VCCI Uniting Entrepreneurs

vbcsd

idh the sustainable trade initiative

in partnership with GPRO Consulting

and the support of Nestlé Good food, Good life

REPORT

ON CURRENT SITUATION AND POTENTIALS OF IMPLEMENTING CIRCULAR ECONOMY IN FAST-MOVING CONSUMER GOODS (FMCG) INDUSTRY IN VIETNAM

FOOD AND NON-ALCOHOLIC BEVERAGES SECTOR

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ABBREVIATIONS

EPR	Circular economy
FDI	Extended producer responsibility
FMCG	Foreign direct investment
KTTC	Fast-moving consumer goods
KTTH	Linear economy
KTTT	Research and development
R&D	Recycling Economy
UNIDO	United Nations Industrial Development Organization
VBSCD	Vietnam Business Council for Sustainable Development
VCCI	Vietnam Chamber of Commerce and Industry

FOREWORD

In recent years, the world has witnessed a trend of shifting from the traditional linear economic model to the circular economic model (CE). Countries are committed to implement the CE through the development of laws, legal frameworks and roadmaps for the CE application. At the company's level, implementing circular solutions involves rethinking products and services based on principles related to durability, reproducibility, reuse, repair, replacement, upgrade, refurbish and reduce the use of materials. By applying the principles of CE, companies gain better understanding about the relationship between markets, customers and natural resources. It will help reduce waste, increase productivity, use resources more efficiently and decouple growth from mass consumption of natural resources.

Since 2016, Vietnam Business Council for Sustainable Development (VBCSD) of Vietnam Chamber of Commerce and Industry (VCCI) has been working with relevant stakeholders, development partners and companies to introduce the CE concept in Vietnam. Over the last 5 years, VCCI-VBCSD has been making significant contributions in supporting and promoting the application of CE among Vietnamese business community through new initiatives and projects; communication activities; research; international cooperation and especially policy consultantcy.

In 2021 within the annual working program, VCCI-VBCSD has conducted the survey on the current situation and the potentials of implementing the circular economy in the fast-moving consumer goods (FMCG) industry in Vietnam with focus on food and non-alcoholic beverages sector. This study is considered as the first research on application of CE model in the FMCG food and beverages industry in Vietnam. The main challenge met during the implementation of the study was the Covid-19 situation that delayed the schedules of firms' survey activities and decrease the availability of interviewees. Existing limitations did not affect the quality of findings and conclusion. The research was completed on time, VCCI-VBCSD does hopes that this report will provide with a vision of the CE application in FMCG industry and to recommend appropriate steps for the companies in the FMCG industry to drive the transition to a circular economy and companies to success. In addition, the management authorities, consulting units and policy makers will also find possible application in in supporting the CE application in practice.

VCCI-VBCSD would like to express sincere thanks to Nestlé Vietnam Co., Ltd and the Stichting IDH Sustainable Trade Initiative in Vietnam (IDH Vietnam) for accompanying and supporting throughout the process of setting up plan, conducting survey and producing this report. We greatly appreciate the substantive participation of EPRO Consulting Joint Stock Company in conducting the study with us during the Covid-19 pandemic.

INTRODUCTION ABOUT VIETNAM BUSINESS COUNCIL FOR SUSTAINABLE DEVELOPMENT

Established in 2010 under the approval of the Government, Vietnam Business Council for Sustainable Development (VBCSD) is a business-led organization that brings together leading enterprises and prestigious social organizations in Vietnam pioneering on implementing sustainable development (SD), acts as a "bridge" to strengthen a close coordination and dialogue among the business community, the Government and other social partners for promoting sustainable development.

VBCSD is also one of 69 partners in the Global Network of World Business Council for Sustainable Development (WBCSD), as well as in partnering with the World Economic Forum (WEF) and other organizations under United Nations, the World Bank and other bilateral organizations.

Through five core activities to connect enterprises including communication & raising awareness, training, research, international cooperation and partnerships, VBCSD-VCCI gradually bringing sustainable development into the heart of long-term strategy for manufacturing and entrepreneurship, becoming the "breath" of enterprises. Outstanding programs and initiatives that is currently being carried out by VBCSD can be seen as the followings:

- ***The Annual Program on Benchmarking and Ranking Sustainable Companies in Vietnam***: The Programme has been implemented since 2016 under the direction of the Government, aiming to honor and recognize sustainable companies, and strongly encourages the business community in Vietnam to implement SD. The Corporate Sustainability Index (CSI), basis for the evaluation of sustainable development level of candidate companies, is acting as an effective tool to measure health of enterprises in three areas: economic, social and environment. The Index helps enterprises early detect risks and new business opportunities, through which could facilitate the management of enterprises more effectively in the direction of sustainable development. In particular, VBCSD not only promotes application of CSI for each enterprise but also targets industries, such as building separated Indices for seafood processing and leather, footwear and handbags industries.

- ***Promoting the application of Sustainability Reporting for businesses:*** In recent years, with a pioneering role in orientation and supporting enterprises in the area of sustainable development, VCCI-VBCSD has advocated the Government on the need for an appropriate legal framework to encourage and require enterprises to make annual sustainability reports on their production and business processes (in following to common practice in the world). The CSI has also proven its feasibility and superiority when applied to prepare a business sustainability report.

- ***Promoting dialogue on SD:*** VBCSD also acts as a bridge to help the Government better understanding businesses through dialogue activities and policy advocacy on sustainable development. VBCSD has made a sharp impression through Vietnam Corporate Sustainability Forum since 2014, and then scaling it up to the form of National Conference on Sustainable Development in the years of 2018 and 2019, pushing sustainable development become the voice throughout political, social and business systems. Many important policies, serving as a hinge for stronger implementation of business sustainable development activities have been issued, such as Resolution No. 09 – now changed to Resolution 02 - on improving the business environment, raising national competitiveness, Directive No. 13/CT-TTg on Sustainable Development dated May 20, 2019, Decision No. 1362/QD-TTg on Approval of sustainable development plans for private enterprise sector until 2025, vision to 2030 dated October 11, 2019, or Resolution No. 136/NQ-CP on Sustainable Development dated September 25, 2020.

- ***Establishing the Press Network on Sustainable Development:*** Through the network, VBCSD expects to bring enthusiastic and committed reporters and journalists together, accompanying with the efforts to promote sustainable development in the national scale.

- ***Promoting public-private partnerships in the field of SD:*** In collaboration with VBCSD members and prestigious domestic and international partners, VBCSD-VCCI has been implementing a series of initiatives and projects to strengthen and maximize benefits of public-private partnership for promoting business sustainable development, such as "Program on supporting SMEs towards sustainable business", "Project on Promoting Sustainable Energy through the development of sectorial Energy Vision for corporates and 'Green' Investment Guidelines for Financial Institutions in Vietnam", "Action Program to Promote Implementation of Business Integrity"; "Co-chair of the Partnering for Green Growth and the Global Goals 2030 (P4G) in Vietnam"; etc

In particular, in January 2018, VBCSD-VCCI officially launched the "Initiative to support enterprises on implementing circular economy models in Vietnam". This is an effort to pioneer in enhancing the competitiveness of the private sector, further promoting the participation of businesses to build a zero-emissions economy.

For more information about VBCSD's activities, please visit http://vbcsd.vn/

Hội viên Chính thức / Official Members

Hội viên Liên kết / Associate Members

SUMMARY

The circular economy (CE) has become an inevitable trend, happening more and more strongly in many countries around the world, including Vietnam. The transition from the traditional economy to the CE is considered an effective solution to maintain economic development while minimize adverse impacts on the environment.

In order to promote the implementation and application of the CE model in Vietnam, VCCI-VBCSD in colaboration of EPRO Consulting Joint Stock Company conducted a survey study on current situation, and the potential of implementing circular economy in fast-moving consumer goods (FMCG) industry in Vietnam with focus on food and non-alcoholic beverages.

The survey was conducted from May to September 2021 with 3 main objectives including: (1) To review the legal framework related to the implementation of the CE in the food and non-alcoholic beverages sector; (2) To assess the current situation and potential of applying the CE and (3) To develop an initial database of enterprises in food and non-alcoholic beverages sector to support the transition and implementation of the CE.

The study was carried out by the method of desk study, in-depth interviews, questionnaire survey with 100 medium and large business in the food and non-alcoholic beverages sector of 9 product groups including: (1) Meat, fish, and aquatic products; (2) Vegetables and fruits; (3) Milk and dairy products; (4) Non-alcoholic beverages; (5) Tea, coffee; (6) Confectionery, instant food; (7) Oil, rice, sugar, salt, flour; (8) Farming, supplying raw materials and (9) Food packaging.

Based on the Circulytics method of the Ellen MacArthur Foundation, the research team has developed 42 indicators with 11 criteria belonging to 2 groups: Group 1 - Preparation for transition and Group 2 - CE implementation to assess the readiness to transform to CE model.

The current situation and potential for implementation of the transition to the CE model is assessed on a 100-point scale with 5 levels of readiness: (A) Champion (77.78-100 points); (B) Advanced (55.56-77.78 points); (C) Intermediate (33.34-55.56 points); (D) Beginner/Preliminary (11.12-33.33 points) and (E) Not started (0-11.11 points)

The research results allow drawing some conclusions about the application of the CE model to the group of industries producing and processing food and non-alcoholic beverages as follows:

- **Overall,** 90% of Vietnam's FMCG enterprises have taken actions in transition to the CE model. Currently, only 10% of enterprises have not started the transition process or have not had a clear transition strategy to the CE model. However, most of the enterprises have a low level of transition with 82% of enterprises at a preliminary and intermediate level of transition. The percentage of enterprises with advanced transition reached 8%. The evaluation results are positive and similar among all 9 product sub-groups, but the rate of CE application is highest in the group of enterprises producing non-alcoholic beverages. The willingness of transition and applying the CE model has been paid more attention in foreign invested businesses and in large enterprises whose products are mainly exported to foreign markets, especially markets that require strict compliance with corporate social responsibility for the environment.

- **Regarding the two groups of criteria for evaluating the transition to the CE model,** the surveyed enterprises showed that most of the companies paid more interest and devoted more resources to the CE implementation activities compared to the preparation for transition. 73% of surveyed enterprises have prepared for the transition, while 98% of enterprises carried out CE activities. Although preparation activities are not their main concern, the percentage of enterprises with advanced and leading preparation level is 17%, which is 1.7 times higher than those having advanced CE implementation (10%). This shows that, for enterprises who have a depth understanding and interest in the transition to the CE model, preparation is always important.

- **11 out of 11 evaluation criteria achieved relatively positive results** (higher than level D-), of which 5 out of 11 criteria achieved intermediate level (Level C). Among the assessment criteria, the criterion of cooperation and communication with stakeholders has the lowest score (14.43 points, level D-), reflecting the unwillingness to share and cooperate with stakeholders in the transition to the CE model.

- **Using raw materials, infrastructure and packaging** are the 3 top priorities of FMCG enterprises when shifting to the CE model. The survey results show relatively big difference in the level of transition to CE model between the activities: The leading criterion is the use of raw materials, products and wastes through the recovery and recycling and reuse activities (38.81 points), followed by equipment use (37.53 points, level C-). The transformation activities in the use of packaging (31.30 points), use of water (25.25 points) and use of energy (17.73 points) are in their infancy (D and D-).

- **Transition in energy use** has not been prioritized properly. Currently, only 38% of enterprises use energy economically and efficiently and 16% of enterprises use renewable energy to meet part of their energy demand in production process. This activity has not even been observed in the tea and coffee product group, which has the potential to participate strongly in the global value chain. This is one among the bottlenecks of the transition process.

- **Cooperation, communication** between business and suppliers, customers, policy makers should be promoted. Up to 73% of enterprises participating in the survey have not had any cooperation relationship in implementing the CE.

In addition to the actual transition to the CE model, the research also points out the barriers preventing the companies in transition to the CE model, including: (1) The pressure for transition is not strong enough to create a change; (2) The incentive mechanism to promote transition to the CE model still has many limitations and inadequacies; (3) Lack of information, succesful shown case of the CE enabling the CE transition in Vietnam.

Based on the current situation, prospects and barriers for the application of the CE in the FMCG industry in Vietnam, the research offered several recommendations to promote the transition to the CE model including: (1) Better incentive mechanism for the transition to the CE model; (2) Establishing effective relationships with multinational enterprises and foreign partners to learn and transfer technology on CE; (3) Building successful CE models as a basis for scaling up and (4) Using multi-stakeholders approach to promote the application of the CE model.

PART ONE

ABOUT THE RESEARCH

1 Background

After 35 years of renovation, the Vietnam economy has grown rapidly and Vietnam becomes a raising star in the region and the world with many remarkable achievements. The economy not only grows by scale but the quality of growth is also improved, the people living standards is enhanced. However, the country is facing many challenges in terms of resource depletion, pollution, environmental degradation and climate change. Given the circumstance, it is necessary to change the economic development approach by transition to a new economic model – the Circular Economy (CE). CE is said a more sustainable development model, contributing to overcome the shortcomings of the current economic model, especially in the context of Covid-19 pandemic. It is clear that since the first case of Covid-19 pandemic was recorded in Vietnam from the beginning of 2020 until now, Vietnamese enterprises have been adversely affected due to disrupted logistics activities and increased business costs. Many enterprises had to temporarily close. The advantages of the CE model are demonstrated clearly through the fact that the economic and environmental benefits are guaranteed without trade-off among the two.

Sweden is one of the bright spots in the development of the CE. In this country, the Government has changed the perception of people and enterprises along with building a clear legal system between economic development and environmental protection by high taxes on wastes, at the same time, there are preferential policies for the use of renewable energy from hydroelectricity and biofuels, etc. Thanks to that, Sweden has recycled 53% of plastic materials consumed in social life, 50% of waste in the construction industry, recycle 99% of waste into electrical energy. Sweden has developed its CE philosophy to new heights with the motto "changing the mindset of consumption will lead to a change of thinking about production"

In Asia, Singapore has become an example of promoting CE for a very long time. As an island nation with very limited natural resources, since 1980, the country has developed waste-to-energy technology with the construction of 4 factories to treat 90% of the country's waste with a capacity of up to 1,000 tons of waste/day. With 10% of the remaining waste, Singapore has creatively turned it into a Semakau garbage island - the world's first man-made "garbage island". These actions of the Government of Singapore are aimed at a society without waste, waste

becomes a resource, following one of the leading principles of the CE (Truong Thi My Nhan, 2019).

From the example in Sweden, it can be seen that even though the CE model is superior, in order to implement it effectively, a promotion tool is needed. That are the legal framework, the appropriate policy framework and a clear implementation program. Vietnam has included the content of implementing CE as one of the Government's policies on environmental protection and is regulated in Article 142 on CE of the Law on Environmental Protection 2020. Within the framework of the Law on Environmental Protection, the responsibilities of organizations and individuals producing, importing and exporting products and packages in the collection, recycling and treatment are specified in Article 54 and Article 55. Specific guidelines and regulations are currently being developed. For the CE to come into practice and be effective, Vietnam needs to assess the current status, capacity and readiness of businesses in transforming to the CE model, and comprehensively review the problems that have been and are the barriers that make it difficult for enterprises to transform to the CE model, thereby proposing appropriate and timely solutions.

The group of food processing and non-alcoholic beverages is the group that is greatly affected by Articles 54 and 55 of the Law on Environmental Protection in 2020 and is also the group responsible for implementing the provisions of Article 142 due to the high demand of packaging. This is also the reason for surveying and reporting on the current situation, assessing the potential of implementing circular economy of fast-moving consumer goods (FMCG) industry in Vietnam, which is conducted with two product groups of food processing industry and non-alcoholic beverage production.

2 Objectives

The main objectives of the survey included:

- To review legal framework related to the implementation of CE in the food and non-alcoholic beverages sector;
- To assess current situation and potential of implementing CE; and
- To develop an initial database of enterprises in in food and non-alcoholic beverages sector to support the transition and implementation of CE.

3 Scope and limitations

The study was carried out from May to September 2021, focusing on two groups of food processing and non-alcoholic beverages with 9 product groups including:

(1) Meat, fish, aquatic products;

(2) Vegetables and fruits;

(3) Milk and dairy products;

(4) Non-alcoholic beverages;

(5) Tea, coffee;

(6) Confectionery, instant food;

(7) Oil, rice, sugar, salt, flour;

(8) Farming, supplying raw materials

(9) Food packaging

These are two groups of industries that have great potential to implement the CE because products have short life cycles (short time on shelves in the distribution system, usually less than 1 year), and there is a great demand for packaging and water for production, diverse in their types and large in the amount of waste generated.

Due to travel restrictions related to Covid-19, some limitations were encountered during the implementation of project such as:

(i) The sample size of the survey is not large;

(ii) The business's unwillingness to answer the interviews

(iii) Other stakeholders such as management agencies and consumers of FMCG products have not been fully consulted

Although some limitations remain, they do not affect the quality of findings and conclusion of the study. This serves a first step for further research on the transition to CE model in Vietnam.

PART TWO

CIRCULAR ECONOMY MODEL

1 Circular economy definitions

The concept of circular economy (CE) was first officially introduced by Pearce and Turner. It refers to a new economic model based on the basic principle that "everything is an input to something else" (Pearce & Turner, 1990), which is completely unlike the traditional linear economy.

There are more than 100 different definitions of CE used in scientific documents and specialized journals, the most widely known definition is the one given by the Ellen MacArthur Foundation at the Global Economic Conference in 2012. Accordingly, *"A circular economy is an economic system that develops on the basis of renewable and resilient business models through proactive planning and design, shifting towards the use of renewable energy, not use harmful chemicals that compromise reuse and aim to reduce waste. It replaces the concept of the end of a material's life with the reduction of use, reuse, recycling and recovery of materials during the production and consumption of the product".*

The United Nations Industrial Development Organization (UNIDO) in 2017 also introduced CE as *"A new way to create value, and ultimately prosperity. It works by extending product life through design and service improvements and moving the waste from the end of the supply chain back to the beginning, thereby using resources more efficiently by using them many times, not just once".*

In 2020, Vietnam's Law on Environmental Protection stipulates that *"A circular economy is an economic model in which design, production, consumption, and service activities reduce the exploitation of raw materials, prolong product life cycle, limit waste generation and minimize adverse impacts on the environment"* (Law on Environmental Protection, 2020).

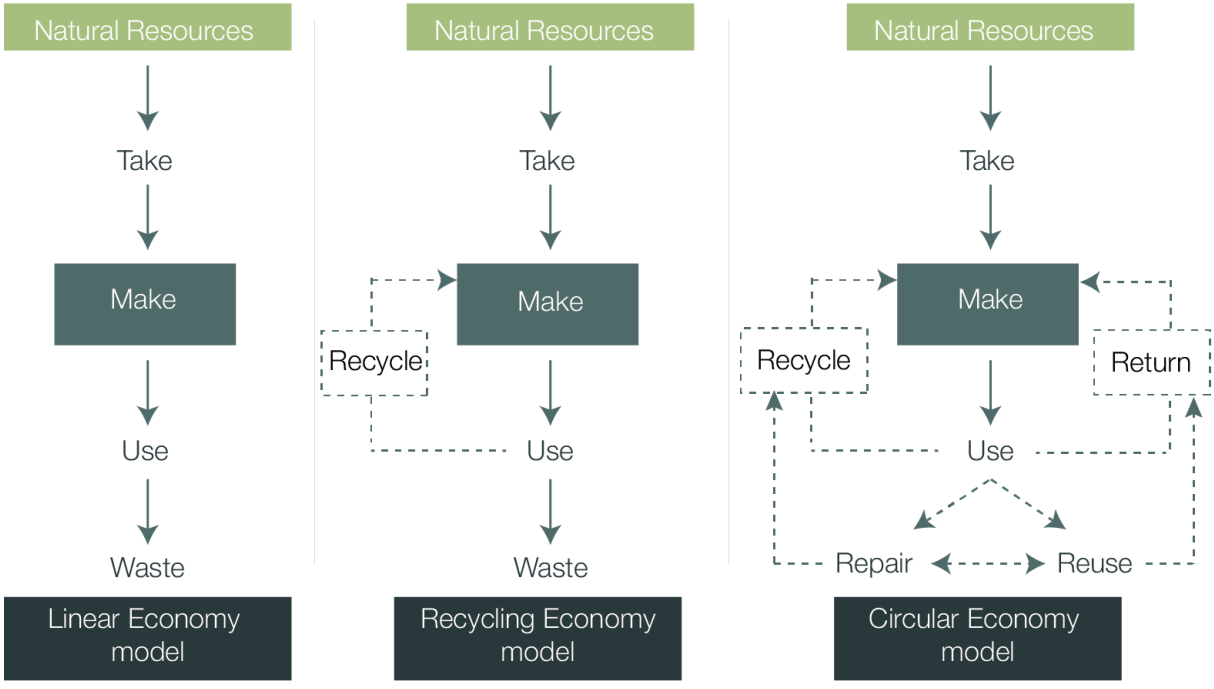
The basic idea of CE is a closed model, based on regeneration and recovery, through the activities of repair, reuse, recycling instead of immediate disposal after use as well as sharing, leasing instead of owning to prolong the product's life cycle, increasing the efficiency of using materials, transferring waste from the ending point back to the starting point, minimizing negative impacts on the environment, improving the quality of ecosystems, economy and society in the long run.

2 From the linear economy to the Circular economy

Along with the development process, there are three economic models, namely the linear economic model, the recycling economic model and the circular economic model (Figure 2-1).

- ***The linear economy model (LE)*** is a traditional economic model in which economic activities usually start from the extraction of raw materials, and then transformed into products that are used until they are finally discarded as waste. Linear economics is the transformation of resources into wastes which causes decline and depletion of natural resources and environmental pollution.
- ***The recycling economy model (RE)*** partially overcomes the limitation of LE model through recycling valuable part of waste which is recognized as a secondary resource to replace the extracted natural resource.
- ***The circular economy model (CE)*** is a "zero-waste" economic model that completely overcomes the disadvantages of the linear economy. CE is considered the preeminent economic model because it is restorative and renewable through proactive planning and design activities. In addition to activities to increase the recycling amount of waste compared to it in the RE model, in the CE model, raw materials and products are extended their life through repair, reuse and redistribution activities in the manufacturing process.

Figure 2.1. Economic models



The CE model has two major differences from traditional economic models as follows:

- First, differences in how the goods are produced and maintained their value. According to the traditional approach, the traditional economic model follows the process of “take - make - use - dispose”, or exploitation - production, processing - use, consumption - disposal. This means that raw materials are extracted, then transformed into products and used until finally discarded as waste. Value is created in this economic model by producing and consuming as many products as possible. Meanwhile, the CE model operates based on the criteria of “reduce - reuse - recycle - recover materials” or reduce demand - reuse - recycle - recover materials to reduce the exploited materials for production and processing. This model aims to prolong the lifetime of products or reuse them, maximize the value of resources through recycling waste and by-products or transforming them into new products, recovering materials, etc. such as product packaging, returning waste from the ending point back to the starting point. In addition, the CE model can also be implemented by optimizing resources such as sharing the logistics system when transporting, distributing or converting products into services, such as selling music licenses instead of CDs. In this system, economic value is created by focusing on preserving and prolonging the longest product life, making products and materials easier to repair and recycle thanks to the initial design initiatives.
- Second, the difference in perspectives on sustainability. In linear economy, the sustainability is considered economic efficiency, which means trying to minimize the negative impact on the ecosystem. This only prolongs the time the system becomes overloaded or only solves the immediate problems of the ecosystem. In the CE, the sustainability focuses on increasing the ecosystem efficiency. That means not only preventing and minimizing adverse impacts on ecosystems, but also improving economic, social and environmental systems.

Vietnam's circular economy policy

Currently, Vietnam does not have a specific policy on the CE. Regulations on CE are integrated into legal documents or policies on environmental protection, sustainable development, green growth and related policies.

As early as 1998, Directive No.36/CT-TW dated June 25, 1998 of the Politburo on strengthening environmental protection in the period of industrialization and modernization of the country, clearly stated "promulgate tax and credit policies to support the application of clean technologies" and "apply clean technologies with low waste, low consumption of raw materials and energy". Next is the Resolution No.41-NQ/TW dated November 15, 2004 of the Politburo stating "Encouraging recycling and use of recycled products" and "Step by step applying measures to force manufacturers and importers to take back and handle used products". Directives No.29-CT/TW in 2009, Strategy for Socio-Economic Development 2011-2020, and Resolution No.24-NQ/TW dated June 3, 2013 on Proactively responding to climate change, strengthening resource management and environmental protection also continue to emphasize and detail the above documents. Resolution No.27/NQ-CP dated June 12, 2009 of the Government also set out solutions on "developing the environmental industry, providing guidelines on the implementation of cleaner production, application of clean and environment-friendly technology, changing the industrial production model towards sustainabilityand a green industry". The concept of the CE development is emphasized in the Resolution of the 13th Party Congress "Digital economy, CE, green growth are models chosen by many countries" and set orientation for the period 2021-2030, "establish a green economy, CE, environment-friendly economy". The Resolution of the 13th Party Congress considered "encouraging the development of the CE model for integrated and efficient use of the output of the production process" as one of the strategic solutions in the next 10 years.

The Law on Environmental Protection 2005 and 2014 stipulated a number of articles on environmental protection, including "exploiting, rationally and economically using natural resources, promoting waste recycling, reusing and reducing". In addition, the Law on Water Resources Use, the Law on Economical and Efficient Use of Energy, the Vietnam Sustainable Development Strategy 2011-2020, the Strategy for Environmental Protection to 2020, a vision to 2030, and the Strategy for Green Growth, Decree No.38/2015/ND-CP, Decision No.16/2015/QD-TTg, Decision No.491/QD-TTg, Directive No.33/CT-TTg, Decision No.1361/QD-TTg, Decision No.889/QD-TTg in 2020 on the National Action Program on Sustainable Production and Consumption, etc. are typical policies, demonstrating the policy shifts towards CE of Vietnam.

Notably, the Law on Environmental Protection 2020 officially introduced the concept, terms and regulations on CE. Accordingly, Vietnam's goal in transitioning from LE to CE focuses on three pillars: (i) design, extend the material life; (ii) reduce waste and emissions; (iii) ecological restoration (promote regeneration and restoration of natural ecosystems). The draft Decree detailing a number of articles of the Law on Environmental Protection in 2020 covered the content on expanded responsibilities of manufacturers and importers in recycling and handling products and packaging after use.

In addition to focusing on the perfection of the institution on efficient use of resources and environmental protection, over the past time, the Communist Party and the Government have issued financial mechanisms and policies on CE by emphasizing budget expenditure for environmental protection; capital support mechanisms, tax incentives or subsidies for environmental protection activities. The budget expenditure can be done in two forms: (i) developing a separate expendituresfor environmental non-business activities and (ii) allocating funds for CE-related national target programs. Types of tax policies related to resource and energy consumption, pollutants and waste generation, etc. have been promulgated in the Law on Natural Resources Tax, the Law on Environmental Protection Tax, the Law on Corporate Income Tax, the Law on Special Consumption Tax. However, a number of barriers on financial policies for CE still exist such as: (i) There is no separate national target program on CE, no separate articles, clauses and sections related to CE in the Law on the State Budget in 2015; (ii) Funding from the state budget has not yet met the practical requirements; (iii) Tax and fee policies applied to exploitation of natural resources as raw materials are not strong enough and lack of tax incentives for recycling or using recycled and green products; (iv) The potential of the state fund for CE is still small.

4 Role of circular economy in FMCG

In recent decades, the global economy has grown strongly and achieved many great achievements. In particular, the growth of the fast-moving consumer goods (FMCG) industry is remarkable. According to a report published by Allied Market Research (2019), the global FMCG market size was valued at $10,020.0 billion in 2017 and is expected to reach $15,361.8 billion by 2025, achieving a growth rate of 5.4% in the period 2018-2025. In recent years, as a sub-sector of FMCG, Vietnam's food processing industry has achieved important achievements, making a great contribution to the growth of the industry as well as the economic growth of the whole country with the growth rate of the average industrial production index in the period 2016-2020 of 7%/year, accounting for 19.1% in the processing and manufacturing industry (the highest among the industry groups).

Among the industry groups with high growth expectations and potential, food and non-alcoholic beverages manufacturing businesses are facing pressure from the implementation of Free Trade Agreements, complying with the extended producer responsibilities, meeting the increased demand for raw materials as well as difficulties from the supply chain disruptions caused by Covid-19 pandemic, etc. The CE model helps manufacturing and processing enterprises to be more responsible and efficient through (i) developing resources, infrastructure, and new technologies; (ii) reducing dependence on external factors, especially raw materials and fuels for production and processing; (iii) improving competitiveness, expanding to international markets, especially markets that demand not only high products quality but also manufacturer's social responsibility and responsibility to the ecosystem ; (iv) increasing benefits from recycling and reuse of materials, reducing fees related to discharge and exploitation of resources. In addition, the application of the CE model also brings positive impacts to society in terms of management, improving the quality of environment and changing the community's perception.

PART THREE

RESEARCH METHODOLOGY

1 Methodology

The research team applied a number of research methods during the study as follows:

- Desk study on policy documents, CE models related to businesses in the value chain of food and non-alcoholic beverages.
- Survey by questionnaires on capacity and availability, operation of enterprises as well as advantages, difficulties and initiatives to shift to CE model.
- In-depth interviews with leading enterprises in the industryto identify and analyze views and perceptions on CE as well as difficulties and challenges for enterprises while shifting to CE model.
- Comparative statistical analysis to assess the current status and potential of the CE application.

2 Survey objects and sample selection

1000 large and medium-sized enterprises in the production chain of two industry groups: (i) food processing and (ii) non-alcoholic beverages were randomly selected from the database of the General Statistics Office with consideration to 4 factors (i) Diversity in ownership (state, private and foreign invested); (ii) nationwide distribution; (iii) diversifying in consumption markets (domestic and foreign) and (iv) prioritizing businesses in the list of top 500 largest enterprises announced in 2020.

3 Data source

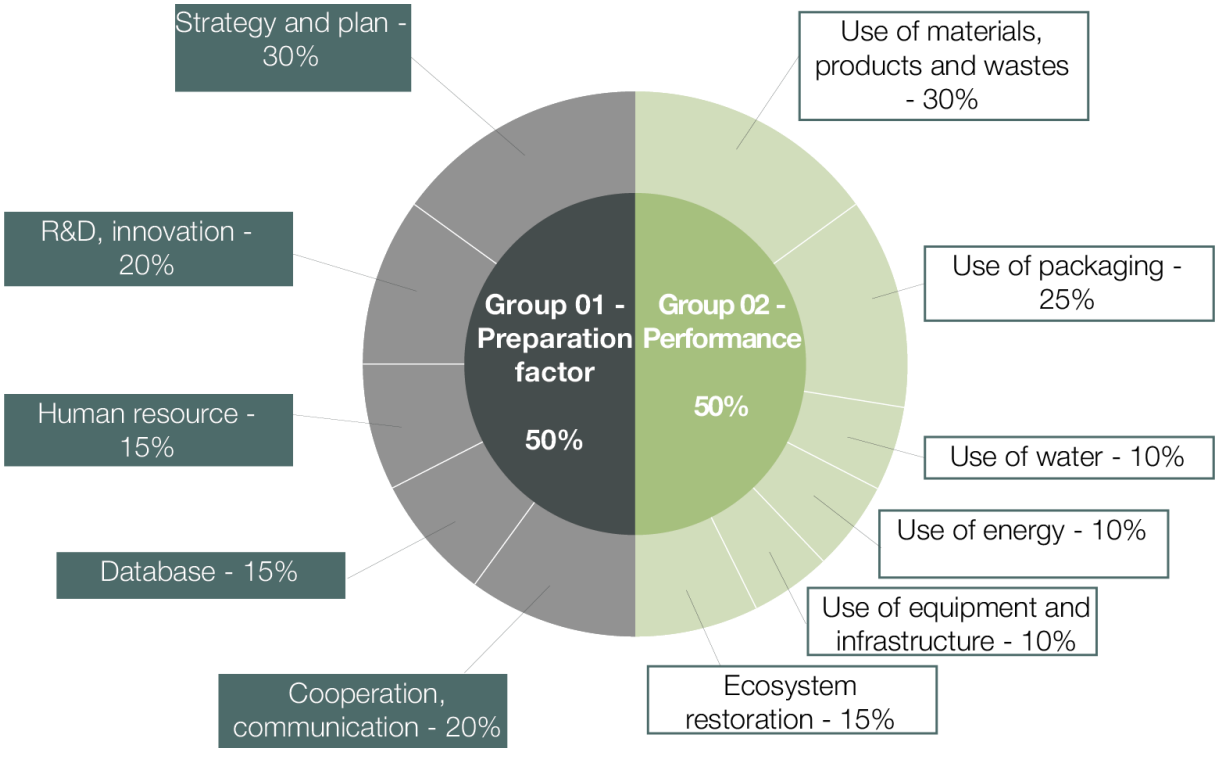
The research was compiled from 2 main data sources: (i) primary data and (ii) secondary data. The primary data includes responses from the survey by questionnaires and in-depth interviews. Secondary data includes legal documents, regulations of Vietnam, statistics from the national database system, research reports, thematic reports from stakeholders such as the Ministry of Natural Resources and Environment, Ministry of Industry and Trade, Ministry of Agriculture and Rural Development, international organizations such as Ellen MacArthur Foundation, UNIDO and other organizations.

4 Evaluation and ranking criteria

Based on the Circulytics method of Ellen MacArthur Foundation, the legal framework related to CE as well as the actual conditions of Vietnam and the food and non-alcoholic beverages sector, the research team has developed 42 indicators, 11 criteria in 2 groups: Group 1 - Preparation for transition and Group 2 - CE implementation to evaluate the readiness to shift to CE model. The weight of the two groups is equal, accounting for 50% of the total score. Figure 3 1 below shows the proportions of the criteria.

42 evaluation indicators belonging to 11 criteria are evaluated on 4 score levels with a maximum score of 100.

Figure 3.1. Criteria for assessing readiness to transform to the CE model



The scoring process is carried out for each survey enterprise, starting from each indicator, each criterion, each group of criteria and is aggregated according to the following formula

$$\text{Readiness score} = \frac{50\% * \text{total group 1} + 50\% * \text{total group 2}}{100\%}$$

Based on the achieved results, the current status and implementation potential of CE transition is evaluated on a 100-point scale with 5 levels of readiness as follows:

Table 3.1. Scale and rating of readiness to transform to CE

STT	Score	Rating		Description
1	77,78-100 77,78-88,89	A A-	Champion	The enterprises implemented CE strategy, had R&D and innovation projects, cooperated with suppliers and stakeholders on CE, implemented solutions on recovery and recycling of resources to contribute to the restoration of ecosystems and reduce negative impacts on the environment Can lead and have influence on business partners
2	55,56-77,78 55,56-66,67	B B-	Advanced	The enterprise had strategies and plans on CE, invested in most priority items, and some CE activities.
3	33,33-55,56 33,33-44,44	C C-	Intermediate	The enterprise integrated CE into its strategic direction and carried out some CE activities.
4	11,11-33,33 11,11-22,22	D D-	Beginner/ Preliminary	The enterprise has been aware of the CE concept and implemented some pilot activities.
5	0-11,11	E	Not started	No CE implementation yet. Enterprises at this level do not meet any of the CE criteria.

PART FOUR

SURVEY RESULTS

1 Respondents

100 food and non-alcoholic beverages enterprises provided information for research, of which 63 enterprises only produce products, 17 enterprises only produce and supply raw materials and 20 enterprises both supply raw materials and produce products.

Respondents are diverse, evenly distributed among 9 groups of enterprises that produce and process (1) Meat, fish, seafood, (2) Vegetables and fruits, (3) Milk and dairy products, (4) Non-alcoholic beverages, drinking water, (5) Tea, coffee, (6) Confectionery, noodle soup, instant noodles, (7) Oil, rice, sugar, salt, flour, (8) Products packaging, (9) Farming, supplying raw materials for the above products. These are medium and large enterprises with the following classification characteristics:

- **Sample percentage by operating model:** 84% of enterprises operate independently, 6% of enterprises are parent companies and 10% of enterprises are branches.
- **Percentage of enterprises by type of ownership:** the private enterprises account for 80%, the remaining two groups are state-owned enterprises with 5% and FDI enterprises with 15%.
- **Percentage of enterprises by product consumption market:** Up to 64% of enterprises produce, process and supply products for both domestic and export markets. In addition, 26% of enterprises only serve the domestic market, 10% of enterprises only serve the foreign market.

2 Implementation status

The research revealed the following key findings

OVERALL

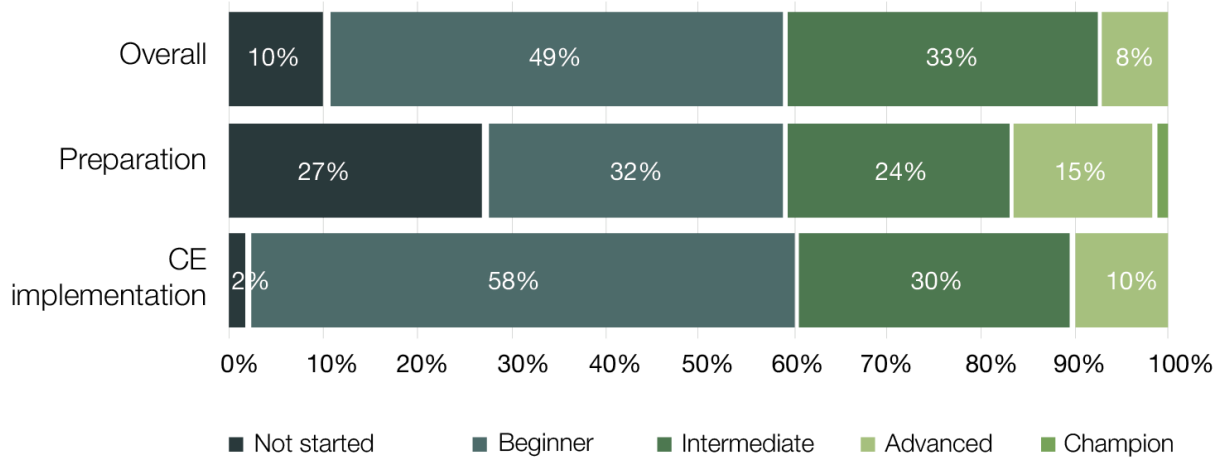
90% OF ENTERPRISES HAVE BEEN SHIFTING TO THE CE MODEL

The survey results show a positive signal in the perception of enterprises towards CE. Currently, only 10% of enterprises have not started the transition process or have not had a clear transition strategy to the CE model.

Among 90% of enterprises that have been shifting to the CE model, 82% of enterprises are at a preliminary and intermediate level of transition. The percentage of enterprises with advanced transition reached 8%, and no business has achieved the champion level in CE transition. However, 2% of enterprises are at the champion level in preparation for transition to the CE model.

The surveyed enterprises show more interest and distribute more resources for the transformation implementation to the CE model than the preparation for transition. Specifically, 27% of enterprises have not started the preparation for transition, while only 2% of enterprises have not had activities related to CE implementation. It is noticeable that although preparation is not enterprises' main concern, the proportion of enterprises with advanced and leading preparation (17%) is 1.7 times higher than enterprises with enhanced CE implementation (10%). This shows that, when enterprises have depth understanding and interest in the transition to the CE model, preparation is always important. The proportion of enterprises that have preparation for transition and CE implementation according to the evaluation levels is presented in Figure 4.1.

Figure 4.1. Percentage of enterprises shifting to the CE model



THE AVERAGE READINESS SCORE OF ENTERPRISES IN TRANSITION TO THE CE MODEL IS 30 POINTS (BEGINNER)

5 transition levels are evaluated on a 100-point scale, including: (1) Level A for champion enterprises (77.78 - 100 points), (2) Level B for enterprises with advanced transition (55.56-77.78 points), (3) Level C for enterprises with intermediate transition (33.33-55.56 points), (4) Level D for enterprises with preliminary transition (11,11-33.33 points) and (5) Level E for enterprises that have not yet started the transition (0-11.11 points). Levels A-, B-, C- and D- are the middle level of the assessment score.

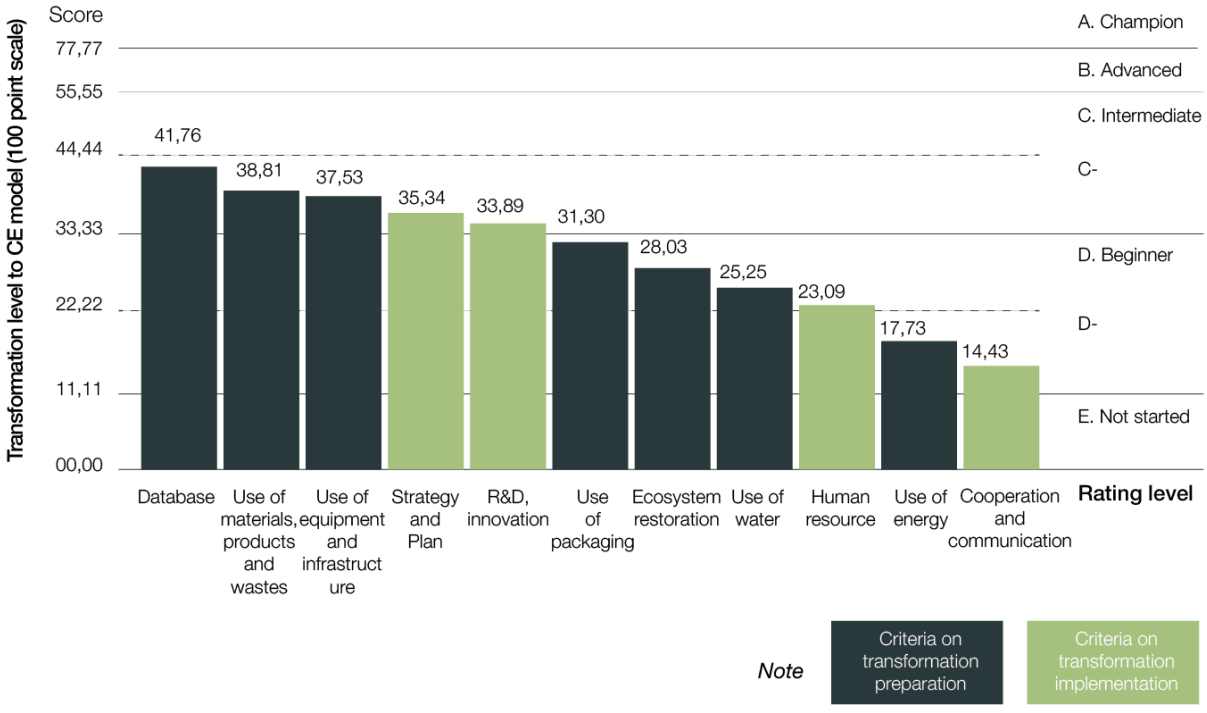
Calculation results show that the average transition score of 100 surveyed enterprises is 30.86 points, reaching level D- (beginner). Between two groups of evaluation criteria, the CE implementation score is 31.72 points, higher than the average score of the preparation for transition (29.99 points) and both at D- (start).

ALL EVALUATION CRITERIA ACHIEVE POSITIVE RESULTS, BUT THERE ARE SIGNIFICANT DIFFERENCES

11 selected criteria to evaluate the transition level to the CE model include: (1) Strategy and plan, (2) R&D, innovation, (3) Human resource, (4) Database, (5) Cooperation, communication, (6) Use of materials and products, (7) Use of packaging, (8) Use of water, (9) Use of energy, (10) Use of equipment and infracstructure and (11) Activities contributing to ecosystem restoration, in which the first 5 criteria are used to evaluate the preparation for transition and the following 6 criteria are used to evaluate the CE implementation.

All 11-evaluation criteria achieve positive results from level D- (beginner) or higher, of which 5 criteria achieve intermediate level (Level C). There are large disparities in the scores of the criteria, especially the 5 criteria in the preparation criteria group (41.76 points compared to 14.43 points). Scores by the evaluation criteria are shown in Figure 4.2.

Figure 4.2. Average score by the evaluation criteria



The average score of the preparation criteria is 29.99 points (level D). Among the evaluation criteria, the preparation criterion on cooperation and communication with stakeholders has the lowest score (14.43 points, level D-). The low evaluation score reflects the unwillingness of enterprises to share and cooperate in the transition to the CE model. More than 60% of enterprises have not had cooperation with suppliers, customers and sponsors, investers in the transition to the CE model. The cooperation and communication on CE transition are mainly still in the process of establishing and discussing, the cooperation activities only focuses on attending seminars and providing information instead of sharing experiences and participating in policy development. For example, although extended producer responsibility (EPR) regulations will bring both opportunities and challenges for model transition for the entire value chain, the percentage of enterprises participating in sharing experiences and developing EPR policies is still limited. Only about 7% of enterprises have participated in this activity.

The average score of the CE implementation criteria group is 31.72 points (level D). Use of packaging is the most relevant criterion to the upcoming EPR policies. All surveyed enterprises use packaging. Transition to CE model in the use of packaging reached 31.30 points, ranked 6th out of 11 criteria, achieving the beginner level (level D). The survey results show that in addition to aesthetics and food safety, 93% of enterprises have paid attention other parameters of packaging such as ingredients, percentage of recycled materials of packaging or other characteristics related to sharing economy such as light weight, convenient for transportation, easy to stack, in which the factor of easy to stack is the most concerned (66% of surveyed enterprises). Only 19% of surveyed enterprises said that they are preparing for the implementation of EPR for packaging, while 81% of surveyed enterprises have not prepared or indicated they are not object to regulations.

For energy use, although enterprises have had energy saving activities, the score is still modest, achieving 17.73 points (level D-). The number of enterprises using renewable energy and the proportion of renewable energy in the total electricity demand of enterprises are still limited. Currently, only 36% of enterprises have renewable energy constructions, with 7% of enterprises self-producing renewable energy to meet more than 30% of their demand.

ALL PRODUCT GROUPS HAVE POSITIVE RESULTS ON TRANSITION TO CE MODEL AND THERE IS NO SIGNIFICANT DIFFERENCE BETWEEN THEM EXCEPT FOR NON-ALCOHOLIC BEVERAGES GROUP

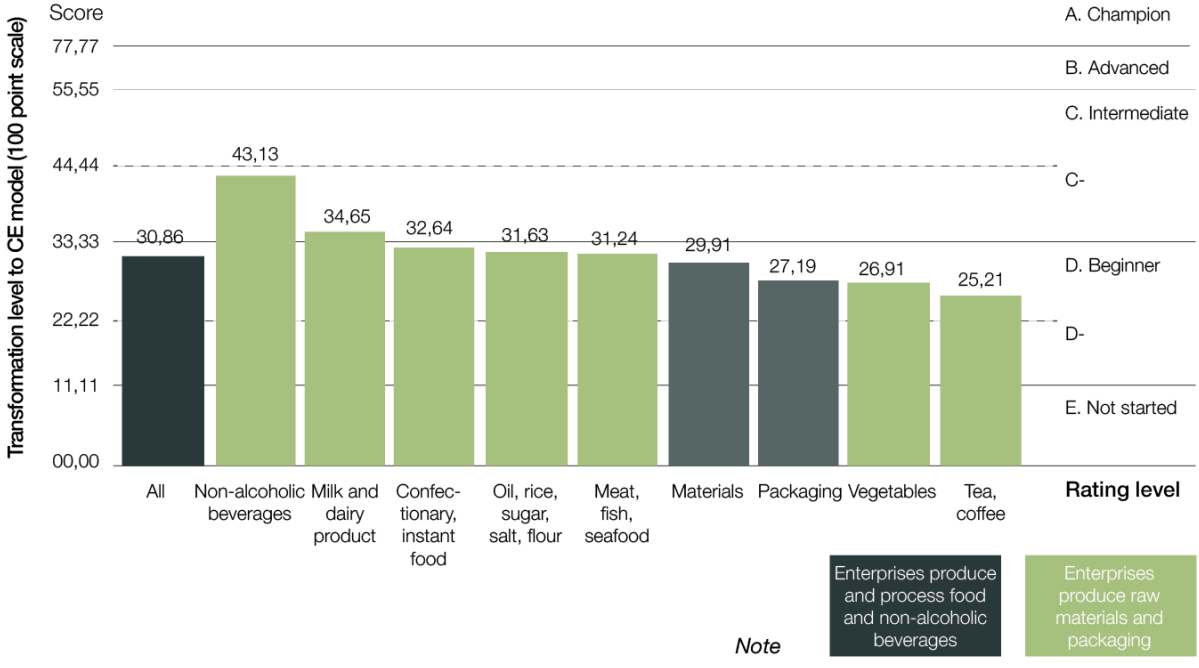
The study was carried out with 9 product sub-groups including: (1) Meat, fish, and aquatic products; (2) Vegetables and fruits; (3) Milk and dairy products; (4) Non-alcoholic beverages; (5) Tea, coffee; (6) Confectionery, instant food; (7) Oil, rice, sugar, salt, flour; (8) Farming, supplying raw materials and (9) Food packaging. Enterprises in group 8 and 9 provide raw materials and packaging for enterprises producing and processing food and non-alcoholic beverages in group 1 to group 7.

The transition level of the surveyed product groups are from level D (beginner level) or higher with an average score of 30.86. Although the milk and dairy products group achieves an average score of 34.65 points (level C-), the evaluation results between the product groups show that the levels of transition to the CE model of product groups are relatively similar, except for non-alcoholic beverage group with 43.13 points (level C-).

Figure 4 3 below presents the assessment results of the transition to the CE model by product groups. Although there is a positive transition in 9 product groups, the survey results show that there are still 4 groups that have not yet started the transition process in the criteria of communication & cooperation and energy use. Specifically:

- Meat, fish and seafood processing enterprises: No preparation for cooperation and communication activities (9.38 points)
- Fruits and vegetables processing enterprises: No preparation for cooperation and communication activities (8.13 points)
- Tea and coffee processing enterprises: No preparation for cooperation and communication activities (9.48 points)
- Packaging enterprises: No transition implementation in energy use (8.78 points)

Figure 4.3. Average scores by product groups



EVALUATION OF THE PREPARATION FOR CE TRANSITION

The preparation level for transition are evaluated by 5 criteria: (1) Strategy and plan, (2) R&D and innovation; (3) Human resource; (4) Database and (5) Cooperation and communication. The average score of the 5 criteria is 29.99 points (level D, beginner).

All 5 evaluation criteria achieve positive results from level D- (beginner) of which 3/5 criteria achieve intermediate level (Level C-) with the highest scores are database (41.76 points), strategy and planning (35.34 points) and R&D and innovation (33.89 points). Among the remaining criteria, communication and cooperation with stakeholders scores the lowest (14.43 points, D-).

The study shows that there is no significant difference between the group of enterprises producing and processing food and non-alcoholic beverages and those manufacturing, supplying raw materials and packaging. Scores on the preparation for the CE transition are summarized in Table 4.1.

Table 4.1. Average score of preparation work by business field

No.	Criteria	All enterprises	Enterprises producing and processing products	Enterprises producing raw materials and packaging
1	Strategy and plan	35,34	36,32	33,82
2	R&D, innovation	33,89	35,57	30,73
3	Human resource	23,09	25,18	16,35
4	Database	41,76	43,42	38,35
5	Cooperation, communication	14,43	14,53	12,74
6	**Transformation preparation criteria**	**29,99**	**31,21**	**27,04**

Note: *: Level D (beginner); Level C (intermediate)*

Criterion #1

STRATEGY AND PLAN

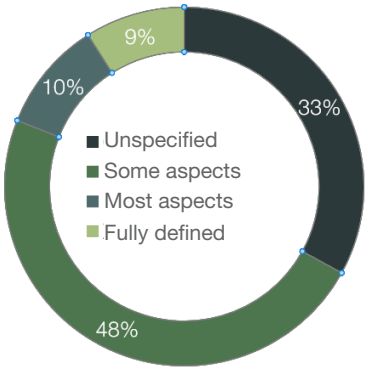
This criterion measures the operation and development orientation of enterprises in shifting to the CE model through enterprises' awareness of the challenges and opportunities of the CE as well as how enterprises integrate CE in business strategy, implementation plan, goal setting and scope of implementation.

Strategy and plan criterion achieved 35.34 points (C-), ranked 4th out of 11 criteria. The survey results show that enterprises have selective preparation orientations and implementation plans, which need to be continued on a systematic and comprehensive scale.

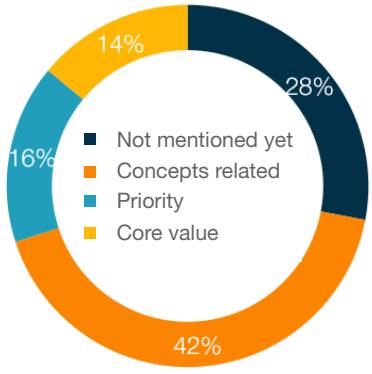
The study results show the following findings:

- Transition to the CE model has not been thoroughly reviewed and evaluated by enterprises. About 9% of enterprises have reviewed all aspects of the CE in the manufacturing activities. 33% of enterprises have not yet reviewed and evaluated any aspect of the CE.
- The role of CE is initially noticed and valued by enterprises in the process of strategy formulation. 30% of the enterprises participating in the survey consider CE as a priority strategy and core value in production and business activities. Up to 42% of enterprises said that they mentioned concepts related to CE in production activities. About 28% of enterprises have not mentioned the CE concept in production activities at the moment.
- The implementation of CE transition takes place relatively slowly. Only 10% of surveyed enterprises have implemented CE transition at varying degrees. 39% of enterprises have not had a specific plan for implementation. The rest are at the preparation stage such as developing an implementation plan or assigning implementation.
- Very few enterprises define their goals to shift to the CE model. Only about 10% of surveyed enterprises have identified the target of the CE transition and have a measurement and evaluation system. 34% of enterprises have not yet determined their goals to shifft to the CE model.
- The determination of the scope of the transition to the CE model has begun to be noticed. 66% of enterprises have identified the scope of implementing CE at different levels. 34% of enterprises have plan to implement CE in all production-related departments. 28% of enterprises initially determine the scope of CE implementation in production department. Meanwhile, marketing, sales and procurement, supply chain departments are rarely chosen by enterprises to shift to CE model.

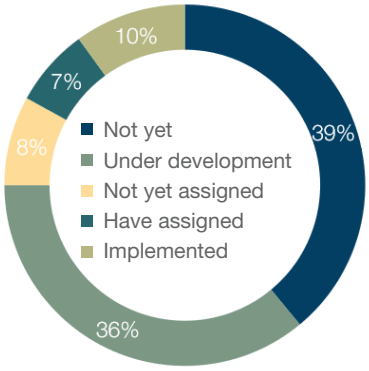
Figure 4.4. Strategy and plan on CE implementation



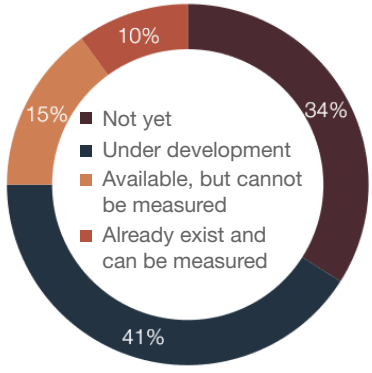
(a) Assessment of challenges and opportunities of CE transition



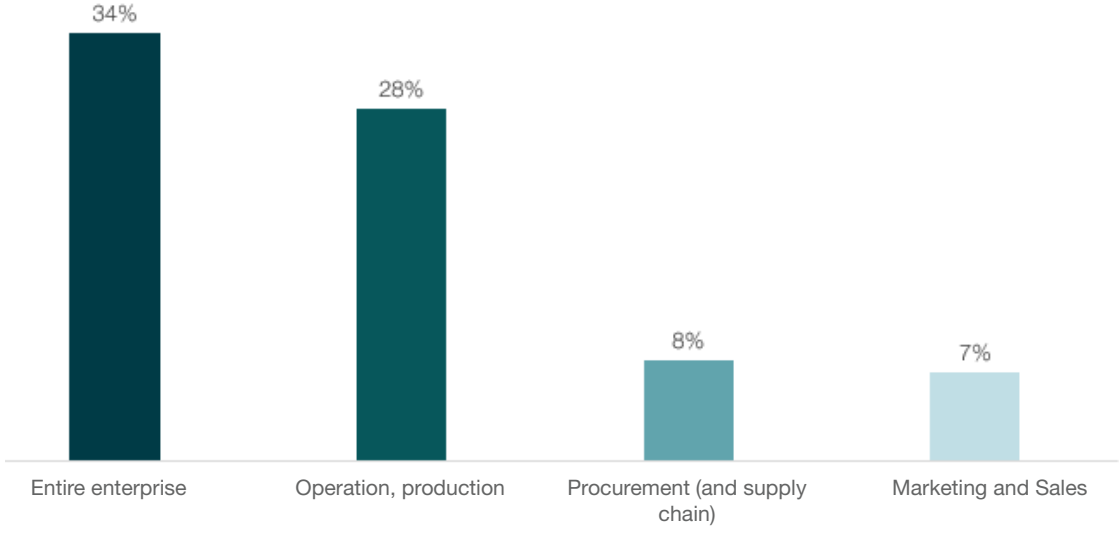
(b) The role of CE in business strategy



(c) CE implementation plan



(d) CE objectives



(e) Scope of CE implementation

Criterion #2

R&D, INNOVATION

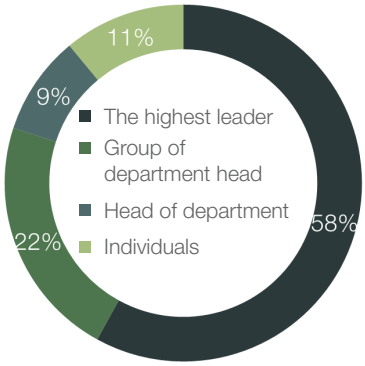
This criterion measures the size, objective, scope and resources in determining and implementing the CE solutions suitable to the specific business conditions of the enterprise.

In R&D and innovation, surveyed enterprises have a relatively positive transition to the CE model with 33.89 points (level C-), ranking 5th in 11 evaluation criteria. The survey results show that there has been a positive preparation in R&D and innovation in particular and the CE in general, especially in packaging materials. However, the proportion of enterprises undertaking R&D and innovation as well as financial support needs to be more widely covered.

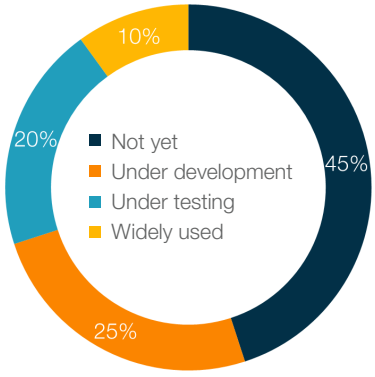
The study results made the following findings:

- The implementation of R&D and innovation on CE mobilizes the participation of leaders in 58% of enterprises participating in the survey. Only 11% of enterprises carry out R&D on CE by individuals.
- Up to 45% of medium and large enterprises have not carried out R&D and innovation on CE. Although up to 25% of enterprises develop R&D projects, 20% of enterprises are applying pilot R&D projects, and 10% have widely applied R&D projects, a large proportion of enterprises not having R&D projects yet (45%) shows that CE is a relatively new approach to enterprises. In addition, the technological level of most Vietnamese enterprises is still limited and asynchronous, which slows down the innovation process. In addition to cognitive and technological barriers, funding sources for R&D projects are extremely limited.
- Among enterprises having R&D activities, most of the implementation budget for R&D comes from the enterprise's budget. Only 4% of enterprises receive 100% funding from other organizations to deploy R&D activities. The reason that few enterprises receive funding may be partly due to the weakness in cooperation and communication activities. Enterprises have little information on programs and projects that sponsor R&D while the cost of R&D activities is often high, so not many enterprises are interested in this activity.
- The main objects of R&D application are raw materials (34% of surveyed enterprises), energy (24% of surveyed enterprises) and packaging materials (21% of surveyed enterprises). These objects account for a large proportion in product price and have a lot of potential for applying CE.

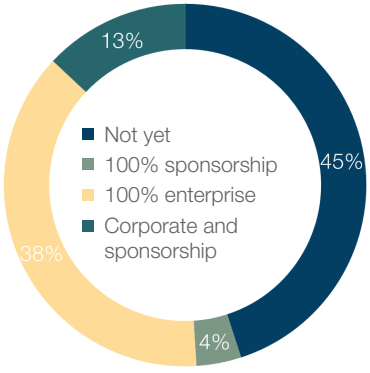
Figure 4.5. R&D and innovation criterion



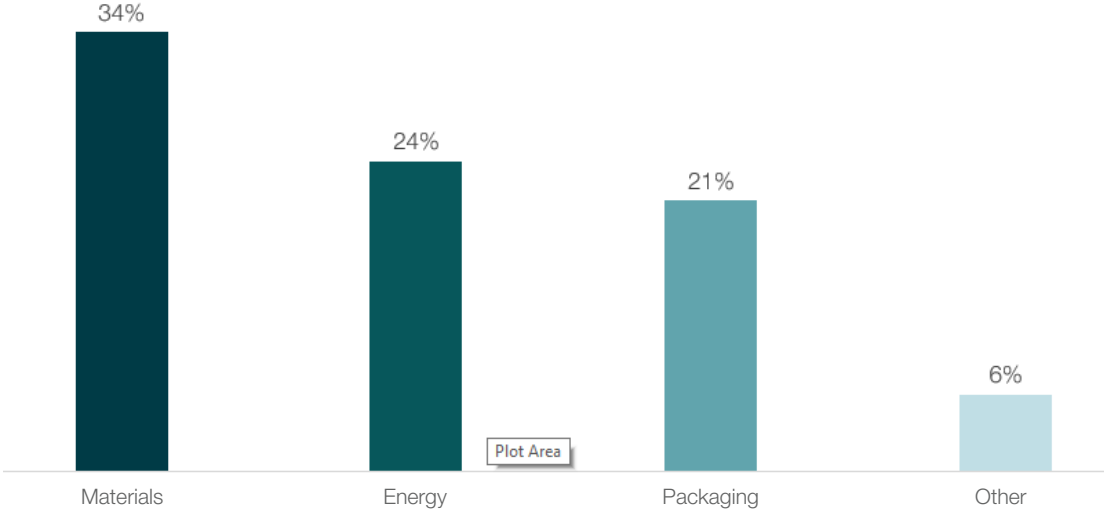
(a) R&D and innovation implementation level



(b) CE R&D and innovation project



(c) Funding for R&D implementation on CE



(d) Topics of R&D and innovation projects

Criterion #3

HUMAN RESOURCE

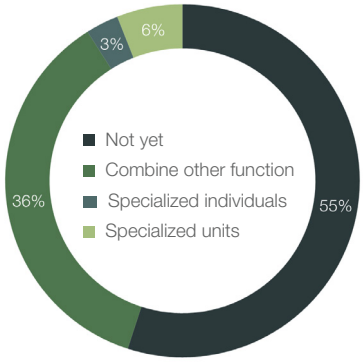
This criterion evaluates the human resource arrangement, capacity building and knowledge on CE of enterprises.

The human resource criterion scores 23.09 (beginner level, D), ranking 9th out of 11 evaluation criteria. This shows that the preparation on personnel to implement transition to the CE is at a primary level and has not been given much attention, and needs to be strengthened more strongly.

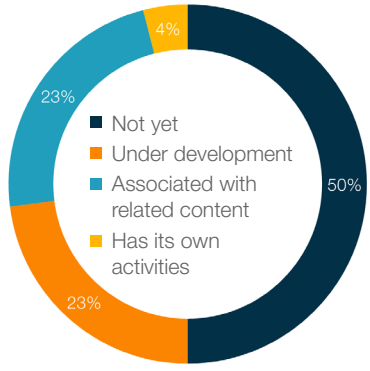
The study results show the following findings:

- The proportion of enterprises having personnel in charge of CE is low. Only 9% of surveyed enterprises have assigned a specialized individual or department in charge of CE. The CE implementation, if any, are usually carried out part-time. The ratio of specialized personnel is consistent with the ratio of enterprises having CE goals and ability to measure and evaluate those goals. Research results also show an optimistic signal in human resource work, specifically, up to 6% of surveyed enterprises indicate that there is a department in charge of CE instead of a dedicated individual.
- The percentage of enterprises having internal training and communication on CE is low, mainly being organized in combination with other contents. 50% of surveyed enterprises do not have internal communication and training activities related to CE. Only 4% of enterprises have their own training on CE. However, concern about the capacity to implement CE is receiving more attention with 23% of enterprises saying that they are developing a plan to improve their internal capacity on CE.
- The rate of enterprises sending employees to trainings and seminars on CE is low. 62% of enterprises have not sent their employees to seminars and training on CE, 15% of enterprises have plans to send employees to CE seminars and training in the future. This may be due to the fact that enterprises do not have information about seminars or there are few specialized seminars on CE organized.

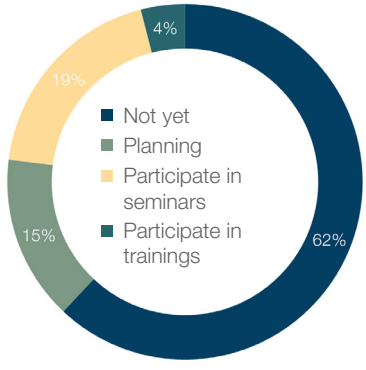
Figure 4.6. Preparation on human resource to implement CE



a) Allocate personnel to implement CE



(b) Improve internal CE capacity



(c) Capacity building on CE from stakeholders

Criterion #4

DATABASE

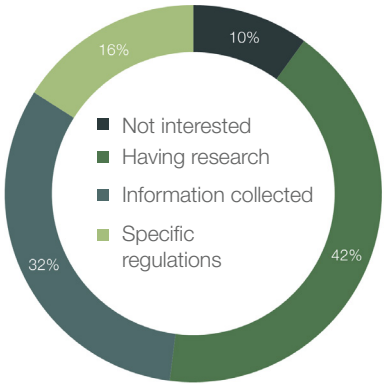
This criterion evaluates the type and extent of input data collection from suppliers and the capacity on decision-making and CE transition of the enterprises.

Database is the criterion achieving the highest score among evaluation criteria with 41.76 points (intermediate, level C-). Research shows that it is technically possible to increase the percentage of recycled ingredients in materials and packaging of food and non-alcoholic beverage products. Besides, although the database is rated at the highest level, the data collected is mainly data on ingredients. The percentage of enterprises collecting information for supplier management and decision-making is still limited.

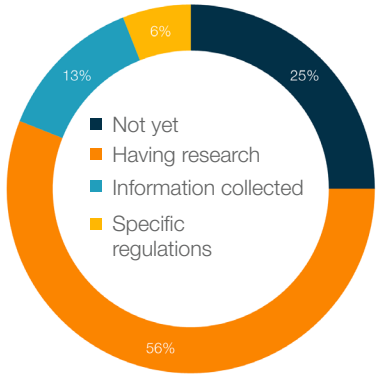
The study results show the following findings:

- Enterprises are most interested in raw materials ingredient. 90% of enterprises are interested in the composition of materials to different degrees, 75% of enterprises are interested in the ratio of renewable and recycled materials and 69% of enterprises are interested in the percentage of renewable energy used by suppliers.
- The enterprise has proactively regulated the composition and proportion of recycled materials for suppliers. 16% of enterprises have given specific regulations on the composition of raw materials for suppliers; 6% of enterprises have regulations on percentage of renewable materials for suppliers. Regulations on the use of renewable or recycled materials or information provided by the supplier will help provide technical solutions for the disposal of the product after the end of its life. This is an encouraging signal because it has partly shown the manufacturers' responsibilityfor their products and supply chain. The regulations on the rate of renewable energy is the driving force to encourage the supply chain to participate in the comprehensive CE model. 7% of enterprises participating in the survey already have these regulations.
- The percentage of enterprises starting to care about data served for R&D implementation is high. The percentage of enterprises that are researching and requesting information on composition of raw materials is 74%, on percentage of renewable and recycled materials is 69% and on the percentage of renewable energy used is 82%.
- In order to use more renewable and recycled materials in packaging, it requires enterprises time to research and make decisions. Currently, 50% of enterprises state they can make decisions on recycled ingredients in their packaging. The research shows that 28% of surveyed enterprises can decide on the use of recycled ingredients in their packaging within a year, 17% of enterprises need 1-3 years and 5% of enterprises need more than 3 years.
- The addition of recycled ingredients in raw materials is technically feasible. 69% of surveyed enterprises indicate that a change is needed to meet the requirements of increasing recycled ingredients in materials for production and processing. Among them, 9% of surveyed enterprises indicate that it is necessary to change the entire technology, 33% need to change part of the technology and 27% need to change part of the equipment.

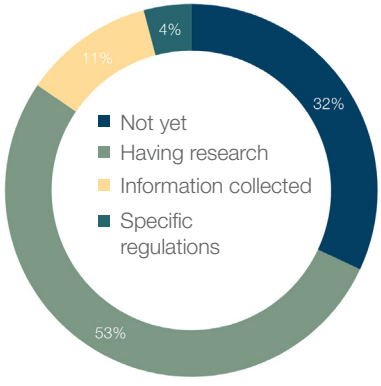
Figure 4.7. Data collection and management



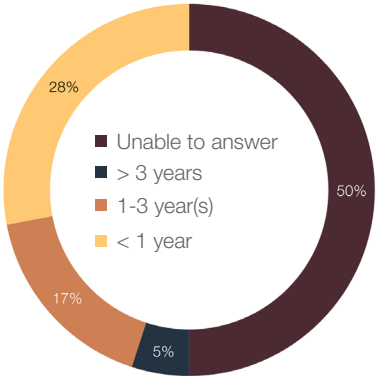
(a) Data on material composition



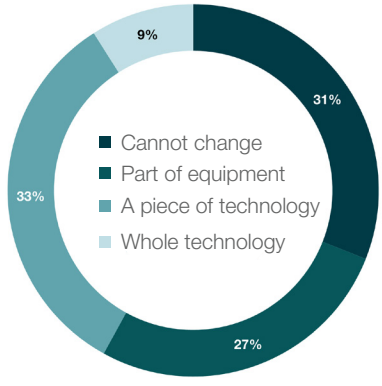
(b) Data on the proportion of renewable and recycled materials



(c) Data on renewable energy usage



(d) Time required to decide to use renewable and recycled materials in packaging



(e) Forms of exchange and cooperation with policy makers

Criterion #5

COOPERATION AND COMMUNICATION

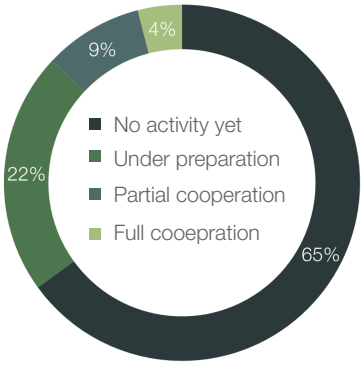
This criterion assesses an enterprise's preparedness to receive, share information and cooperate with stakeholders, including suppliers, customers, investors and policy makers, in transition to the CE model.

Among the evaluation criteria, cooperation and communication with stakeholders has the lowest score (14.43 points, reaching level D-). The low score of the cooperation and communication criterion reflects the unwillingness of enterprises to share and cooperate in transition to the CE model, the connection and interaction of enterprises with stakeholders is still weak and it is necessary to have appropriate solutions to promote and develop this relationship in depth.

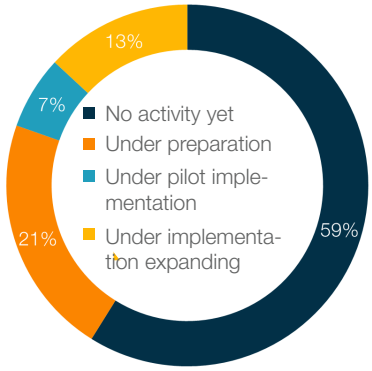
The study results made the following findings:

- The rate of enterprises cooperating and communicating on CE with stakeholders is low. 65% of surveyed enterprises have not cooperated with suppliers to control and adjust the composition of raw materials, 63% of surveyed enterprises have not cooperated with customers to take back of defective packaging and products, 73% of surveyed enterprises have not cooperated with donors and investors to increase capital mobilization and 59% of enterprises have not cooperated with policy makers to capture information and give suggestions in accordance with actual conditions.
- The proportion of enterprises with experience in cooperation and communication on CE is still low. 13% of of surveyed enterprises have experience in cooperating with some or all of the raw material suppliers, 14% of surveyed enterprises have experience in testing or replicating the CE model with customers. Cooperation with investors, sponsors, and policy makers is mainly in seminars, training, information provision and experience sharing. Only 4% of surveyed enterprises state that they have co-implemented with investors and sponsors. Extended producer responsibility (EPR) regulations will present opportunities and challenges for model shift across the value chain, however, only 7% of enterprises indicated they had information and consulted about this content.
- Enterprises are still hesitant to share information. Not only limited on cooperation and communication with stakeholders in the value chain, the survey also shows that the information shared and the way enterprises interact are also limited. 83% of enterprises have not joined any network related to sustainable development or CE. This will affect the perception of enterprises, the quality of feedback from stakeholders as well as the progress of transition to the CE model of the entire sector. Only 19% of surveyed enterprises said that they have been prepared for EPR implementation, 23% of enterprises are not prepared and 58% of enterprises said that they are not the object of EPR regulations.

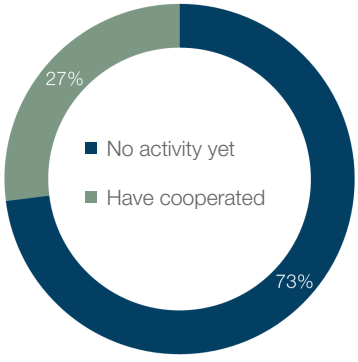
Figure 4.8. Cooperation and communication with stakeholders on CE



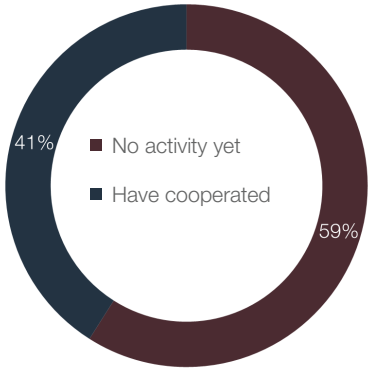
(a) Cooperation and communication with suppliers



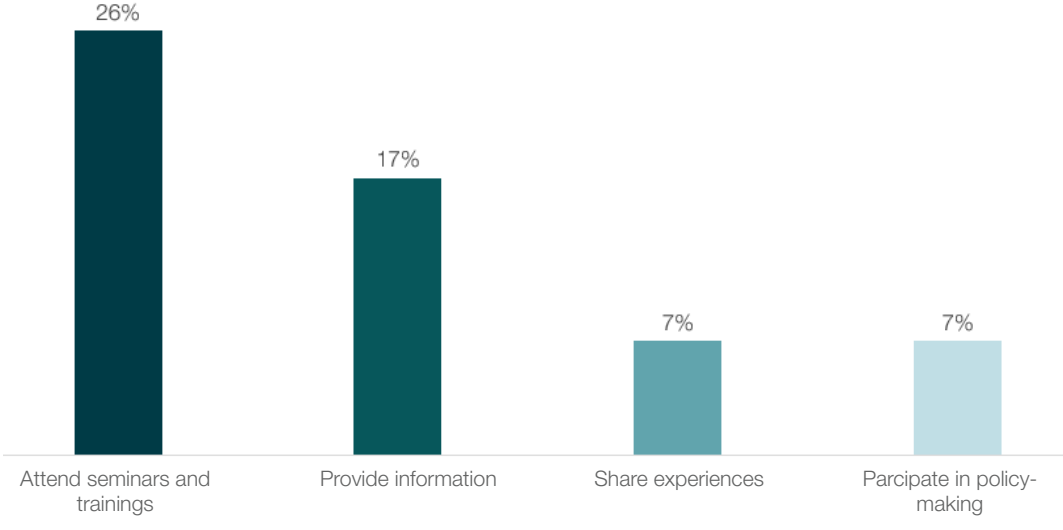
(b) Cooperation and communication with customers



(c) Cooperation, communication with investors, sponsors



(d) Cooperation and communication with policy makers



(e) Way to exchange and cooperate with policy makers

EVALUATION OF THE CE IMPLEMENTATION

The CE implementation are evaluated according to 6 criteria: (1) Use of raw materials, products, and waste; (2) Use of product packaging; (3) Use of water; (4) Use of energy; (5) Use of equipment and infrastructure; (6) Ecosystem restoration.

All 6 evaluation criteria achieve positive results from level D- (beginner) of which 2 in 6 criteria achieve intermediate level (level C-) with the highest score being use of materials, products, waste (38.81 points) and use of equipment and infrastructure (37.61 points). Although the rest of criteria are at level D (beginning), energy use is currently at its lowest level (17.73 points, level D-).

The study shows that there is no significant difference between the group of enterprises producing and processing food and non-alcoholic beverages and those manufacturing, supplying raw materials and food packaging. The evaluation score on the preparation for transition to the CE is compiled in Table 4.2.

Table 4.2. Average score of CE implementation by business field

STT	Criteria	All enterprises	Enterprises producing and processing products	Enterprises producing raw materials and packaging
1	Use of raw materials, products, and waste (except packaging)	38,81	38,06	41,74
2	Use of product packaging	31,30	31,05	31,84
3	Use of water	25,25	26,51	19,59
4	Use of energy	17,73	19,41	13,83
5	Use of equipment and infrastructure	37,53	37,61	31,85
6	Ecosystem restoration	28,03	28,49	23,69
7	**CE implementation**	**31,72**	**31,81**	**30,56**

Note: *Level D (beginner), Level C (intermediate)*

Criterion #1

USE OF RAW MATERIALS, PRODUCTS, AND WASTE (EXCEPT PACKAGING)

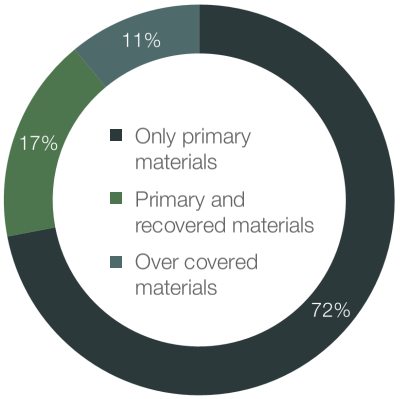
Raw materials are among the most important inputs to the food and non-alcoholic beverages processing industry. This criterion evaluates the origin of materials used and the treatment method and proportion of materials, products and waste that enterprises recover, recycle and reuse.

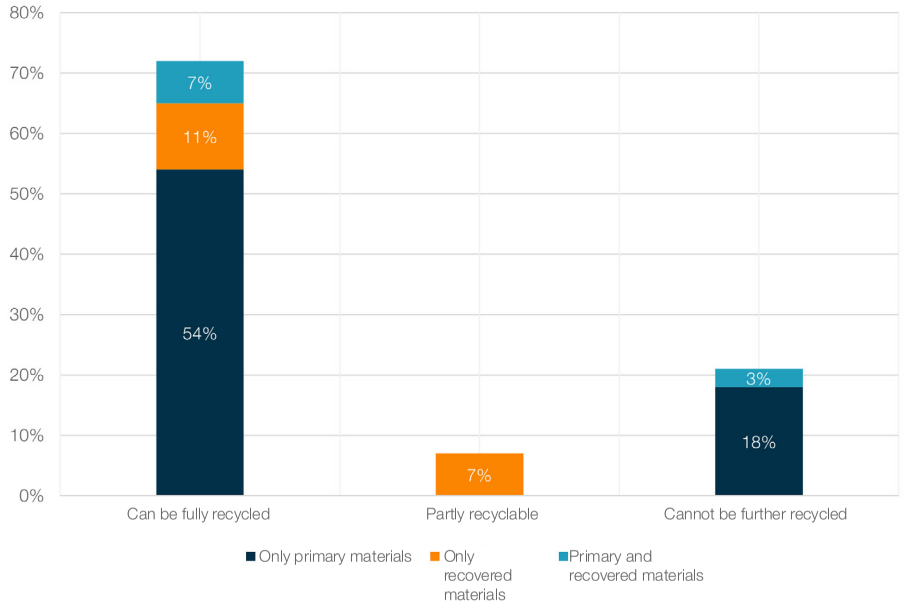
With the characteristics of producing and processing on demand, 89% of enterprises can actively decide how to use raw materials, products, waste of the producing process, the use of raw materials, products, and waste criterion reached 38.81 points (intermediate, level C-), ranked 2nd out of 11 evaluation criteria. The research results show that the proportion of enterprises taking advantage of scrap and waste according to the characteristics of input materials is appropriate, it is necessary to continue to expand management of raw materials, determining and monitoring the rate of scrap and waste recovered and recycled during and after processing.

The study results made the following findings:

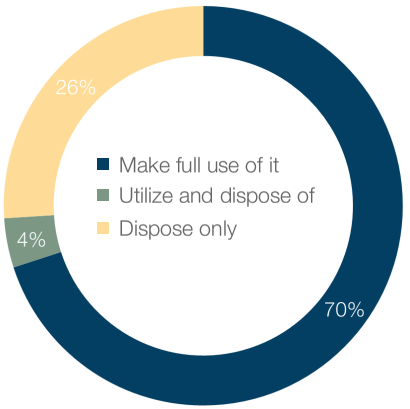
- Enterprises have taken advantage of recycled materials. The survey results show that although up to 72% of enterprises use primary materials, which are typical of the food and non-alcoholic beverage industry, 28% of enterprises use recovered and recycled materials along with primary materials to produce and process products. This is a clear recognization of the value of scrap and waste as an input to the production process. This ratio is observed to be similar in both groups of enterprises producing food and non-alcoholic beverage products and providing raw materials and packaging for production.
- The ratio of enterprises circulating and making use of scrap and waste is consistent with the above-mentioned characteristics of using raw materials. The characteristic of the materials used is that they can be recycled back to the production process. 72% of surveyed enterprises said that their materials could be fully recycled, 7% of surveyed enterprises said that their materials could be partially recycled and 21% of surveyed enterprises said that their materials could not be further recycled. 70% of enterprises fully utilize scrap and waste, 4% of enterprises partially utilize them. Research results also show that the ways enterprises handle the scrap and waste are very different. 41% of enterprises use scrap and waste as raw materials for the production of by-products, 11% of enterprises use it to create energy, and 36% of enterprises reuse it.
- The statistics on the percentage of recovered scrap and waste is still limited. 61% of surveyed enterprises participating do not quantify the percentage of recovered scrap and waste. Only 17% of enterprises achieve a recovery rate of over 50% of scrap and waste, the remaining 22% achieve a recovery rate of less than 50% of scrap and waste. Rate of recovered scrap and waste is only assessed within the scope of production and processing.

(a) Percentage of enterprises by characteristics of raw materials used





(b) Percentage of enterprises by method of waste and scrap treatment



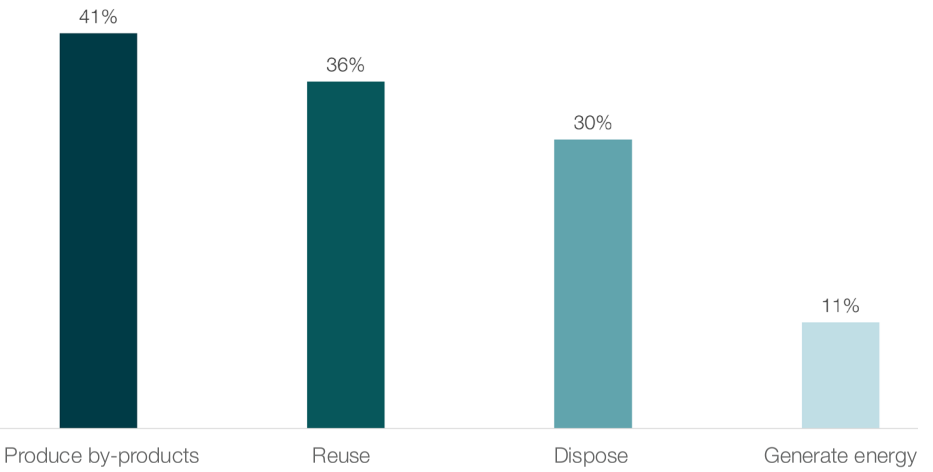


Figure 4.9. Use of raw materials, products, and waste

Criterion #2

USE OF PACKAGING

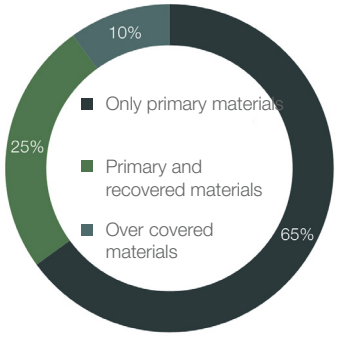
All surveyed enterprises use product packaging. This criterion evaluates the characteristics of packaging materials, the enterprises' concerns when choosing and handling packaging after use.

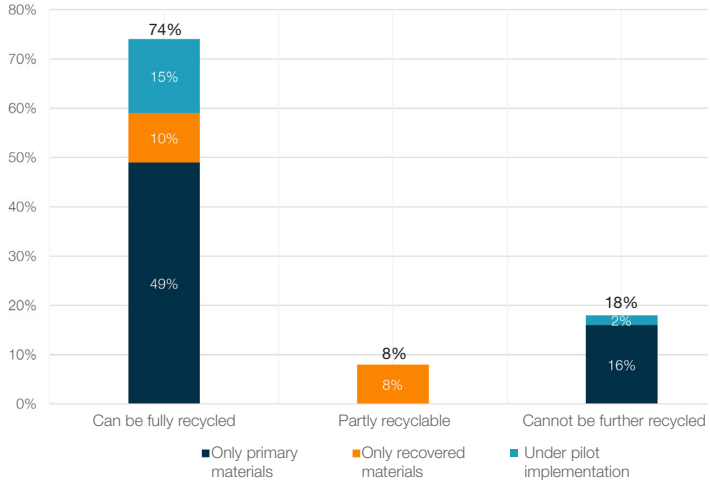
Although only 69% of surveyed enterprises could decide on the use of packaging due to processing requirements, the criterion of using packaging was assessed to have a positive change, reaching 31.30 points (beginner, level D), ranked 6th out of 11 evaluation criteria. Research results show that there are still enterprises that dispose of recyclable packaging, specifically 18% of enterprises said that packaging materials cannot be recycled while up to 35% of enterprises dispose packaging without take any action. The most popular way to take advantage of packaging is to reuse it. The rate of enterprises recycling or creating new products from packaging is still low. Activities to measure and monitor the amount of packaging recovered during and after the use of the packaging are still very limited. Packaging selection focuses on easy stackability.

The study results made the following findings:

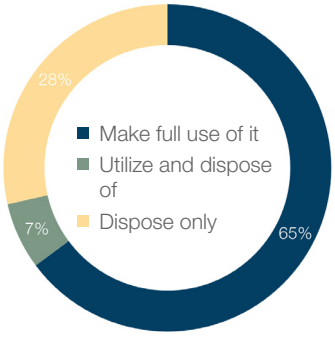
- Enterprises are most interested in the stackability of packaging. Packaging does not have as largevalue as input materials such as raw materials, water, and energy and is usually only paied attention to aspects of aesthetic assurance and food safety. Regarding awareness, the survey results show that in addition to the factors of aesthetics and food safety, 93% of enterprises are interested in parameters such as ingredients, percentage of recycled materials of packaging or other characteristics related to the sharing economy such as light weight, convenient for transportation, easy to stack, in which the factor of easy-to-stack is the most concerned (66% of surveyed enterprises).
- Information on the proportion of recycled materials in the packaging has not been considered. Although up to 24% of enterprises expressed concern about the proportion of recycled materials in their packaging, only 10% of enterprises had this information. Increasing the proportion of recycled components has been incorporated into the development strategy of some enterprises following the global strategy.
- The packaging after use should be taken back. 68% of enterprises have not recovered the packaging. Among 32% of enterprises that have recovered packaging, only 5% of enterprises have achieved a recovery rate of more than 50%, 15% of enterprises have a recovery rate of 10-50%, and 12% of enterprises achieved a recovery rate of lower than 10%. Reclaimed packaging will be reused (48%), recycled (14%) and even created new products (11%). Recovering packaging is mainly carried out at the production and processing stage and is currently researched to extend to the entire value chain. One of the obstacles of establishing an industrial-scale post-use packaging recovery system is the cost of collection and the social problems associated with the work of the bottle collectors. Only 19% of surveyed enterprises said that they have prepared for the implementation of EPR for packaging, while 81% have not prepared or said they are not subject to regulations.

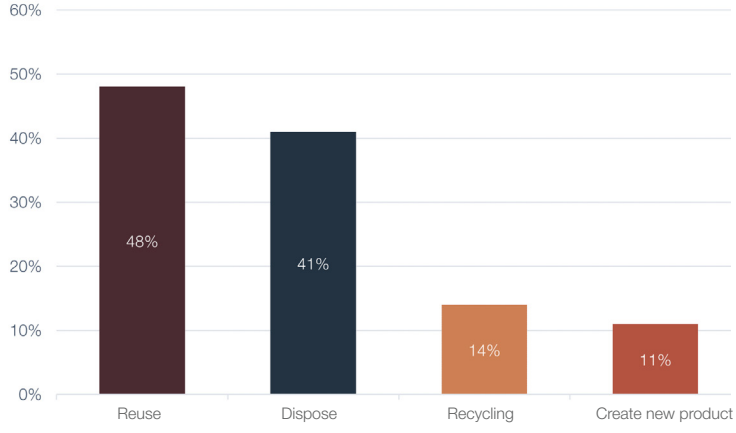
Figure 4.10. Use and handling of packaging



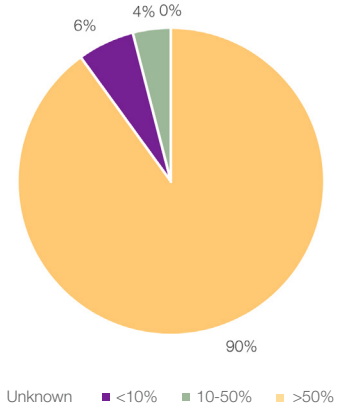


(a) Percentage of enterprises according to the characteristics of packaging materials used

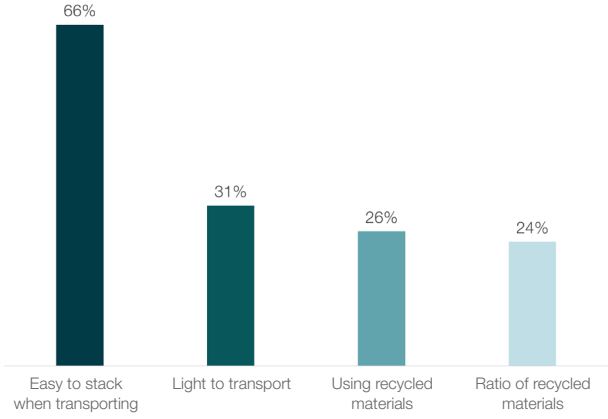




(b) Percentage of enterprises by packaging treatment method



(c) Enterprise ratio by proportion of recycled materials in packaging



(d) Percentage of enterprises according to packaging selection criterion

Criterion #3

USE OF WATER

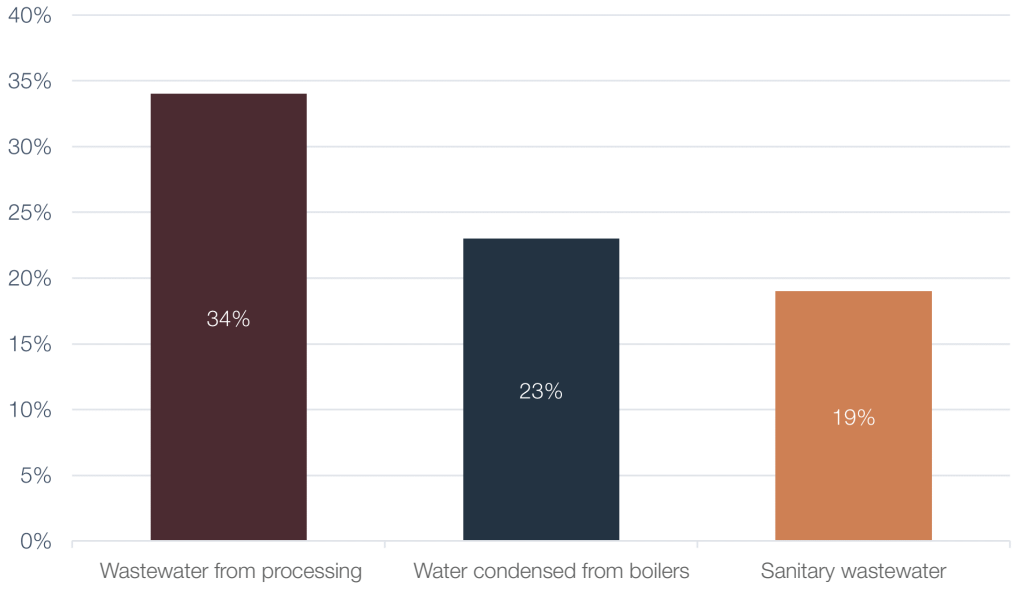
Water is an indispensable component in the operation of every business and is used for many different purposes. This criterion evaluates the level of wastewater circulation during use process.

Transition to the CE model in water use criterion achieves 25.25 points (beginner, level D) and is among the four criteria with the lowest level of transition to the CE model. This shows that the circulation of used water has not been paid enough attention. Although all surveyed enterprises use water with different needs and purposes, only 54% of surveyed enterprises have wastewater recirculation. However, 76% of enterprises do not know the proportion of wastewater recycled in their enterprise. Wastewater treatment is still a popular linear model with food and non-alcoholic beverage processing enterprises.

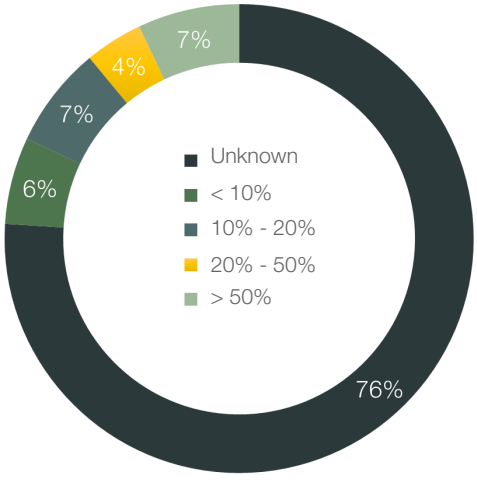
The study results made the following findings:

- Wastewater circulation has not been considered. 46% of surveyed enterprises participating are not interested in recycling and reuse of wastewater. One of the reasons is the cost of wastewater recirculation. Among surveyed medium and large enterprises, only 34% of enterprises recycle wastewater from processing; 23% of enterprises implement recirculation of boiler condensate and 19% implement recirculation of domestic wastewater.
- The quantification of wastewater that is recirculated and reused in the enterprise has not been done well. With 54% of enterprises having recycled wastewater and 76% of enterprises not knowing the recycling rate, it means that up to 22% of enterprises did not conduct the assessment on the recirculation and reuse rate.
- Rate of recirculated wastewater is low. Only 7% of enterprises achieved a wastewater recirculation rate of more than 50%. The investment cost of the wastewater recirculation system, especially the boiler wastewater recirculation system to make use of water and heat can be one of the obstacles to this recirculation.

Figure 4.11. Wastewater circulation



(a) Percentage of enterprises by type of recirculated wastewater



(b) Ratio of enterprises by the proportion of recirculated wastewater

Criterion #4

USE OF ENERGY

Energy is one of the inputs used in all surveyed enterprises in the form of electricity and (or) heat. This criterion evaluates the level of energy saved in 2020 as well as the role of renewable energy in economical and efficient use of energy.

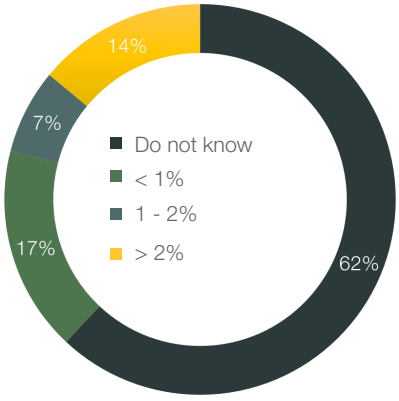
CE transition in energy use is still limited, reaching a low level. Although enterprises have had energy saving activities as well as using renewable energy, the achievement level is still modest, reaching 17.73 points (beginner, level D-) ranked 10th out of 11 criteria. Energy is a potential aspect for CE implementation. The investment in renewable energy has helped 7% of surveyed enterprises meet over 30% of usage demand. However, the percentage of enterprises interested in and implementing economical and efficient use of energy is still limited, which needs stronger promotion in the implementation of the Law on Economical and Efficient Use of Energy.

The study results made the following findings:

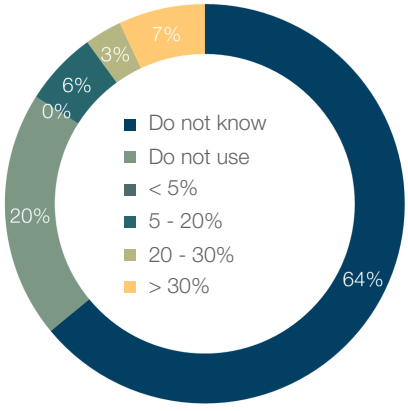
- Energy saving has not been widely deployed in enterprises. 62% of surveyed enterprises are not interested in saving energy, nor can determine their annual energy saving level. 14% of enterprises saved more than 2% of energy, 7% of enterprises saved 1–2% and 17% of enterprises saved less than 1% in 2020.
- Use of renewable energy can make a significant contribution to energy demand. Although only 36% of enterprises have renewable energy constructions, the survey results show that 7% of enterprises provided over 30% of their energy demand. Three forms of renewable energy are being used by enterprises, including biomass energy, biogas energy and solar energy, in which solar energy is used the most by enterprises (21%). This is an issue that should be noted by managers and enterprises in establishing cooperation programs between the stakeholders as well as developing regulations on economical and efficient use of energy.

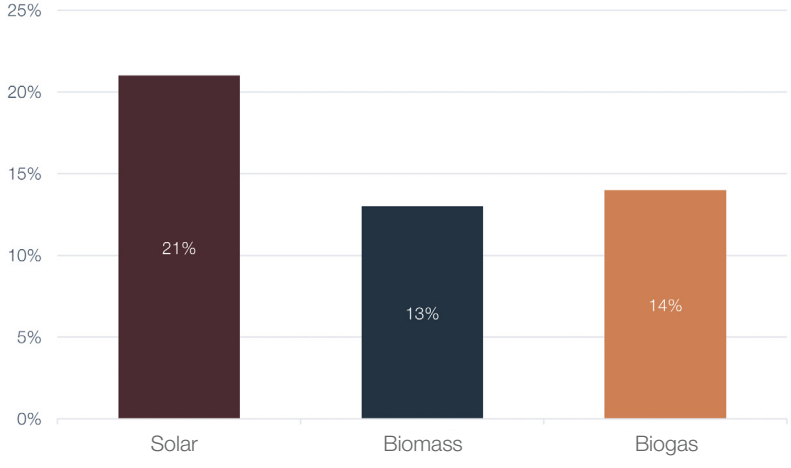
Figure 4.12. Use of energy

(a) Percentage of enterprises by energy saving level in 2020



(b) Ratio of enterprises by renewable energy capacity to demand





(c) Percentage of enterprises by type of renewable energy used

Criterion #5

USE OF EQUIPMENT AND INFRASTRUCTURE

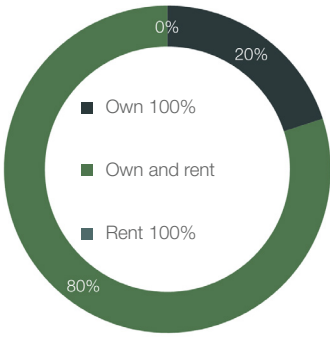
Equipment and infrastructure play important roles in the production and processing activities of enterprises, significantly contributing to improve labor efficiency and increase production output. This criterion evaluates how enterprises use equipment and infrastructure towards extending their life and efficiency.

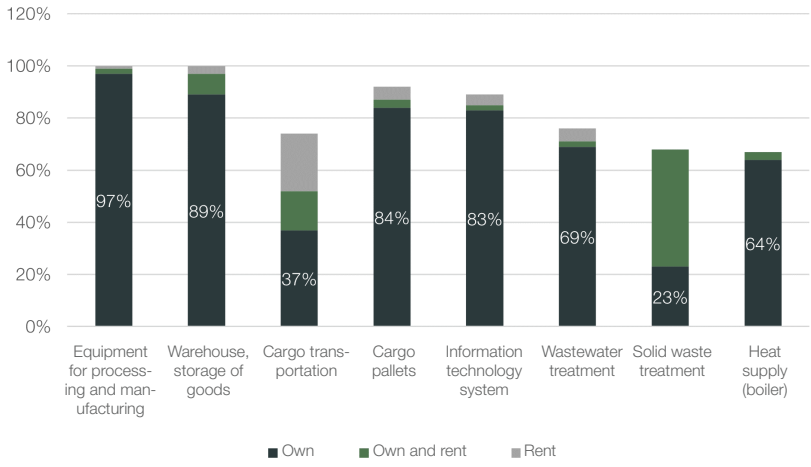
Use of equipment criterion is rated at a relatively good level (37.53 points, level D), ranked 3rd out of 11 criteria. The majority of enterprises own and rent a piece of equipment. The business that owns the equipment normally has maintenance activities. However, 16% of enterprises said they only care about breakdowns, equipment improvement or replacement instead of routine maintenance. In addition to equipment rental costs, 55% of enterprises are interested in other criteria related to CE, which should be promoted in the near future in the direction of the sharing economy.

The study results made the following findings:

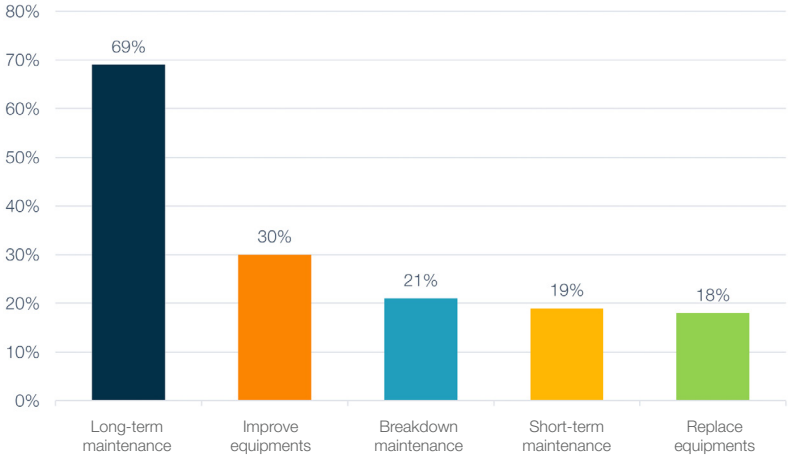
- No enterprise rents 100% of equipment and infrastructure. 20% of enterprises just own equipment, 80% own the main equipment and rent ancillary equipment, mainly equipment for transportation, wastewater and waste treatment.
- Most enterprises already have measures to maintain equipment and infrastructure. 84% of enterprises have maintenance activities. Long-term maintenance is applied in 69% of enterprises and short-term maintenance at 19% of enterprises. The remaining enterprises pay much attention to equipment improvement, breakdown maintenance or equipment replacement.
- There have been concerns on CE when choosing outsourced equipment. Among 80% of enterprises that have rent equipment and infrastructure, there are some enterprises that are interested in environmental and social benefits, equipment's lifespan, advantages of lower fuel consumption or less emissions to make decisions. The percentage of enterprises interested in these factors is 32%, 30%, 21% and 20%, respectively.

Figure 4.13. Use of equipment and infrastructure

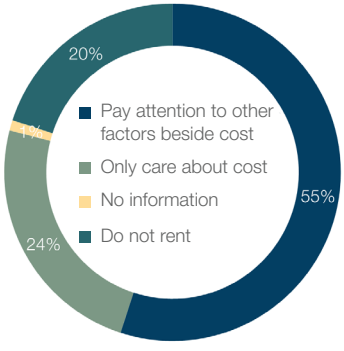


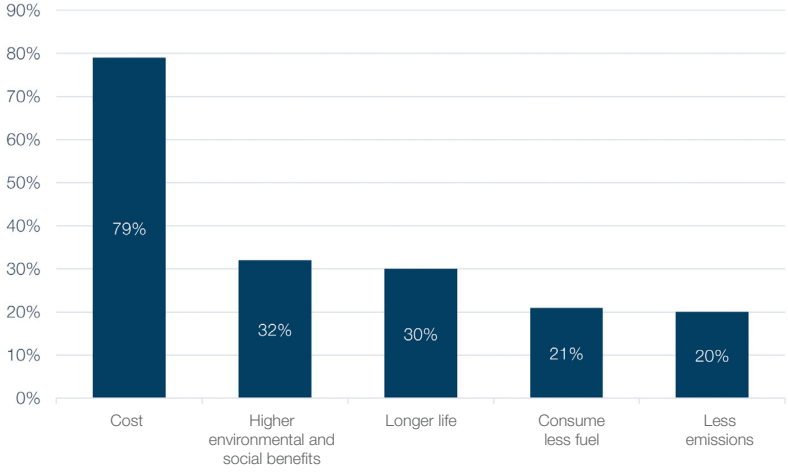


(a) Use of equipment



(b) Method to manage equipment





(c) Criteria for renting equipment

Criterion #6

ACTIVITIES THAT CONTRIBUTE TO ECOSYSTEM RESTORATION

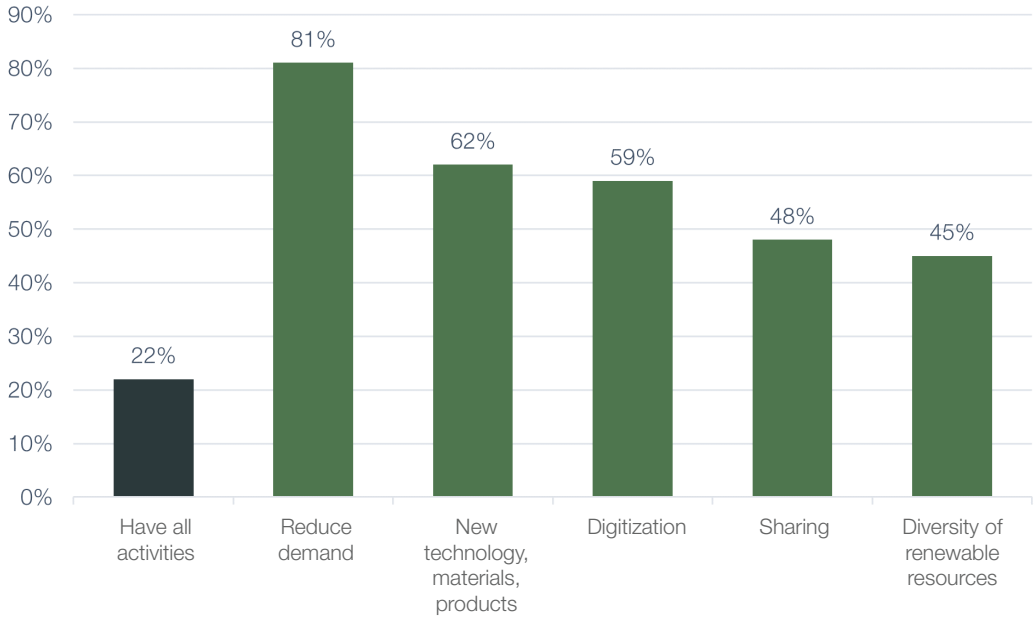
Ecosystem restoration criterion is not only used to evaluate the effectiveness of improving environmental quality, but also demonstrate the environmental responsibility of enterprises. The implementation of ecosystem restoration activities can be considered as a comprehensive approach to reduce greenhouse gas emissions, optimize resources, and bring sustainable values to the environment and society. This criterion evaluates the interest level of enterprises in the use and regeneration of the ecosystem, common use, resource sharing, optimization of resource as well as using of digital tools and updating, shifting to advanced materials, technologies and products.

The ecosystem restoration criterion achieves 28.03 points, reaching the beginner level (level D), ranking 7th out of 11 evaluation criteria. Research results show that activities contributing to ecosystem restoration are not synchronized, selective to increase income, and need financial support for stronger implementation.

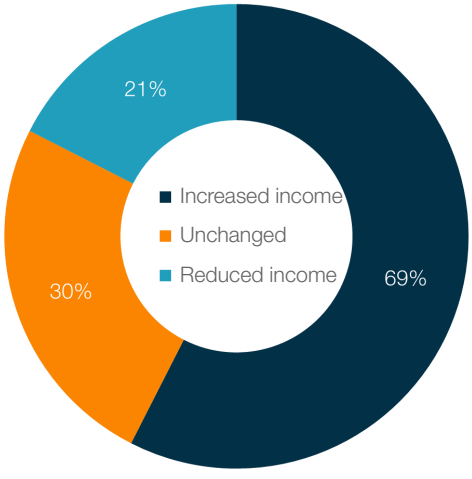
The study results made the following findings:

- Activities contributing to ecosystem restoration are not comprehensive and selective. 81% of enterprises carry out activities to optimize the resource demand, 62% of enterprises are interested in using new technologies and materials, 59% of enterprises implement digitalization, 48% of enterprises share equipment, 45% of enterprises use multiple resources. However, the options are geared towards the goal of increasing income. Only 22% of surveyed enterprises have carried out all groups of activities contributing to ecosystem restoration, of which 16% have activities to return resources.
- The purpose of reducing resource demand is to reduce costs. Among 81% of surveyed enterprises indicating that they have implemented resource optimization activities, 66% of enterprises have implemented solutions to reduce waste, 30% have implemented solutions to recycle and reuse materials, 26% implemented solutions to increase the value of products. Enterprises are more interested in advanced technology than new materials. 51% of enterprises said that they have activities related to advanced technology, 31% of enterprises have new products and services, and 19% of enterprises use advanced materials.
- Digitization in production is not as good as expected in the context of the sweeping 4.0 revolution. Although 59% of enterprises implement digitization, activities related to digitization in production include digital office (34%), using digital processes in production (32%) and providing and using digital services (18%).
- The resource sharing activities with stakeholders is mainly common use and sharing of pallets, packaging. Among enterprises that have activities of sharing resources with stakeholders, the rate of enterprises with common use, pallets and packaging sharing accounts for the majority with 33%. There have been activities of sharing equipment, infrastructure (16%) and sharing information, solutions and services (18%).
- Among enterprises that have used and regenerated the ecosystem, the proportion of enterprises using renewable energy and materials accounts for 27%, followed by the proportion of enterprises returning resources, restoring the ecosystem with 16%. However, only 5% of enterprises said that they use renewable energy and materials.

Figure 4.13. Activities that contribute to ecosystem restoration



(a) Activities that contribute to ecosystem restoration



(b) Financial impact

EVALUATION BY PRODUCT GROUP

The level of CE implementation is assessed with 9 subgroups of products, including: (1) processing and preserving of meat, fish, and aquatic products, (2) processing and preserving of fruits and vegetables, (3) processing milk and dairy products, (4) production of non-alcoholic beverages, (5) processing of tea and coffee, (6) processing of confectionery, instant food, (7) processing of oil, rice, sugar, salt, flour, (8) farming, supplying raw materials, and (9) manufacturing packaging.

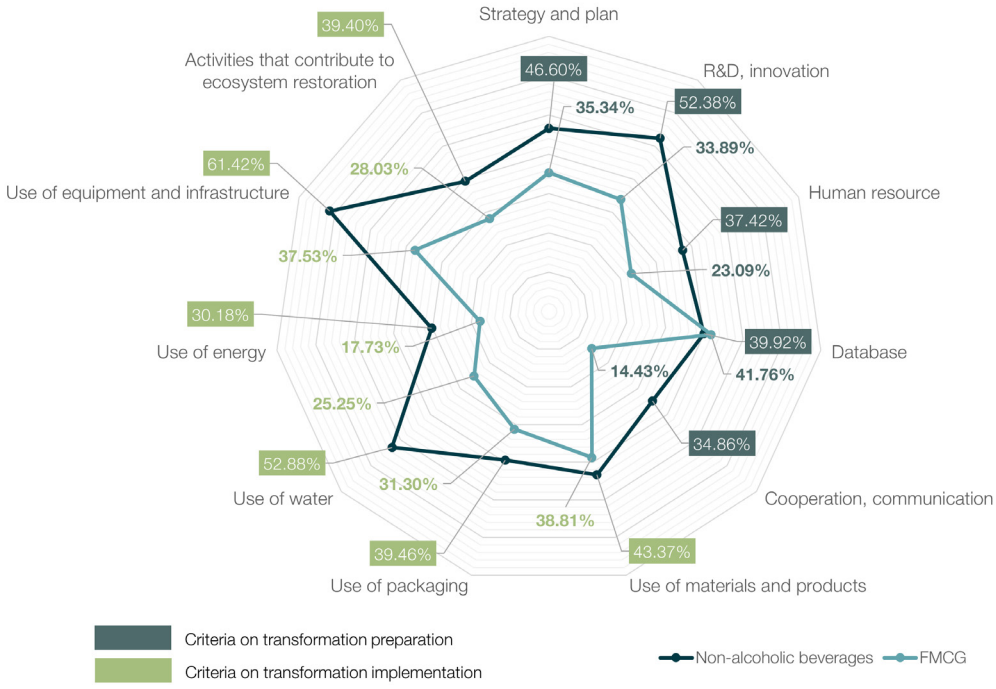
Although the number of surveyed samples for each product group is limited, the average scores for each product group are aggregated to serve as a basis for further studies. Research shows that the average score of the above product groups is from D level (initial level) or higher level with an average score of 30.86. The evaluation results between the product groups are quite similar, except for the group of enterprises producing non-alcoholic beverages. 2 out of 9 product groups with the highest transition level (Intermediate, level C-) are non-alcoholic beverages and milk and dairy products. The group of tea and coffee enterprises had the lowest score (25.21 points) but still achieved level D.

Despite being in the same intermediate transition group (Level C-), the non-alcoholic beverages processing group had a much higher transition score than the dairy product group, achieving the highest average score with 43.13 points. Compared with the whole FMCG industry, the evaluation score of the non-alcoholic beverages group are superior, especially the equipment use criterion (61.42 points, level B-). The criteria on use of water (52.88 points, level C), and R&D and innovation (52.38 points, intermediate, level C) of the non-alcoholic beverages group have higher transition level than those of the whole industry. Among the 11 criteria, the database criterion of the non-alcoholic beverage group has a lower assessment score than that of the whole FMCG industry (39.42/41.76 points). This is a matter of great concern, because the database is the criterion that achieves the highest score of 41.76 out of 11 evaluation criteria.

Although there is a positive transition to the CE model in 9 product groups based on 11 evaluation criteria, the survey results show that there are still 4 product groups that have not had any transition activities related to criteria on cooperation & communication and use of water and energy as follows:

- Meat, fish, aquatic products: Cooperation & communication (9.38 points)
- Vegetables: Cooperation & communication (8.13 points)
- Tea, coffee: Cooperation & communication (9.48 points), Water use (9.62 points)
- Food packaging: Energy use (8.78 points)

Figure 4.15. Evaluation score of the group of non-alcoholic beverage enterprises



SURVEY RESULTS

3 Opportunities and challenges

According to many experts, the 2020-2030 decade is a decisive period for Vietnam to transform itself into an industrial country. This is an important milestone and opens up many development opportunities for the country's economy. The transition from a traditional economy to the CE is considered an effective solution, helping to maintain economic development while minimizing adverse impacts on the environment. In the context of accelerating industrialization and modernization, the transition to the CE model helps shorten the development gap of Vietnam compared to other countries in the region and the world.

The opportunities for the development of the local economy in Vietnam are reflected in the following points:

Firstly, CE is a general development trend of the world in the context of increasing environmental pollution, climate change and depletion of natural resources. Many countries in the world like Netherlands, Sweden, Japan, Singapore etc. has applied the CE model and achieved great benefits. This is a testament to the correctness of the CE model and at the same time suggests many lessons for other countries, including Vietnam.

Second, sustainable consumption is becoming a new requirement as consumers begin to pay attention to environmental issues. According to a study by Circular Colab (2018) in the United States, 66% of consumers said they were willing to pay more for environmentally friendly products, 88% of consumers would stick with enterprises that have active activities in environmental protection and sustainable social benefits, 76% would leave suppliers, enterprises operate contrary to consumer expectations, etc. In Vietnam, according to the Corporate Social Responsibility Report (Nielsen, 2017), consumers were paying more and more attention to "green" and "clean" issues, especially health factor, natural organic products, environmentally friendly products. The report also shows that up to 86% of Vietnamese consumers are willing to pay more to buy products with a commitment to positive environmental and social impacts. However, customers do not simply want to consume green products. They want the product to be sustainable and environmental friendly during the entire production and consumption process. This causes manufacturers to find ways to change their production and business models in order to fulfill social responsibility and meet the increasing requirements of consumers.

Third, the industrial revolution 4.0 creates technological breakthroughs, fundamentally changing production methods with the combination of real and virtual systems, breaking the material limits of the development process, creating unprecedented scale and speed of development in economic, social and environmental history globally, in the region and in each economy. The birth of many green, smart and environmental friendly technologies is a golden opportunity to help Vietnamese enterprises shorten the time to access modern technology in the world, narrowing the gap in technology level with other countries.

Fourth, the development of the CE model has been incorporated into the guidelines, policies, strategies of socio-economic development, legal documents of Vietnam and received the consensus and support of all classes of society because it can solve the problem of resource scarcity, protect the environment, respond to climate change and improve economic efficiency.

Last but not least, Vietnam is in the process of perfecting the socialist-oriented market economy institution. The encouragement and creation of a mechanism for the private economy to develop in the context of a competitive market will create many opportunities for investment by the private sector in the implementation of the development of the CE in the coming time.

In addition to having opportunities, Vietnamese enterprises also face many challenges in transforming to CE model, such as:

Firstly, the pressure for the transition is not strong enough to make a change. Social pressure from the community, suppliers, customers, and consumers is assessed as a factor that has a close relationship with the behavior of enterprises shifting to the CE model. The survey results show that FMCG enterprises do not have to bear much pressure from customers. Only about 20% of enterprises receive requests from customers on issues such as the percentage of recycled materials in products or packaging, the percentage of renewable energy used in production and business activities, etc.

Second, the mechanism to encourage the transition to the CE model still has many limitations and inadequacies. The transition to the CE model requires the cooperation of many stakeholders. The survey results show that enterprises carry out transition activities based mainly on their own experiences, initiatives and financial and technical capabilities. 54% of surveyed enterprises believe that the transition to the CE model faces many difficulties in terms of policy, technology, technique or finance. Recovery and recycling activites of materials, products, waste, water, energy, etc. are only implemented within the enterprise scale due to the costs to build a recovery and recycling system for the entire value chain is high. Although the transition to renewable energy and raw materials has a lot of potential, there is no incentive mechanism (for example, lack of mechanism for biomass energy, or a limitation on scale with solar energy). In addition, there is no system to recognize the efforts and achievements of enterprises in transition to the CE model, as a base for proposing appropriate incentive mechanisms.

Finally, there is a lack of information and demonstration models of CE that are suitable for Vietnam's conditions. CE is an economic model in which design, production, consumption and service activities aim to reduce the exploitation of raw materials, prolong product life cycles, limit waste generated and minimize negative impacts for the environment (Law on Environmental Protection 2020). In essence, the transition to the CE model is to increase the efficiency of using raw materials and products to gradually contribute to the restoration of the ecosystem while still bringing economic efficiency to enterprises and need the participation of all parties in the product value chain. Although the idea of the CE model is very feasible and effective, the practical application in Vietnam is still not much. The demonstration models have not yet created persuasion and spread in the business community.

PART FIVE

CONCLUSIONS AND RECOMMENDATIONS

1 Conclusions

Current status and potential for transition to the CE model is assessed on a 100-point scale with 5 levels of readiness: (A) Champion (77.78-100 points); (B) Advanced (55.56-77.78 points); (C) Intermediate (33.34-55.56 points); (D) Beginner (11.12-33.33 points) and (E) Not started (0-11.11 points). The research results allow to draw some conclusions about the application of the CE model to the food production and processing industries and non-alcoholic beverages industry as follows:

FMCG enterprises have been actively preparing for the transition to the CE model, but cooperation and communication activities on CE transition are still lacking and weak.

90% of Vietnam's FMCG enterprises have taken actions in transition to the CE model. Although the majority of enterprises have a low level of transition to the CE model (49% of enterprises at a preliminary level; 33% at intermediate level of transition) the percentage of enterprises with advanced transision reached 8%. The evaluation results are positive and similar among all 9 product sub-groups with leading score of non-alcoholic beverages subsector. The total score was recorded at 43.13 points (level C-).

For the first Group of assessment - Preparation for transition, two criteria with high weight in the total score are planning and strategy (30%) and R&D (20%) achieved level C- with 35.34 points and 33.49 points respectively. However, the criterion on cooperation and communication with suppliers and customers is relatively low (14.43 points). This even was not recorded in some product groups such as processing meat, fish, vegetables, tea and coffee. This shows that transition efforts have not been equal among the entire product value chain. The criterion on preparation of the database has the highest level (41.76 points). It shows that understanding the composition and recycling rate of raw materials will serve a good base for the preparation of cooperation and communication in the near future for the entire value chain.

Although all surveyed enterprises use packaging, currently, only 19% of enterprises are prepared to implement extended producer responsibility requirement. More than 80% of surveyed enterprises state that they are not under the coverage of this policy and thus are not prepared for that. The low rate of enterprises participating in policy formulation (7%) is also one among the factors affecting the awareness and cooperation and communication activities in the transition to the CE model for the entire value chain.

Using raw materials, infrastructure, and packaging is the priority of FMCG enterprises in transition to the CE model

The CE model has been applied to all inputs of the production and manufacturing process. The survey results show relatively big difference in the level of transition to the CE model across the activities: The leading criterion is the use of raw materials, products and wastes through the recovery and recycling and reuse activities (38.81 points), followed by equipment use (37.53 points, level C-). The transition activities in the use of packaging (31.30 points), use of water (25.25 points) and use of energy (17.73 points) are in their infancy (D and D-).

Transition in energy use has not been prioritized properly

The criterion on using energy has the lowest weight (only 10% of the total score) in the input materials of the production process. The survey results show that this is one among the bottlenecks of the transition to CE model process. This activity has not even been observed in the tea and coffee product group, which has the potential to participate strongly in the global value chain. Currently, only 38% of enterprises use energy economically and efficiently and 16% of enterprises use renewable energy to meet part of the energy demand in production process.

2 Recommendations

Based on the current situation, prospects and barriers for the application of the CE in the FMCG industry in Vietnam, the research offered several recommendations to promote the transition to the CE model as follow:

Better incentive mechanism for transition to the CE model

International experience shows that the transition to CE requires support from the Government. Financial support, infrastructure for CE (collection and recycling system, accountability, etc.), human resources, and information are essential to create an incentive mechanism to promote transition to the CE model. In addition, it is necessary to have a system of evaluating and recognizing and rewarding the efforts of enterprises in CE transition in place. The activities of the Packaging Recycling Organization (PRO), especially in development of an expanded producer responsibility policy should be further replicated. Along with PRO activities, UNDP's CE network launched in October 2021 should bring benefits to enterprises, especially in building a mechanism to encourage efficient use of resources according to the CE model.

Establishing effective relationships with multinational enterprises and foreign partners to learn and transfer technology on CE

Given the relatively low level of development, learning from multinational corporations and foreign partners and working with them is the most effective, pratical and quickest way to shift to CE for the countries like Vietnam. While waiting for specific regulations on the requirements for transition to the CE model to be effective, learning and networking with MNCs may lead to foreign market access as well as joining the global value chain. Technology transferred in this way is actually used and not just learned theoretically to be forgotten soon. In Vietnam, there are instances of such spontaneous teaching. But improvements this kind of piloting project are limited in scale relative to the size of the national economy and cannot produce visible results or significantly promote CE transition. Policy is required to accelerate and expand such "win-win" teaching and learning.

Building successful CE models as a base for deployment and replication

By nature, the transition to the CE model is to increase the economic efficiency of using raw materials and products to gradually contribute to the restoration of the ecosystem. There is a need for participation of all parties along the the product value chain. The survey results show that Vietnam does not have leading companies for CE transition (level A) that can lead other enterprises in the industry. The number of companies achieving advanced level (Level B) is still limited (3 enterprises). Therefore, sharing information, implementation experience from international good practices as well as building CE models transition suitable to Vietnam's context is of great importance to reconfirm the benefits and promote enterprises to participate more strongly in the global development trend.

Using multi-stakeholder approach to promote the application of CE model

The multi-stakeholder approach emerged from a perceived need for a more inclusive, effective manner to address urgent sustainability issues. It aims to bring together all major stakeholders in a new form of communication, consultation and decision-making on a particular issue. It is based on the recognition of the importance of equity and accountability among stakeholders. In the case of transition to the CE model in Vietnam, the key stakeholders would likely consist of industrial/economic, policy, and societal networks.

The efforts of companies alone may not be sufficient in transition to CE. Joint initiatives with MONRE, MARD, MOST and MOIT, for example, to introduce environmental-friendly and CE technologies, facilitate information exchange and develop collective actions are recommended. The enhancement of the role and functions of VCCI, industry/sector associations, packaging recycling organization (PRO), UNDP's CE network as a bridge between enterprises and policy makers are essential to greening the FMCG industry in Vietnam.

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Food and Non-alcoholic beverages sector

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