Redesigning the socio-economic system to more sustainable and resilient through 3 transitions

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Backdrop to COVID-19 Crisis in Japan

Jan. 15 The first patient in Japan was identified.

Jan. 30 WHO declared a Public Health Emergency of International Concern (PHEIC).

Mar. 2 Emergency national closure of elementary and middle schools.

Apr. 7 The government declared **a state of emergency**. "Basic Policies for Novel Coronavirus Disease Control" were amended.

> Waste treatment enterprises were listed as a business required to continue operations under the state of emergency to maintain the minimum living standards of the nation.

May 25 Lifting of the state of emergency

Outcome of Waste Management Measures in Response to the Spread of COVID-19

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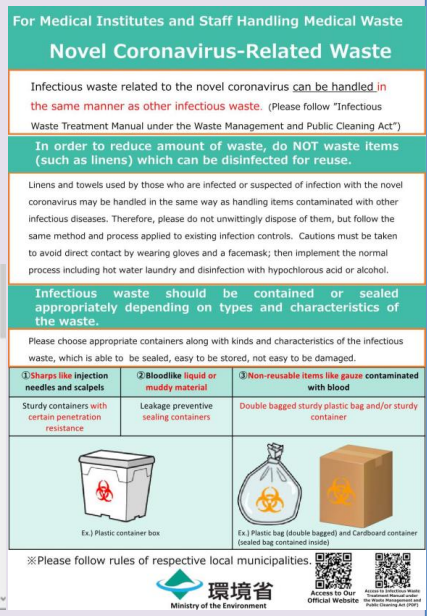
～ Initial actions ～

- Response measures which targeted at specific site, such as the cruise ship with cluster or returnees from Wuhan
- Measures complying with the existing "**Infectious Waste Treatment Manual** "and "**the Guidelines on Measures for New Strains of Influenza in Waste Management"**

～ Actions during the spread of infection ～

- ✓ **Creation of leaflets and video**
- ✓ **Development of Q&As**
- ✓ **Enactment of legislative amendments** to deal with potential shortfalls in regular normal waste treatment capacity or issues concerning compliance with performance obligations.
- ✓ **Bridged PPE providers and waste treatment operators**
- ✓ Developed **"Guidelines on Measures for COVID-19 in Waste Management"**

Video



Leaflet

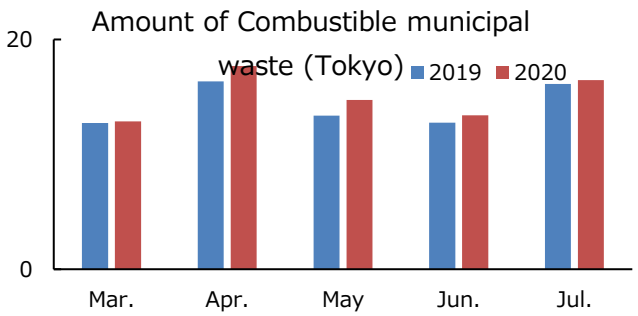
Social Change after the COVID-19 Pandemic

Issues to be considered for municipal waste management after the spread of COVID-19
-Short Term-

Shifting waste generating sites by increased remote working

Shifting from offices to homes, and from cities to rural areas, with the increased activities at home according to the widespread remote working and online classes.

- ✓ In Tokyo Metropolitan Area, **increased household waste 1 - 0%,decreased business waste 14-43%,** in March to June 2020. [1)]
- ✓ Waste generation which currently concentrated in large cities could be **dispersed to rural areas** if rural migration accelerates due to the rural relocation of headquarters and the widespread of remote-working.



1)Clean Authority of Tokyo

Change in waste characteristics and volume

Changing consumer behaviors by adopting the "New-normal" style through avoiding 3Cs and going online

- ✓ **Increasing of E-commerce and food-delivery** causes the increase delivery cardboards and packing plastics as waste .
- ✓ **Increasing infectious and medical waste(PPEs)** in hospitals.
- ✓ Possibility of **waste generation reduction from the several industries** such as accommodations, food-beverage, wholesales & retails, and entertainments that significantly declined their sales .

Industries with reduced sales due to the COVID-19 pandemic

Industries	Ratio of companies decreased in sales*.
Lodging	84%
Food and Beverage	68%
Fitness clubs movies, theaters, etc.	40%
Wholesale and Retail	20%

2) Adapted from Document 3 of the Growth Strategy Committee of the 3rd Industrial Structure Council

Percentage of companies whose sales decreased by 30 percent or more (March 2020, vs. same month last year)

Social Change after the COVID-19 Pandemic

Issues to be considered for municipal waste management after the spread of COVID-19 -Long Term-

◆Possible waste stream change due to supply chain transformation

Assumed the change of supply chain utilizing digital transformation will be accelerated with the experiences of massive food and manufacturing losses

- ✓ Occur production adjustment (disposal) agricultural products, etc., with voluntary business restraint of restaurants
- ✓ Proceed the construction of supply chain with less waste loss due to overproduction and expiration, thanks to the development of cold technology and demand forecasting through AI.
- ✓ Facilitate domestic market return and decentralization of supply chain in light of suspending of manufacturing factories' operation due to the stuck of overseas component supplying.

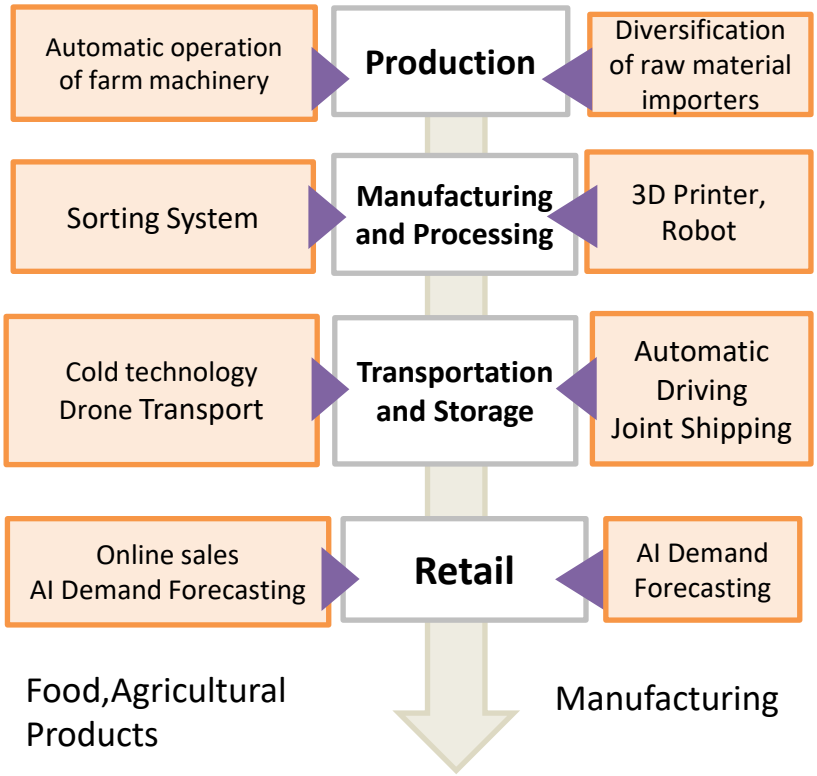


Image of Supply Chain Transformation

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Redesign the Socio-Economic Structure through "Three Transitions"

＜With&Post COVID-19 Pandemic＞

Redesign the socio-economic structure toward more sustainable and resilient ⇒Achieving SDGs in local area

3 Transitions

1.Decarbonized Society

- Decarbonizing under "New Normal" situation
- Accelerating Innovation

2.Circular Economy

- **Implementing "Resource Circulation Strategy on Plastic "**
- **Sustainable and resilient waste management system**

3.Decentralized Society

- **Promoting renewable energy**
- **Promoting new life style and business utilizing nature and biodiversity**
- **Climate change and disaster prevention, adaptive recovery**

Measures supporting the Transitions

Society Transformation utilizing ESG Finance, Nudge, or by starting up new business

Enhancing Environmental Cooperation Strategy

- Cooperation toward COP26 on climate change and COP15 on biodiversity
- Expand and deepen "Osaka Blue Ocean Vision" initiative

Protecting Basic Health & Environment

- Infectious disease measures
- Asbestos,PCB and Mercury

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Resource Circulation Strategy for Plastics

Key Strategies

Basic Principle: "3Rs + Renewable"

- Reduce
- Recycling
- Recycled materials
- Bio-plastics
- Marine Plastic Litter
- International Cooperation
- Infrastructure development

Milestone

＜Reduce＞

(1) Cumulative reduction of **25%** of single-use plastics by **2030**

<Reuse/Recycle>

(2) Reusable/recyclable design by **2025**

(3) Reuse/recycle **60%** of containers and packaging by **2030**

(4) **100%** effective use of used plastics by **2035**

<Recycling and Bio-Plastics>

(5) **Double** the use of recycled amount by **2030**

(6) Introduce **2 million tons** of bio-plastics by **2030**

◆Not only solve worldwide resource and environmental issues, but also contribute to economic growth and employment creation

⇒ Contribute to sustainable development

◆Promote investment and innovation of technology and consumer lifestyle through collaboration with all the stakeholders

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Future Waste Management

Basic Principle

Building waste management system for enriches local communities by promoting "3Rs + Renewable" and ensuring the sustainability of proper management

Basic Method

-Change in waste volume and quality
-Staffing and Financial Constraints
-Utilizing ICT
-Promoting resource circulation
-Infection countermeasures etc.

-Decarbonization
-Climate change adaptation
-Resilience of waste treatment facilities
-Waste Energy Utilization etc.

Improve public health and conservation of living environment through ensuring proper management

・Responsibility for proper management by the municipalities
・3R＋Renewable

Deal with disasters, climate changes, etc.

-Promoting regional revitalization and local industries
-Self-reliant and decentralized energy systems
-Change as a disaster-prevention center

Waste treatment creating new value for community
⇒ **Creating "Regional Circular and Ecological Sphere "**
(Local SDGs)

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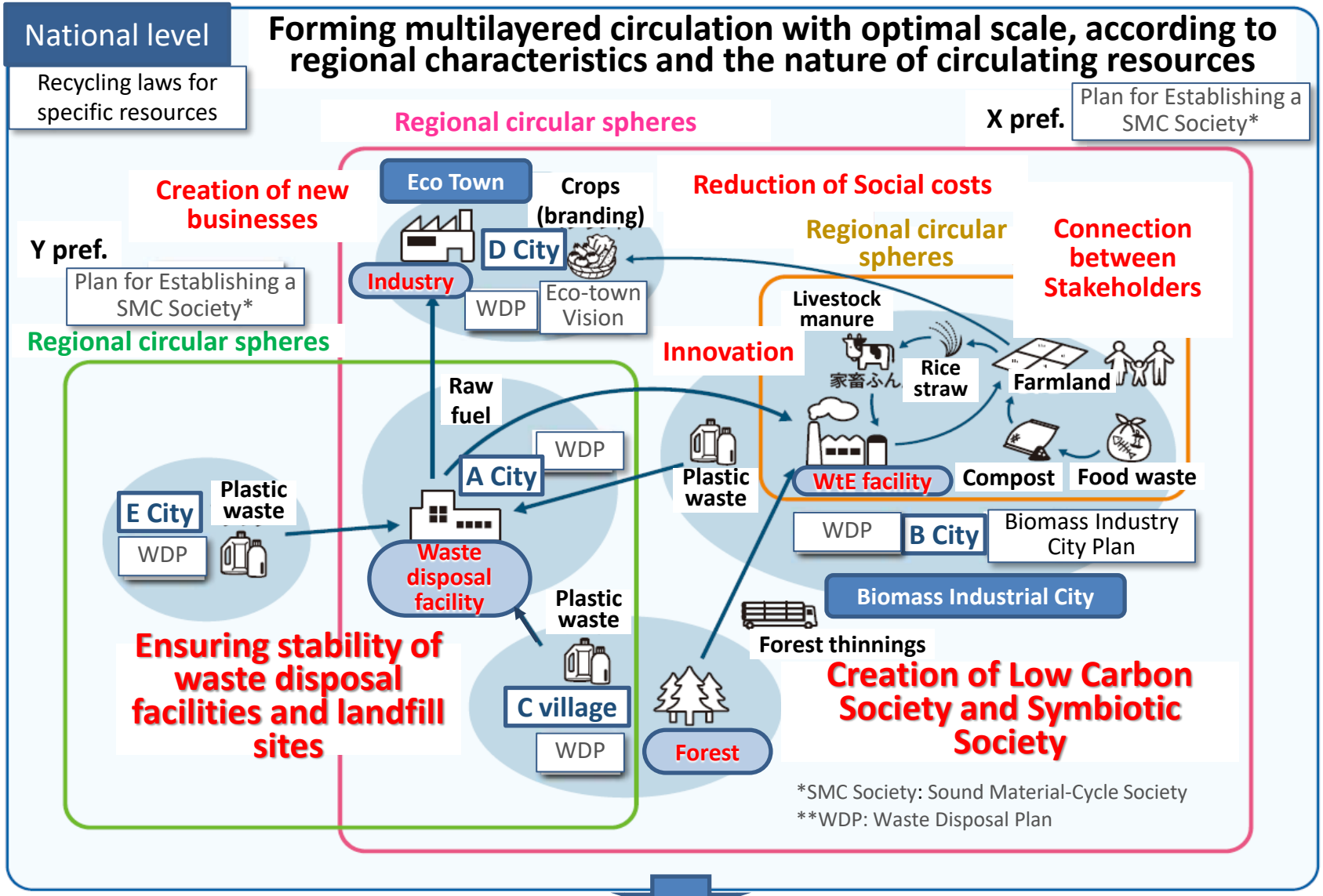
Regional Circulating and Ecological Spheres

National level

Recycling laws for specific resources

Forming multilayered circulation with optimal scale, according to regional characteristics and the nature of circulating resources



Creation of regional circular and ecological spheres