

# SIMULTANEOUS RESOLUTION OF ENVIRONMENTAL, ECONOMIC AND SOCIAL ISSUES

Japan's population is declining and aging at a pace never before experienced worldwide. We introduce some examples below of approaches and specific initiatives aimed at promoting socioeconomic innovation to resolve economic and social issues while simultaneously resolving environmental issues through environmental policies.

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# JAPAN'S APPROACHES TO THE SIMULTANEOUS RESOLUTION OF ENVIRONMENTAL, ECONOMIC AND SOCIAL ISSUES

## Achieving green growth

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Achieving the objectives of the Paris Agreement requires sustained long-term investment in reducing global greenhouse gas emissions. Climate change countermeasures may in time help eliminate the shortage of investment opportunities in

Japan, and Japan's outstanding environmental technologies may also generate overseas demand. Linking climate change countermeasures to Japan's further economic growth will become increasingly important.

## Improving carbon productivity

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Carbon productivity needs to be greatly improved to ensure continued economic growth under the Paris Agreement. We need to shift to an economic structure in which greenhouse gas emissions are

less likely to increase with economic growth by generating high added value through such means as innovation that leverages brands and other intangible assets.

## Improving resource productivity

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Based on the Toyama Framework on Material Cycles adopted at the 2016 G7 Toyama Environment Ministers' Meeting, we need to raise Japan's resource productivity and drive domestic economic growth

while reducing our natural resource consumption by creating services that do not require natural resources, and substituting domestic recycled resources for imported fossil and metal resources.

## Utilizing community energy

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Renewable energy is expected to help boost resource-poor Japan's energy self-sufficiency and consequently reduce our dependence on imported fossil fuels. Particularly in rural areas rich in renewable energy resources, community energy

balance could be improved by exploiting such resources, and decentralized and self-reliant energy systems would also help to improve resilience to disasters.

## Urban compaction

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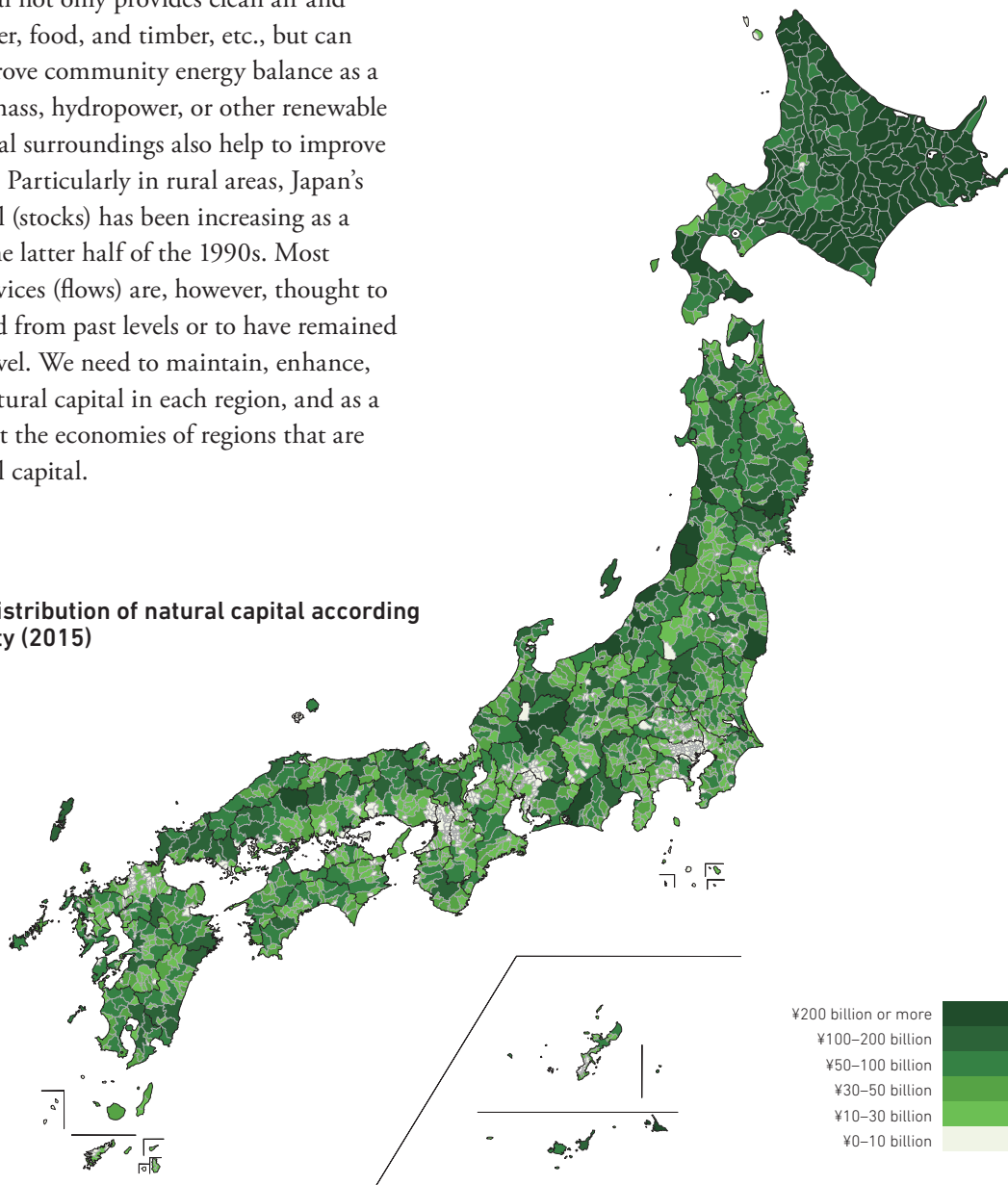
Concentrating services to create more compact cities in tandem with population decline would help cut GHG emissions by reducing fossil fuel-consuming traffic movements. Concentrating services and boosting population density through

urban compaction may also improve labor productivity, revitalize inner cities, reduce government expenditure, extend healthy life, and reduce medical and nursing care costs.

## Maintaining, enhancing, and utilizing natural capital

Natural capital not only provides clean air and abundant water, food, and timber, etc., but can also help improve community energy balance as a source of biomass, hydropower, or other renewable energy. Natural surroundings also help to improve quality of life. Particularly in rural areas, Japan's natural capital (stocks) has been increasing as a whole since the latter half of the 1990s. Most ecosystem services (flows) are, however, thought to have decreased from past levels or to have remained at the same level. We need to maintain, enhance, and utilize natural capital in each region, and as a nation support the economies of regions that are rich in natural capital.

Nationwide distribution of natural capital according to municipality (2015)



Source: Ministry of the Environment

## Climate security

As a major GHG emitter, Japan is aiming to set an example by drastically reducing its GHG emissions, and based on scientific knowledge, to work with other nations to help reduce worldwide GHG emissions and bolster climate security by promoting Japanese technologies, expertise, lifestyles, institutions etc. overseas.

# INITIATIVES AIMED AT THE SIMULTANEOUS RESOLUTION OF ENVIRONMENTAL, ECONOMIC AND SOCIAL ISSUES

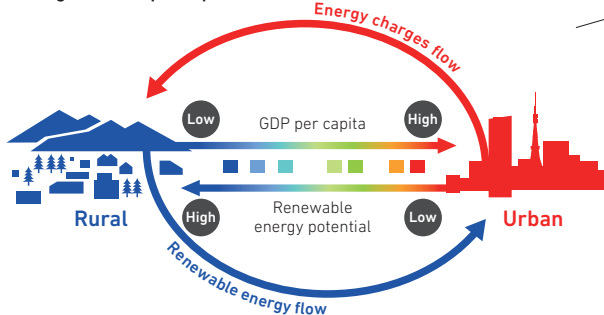
## Renewable energy

Japan's renewable energy deployment potential is estimated to be approximately 2.1 billion tonnes of CO<sub>2</sub> equivalents, which is about 1.8 times the nation's energy-derived CO<sub>2</sub> emissions in fiscal 2015.

Japan aims to achieve a renewable energy capacity of 22–24% in fiscal 2030. Since the introduction of the feed-in tariff (FiT) system in 2012, renewable energy deployment, and particularly solar power generation, has expanded rapidly, with capacity reaching approximately 13% of Japan's energy mix in 2014.

However, about 90% of municipalities throughout Japan are running energy balance deficits, resulting in capital outflows. Since rural areas on the whole have far greater renewable energy deployment potential than urban areas, generating renewable energy in rural areas for consumption in cities would help drive rural revitalization.

Relationship between renewable energy potential and regional GDP per capita



Source: Ministry of the Environment

## Smart Disaster-Resilient Eco-Town

The city of Higashimatsushima, which was inundated by the Great East Japan Earthquake tsunami, has since June 2016 been supplying renewable energy through a microgrid to 85 disaster recovery public housing units as well as surrounding hospitals and public facilities. In the event of a disaster, a combination of emergency generators, solar power generation, and large storage batteries will be able to supply at least three days' worth of power at the normal level. The Higashimatsushima Organization for Progress and Economy, Education, Energy (HOPE) operates the microgrid, creating new jobs within the local community and plowing profits back into the community.



Smart Disaster-resilient Eco-Town

## Utilization of Wood Biomass Resources

In the city of Maniwa, 80% of which is forested, local sawmills, timber industry unions and others joined forces to establish a biomass power generation company running a biomass plant that in 2015 generated 10 MW from locally purchased tree thinnings and sawmill waste timber. The city estimates that the purchase of otherwise unused timber generated approximately ¥1.3 billion in income for local landowners and forestry industries, and has generated approximately 50 jobs. Maniwa is also promoting the use of biomass resources in other ways. For example, it uses biomass to heat its City Hall and other public facilities, and has established a cross-laminated timber production plant and a startup that is developing cellulose nanofiber manufacturing technologies and applications.



Wood biomass power generation plant

## Smart communities

Smart communities are next-generation social systems that make maximum local use of locally generated renewable energy and heat, and minimize energy consumption by leveraging IT networks that connect homes, buildings, and transportation systems. Smart community

initiatives are being pursued in many locations for the way local consumption of locally generated energy and heat creates more disaster-resilient communities as well as making use of local resources and generating jobs.

### Fujisawa Sustainable Smart Town

Fujisawa Sustainable Smart Town in the city of Fujisawa, Kanagawa prefecture, is a public-private joint project to develop a 1,000-household smart community of 600 detached houses and 400 condominium units. All the detached houses are equipped with solar power generation, storage batteries, and home energy management systems as standard fixtures with the aim of reducing CO<sub>2</sub> emissions by 70% and domestic wastewater by 30%, raising use of renewable energy to 30%, and ensuring lifeline services for three days in emergency situations.



Fujisawa Sustainable Smart Town

## Compact cities

In a society with a declining population, consolidating various functions within specific localities and connecting those localities through networks to secure a population of a certain level equipped with the functions required for everyday life also brings environmental benefits. The

Japanese government has established a Compact City Development Support Team made up of representatives of relevant ministries and agencies that is charged with supporting the many compact city initiatives that municipalities throughout Japan have started to formulate.

### Compact urban development focused on public transport

The city of Toyama, Toyama prefecture, is focusing on light rail transit (LRT) and other public transport as a means of implementing compact urban development. In 2006, it launched an inner-city LRT by converting a former heavy rail line. As a result of adding stations and running more frequent trains, the LRT now carries double the pre-conversion number of passengers on weekdays, and 3.5 times on holidays, an increase that, like the city's tram system, also reduces CO<sub>2</sub> emissions that would otherwise be generated by the use of buses and private cars. Although the population of surrounding districts is declining, inner-city residents have been increasing since 2008, and elderly residents appear to be taking advantage of the improved public transport system to get out and about more often.



LRT in Toyama

## Urban mining

Japan's "urban mining" resources (reclaimable precious metals) are estimated to amount to approximately 2–3 years' global consumption of gold, silver, copper, and other precious metals. They are particularly rich in lithium, which is an important battery material, and platinum, which is indispensable as a catalyst and fuel cell electrode

material. Urban mining would not only ensure a stable supply of many resources that are not naturally available in Japan, but would also mitigate global environmental impacts such as mining-related deforestation and water pollution caused by improper heavy metal treatment.

### Tokyo 2020 Medal Project: Toward an Innovative Future For All

Medals to be awarded at the Tokyo 2020 Olympic and Paralympic Games will be cast from recycled metals reclaimed from used mobile phones, PCs, and other small consumer electronic devices. Producing the 5,000-plus medals to be awarded at the Games will require approximately 40 kg of gold, 4,900 kg of silver, and 3,000 kg of copper including material losses generated in the manufacturing process.

It is hoped that this initiative will involve people throughout Japan by producing the medals from recycled metals, and contribute to achieving the Sound Material-cycle Society in Japan by leading to continued recycling of consumer electronic devices after the Tokyo 2020 Olympic and Paralympic Games.



Tokyo 2020 Medal Project:  
Toward an Innovative Future For All

## Green infrastructure

Green infrastructure refers to utilization of the diverse functions of nature in both hard and soft aspects of infrastructure development and land use to create sustainable and attractive communities and surroundings. Japan with its proneness to natural disasters has long utilized nature to guard against such disasters. Japanese people have, for example, preserved forests to prevent landslides,

planted coastal forests to mitigate sand- and wind-related damage, and bamboo groves alongside embankments to reduce flood damage, and surrounded their homes with trees to protect them from the elements. Further efforts are now underway to utilize green infrastructure in building communities that are more resilient to torrential downpours and other impacts of climate change.

### Rain garden in Kyoto

Rain gardens that make use of the wisdom contained in traditional Japanese gardens are being developed in Kyoto. Kyoto Gakuen University has installed a rain garden in its campus that incorporates Japanese rock garden concepts. Kyoto Station Building also features a terraced rain garden in which rain falling on the rooftop is fed down gradually through a series of special planters located on lower floors. Scattering small-scale rain gardens such as these throughout an urban landscape will help both to mitigate urban flooding risks, and to preserve biodiversity and enrich urban ecosystems.



Kyoto Gakuen University's rain garden

## Utilizing national parks to promote inbound tourism

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The number of foreign tourists visiting Japan has increased sharply in recent years, exceeding 24 million in 2016. The Japanese government is aiming to increase this number to 40 million by 2020, and 60 million by 2030. As one aspect of this endeavor, the government is aiming to boost the number of foreign visitors to national parks in Japan to 10 million—more than double the 2015 total—by 2020, by working also with the private sector to transform the parks into recreational areas providing a rich range of activities and experiences on par with the world’s top national parks. Japan’s 34 national parks cover a total area of over

5% of Japan’s land. In 2016, the Ministry of the Environment selected eight national parks for an initial intensive focus on attracting more foreign tourists, drawing up “Step-Up Program 2020” plans for each national park. Based on this program, which positions nature itself as the parks’ greatest attraction, efforts are underway to offer high quality, high added value tourism by improving scenic assets of the parks themselves and their surroundings to maximize their natural beauty, and by attracting quality accommodation and developing tour programs that best enable visitors to experience the nature of the parks.

## Environmental finance

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Developing a long-term investment environment for promoting environmental, social, and governance (ESG) investment is vital to advancing environmental, economic, and social goals in tandem and achieving sustainable economic growth. ESG investment that requires medium- to long-term evaluation of corporate value based on perspectives of environmental, social, and corporate governance concerns is expected to encourage investment in sustainable growth. In January 2017, the Ministry of the Environment’s Working Group on Incorporating Issues Regarding Sustainability into Investment (ESG Working Group) issued its Introduction to ESG Investment report.

In May 2014, the Government Pension Investment Fund (GPIF), a Japanese government agency that manages the world’s largest pool of retirement savings, accepted the Japanese language edition of the Stewardship Code, and in September 2015, signed the United Nations-backed Principles for Responsible Investment (PRI).

The Japanese Green Bond market is still in its infancy, but the growth of Green Bond issuance and investment can be expected not only to bring various environmental benefits, but also to contribute to the growth of environment-related industries, job creation, regional development, and disaster countermeasures. In March 2017, the Ministry of the Environment issued Green Bond Guidelines, 2017 to promote the issuance of Green Bonds in line with the Green Bond Principles (GBP).

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### Tokyo’s Green Bond issue

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In December 2016, the Tokyo Metropolitan Government (TMG) issued its Tokyo Environmental Supporter Bonds as a Green Bond trial. The funds raised by these bonds, approximately ¥10 billion, are being used to help resolve climate change and other environmental problems, including fitting TMG facilities with solar power generation systems and LED lighting, and urban greening.

**Overview of the Step-Up Programs of the eight selected national parks**

