

JAPAN'S CIRCULARITY

*A Panorama of Japanese Policy, Innovation, Technology and Industry Contributions
Towards Achieving the Paris Agreement*

Helene Bangert



MINERVA
EU-JAPAN market & policy
intelligence



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EXECUTIVE SUMMARY

The world is currently facing two global crises, the climate crisis alongside the COVID-19 pandemic and its economic ramifications. Transitioning to a circular economy can be the solution to both, which aims to decouple our economic activity from consuming finite resources and design out waste, underpinned by using renewable energy. Thus this report, on the basis of over 40 interviews with stakeholders from the Japanese and EU private and public sectors, alongside desk-based research, presents a snapshot of Japan's circularity. It gives an overview of Japan's current awareness of circularity and its circular economy policy framework, which centres around the concept of a Sound Material-Cycle Society, its Circular Economy Vision 2020, alongside a table of key circularity indicators comparing the EU and Japan.

A 2020 report from Japan's Ministry of Environment on Japan's environmental industry showed that this market has reached a record size of approximately 105.3 trillion JPY in 2018, and now accounts for 10.1% of all Japan's industry. It employs approximately 2.61 million people, and it is estimated that the entire market will grow to a value of 133.5 trillion JPY in 2050. Of these, the sectors including clean energy and energy efficiency were set to account for 46.9%. Businesses related to recycling and waste management, remanufacturing and repair, leasing and renting, and long-life construction were set to account for 40%. The remanufacturing and repair industry will see increasing growth, driven by the construction sector. Likewise, there are interesting trends in regards to renewable energy within offshore wind, distributed solar photovoltaics, and biomass. Therefore, Japan's interest in circularity is deepening. To highlight this, and further opportunities for European companies, 20 examples of circular supplies, resource recovery, product life extension, sharing, and product as a service businesses are shown. Relevant Japanese circular economy organisations and public-private partnerships are also presented.

As implementing the circular economy has to be a global effort, the increasing trend of third market collaboration between Japanese and EU companies is also explored by this report, where tackling the issue of plastics is an especially prominent trend. It also considers the urgent issue of the impact of COVID-19 pandemic in the context of the circular economy. The benefits of becoming more circular have never been clearer. Although Japan's initial recovery plan did not have a heavy circular emphasis, the new Japanese prime minister, Yoshihide Suga, passed in December 2020 a new green investment stimulus package of two trillion JPY to support his new pledge that Japan will cut GHG emissions to net zero by 2050. Japan has also launched the online "Platform for Redesign" as an impetus for countries to share their green recovery solutions.

Lastly, in order to accelerate the transition to the circular economy, the report recommends three future policy focus areas: implementing a green circular recovery, as the COVID-19 pandemic can and should be used to build back better; continuing to enhance global political cooperation on circular economy, through building on the recent seminal agreements between the EU and Japan; and lastly increasing public awareness and support of the circular economy, through actively promoting circular business models and mobilising more funding towards circular initiatives.



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LIST OF ABBREVIATIONS

3Rs:	Reduce, Reuse and Recycle
AIST:	National Institute of Advanced Industrial Science and Technology
CCUS:	Carbon Capture, Utilisation and Storage
CLOMA:	Japan Clean Ocean Material Alliance
COP:	Conference of the Parties
EIA:	Environmental Impact Assessment
EPA:	Economic Partnership Agreement
ESG:	Environmental, Social and Governance
EV:	Electronic Vehicles
FIT:	Feed-In-Tariff
FIP:	Feed-In-Premium
GHGs:	Greenhouse Gases
GWEC:	Global Wind Energy Council
IEA:	International Energy Agency
IGES:	Institute for Global Environmental Strategies
IMF:	International Monetary Fund
IRENA:	International Renewable Energy Agency
ISMA:	Innovative Structural Materials Association
JWPA:	Japan Wind Power Association
MAFF:	Ministry of Agriculture, Forestry and Fishery of Japan
METI:	Ministry of Economy, Trade and Industry of Japan
MILT:	Ministry of Land, Infrastructure, Transport and Tourism of Japan
MOE:	Ministry of Environment of Japan
NDCs:	Nationally Determined Contributions
NEDO:	New Energy and Industrial Technology Development Organization
NGO:	Non-governmental organisation
PACE:	Platform for Accelerating the Circular Economy
PET:	Polyethylene terephthalate
PPA:	Power Purchase Agreements
PV:	Photovoltaic
R&D:	Research and Development
SME:	Small and Medium-Sized enterprises
SDGs:	Sustainable Development Goals
SPA:	Strategic Partnership Agreement
TPES:	Total Primary Energy Supply
UNFCCC:	United Nations Framework Convention on Climate Change
WBCSD:	World Business Council for Sustainable Development



INTRODUCTION

The Paris Agreement was adopted by consensus on the 12th of December 2015, which for the first time ever set out a universal and legally binding agreement on mitigating climate change. The agreement aims to keep the increase in the global average temperature to well below 2°C, limit this increase to 1.5°C, reach the peak of global emissions as quickly as possible, and to undertake rapid reductions. The five-year anniversary of this historic agreement is swiftly approaching, with the climate crisis no less serious than when it was agreed. Though global attention is currently primarily focused on overcoming the COVID-19 pandemic, the on-going climate crisis must not be forgotten either.

One of the primary reasons for the climate crisis is our current linear economic model of an escalating take-make-waste extractive economy that depletes finite resources without regard for the environmental degradation and pollution of our planet. The circular economy strives to change this by offering a different future and economic model, which is sustainable and restorative, based on transitioning to the use of renewable energy sources, moving our economic activity away from consuming finite resources and designing waste out of our global economic system.

The EU and Japan have each in their own way implemented circularity policies, and there is inspiration to be found in both the Japanese and EU approaches. The EU's new growth strategy, the Green Deal, has seen the European Parliament propose that the EU set a 60% emission reduction compared to 1990 by 2030, as of September 2020.¹ Such ambitious goals go hand in hand with the transition to a circular economy. This must be a global effort, and following the three recent seminal agreements between the EU and Japan – the Economic Partnership Agreement, the Strategic Partnership Agreement, and the Partnership on Sustainable Connectivity and Quality Infrastructure – there is fertile ground to further develop and continue the global momentum towards supporting the circular economy. The aim of this report is therefore to give an panorama of Japan's circularity, and thereby improve understanding. It will not only provide an awareness of the opportunities for European companies, but also for other stakeholders, such as policymakers and non-governmental organisations.

The report is structured into five chapters:

1. The first chapter outlines what the circular economy is, its importance, and gives a snapshot of Japan's policy approach to circularity, alongside some key EU focus areas.
2. The second chapter looks at circular businesses in Japan, highlighting 20 circular business examples, together with relevant circular economy organisations in Japan.

¹ European Parliament (15.11.2020): EU climate law: MEPs Want to Increase 2030 Emissions Reduction Target to 60% [Press release]. <https://www.europarl.europa.eu/news/en/press-room/20201002IPR88431/eu-climate-law-meps-want-to-increase-2030-emissions-reduction-target-to-60>



3. In the third chapter, the increasing trend of third market collaboration between EU and Japanese companies is introduced as another interesting opportunity trend for European SMEs.
4. As the COVID-19 pandemic presents a unique opportunity for also tackling climate change, chapter four looks at what green and circular measures have been taken so far as part of Japan and EU's recovery measures.
5. The final chapter concludes with some key future focus areas to further circularity: implementing a green circular economy; enhancing global political cooperation on the circular economy; and increasing public awareness and support of the circular economy.

METHODOLOGY

This report is based upon desk-based research together with more than 40 interviews of relevant stakeholders from the EU and Japanese public and private sectors, which ranged from SMEs to large multinational corporations, government officials, clusters and non-governmental organisations.

1 JAPAN'S CIRCULARITY

1.1 WHAT IS THE CIRCULAR ECONOMY

The circular economy is a fundamentally different systemic approach to economic development, whereby businesses, society and the environment all stand to benefit. It is a term which has several different definitions.² However, as the Ellen MacArthur Foundation, the leading circular economy non-governmental organisation (NGO), and Walter Stahel and Ken Webster, key thinkers on the topic, explain, it is a systemic shift away from the current linear economic model of a “take-make-dispose” extractive industrial model.³ Instead it focuses on the transition to renewable energy sources, decoupling our economic activity from consuming finite resources, and designing waste out of the system.⁴ It is not a new concept, as Stahel notes: “Circularity has been the guiding principle of nature since the very beginning”, and it has and is being implemented to various degrees throughout societies.⁵ The Ellen MacArthur Foundation has distilled this into a set of three guiding principles which can be used to implement the circular economy:

1. Design out waste and pollution
2. Keep products and materials in use
3. Regenerate natural systems⁶

This economic model also distinguishes between biological and technical cycles, illustrated in Figure 1.1, which is known as the Ellen MacArthur Foundation’s butterfly diagram, and is a useful conceptualisation of the circular economy (see below). In biological cycles, biologically based materials (such as food, cotton or wood) return back into the system through processes including anaerobic digestion and composting. These cycles then regenerate living systems such as soil, which in turn provide renewable resources for the economy. Meanwhile, the technical cycles are recovering and restoring products, parts, and materials through strategies including reuse, repair, remanufacture, or recycling, where the latter should be seen as a last resort. Digital technology is a key driving force for the transition to the circular economy, as it can provide a systemic shift to increasing virtualisation and provide feedback driven intelligence.⁷

² Kirchherr, J., Reike D., Hekkert M. (2017): Conceptualizing the Circular Economy: An Analysis of 114 Definitions. In: Resources, Conservation & Recycling, vol. 127.

https://www.researchgate.net/publication/320074659_Conceptualizing_the_Circular_Economy_An_Analysis_of_114_Definitions

³ Stahel, W. (2019): The Circular Economy: A User's Guide. London: Routledge; Webster, K. (2016): The Circular Economy: A Wealth of Flows: 2nd Edition. Cowes: Ellen MacArthur Foundation; Ellen MacArthur Foundation (2019): Completing the Picture: How the Circular Economy Tackles Climate Change. Cowes: Ellen MacArthur Foundation.

<https://www.ellenmacarthurfoundation.org/publications/completing-the-picture-climate-change>

⁴ Ibid.

⁵ Stahel: The Circular Economy, p. 1.

⁶ Ellen MacArthur Foundation: Completing the Picture.

⁷ Ibid.

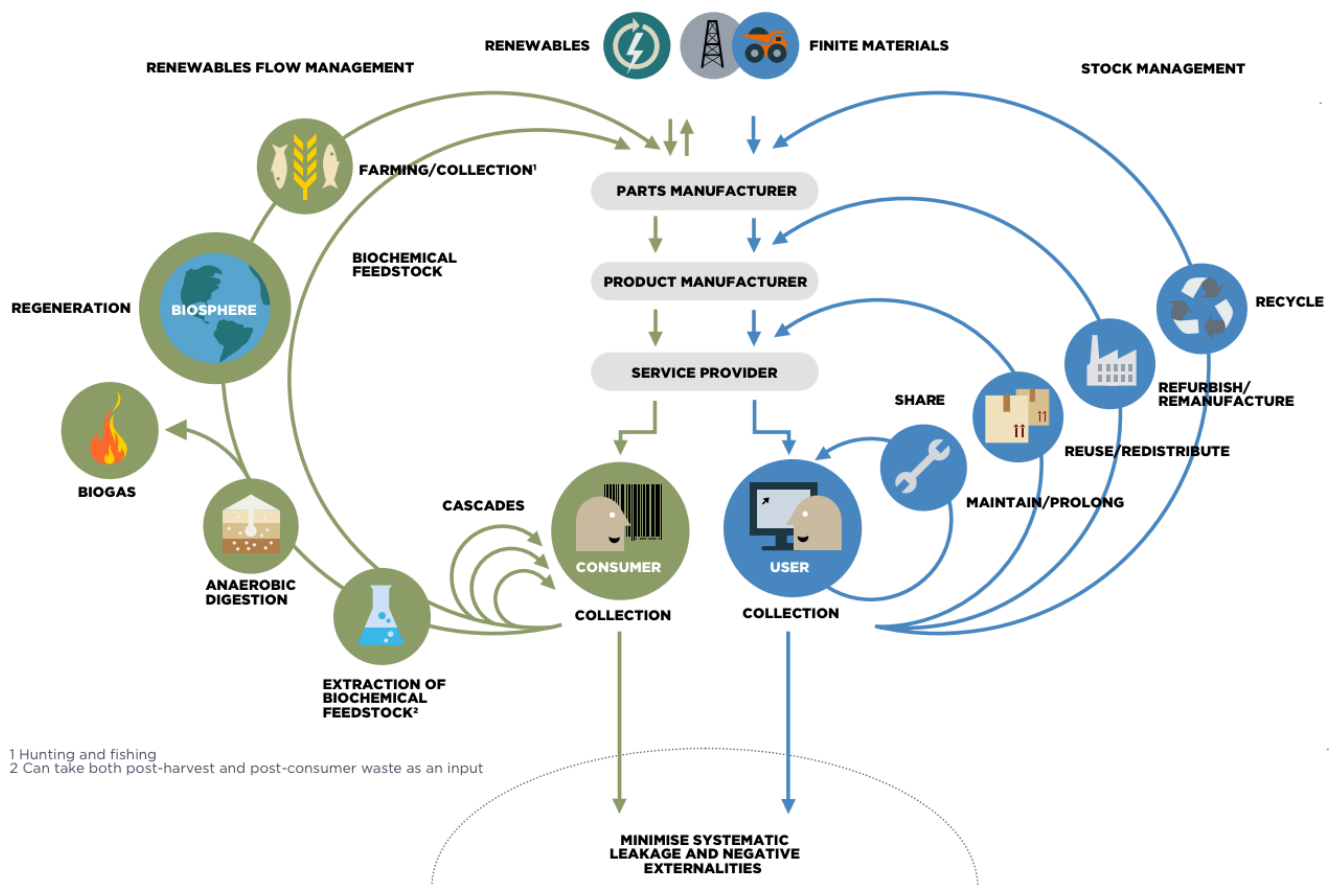


Figure 1.1 The Circular Economy System Diagram⁸

1.1.1 Why does the circular economy matter?

So why is the concept of a circular economy so important? In short, the world has seen a significant increase in global population and economic development in the last 100 years, going hand in hand with a growing demand for energy and finite resources, set against a deepening climate crisis, partly driven by this escalating need for resources. In terms of global population growth, even though it is happening at a slower pace than since 1950, the world's population has still increased by 1 billion people between 2007 and 2019, making the current global population 7.7 billion, according to the UN.⁹ The UN estimates that the global population will continue to grow, potentially reaching 8.5 billion in 2030, and 9.7 billion in 2050. Likewise, just between 2009 and 2019 global GDP has increased from 11.36 trillion USD to 85 trillion USD, according to the World Bank.¹⁰ Simultaneously, we have continued to see annually record breaking levels of greenhouse gases (GHGs) concentrations in the

⁸ Ellen MacArthur Foundation: Completing the Picture.

⁹ UN, Department of Economic and Social Affairs, Population Division (2019): World Population Prospects 2019: Highlights. New York: UN, Department of Economic and Social Affairs.
https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf

¹⁰ World Bank: DataBank: GDP Indicators.
<https://data.worldbank.org/indicator/NY.GDP.MKTP.KD?end=2019&start=1960>



atmosphere, with a 43% increase in total radiative forcing, which is the warming effect on the climate, by long-lived GHGs, since 1990.¹¹

Likewise, global resource consumption continues to rise, with the extraction of materials tripling over the last five decades, with a notable acceleration over the last two decades, according to the International Resource Panel.¹² Thus, we cannot continue our current mode of development as there is a natural limit to what the earth can provide, and we need to remain within these planetary boundaries.¹³ As the world becomes ever more interconnected, so clearly shown by the COVID-19 pandemic, our societies, our economies, our supply chains, and our waste chains are likewise intertwined. Our consumption and disposal activities, our use of energy has global effects and necessitates a worldwide and holistic response to mitigate the climate crisis.

Therefore adapting to a circular economy should be seen as key way to reduce our GHGs, not only by focusing on using renewable energy, but also because, as Circle Economy, (a UN Environment supported not-for-profit organisation) calculates, 62% of global GHG emissions, excluding those from land use and forestry, are emitted under the extraction, processing and manufacturing of products and services, whereas only 38% are released from the delivery and usage of products and services.¹⁴ This is made abundantly clear in Circle Economy's latest report on global circularity: The Circularity Gap Report 2020. This annual report revealed that the world's circularity is now decreasing, having gone down from 9.1% last to year to 8.6% circular today.¹⁵ This is worrying, and it will be important to see if the COVID-19 pandemic has further affected this statistic.

However, despite the negative figures from Circle Economy this year regarding the development of the global circular economy, the economic benefits of shifting towards the circular economy are numerous, and evermore increasing in importance. In a 2015 study by the Ellen MacArthur Foundation and McKinsey, they laid out how by 2030 for Europe alone, shifting towards a more circular economy could lead to boosting the region's resource productivity by 3%, cost savings of 600 billion EUR a year, and 1.8 trillion EUR in other economic benefits, from new business and job niches related to the circular economy.¹⁶ As Stahel states: "The circular economy is the most sustainable post-production business model".¹⁷ Thus, now more than ever, it is clear that we need to abandon the linear economy, and employ a new solution, with an economy that works for all stakeholders.

¹¹ World Meteorological Organisation (25.11.2019): Greenhouse gas concentrations in atmosphere reach yet another high [Press release]. <https://public.wmo.int/en/media/press-release/greenhouse-gas-concentrations-atmosphere-reach-yet-another-high>

¹² International Resource Panel (2019): Global Resources Outlook 2019.

¹³ Raworth, K. (2017): Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist. London: Penguin Random House.

¹⁴ UNFCCC (22.01.2019): Circular Economy Crucial for Paris Climate Goals [Press release]. <https://unfccc.int/news/circular-economy-crucial-for-paris-climate-goals>

¹⁵ Circle Economy (2020): The Global Circularity Gap Report 2020. Amsterdam: Circle Economy. <https://www.circularity-gap.world/2020>

¹⁶ Ellen MacArthur Foundation (2015): Growth Within: A Circular Economy Vision for a Competitive Europe. Cowes: Ellen MacArthur Foundation. https://www.ellenmacarthurfoundation.org/assets/downloads/publications/EllenMacArthurFoundation_Growth-Within_July15.pdf

¹⁷ Stahel: The Circular Economy, p. 4.

1.2 JAPAN'S CIRCULAR ECONOMY AWARENESS

Circularity is not a new concept for Japan, and can be encapsulated by the Japanese term, 'mottainai', which can be loosely translated as "waste not, want not", often the exact opposite of what happens in the linear economy. In the Japanese context, the emphasis has very often been on recycling, however a broader concept of the circular economy is starting to gain traction in both the public and private spheres. As a small illustration, this Google Trends graph shows that the interest in the concept has been growing steadily:



Figure 1.2 Searches for “circular economy” (サーキュラーエコノミー)¹⁸

Indeed, Japan has also showed its public commitment to furthering the circular economy by hosting the second iteration of the World Circular Economy Forum in Yokohama in 2018, an initiative by the Finnish Innovation Fund, Sitra.¹⁹ However, public support and awareness of the Circular Economy is still developing, though it is moving in the right direction. It is essential to understand consumer awareness of the circular economy. This is emphasised by an annual consumer survey by Dentsu Inc., which surveyed 1,400 male and female respondents between the ages of 10 and 79 across Japan about their awareness of the Sustainable Development Goals (SDGs). In their 2020 annual survey, conducted before the COVID-19 outbreak had truly spread, it showed the following results:

¹⁸ Source: Google Trends. <https://www.google.com/trends> (Accessed 21 July 2020).

¹⁹ Sitra: World Circular Economy Forum. <https://www.sitra.fi/en/projects/wcef/>

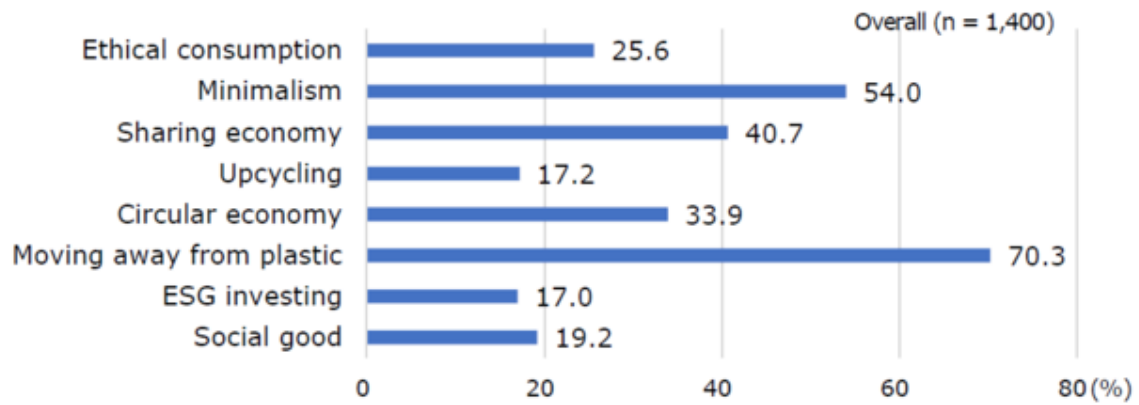


Figure 1.3 Awareness of the SDGs²⁰

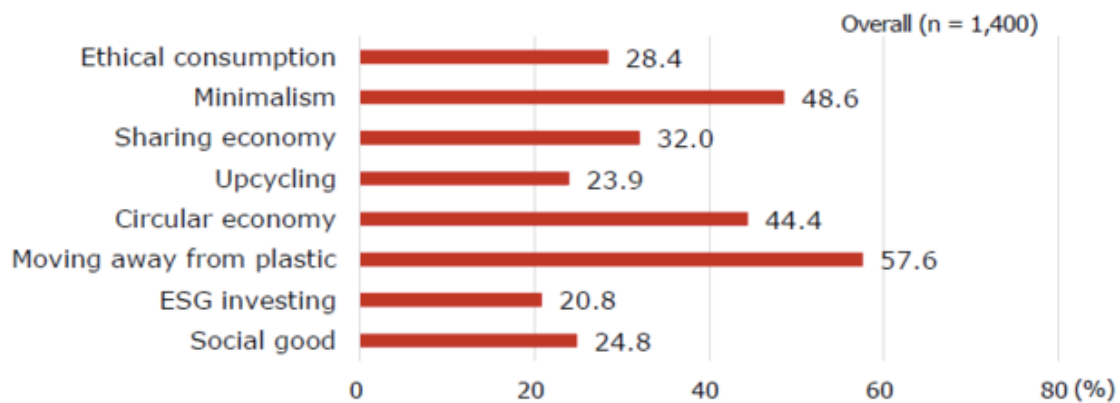


Figure 1.4 Sympathetic to Objectives²¹

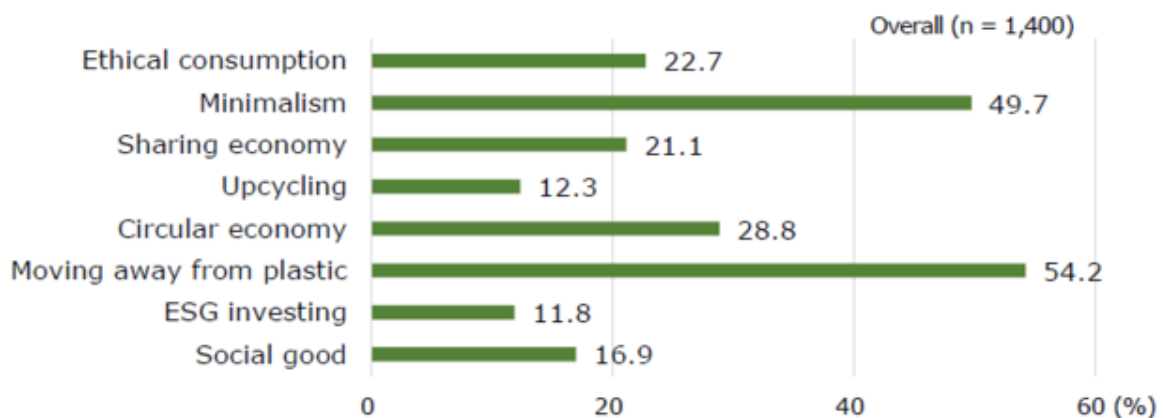


Figure 1.5 Intentions to Incorporate Into Lifestyle²²

Circular economy was defined by Dentsu Inc. as “rather than thinking about recycling after use, the focus should be on both reuse from the initial design phase, and ingenuity to avoid producing trash and waste”.²³ It is positive to see in the above graphs that the concept is

²⁰ Dentsu Inc. (27.04.2020): Dentsu Conducts Third Consumer Survey on Sustainable Development Goals (SDGs) [Press release]. <https://www.dentsu.co.jp/en/news/sp/release/2020/0427-010046.html>

²¹ Ibid.

²² Ibid.

²³ Ibid.



known to 33.9% of surveyed participants, and that in terms of consumers feeling sympathetic, and intending to incorporate it into their lifestyles, circular economy comes in third. There is of course scope for improvement, especially in terms of awareness, but other circularity related concepts such as minimalism and moving away from plastic, also score highly. Another 2020 consumer survey, this one by the Dutch bank, ING, defined Japanese consumers as “non-engagers”, who are most likely not to factor in sustainability, unwilling to pay higher prices and are more sceptical about individual responsibility.²⁴ Thus it is clear that awareness needs to be bolstered, but that it is growing amongst consumers and it is moving in a positive direction, which is key to creating successful businesses.

1.2.1 Circular Economy Indicators

To give an overview of Japan’s circularity, the table below gives a side by side comparison of Japan and the 27 Member States of the EU, in terms of 14 different indicators relating to the circular economy. They are grouped into five key circular economy issues: resources, in terms of material productivity waste and material footprint per capita; waste, looking at the generation and recycling rates of both municipal and industrial waste; energy, where the indicators relate to energy productivity and the share of renewable energy; GHG emissions in terms of intensity and per capita emissions; and lastly innovation, where EU and Japan’s latest annual Global Innovation Index ranking is compared, which analyses 131 countries. The indicators were modelled on similar assessments and models made by consultancy firm EY, the Ellen MacArthur Foundation and the EU.²⁵

This highlights both areas where Japan may be more in the lead, and others where perhaps the EU Member States are further progressed. In terms of resources, both with respect to material productivity and material footprint, Japan scores better than the EU Member States. Likewise, in terms of waste generation there are some clear differences between Japan and the EU. Japan generates less municipal waste per capita than the EU, and similarly due to constraints on landfills in Japan, Japan also disposes less of that waste in landfills. Japan has a 10% lower municipal recycling rate, and higher rate of municipal waste that is incinerated, with a very high percentage being incinerated in waste-to-energy facilities.²⁶ Looking just at Japan, its recycling rate has stagnated in recent years, as has its material productivity. In terms of energy, the EU leads in terms of energy productivity and the amount of renewable energy in the total primary energy supply. Concerning GHG emissions, the EU has lower GHG emissions intensity of energy consumption and GHG emissions per capita. In terms of innovation, which will be necessary in order to transition to the circular economy, and solve the issues of the current linear economy, Japan scores higher than the EU. Ultimately, both Japan and the EU are still undergoing a journey to reach a circular economy.

²⁴ ING Bank NV (2020): Learning from Consumers: How Shifting Demands are Shaping Companies’ Circular Economy Transition. Amsterdam: ING Bank NV. <https://www.ingwb.com/media/3076131/ing-circular-economy-survey-2020-learning-from-consumers.pdf>

²⁵ EY (2016): EY Study on the Circular Economy in Greece. Athens: EY. https://en.sev.org.gr/wp-content/uploads/2018/06/EY_Study_on_the_Circular_Economy_BRIEF-EDITION_0.pdf; European Commission, Directorate-General for Environment: Circular Economy Indicators. https://ec.europa.eu/environment/ecoap/indicators/circular-economy-indicators_en

²⁶ DeWit, A. (2020): Is Japan a Climate Leader? Synergistic Integration of the 2030 Agenda. In: The Asia-Pacific Journal: Japan Focus, vol. 18:3, no. 2. <https://apjif.org/2020/3/DeWit.html>

CIRCULAR ECONOMY INDICATORS ²⁷				
ASPECT	INDICATOR	JAPAN	EU27	JAPAN/EU27
RESOURCES	Material productivity (EUR per kg) (2017) Economic value generated (GDP) per unit of materials consumed, in terms of domestic material consumption.	3.9	2.24	174%
	Material footprint per capita (kg per capita) (2017) Expressed in tonnes per capita; the material footprint is the global allocation of used raw material extracted to meet the final demand of an economy, thus including materials used in the production of imported products.	25.93	26.47	97.96%
WASTE	Industrial waste generation (tonnes per capita) (2018)	2.97	4.90	60.61%
	Municipal waste generation (kg per capita) (2018)	336.42 (2017)	492 (2018)	68.38%
	Recycling rate of municipal waste (2017) Recycled municipal waste / total municipal waste	20%	30%	66.67%

²⁷ Sources: Cornell University, INSEAD, World Intellectual Property Organization (2020): Global Innovation Index 2020. Geneva: World Intellectual Property Organization. <https://globalinnovationindex.org/about-gii#history>; European Commission: Eurostat. <https://ec.europa.eu/eurostat/data/database>; European Commission, Joint Research Centre (2019): Fossil CO₂ and GHG Emissions of all World Countries. Luxembourg: Publications Office of the European Union. <https://op.europa.eu/en/publication-detail/-/publication/9d09ccd1-e0dd-11e9-9c4e-01aa75ed71a1/language-en>; Ministry of the Environment of Japan (30.3.2020): Municipal solid waste emissions and disposal in FY2018 [Press release]. <https://www.env.go.jp/en/headline/2445.html>; Ministry of the Environment of Japan (2020): Industrial Waste Treatment Survey FY2018 (Only in Japanese). http://www.env.go.jp/recycle/sangyo_h30.pdf; OECD: OECD.Stat. <https://stats.oecd.org/>



	Compositing rate of municipal waste (2017)	0%	16.80%	0%
	Rate of municipal waste incinerated of treated waste (2017)	78.77%	26.82%	293.7%
	Municipal waste incinerated with energy recovery (thousands of tonnes) (2017)	31,603	57,259	55%
	Rate of municipal waste incinerated with energy recovery (2017)	93%	97.62%	95.27%
ENERGY	Energy productivity (EUR) (2018) The indicator results from the division of GDP by the gross inland consumption of energy for a given calendar year. It measures the productivity of energy consumption.	10,694	11,371	94%
	Share of renewable energy in total primary energy supply (2018)	5.88%	16.55%	35.53%
EMISSIONS	GHG emissions intensity of energy consumption (2018) The indicator is measured in comparison to the values for the year 2000 (Index 2000 = 100)	94.15	85.22	110.5%
	GHG emissions per capita (tonnes of CO ₂ equivalent) (2018)	9.4	7.39	127.2%
INNOVATION	Overall score on Global Innovation Index (2019)	54.7	48.65	112.44%



1.3 EU'S CIRCULAR ECONOMY ACTION PLAN

As the EU is seen as at the global forefront of attempting to achieve the circular economy, a brief overview of the EU's policy measures will also be laid out here, in continuation of the indicator comparison table. Interviewed Japanese government stakeholders and Japanese policy papers frequently mention the EU's policy initiatives within circular economy as inspiring. The EU and Japan are currently actively pursuing policy cooperation within circular economy, through several channels. These include the High Level Environment Dialogue, the High-Level Economic Dialogue, and the bilateral Industrial Policy Dialogue. It is especially the latter which is being used to discuss circular economy issues, with cross-departmental government collaboration.²⁸ EU and Japan have already worked closely on some key circular economy issues, especially during Japan's presidency of the G20 in 2019, where two workshops on marine plastic litter and circular economy financing were co-organised.²⁹ Both Japan's and the EU's definition of circular economy are aligned with the principles outlined by the Ellen MacArthur Foundation. As the circular economy can encompass so many different facets it is insightful to compare the different policy emphasises of the EU and Japan within circular economy.

The EU's first specifically named Circular Economy Action Plan was adopted in 2015, and had 54 actions and four legislative proposals on waste, with targets regarding reuse, recycling and landfills. The first Circular Economy Action Plan has now completed, or is in the process of completing, all 54 actions.³⁰ Since 2016, more than 14 Member States, eight regions, and 11 cities have issued a circular economy strategy.³¹

The European Green Deal presented in December 2019 by the new European Commission President, Ursula von der Leyen, continued to build on this. The Green Deal, together with its central targets of decoupling economic growth from resource and energy use and achieving no net emissions by 2050, presented circular economy as one of its fundamental key pillars. The Green Deal includes priorities such as biodiversity, pollution, renewable hydrogen, energy system integration and a 'renovation wave' of the EU's building stock. A new Circular Economy Action Plan for the EU was presented in March 2020. The EU will also provide both financial support and technical assistance for those who are most affected by the move towards a greener economy through the Just Transition Mechanism, of which

²⁸ European Commission (2020): Commission Staff Working Document, Leading the Way to a Global Circular Economy: State of Play and Outlook. https://ec.europa.eu/environment/circular-economy/pdf/leading_way_global_circular_economy.pdf

²⁹ Ibid.

³⁰ European Commission (2015): Closing the Loop - An EU Action Plan for the Circular Economy. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015DC0614>; European Commission (2019): Report From The Commission to the European Parliament, The Council, The European Economic and Social Committee and The Committee of the Regions on the Implementation of the Circular Economy Action Plan. https://ec.europa.eu/environment/circular-economy/pdf/report_implementation_circular_economy_action_plan.pdf

³¹ Ellen MacArthur Foundation (2020): The EU's Circular Economy Action Plan. <https://www.ellenmacarthurfoundation.org/assets/downloads/EU-Case-Study-june2020-EN.pdf>



the final total sum is currently being negotiated.³² This new Circular Economy Action Plan has seven different focus areas.³³ These are:

Sustainable product policy frameworks

This will focus on designing more sustainable products, through a sustainable product policy initiative, which will further build on existing EU directives and instruments, such as the Ecodesign directive.³⁴ Likewise, the focus will be on empowering consumers and public buyers, through proposals including revising EU consumer law so that consumers are informed about products' lifespan and reparability. Lastly, it will ensure circular production of products, including promoting the use of digital technologies for resource mapping and tracking, and through the new EU SME Strategy, support SME's circular industrial cooperation.

Key product value chains

The action plan emphasises cooperating with key stakeholders in the below value chains as they present the most urgent issues.

- **Electronics and ICT:** Actions include the Commission presenting a Circular Electronics Initiative and introducing a common charger.
- **Batteries and vehicles:** Proposal for a new regulatory framework for batteries, with rules on recycling rates of all batteries and recycled content, and revising rules on end-of-life vehicles to enhance recyclability and use of recycled content.
- **Packaging:** Simplifying packing materials by the number of materials and polymers used, essential requirements for bringing packaging to the market and assess the possibility of EU-wide labelling to ensure correct separation of packaging waste at its source.
- **Plastics:** Focusing especially on reducing microplastics, through restricting intentionally added microplastics, alongside measures to reduce their unintentional release. Proposing mandatory requirements for recycled plastic content in key products such as packaging, construction materials and vehicles. The Commission is also working towards a policy framework for biodegradable plastics.
- **Textiles:** Developing an EU Strategy for Textiles and guidance for implementing high levels of separate collection of textile waste by 2025.
- **Construction and buildings:** Developing an EU Strategy for a Sustainable Built Environment, and considering having a recycled content requirement for some construction products.

³² European Commission: The Just Transition Mechanism. https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/actions-being-taken-eu/just-transition-mechanism_en

³³ European Commission (2020): A new Circular Economy Action Plan - For a Cleaner and more Competitive Europe. <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN>

³⁴ European Commission, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs: Sustainable Product Policy & Ecodesign. https://ec.europa.eu/growth/industry/sustainability/product-policy-and-ecodesign_en



- **Food, water and nutrients:** Proposing a food waste target, measures to substitute single-use food packaging and cutlery, encouraging water reuse in agriculture and developing a Nutrient Management Plan for sustainable fertiliser use.

Batteries, plastics, and textiles are also emphasised as key focus areas in METI's Circular Economy Vision 2020 (see section 1.4).

Less waste, more value

These EU actions look to reduce waste and enhance value through a report on a waste reduction feasibility target, developing a harmonised EU model for separate waste collection, improve the management of hazardous waste, and ensuring that the EU does not export its waste problems to third countries.

Circular economy for people, regions and cities

The EU wants to ensure that the circular economy works for all, through initiatives such as the Circular Cities and Regions Initiative.

Horizontal issues

This focus area will include actions on improving modelling tools to show the benefits of circular economy in reducing GHGs, while also focusing on environmental, societal and governance (ESG) investment as a means to achieve circular economy, alongside research, innovation and digitalisation.

Global circular economy

The European Commission wants to promote the global uptake of the circular economy, by actions including reaching a global agreement on plastics, proposing a Global Circular Economy Alliance, and fostering a stronger partnership with Africa.

Monitoring

The European Commission will continue to monitor national circular economy plans and improve circularity metrics.



1.4 JAPAN'S CIRCULAR ECONOMY POLICY FRAMEWORK

So what are the key issues and policy issues facing Japan, and how is the circular economy dealt with in a Japanese policy context? Japanese society faces a number of pressing issues, aside from the economic recovery from the COVID-19 pandemic which will be covered in the fourth chapter. These include an aging population, a correlated shrinking workforce, regional decline, economic stagnation, and a dependence on importing resources such as oil and iron.³⁵

1.4.1 Sound Material-Cycle Society

The policies related to implementing the circular economy are centred around the concept of the idea of a "Sound Material-Cycle Society" which was enacted by the Basic Act for Establishing a Sound-Material Cycle Society in 2000 (see Figure 1.6), which aimed to deal with the enormous rate of waste generation, landfill shortages and increasing public demand for promotion of recycling.³⁶ This Act focuses on the promotion and implementation of the 3Rs, reduce, reuse and recycle, proper waste management and a reduction in environmental impact.³⁷ It is grounded in the Waste Management Act, which importantly differentiated between municipal and industrial waste, and the Effective Resource Utilization Promotion Act, which are the main legislative acts for waste management and recycling, respectively. Furthermore, these are supported by six individual recycling acts and green purchasing laws.³⁸

³⁵ The Japan Times (25.6.2012): Liberating Japan's Resources. <https://www.japantimes.co.jp/opinion/2012/06/25/commentary/japan-commentary/liberating-japans-resources/#:~:text=Japan%20has%20long%20been%20characterized,world%20in%20terms%20of%20size>; Walia, S. (19.11.2019): The Economic challenge of Japan's Aging Crisis. In The Japan Times. <https://www.japantimes.co.jp/opinion/2019/11/19/commentary/japan-commentary/economic-challenge-japans-aging-crisis/#.X0TnsNMzbOQ>

³⁶ Aoki-Suzuki, C., Nihiyama, T., Kato, M. (2019): Circular Economy in Japan. Tokyo: EU-Japan Centre for Industrial Cooperation. <https://www.eubusinessinJapan.eu/sites/default/files/2019-10-circular-economy-in-japan-eubij.pdf>; Ministry of Economy, Trade and Industry of Japan (2002): Towards Advancement of a Recycling-Oriented Economic System. <https://www.meti.go.jp/english/report/downloadfiles/gRO0203re.pdf>

³⁷ Ministry of Environment of Japan (MOE) (2014): History and Current State of Waste Management in Japan. <https://www.env.go.jp/en/recycle/smcs/attach/hcswm.pdf>

³⁸ Aoki-Suzuki, et al.: Circular Economy in Japan.

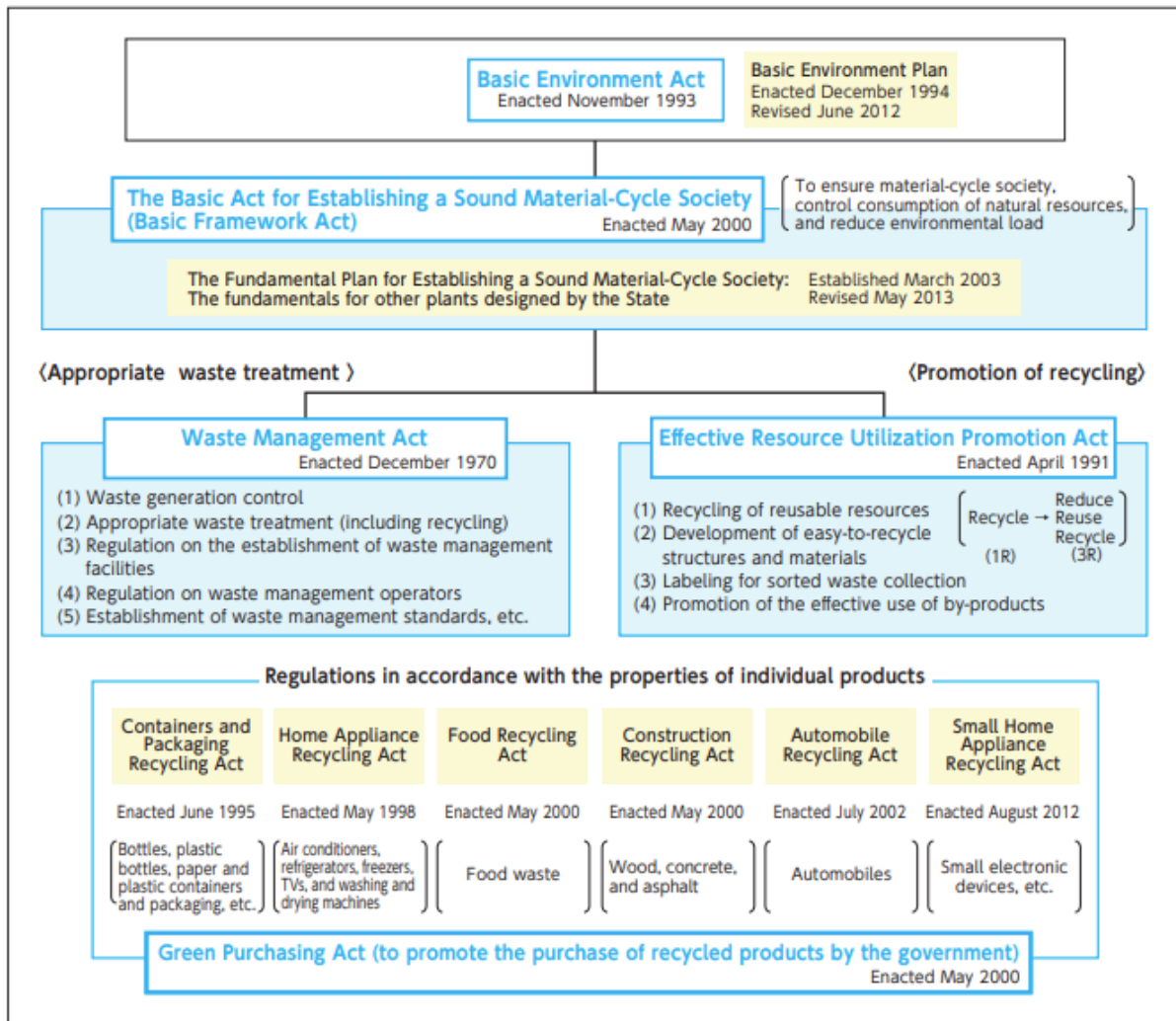


Figure 1.6 Legal Framework of Sound Material-Cycle Society³⁹

In 2003, the Fundamental Plan for Establishing a Sound Material-Cycle Society was enacted, which has targets for resource productivity, recycling rates, and the final waste disposal amount.⁴⁰ The Plan is reviewed and revised every five years by the Ministry of Environment (MOE), with the latest Plan, which is the fourth, being adopted in 2018.⁴¹ The fourth Plan has seven main pillars of focused measures: 1. Integrated Measures towards a Sustainable Society; 2. Regional Circulating and Ecological Sphere; 3. Resource Circulation throughout the entire Lifecycle; 4. Proper Waste Management and Restoration of Environment; 5. Disaster Waste Management Systems; 6. International Resource Circulation; and 7. Sustaining Fundamentals for 3Rs and Waste Management.⁴² It is worth nothing that for pillar 3 concerning Resource Circulation, the Japanese Government is promoting businesses related to reducing and reusing, and resource efficient design, and also set out six priority areas: plastics; biomass, especially concerning food waste and loss; metals, including using metals from recycled small home appliances to create 5,000 Olympic

³⁹ MOE: History and Current State of Waste Management in Japan.

⁴⁰ Ibid; Aoki-Suzuki, et al.: Circular Economy in Japan.

⁴¹ Ministry of Environment of Japan (MOE) (2018): The 4th Fundamental Plan for Establishing a Sound Material-Cycle Society. https://www.env.go.jp/recycle/recycle/circul/keikaku/pam4_E.pdf

⁴² Ibid.



medals for the now postponed Tokyo 2020 Olympic games; construction materials, and emerging topics such as recycling of diaper and solar power generation facilities.⁴³

The Plan has a 151 indicator set and material flow analysis to monitor progress, alongside four headline indicators as policy targets. The targets for FY2025 are as follows:

- **Resource Productivity**, which is GDP / Input of natural resources, and shows how effectively materials are used by generating more wealth while using fewer resources:
490,000 JPY / ton (approximately double from FY2000)
- **Cyclical use rate (resource base)**, which is amount of cyclical use / (amount of cyclical use + input of natural resources):
18% (approximately 80% increase from FY2000)
- **Cyclical use rate (waste base)**, which is amount of cyclical use / generation of waste:
47% (approximately 30% increase from FY2000)
- **Final disposal amount**, which is the amount of waste put in landfills:
13 million tonnes(a 77% decrease from FY2000)⁴⁴

As indicators such as resource productivity and priority areas such as plastics, especially bioplastics, are cross-sectoral there is a natural intersection in policy interests with other ministries, particularly the Ministry of Economy, Trade and Industry (METI – see below).

1.4.2 Circular and Ecological Economy

In 2018, the concept of a Circular and Ecological Economy was presented as a key pillar of the MOE's 5th Basic Environment Plan.⁴⁵ It aims for a low-carbon, autonomous and decentralised society, with a local production of renewable energy. Each region will take advantage of its own resources, and work together with other regions to carry out complementary “symbiotic exchanges” based on the exchange of natural resources and economic resources, such as investments and human resources.⁴⁶

⁴³ MOE: The 4th Fundamental Plan; International Olympic Committee (2019): Tokyo 2020 Medals. <https://www.olympic.org/tokyo-2020-medals>; Aoki-Suzuki, et al.: Circular Economy in Japan.

⁴⁴ MOE: The 4th Fundamental Plan; Aoki-Suzuki, et al.: Circular Economy in Japan.

⁴⁵ Ministry of Environment of Japan (MOE) (2019): Annual Report on the Environment in Japan 2019. Tokyo: Ministry of the Environment Environmental Strategy Division Minister's Secretariat. http://www.env.go.jp/en/wpaper/2019/pdf/2019_all.pdf

⁴⁶ MOE: Annual Report on the Environment in Japan 2019; Institute for Global Environmental Strategies (IGES) (2019): Circulating and Ecological Economy – Regional and Local CES: An IGES Proposal. Hayama: IGES. https://www.iges.or.jp/en/publication_documents/pub/discussionpaper/en/6744/Circulating+and+Ecological+Economy+-+Regional+and+Local+CES%2C+An+IGES+Proposal.pdf

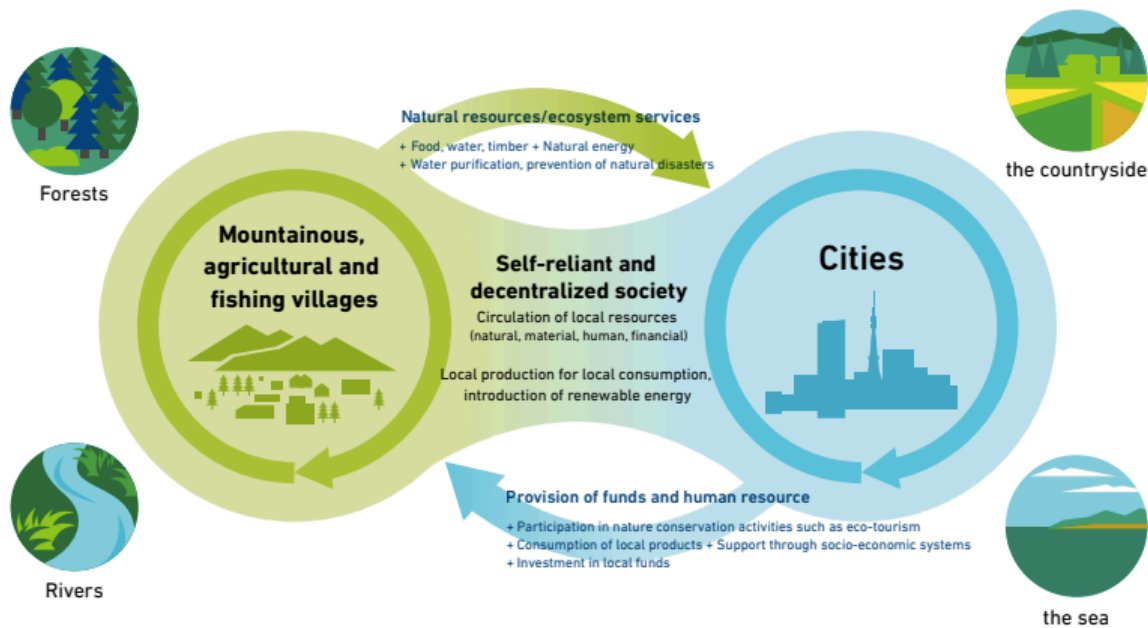


Figure 1.7 Conceptual illustration of the Circular and Ecological Economy⁴⁷

1.4.3 Circular Economy Vision 2020

Another notable development is the publication of the METI's Circular Economy Vision 2020, released in May 2020.⁴⁸ This report highlights the need for Japan to transition to a circular economy, underlining the necessity for Japanese companies to see it as a business opportunity leading to a “virtuous cycle of the environment and growth”, and a “marked shift” from the existing promotion of the Japanese 3Rs and focus on recycling, towards instead business models where circularity is at the forefront. The report emphasises the development of digital technologies, in line with the Japanese government aspiration of Society 5.0, which is “a human-centred society that balances economic advancement with the resolution of social problems by a system that highly integrates cyberspace and physical space”.⁴⁹ It also highlights the growing public demands for environmentalism and sustainability, and the rise of ESG investment, to be part of the drivers of this change, promoting the voluntary efforts of companies of adopting circular business models and building a resilient circulation system over the medium to long term.

Thus the Circular Economy Vision 2020 highlights three positions:

⁴⁷ MOE: Annual Report on the Environment in Japan 2019.

⁴⁸ Ministry of Economy, Trade and Industry of Japan (METI) (2020): Circular Economy Vision 2020 (Only in Japanese).

https://www.meti.go.jp/english/press/2020/0522_003.html#:~:text=Aiming%20to%20present%20basic%20future,abroad%20and%20analyzed%20the%20results.

⁴⁹ Society 5.0 was proposed in the 5th Science and Technology Basic Plan, published in April 2016. It follows the hunting society (Society 1.0), agricultural society (Society 2.0), industrial society (Society 3.0), and information society (Society 4.0). More information can be found here: Cabinet Office, Cabinet of Japan: Society 5.0. https://www8.cao.go.jp/cstp/english/society5_0/index.html



1. Widespread adoption of circular business models, with both the upstream and downstream supply chain keeping this central to their considerations. Likewise, promoting that this should be a voluntary shift, rather than one that is heavily regulated, in order not to stifle development. When speaking with representatives from METI, this latter point was especially emphasised.

2. Acquisition of appropriate evaluation from the market and society. This viewpoint is in light of the growing interest from businesses in Japan in fulfilling the SDGs and ESG investment. The report highlights that there should be a proper system in place for evaluating and disclosing a company's circularity efforts. Similarly, there should be investment guidance for circular economy investment, which METI is currently working on developing. Lastly, ensuring that there is a marketplace and desire from consumers to buy alternative products made from different, recycled and reused materials and support alternative business models. METI has previously tried to support such measures, via the Eco-Mark program (an environmental label managed by the Japan Environment Association Eco Mark office, which can be placed on products which have a smaller environmental imprint), and the Green Purchasing Law.⁵⁰ METI wishes to expand upon these initiatives.

3. Early establishment of a resilient resource circulation system to present Japan's basic policy directions for a circular economy. The report underlines that the domestic circulation system must be optimised, to secure qualitative and quantitative sources of recycling, focusing on diversification. Another key area is the promotion and support of international resource recycling and international development, especially promoting the use of Japanese technologies.

Lastly, the report highlights five areas which need special attention in terms of circularity. These are:

1. Plastics:

The report highlights the new plastic resource circulation strategy, and emphasises that this is a pivotal focus area.

2. Fibres:

As 73% of the world's discarded clothing is incinerated or landfilled, and the textile industry is one of the greatest polluters of freshwater, circularity and fashion is a key topic, which the EU's Circular Economy Action Plan (see section 1.3) also focuses on. Solutions highlighted are digital technology, sharing models, and new initiatives to recycle textiles by stores and manufacturers.

3. Carbon Fibre Reinforced Polymers (CFRP):

CFRP is an extremely durable, light, strong and heat resistant material, which can reduce GHG emissions through reducing weight. Therefore, its usage is expected to be increased in the aircraft and automotive industries. Japanese companies have a large share of the global market, but it is a difficult material to recycle. Thus METI and bodies such as the Innovative Structural Materials Association (ISMA), commissioned by New Energy and Industrial

⁵⁰ Japan Environment Association, Eco Mark Office: Introduction of the Eco Mark Program.
<https://www.ecomark.jp/english/syokai.html>



Technology Development Organization (NEDO), the Japanese independent government agency, are looking at solutions.⁵¹

4. Batteries

The report notes that small high capacity lithium-ion batteries are becoming more prevalent, and more needs to be done to ensure their correct disposal. Likewise, the report notes that the development of the recycling of electronic vehicles (EV) batteries should be supported.

5. Solar Panels

Due to the various renewable energy feed-in-tariff (FIT) programs launched in 2009 and 2012, the use of solar panels expanded (see section 1.4.5.3). However, this has fostered concerns that this will lead to an increase in industrial waste. This is set to peak between 2035 and 2037, with around 170-280 thousand tonnes of PV panels to be disposed of per year. This would be equal to 1.7-2.7% of Japan's total industrial waste. As such, NEDO has been working on solutions for this.⁵²

1.4.4 Special focus area: Plastic resource circulation strategy

Managing plastic waste, especially marine plastic waste, has become a growing focus area for the Japanese government, in part also because of growing international attention. Japan is the world's second biggest producer of plastic waste per capita after the US, however it also has one of the world's highest rates of recycling plastic bottles: 85%, compared to Europe's 41%.⁵³ In line with the plastic focus area of the Sound Material-Cycle Society, the government released the plastic resource circulation strategy in May 2019.⁵⁴ This was coordinated with Japan's hosting of the G20 meeting in Osaka the following month. The "Osaka Blue Ocean Vision", which sets aims of reducing additional marine plastic litter to zero by 2050, was also announced.⁵⁵ The plastic resource circulation strategy has numerous goals, and targets including increasing the domestic shipping of biomass plastic to 2 million tonnes a year by 2030, 25% reduction of waste one-way plastic generation by 2030, 100% effective use of all used plastics by 2035, and doubling the use of used plastics by 2035. It has six pillars: Reduce; Recycle; Recycled Material and Bioplastics; Measures for Marine Plastic; International Collaboration/Cooperation; and Developing Basis for Action.⁵⁶ In line with the resource circulation policy, a law charging consumers for single-use plastic bags entered into force in July 2020. It is a step in the right direction, but it is as of yet too early to assess the impact of the policy. However, early data from the three largest convenience

⁵¹ Innovative Structural Materials Association (ISMA). <https://isma.jp/en/about/>

⁵² METI: Circular Economy Vision 2020.

⁵³ UN Environment Programme (2018): Single-Use Plastics: A Roadmap for Sustainability. Kenya: UN Environment Programme.

https://wedocs.unep.org/bitstream/handle/20.500.11822/25496/singleUsePlastic_sustainability.pdf;

Inagaki, K. (23.7.2020): Japan Faces Up to Its Plastic Problem. In The Financial Times.

<https://www.ft.com/content/5cf68c84-afeb-11ea-94fc-9a676a727e5a>

⁵⁴ MOE: Annual Report on the Environment in Japan 2019.

⁵⁵ Ministry of Foreign Affairs of Japan (2019): G20 Osaka Summit (Summary of Outcome).

https://www.mofa.go.jp/policy/economy/g20_summit/osaka19/en/overview/; Ministry of Foreign Affairs of Japan (2019): G20 Implementation Framework for Actions on Marine Plastic Litter.

https://www.mofa.go.jp/policy/economy/g20_summit/osaka19/pdf/documents/en/annex_14.pdf

⁵⁶ Aoki-Suzuki, et al.: Circular Economy in Japan.

store chains in Japan sees that consumers declining to pay for bags was 75%, 76% and 77% for Seven-Eleven Japan Co., Lawson Inc. and FamilyMart Co., respectively.⁵⁷

1.4.5 Renewable energy

However, the circular economy does not just include the above focus areas, it is also pivotal to consider the underpinning energy usage, as renewable energy is key to achieving a circular economy, as shown by the Ellen MacArthur Butterfly Diagram (see Figure 1.1). Therefore, it is important to understand the Japanese market trends and the opportunities, especially regarding offshore wind, solar photovoltaic (PV) and biomass.

Japan's energy policy is rooted in the 5th edition of the Basic Energy Plan, last updated in 2018 and set to be updated again in 2021. METI is responsible for energy policy. The principles and targets of 3E+S (see below) are its core objectives, which is that Safety is the fundamental concern, then Energy Security, as Japan is largely dependent on external energy supplies, in addition to Economic Efficiency and Environment.

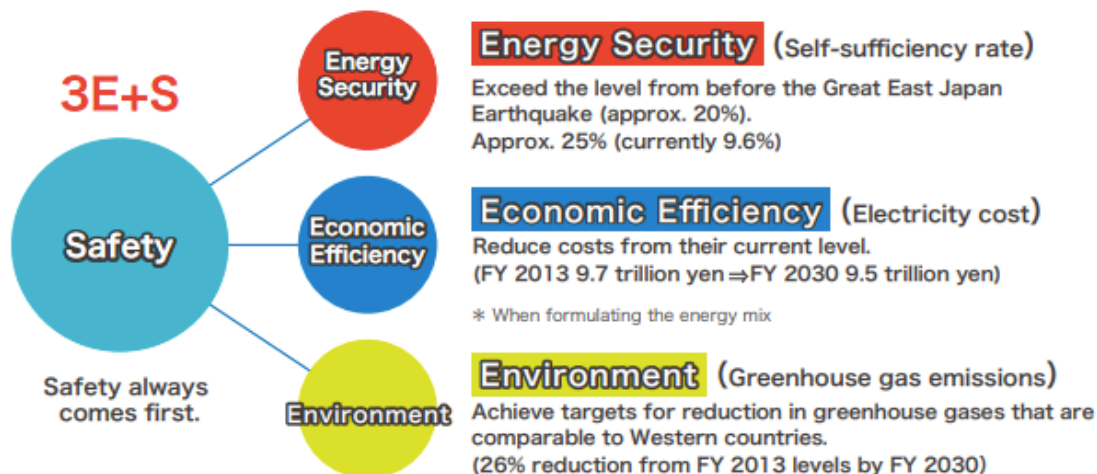


Figure 1.8 3E+S⁵⁸

⁵⁷ Jiji Press (5.8.2020): More Japan Convenience Store Customers Skipping Plastic Bags to Save a Few Yen. In The Japan Times. <https://www.japantimes.co.jp/news/2020/08/05/business/convenience-store-bags/>

⁵⁸ Ministry of Economy, Trade and Industry of Japan (METI) (2020): Japan's Energy 2019. https://www.enecho.meti.go.jp/en/category/brochures/pdf/japan_energy_2019.pdf

As shown in the graph below, Japan's total primary energy supply (TPES) still relies heavily on coal and oil. Japan's priorities in its energy mix have also changed substantially after the 2011 Great Eastern Earthquake and the Fukushima nuclear accident, with public opinion sharply turning against the use of nuclear power, but also forcing Japan to become more reliant on fossil fuels in the wake of the accident. As of August 2020, out of the 54 nuclear reactors that were in operation before Fukushima, only nine are currently in operation.⁵⁹

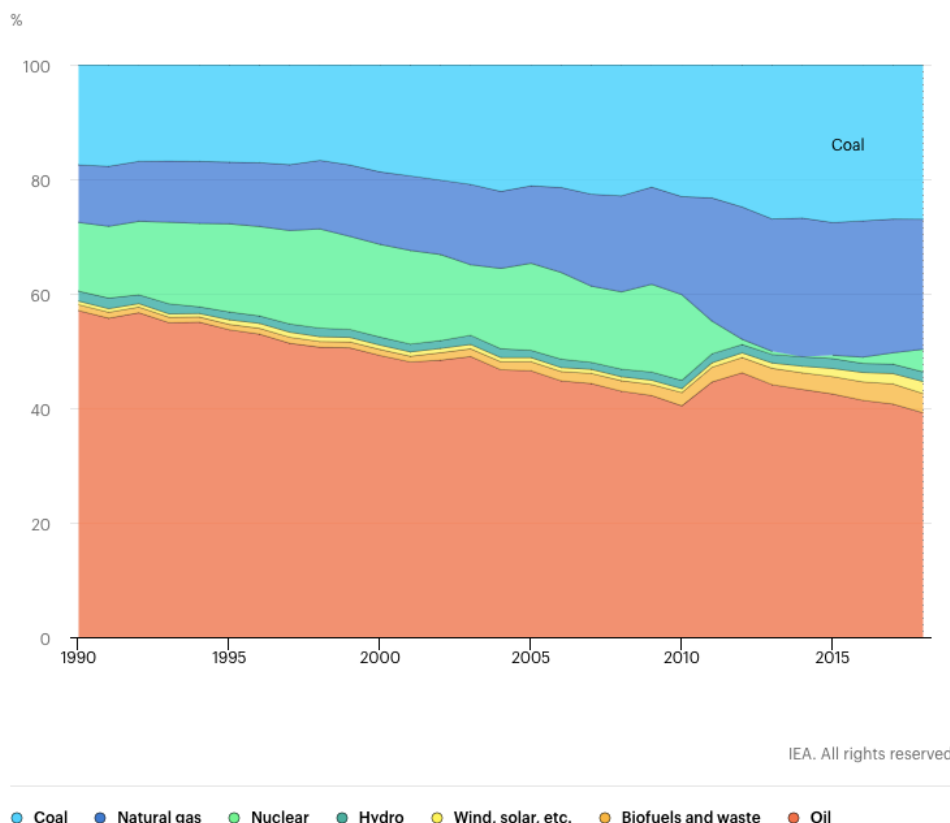


Figure 1.9 Japan's TPES⁶⁰

Thus the future energy mix of Japan for 2030 as outlined in the Basic Energy Plan currently sets the targets seen below in Figure 1.10. Japan's government is hoping to increase its percentage of renewable energy use from 16% to between 22 and 24%. Within the different renewable sectors, Japan wishes to increase the following percentages: geothermal 0.2% to 1 to 1.15%, biomass from 0.2% to between 3.7 and 4.6%, wind from 0.6% to 1.7%, solar photovoltaic (PV) from 5.2% to 7%, and hydroelectric from 7.9% to between 8.8 and 9.2%. The most recent annual Energy White Paper was adopted by the government in June 2020.⁶¹ This paper emphasises the importance of the promotion of renewable energy and the lessening of Japan's dependency on fossil fuels. It also stresses the importance of a

⁵⁹ Kyodo News (12.8.2020): Japan's Nuclear Fuel Imports Almost Zero in 2019 as Industry Stagnates. In The Japan Times. <https://www.japantimes.co.jp/news/2020/08/12/business/japan-nuclear-fuel-imports-zero/>

⁶⁰ International Energy Agency: Japan. <https://www.iea.org/countries/Japan>

⁶¹ Ministry of Economy, Trade and Industry of Japan (2020): Annual Report on Energy (Energy White Paper 2020) (Only in Japanese). https://www.meti.go.jp/english/press/2020/0605_001.html

sustainable electricity system, and making renewable energy a main power source through reducing its cost.

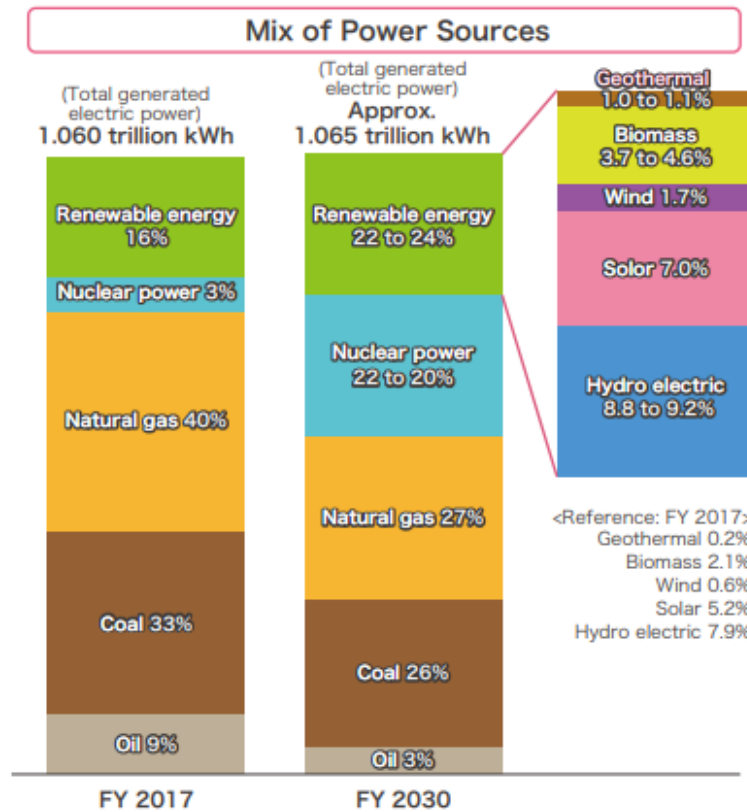


Figure 1.10 Japan's Energy Policy⁶²

For the 2019 fiscal year renewable energy accounted for 18.5% of Japan's power generation, which is an increase from 17.4% in the previous year, according to a preliminary report. The annual share of solar PV increased from 6.5% to 7.4%, thus already pushing past the Basic Energy Plan goal for 2030. The use of wind power increased from 0.7% to 0.76%. The use of biomass likewise increased from 2.2% to 2.7%, and geothermal from 0.2% to 0.24%, with the share of hydro power staying largely the same.⁶³

There have been calls by stakeholders for Japan to cut its energy dependence on fossil fuels further. Notably, the Institute for Global Environmental Strategies (IGES), the Japanese research institute, published a report in February 2020, calling for Japan's Nationally Determined Contribution (NDC) under the Paris Agreement to be as a 32% reduction in emissions compared to 2013 – instead of the current target of 26% – with a focus on strengthening the use of renewable energy.⁶⁴ This recommendation was made in conjunction with 2020 being the first opportunity for countries to update or submit their NDCs. Subsequently, others such as the Tokyo-based think tank Renewable Energy

⁶² METI: Japan's Energy 2019.

⁶³ Institute for Sustainable Energy Policies (ISEP) (2020): Share of Renewable Energy Electricity in Japan, 2019 (Preliminary report). <https://www.isep.or.jp/en/879/>

⁶⁴ Institute for Global Environmental Strategies (2020): Recommendations for Revising Japan's Nationally Determined Contribution (NDC). https://www.iges.or.jp/en/publication_documents/pub/policysubmission/en/10579/NDC+Revision+Statement+%28EN%29_0326final.pdf



Institute, established in the wake of the Great Eastern Earthquake by Masayosi Son the founder of Softbank Group, recommended that Japan set an emission target of a 47% reduction in emissions in a report published in August 2020. As part of this, the institute proposes that 45% of Japan's generated electric power is supplied by renewable energy.⁶⁵ The Japan Association of Corporate Executives, one of the three major business associations has also proposed a target of 40%. Local government bodies such as the Renewable Energy Council, a Japanese association representing 34 prefectures, has also proposed a target of over 40%, while the Designated City Council, comprising 19 ordinance-designated cities asked for a target of at least 45%.⁶⁶ In a noted policy shift, in his first policy speech to the Japanese Diet as the new Japanese prime minister, Yoshihide Suga announced that Japan will pledge to cut GHG emissions to net zero by 2050 in October 2020.⁶⁷ Prior to this, under former Prime Minister Shinzo Abe there were also increasing positive signs such as the Japanese Minister for the Environment, Shinjiro Koizumi, announcing that higher targets for renewable energy will be set in the next revision of the Basic Energy Plan, and that Minister Koizumi wishes to propose a new NDC ahead of the postponed COP26 to be held in Glasgow in November 2021.⁶⁸ This now seems even more likely to happen now.

1.4.5.1 Feed-in Tariffs and Feed-in Premium

Another important element of Japanese energy policy, in the aftermath of the Great Eastern Earthquake, has been the Act on Special Measures Concerning Procurement of Electricity from Renewable Energy Sources by Electricity Utilities of 2011, which led to the introduction of a new Feed-in Tariff (FIT) in July 2012. The FIT is a scheme wherein electric utility companies buy electricity generated by renewable energy sources at a fixed price and contract duration set by METI (see Figure 1.10). End-users also pay a surcharge to help cover the costs of renewable energy. The FIT tariff for newer contracts has been updated on an annual basis, due to changes in construction costs linked to technological innovation or increased competition.⁶⁹ There was also a FIT scheme launched in 2009, to last until 2019, specifically for purchasing solar PVs, called the New Purchase System for Photovoltaics. The FITs have led to a marked increase of renewable energy installations, especially in the deployment of solar PVs. However, a phase-out of the FIT started in 2019 and is set to continue in 2020, because of an increasing cost burden for consumers.

⁶⁵ Renewable Energy Institute (REI) (2020): Proposal for 2030 Energy Mix in Japan. https://www.renewable-ei.org/pdfdownload/activities/REI_Summary_2030Proposal_EN.pdf

⁶⁶ Ibid.

⁶⁷ Nikkei Staff Writers (26.10.2020): Suga Vows to Meet Japan's Zero-Emissions Goal by 2050. In Nikkei Asia. <https://asia.nikkei.com/Politics/Suga-vows-to-meet-Japan-s-zero-emissions-goal-by-2050>

⁶⁸ Takada, A., Inajima, T. (2020.07.15): After Coal Battle, Koizumi Aims to Raise Japan's Emission Goals. In Bloomberg. <https://www.bloomberg.com/news/articles/2020-07-15/after-coal-battle-japan-s-koizumi-aims-to-raise-emission-goals>

⁶⁹ Ministry of Economy, Trade and Industry of Japan (2012): Feed-In Tariff Scheme in Japan. https://www.meti.go.jp/english/policy/energy_environment/renewable/pdf/summary201207.pdf

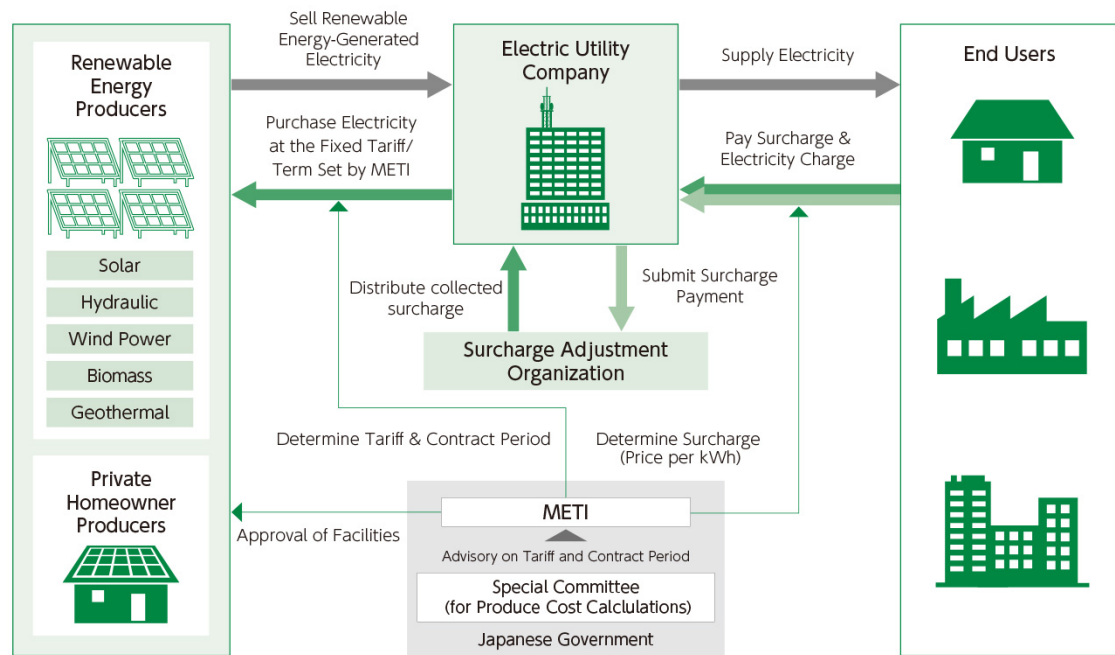


Figure 1.11 Feed-In Tariff System⁷⁰

In June 2020, new amendments regarding the FIT were passed into law, and they will go into force in April 2022. The new law includes several important changes to FIT, including the proposal to introduce a feed-in-premium (FIP) system, a mandatory reserve for decommissioning renewable power generation facilities, and an expiration deadline for FIT and FIP approvals.⁷¹

The FIP system will apply for market transactions, that is to say electricity sales via wholesale power exchange or over-the-counter transactions with retailers. Thus businesses that have gained FIP approval will receive revenues from the market transactions in addition to receiving a premium for a set period of time. Currently the FIP will include mega-solar projects and off- and onshore wind projects. The FIT will still apply to certain categories of renewable power generation facilities, which will be designated later.⁷²

The mandatory reserve will be applicable for certain renewable energy generators, with it looking likely that all commercial solar power facilities of 10 kW or more will be included. Lastly, the new law states that FIT or FIP approval can be cancelled, if the FIT or FIP awarded project does not start operations within a certain timeframe. The new law has set

⁷⁰ Ichigo Green Infrastructure Investment Corporation: About Japan's Feed-In Tariff (FIT).
<https://www.ichigo-green.co.jp/en/operation/purchase.php>

⁷¹ Orrick Herrington & Sutcliffe LLP (2020): Japan Renewable Alert 47: The Nullification of Approvals Under the Amended FIT/FIP Act. <https://www.orrick.com/en/Insights/2020/06/Japan-Renewable-Alert-47>

⁷² Orrick Herrington & Sutcliffe LLP (2020): Japan Renewable Alert 44: Comprehensive Revamp of Regulations on Renewables.
<https://www.orrick.com/en/insights/2020/03/japan-renewable-alert-44-comprehensive-revamp-of-regulations-on-renewables>



the regulatory framework of these new systems, but not all the all details yet, so this will be important to follow.

On the basis of the above policy framework there are three trending energy sectors, which in interviews with stakeholders were presented as areas of opportunities for European SMEs. These are off-shore wind, solar PVs, and biomass projects.

1.4.5.2 Offshore wind energy

As discussed above, wind power only currently accounts for 0.76% of Japan's power generation, which is below the global average of 5.44%.⁷³ The development of wind power capabilities in Japan has been complicated by lack of land and deep water offshore (defined as depth greater than 100 metres). Japan also has had no clear legislation in support of offshore wind, with no national level laws covering general sea areas, that is those outside ports and harbours. Furthermore, the 38 applicable prefectures have had their own rules, which were often undetailed and offering limited development periods, such as five years. This, combined with a complicated and long environmental assessment procedure, alongside worries about supply stability and access to the grid, and a need to cooperate with strong stakeholders especially the Japanese fishing industry, has made it a hard market to develop.⁷⁴

The FIT for offshore wind was approved in 2012, but not available until 2014. At 36 JPY/kWh (0.28 EUR/kWh) it is the highest FIT in the world for offshore wind, but this still only translated to Japan having 65.5MW of offshore wind power available by the end of 2019, according to the Global Wind Energy Council (GWEC).⁷⁵ Likewise, since 2012 any new wind farm greater than 7.5 MW must have a Environmental Impact Assessment (EIA) permit. The EIA can take between four to five years, and there has been a lack of coordination between different government bodies to streamline the process.⁷⁶

However, Japan also has the world's sixth largest territorial waters and exclusive economic zone, together with one of the world's longest coastlines with bountiful amounts of wind and there has been a marked policy shift in recent years. This has led to optimism that this sector will see a strong development. The Japanese government has tried to streamline legislation and in 2016 the Ministry of Land, Infrastructure, Transport and Tourism (MILT) amended the Port and Harbours Act to allow development, however only in ports and harbour areas, and with longer periods of occupancy up to 20 years. This did lend itself to larger wind projects, however they were still relatively small.

In April 2019, the Act of Promoting Utilization of Sea Areas in Development of Power Generation Facilities Using Maritime Renewable Energy Resources was enacted, which

⁷³ Ember (2020): 2020 Global Electricity Review. London: Ember. <https://ember-climate.org/wp-content/uploads/2020/03/Ember-2020GlobalElectricityReview-Web.pdf>

⁷⁴ For further background on Japan's wind industry, the previous Minerva Report, Heger, I. (2016): Wind Energy in Japan: Technological Cooperation and Business Potential for European Companies. Tokyo: EU-Japan Centre for Industrial Cooperation. <https://www.eu-japan.eu/publications/wind-energy-japan>

⁷⁵ Global Wind Energy Council (2020): Global Wind Report 2019. Brussels: Global Wind Energy Council. https://gwec.net/wp-content/uploads/2020/08/Annual-Wind-Report_2019_digital_final_2r.pdf

⁷⁶ Ibid.



allows for development in general seas too, beyond just ports and harbours, with occupancy rights of 30 years.⁷⁷ Later in August 2019, 11 zones were shortlisted for development, with four zones being designated. These are so far one each in Chiba and Nagasaki prefectures and two in Akita Prefecture, where the local community has agreed to cooperate with developing the projects.⁷⁸ Of these, the zone in Nagasaki is focused on Goto Islands, which has a floating offshore wind pilot project of 21 MW, and for which the government launched its first tender in June 2020, closing in December the same year, with the winner selected in summer 2021, with more set to follow.⁷⁹ Although the Goto Islands project is very small in terms of capacity, it is considered an important test case for the new legislation and a positive sign for the trajectory of the offshore wind sector.

Japan Wind Power Association (JWPA) together with GWEC has also launched the Japan Offshore Wind Task Force to help further develop the market.⁸⁰ METI and MLIT have also launched a public-private dialogue committee. JWPA have further recommended to the government that Japan set a target of 10 GW in offshore wind by 2030, and between 30 GW and 45 GW by 2040.⁸¹ This in turn would lead to between 5 trillion and 6 trillion JPY worth of investment by 2030, and the economic benefits could be over 13 trillion JPY using METI price calculations.⁸² Therefore several commentators, such as the International Renewable Energy Agency (IRENA) see Asia as the next big market, with the Asian market “dominating” in terms of total offshore wind power installations.⁸³ Of these it is again the Japanese market which is highlighted, with some projections seeing the Japanese market accounting for 60% of the world’s offshore capacity by 2050.⁸⁴ As of July 2020, the Japanese government is currently drafting a bill which would enable identifying new development sites for 1 GW of installed offshore wind capacity per year between 2021 and 2031, thus creating an expectation of 30 sites generating the suggested 10 GW of JWPA.⁸⁵

It is clear that the new legislation changes and the opportunities of the Japanese market have attracted the interest of numerous large European developers and suppliers, many of which have formed joint ventures with Japanese companies. These include:

⁷⁷ DLA Piper (2019): Japan Renewable Energy Update - Offshore Wind Energy (2) Energy Alert. https://www.dlapiper.com/~media/files/insights/publications/2019/06/japan_renewable_energy_update_offshore_wind_energy_booklet.pdf

⁷⁸ Japan Wind Power Association (3.7.2020): Japan Announced 4 Offshore Wind Promoting Zone [Press release]. http://jwpa.jp/page_297_englishsite/jwpa/detail_e.html

⁷⁹ Durakovic, A. (24.6.2020): Japan Opens First Floating Wind Farm Auction. In Offshore Wind. <https://www.offshorewind.biz/2020/06/24/breaking-japan-opens-first-floating-wind-farm-auction/>

⁸⁰ Japan Wind Power Association (27.2.2020): JWPA and GWEC Launch Joint Task Force [Press release]. http://jwpa.jp/page_293_englishsite/jwpa/detail_e.html

⁸¹ Japan Wind Power Association (17.7.2020): Japanese METI & MLIT Hold Government-Industry Dialogue for Offshore Wind [Press release]. http://jwpa.jp/page_298_englishsite/jwpa/detail_e.html

⁸² Shibata, N. (3.1.2020): Global Wind Power Players See Japan as Next Money-Spinner. In Nikkei Asia. <https://asia.nikkei.com/Business/Multinationals-in-Asia/Global-wind-power-players-see-Japan-as-next-money-spinner>

⁸³ Investment, Technology, Grid Integration and Socio-Economic Aspects (A Global Energy Transformation paper). Abu Dhabi: International Renewable Energy Agency. https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Oct/IRENA_Future_of_wind_2019.pdf

⁸⁴ Shibata: Global Wind Power Players See Japan as Next Money-Spinner.

⁸⁵ Buljan, A. (22.7.2020): Japan’s New Draft Bill to Outline 30 New Offshore Wind Sites. In Offshore Wind. <https://www.offshorewind.biz/2020/07/22/japans-new-draft-bill-to-outline-30-new-offshore-wind-sites/>



- Ørsted AS, the Danish offshore wind developer, has established the joint venture company Choshi Offshore Wind Farm KK, together with Tokyo Electric Power Company Holdings Inc (TEPCO), to put forward a joint bid for the 370 MW Choshi offshore wind promotion area.⁸⁶ TEPCO is the largest power company in Japan, and this is part of its drive to focus more on renewables after its involvement in the Fukushima nuclear accident and plans to spend between 1 to 2 trillion JPY to develop between 6 and 7 GW of offshore wind and hydroelectric power by 2035.⁸⁷
- MHI Vestas Offshore Wind AS, a joint venture between Mitsubishi Heavy Industries and Vestas Wind Systems AS, the Danish wind turbine manufacturer, will supply 33 turbines for the Akita Noshiro offshore wind farm project, which is Japan's first large scale offshore windmill park. Installation will begin in 2022, and the wind farms are expected to have a combined output of 139 MW.⁸⁸
- Siemens Gamesa Renewable Energy SA, the German and Spanish joint venture, secured in 2019 a first supplier nomination with Obayashi Corporation, as the latter will be submitting a tender for the 455 MW Northern Akita project, set to be in commercial operation by 2024. They also signed a memorandum of understanding (MOU) to promote benefits for local stakeholders.⁸⁹
- Portugal's EDP Renováveis SA and France's Engie SA created a joint venture in 2019, called Ocean Winds, to focus on expanding their offshore wind market share.⁹⁰ Japan has been announced as a key market.⁹¹
- In March 2020, Penta-Ocean Construction Co Ltd, the Japanese marine contractor, and DEME Offshore NV, a subsidiary of Belgian Dredging, Environmental and Marine Engineering NV (DEME), signed a MOU to collaborate on the construction of windmill farms, in light of the new Japanese legislation.⁹²

These are large corporations and all of these projects, alongside the many more still to become public, will be huge, complex operations, involving many different industries and

⁸⁶ Ørsted AS (18.03.2020): TEPCO and Ørsted Agree to Establish a Joint Venture Company for Offshore Wind in Choshi [Press release].

<https://orsted.com/en/media/newsroom/news/2020/03/873268151293809>

⁸⁷ Obayashi, Y., Shimizu, R. (8.7.2020): TEPCO Renewable to Spend \$9-18 billion by 2035 on Green Power. In Reuters. <https://www.reuters.com/article/us-tep-hldg-windpower/tepc-renewable-to-spend-9-18-billion-by-2035-on-green-power-idUSKBN23F1YG>.

⁸⁸ Durakovic, A. (3.3.2020): MHI Vestas Notches First Firm Order in Japan. In Offshore Wind.

<https://www.offshorewind.biz/2020/03/03/mhi-vestas-notches-first-firm-order-in-japan/>

⁸⁹ Siemens Gamesa Renewable Energy SA (19.6.2019): Siemens Gamesa Receives First Offshore Wind Preferred Supplier Nomination in Japan: up to 455 MW for Obayashi Corporation [Press release]. <https://www.siemensgamesa.com/newsroom/2019/06/190620-siemens-gamesa-japan-offshore-wind-preferred-supplier>

⁹⁰ OW Offshore SL: Ocean Winds. <https://www.oceanwinds.com/about-ow/about-ow-our-history/>

⁹¹ Richard, C. (21.7.2020): EDPR and Engie Launch Offshore JV – Updated. In Wind Power Monthly. <https://www.windpowermonthly.com/article/1671839/edpr-engie-launch-offshore-jv-updated>

⁹² Belgian Dredging, Environmental and Marine Engineering NV (24.3.2020): Penta-Ocean and DEME Offshore Sign Memorandum of Understanding to Collaborate on Construction of Offshore Wind Projects in Japan [Press release]. <https://www.deme-group.com/news/penta-ocean-and-deme-offshore-sign-memorandum-understanding-collaborate-construction-offshore>



specialised skills, and a long supply chain, in an area in which European companies hold speciality technological expertise and experience. Interviewed stakeholders did comment that European SMEs were involved in this regard, though many of them preferred to remain anonymous, as several agreements were not public yet, and it seems to be an area of increasing focus and opportunity in Japan.

1.4.5.3 Solar PV

At the end of 2019, solar power accounted for approximately 7.4% of Japan's energy generation, according to a preliminary report, which means that this already meets the government's goal of achieving 7% by 2030.⁹³ As discussed above in relation to FIT amendments, the Japanese solar market is also facing changes. After experiencing a large boom in installation, peaking in 2015, due to the FIT, the market and government focus is now moving away from the large scale mega solar projects on land areas, although they produce many GW, as it is hard to find available suitable land areas. The Japanese electricity market has also undergone reforms to promote the use of renewable energy in 2019. Instead distributed solar is seen as the growing trend and one of the futures of the solar PV market in Japan.⁹⁴ Distributed solar is solar electricity produced by solar panels on commercial, industrial and residential rooftops.

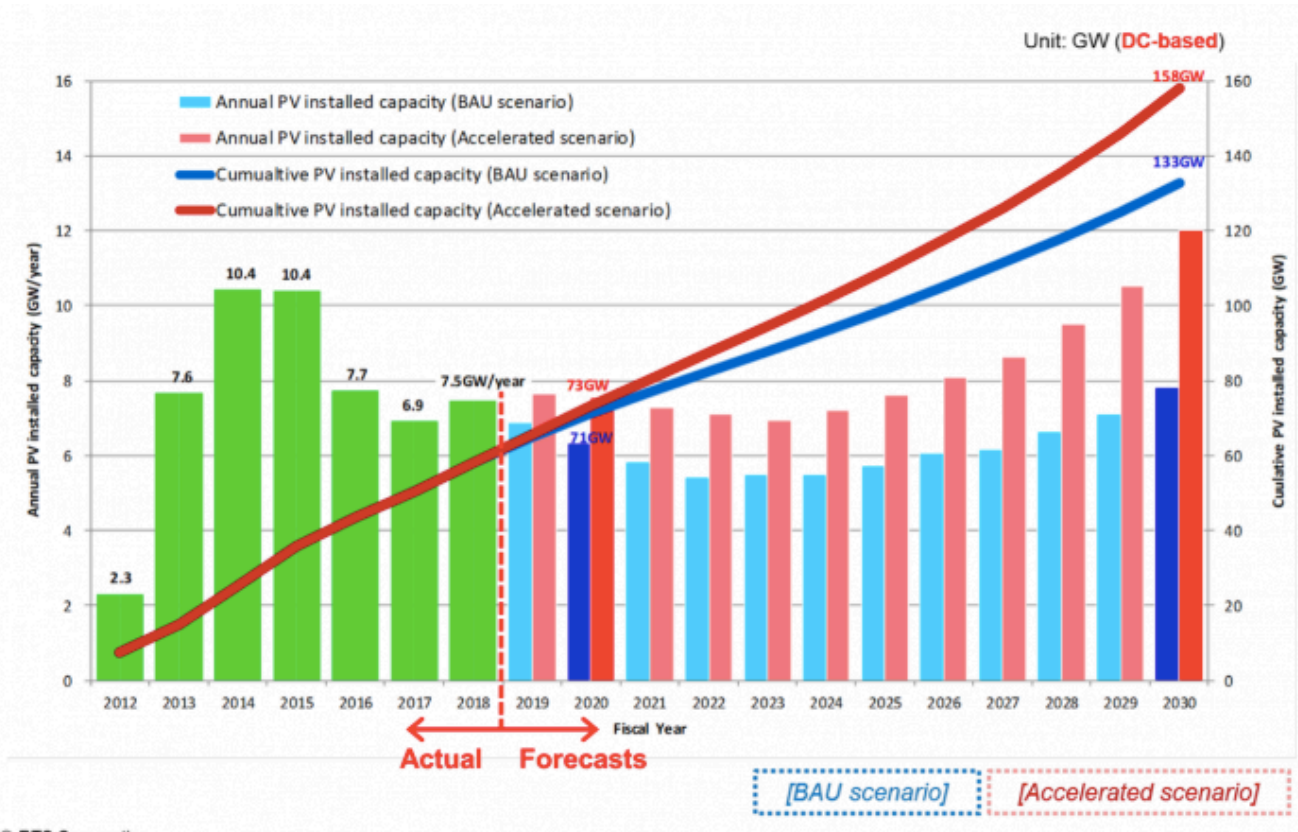
The Japanese solar PV research firm, RTS Corporation, states that the primary driver of this trend is because of the reducing FIT and companies and the public appetite for renewable energy is growing. The end of the FIT that began in 2009, has meant more than 500,000 residential tariffs have run out. Thus homeowners are looking at self-consumption of their power through battery storage, or trying to get power purchase agreements (PPAs) contracts with the new crop of retailers that have developed to work with Japan's deregulated electricity market.⁹⁵ Therefore there is a shift in focus to new products and business models. These include combined solar and battery systems, especially important for energy resilience in a country that routinely suffers from earthquakes and typhoons, and third party ownership models, known as "Zero Yen Installation" models, for the commercial, industrial and residential markets, whereby the customer has a PPA with the provider, sharing electricity cost alongside any revenues from selling energy back to the grid.⁹⁶

⁹³ ISEP: Share of Renewable Energy Electricity in Japan, 2019; For a dedicated report on Japan's solar market please see: Arias, J. (2018): Solar energy, energy storage and virtual power plants in Japan. Tokyo: EU-Japan Centre for Industrial Cooperation. <https://www.eu-japan.eu/publications/solar-energy-energy-storage-and-virtual-power-plants-japan-minerva-fellowship>

⁹⁴ Asian Power (22.5.2019): Japan's Solar Capacity to Boom amidst FiT Scheme Phase-Out. <https://asian-power.com/power-utility/news/japans-solar-capacity-boom-amidst-fit-scheme-phase-out>

⁹⁵ Colthorpe, A. (2020): PV and ESS in Japan's Changing Energy Market Landscape. In PV Tech Power, vol. 22. <https://store.pv-tech.org/store/pv-tech-power-volume-22/>

⁹⁶ Ibid.



© RTS Corporation

Figure 1.12 RTS Forecast of Annual and Cumulative PV Installed Capacity in Japan Toward FY 2030 (Business as Usual Scenario + Accelerated Scenario)⁹⁷

Thus, RTS Corporation have modelled various scenarios and have analysed that Japan could potentially install 150 GW of solar PV by 2030, partly through the shift from ground installations to rooftops, as seen in Figure 1.12.⁹⁸ They see residential and small-scale commercial demand leading to the deployment of up to 80 GW, while large-scale industrial and commercial sectors could facilitate the deployment of up to 60 GW.⁹⁹ As the Renewable Energy Institute notes, less than 10% of the total number of detached private houses in Japan currently have solar PV installed. They also see the cost of solar PV decreasing to a level lower than electricity purchase prices, further promoting distributed solar.¹⁰⁰ This also means that stakeholders predict solar as filling some of the gap in the power mix projections of the Japanese government for 2030, as a majority of the Japanese public is still set against the use of nuclear power, which otherwise is set to increase from 3% in 2017 to between 20% and 22% in 2030. Achieving even 10% at the current rate of development will be hard.¹⁰¹ The Renewable Energy Institute posits that 145 GW of solar PV could be supplied by 2030, which would be an increase of 40% in comparison to the current policy scenario.¹⁰²

⁹⁷ Colthorpe: PV and ESS in Japan’s Changing Energy Market Landscape.

⁹⁸ Ibid.

⁹⁹ Publicover, B. (18.3.2019): Japan could install 150 GW by 2030. In PV Magazine. <https://www.pv-magazine.com/2019/03/18/japan-could-install-150-gw-by-2030-report/>

¹⁰⁰ REI: Proposal for 2030 Energy Mix in Japan.

¹⁰¹ Ibid.

¹⁰² Ibid.



The other interesting opportunity for European companies is within the recycling, repair and reuse of solar panels. As outlined in METI's Circular Economy Vision 2020, this is a growing area of focus and developing market for Japan, together with the rise in use of solar PV technology, as Japan may see a peak between 2035 and 2037 in waste disposal related to end of life solar panels, with approximately 170-280 thousand tonnes disposed of per year.¹⁰³ Simultaneously, a report by IRENA estimates that the global value of recovered materials from solar PV panels could cumulatively be valued at 450 million USD by 2030.¹⁰⁴ As also highlighted in the 2018 MINERVA report on the Japanese solar market by Jonathan Arias, the Japanese government, NEDO and the private sector are working actively on the development of affordable solar PV recycling technology.¹⁰⁵ This developing market therefore remains an area where EU companies with pre-existing expertise may have interesting opportunities, especially considering that the EU has specific regulations for end of life solar panels.

1.4.5.4 Biomass

The final renewable sector that worth considering is biomass, and another sector which may help fill the gap left by nuclear power. This is a sector highlighted as a market of opportunity by interviewed stakeholders, especially for SMEs from EU countries with strong forestry and related industries and technical expertise within this field. The current energy goals see biomass accounting for between 3.7% and 4.6% in 2030. In the 2019 fiscal year, biomass accounted for 2.7% of generated electricity. However, FutureMetrics LLC, an American biomass consultancy, sees the market as having greater potential, and as a market to watch.¹⁰⁶

Approximately two-thirds of Japan's land mass is covered by forest, corresponding to 25 million ha, according to Japan's Ministry of Agriculture, Forestry and Fishery (MAFF).¹⁰⁷ Of this, 42% are national forests and publicly-owned, while 58% is privately owned. The private ownership is predominately characterised by individual forest owners. This structure has in turn stifled effective forest practices together with Japan's steep topography.¹⁰⁸ However, the forestry and wood industry in Japan, which in MAFF's own words has long been "stagnant", is again seen as playing a large role in local economies due to an increasing governmental focus and because woods are reaching maturity.¹⁰⁹ There is an interest in creating regional jobs and in using biomass for local energy and heating especially in smaller municipalities,

¹⁰³ METI: Circular Economy Vision 2020.

¹⁰⁴ International Renewable Energy Association (2016): End-Of-Life Management: Solar Photovoltaic Panels. Abu Dhabi: International Renewable Energy Agency.
https://www.irena.org/documentdownloads/publications/irena_ieapvps_end-of-life_solar_pv_panels_2016.pdf

¹⁰⁵ Arias: Solar energy, energy storage and virtual power plants in Japan.

¹⁰⁶ Boyd, P. (10.6.2020): 'Open Doors in Japan': Japanese Wood Chip, Wood Pellet Demand Expected to Grow. In Canadian Biomass Magazine. <https://www.canadianbiomassmagazine.ca/open-doors-in-japan-japanese-wood-chip-wood-pellet-demand-expected-to-grow/>

¹⁰⁷ Ministry of Agriculture, Forestry and Fisheries of Japan (2019): State of Japan's Forests and Forest Management: 3rd Country Report of Japan to the Montreal Process.
<https://www.maff.go.jp/e/policies/forestry/attach/pdf/index-8.pdf>

¹⁰⁸ Ibid.

¹⁰⁹ Ibid.



known as “biomass towns”, of which over 300 have been developed in Japan, such as Shimokawa in Hokkaido and Maniwa in Okuyama.¹¹⁰

The interest in biomass is reflected in Japanese policy, such as MAFF’s Basic Plan for Biomass Usage Promotion, last revised in 2016, which sets a goal of using forest scraps for biomass, defined as damaged trees and the like, from roughly 9% of the annual generation of 8 million tonnes to roughly 30% by 2025.¹¹¹ Likewise, MOE’s 4th Fundamental Plan for Establishing a Sound Material-Cycle Society, under the pillar Regional Circular and Ecological Sphere, promoting the local use of biomass features as a priority area.¹¹² Moreover, there are projects such as Japan’s Agency for Natural Resources and Energy and the Forestry Agency setting up a joint expert group in July 2020 to explore the feasibility of a woody biomass powered generation project, as part of forest conservation, and they are considering securing woods specifically for this purpose.¹¹³ Thus the biomass sector in Japan is one which bears retaining a focus on.

¹¹⁰ Ministry of Agriculture, Forestry and Fisheries: Biomass Town.

<https://www.maff.go.jp/e/policies/env/biomasstown.html>;

Ministry of Agriculture, Forestry and Fisheries: The Guidebook for Promoting Biomass Utilization at the Community Level. <https://www.maff.go.jp/e/pdf/part1.pdf>;

Boyd: ‘Open Doors in Japan’; <https://www.maff.go.jp/e/pdf/part1.pdf>

¹¹¹ Ministry of Agriculture, Forestry and Fisheries of Japan (2016): Basic Plan for the Promotion of Biomass Utilization. <https://www.maff.go.jp/e/policies/env/attach/pdf/index-4.pdf>

¹¹² MOE: The 4th Fundamental Plan.

¹¹³ Kyodo News (25.8.2020): Japan Eyes 'Energy Forests' for Biomass Power Generation.

In The Japan Times. <https://www.japantimes.co.jp/news/2020/08/25/business/japan-energy-forests-biomass/#.X0XcZTVUuUk>



2 CIRCULAR BUSINESSES IN JAPAN

2.1 SIZE OF THE CIRCULAR ECONOMY DOMESTIC MARKET IN JAPAN

As established, circularity is not a new concept in Japan, with several private and public bodies already engaged in fields relating to the circular economy, rooted in an awareness of the 3Rs and a wish to establish the Sound-Material Cycle Society. However, an increasing number of Japanese companies now wish to pursue a different mode of operating which is more circular, rather than business as usual (BAU).

A 2020 MOE report on the size of Japan's environmental industry states that it has reached a record size of approximately 105.3 trillion JPY in 2018, which is a year on year 3.1% increase, and roughly 1.8 times the size of the market in 2000, and now accounting for 10.1% of all Japan's industry. It employs approximately 2.61 million people, which is 1.45 times as many in 2000.¹¹⁴ The report estimates that the entire market will grow to a value of 133.5 trillion JPY in 2050. Of these, the sector defined as global warming countermeasures, which includes clean energy and energy efficiency, was set to account for 46.9% and the businesses related to recycling and waste management, remanufacturing and repair, leasing and renting, and long-life construction were set to account for 40%. Looking more narrowly at the latter group, the report estimates that the remanufacturing and repair industry in particular will see increasing growth, driven by its use in construction.

In comparison, a 2018 report for the European Commission by Cambridge Econometrics, Trinomics, and ICF, estimated that converting to the circular economy could potentially increase the GDP of the EU by 0.5% by 2030 and create around 700,000 new jobs.¹¹⁵

¹¹⁴ Ministry of Environment of Japan (MOE) (2020): Estimation of the Market Size of the Environment Industry on a Commission Basis in Fiscal 2017 (Only in Japanese). <http://www.env.go.jp/press/files/jp/114308.pdf>

¹¹⁵ Cambridge Econometrics, Trinomics, and ICF (2018): Impacts of Circular Economy Policies on the Labour Market. <https://bit.ly/2KGAW1X>

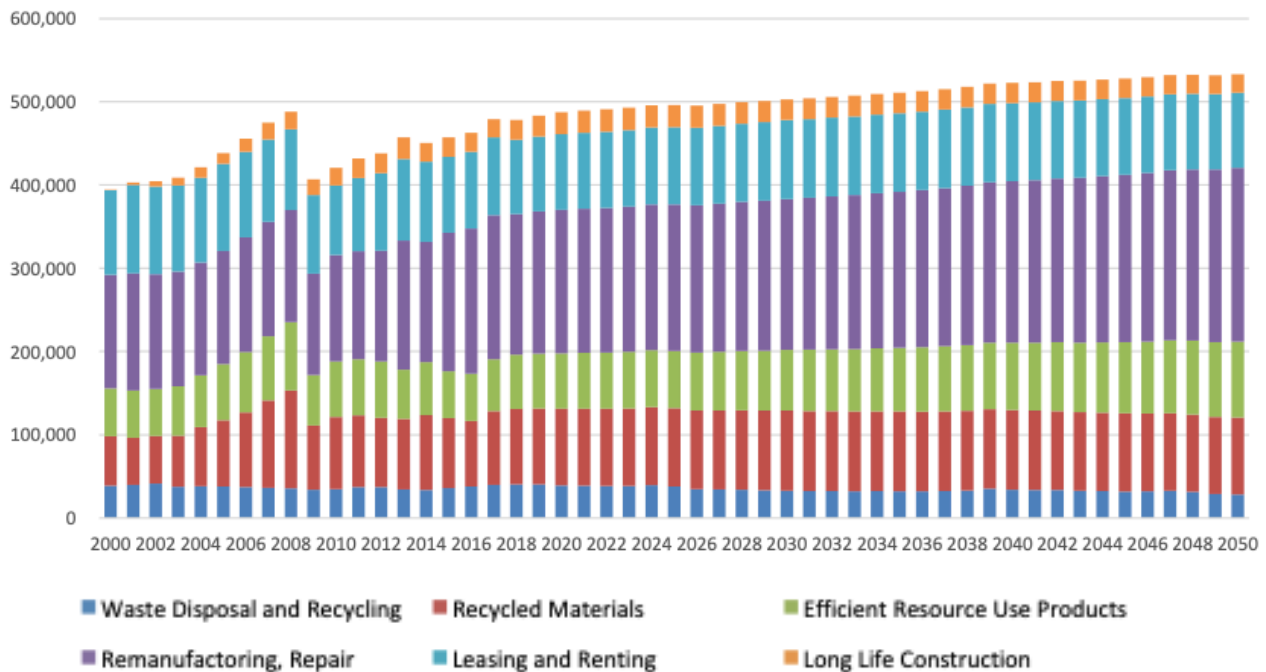


Figure 2.1 Development and Estimation of Future Market Size of Circular Economy Related Businesses in Japan (Unit: 100 million JPY)¹¹⁶

2.2 CIRCULAR BUSINESS MODELS EXAMPLES IN JAPAN

To provide further insight, below are several business examples of companies operating in Japan within the circular economy, within numerous different sectors and involving large, medium and small companies. These are categorised into five circular business models, which have been defined and used by several different stakeholders, including the World Business Council for Sustainable Development (WBCSD), Accenture, the OECD and Sitra. These models can be used on their own or together to reach a more resource efficient and circular economy.¹¹⁷ However, it should also be noted that when implementing circular business models, life cycle assessments and environmental impact studies should be considered too, to ensure that the different mode of business operation has a net positive effect.¹¹⁸ The models are:

¹¹⁶ MOE: Estimation of the Market Size of the Environment Industry.

¹¹⁷ Lacy, P, Spindler, W., Long, J. (2020): The Circular Economy Handbook: Realizing the Circular Advantage. London: Palgrave Macmillan; OECD (2019): Business Models for the Circular Economy: Opportunities and Challenges for Policy. Paris: OECD Publishing.

<https://doi.org/10.1787/g2g9dd62-en>; Sitra: What is it About?

<https://www.sitra.fi/en/projects/interesting-companies-circular-economy-finland/#what-is-it-about>;

World Business Council for Sustainable Development (2017): CEO Guide to the Circular Economy. Geneva: World Business Council for Sustainable Development.

https://docs.wbcSD.org/2017/06/CEO_Guide_to_CE.pdf

¹¹⁸ OECD: Business Models for the Circular Economy.

2.2.1 Circular supply models

This model replaces traditional material inputs with renewable, bio-based, recovered ones, and promotes circular product and consumption systems.

Saga City

A good case study of circular supplies is Saga City near Fukuoka in southern Japan. The mayor wants the city to be a hub for circular economy innovation and to invigorate the region, and it has been designated a Special Economic Zone to encourage sustainable start-ups and job creation. The city has initiated several projects to achieve this. Saga City has built a waste incineration plant which captures 10 tonnes of CO₂ daily from the plant's live flue gas which is piped directly to: an algae farm, run by Alvita Ltd, which is used in cosmetics; Green Lab Ltd, which produces basil; and a greenhouse growing cucumbers.¹¹⁹ Likewise, the city is keen to find international collaborators to become more circular, such as working with the VTT Technical Research Centre of Finland Ltd to find better uses for rice stems.¹²⁰ Another example is that in July 2019 the city signed an MOU with Morodomi Furniture Promotion Association, as Saga is known for its furniture production, and ECOR, a technology which recycles fibre waste into panels developed by American start-up Noble Environmental Technologies Corp. Together with local manufacturers, including using a sustainable patented cypress veneer by Nakamura Lumber Co Ltd, prototypes for circular furniture were created, which received funding from the Dutch government.¹²¹ The project is currently looking for Japanese commercial collaboration partners. However, when interviewing involved stakeholders they indicated that the project has been slowed down due to the COVID-19 pandemic.

Nippon Paper Industries Co Ltd

As discussed plastic packaging is a key focus area for Japan. Several companies, especially Japanese paper companies which have seen a fall in demand in paper, are manufacturing alternative packing. These include Nippon Paper Industries Co Ltd, which has created the product Shieldplus, a paper-based biodegradable packaging material for food or for other uses such as straws.¹²²

Marushige Seika KK

Several Japanese companies are now focused on making edible tableware to overcome the issue of non-recyclable single-use tableware. Marushige Seika KK is a family-run business which manufactures edible dishes, chopsticks and they are working producing an edible drinking cup. The company previously produced soft-serve ice cream cones. The company

¹¹⁹ Global CSS Institute (2018): Saga City: The World's Best Kept Secret (For Now).

<https://www.globalcssinstitute.com/news-media/insights/saga-city-the-worlds-best-kept-secret-for-now/>

¹²⁰ VTT Technical Research Centre of Finland Ltd (13.11.2019): Building Smart Cities with the Help of VTT's Citytune Concept [Press release]. <https://www.vtresearch.com/en/news-and-ideas/building-smart-cities-help-vtts-citytune-concept>

¹²¹ ECOR (5.7.2019): Memorandum of Understanding signed in Tokyo [Press release]. <https://ecorbenelux.com/press-release/memorandum-of-understanding-signed-in-tokyo/>

¹²² Nippon Paper Industries Co Ltd: Shieldplus. <https://www.nipponpapergroup.com/english/products/shieldplus/>



has seen a three-fold jump in sales in the past two years, and hoped that their products could be used at the Tokyo Olympic Games.¹²³

Integrated Rice and Duck Farming

One of the most famous examples within this model is actually Japanese, the Integrated Rice and Duck Farm System, created by Takao Furuno and based on traditional Asian rice farming methods. Furuno is based in Fukuoka, where he runs a small-scale organic farm that currently achieves rice yields 20% to 50% higher than industrial rice systems. This rice system combined with numerous other types of produce, which includes duck eggs and meat, figs, vegetables and wheat, supports his symbiotic complex farming systems, without using fossil fuel fertilisers and pesticides. He plants rice seedlings in flooded rice paddies, and then introduces ducklings, which eat insects that normally eat the rice plants. Loaches, a fish later sold as meat, are also used alongside the water fern azolla, which retains nitrogen and works as a natural fertilizer for the rice. Duck and fish droppings provide additional fertilization for the rice, while the ducks take care of weeding. When the rice starts to produce grain the ducks are removed. Furuno has since shared his successful model of a small-scale organic farm with both governments and farming bodies. Even though it is niche, it still highlights a different model of farming with high returns, which can inspire other large-scale systems.¹²⁴

2.2.2 Resource recovery models

Producing secondary raw materials from waste, such as upcycling and recycling.

L4T Group (Life For Tyres) Ltd

L4T Group offers patented recycling technology for end of life tyres, and is a strategic joint venture between the Italian machinery producer Curti Costruzioni Meccaniche and the Slovenian development company EP1. Japan annually disposes of more than 1 million tonnes of end of life tyres every year, with no suitable method to sustainably recycle them. L4T Group has developed a patented technology which can produce recovered carbon black, advanced biofuel, and scrap steel which can subsequently be used in industrial processes. It is a self-sufficient technology and can reduce up to 90% of GHG emissions compared to conventional processes for recycling tires.¹²⁵ After having participated in the EU's Circular Economy Mission to Japan, and with help from the EU-Japan Centre for Industrial Cooperation and the EU Delegation to Japan, the company has now found local Japanese partners and is in talks to open a plant. Further development has however been hampered by the COVID-19 pandemic, according to interviewed senior management, but the company is still very enthusiastic about the Japanese market.

¹²³ Kabata, H. (5.6.2020): Have Your Plate and Eat It; Edible Tableware Takes Japan by Storm. In The Asahi Shimbun. <http://www.asahi.com/ajw/articles/13386733>;

Natarajan, N., Vasudevan, M., Vivekk Velusamy, V., Selvaraj, M. (2019): Eco-Friendly and Edible Waste Cutlery for Sustainable Environment. In International Journal of Engineering and Advanced Technology, vol. 9 no.1s4. <https://www.ijeat.org/wp-content/uploads/papers/v9i1s4/A10311291S419.pdf>

¹²⁴ Ellen MacArthur Foundation: Takao Furuno: Greater Profits for the Farm Powered by Symbiosis. <https://www.ellenmacarthurfoundation.org/case-studies/ecosystem-inspired-farm-yields-large-profits>

¹²⁵ Milicevic, T. (2019): Never Tired of Reducing Waste. In Eurobiz Japan. https://eurobiz.jp/archived-pdfs/EB_Oct2019.pdf



Oikawa Denim Co Ltd

Oikawa Denim is a denim company based in the fishing port city of Kesunnuma in Miyagi prefecture.¹²⁶ Fashion is one of the least circular industries, however this company has tried to be as circular as possible by creating jeans where approximately 40% of the material is made from the horns of locally fished swordfish. These would normally otherwise be discarded, but instead make the jeans far more resilient. The jeans also became well known in Japan after the Great Eastern Earthquake, as jeans were found intact after the tsunami which badly affected Kesunnuma. The rest of the material is made of organic hemp. Instead of using copper rivets and metal buttons, they use buttons made of wood and cotton bar tacks to make the jeans as biodegradable as possible.¹²⁷

Eiki Shoji Co Ltd

Eiki Shoji Co Ltd a Japanese renewable energy company with its headquarters in Tokyo. The company furthermore has a reuse, repair and recycling business, where they buy broken solar PV panels or surplus inventory from manufacturers and then sort and dismantle the panels to subsequently repair and restore them. These panels are then used again, also in Congo, Indonesia, Myanmar, Nepal, and Uganda.¹²⁸

Kamikatsu Zero Waste Center Why

Much like Saga City, there are other Japanese municipalities which are trying to implement the circular economy in order to boost the region while also becoming more sustainable. Kamikatsu is a small town in Tokushima prefecture in Shikoku. In 2003, the town was the first in Japan to make a Zero Waste Declaration, trying to achieve this by 2020 after the town at great cost had built a waste incinerator which emitted dangerous toxins.¹²⁹ The town has nearly reached this goal, with a recycling rate of a little over 80%. To do so, the town has involved all residents who sort their waste into more than 45 categories. It has created the Zero Waste Academy to share best practices to inspire others to copy their sorting system, and give accreditation to local shops.¹³⁰ In addition they have built the Why Center, which was finished in 2020.¹³¹ The centre hosts the town's recycling and sorting centre, built in the shape of a question mark, alongside a thrift shop where items can be resold. There is also an upcycling craft section where residents can bring in unused items such as old kimonos which are then made into new products by local, often elderly, residents to be sold.¹³² The centre also has a zero waste hotel, built out of recycled and sustainable materials, so that tourists also can experience the town.

¹²⁶ Oikawa Denim Co Ltd: Zero Denim. <http://www.zerodenim.com/>

¹²⁷ Tsuruto: Oikawa Denim. <https://en.tsuruto.com/oikawadenim>

¹²⁸ Eiki Shoji Co Ltd: Solar Panel Recycling/Reuse. <https://www.eikishoji.co.jp/recycle/?lang=en>

¹²⁹ Wray, S. (9.1.2020): "Small Things Add Up": The Japanese Town Leading the Zero-Waste Charge. In SmartCitiesWorld. <https://www.smartcitiesworld.net/special-reports/special-reports/small-things-add-up-the-japanese-town-leading-the-zero-waste-charge>

¹³⁰ Zero Waste Academy. <http://zwa.jp/en/>

¹³¹ Kamikatsu Zero Waste Center. <https://why-kamikatsu.jp/en/>

¹³² Gray, A. (21.1.2019): The Inspiring Thing That Happened When a Japanese Village Went Almost Waste-Free. In World Economic Forum. <https://www.weforum.org/agenda/2019/01/the-inspiring-thing-that-happened-when-a-japanese-village-went-almost-waste-free/>

The Ethical Spirits & Co Ltd

Ethical Spirits & Co Ltd is a Tokyo-headquartered distiller, which is focused on producing gin and whiskey from sake lees, which is a by-product from sake.¹³³ Though sake lees are used in numerous ways in Japan, a majority is still disposed as industrial waste. The company purchases the sake lees from sake breweries, using them to distil new products such as gin and whiskey. The sale profits from these are then used to purchase new rice from rice farmers, which is delivered back to the sake breweries. Likewise the company also wants to tackle the issue of abandoned farmland in Japan, by aiming to regenerate 100% of the abandoned land in the Tokyo metropolitan area during the next three years.¹³⁴ In September 2020, the distillery collaborated with the sake manufacturer Geikkeikan Sake Co Ltd and Bud Weiser Japan to use excess beer, which would otherwise have been disposed of due to a stark fall in demand because of the COVID-19 pandemic, to distil a gin known as Revive.¹³⁵

2.2.3 Product life extension models

Extending the lifetime of products, which is achievable in multiple ways, such as designing products with maintainability, reparability, reuse and remanufacturing as key attributes, out of high quality and durable materials.

Co-Cooking Co Ltd

Food waste is an issue in Japan, with 6.12 million tonnes of still edible food discarded in FY2018, according to MOE and MAFF statistics.¹³⁶ Though it is the lowest amount since measurements started in 2017, there may also be an increase because of the COVID-19 pandemic. Though the Japanese government enacted legislation targeting food waste last October, there is still further progress to be made. The start-up CoCooking Co Ltd launched the app Tabete in 2018, which lets restaurants and other food retail outlets sell excess food that would otherwise be disposed of. Customers pay for the food at a reduced price, with 65% of the proceeds going to the store, 30% going to CoCooking and the rest is donated to charities that support feeding underprivileged children.¹³⁷ The company has also collaborated with several local government bodies to bring awareness to the issue of food waste, as well as on an awareness campaign with MOE.¹³⁸

¹³³ The Ethical Spirits & Co Ltd: Revive (Only in Japanese). <https://shop.ethicalspirits.jp/>

¹³⁴ Wee, A. (23.3.2020): Achieving a Circular Economy in the Sake Industry with LAST Gin. In Zenbird. <https://zenbird.media/achieving-a-circular-economy-in-the-sake-industry-with-last-gin/>

¹³⁵ Wee, A. (5.9.2020): REVIVE, a Gin Created to Prevent Alcohol Waste During COVID-19. In Zenbird. <https://zenbird.media/revive-a-gin-created-to-prevent-alcohol-waste-during-covid-19/>

¹³⁶ Ministry of Agriculture, Forestry and Fisheries of Japan (14.4.2020): Publication of Estimation of Food Loss in 2017 (Only in Japanese) [Press release]. <https://www.maff.go.jp/j/press/shokusan/kankyoi/200414.html>

¹³⁷ Wolf, M. (3.9.2018): Japan's CoCooking Raises Seed Round To Help Restaurants Sell Excess Food. In The Spoon. <https://thespoon.tech/japans-cocooking-raises-seed-round-to-help-restaurants-sell-excess-food/>

¹³⁸ Co-Cooking Co Ltd (14.9.2020): No-Foodloss! Youth Action Project [Press release]. <https://www.cocooking.co.jp/2020/09/14/1002/>



Daikin Industries Ltd

The air conditioning company Daikin Industries Ltd offers the Daikin D-Net service support system: a remote digital monitoring system which oversees building air conditioning systems to ensure that systems are repaired and serviced to prevent breakdowns.¹³⁹

Shin-Etsu Denso Co Ltd

Shin-Etsu Denso Co Ltd is headquartered in Omachi, and its main business is remanufacturing automobile unusable auto parts such as starters, of which it is one of the largest companies within this field in Japan. Though remanufacturing is still not very popular in Japan, it is a growing market.¹⁴⁰

Meat Epoch Co Ltd

This Kawasaki-based company has produced sheets sprayed with a harmless mould for ageing meat which can be used for fish, shellfish and meat to preserve them by blocking out bacteria that cause the food to go off. However, they also preserve the freshness of the food, and the company intends to sell them as such.¹⁴¹

2.2.4 Sharing models

Maximise the use of goods and resources via predominately online platforms to rent, sell, share, and reuse. However, this business model has been particularly hard hit by the COVID-19 pandemic, as the general public feels less secure about sharing goods.

Indetail Inc

The Sapporo-headquartered Indetail Inc is a blockchain company, who are currently working on an electric vehicle (EV) and renewable energy project to solve regional, local transportation issues. The project aims to alleviate regional depopulation and local economic decline due to increased energy costs. In August 2019, Indetail together with its eight partners conducted a proof of concept demonstration in the town of Assabu-cho in Hokkaido, where residences are far from the town and private bus travel expenses are covered by the town through taxes, which cost around 50 million JPY per year. Indetail and partners devised a local currency based on blockchain which could be earned by local residents through visiting local facilities, such as government offices and supermarkets. This local currency could then be used to pay for EV buses. The EV buses were powered by local renewable energy, promoting its local production and use.¹⁴² The benefits of using a regional currency based on blockchain is that it requires no prerequisite resources, facilitates the easy sharing and use of the EV buses, and though normally you require governmental permission to carry out businesses using transportation, this project does not as it uses a local currency.

¹³⁹ Daikin Industries Ltd: D-Net Remote Monitoring Program. <http://www.daikinac.com/content/the-daikin-difference/d-net-remote-monitoring-program/resources/>

¹⁴⁰ Shin-Etsu Denso Co Ltd. <http://www.shine-reman.global/about/>

¹⁴¹ Meat Epoch Co Ltd. <https://www.meatepoch.com/>; Harashima, K., Gatayama, M. (29.7.2019): Japan's Food Tech Companies Find Fresh Ways to Extend Shelf Life. In Nikkei Asia. <https://asia.nikkei.com/Business/Food-Beverage/Japan-s-food-tech-companies-find-fresh-ways-to-extend-shelf-life>

¹⁴² Indetail Inc (4.9.2019): Town Energy Powers EV Buses as Part of the MaaS "ISOU Project" to Eliminate Inconvenience in Depopulated Areas [Press release]. <https://www.indetail.co.jp/en/news/20097/>



Mercari Inc

Launched in 2013, Mercari Inc provides Japan's largest marketplace app, allowing users to list and sell items to each other. In early 2020, the app had 15.38 million monthly active users with a cumulative total of 1.5 billion items listed on the app.¹⁴³ In September 2019, Mercari also launched reusable packing materials for smaller items for users of the app, made out of tarpaulin, in order to try and minimise packing waste.¹⁴⁴

Earthcar Co Ltd

This company offers a car-sharing platform, which has been especially popular amongst Japanese millennials.¹⁴⁵ Japan's new car purchases have declined by approximately a third between 1990 and 2017. However, the company did see a 50% decrease in use between March and May in 2020, compared to last year, though it has also cut down on its advertising budget.¹⁴⁶

Spacemarket Co Ltd

Spacemarket Co Ltd hosts a website which offers more than 13,000 unused spaces available to be quickly rented on an hourly basis. There is a broad range of spaces, including event spaces, houses, studios and shops.¹⁴⁷

2.2.5 Products service systems models

This business model is focused on supplying a service rather than a product.

Nature Innovation Group Inc

Headquartered in Tokyo, the company is behind i-Kasa, which was launched in 2018.¹⁴⁸ Users, via the popular messaging app Line or a dedicated app, can rent an umbrella from stands around Tokyo, and return them when finished for a small sum. This is instead of buying cheap and flimsy plastic umbrellas which are readily available in convenience stores and the like to protect against Japan's many downpours. Japan consumes between 120 and 130 million umbrellas every year according to Japan's Umbrella Promotion Association.¹⁴⁹ i-Kasa wishes to reduce this large number.

¹⁴³ Mercari Inc (21.2.2020): Mercari Announces Business Strategy at "Mercari Conference 2020" [Press release]. https://about.mercari.com/en/press/news/articles/mercari_conference/

¹⁴⁴ Mercari Inc: Mercari Eco Pack. <https://about.mercari.com/en/sustainability/creating-a-circular-economy/eco-pack/>

¹⁴⁵ Earth Co Ltd: Car Sharing Business (Only in Japanese). <https://corp.earth-car.com/carshare/>

¹⁴⁶ Tamehiro, T., Hiratsuka, T. (14.7.2020): Nissan Revs Up Subscriptions as Car-Sharing Takes Back Seat. In the Nikkei Asia. <https://asia.nikkei.com/Business/Automobiles/Nissan-revs-up-subscriptions-as-car-sharing-takes-back-seat>

¹⁴⁷ Spacemarket Co Ltd. <https://spacemarket.co.jp/service>

¹⁴⁸ Nature Innovation Group Inc: i-Kasa. <https://www.i-kasa.com/>; Nyan, E. (11.6.2019): Tokyo's New Rental Umbrella Service is Perfect for Sudden Showers, Staying Dry on the Cheap. In Japan Today. <https://japantoday.com/category/features/lifestyle/tokyo%E2%80%99s-new-rental-umbrella-service-is-perfect-for-sudden-showers-staying-dry-on-the-cheap>

¹⁴⁹ Yamagami, H. (26.12.2019): Tokyo Station Turns to Umbrella Rental Service to Cut Waste. In Nikkei Asia. <https://asia.nikkei.com/Spotlight/Sharing-Economy/Tokyo-Station-turns-to-umbrella-rental-service-to-cut-waste>

AirCloset Inc and Jeplan Inc

AirCloset Inc provides Japan's largest women's clothes rental service with over 200,000 users. For a monthly fee subscribers can rent clothing and then return the pieces when they no longer wish to wear them. The company started in 2015, and is increasingly trying to become more circular through trying to reduce apparel waste, optimising their production, and ensuring proper reuse and recycling. To do so, they have also begun ShareCloset where users can send in their unwanted clothes. These are then repaired and cleaned and made available to rent, or recycled. AirCloset has a partnership with Jeplan Inc, a Japanese textile company which has specialised in recycling textiles. Through Jeplan's BRING project, it collects used clothes and then converts polyester fibres into recycled fibres which are used to create new clothing. Under BRING, Jeplan has already recycled 3,000 tonnes of clothing. Other parts of the clothes, such as woollen components are also recycled, used for car interiors, or for feedstock recovery in a coke oven.¹⁵⁰ AirCloset is also working with Shizen Energy Inc, the Japanese renewable energy provider, to reduce its carbon footprint.¹⁵¹

Social Innovation Japan G.I.A.

Social Innovation Japan G.I.A. is a social enterprise focused on realising the SDGs, by creating a platform helping stakeholders to connect through events, workshops and consulting work.¹⁵² They launched the app MyMizu in September 2019, to combat the consumption of plastic bottles, as Japan daily consumes 69 million polyethylene terephthalate (PET) bottles, which is over 25 billion bottles a year. The app maps out free water refilling points in Japan and globally, so that people can refill their water bottles instead. These refill points are either public drinking fountains or retailers who have agreed to register with MyMizu, including large enterprises such as IKEA which now offer free refills in all their shops. The app currently has over 200,000 refill spots worldwide. MyMizu also has a collaboration with Shizen Energy, and have now also started partnerships with local governments, such as Kobe City, where the aim will be to increase refill points in the city, and promote joint campaigns for the use of tap water.¹⁵³ They have launched a shop under the name Ocean Loop, where for every purchase from the shop, MyMizu will collect 1 kg of rubbish from rivers, beaches and oceans.¹⁵⁴

2.3 ORGANISATIONS PROMOTING THE CIRCULAR ECONOMY IN JAPAN

There are several organisations promoting the circular economy in Japan, of which there are some interesting examples below.

Circular Economy Japan

Circular Economy Japan (CEJ) is an organisation promoting the transition to the circular economy through hosting a platform where members can attend events, business matchmaking, share best practices and international standards, and learn through seminars held by experts.¹⁵⁵

¹⁵⁰ Jeplan Inc: Bring. <https://www.jeplan.co.jp/en/service/bring/>

¹⁵¹ AirCloset Inc: SDGs (Only in Japanese). <https://corp.air-closet.com/sdgs/>

¹⁵² Social Innovation Japan G.I.A. <https://www.socialinnovationjapan.com/>

¹⁵³ MyMizu. <https://www.mymizu.co/>

¹⁵⁴ MyMizu: Ocean Loop. <https://www.mymizu.co/>

¹⁵⁵ Circular Economy Japan (Only in Japanese). <https://www.circulareconomy-japan.com/about/>



Circular Economy Hub

The Circular Economy Hub is a website which publishes articles in Japanese about the circular economy, alongside organising seminars, business matchmaking and networking. The platform has also started arranging study trips to circular businesses. Circular Economy Hub is also partnered with other Japanese interest groups such as CEJ. It is operated by Harch Inc, a Japanese media company focused on sustainability, which also manages the English online magazine Zenbird, which publishes articles about sustainability initiatives in and outside Japan.¹⁵⁶

Sharing Economy Association Japan

Sharing Economy Association Japan is an organisation promoting the sharing economy in Japan, through policy recommendations, seminars, and awards a sharing economy trust mark so that user are more secure when using a sharing platform and working with local governments.¹⁵⁷

Circular Economy Organisation

The Circular Economy Organisation is focused on using digital technologies such as big data, AI, and the internet of things (IoT) to reach the next industrial revolution, through creating better linkages between universities, data scientists and corporations.¹⁵⁸

There are also several regional and local organisational initiatives promoting the circular economy, such as Circular Yokohama, Kanagawa Upcycle Consortium and 530Week based in Tokyo, to name a few.¹⁵⁹

Other Relevant Japanese Organisations and Initiatives

There are also several other bodies and interest groups which are working towards a more sustainable and circular Japan. These include national organisations as previously mentioned, Japan's national research and development agency NEDO, and the National Institute of Advanced Industrial Science and Technology (AIST). Their projects include leading the consortium Strategic Urban Mining Research Base and developing an automated machine that can dismantle and recycle electronic products.¹⁶⁰ AIST has also launched in 2020 the Global Zero Emission Research Center (GZR) and the council Tokyo Zero-Emission Innovation Bay, which will try to develop the Tokyo Bay Area into innovation areas focused on zero-emission technologies, via collaboration between research institutes and corporations.¹⁶¹

¹⁵⁶ Circular Economy Hub (Only in Japanese). (<https://cehub.jp/about/>)

¹⁵⁷ Sharing Economy Association Japan (Only in Japanese). <https://sharing-economy.jp/ja/about/>

¹⁵⁸ Circular Economy Organization (Only in Japanese). <https://ceoc.or.jp/>

¹⁵⁹ Acosta, M. (17.6.2019): 530week - A Community Towards a Circular Economy in Japan. In Ciclo. <https://ciclo.jp/global/2019/06/17/530week/>; Circular Yokohama (Only in Japanese).

<https://circular.yokohama/>; Kanagawa Upcycle Consortium. <https://tb-m.com/kanagawa-upcycle-consortium>,

<https://ciclo.jp/global/2019/06/17/530week/>

¹⁶⁰ Yumae, S. (9.6.2020): Resource-Poor Japan Unearths Metal Riches in its Trash. In The Asia Nikkei. <https://asia.nikkei.com/Business/Markets/Commodities/Resource-poor-Japan-unearths-metal-riches-in-its-trash>

¹⁶¹ Ministry of Economy, Trade and Industry of Japan (2.6.2020): AIST to Establish "Tokyo Zero-emission Innovation Bay" [Press release]. https://www.meti.go.jp/english/press/2020/0602_001.html



Concerning plastics, there are two especially noteworthy public-private partnerships. The first is the Plastics Smart Forum, which is a platform supporting MOE's Plastics Smart Campaign. This aims to reduce marine plastic waste, and brings together several different bodies, including companies, industry associations, NGOs, local and national government and research institutes.¹⁶² The other is Japan Clean Ocean Material Alliance (CLOMA), supported by METI, and was established by companies in the packaging industry to combat marine plastic waste, and find new more sustainable alternatives for plastic. They have an action plan which sets out to achieve a 100% rate of recycling plastics products by 2050.¹⁶³ As of October 2020, over 360 companies have joined the alliance.¹⁶⁴

The influential Japan Business Federation, known as Keidai-ren, is one of Japan's leading three business associations predominantly known for representing big business.¹⁶⁵ They have launched an innovation challenge, known as "Challenge Zero", together with NEDO and METI in July 2020.¹⁶⁶ This will aim to publicise and encourage companies to achieve a decarbonised society, with companies and organisations announcing their specific actions. The goal is also to encourage ESG investment in these companies, alongside fostering collaborations between industries, academia and the Japanese government. As of October 2020, 339 challenges have been set by 159 members, ranging from Asahi Group Holdings Ltd to Toyota Motor Corp.¹⁶⁷

¹⁶² Ministry of Environment of Japan: Plastics Smart Forum. <http://plastics-smart.env.go.jp/en/about/forum/>

¹⁶³ Japan Clean Ocean Material Alliance (CLOMA) (2020): CLOMA Action Plan. https://cloma.net/wp-content/uploads/2020/09/CLOMA_actionplan_%E5%86%8A%E5%AD%90_%E8%8B%B1%E8%AA%9E%E7%89%88.pdf

¹⁶⁴ Japan Clean Ocean Material Alliance (CLOMA): Members' List. <https://cloma.net/english/memberlist/>

¹⁶⁵ Keidanren. <https://www.keidanren.or.jp/en/>

¹⁶⁶ Ministry of Economy, Trade and Industry of Japan (7.7.2020): New Project "Zero-Emission Challenge" to Start [Press release]. https://www.meti.go.jp/english/press/2020/0707_004.html

¹⁶⁷ Challenge Zero: Participating Members. <https://www.challenge-zero.jp/en/member/>;
Challenge Zero: Innovation Challenges. <https://www.challenge-zero.jp/en/casestudy/>



3 THIRD MARKET COLLABORATION

3.1 INTRODUCTION AND POLICY BACKGROUND

The circular economy must be a global solution and therefore international cooperation will be necessary for the planet's economy to fully transition. In that regard, a growing trend in EU-Japanese relations, namely third market collaboration, is important to highlight in this context. This is defined as EU and Japanese companies collaborating in a third market outside of the EU and Japan.¹⁶⁸

There is a strong political impetus behind this trend, supported by three milestone agreements between EU and Japan: The EU-Japan Economic Partnership Agreement (EPA), the EU-Japan Strategic Partnership Agreement (SPA) and the Partnership on Sustainable Connectivity and Quality Infrastructure between the European Union and Japan.

The EPA was signed on the 17th July 2018 and entered into force on the 1st February 2019. It removed tariffs and other trade barriers in pivotal sectors such as agriculture, transport, medical and financial services, alongside strengthening cooperation on international standards and regulation.¹⁶⁹ It was also the first international trade agreement to include a specific commitment to implement the Paris Agreement.

The SPA, which was signed and entered into force the same time as the EPA, covers policy cooperation and political dialogue. In addition, it agrees that both parties will cooperate in facing regional and global challenges, including the environment and climate change.¹⁷⁰

Lastly, the Partnership on Sustainable Connectivity and Quality Infrastructure between the European Union and Japan was signed on the 27th September 2019. The Partnership is based on connectivity, which is the physical, institutional, and people-to-people networks that connect us. It is particularly this agreement which focuses on expanding EU and Japan's third market collaboration, working together not only for mutual benefits in global markets but also to advance high standards, regulatory cooperation and common values such as sustainability and fair and rules-based trade. The agreement specifically highlights "the Western Balkans, Eastern Europe, Central Asia, Indo-Pacific, as well as in Africa" as regions of particular interest.¹⁷¹ Furthermore, though not specifically focusing on third market collaboration, both METI's Circular Economy Vision 2020 and the EU's Circular Economy

¹⁶⁸ For a broader analysis of third market cooperation, please see Marbot, M. (2020): Analysis of EU-Japan Business Cooperation in Third Countries. Tokyo: EU-Japan Centre for Industrial Cooperation. https://www.eu-japan.eu/sites/default/files/publications/docs/report_masami_marbot_april_2020_0.pdf

¹⁶⁹ Ministry of Foreign Affairs of Japan (2018): Agreement Between the European Union and Japan for an Economic Partnership. <https://www.mofa.go.jp/files/000382106.pdf>

¹⁷⁰ Ministry of Foreign Affairs of Japan (2018): Strategic Partnership Agreement Between the European Union and Japan. <https://www.mofa.go.jp/files/000381942.pdf>

¹⁷¹ European External Action Service (2019): The Partnership on Sustainable Connectivity and Quality Infrastructure between the European Union and Japan. https://eeas.europa.eu/headquarters/headquarters-homepage/68018/partnership-sustainable-connectivity-and-quality-infrastructure-between-european-union-and_en



Action Plan stress the importance of global cooperation and furthering the circular economy outside of Japan and the EU in South East Asia and Africa, respectively.¹⁷²

As presented in Masami Marbot's report, these cooperations often take the form of a large Japanese trading house, such as Itochu Corporation, Mitsubishi Corporation or Marubeni Corporation, together with another large European corporation. However, as noted in her report and in interviews with stakeholders, the trading houses have also involved European SMEs in large-scale projects abroad, after they have approached European trade promotion agencies in Japan, seeking a specific technological solution from European SMEs or if they had a pre-existing relationship.¹⁷³

3.2 DRIVERS OF THIRD MARKET COOPERATION

Third market cooperation can be mutually beneficial for companies, heightening companies competitiveness by working together to access new markets. They can complement each others strengths in terms of market intelligence, technology, financing facilities, alongside the cultural and historical ties Japan or EU Member States have in Southeast Asia and Africa. As noted in Marbot's report, the most common driver for this type of collaboration is a long-term relationship between the European and the Japanese company, enhancing competitiveness through complementary technology and expertise, reducing costs and securing the necessary financing, market intelligence and understanding of the local business environment, sharing risks, and common compliance standards.¹⁷⁴

On the basis of interviews with stakeholders both within the private and public sector in relation to third market cooperation within the circular economy, several further drivers were mentioned. Many interviewees were positive, saying that they saw a clear interest from Japanese companies who wanted to focus on trying to achieve the SDGs, and thus were interested in circular economy-related projects, especially in collaboration with European companies, who can supply a needed niche technological solution or local know-how. This is also partially driven by a growing awareness of the circular economy within Japan. Likewise, EU companies saw a benefit in entering a third market due to the difficulties of accessing the Japanese market, because of barriers such as a saturated market or difficult regulations. Some interviewees also underlined that their partnership with a Japanese company was seen as a mark of quality to show to other markets, particularly within Asia.

There is still no large body of quantitative data on third market collaboration between EU and Japan companies, and some interviewed stakeholders said they had observed the discussions surrounding the topic, but felt they had seen few tangible outcomes, or that the concept was too vague. However, as an illustration of some of the above drivers, the 2020 annual business climate survey by the German Chamber of Commerce and Industry in Japan (AHK) shows similar results to the above drivers, as seen in Figure 3.1. Of the surveyed German businesses, 63% were involved in projects with Japanese companies outside Japan, and though it is a 6% decline from last year, it is a clear trend. Of these

¹⁷² METI: Circular Economy Vision 2020; European Commission: A new Circular Economy Action Plan.

¹⁷³ Marbot: Analysis of EU-Japan Business Cooperation in Third Countries.

¹⁷⁴ Ibid.

companies, 47% generated sales from these third market collaborations which were at least equal to the those they made in Japan itself, which is a 1% increase since last year.¹⁷⁵ The biggest driver for the German companies was “the use of an in-house global sales and service network”, which underlines the trend of EU companies using Japan as a hub.

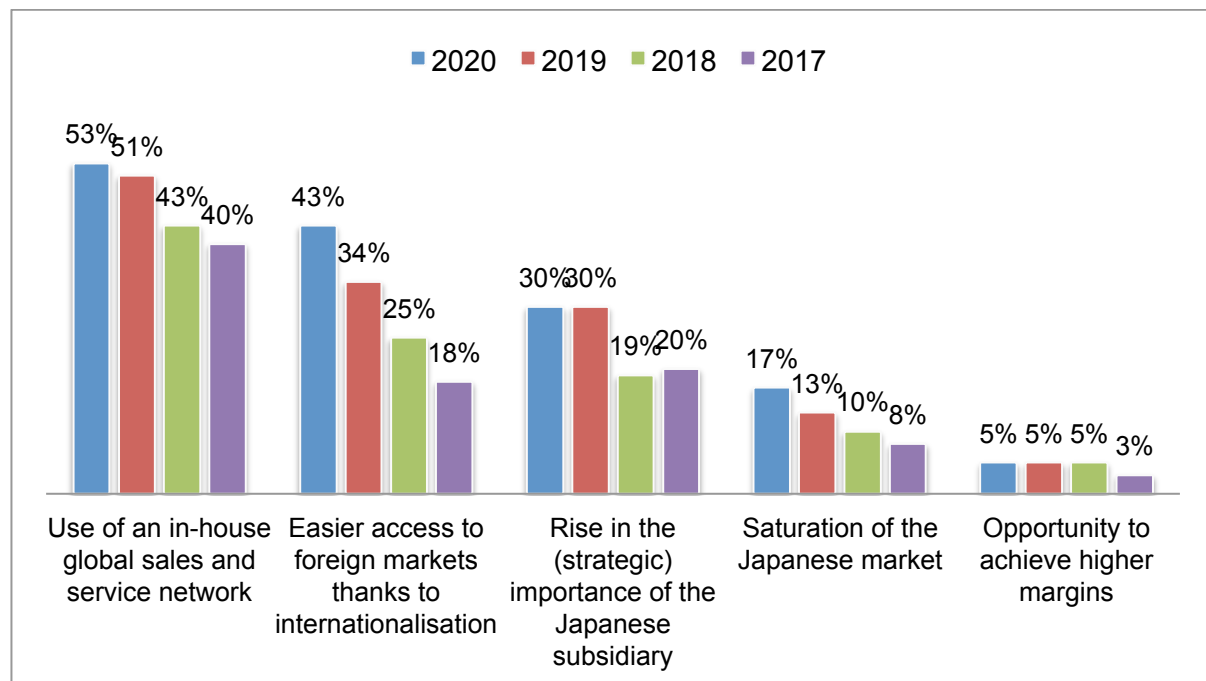


Figure 3.1 German companies’ Japanese Subsidiaries Main Reason for Participating in Third-Country Projects with Japanese companies¹⁷⁶

Consequently, some Member States have been particularly active in pursuing this field and publishing information about this. Germany is a clear example, as can be seen by their AHK survey, and France is another example. In France’s case, this has been a policy focus, exemplified when France and Japan signed the Franco-Japanese Plan for Sustainable Development, Health and Security in Africa, which was adopted in October 2015, aiming to promote business cooperation in Africa between the two countries, alongside coordinating “their efforts with the EU and promote trilateral cooperation projects”.¹⁷⁷ In June 2019, France and Japan presented the Roadmap on Japan-France Cooperation for Opening New Horizons between Japan and France under an Exceptional Partnership (2019-2023), which highlights cooperating in the Indo-Pacific, with a central axis being climate and

¹⁷⁵ German Chamber of Commerce and Industry in Japan (AHK Japan) (2019): German Business in Japan 2019. Tokyo: AHK Japan.

https://japan.ahk.de/fileadmin/AHK_Japan/Dokumente/German_Business_in_Japan_2019_EN.pdf; German Chamber of Commerce and Industry in Japan (AHK Japan) (2020): Economic Outlook German Business in Japan 2020. Tokyo: AHK Japan. <https://bit.ly/3cHStRv>

¹⁷⁶ Ibid.

¹⁷⁷ Embassy of France (2015): Franco-Japanese Plan for Sustainable Development, Health and Security in Africa. https://jp.ambafrance.org/IMG/pdf/franco-japanese_plan_for_sustainable_development_health_and_security_in_africa.pdf?20949/dfa13a290c8790be74e5f776f5aa6c23b3de3ba8



environment.¹⁷⁸ In November 2020, the French Chamber of Commerce and Industry in Japan will host their 3rd annual business summit under theme “Growth Opportunities in Africa: Towards New Business Partnerships”, an event with a strong emphasis on sustainability and the SDGs.¹⁷⁹

A recent survey by the French Embassy, published in 2020, has highlighted 52 examples of French and Japanese cooperation within sustainable cities and the energy transition. Tracking projects since 1996, there was an average of 1.5 new projects per year by French and Japanese companies in a third country, between 1996 and 2015. From 2015 to 2020, this rate was 4.6.¹⁸⁰

3.3 FUTURE FOCUS SECTORS AND MARKETS

There are several current examples of circular economy third market collaborations in both Marbot’s report and a recent survey by the French Embassy. Of the 44 case studies in the former report, 14 were related to the circular economy, within the waste management and renewable energy sectors. Like Marbot’s report, the French circular examples were predominately renewable energy initiatives, such as solar and wind projects, together with a few examples of energy-from-waste and geothermal projects.¹⁸¹ The regions in which these projects take place is also dependent on the sector. Since circular economy can encompass such a broad range of numerous opportunities it is difficult to succinctly summarise them all. However, it is worth mentioning that for the French survey, the renewable energy projects within solar and wind, were predominately in South America, accounting for 70% and 56% respectively. Of the 52 examples, overall the Asia-Pacific region accounted for the most with 35%. The AHK survey, which does not distinguish by sector in terms of which region companies were interested in cooperating in, saw 53% planning or having already carried out projects in ASEAN. Africa only accounted for 4%.

In interviews with Japanese and European businesses and policymakers, it was predominately the potential markets of ASEAN that were broadly favoured by the Europeans, and Africa, with especially the Japanese side keen to use European’s businesses good connections and local know-how in Africa, that were most often mentioned in terms of potential future collaborations. In terms of sectors, solid waste management solutions, especially regarding plastics and electronics, and renewable energy solutions were frequently mentioned as interesting avenues. Projects, such as ‘Rethinking Plastics – circular economy solutions to marine litter’, which is co-financed by the EU and the German Federal Ministry for Economic Cooperation and Development (BMZ) and being jointly implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and Expertise France, is being executed in China, Indonesia, Japan, Philippines, Singapore,

¹⁷⁸ Ministry of Foreign Affairs of Japan (2019): Roadmap on Japan-France Cooperation for Opening New Horizons between Japan and France under an Exceptional Partnership (2019-2023) (Only in French). <https://www.mofa.go.jp/files/000492473.pdf>

¹⁷⁹ Chamber of Commerce and Industry France Japan: French Japanese Business Summit. <https://fjbusinesssummit.com/>

¹⁸⁰ Directorate-General of the Treasury of France, Tokyo Regional Economic Service, Sustainable Development Division (2020): Energy Transition and Sustainable Cities: Mapping Franco-Japanese cooperation in third countries. <https://www.tresor.economie.gouv.fr/Articles/2020/04/15/energy-transition-and-sustainable-cities-mapping-franco-japanese-cooperation-in-third-countries>

¹⁸¹ Ibid.



Thailand, and Vietnam between May 2019 and April 2020. The project objectives include supporting design for reuse and recyclability, standards for plastic recyclates as well as alternatives, alongside a special focus on green procurement policies in Japan, and may show interesting third market business opportunities.¹⁸² In terms of opportunities in Africa, the Africa Circular Economy Network, a non-profit organisation headquartered in South Africa, has 31 African countries involved and is actively engaged with the EU in order to share and discuss approaches to implementing the circular economy in Africa.¹⁸³

¹⁸² Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Expertise France (2019): Rethinking Plastics – Circular Economy Solutions to Marine Litter. https://knuw.nrw/wp-content/uploads/2019/10/Factsheet-GIZ_plastics-circular-economy.pdf

¹⁸³ Africa Circular Economy Network: <https://www.acen.africa/>; Cicerone (2019): Report on Experiences with the Implementation of Circular Economy Outside Europe. <http://cicerone-h2020.eu/wp-content/uploads/2020/05/CICERONE-D1.3-Report-on-experiences-with-the-implementation-of-Circular-Economy-outside-of-Europe.pdf>

4 MEASURES TOWARDS A GREEN RECOVERY

4.1 INTRODUCTION

The world faces an enormous challenge to overcome the financial ramifications of the COVID-19 pandemic, but also an opportunity to ensure a green economic recovery and hasten the uptake of the circular economy. In an increasingly connected world, governments across the globe face severe economic consequences and difficult choices about how best to overcome these. On the basis of current projections, as the World Bank reports, we may be facing the deepest financial recession since World War II, and one that may be more than twice as deep as the global financial crisis of 2007.¹⁸⁴ The International Monetary Fund (IMF) notes the economic consequences of the pandemic has had a worse impact on economic activity than predicted, with the recovery likewise estimated to be more gradual than was previously envisaged.¹⁸⁵ In October 2020, global growth for 2021 was projected to be 5.2%, which is 6.7% lower than projections from pre-COVID-19, and will acutely affect advanced, emerging and developing economies.¹⁸⁶ The global labour market was hit especially hard with the International Labour Organization reporting a global drop in working hours from the 4th Quarter of 2019 to the 2nd Quarter of 2020 equivalent to the loss of 495 million full-time jobs, and the expectation that the next quarter may see losses of the equivalent of 345 million full-time jobs.¹⁸⁷

This is a stark and uncertain future, but hand in hand with the drop in global activity, the pandemic will also bring about a predicted 8% drop in global CO₂ for 2020, according to the International Energy Agency (IEA).¹⁸⁸ However, this outcome is not permanent, and may in fact lead to a rebound in emissions, which “may be larger than the decline, unless the wave of investment to restart the economy is dedicated to cleaner and more resilient energy infrastructure”.¹⁸⁹ Thus, it is imperative not to forget the on-going climate crisis that the world faces, and attempt to use the same urgency with which the global community reacted to the pandemic for the climate crisis. As Antonio Guterres stated: “We must act decisively to protect our planet from both the coronavirus and the existential threat of climate disruption. The current crisis is an unprecedented wake-up call”.¹⁹⁰

Both the EU and Japan have announced extensive stimulus packages to mitigate the economic pandemics, with different emphases, which will be explored below. There could be

¹⁸⁴ World Bank (2020): Global Outlook: Pandemic, Recession: The Global Economy in Crisis. Washington, DC: World Bank

<https://openknowledge.worldbank.org/bitstream/handle/10986/33748/211553-Ch01.pdf>

¹⁸⁵ International Monetary Fund (IMF) (2020): World Economic Outlook, October 2020: A Long and Difficult Ascent. Washington, DC: IMF.

<https://www.imf.org/en/Publications/WEO/Issues/2020/09/30/world-economic-outlook-october-2020>

¹⁸⁶ Ibid.

¹⁸⁷ International Labour Organization (ILO) (2020): ILO Monitor: COVID-19 and the world of work. Geneva: ILO. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/briefingnote/wcms_755910.pdf

¹⁸⁸ International Energy Agency (IEA) (2020): Global Energy Review 2020. Paris: IEA. <https://www.iea.org/reports/global-energy-review-2020>

¹⁸⁹ Ibid.

¹⁹⁰ UN (22.4.2020): Secretary-General's Message [Press release]. <https://www.un.org/en/observances/earth-day/message>



vast gains for society if the economic recovery models also tackled climate change mitigation and “built back better”, as demonstrated by leading economists in an Oxford University study.¹⁹¹ On the basis on a survey of leading economic experts from G20 countries, five policies with a large potential for positive impacts for both the environment and the economy were identified, which included renewable energy infrastructure and green R&D. The circular economy can and should be a key to a green, resilient and low-carbon economic recovery. The Ellen MacArthur Foundation, and stakeholders from the Platform for Accelerating the Circular Economy (PACE), have presented several policy focus areas to do so, including focusing stimulus on green and circular investment, creating better policy frameworks for the implementation of the circular economy, alongside promoting circular business models and innovation.¹⁹² Japanese and EU leaders, including Minister of the Environment Shinjiro Koizumi and the European Commission President Ursula von der Leyen, have both emphasised the importance of circular solutions.¹⁹³ In light of this, Japan’s and the EU’s current measures will be outlined below, to give an idea of the respective priorities.

4.2 THE ECONOMIC IMPACT IN JAPAN

As many others, Japan’s economy has suffered, with an IMF report published in October 2020 estimating that its GDP will contract by 5.3% this year compared to 2019, and expanding by 2.3% at the end of FY2021.¹⁹⁴ The OECD predicts a similar contraction, but only an increase of 1.5% in GDP by 2021.¹⁹⁵ In the second quarter of 2020, Japan suffered what some analysts claimed was its worst economic contraction since World War II, after contracting by 28.1%.¹⁹⁶ The sectors that have been particularly hard hit by the pandemic have been the tourism, accommodation, restaurants and personal services sectors.

¹⁹¹ Hepburn, C., O’Callaghan, B., Stern, N., Stiglitz, J., and Zenghelis, D. (2020): Will COVID-19 fiscal recovery packages accelerate or retard progress on climate change? Working Paper No. 20-02. Oxford: Oxford Smith School of Enterprise and the Environment.

<https://www.smithschool.ox.ac.uk/publications/wpapers/workingpaper20-02.pdf>

¹⁹² Ishii, N., van Houten, F. (6.7.2020): To Build a Resilient World, We Must Go Circular. Here’s How To Do It [Press Release]. World Economic Forum. <https://bit.ly/2GP3lw3>; Ellen MacArthur Foundation (2020): How Policymakers Can Help Achieve a Resilient Recovery with the Circular Economy <https://www.ellenmacarthurfoundation.org/assets/downloads/Policy.pdf>

¹⁹³ European Commission, Directorate-General for Climate Action (2020): Written Statement for the 4th Ministerial on Climate Action (MoCA) by Shinjiro Koizumi.

https://ec.europa.eu/clima/sites/clima/files/news/20200707_japan_en.pdf

; European Commission (4.4.2020): How Our Europe Will Regain its Strength [Press release].

https://ec.europa.eu/commission/presscorner/detail/en/AC_20_602

¹⁹⁴ IMF: World Economic Outlook, October 2020.

¹⁹⁵ OECD (2020): OECD Economic Outlook, December 2020. Paris: OECD Publishing.

<https://doi.org/10.1787/39a88ab1-en>

¹⁹⁶ Kageyama, Y. (8.9.2020): Japan’s Economy Shrinks 28% in 2Q, Worse Than 1st Estimate. In The Washington Post. https://www.washingtonpost.com/business/japans-economy-shrinks-28percent-in-2q-worse-than-1st-estimate/2020/09/07/cb723f34-f17a-11ea-8025-5d3489768ac8_story.html

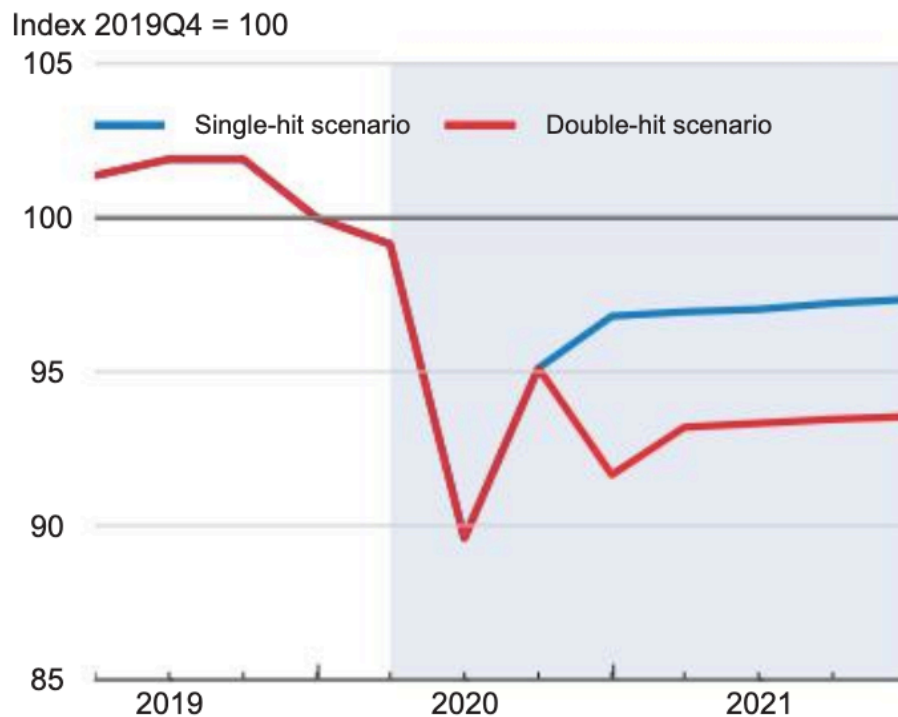


Figure 4.1 Japan's Short-term GDP Projections By OECD¹⁹⁷

In terms of unemployment rates, as of September 2020 Japan's rate of unemployment was 3%, which is an increase from 2.4% from the same period in 2019 (see Figure 4.2).¹⁹⁸ A little over 60,000 people have lost their jobs. However, some analysts worry the actual figures may be higher, as the numbers do not include workers who are currently furloughed. In August, they numbered approximately 2.4 million, which means companies may be forced to cut jobs later in the year. Thus, the most pessimistic of analysts saw the actual percentage of unemployed potentially rising to 5.5%.¹⁹⁹

¹⁹⁷ OECD: OECD.Stat. <https://stats.oecd.org/> (Last accessed 25 November 2020).

¹⁹⁸ Ibid.

¹⁹⁹ Leussink, D. (29.5.2020): Japan's Low Unemployment Rate Conceals Deeper Labour Market Pain. In Reuters. <https://www.reuters.com/article/us-health-coronavirus-japan-unemployment-idUSKBN2350Y0>; Reuters (18.8.2020): Japan's Low Unemployment Rate May be a Mirage, Analysts Say. In Al Jazeera. <https://www.aljazeera.com/economy/2020/08/18/japans-low-unemployment-rate-may-be-a-mirage-analysts-say/>; Ozawa, H., Balmaer, E. (3.7.2020): Japan Pandemic Jobless Data Masks Woe Of Millions, Experts Say. In The Japan Times. <https://www.japantimes.co.jp/news/2020/07/03/business/economy-business/japan-jobless-data-masks-woes/>

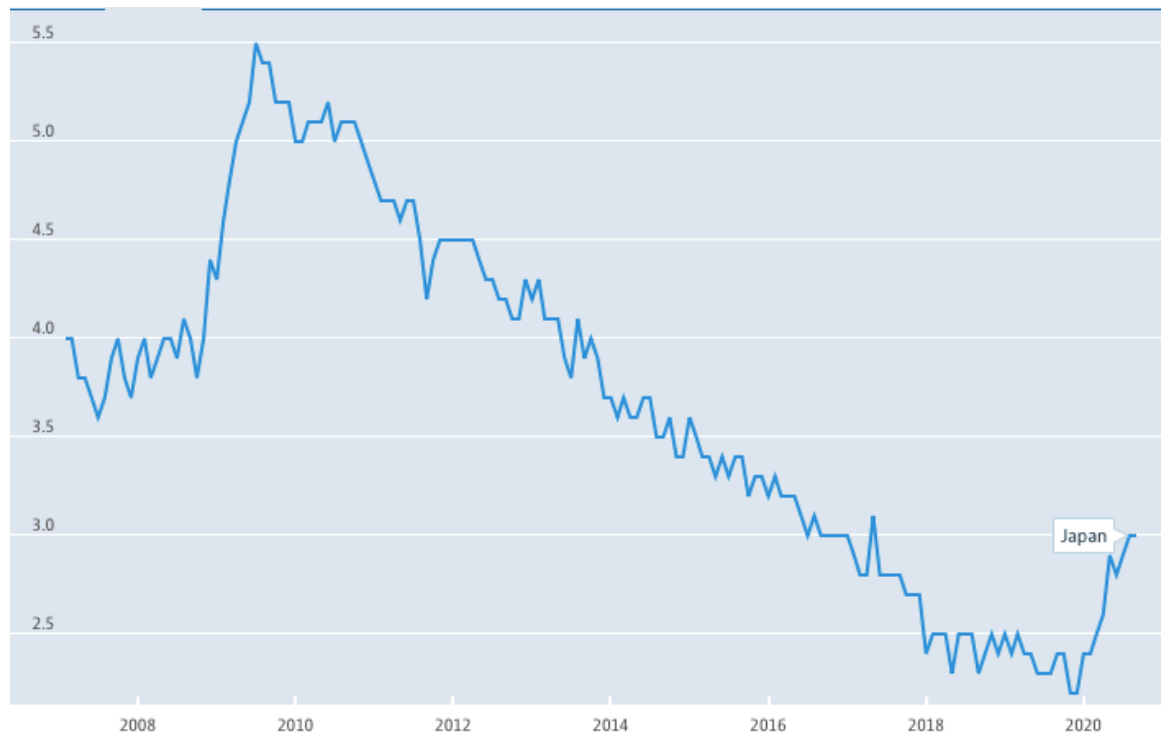


Figure 4.2 Japan's Unemployment Rate²⁰⁰

4.3 JAPAN'S RESPONSE

To combat the economic fallout of the pandemic, Japan initially introduced two economic relief packages, totalling 234 trillion JPY, which is 43% of Japan's GDP, of which 121 trillion JPY will be for fiscal expenses, which is the equivalent of 22% of Japan's GDP. This is split into two phases, with five pillars. The first phase is the "emergency support", aiming to contain the disease while also securing the economy and is focused around two pillars: 1. Preventing infection spread and building enhancing medical treatment structures; and 2. Protecting employment and the viabilities of businesses. The second phase is "V-shaped recovery", with three pillars: 3. Recovery of economic activities through public and private cooperation, through support of affected sectors and revitalising regional economy; 4. Making the economic structure more resilient, through the supply chain, supporting export and overseas business of agriculture, forestry, fisheries and food, accelerating the digital transformation, and front-loading public investment; and 5. Preparing for the future by creating new contingency reserve funds for COVID-19.²⁰¹ The recovery package has not been promoted as a green recovery package. There are some measures towards a greener recovery, with approximately 10.8 billion JPY set aside for policies like financing the installation of energy-efficient ventilation systems in public spaces such as restaurants and hotels, constructing factories for manufacturing which run on renewable energy for companies that bring their overseas manufacturing back to Japan, and converting warehouses into renewable energy stations to decarbonise delivery logistics, and promoting "workations" in Japanese national parks and hot springs through helping with infrastructure

²⁰⁰ OECD: OECD.Stat. <https://stats.oecd.org/> (Last accessed 25 November 2020).

²⁰¹ Cabinet Office, Cabinet of Japan (2020): Emergency Economic Measures to Cope with the Novel Coronavirus (COVID-19). https://www5.cao.go.jp/keizai1/keizaitaisaku/2020/20200420_economic_measures_all.pdf



such as Wi-Fi. A report by the Dutch Bank ING calculated that as a percentage of total stimulus spending, the green projects accounted for 0.02%.²⁰² However, in December 2020 new Prime Minister Yoshihide Suga's cabinet approved a new 73.6 trillion JPY stimulus package, with two trillion JPY set aside for a new fund to support developing green technologies such as next-generation batteries and carbon recycling.²⁰³

In addition, Minister Koizumi hosted an online ministerial meeting in September 2020, as a precursor to COP26 in 2021, to launch the "Platform for Redesign" proposed by MOE, which is supported by UNFCCC and managed by IGES. This platform is meant to be a source of knowledge for both governments and non-state stakeholders, sharing information about policies and actions taken by national governments towards a sustainable recovery from the pandemic.²⁰⁴ These measures are categorised into three groups: response, which are short-term measures; recovery, which are medium-term aims; and redesign, which are long-term initiatives meant to be paradigm shifts. As of November 2020, Japan has listed 39, in five different categories, which are: climate mitigation measures, climate adaptation measures, cross-cutting measures, other environmental measures, and international cooperation. These include several hydrogen and carbon capture, utilisation and storage (CCUS) projects, and the above-mentioned economic recovery policy initiatives.

4.4 THE ECONOMIC IMPACT IN THE EU

Like Japan, the EU has also suffered economic consequences from the pandemic. The first quarter saw GDP decrease by 3.3% in the EU, and the second quarter saw GDP drop by 11.4%, compared to the previous quarter. This is the sharpest decline since Eurostat, the EU's statistical office, started this time series. Compared to the second quarter of 2019, GDP decreased by 13.9%.²⁰⁵ Spain saw the steepest percentage change, compared with the same quarter last year, with France and Italy seeing the second and third largest decline, respectively. In the third quarter, GDP increased by 12.1% compared to the previous quarter, due to the temporary relaxation in restrictions over summer.²⁰⁶ The latest forecast by the European Commission sees the EU annually contracting by 7.4% and growing by 4.1% in 2021.²⁰⁷ In terms of employment, the EU has an unemployment rate of 8.4% (see Figure 4.3), as of October 2020, higher than Japan's relatively low rate.²⁰⁸ Though there are signs

²⁰² ING Bank NV (2020): Asia's Lamentable Green Response to Covid-19. Amsterdam: ING Bank NV. https://think.ing.com/uploads/reports/Asias_green_response_100820_AOT.pdf

²⁰³ Nakamura, K. (8.12.2020): Japan Cabinet OKs 73.6 tril. Yen New Stimulus to Fight Virus. In Kyodo News. <https://english.kyodonews.net/news/2020/12/8a909b0c27bb-urgent-japan-to-compile-73-tril-yen-new-stimulus-package.html>

²⁰⁴ Ministry of Environment of Japan (2020): Platform for Redesign 2020. <https://platform2020redesign.org/>

²⁰⁵ European Commission, Eurostat (8.9.2020): GDP main aggregates and employment estimates for the second quarter of 2020 [Press release]. <https://ec.europa.eu/eurostat/documents/2995521/10545471/2-08092020-AP-EN.pdf/43764613-3547-2e40-7a24-d20c30a20f64>

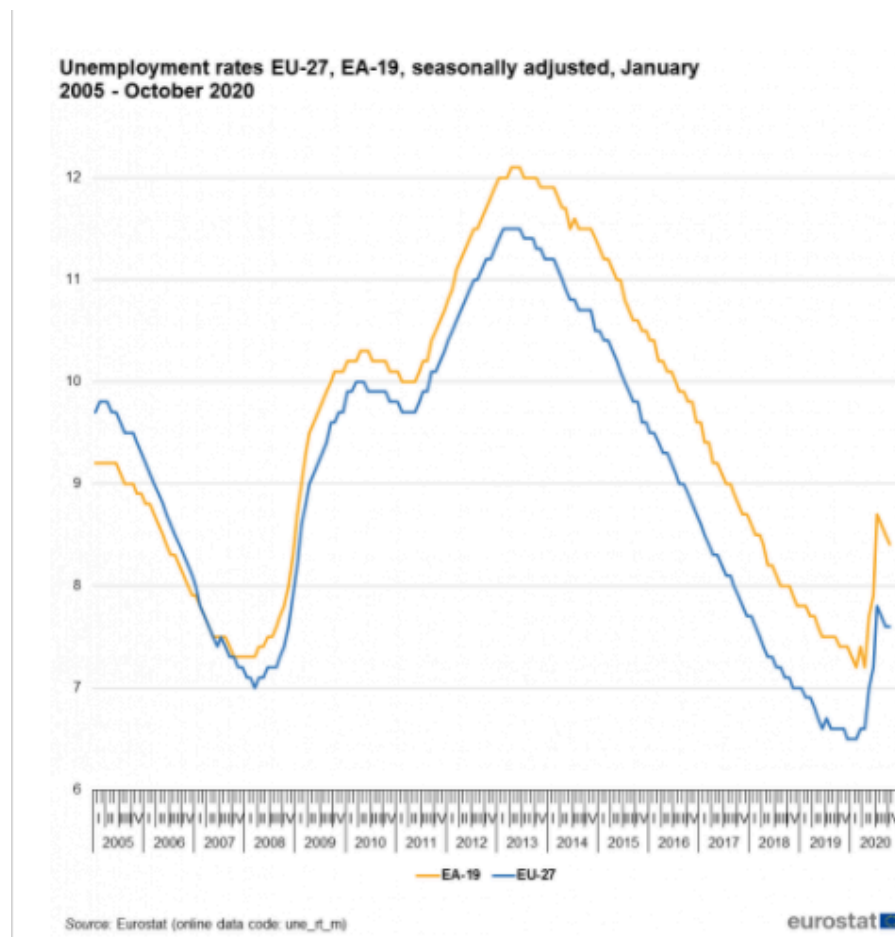
²⁰⁶ European Commission, Eurostat (30.10.2020): Preliminary flash estimate for the third quarter of 2020 [Press release]. <https://ec.europa.eu/eurostat/documents/2995521/10663774/2-30102020-BP-EN.pdf/94d48ceb-de52-fcf0-aa3d-313361b761c5>

²⁰⁷ European Commission (2020): European Economic Forecast, Autumn 2020. https://ec.europa.eu/info/sites/info/files/economy-finance/ip136_en_2.pdf

²⁰⁸ European Commission, Eurostat: Unemployment Statistics. <https://bit.ly/3IKIKNn> (Last accessed 25 September).

of recovery, predictions still worry that the labour market in the EU may take significant time to return to its pre-pandemic situation.²⁰⁹

Figure 4.3 The EU's Unemployment Rate January 2005 - October 2020²¹⁰



4.5 THE EU'S RESPONSE

In response to the crisis, the EU Council has proposed a 750 billion EUR recovery fund, which was agreed upon on the 21st July 2020, under the name Next Generation EU, alongside a reinforced EU budget for 2021 to 2027, which together equate 1.82 trillion EUR. The recovery fund represents 6% of EU's GDP. This budget and recovery fund is firmly rooted in the EU's Green Deal growth strategy, and is one of the few recovery funds globally which is rooted in a green growth strategy. The EU Council is working with the European Parliament to finalise the instrument, especially the financing elements, before it can be ratified by individual Member States. It is foreseen that it will enter into force in January 2021.²¹¹ The Next Generation EU fund will be funded by the European Commission borrowing 750 billion EUR on the financial markets by issuing bonds.

²⁰⁹ European Commission: European Economic Forecast, Autumn 2020.

²¹⁰ European Commission, Eurostat (2020): Unemployment Rates EU-27. <https://bit.ly/37bT90R>

²¹¹ D'Alfonso, A. (2020): Next Generation EU: A European Instrument to Counter the Impact of the Coronavirus Pandemic. European Parliamentary Research Service



The Next Generation EU funds will be implemented across three pillars: 1. Support to Member States with investments and reforms; 2. Kick-starting the EU economy by incentivising private investments; and 3. Addressing the lessons of the crisis. In terms of specifically green initiatives, under the first pillar 560 billion EUR will be for financial support to Member States, including for the green and digital transition, 310 billion EUR will be grants, and the remainder loans. The Just Transition Fund will also be allocated with 30 billion EUR to help Member States in becoming carbon neutral, and an extra 15 billion EUR will be given to the European Agricultural Fund for Rural Development, to help reach Green Deal targets in areas such as biodiversity. Pillar 2 will see 15.3 billion EUR in additional support for InvestEU, the EU's investment programme, to help private investments, and 15 billion EUR to the Strategic Investment Facility, which invests specifically in projects linked to the green and digital transition. Pillar 3 includes 5 billion EUR towards Horizon Europe, EU's research and innovation programme, though the total budget of the programme was lower than hoped by stakeholders. The EU Council has underlined that at least 30% of both the EU budget and Next Generation EU must go towards climate change alleviation.²¹²

[https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/652000/EPRS_BRI\(2020\)652000_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/652000/EPRS_BRI(2020)652000_EN.pdf)

²¹² European Council (2020): Special meeting of the European Council (17, 18, 19, 20 and 21 July 2020) – Conclusions. <https://www.consilium.europa.eu/media/45109/210720-euco-final-conclusions-en.pdf>; European Commission (2020): The pillars of Next Generation EU. https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/recovery-plan-europe/pillars-next-generation-eu_en



5 CONCLUSION AND FUTURE POLICY FOCUS AREAS

5.1 JAPAN'S CIRCULARITY

The concept of the circular economy is a growing focus area which, although it is not a new concept in Japan, is one that can be more widely disseminated and implemented. As laid out in this report, Japan has already applied an extensive policy framework centred around the concept of a Sound Material-Cycle Society, to form the basis of its transition towards a more circular economy. Likewise, policy plans such as METI's Circular Economy Vision 2020 and the MOE's plastic resource circulation strategy and its concept of a Circular and Ecological Economy, help increase awareness of the circular economy. The Circular Economy Vision 2020, though not as detailed as the EU's most recent Circular Economy Action Plan, still puts forward some crucial focus points, such as the importance of digitalisation, ESG, and an improvement of the market for secondary materials, through measures such as regulation and better cooperation between the upstream and downstream supply chain. It highlights key areas including plastics, textiles and batteries, which are also areas of concern for the EU.

However, there is still scope for improved circularity in Japan, not only in terms of improving resource productivity and recycling rates, but also in terms of continuing to set ambitious goals towards the use of more renewable energy to ensure Japan truly becomes circular. In that regard, there are some interesting opportunities within offshore wind, small solar panels and biomass. Most importantly, new Prime Minister of Yoshihide Suga has announced his goal of Japan achieving net carbon neutrality by 2050. Likewise there have been hopeful statements from the Japanese Minister for the Environment, Shinjiro Koizumi, that Japan will announce a new NDC ahead of COP26.

The role of non-governmental stakeholders should not be forgotten, as involving civil society and business communities is key in achieving a circular economy. Though the remanufacturing, repair, reuse, and products as a service are still smaller sectors in Japan, this report has highlighted several interesting examples, showing that circular business models are commercially viable and that innovative European circular solutions would also be attractive for a Japanese market. There are several organisations and media companies now specially focused on promoting the circular economy in Japan. The importance of public-private partnerships cannot be underestimated either, with initiatives such as CLOMA for combating plastic waste being successful in uniting cross-sectorial stakeholders from the entire supply-chain, and showing a clear way forward.

5.2 THIRD MARKET COLLABORATION

The increasing trend of third market collaboration should also be emphasised, though as it is a relatively recent trend, there is still scope for further research. It is actively promoted by some Member States, such as France and Germany. As discussed, there are clear drivers and benefits to be gained from this, with the possibility of new market accesses and



partnerships to be derived. Interviewed stakeholders spoke with interest especially regarding collaborations in ASEAN countries or Africa, using European and Japanese circular economy expertise within plastics or renewable energy.

5.3 A GREEN RECOVERY?

A discussion of the circular economy must also considering the impact of the COVID-19 pandemic. The benefits of becoming more circular have never been clearer, especially in light of the large economic challenges the world faces in the wake of the COVID-19 pandemic. The crisis has highlighted the fragility of global supply chains, but also that the solutions can be achieved globally. Some rescue packages, such as the EU's proposals under the Green Deal have a heavy emphasis on a green recovery. Japan's recovery plan for its hard-hit economy has not featured the same emphasis on a green recovery, though MOE officials have reportedly stated that more green recovery initiatives should be expected in Japan's 2021 annual budget. Crucially, Prime Minister Yoshihide Suga's cabinet approved in December 2020 a new stimulus package, including a new two trillion JPY green investment fund. In addition, Japan has launched the online "Platform for Redesign" as an impetus for countries to share their green recovery solutions. It will be important to see if Japan does try to implement a greener recovery at this critical junction for climate mitigation, as Japan currently only has 0.02% of their total stimulus spending from the recovery package earmarked for green solutions.

5.4 FUTURE FOCUS AREAS FOR THE CONTINUED DEVELOPMENT OF THE CIRCULAR ECONOMY

In order to accelerate the transition to the circular economy, listed below are key future policy focus areas.

- **Implementing a green circular recovery**

As discussed above, the COVID-19 pandemic can and should be used to build back better in a green and circular manner. Though there may be created a vaccine for COVID-19, the climate crisis existed before the pandemic, and will be worsened if non-circular and unsustainable recovery plans are chosen. Even China, the world's largest CO₂ producer, has now committed to becoming carbon neutral by 2060. The EU has proposed a distinctly green and circular recovery, and Japan is moving in the same direction.

- **Continue to enhance global political cooperation on the circular economy**

In order for a complete transition to the circular economy, it ultimately has to be a global movement. Building on the EPA, SPA and the EU-Japan Connectivity Agreement, and the high-level environment dialogue, high-level economic dialogue, and bilateral industrial policy dialogue, work must continue to align and strengthen both the EU's and Japan's mutual interest areas. Stages such as the Platform for Accelerating the Circular Economy, global partnerships and networks of stakeholders should be strengthened through such proposals as the EU's Circular Economy Action Plan's Global Circular Economy Alliance. This may also help towards concretising projects for third market collaboration.



- **Increase public awareness and support of the circular economy**

This can be done by actively promoting circular business models and showing their commercial viability, while also mobilising more funding towards circular initiatives. Likewise, building on the foundations of the EU's Taxonomy for Sustainable Activities and the MOE's Green Bond Guidelines, work should be made towards a clear taxonomy, to avoid greenwashing and streamline investment goals. In addition, successful public-private partnerships like CLOMA should be encouraged for other key circular economy issues, to strengthen connections between manufactures and waste managers, and the demand for secondary resources. In the long term, more radical steps such as moving towards taxing resources rather than labour should also be considered.

Ultimately, the benefits and reasons for making the circular economy a reality are overwhelmingly persuasive. It is now of utmost importance that this transition is carried out.



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