

Hitachi-AIST Cooperative Research on Circular Economy - Grand Design to Embody Future Vision of a Circular Economy Society and its Pathway



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The purpose of the Grand Design for a Circular Economy

◆ The purpose of the Grand Design for a Circular Economy is to provide a vision of the ideal society to realize a circular economy society in which resources are used efficiently throughout the value chain across industries, and to serve as a basis for studying solutions to problems.

◆ We are studying what the manufacturing industries of Japan will look like in 2040 by using scenario analysis, while also taking into account relationship with other countries.

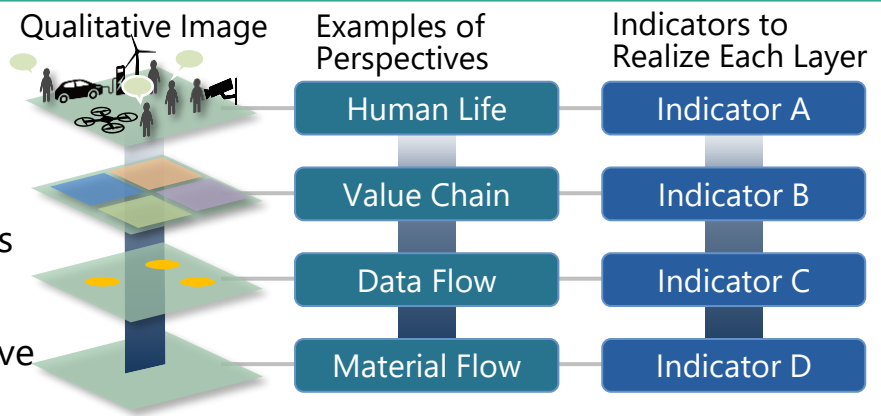


Definition of Scope

◆ We avoided complication by dividing the grand design into multiple layers, such as "Human life," "Value Chain to support human life," "Data flow" and "Material flow".

◆ In addition, we created a qualitative image for each of these layers, and are planning to develop the quantitative indicators as the basis for realizing the state of each layer.

◆ We attempted to link qualitative future scenarios and quantitative indicators to present a concrete roadmap for the future.



Scenario Planning

STEP1: 61 Topics were identified through a literature review of domestic and international government reports experts' opinions, proposals, and presentations[1]-[4]. From these topics, future directions and issues were sorted out, and 12 hot topics were defined as the items required attentions.

Hot Topics Surrounding the Circular Economy Society

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|--|---|
| 1 Highly efficient recovery of waste | 7 ESG investment and financial measures |
| 2 Consumer behavior change, awareness building, Lifestyle change | 8 Export of waste materials and the evolution of international trade |
| 3 Transformation of corporate roles and business models | 9 Responding to regional characteristics |
| 4 Common rule formation, institutional and standardization, soft law | 10 Integration of economy, resources, and environment; decoupling |
| 5 Supply chain disclosure and advanced management | 11 Environmentally conscious design, eco-design |
| 6 Developing human resources for venous Industry | 12 Circularity indicator (environmental time horizon, smoothness of flow) |

STEP2: 12 industry experts were interviewed to confirm the validity of the hot topics, the most influential topics for the future were selected and their backgrounds were extracted. Based on the results of it, two themes were set up for the development of future scenarios.

Theme 1: International division of labor in manufacturing and economic security

Theme 2: Regional circulation models and ecosystems

STEP3: We are currently conducting PESTLE analysis regarding Theme 1. It was found that the decoupling the economy growth and environmental burden due to changes in consumer behavior and organization responsible for product maintenance are important future changes.

Conclusions and Outlook

In this study, we showed the processes to structure the overall world view as a "grand design layer" and clarify its details by using scenario planning techniques. In the future, based on the results of PESTLE analysis, multiple possible future directions will be derived for theme 1 after clarifying the key driving forces.

[REFERENCE]

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4. Disclosure and dialogue guidance for promoting sustainable finance related to circular economy (in Japanese) <https://www.env.go.jp/press/108893.html>