Bio Waste Recycling for Local Revitalisation: *Lessons from Japanese Cities*

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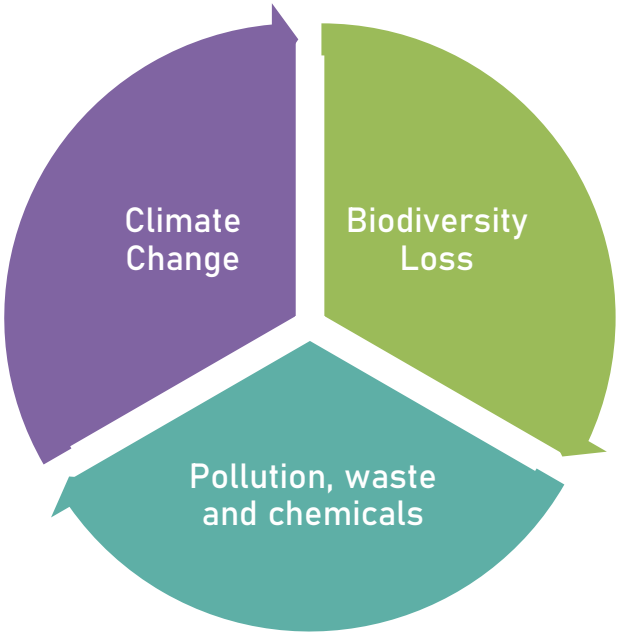
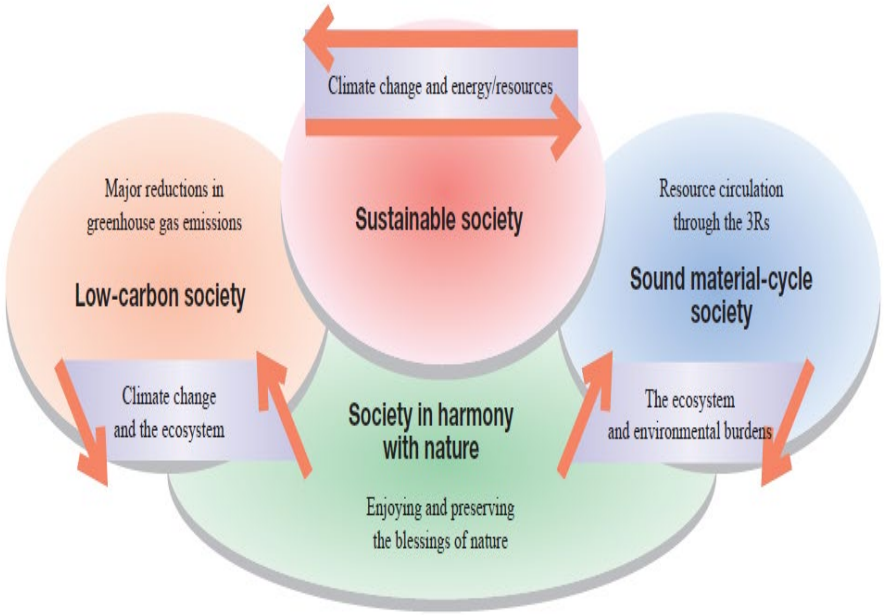
Urgency of Creating Sustainable Society

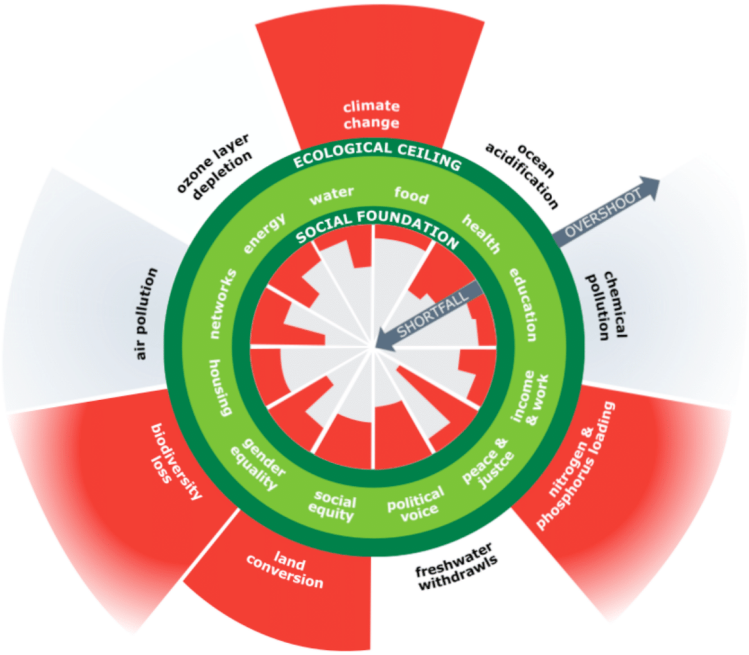


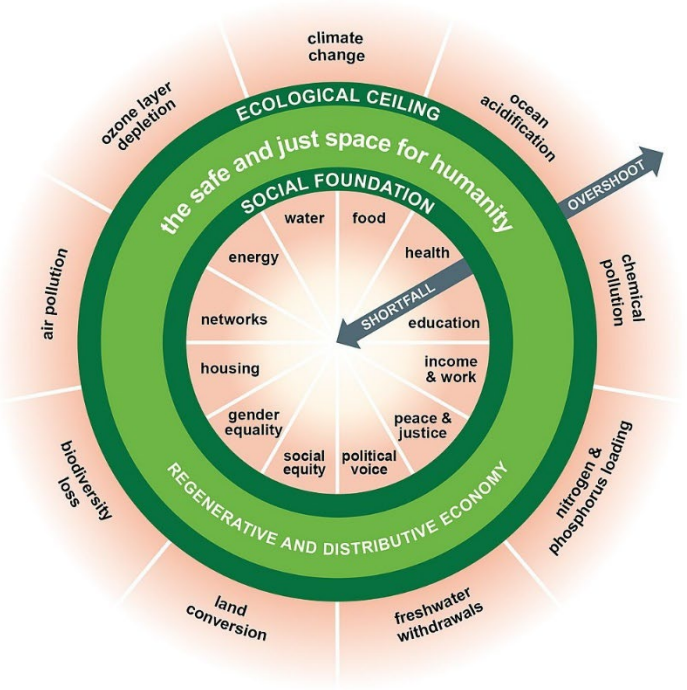


Triple Planetary Crisis

Sustainable Society (Source: MOEJ, 2008)

Transition to a sustainable society requires a shift from traditional economic growth thinking to ecological thinking.



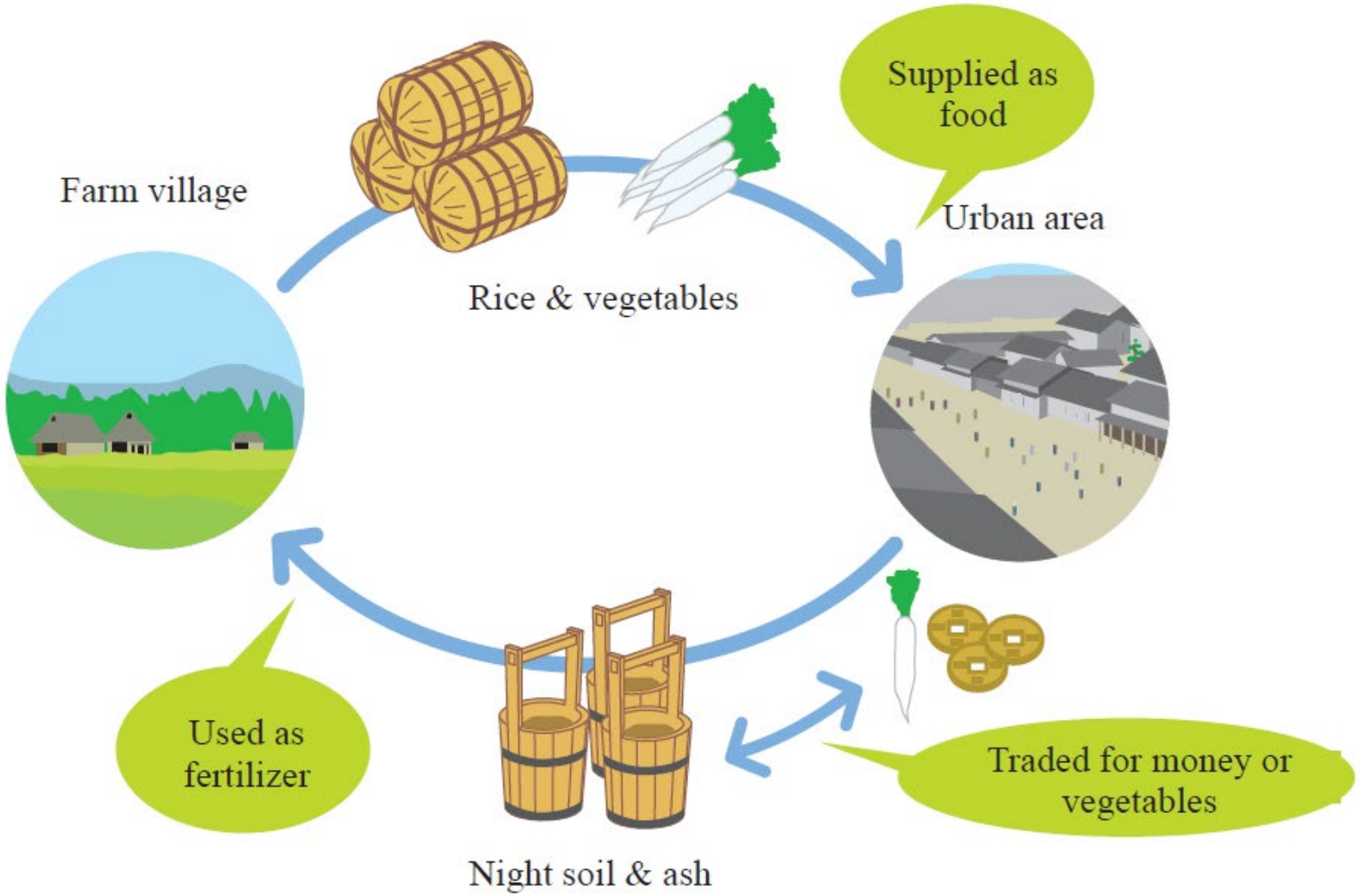


Planetary boundaries

Doughnut Economy

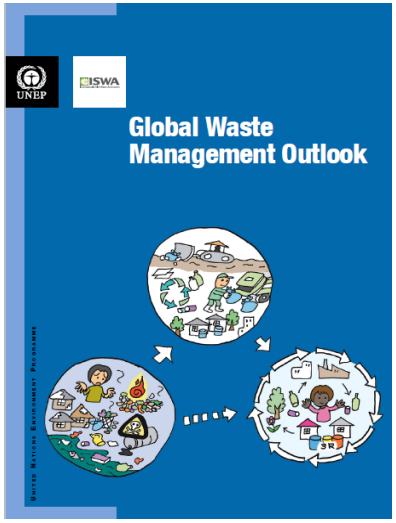
(Source: https://www.kateraworth.com/doughnut/)

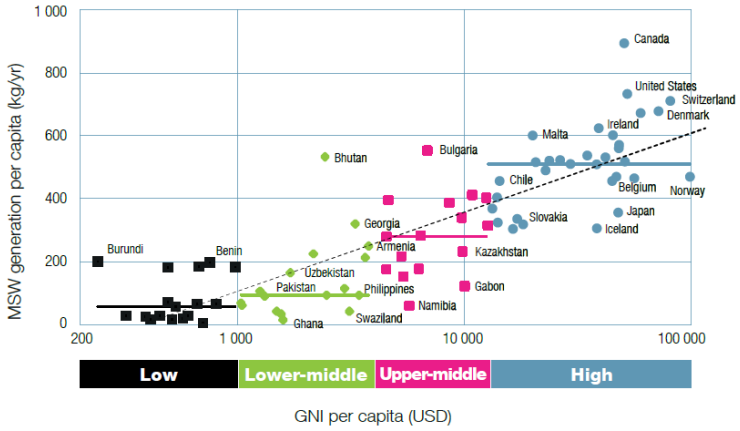
Practices of Resource Circulation System before Industrialisation



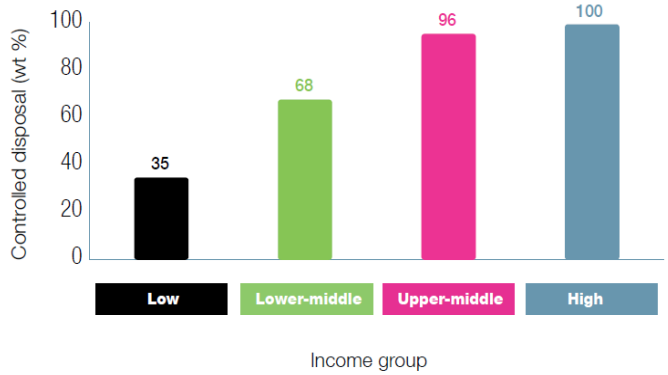
(Source: MOEJ, 2008)

Challenges in managing waste in developing countries

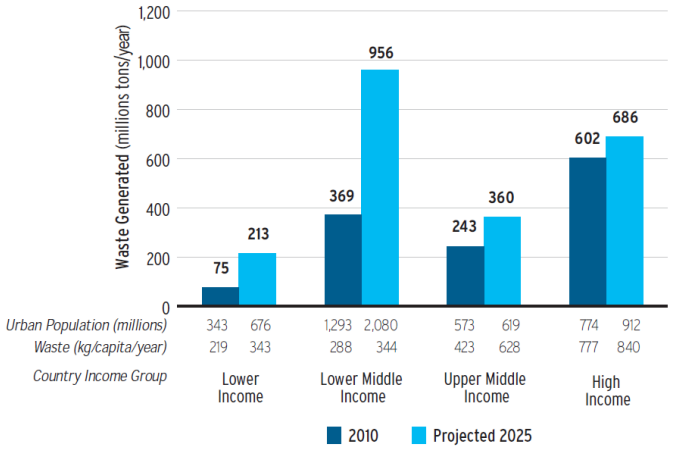




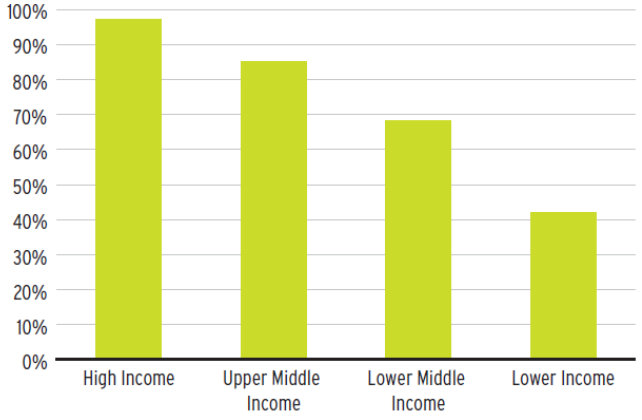
The richer we get, more we discharged



Open disposal and open burning is the main option in many low/middle income countries

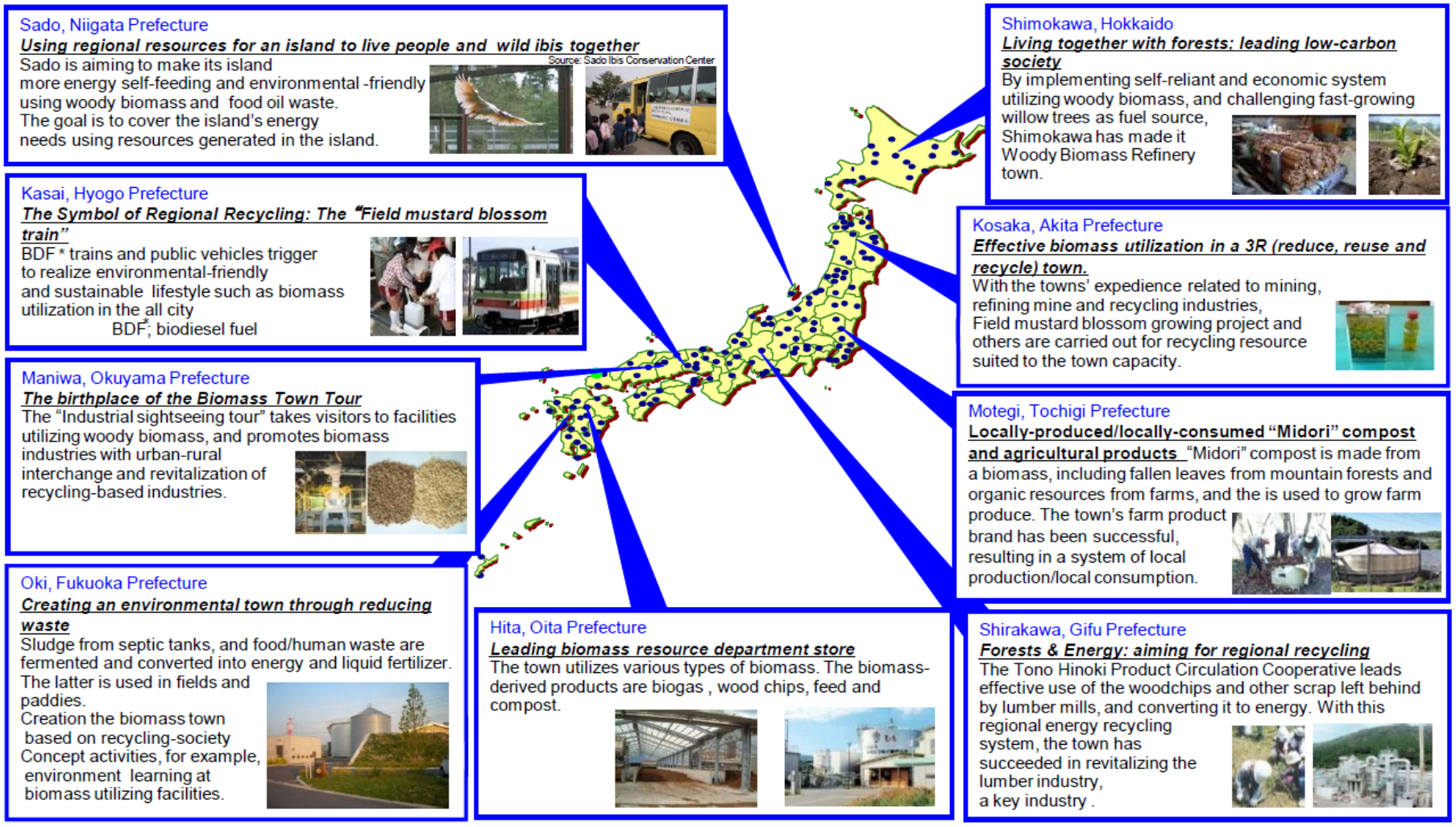


MSW generation will be doubled in lower/middle income countries by 2025



Rate of waste collection service is between 40%-70% in low/middle income countries

Biomass City Development in Japan



(Source: https://www.maff.go.jp)

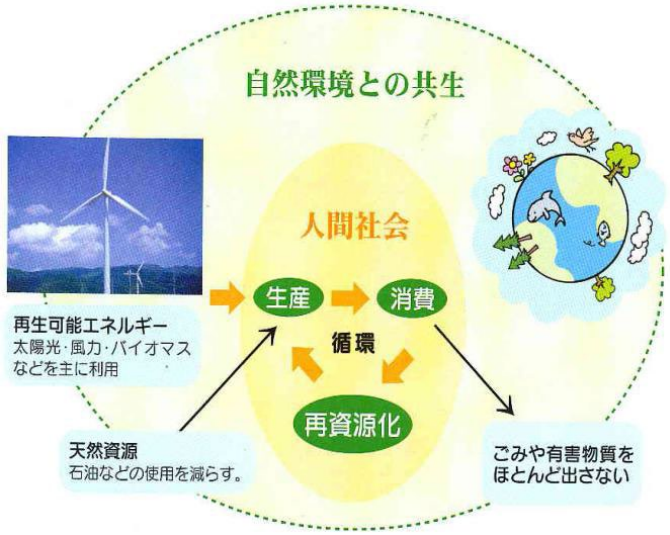
Creating ecological and circular society: a case of Oki Town, Japan

- Small agricultural town located in Fukuoka Prefecture
- About 13,850 people and 4,775 households in 2020
- 14% of town's total land area of 18.44 sq.km is comprised by canal network
- Popular for its local agricultural production, such as Strawberries and Mushrooms

Initiative to create ecological and circular society

Step 1: Making a zero waste city declaration (Okimachi Mottainai Declaration)
With an active citizen participation and dialogue the city has developed a vision in 2007

- We shall create a town without waste anything
- We shall promote the recycling of waste and become a town that does not dispose of waste by incineration or landfills by 2016
- We shall create a sustainable community and improving social harmony



(Photo courtesy: Oki Town)

Initiative to create ecological and circular society

Step 2: Introduced a new waste management rule to promote waste separation at source.

- Organized awareness-raising workshops to make people aware about the new waste management system through citizen dialogue
- Currently, the waste is separated into 21 categories at household based on the value of materials
- Recyclable materials are collected once a month at the town recycling center
- The kitchen waste collection takes place twice a week. The collection baskets, one for ten households are placed certain locations the day before collection
- Other waste (residual) is collected once a week

(Photo courtesy: Oki Town)

Step 3: Establishment of socio-economic infrastructure to support ecological and circular system

Kitchen Waste Separation
Separation of kitchen waste at home and at schools

Human Waste and Septic Tank Sludge

Local Agricultural Product Supply
Supplying of agricultural products produced using liquid manure to homes and schools

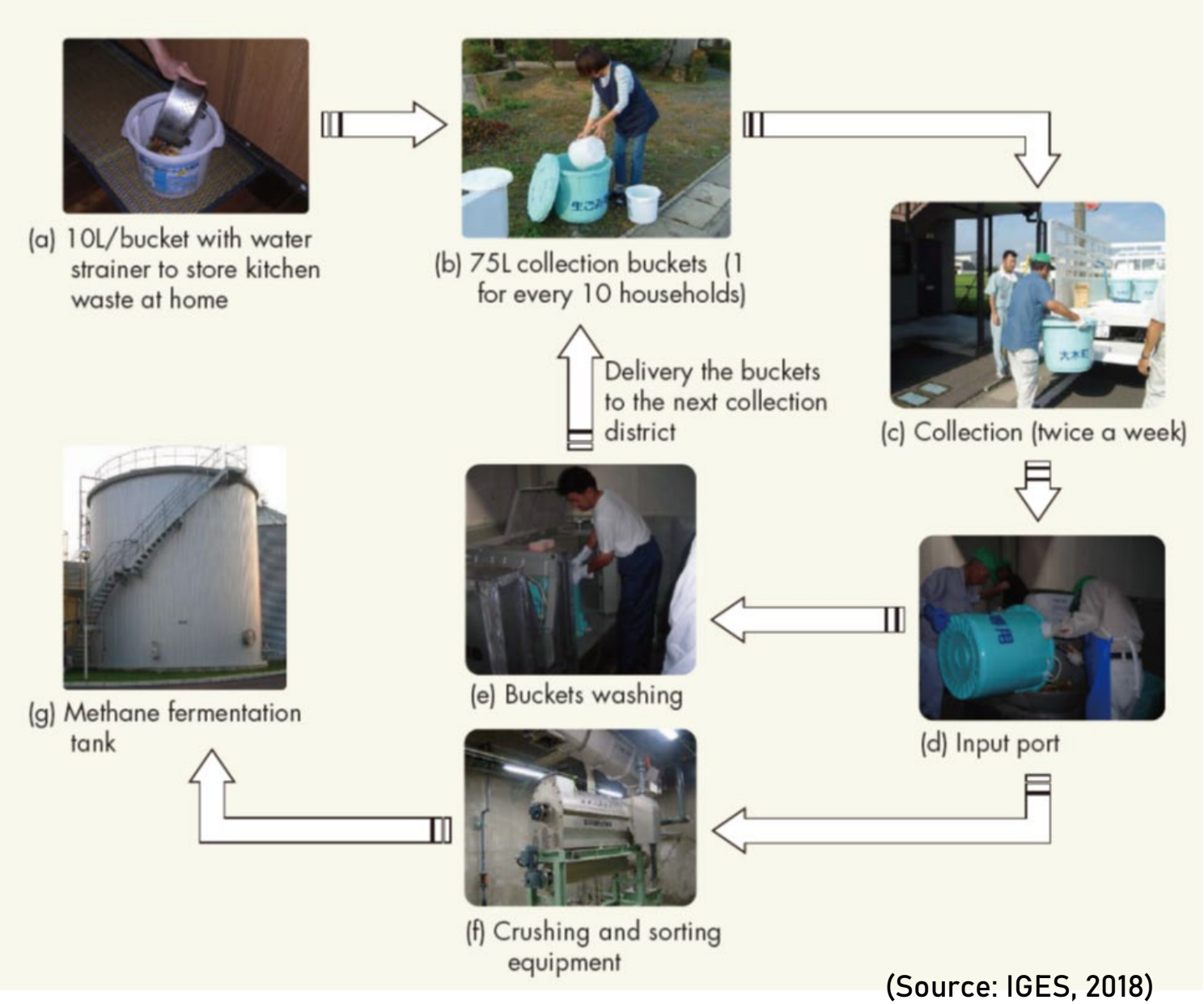
Cycle loop

Fermentation Recycling
Fermentation at biomass plant to recover bio-gas and liquid manure

Liquid Manure Usage
Bio-gas liquid manure returned to farms as an organic fertilizer

(Source: IGES, 2018)

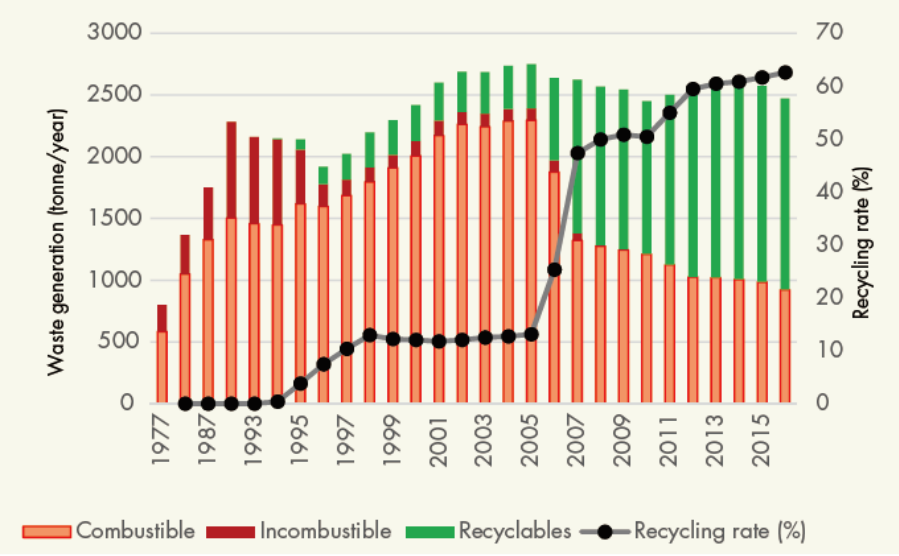
Biogas/digestor facility for organic waste, human waste and septic tank sludge treatment



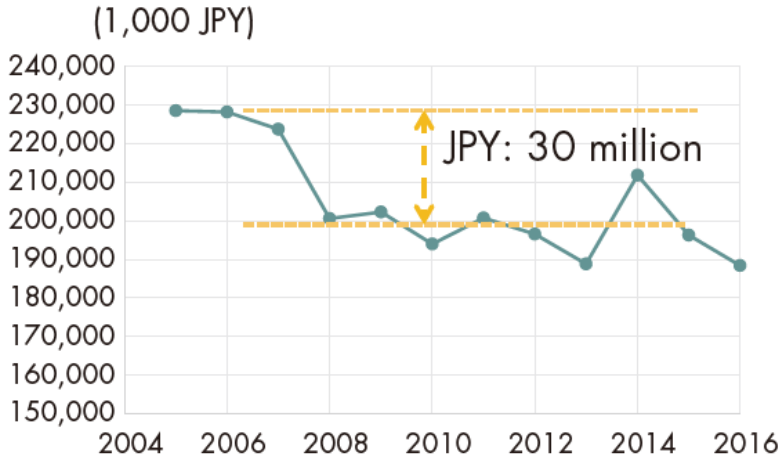
(Source: IGES, 2018)

Co-benefits

(1) Increase of material recovery



(2) Reduction of waste management expenditure

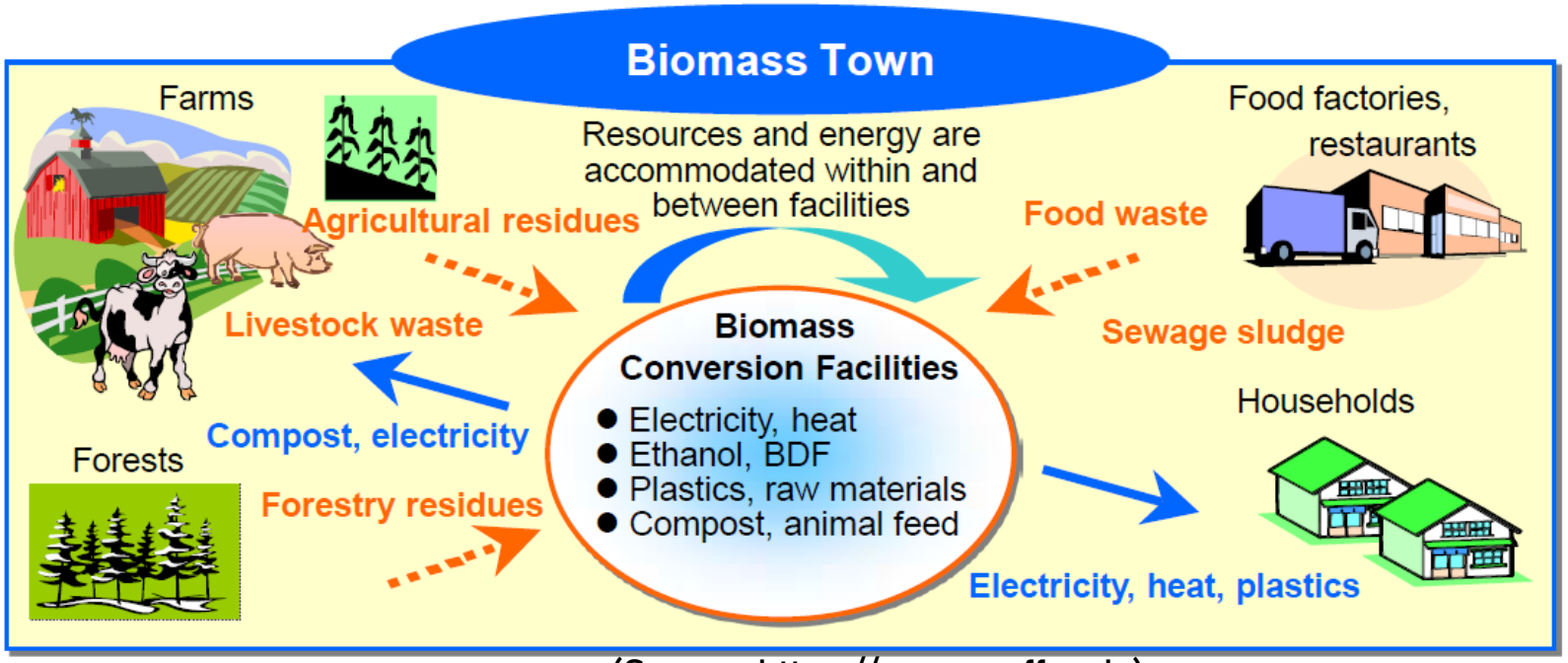


(3) Reduction of GHGs emission

Case	GHGs emission	
	t-CO_2eq/year	t-CO_2eq/tonne
A: "Kururun" methane fermentation system	313	0.027
B: Incineration for organic kitchen waste and human waste treatment system for human waste and septic tank sludge	1,159	0.101
Reduction effect (B-A)	846	0.074

(Source: IGES, 2018)

Lessons Learned



(Source: https://www.maff.go.jp)

- Establishing a system based on local conditions
- Establishing an economically feasible recycling system
- Establishing partnership within local community

ご清聴ありがとうございました。

Thank you for your attention.

You can find more information:
https://www.ccet.jp/publications

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