Circular Economy Water and Sanitation

Future Pathways in Rural Viet Nam

Workshop - 7 November - Hanoi

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Welcome and opening remarks

- Dr. Đặng Ngọc Hạnh, Deputy Director of Institute for Water Resources Economics and Management
- Mr James Deane, Australian Department of Foreign Affairs and Trade (DFAT)
- Dr Naomi Carrard, University of Technology Sydney – Institute for Sustainable Futures (UTS-ISF)

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UTS Institute for Sustainable Futures

Water For Women

Australian Aid

circle wash

Workshop purpose and agenda

Dr. Đinh Văn Đạo

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Workshop agenda

Time	Activity
8:30 – 8:45 am	Welcome
8:45 – 10:00 am	**Part I:** Circular Economics for water supply, sanitation • Overview of the projects • Overview of circular economy policy in Viet Nam • Circular economy in irrigated agriculture and rural development: Direction and potential • Application of the 8Rs circular framework in rural areas: Case study in Ha Tinh • Q&A
10:00 – 10:30 am	Tea break
10:30 – 11:45 am	**Part II:** Interactive session: pathways for circular economy water and sanitation in rural Viet Nam • Orientation to futures thinking • Futures thinking activity: visioning of circular opportunities in water and sanitation in rural Viet Nam
11:45 - 12:00 pm	Wrap up and closing

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Part I: Circular economy for water supply and sanitation

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Introduction to the research project

Dr. Đinh Văn Đạo, Dr. Naomi Carrard

November 2024

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Circular economy and WASH in Hà Tĩnh, Vietnam: Opportunities to strengthen WASH services and build climate resilience

ABOUT THE CIRCLE WASH PROJECT

1. Create knowledge on how WASH services and management systems can benefit from circular economy approaches to achieve better resource use, inclusion, and climate resilience.
2. Support the WASH sector's stackholders to think differently, contributing innovative solutions to solve the challenges for achieving safely managed services in the context of climate change.
3. Offers an opportunity to enable cross-sectoral collaboration towards a paradigm shift in how WASH systems are designed, managed and resourced.

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FOCUS IN VIETNAM

- inform the existing and emerging policy environment and planning towards circular economy
- contribute to policy dialogue on rural WASH
- guide future innovation towards efficient resource use, positive WASH outcomes and climate change resilience.

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PROJECT ARRANGEMENT

Funding sources:

Water For Women | Australian Aid

Project cordinator:

UTS Institute for Sustainable Futures

Project site: Vietnam (Ha Tinh province)

Project site: Kiribati (Kiritimati Island)

Expert input:

unicef

IWMI International Water Management Institute

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OUR THREE PHASES

Concepts

2023

Case studies

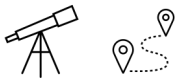
Ha Tinh, Vietnam

Kiritimati Island, Kiribati

2023 - 2024

Pathways

Collaborative visioning and knowledge co-production



2024

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CONCEPTS

5Rs process and purposes

3Rs practices

5Rs mang tính định hướng

3Rs mang tính kỹ thuật

8Rs FOR CIRCULAR WATER AND SANITATION

KHUNG KTTH 8Rs TRONG QUẢN LÝ CẤP NƯỚC VÀ NƯỚC THẢI NÔNG THÔN

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CASE STUDY: focused assessments

Ha Tinh

Topic: optimising household greywater treatment and reuse systems

Status: data collection complete, now sensemaking and writing

Planned output: journal article

Kiritimati

Topic: pre-feasibility of manufacturing sanitation products from recycled plastic

Status: data collection planned, on hold pending approval

Planned output: research brief

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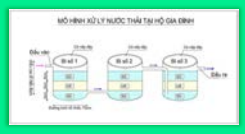
Hà Tĩnh, Việt Nam



Kiritimati Island, Kiribati

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HIGHLIGHTS - PROJECT OUTPUTS

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SHARING CIRCLE WASH AT EVENTS

16

Final phase - sharing findings, pathways and policy briefs

Vietnam

Workshop in Hanoi 7 Nov

IWEM and UTS-ISF

Attended by researchers and government representatives with circular economy, water, sanitation expertise

Kiribati

Focus group in Kiritimati 14 Nov

UNICEF and UTS-ISF

Attended by sanitation service delivery professionals

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Thank for your attention!

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Overview of circular economy policy in Vietnam

Presenter: Nguyen Trong Hanh
Email: hanhng.2601@gmail.com/nthanh@isponre.gov.vn
Institute of Strategy, Policy on natural resources and environment
Ministry of Natural Resources and Environment

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OVERVIEW OF POLICY AND LEGAL FRAMEWORK ON CIRCULAR ECONOMY IN VIETNAM

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Orientation of the Party and Government of Vietnam

Viewpoints of the Party and Government of Vietnam on circular economy:

The period before the 12th National Congress of the Party (Before 2016):

- The term circular economy has not been mentioned in any Party and Government policies. On the other hand, there have been a number of orientations and solutions related to the implementation of circular economy.

(ii) Period to implement the Resolution of the 12th National Congress of the Party (from 2016 to 2020):

Circular economy has been pointed out in a number of key national orientations such as **Vietnam's sustainable energy development orientation**; **National action plan on sustainable production and consumption** for the period 2021-2030.

(iii) The period from the 13th National Congress of the Party to now (from 2021):

Circular economy has been integrated into the Socio-Economic Development Strategy for the period 2021-2030 and the 5-year Socio-Economic Development Plan for 2021-2025.

In addition, many newly issued resolutions and strategies on economic restructuring and industrial development have presented the application of circular economy.

In June 2022, the Prime Minister issued the Circular Economy Development Project in Vietnam

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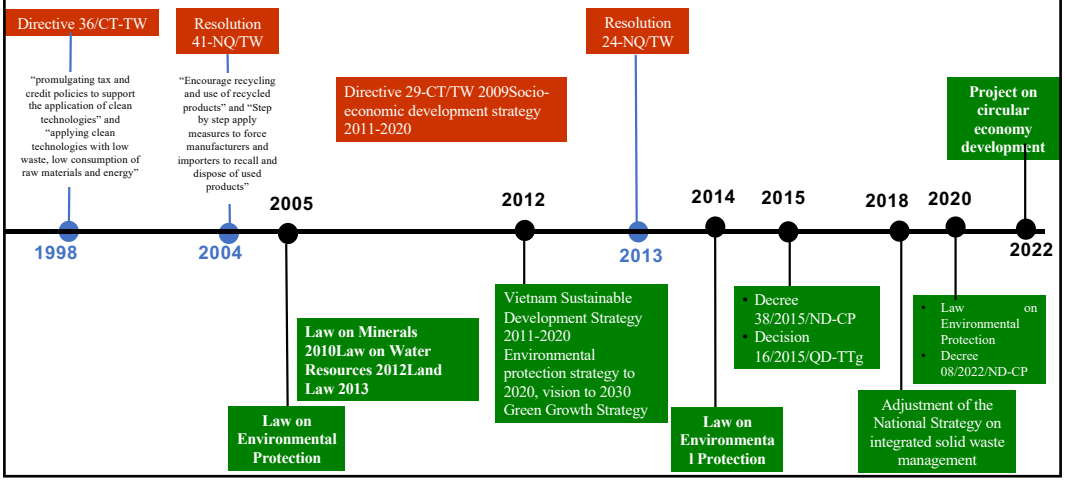
Vietnamese policies and laws related to circular economy development



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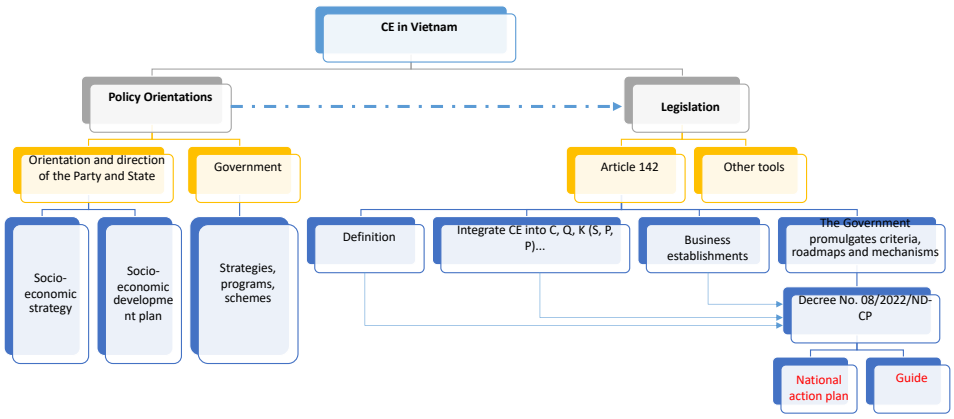
Circular Economy policy and legal framework



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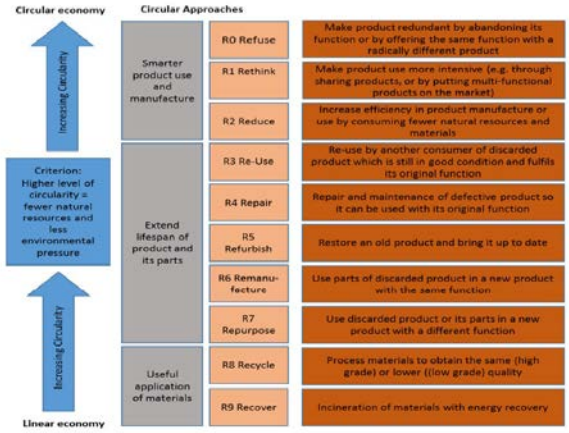
Approach of circular economy in Vietnam



Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. Resources, Conservation and Recycling, 127, 221-232. https://doi.org/10.1016/j.resconrec.2017.09.005

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Article 142. Circular Economy

1. Circular economy is an **economic model** which encompasses the design, production, consumption and services activities aimed at reducing raw materials, extending product life, reducing waste generation and minimizing adverse impacts on the environment.

2. Ministries, ministerial agencies and provincial People's Committees shall incorporate circular economy immediately at the stage of formulating a development strategy, planning, plan, program or project; managing, reusing and recycling waste.

3. Every business shall establish a management system and take measures to reduce extraction of natural resources, reduce waste and increase waste recycling and reuse from setting up a project and designing a product or goods to production and distribution.

4. The Government shall elaborate on criteria, roadmap and mechanisms for encouraging the implementation of circular economy in conformity with the national socio-economic conditions.

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Decree No. 08/2022/ND-CP issued by the Government on 10/01/2022 elaborates a number of articles of the Law on Environmental Protection

- Article 138. Criteria for circular economy
- Article 139. Responsibility for implementing circular economy
- Article 139. Roadmap for implementing circular economy
- Article 140. Mechanism to encourage the implementation of circular economy

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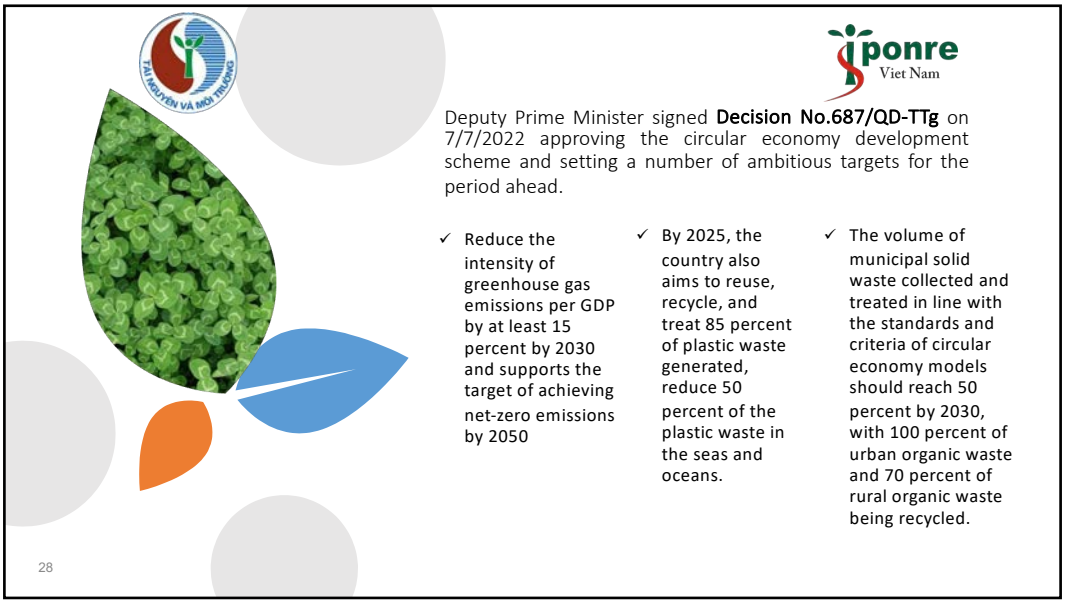
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Viet Nam
Deputy Prime Minister signed Decision No.687/QD-TTg on 7/7/2022 approving the circular economy development scheme and setting a number of ambitious targets for the period ahead.
✓ Reduce the intensity of greenhouse gas emissions per GDP by at least 15 percent by 2030 and supports the target of achieving net-zero emissions by 2050
✓ By 2025, the country also aims to reuse, recycle, and treat 85 percent of plastic waste generated, reduce 50 percent of the plastic waste in the seas and oceans.
✓ The volume of municipal solid waste collected and treated in line with the standards and criteria of circular economy models should reach 50 percent by 2030, with 100 percent of urban organic waste and 70 percent of rural organic waste being recycled.
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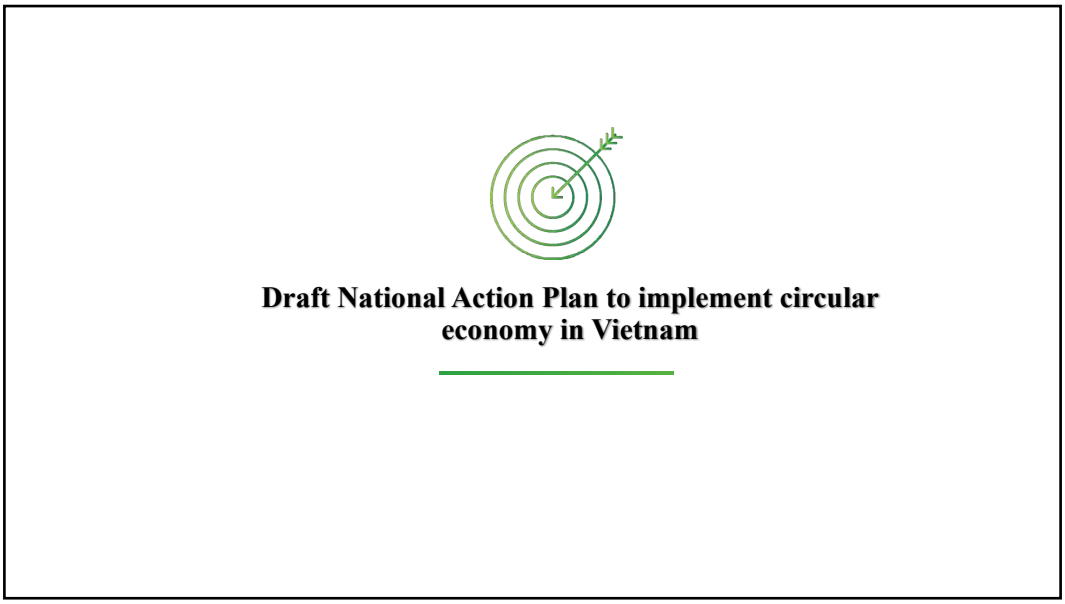
Draft National Action Plan to implement circular economy in Vietnam

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Tasks and requirements for building NAPCE

Law on Environmental Protection 2020

Article 142. CIRCULAR ECONOMY

1… An economic model in which design, production, consumption and service activities aim to reduce the exploitation of raw materials and materials, extend the product life cycle, limit waste generation and minimize adverse impacts on the environment.

2. … **Integrate CE** right from the stage of formulating development strategies, plannings, plans, programs and schemes; waste management, reuse and recycling. **?**

3. … Be **responsible** for establishing a management system and implementing measures to reduce resource exploitation, reduce waste, raise the level of waste reuse and recycling right from the stage of project construction, product and goods design to the stage of production and distribution. **??**

4. … **Criteria, roadmap**, mechanisms to encourage CE implementation in accordance with the country's socio-economic conditions;

Decree 08/2022/ND-CP detailing a number of articles of the law on environmental protection.

Clause 5, Article 139: "The national action plan for CE implementation includes the following main contents":

a) Overview analysis of the current status of resource exploitation and use; production and consumption; the situation and forecast of waste generation; domestic and international context of CE implementation;

b) Building views, general objectives, specific objectives and expenditures CE implementation in the 10-year NAP period;

c) Determine **tasks and implementation roadmap** ➔ **Industries and fields**, which defines the **priority sectors** carried out in stages; The build list of **specific industries and fields** must contain guidelines for the application of circular economy;

d) Identify types of **investment projects, production, business establishments, services and products** that must be designed to achieve CE criteria; adopt cleaner production, environmentally friendly product production, production using recycled materials, life cycle management of chemicals and waste;

đ) Orientation of CE implementation solutions

e) Implementing organizations include

Ministries, ministerial-level agencies➔ Formulate and approve action plans for CE implementation of sectors, sectors and products in accordance with NAPCE;

Provincial People's Committee➔ formulate and collect opinions of relevant ministries and ministerial-level agencies and approve action plans for provincial CE implementation

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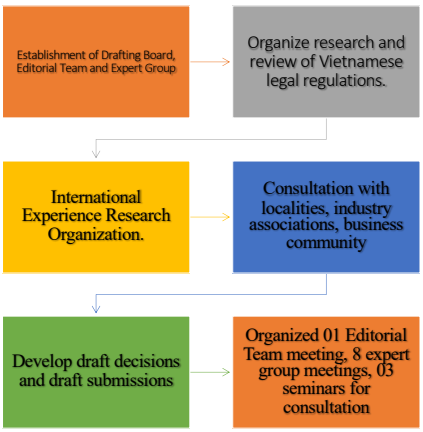
IMPLEMENTATION PROCESS AND IMPLEMENTATION METHODS

NAPCE Consultation Workshop in the Northern Region

NAPCE Consultation Workshop in the Southern Region



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Meeting with expert group, Drafting Committee, Editorial Team

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On November 16, 2023 Organize "**Vietnam Circular Economy Forum 2023**" with the theme "Developing a National Action Plan to implement circular economy"

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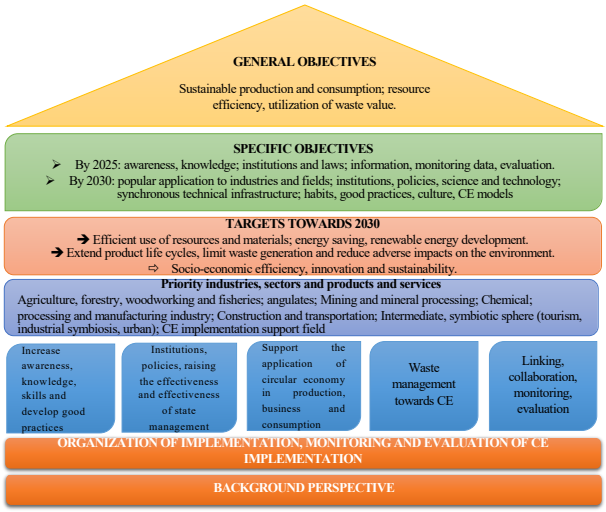
THE STRUCTURE OF THE DRAFT

PRINCIPLES IN CONSTRUCTION

- In line with the Nature of CE.
- Relevance and inheritance.
- Action.
- Create open spaces.
- Enforceability.
- Maximum listening and absorption.
- ….



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Perspectives

01

It is a **priority strategy** to innovate growth models, improve quality, efficiency and competitiveness, create new value-added chains, harmonize the relationship between economy and environment, contribute to the implementation of commitments on nature conservation, biodiversity and net-zero emissions by 2050

02

Ensure **interdisciplinary, interregional and inclusive**; **The State** plays the role of creating an institutional and policy environment to encourage the participation of all social strata; **economic sectors, communities, organizations and individuals who are the subjects of circular economy**

03

It is a long-term roadmap, associated with institutions to encourage innovation and breakthroughs, based on achievements of modern science and technology, digital transformation; development of linkage and **synchronous infrastructure** between regions and regions; develop **high-quality human resources** to maximize the value of raw materials, materials and waste throughout the entire phase of design, production, distribution, consumption and waste management

04

Make the **most of the advantages, potentials and characteristics** of sectors, fields, regions, regions and localities to develop appropriate circular economy models; development of **good practices, preservation and cultural development in sustainable production and consumption**; promote independence and autonomy in **mobilizing and effectively using domestic and international resources**

05

Ensure **harmony of interests** of related actors, human-centered, focusing on improving social welfare and quality of life of people; **ensure comprehensiveness and conformity with the Party's views, guidelines, guidelines and policies on the country's economic and social development**

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General objectives

- Forming a system of sustainable production and consumption structure, effectively using the value of natural resources, making the most of used materials and materials, limiting waste generation and reducing adverse impacts on the environment;
- Strongly develop production and business models applying circular economy;
- Develop good practices, create culture in production, business and consumption, and move towards the formation of a material circular society.

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Specific goals to 2025

- Complete the elaboration and promulgation of action plans for the implementation of the circular economy of sectors, sectors and localities.
- Establish a system for organizing, managing, monitoring, evaluating, supporting and building a common monitoring framework for circular economy implementation.
- Guide and organize the integration of the circular economy into development strategies, plannings, plans, programs and projects; management, reuse and recycling of waste at all levels and sectors.
- Promote research and development of technologies and equipment for the implementation of the circular economy.
- Promulgate and guide the effective application of mechanisms, policies, regulations, standards and technical regulations in current laws to encourage the implementation of the circular economy.
- Develop documents and organize guidance on the application of circular economy to a number of industries, fields, products and services according to the roadmap.
- Experiment with applying the circular economy model in a number of potential and local sectors with advantages.
- Establish mechanisms for sharing and providing information and data, calculating indicators and monitoring and evaluating the implementation of the circular economy in Vietnam.

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Specific goals to 2030
Complete the institutional framework, policies and laws to implement the circular economy.
Complete the elaboration and promulgate guidelines on the application of circular economy implementation to priority sectors and domains.
Complete the synchronous and linked technical infrastructure system to realize the circular economy.
Promote the application and transfer of technology and equipment for the implementation of the circular economy.
Forming new value-added chains and supply chains through the application of circular economy models to maximize the value of raw materials, materials and waste.
Promote the formation and development of production and business models applying circular economy and creating green jobs.
Spreading good habits and practices, creating a culture of sustainable production, business and consumption, building a socially responsible green lifestyle.
Complete the institutional framework, policies and laws to implement the circular economy.
Complete the elaboration and promulgate guidelines on the application of circular economy implementation to priority sectors and domains.
Complete the synchronous and linked technical infrastructure system to realize the circular economy.
Promote the application and transfer of technology and equipment for the implementation of the circular economy.
Forming new value-added chains and supply chains through the application of circular economy models to maximize the value of raw materials, materials and waste.
Promote the formation and development of production and business models applying circular economy and creating green jobs.
Spreading good habits and practices, creating a culture of sustainable production, business and consumption, building a socially responsible green lifestyle.

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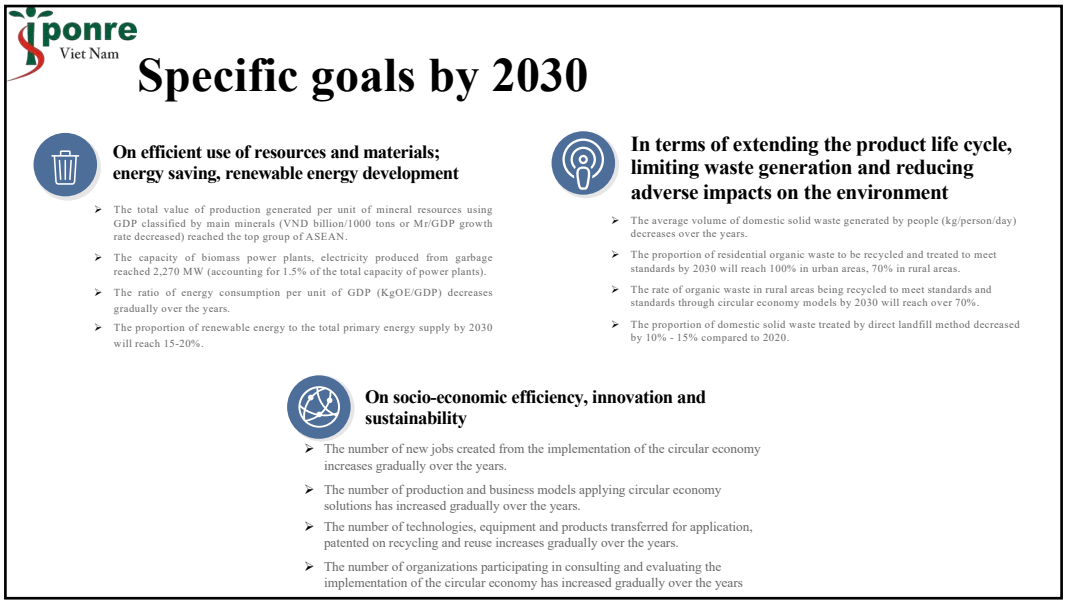
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Viet Nam
Specific goals by 2030
On efficient use of resources and materials; energy saving, renewable energy development
The total value of production generated per unit of mineral resources using GDP classified by main minerals (VND billion/1000 tons or Mr/GDP growth rate decreased) reached the top group of ASEAN.
The capacity of biomass power plants, electricity produced from garbage reached 2,270 MW (accounting for 1.5% of the total capacity of power plants).
The ratio of energy consumption per unit of GDP (KgOE/GDP) decreases gradually over the years.
The proportion of renewable energy to the total primary energy supply by 2030 will reach 15-20%.
In terms of extending the product life cycle, limiting waste generation and reducing adverse impacts on the environment
The average volume of domestic solid waste generated by people (kg/person/day) decreases over the years.
The proportion of residential organic waste to be recycled and treated to meet standards by 2030 will reach 100% in urban areas, 70% in rural areas.
The rate of organic waste in rural areas being recycled to meet standards and standards through circular economy models by 2030 will reach over 70%.
The proportion of domestic solid waste treated by direct landfill method decreased by 10% - 15% compared to 2020.
On socio-economic efficiency, innovation and sustainability
The number of new jobs created from the implementation of the circular economy increases gradually over the years.
The number of production and business models applying circular economy solutions has increased gradually over the years.
The number of technologies, equipment and products transferred for application, patented on recycling and reuse increases gradually over the years.
The number of organizations participating in consulting and evaluating the implementation of the circular economy has increased gradually over the years

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Themes, tasks, activities

- Raise awareness, knowledge, skills and develop good practices on circular economy implementation.
- Building and perfecting institutions and policies, raising the effectiveness and effectiveness of state management of the circular economy.
- Support to promote the application of circular economy in production, business and consumption.
- Waste management to realize a circular economy.
- Strengthen linkage, cooperation, monitoring and evaluation of circular economy implementation.

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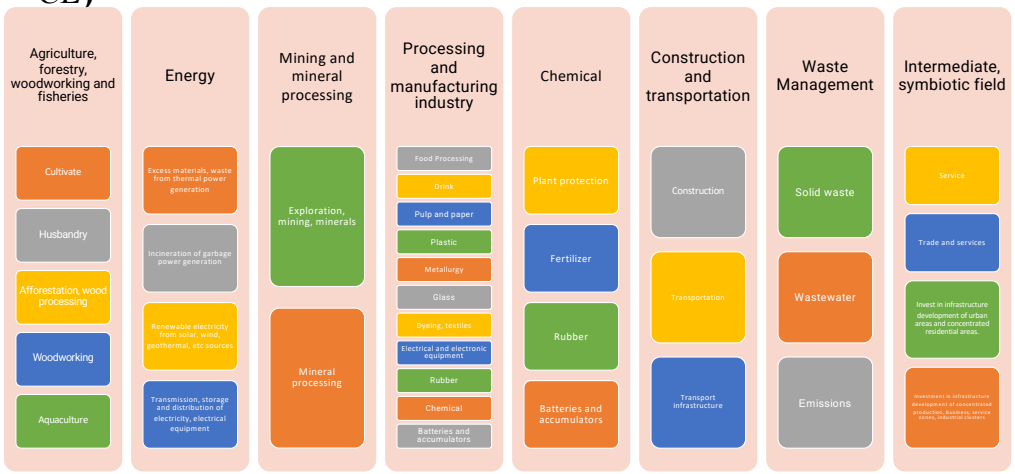
PRIORITY SECTORS AND SECTORS

(*Based on assessment of readiness, challenges and potential with CE*)



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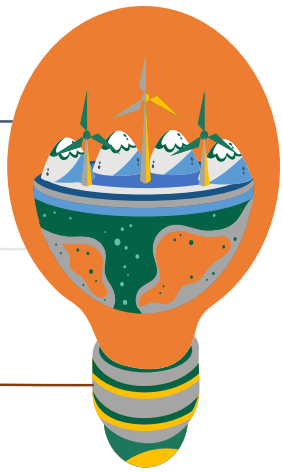
Implementation organizations

Ministry of Natural Resources and Environment; Ministry of Planning and Investment;
Ministry of Finance

Ministries, ministerial-level agencies
Provincial People's Committees

VCCI, VCA, professional associations, universities, research institutes…

Owners of investment projects, owners of production, business and service establishments (enterprises, cooperatives, other economic establishments)



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Thank you for paying attention!

hanhng.2601@gmail.com/nthanh@isponre.gov.vn

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CIRCULAR ECONOMY IN AGRICULTURE AND RURAL AREAS IN VIETNAM: CURRENT SITUATION AND POTENTIAL

NGUYEN MANH SON

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THE CURRENT STATUS OF THE CIRCULAR ECONOMY IN AGRICULTURE AND RURAL AREAS IN VIETNAM

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CONCEPT

- Circular agriculture is a sustainable production approach in which by-products and residues from the production process are maximally reused to minimize waste and reduce negative environmental impacts.

- This model creates a closed-loop system, optimizing resources, reducing input costs, and enhancing economic efficiency for producers.

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TYPES OF CIRCULAR ECONOMY MODELS IN AGRICULTURE AND RURAL AREAS

(1) Biogas Generation and Utilization Model from Waste and Wastewater in Livestock and Crop Production

(2) Integrated Farming Models (VAC, Rice-Shrimp, Rice-Fish), Agroforestry Models, and Garden-Forest Models

(3) Circular Model Utilizing Agricultural By-products and Residues as Catalysts or for the Creation of Value-added Products

(4) Moderation Model: Linked to Limiting the Use of Chemical Fertilizers, Pesticides, Veterinary Drugs, and Growth Stimulants in Crop and Livestock Production

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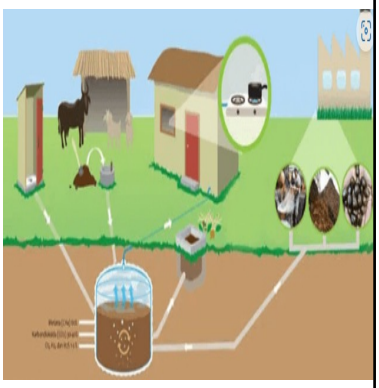
MODEL OF BIOGAS PRODUCTION AND UTILIZATION FROM WASTE AND WASTEWATER IN LIVESTOCK AND CROP PRODUCTION

- The biogas model refers to the production and use of gas from waste and wastewater in agricultural activities. It is a sustainable ecological solution that helps reduce environmental pollution, conserve energy, and reuse resources derived from organic waste.
- Several biogas models are implemented in Vietnam:

1. **Biogas from cattle and pig farming** (in provinces such as Đồng Nai, Bình Dương, Long An)
2. **Biogas from crop waste and agricultural by-products** (in major agricultural regions such as the Central Highlands and the Mekong Delta)
3. **Biogas from food processing wastewater**
4. **Household biogas systems,** which are widespread in rural areas of Vietnam



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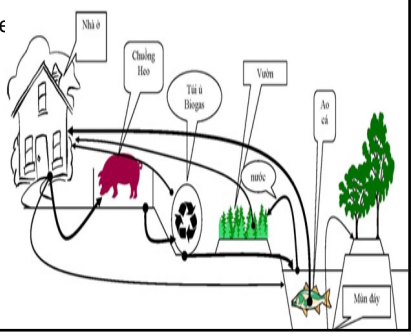
INTEGRATED CROP, LIVESTOCK, AQUACULTURE, AND FORESTRY MODEL

- This model integrates crop production (plants), livestock farming (animals and poultry), and aquaculture (fish farming), or combines these activities with forestry within the same system or area. The goal is to optimize natural resources such as land, water, and by-products, reduce costs, and enhance productivity.
- Several integrated models are applied in Vietnam:

1. **VAC model (Garden – Pond – Livestock Pen)**
2. **Rice–Shrimp rotation model**
3. **Rice–Fish rotation model**
4. **Livestock–Aquaculture integrated model**
5. **Agroforestry and garden-forest models**



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CIRCULAR MODEL UTILIZING BY-PRODUCTS AND RESIDUES IN AGRICULTURAL AND FORESTRY PRODUCTION AND PROCESSING

This model involves the reuse of by-products and residues from agricultural production and processing activities to create new value and minimize waste. It not only enhances economic efficiency but also reduces environmental pollution and promotes sustainable development.


Vỏ trấu


Bã mía


Vỏ dừa


Thân cây họ đậu


Vỏ đậu, vỏ hạt điều


Rơm rạ

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MÔ HÌNH TUẦN HOÀN SỬ DỤNG PHẾ PHỤ PHẨM TRONG SẢN XUẤT, CHẾ BIẾN NÔNG NGHIỆP

- **Several integrated models are applied in Vietnam:**

1. **Utilization of by-products from rice production:** Rice straw is used as feed for cattle, for mushroom cultivation, or as raw material for composting. Rice husks are used to produce biomass pellets or as fuel for boilers.
2. **Reuse of bagasse and by-products from the sugar industry:** Bagasse and residues are repurposed for various uses.
3. **Composting livestock waste**: Organic fertilizer is produced from livestock waste through composting processes.
4. **Utilization of by-products from seafood processing:** These by-products are used to produce food (e.g., cooking oil, fish meal, surimi), pharmaceuticals (e.g., glucosamine, fish oil, functional foods), animal feed, and premium organic fertilizers.
5. **Utilization of by-products from forestry:** Forestry residues are processed into bio-pellets and biofuels

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SOME SPECIFIC MODELS ARE BEING IMPLEMENTED EFFECTIVELY

Garden – Pond – Barn model

Rice – shrimp, rice – fish model

Model of rice cultivation - mushroom cultivation - organic fertilizer production - fruit tree cultivation

Model of compost production from agricultural waste

The integrated production model of cattle - earthworms - grass/corn - livestock and poultry - fish

4F biosecure livestock model(Farm-Food-Feed-Ferlitizer)

"Green cycle" model in dairy farms

Aquaculture model with water circulation technology

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MỘT SỐ MÔ HÌNH TUẦN HOÀN NÔNG THÔN

① Circular Model in Wastewater Treatment

② Circular Model in Organic Household Waste Management

③ Recycling and Utilization Model for Solid Waste

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CIRCULAR MODEL FOR WASTEWATER TREATMENT IN RURAL AREAS

- **The circular wastewater treatment model** is a sustainable approach where wastewater is collected, treated, and reused to minimize resource waste and protect the environment. In rural settings, domestic wastewater and agricultural wastewater can be recycled to supply irrigation water, produce organic fertilizers, and support livestock farming.
- **Examples of applied models in Vietnam**

1. Wastewater treatment model for livestock farming
2. Circular wastewater treatment model in coffee processing
3. Circular wastewater treatment model in aquaculture

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CIRCULAR MODEL FOR ORGANIC HOUSEHOLD WASTE MANAGEMENT

- The circular model for organic waste management involves the collection, treatment, and reuse of organic waste in a sustainable manner. The primary objectives of this model are: (1) Minimizing the amount of waste sent to landfills. (2) Transforming organic waste into valuable resources such as fertilizers and bioenergy. (3) Creating a closed-loop system where treated waste is reused, contributing to environmental protection and resource conservation.
- **Examples of applied models in Vietnam**

1. Composting to produce organic fertilizer
2. Biogas production
3. Processing organic waste into animal feed

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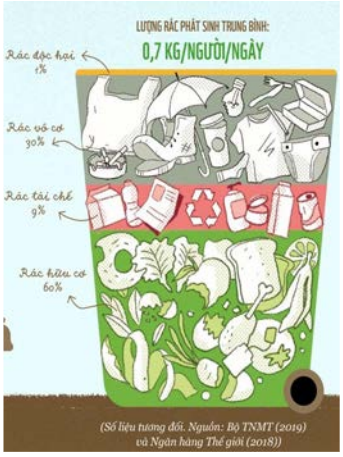

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RECYCLING AND UTILIZATION MODEL FOR SOLID WASTE

- **Recycling solid waste** involves the collection, sorting, and conversion of discarded materials (such as plastic, paper, metal, and glass) into new raw materials or products, contributing to environmental pollution reduction and resource conservation.
- **Examples of applied models in Vietnam:**

1. Recycling of plastic, paper, metal, and glass
2. Development of bioenergy from waste

The Sóc Sơn Waste-to-Energy (WTE)

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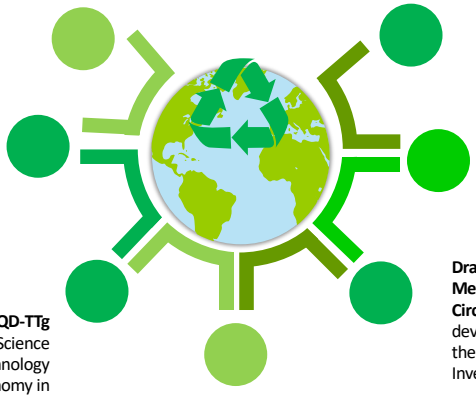
KEY POLICIES FOR CIRCULAR ECONOMY DEVELOPMENT IN VIETNAM

Strategy for Sustainable Agriculture and Rural Development in the 2021-2030 period, with a vision to 2050

Decision No. 687/QD-TTg dated June 7, 2022. This decision approves the Project on Circular Economy Development in Vietnam

Decision No. 540/QD-TTg approving the scheme on Science Development and Application, Technology Transfer to Promote Circular Economy in Agriculture by 2030



Draft Decision on the National Action Plan for Implementing the Circular Economy by 2030: Currently being developed and commented on by the Ministry of Natural Resources and Environment (MONRE).

Draft Decree on the Pilot Mechanism for Developing a Circular Economy: This draft is being developed and commented on by the Ministry of Planning and Investment (MPI).

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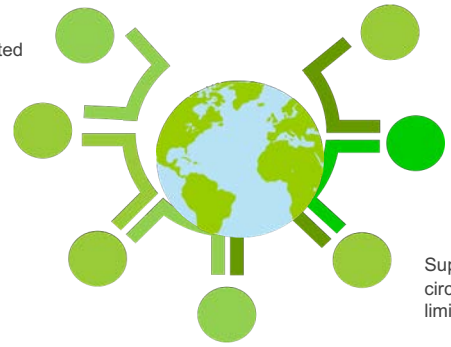
LIMITATIONS IN THE DEVELOPMENT OF CIRCULAR AGRICULTURE AND RURAL SYSTEMS IN VIETNAM

Circular development models remain fragmented and lack a systematic approach

Awareness of circular agriculture and circular economy remains unclear, and the orientation is not yet well-defined.

There are insufficient conditions for implementing and applying technology in recycling and reuse.



The capital required to implement circular models is substantial, especially for circular models in rural areas (such as wastewater reuse systems).

Information on the circular economy remains limited.

Supportive policies for the circular economy remain limited.

Lack of the comprehensive CE model to efficiently manage resources in rural areas

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POTENTIAL FOR DEVELOPING THE CIRCULAR ECONOMY IN AGRICULTURE AND RURAL AREAS

The circular economy is a global trend

Vietnam can learn valuable experiences from pioneering countries.

Vietnam is in the process of improving its socialist-oriented market economy framework.

The transition from a "linear economy" to a "circular economy" contributes to fast and sustainable economic development.

Encouraging and creating mechanisms for the development of the private sector.

The circular economy will present numerous opportunities for private sector investment in its development in the near future.

Việt Nam đã và đang hướng đến cuộc Cách mạng công nghiệp 4.0

thực hiện phát triển KTTH gắn với công nghệ cao, chuyển từ thế giới thực sang thế giới số sẽ là cơ hội lớn nhằm nâng cao hiệu quả tăng trưởng so với cách thức tăng trưởng trước đây

Phát triển KTTH sẽ nhận được sự đồng thuận cao và ủng hộ của xã hội

giải quyết được sự khan hiếm tài nguyên, bảo vệ môi trường, ứng phó với biến đổi khí hậu và mang lại hiệu quả kinh tế cao.

Nông nghiệp, nông thôn có nguồn phế phụ phẩm vô cùng lớn

Nguồn nguyên liệu này cần được xem là đầu vào quan trọng, kéo dài chuỗi giá trị gia tăng trong nông nghiệp

Tỷ lệ thu gom phụ phẩm trồng trọt mới đạt 52,2%, ngành chăn nuôi là 75,1%; lâm nghiệp là 50,2% và thủy sản là 90%, rác hữu cơ chiếm 60%

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CHALLENGES IN DEVELOPING THE CIRCULAR ECONOMY IN AGRICULTURE AND RURAL AREAS IN VIETNAM

01
- Awareness of the circular economy and the necessity of transitioning towards the development of a circular economy model remains limited.

02
- The responsibilities of enterprises, farms, cooperatives, farmers, and citizens.

03
- Human resources/Researchers. Capacity for applying science and technology (S&T).
- Promotion and dissemination of best practices

04
- Recycling activities and the recovery of by-products, waste, and wastewater in agriculture and rural areas remain underdeveloped.

05
- The legal framework and policies for the development of the circular economy model remain incomplete.

06
- Investment in research and development of science and technology for circular economy development remains limited.

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KEY RECOMMENDATIONS

Strengthen Policy Frameworks
Implement comprehensive policies, regulations, and financial support (subsidies, loans) to promote circular agriculture and standardize practices across supply chains..

Enhance Research and Development
Increase funding for R&D, foster innovation through partnerships, and promote knowledge sharing among APEC economies.

Foster Cross-Sector Collaboration
Encourage partnerships between agriculture, waste management, energy, and technology sectors, and involve local communities in circular agriculture projects..

Increase Awareness and Capacity Building
Provide training programs for farmers and policymakers and conduct campaigns to educate consumers on the benefits of sustainable agricultural products.

Promote Technological Solutions
Support the use of advanced technologies (drones, IoT, AI) to optimize resource use and reduce waste, and offer training for farmers..

Support Smallholder Farmers:
Design programs addressing smallholder farmers' needs, providing resources, market access, and support for meeting certification standards.

Encourage International Cooperation:
Engage in regional collaborations, share best practices, and align circular agriculture strategies with global goals like the SDGs and the Paris Agreement..

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Thank you!

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UTS Institute for Sustainable Futures

Applying Circular Economy to Water and Sanitation

Circular Economy Water and Sanitation Workshop: Future Pathways in rural Viet Nam

TS. Naomi Carrard, TS. Đinh Văn Đạo and Ms Georgina Robinson

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Why should we integrate circular economy into the way we think about water and sanitation services?

For WASH, circular economy concepts can drive a focus on efficiency, optimisation, resource recovery and regeneration of nature.

Circular economy practices can directly contribute to achieving multiple **SDGs**

Building climate resilient, inclusive, safely managed water and sanitation services that **align with, and contribute to**, Viet Nam's circular economy and green growth ambitions.

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What is circular economy?

Circular economy is about **systems change** to decouple economic growth from the consumption of finite resources.

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Where to start? Systems change must be driven by principles

To drive transformation, we must define the key principles underpinning our ideal system.

What principles help us think about how to harness circular economy in ways that achieve safe management, inclusion and climate resilience?

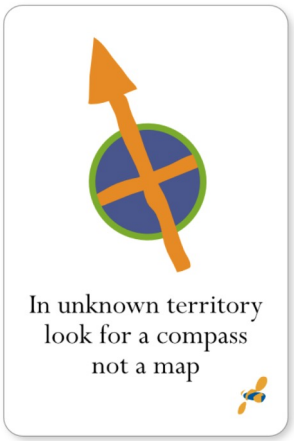

Image: IFF KitBag

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Where to start? Systems change must be driven by principles

Circular economy + Safely managed water and sanitation + Social inclusion + Climate resilience

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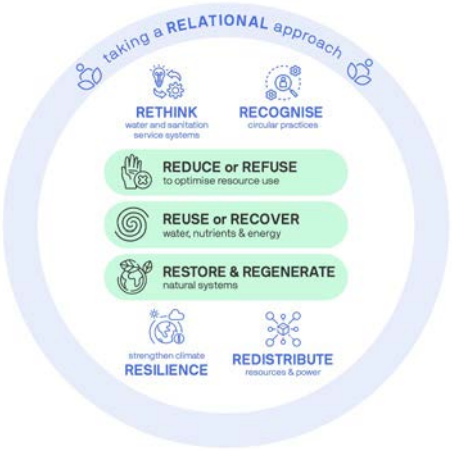
How can we move from principles to practice? 8Rs for circular water and sanitation

- A theory-based 'thinking tool' that everyone can use
- 8 R strategies that reflects the principles
- Supports locally-led, context specific application of circular economy strategies



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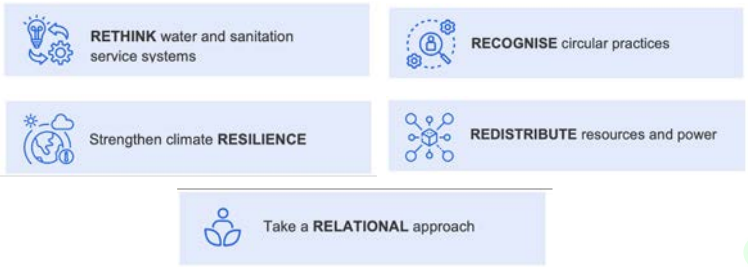
How can we move from principles to practice? The 8Rs framework

Practical strategies

Purpose and process



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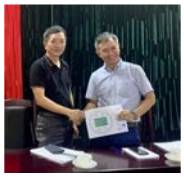
Using the 8Rs framework

What do the 8Rs bring up?

What principles do we need to think about?



- Ideation about locally-relevant circular economy opportunities
- Investigating promising opportunities
- Planning and implementing opportunities
- Evaluating activities against circular economy, inclusion and climate resilience principles

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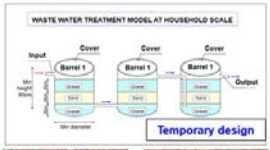
Ha Tinh, Viet Nam
Three-tank system for greywater treatment and reuse at household scale



8Rs

Negative impacts

Overflowing greywater causing pollution in flooding and bad smell in drought time

Positive impacts

Sludge and greywater treated for reusing as fertilizer and watering in gardening

8Rs

Province New Rural Development target 2021-2025

Ha Tinh target 35% of HH greywater treated

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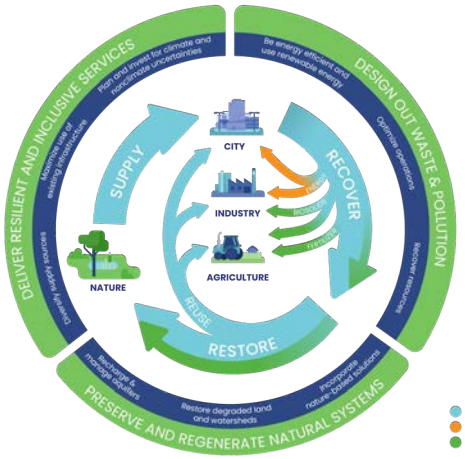
Complementary framework for circular economy water and sanitation – World Bank WICER

Water in Circular Economy and Resilience (WICER)

http://www.worldbank.org/wicer



THE WICER FRAMEWORK

WORLD BANK GROUP

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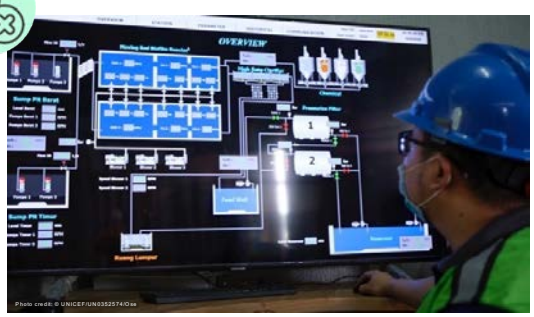
Practical examples of circular solutions in rural areas



Water sensors to detect leakages in piped water system in Indonesia (UNICEF young innovators program).

Quicker response from operators reduces water losses.

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Practical examples of circular solutions in rural areas

Net zero toilet pilot in Soc Trang Province. Partnership between UNICEF and Masterise Group. Powered by solar cells and converts septic tank waste into treated water for irrigation and toilet flushing.

Reduces non-renewable energy use and enables reuse of water.

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Practical examples of circular solutions in rural areas

Regeneration of water catchments in Timor-Leste improved water retention and groundwater recharge through ponds, reservoirs, earth dams and terraces. The initiative (UNICEF, civil society, government) addressed water stress and strengthened resilience to climate change impacts on the water cycle.

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Find out more

UNICEF learning brief

Open access journal article

Ha Tinh knowledge brief

Get in touch

Naomi Carrard
Naomi.Carrard@uts.edu.au

Đinh Văn Đạo
dvdao.thuyloi@gmail.com

Georgina Robinson
Georgina.Robinson@uts.edu.au

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CIRCULAR ECONOMY IN VIETNAM'S RURAL WATER AND SANITATION SECTOR

Institute for Sustainable Futures

APPLICATION OF CIRCULAR ECONOMY FRAMEWORK 8RS IN GREY WASTEWATER TREATMENT MANAGEMENT: CASE STUDY IN HA TINH PROVINCE

Dr. Dinh Van Dao, IWEM
Dr. Naomi Carrard, UTS
Georgina Robinson, UTS
Avni Kumar, UTS

International Water Management Institute

Australian Aid

Water For Women

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CONTENTS

1) Summary of 8Rs Circular Economics framework in Rural WASH management
2) Grey wastewater management in Ha Tinh province
3) Results of 8Rs Circular Economics framework
4) Benefits of 8Rs Circular Economics framework
5) Policy implication

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1. SUMMARY OF 8RS CIRCULAR ECONOMICS FRAMEWORK IN RURAL WASH MANAGEMENT

Why should circular economy be used as a way of thinking about water and sanitation services in Vietnam, specifically in Ha Tinh?

Conclusion 81/KL-TW, June/2024 (Political Bureau)

Prime Minister's Decree on circular economy (2022)

Decree 08/NĐ-CP

Decision no 687/QĐ-TTg

Climate change impacts and frequent natural disaster impacts in Ha Tinh require *innovative thinking* to plan for resilient, inclusive water and sanitation services

Ex: Yagi Typhoon and flooding

Ha Tinh Province has the potential to be a trailblazer in green transformation and new technology appplication

>>> Needing to have the new thinking in planning resilient strategies, ensuring the water and sanitation service and hygiene, social inclution

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Why should circular economy be used as a way of thinking about water and sanitation services in Vietnam, specifically in Ha Tinh?

General direction	**Design/ Planning**	→ **Production**	→ **Consumption**	→ **Service**
Province people committee	Establishment of development strategies, plans, projections, programs, project);	⟷	Management, reuse and recycle of waste	
Production and business agencies	**Setting up projection/ plan**	→ **Designing products and goods**	→ **Production**	→ **Distribution**

Article 142, Law on environmental protection: **CIRCULAR ECONOMICS**

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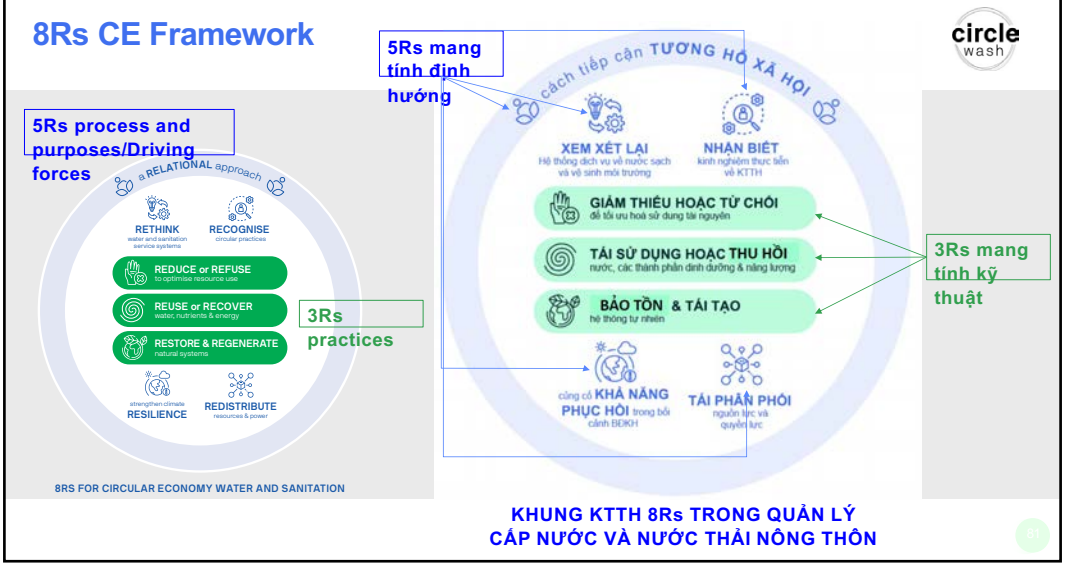
8Rs CE Framework



KHUNG KTTH 8Rs TRONG QUẢN LÝ CẤP NƯỚC VÀ NƯỚC THẢI NÔNG THÔN

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Objectives of case study in Ha Tinh

Case study topic: **Greywater reuse at household scale: optimising current investments**

8Rs CE Framework

To considering the optimization ability in collection, treatment and reuse of grey wastewater treated from households scale wastewater treatment systesm.

Current system:

Good policy…but implementation challenges and benefits not fully realized

Optimized system:

Greywater treatment systems functional, resilient and inclusive

Treated water is reused in gardens

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2. GREY WASTEWATER MANAGEMENT IN HA TINH PROVINCE

Contexts of Ha Tinh province

Climate change:

+ High frequency of flooding storms and Drought
+ Water scarcity issues

Rural social economics:

+ High poor rate,
+ Low infra-structure,
+ Free discharging waste water to drainage systems (polluted);

Directives:

+ Green transformation with CE as the central solutions
+ HH" Wastewater Treatment: (35%/ Province NRD' Plan; 40% National standard)

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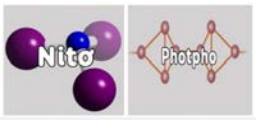
Contexts of Ha Tinh province

Rural population: 1,163 mil. = 108.322 m³/day-night of grey wastewater
(as JICA research: 70% x 133 liter/person/day-night).

Rural family scale:
- 2-4 living people (elders and children);
- People gathering in weekend and festival.

Grey water discharging features:
- Raw feed and food preparation (high water volume used)
- Traditional bathing and manual washing
- Bathing and washing after field works
- Family reunion
- Elder and children (impossibility of O&M)
- Overwater using habits
- Different land areas and soil components …..



Recover/Reuse

BE TREATED

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Contexts of Ha Tinh province

WASTE IN HA TINH PROVINCE

NƯỚC THẢI Wastewater

- Nước thải ĐEN BLACK → Septic tanks → Not yet collected and treated for reuse
- Nước thải XÁM GREY → Household scale waste water treament → Not yet collected and treated for reuse

RÁC THẢI Waste

- HỮU CƠ DỄ PHÂN HỦY Organic waste → Collected and reused on site as the organic fertilizers → Almost of 100% reused on site at household → GOOD
- KHÓ PHÂN HỦY Solid waste
  - Rác thải RẮN Solid waste → Separated. Collected and central treatment
  - Rác thải NHỰA Plastic waste → Separated, collected for reuse purposes

Wastewater amount reduced ~70%, from 45 ton to 15 ton/ month → GOOD

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Implementation of grey wastewater treatment management

LINEAR ECONOMICS FRAME

Issuing legal framework

Time	Documents	Contents
16/12/2020	**Decision 2114/QĐ-TTg:** approval of Ha Tinh NRD plan (2021 – 2025) (national level)	35% of HH waste water treated
16/12/2021	**Resolution 44/2021/NQ-HĐND:** supportive regulations and mechanism	For the poor's
22/02/2022	**Document 536/STNMT-MT:** Temporary design of onsite systems for individual HHs	Simple guidance on technical design
22/02/2022	**Decision 263/QĐ-TTg**: Approval of National NRD (2021-2025)	MARD guiding the onsite waste water treatment
02/08/2022	**Decision 925/QĐ-TTg**: Approval of environmental protection… in NRD program (2021-2025)	CE as the central solution
11/11/2022	**Resolution 78/2022/NQ-HĐND:** supportive regulation and mechanism from NRD source	For normal HHs
27/12/2023	**Document 1252/VPĐP-NV&MT:** temporary guidance on onsite systems construction	Definition, technical design and O&M guidance

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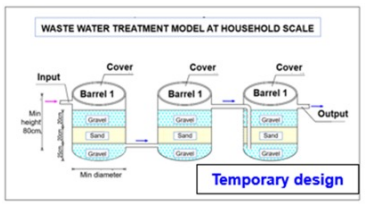
The installation of onsite three-tank grey water treatment system has a lot of potential

THREE-TANK SYSTESM

Provincial National Target Program of NRD2021-2025

35% rural wastewater treated



Practical implementation

Installed

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Arrangement for construction of the systems in commune level

GOOD POINT

LINEAR ECONOMICS FRAME

Contents	Thach Ha district	Cam Xuyen district
Management apparatus	Commune NRD Board	Commune NRD Board
Communication	Chaired by Women Union	Chaired by Women Union
Participation of HH	Register and committed by HH	HH registers and self selects construction ways (self /rent/cost contribution)
Construction and installation	- Veteran/farmer organizations - Renting suppliers construct and install	- Village NRD board and mass organizations, CPC staff - Renting suppliers to construct and install
Supportive mechanism	- Supporting cost for the poor's and vulnerable HHs by province policies and normal HH by NRD fund	- Supporting cost for the poor and policy HHs. - From socialization sources (NRD fund contributed by HH).
Monitoring	Veteran/farmer organizations	Village NRD board and people; and supported by Commune NRD board
O&M/O&M Monitoring	Sector and mass organizations of village (1 time a month)	Village NRD board; and mass organization (1-2 time a 2 weeks)…

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Amount of the onsite three-tank systems constructed - Up to 30/3/2024

LINEAR ECONOMICS FRAME

No	Places	Number of HH installed the onsite systems (HH)	Total of HH (HH)	Rate of HH constructed the onsite three tank systems (%)				
				Rolution-44	Source of NRD/ Mobilization	Min	Max	Average
I	**Thạch Hà Dist.**	**13.258**	**38.744**	**1,22**	**32,79**	**11,82**	**47,17**	**34,01**
1	Việt Tiến Com.	1.193	2.697	1,85	42,38			44,23
2	Thạch Liên Com.	575	1.353	6,73	35,77			42,50
II	**Cẩm Xuyên Dist.**	**11.453**	**44.050**	**2,35**	**22,93**	**5,29**	**49,11**	**25,28**
1	Cẩm Duệ Com.	961	1.957	6,54	42,57			49,11
2	Cẩm Quan Com.	772	2.342	1,75	31,21			32,96
III	**Hà Tĩnh Pro.**	**93.602**	**306.501**	**1,77**	**28,37**			**30,14**

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LINEAR ECONOMICS FRAME

Cost estimation for construction, installation- Upto 30/3/2024

TT	Location	Number of HH installed the onsite systems (HH)	Total of HH (hộ)	Cost used (Tr. đồng)		
				Rolution-44	Source of NRD/ Mobilization	Total
I	**Thạch Hà Dist.**	**13.258**	**38.744**	**474**	**15.340**	**15.814**
1	Việt Tiến Com.	1.193	2.697	50	1.382	1.432
2	Thạch Liên Com.	575	1.353	91	599	690
II	**Cẩm Xuyên Dist.**	**11.453**	**44.050**	**1.037**	**12.329**	**13.366**
1	Cẩm Duệ Com.	961	1.957	128	1.025	1.153
2	Cẩm Quan Com.	772	2.342	41	885	926
	Hà Tĩnh Pro.	**93.602**	**306.501**	**5.440**	**105.417**	**110.857**

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3. RESULTS APPLYING 8Rs CE FRAMEWORK: in Hà Tĩnh

Case study topic: **Greywater reuse at household scale: optimising current investments**

8Rs CE FRAMEWORK

To considering the optimization ability in collection, treatment and reuse of grey wastewater treated from households scale wastewater treatment systesm.

Current system:

Good policy…but implementation challenges and benefits not fully realized

Optimized system:

Greywater treatment systems functional, resilient and inclusive

Treated water is reused in gardens

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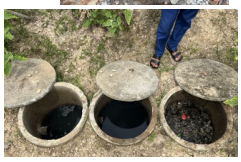
3a. RESULTS OF PROGCESS AND PURPOSE 5RS APPLICATION

RETHINKING
Service systems

(1) Improving technical design and trials of new design
(2) Replaced by centralized systems.
(3) Considering O&M management
(4) Finanical cost being suitable with the payment ability but they dont work efficiently
(5) Reviewing the synchronous characteristics of the guidances between national and province the guidances.
(6) Perfecting the policies toward service orientation and relevant regulation



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Temporary guidance on technical design of onsite three tank systems

Greywater Collection → Sand, fat accumulation tanks → Chemical/biological or ecosystems treatment systems → Reuse of grey water

From kitchen, bath room, washing and cleaning floor....

Tanks of sand filter or combining with zeolite absorb

Treating by chloramin A, lime clorua,…bio-cropping land/or ponds

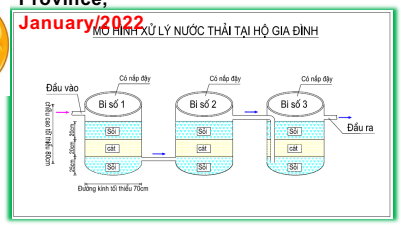
(other purposes like gardening, cleaning yard…)

Criteria	Household scale
(Decision 1252/VPDP-NV&MT: Temporary guidance)	
Geywater amount scale	1-3 m3/day
Characteristics water	Nước thải sinh hoạt
Areas requeste, Landscape request	Not limitted but should hav… the garden and pond
O&M ability and cost	Households, limitation of O&M cost

By Ministry, December/2023

Not be considered

Province, January/2022



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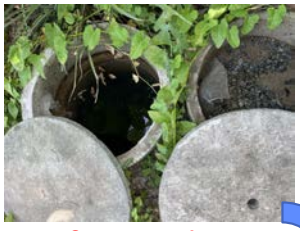

Overflow

Stagnant and not filtered

Hard to maintain and clean

After maintain (cleaning)

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Results of progcess and purpose 5rs application

circle wash

Setting up more net system to prevent and collect rubbish and waste food, feed.

RECOGNISE circular practices

(1) Not circularity/flowing

(2) Lack of the treating stages.

(3) Not friendly with HHs customs and ability in O&M

(4) Success of directives and supportive policies

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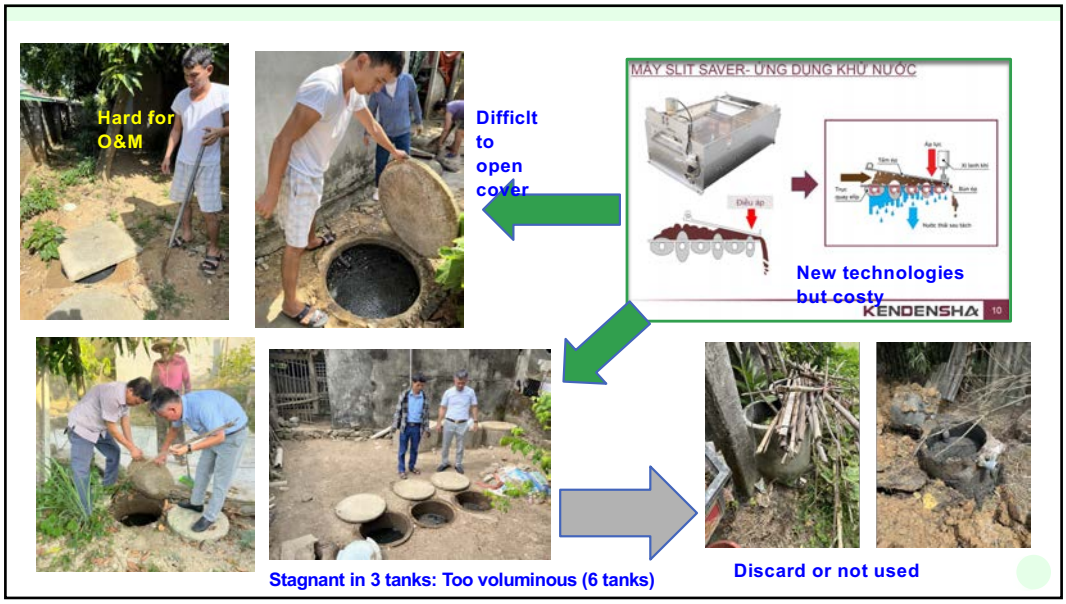

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Results of progcess and purpose 5rs application

circle wash

strengthen climate **RESILIENCE**

(1) Limitation of overflow or discharging grey wastewater to community environment

(3) Wastewater collected for gardening

(4) Taking use of nutition in wastewater for cropping fruit trees.

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Results of progcess and purpose 5rs application

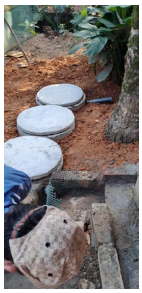
REDISTRIBUTE resources and power

(1) Good provincial supportive policies for vulnerable people

(2) Mobilization of all social sectors and political systems

(3) Setting up the management models from province to village levels and people.

(4) Confirming clearly role of women unions



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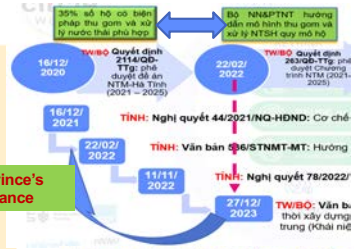
Results of progcess and purpose 5rs application

Taking a **RELATIONAL** Approach

(1) Leading in solving the challenges as CE types of achieving the environment criteria

(2) Setting up a good participatory M&E (lack of specific feedback channel/mechanism).

(3) Involvement of community stakeholders at all authority levels.



circle

National guidance

Arrangement for construction of the systems in commune level

Contents	Thach Ha district	Cam
Management apparatus	Commune NRD Board	Commune NRD Board
Communication	Chaired by Women Union	Chaired by Women Union
Participation of HH	Register and committed by HH	HH registers and self selec (self -rent/cost contribution
Construction and installation	- Veteran/farmer organizations - Renting suppliers construct and install	- Village NRD board and m - Renting suppliers to cons
Supportive mechanism	- Supporting cost for the poor's and vulnerable HHs by province policies and normal HH by NRD fund	- Supporting cost for the po - From socialization source
Cost contribution	= 50 USD/System (8-10 USD – for installation labor and 40 USD by district).	= 50-52 USD systems (by I and 50% construction cost
Monitoring	Veteran/farmer organizations	Village NRD board and pe NRD board
O&M/O&M Monitoring	Sector and mass organizations of village (1 time a month)	Village NRD board; and mo weeks)...

LINEAR ECONOMICS FRAME

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3a. RESULTS OF PRACTICAL 3Rs APPLICATION

REDUCE of REFUSE

to optimise resource use

(1) **Limitation of water using from digging & grilling wells** replaced by piped waster.
(2) **Replacing** by **regulated sýtems**
(3) **Tendency refuse or limiting** installation of wrong or outdated onsite systems.
(3) **Separating black and greywater** for reuse of grey water.
(4) **Refusing use of materials** which not efficiently work.
(6) **Refusing use of greywater treated not satisfying the standards** for gardening vegitables and spices.
(7) **Reducing discharing directly greywater** to community water grainage canals.

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Results of practical 3Rs application

REUSE or RECOVER

water, nutrients & energy

(1) **Reuse the sludge as fertilizer for ftuit tree** (fermented with lime and phosphorus);
(2) **Reuse greywaste water** for moituring gardensoil in drought time
(3) **Taking advantage of endigenous experience and knowledge**…
(4) **Discharging directly to garden in sand-soil areas** which could natural absorb the greywater

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Results of practical 3Rs application

RESTORE and REGENERATE natural systems

(1) **Constructing the gas tanks and rubbish preventive nets**

(2) **Recovering and improving natural-based watewater treatment, water drainage systems** in village scale.

(3) **Setting up the community drainage systems of villages**

(4) **Obtimizing the central and medium-scale systems for grey water collection and treatment** (not efficience).




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4. BENEFITS WHEN APPLYING 8RS FRAMEWORK

Environment

Locations	Total of HH setting up onsite 3-tank systems	Containing wastewater/ 1 system (m3)	Total of watsewater needing to treated regularly (m3)
	13.258	**0,327**	**4.334,7**
Thạch Hà Dist	1.193	0,327	390,1
Việt Tiến Com.	575	0,327	188,0
Thạch Liên Com.	**11.453**	**0,427**	**4.890,9**
Cẩm Xuyên dist.	961	0,427	410,4
Cẩm Duệ Com.	772	0,427	329,7
Cẩm Quan Com.	**93.602**	**0,375**	**35.384,1**


Reduced/limited greywater collected but/stagnanted in **Home garden/ Needing to be treated**: **35.384 m3**


Help preventing potential risk of environment




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Benefits when applying 8Rs Framework

Funding saved

Locations	Total of HH setting up onsite 3-tank systems	Cost used (Mill. VND)		
		By province resolution-44	NRD/ people mobilized	Total
Thạch Hà Dist	**13.258**	**474**	**15.340**	**15.814**
Việt Tiến Com.	1.193	50	1.382	1.432
Thạch Liên Com.	575	91	599	690
Cẩm Xuyên dist.	**11.453**	**1.037**	**12.329**	**13.366**
Cẩm Duệ Com.	961	128	1.025	1.153
Cẩm Quan Com.	772	41	885	926
Toàn tỉnh prov.	**93.602**	**5.440**	**105.417**	**110.857**

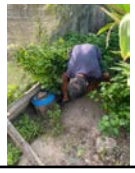
Cost estimated: 1,2-1,35 Mill. VND/system
(production: 1,0 Mill., install labour: 0,25-0,35 mill.)

Could be saved cost: 110,8 bill.VND

Could be saved the social labour

(construction & installation)

(Maintenance)



(Operation, replacing filter materials)

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Benefits when applying 8Rs Framework

Climate resilience

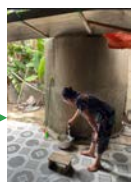
Location	Total of HH setting up onsite 3-tank systems
Thạch Hà Dist	**13.258**
Việt Tiến Com.	1.193
Thạch Liên Com.	575
Cẩm Xuyên dist.	**11.453**
Cẩm Duệ Com.	961
Cẩm Quan Com.	772
Toàn tỉnh prov.	**94.275**

Collected greywater & limited directly discharge to natural systems

Reuse (watering garden)

Reuse sludge (fertilizers)

Saving water use, discarding old water sources, replaced by saving facilities



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5. POLICIES IMPLICATION

- Establishing regulations on construction of the systems & mechanisms, policies, plans for collection, treatment and reuse of grey wastewater based on CE principles linked to 8Rs to optimize environmental, social and economic benefits; climate change resilience, water saving use and social inclusion.
- Improving physical infrastructure & management model on development of centralized wastewater treatment systems toward service orientations as a type of public service product (Decree 32/2019/ND-CP), in which focusing on:

(1) Redesign, technical improvement with participation from multiple sectors
(2) MANAGEMENT MODEL oriented by service mechanism
(3) Improving **REPORTING-FEEDBACK MECHANISM**
(4) INFRASTRUCTURE UPGRADE
(5) TAKE ADVANTAGE of traditional diamentions
(6) DEVELOPMENT OF CE INDICATORS & CRITERIA

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Thanks for your attention!

Cảm ơn sự quan tâm của quý vị!

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UTS Institute for Sustainable Futures

Questions and comments

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UTS Institute for Sustainable Futures

circle wash

Part II: Interactive session – pathways for circular economy water and sanitation in rural Viet Nam

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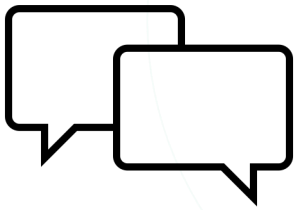
Warm up activity



In groups of 2-3, share something you found interesting from the morning's presentations

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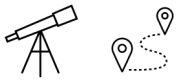
Why a future-oriented activity?

Imagining alternatives

What can a future sustainable, thriving society look and feel like?

Exploring pathways

What sequence of actions might take us towards our desirable future?



There are many possible scenarios

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The future we don't want

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The future we want

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Activity

Details

- Develop a vision for a model rural community where circular economy principles are used for water and sanitation management
- Think about 10 years from now

Process

- Groups of 2-3
- Develop your vision *(15 mins then share)*
- Identify activities that will help achieve the vision *(15 mins then share)*

Your discussions will inform us as we develop a policy briefing note → to share with policy makers for New Rural Development, Provincial Green Growth Planning, draft Decree on Rural Water Supply, and draft Law on Water Supply and Sanitation…

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Scenario: a model circular community in rural Viet Nam

Activity instructions:

Develop a vision for a **model circular community** in rural Viet Nam, where circular economy principles are used for **water and sanitation** management.

Think about a time 10 years from now.

Principles of eliminating waste and pollution, circulating products and materials, and regenerating nature are being applied and have led to a community with **climate-resilient, safely managed and inclusive water and sanitation services.**

On the next page, develop your vision of a **model circular community** in rural Viet Nam.

You might consider:

- ❖ What does circular water and sanitation look like in this community?
- ❖ What activities take place?
- ❖ Who are the key individuals, groups, or institutions involved?
- ❖ What institutional connections are supporting continued success?

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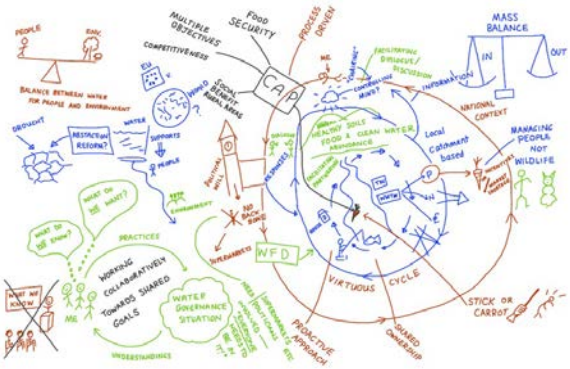
Draw your ideas here… you can sketch, use diagrams, use words (be creative!)



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Draw your ideas here… you can sketch, use diagrams, use words (be creative!)

DAO's EXAMPLE

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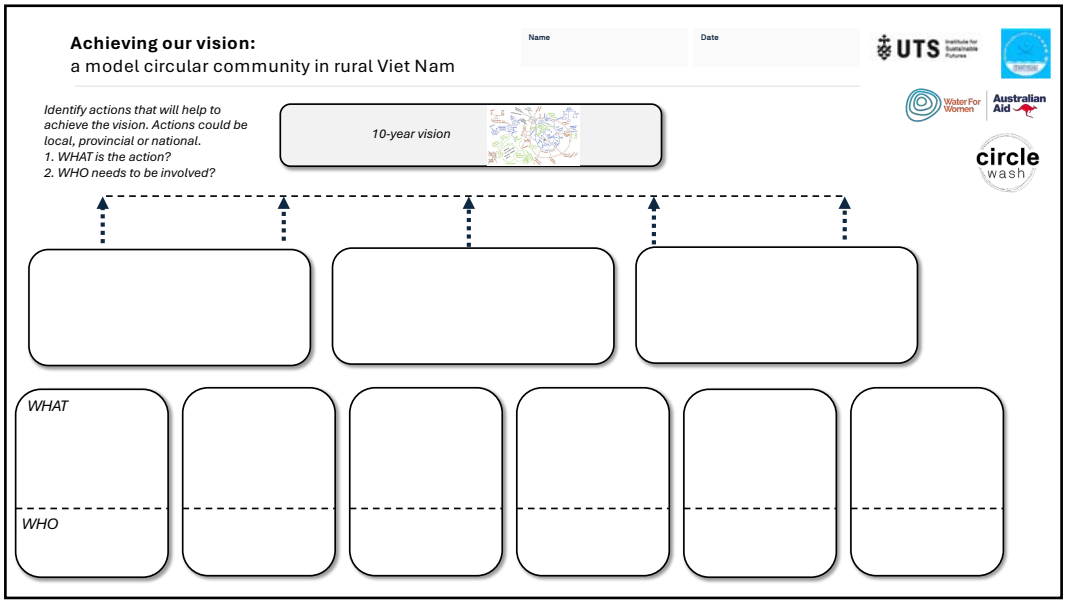
Achieving our vision:
a model circular community in rural Viet Nam
Name
Date
Identify actions that will help to achieve the vision. Actions could be local, provincial or national.
1. WHAT is the action?
2. WHO needs to be involved?
10-year vision
WHAT
WHO

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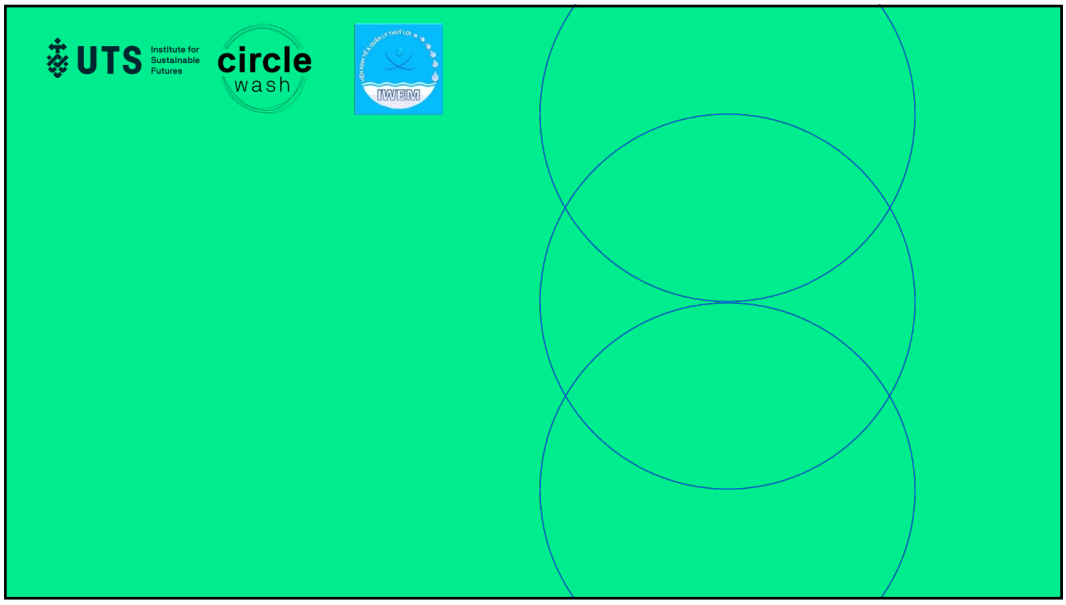

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