growth.
- Increasing water pollution due to wastewater from urban, industry, aquaculture, and agrochemical and fertilizer runoff in rural areas.
- Increasing salinity intrusion because of climate change in coastal areas, hurting crop yields.
- Effective promotion and implementation of CE in natural resources management by authorities at provincial levels to foster change behavior for wastewater recycling.
- There are gaps, overlaps, and coordination challenges across agencies due to lack of clarity in existing laws and regulations. This discourages and limits the application of CEW practices.
- Success stories in Vietnam demonstrating the benefits of transitions to CE to encourage industries to apply CEW policies and practices in their operations have not been produced.
- Poor infrastructure of water supply and water treatment facilities, inadequate community awareness regarding water treatment and reuse, and unaddressed users' safety and hygiene concerns around wastewater reuse.

Policy relevant recommendations

The existing challenges point to the need to revise existing legislation on water resources to achieve transformative change with CEW in Vietnam:

- Revise the Law on Water Resources to encourage the application of CE in water and wastewater reuse. Revision should include defining and explaining the concepts related to CEW, water circulation, and water reuse.
- Government agencies responsible for water resources (i.e., Ministry of Natural Resources and Environment, Ministry of Health, Ministry of Agriculture and Rural Development, Directorate for Standards, Metrology and Quality), and provincial departments should plan to accelerate the application of CE by developing technical guidelines and standards for water treatment and reuse.
- The application of CEW depends on incentives it provides for businesses to change water use and reuse practices. In this regard, government authorities should focus on regulations and consider policies and programs incentivizing private sector businesses and industries to transition to CEW application.
- The CEW policies will only bear fruit when the private sector is aware of the incentives provided by the government and the benefits of CEW. Similarly, there is a need to address the safety and hygiene concerns at the community level around using recycled water. In this regard, the government should implement awareness campaigns targeting businesses and communities.

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WWTP for circulation in the Vieba Garment Co. Ltd. (Nhandan TV Channel)