
Realization and implementation of the "Growth-oriented Carbon Pricing Concept in Japan"

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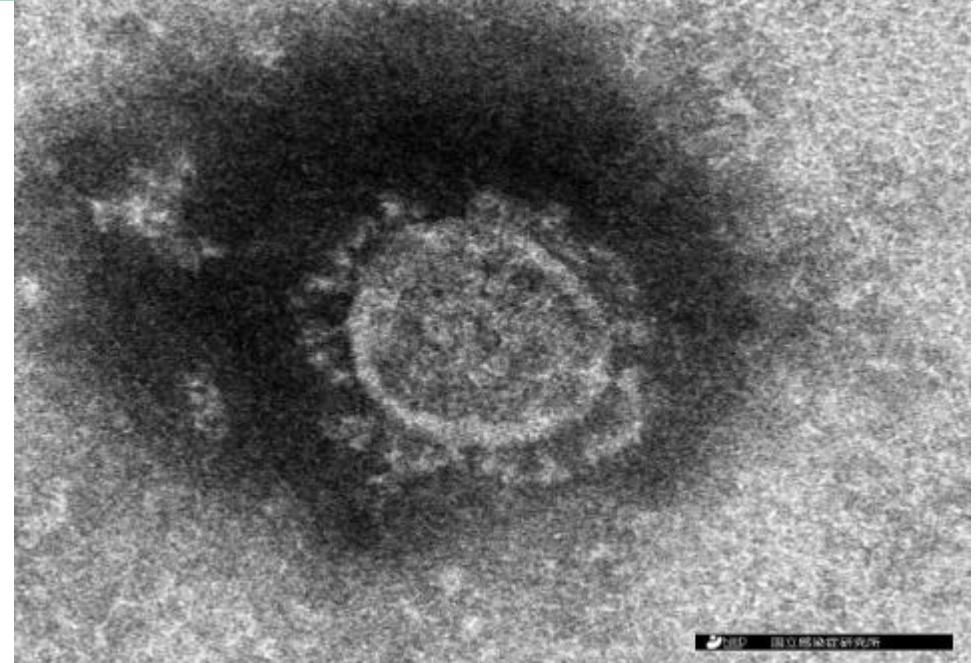
1. Trends surrounding climate change in Japan and abroad

Facing two crises of “climate” and “COVID-19”

- Frequent severe weather disasters and further increase in their risk
- On June 12, 2020, the Ministry of the Environment of Japan issued a “Climate Crisis Declaration”
- In November, the “Climate Crisis Declaration” was passed in the Lower / Upper House primary sessions.
- Enormous impact of COVID-19 on the global economic society, health, etc.



▲ Damage caused by the 2019 East Japan Typhoon
<The Chikuma River, Nagano City, Nagano>



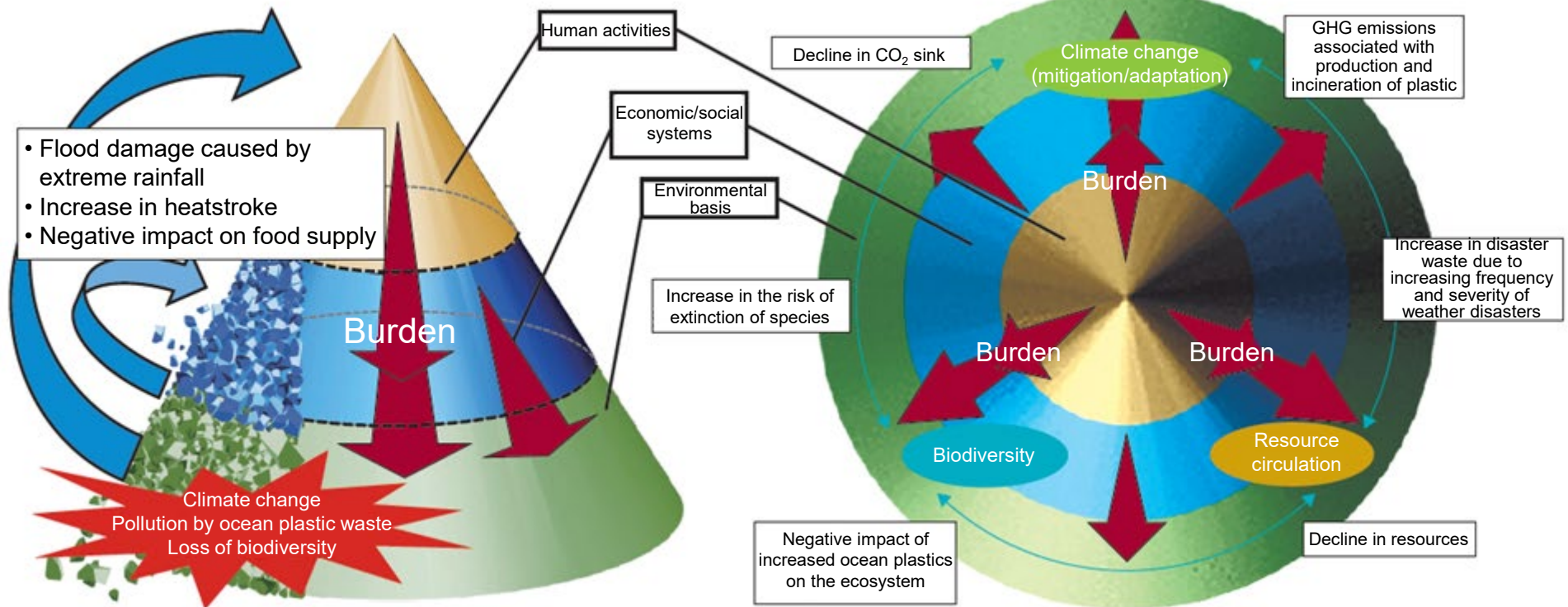
▲ Electron micrograph of 2019-nCoV
(Source: National Institute of Infectious Diseases)

The two crises are not separable and → require simultaneous solutions

These are caused by human life and the economic and social system

- New infectious diseases, such as COVID-19, are deeply related to changes in the global environment due to loss of biodiversity and climate change.
- Human life and economic and social systems negatively affect the global environment.
- For response to the crises, it is essential to drastically change our economic/social systems and everyday life (social change)

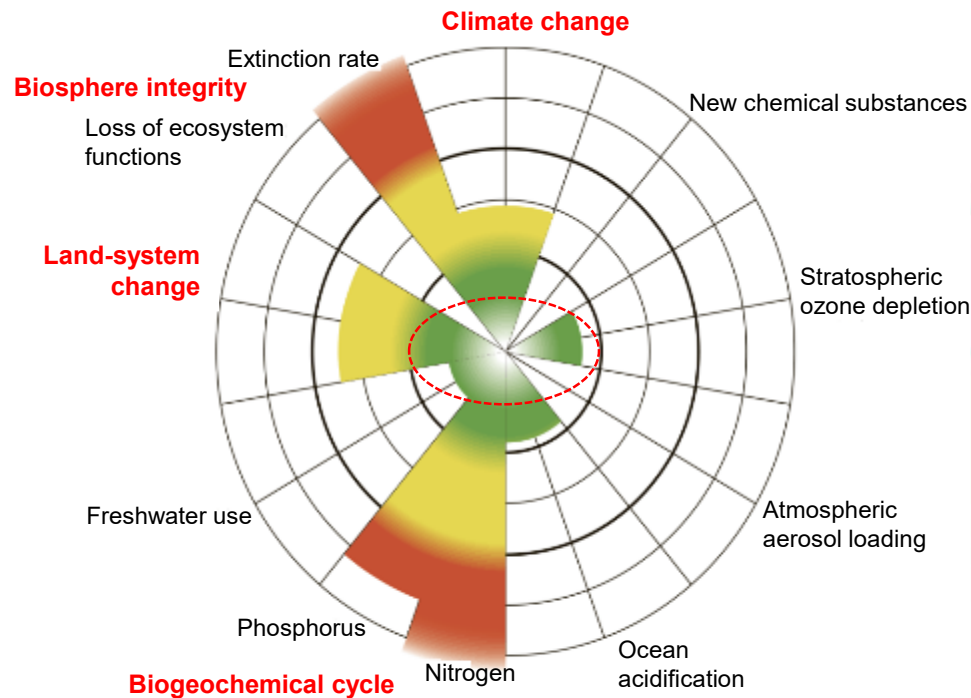
Upper view of the figure on the left



Limit of global environmental capacity and SDGs

- It is suggested that the global environment that is the basis for human beings to continue to live in affluence may have reached its limit in some aspects.
- Against a backdrop of the sense of crisis in the international community that “the world cannot continue this way” the United Nations General Assembly adopted the 2030 Agenda for Sustainable Development, which includes sustainable development goals (SDGs), in September 2015.

Limit of the global environmental capacity



Source: prepared by the Ministry of the Environment from Will Steffen et al. *Planetary boundaries :Guiding human development on a changing planet*

- Beyond zone of uncertainty (high risk)
- In zone of uncertainty (increasing risk)
- Below boundary (safe)

Sustainable Development Goals (SDGs)

SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD



Material: United Nations Information Center

Significance of Paris Agreement

Decarbonization has become a global trend

In December 2015, the Paris Agreement was adopted (COP21)

- **Fair targets with participation of all nations**
- **2°C target**
- **Balance emissions and absorption of greenhouse gases (GHG) by the second half of this century.**

Paris Agreement is a declaration to break away from the carbon society.



Climate Action Summit in September 2019
(New York)

- **Turning point** toward decarbonization
- The world started to run toward a decarbonized society in the second half of this century

On October 8, 2018:
IPCC 1.5°C special report
was made public.

2. What should we do for social change?

What should we do for social change?



<With-/post-coronavirus age>

Redesign of economic society with “three transitions”

(1) Decarbonized society

Carbon neutrality

- Zero-carbon city renewable energy enhancement support package
- Decarbonization of “new normal”
- Acceleration of innovations for decarbonization

(3) Decentralized Society in Harmony with Nature

Nature positive

- Enhance resilience by “Climate Action and Disaster Risk Reduction” and “Adaptive Recovery”
- Drastic enhancement of national parks
- Creation of new village-vicinity land, mountains and seas

(2) Circular economy

Circular economy

- Embodiment of the plastic resource circulation strategy
- Construction of a sustainable waste disposal system
- Resilient waste disposal

Creation of Regional Circular and Ecological Spheres (local SDGs)

Initiatives to support the transitions

Social change using ESG finance/nudge

- ESG finance, impact finance
- Nudge
- Support for decarbonized management and start-ups

Strengthening of environmental diplomacy

- Strengthen diplomacy efforts toward COP26 and COP15.
- Expansion and deepening of Osaka Blue Ocean Vision
- Environmental infrastructure export based on the decarbonization principle

Efforts to protect health and the environment forming the basis

- Measures against zoonotic infections
- Control of asbestos, PCB, Minamata disease, and animal protection

2050 Carbon Neutral Declaration / announcement of the goals by fiscal 2030



Long-term goal

Net-zero GHG emissions by 2050

Medium-term goal

46% reduction of GHG emissions by 2030 (from the 2013 level)

Further strive toward a 50% reduction.



- On October 26, 2020, then-Prime Minister Suga declared that Japan **“aims to achieve Carbon-Neutral 2050 and realize a decarbonized society”** at the 203rd extraordinary Diet session.

[Policy Speech of then-Prime Minister Suga at the 203rd extraordinary Diet session] on October 26, 2020 (excerpt)

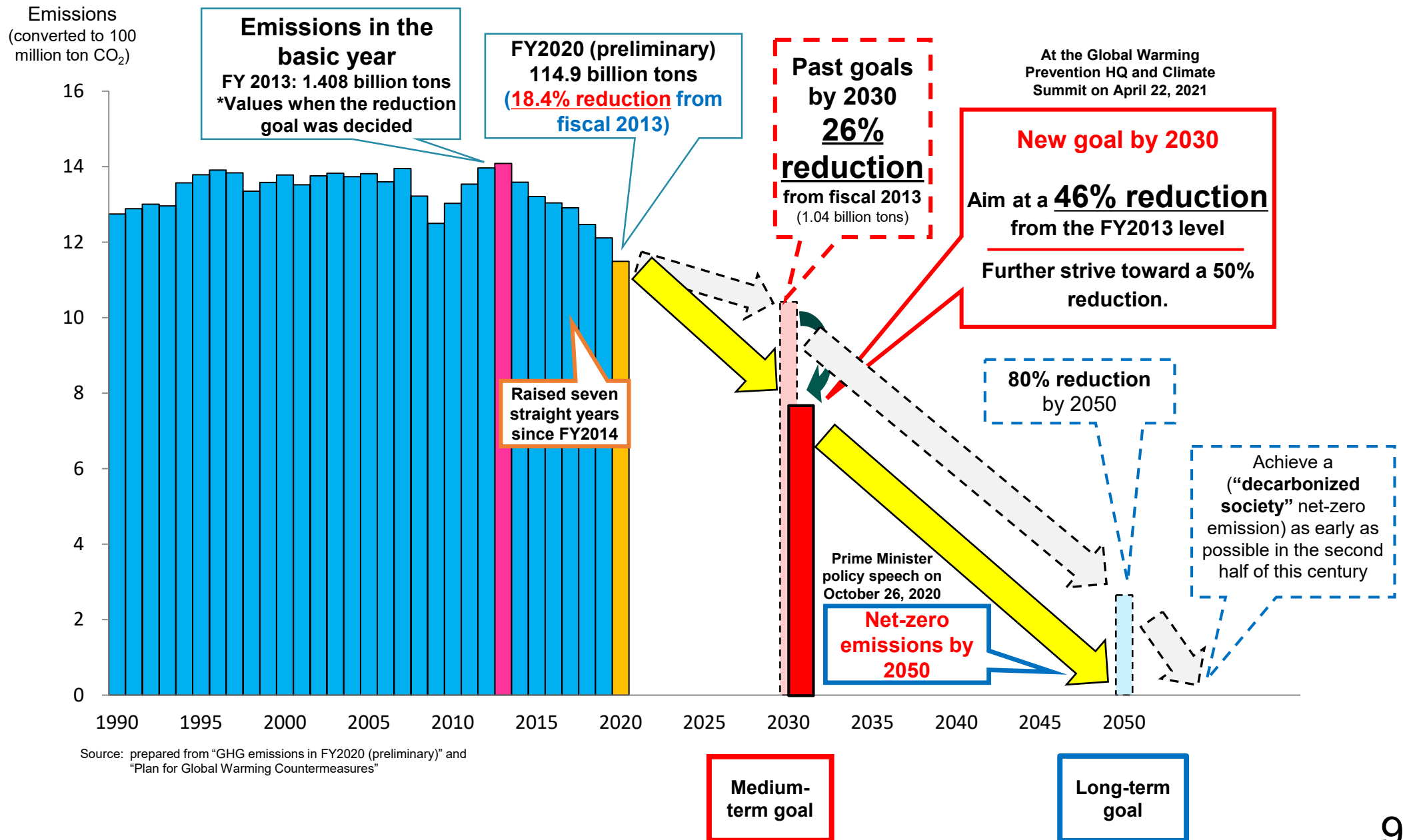
- My administration will devote itself to the greatest possible extent to **bring about a green society, while focusing on a virtuous cycle of the economy and the environment** as a pillar of our growth strategy. We hereby declare that **Japan will aim to reduce greenhouse gas emissions to net-zero by 2050, that is, to realize a carbon-neutral, decarbonized society**. Addressing climate change is no longer a constraint on economic growth. We need to adjust our mindset to a paradigm shift that proactive climate change measures will bring transformation of industrial structures as well as our economy and society, leading to dynamic economic growth.

- At the Global Warming Prevention Headquarters and Climate Summit hosted by the U.S., then-Prime Minister Suga stated that **the country would aim to slash greenhouse gas emissions by 46 percent from fiscal 2013 levels by fiscal 2030 and further strive for 50% reduction.**

[Speech by then-Prime Minister Suga at the Climate Summit hosted by the U.S.] on April 22, 2021 (excerpt)

- Japan will take a big step to solve the global issue. **As a target that is ambitious and consistent with carbon neutrality, the country will aim to slash greenhouse gas emissions by 46 percent from fiscal 2013 levels by fiscal 2030, and further strive toward a 50% reduction.**

Changes in the medium-term and long-term goals for GHG emission reduction of Japan



Local governments announcing net-zero CO₂ emissions by 2050

As of November 30, 2022

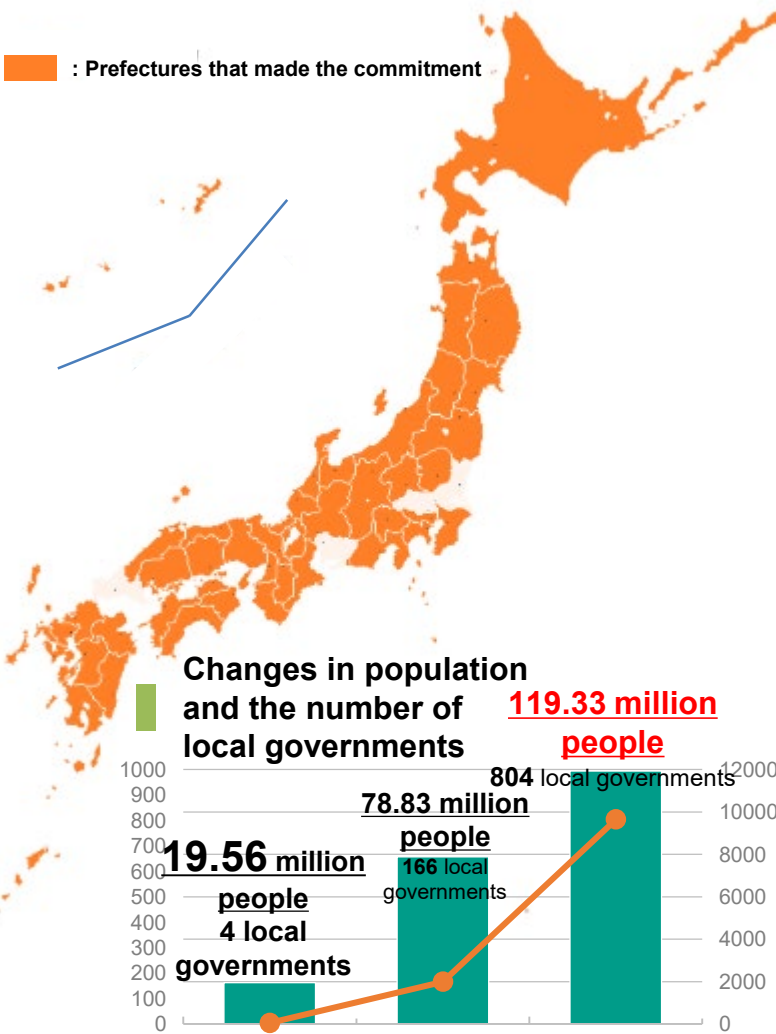


804 local governments (43 prefectures, 471 cities, 20 special wards, 231 towns, and 39 villages), including Tokyo Prefecture, Kyoto City, and Yokohama City, announced plans “to achieve net-zero CO₂ emissions by 2050.” **Total population of local governments that made the commitment: Approx. 119.33 million***

* The total population of local governments that made the commitment (total population of each local government) is calculated by excluding prefectural and municipal duplication.

Prefectures that made the commitment (107.03 million people)

Municipalities that made the commitment (91.2 million people)



Hokkaido	Aomori Pref.	Akita Pref.	Ibaraki Pref.	Guruma Pref.	Chiba Pref.	Tokyo	Kanagawa Pref.	Ishikawa Pref.	Nagano Pref.	Shizuoka Pref.	Mie Pref.	Osaka Pref.	Tottori Pref.	Kagawa Pref.	Saga Pref.	Oita Pref.	
Furubira Town	Hachinohe City	Odate City	Mito City	Ota City	Sanmu City	Katsushika Ward	Yokohama City	Kaga City	Hakuba Village	Gotemba City	Shima City	Hirakata City	Hokuei Town	Zentsu City	Takeo City	Oita City	
Sapporo City	Shirachi Town	Shichinohe Town	Yoshioka City	Fujoka City	Noda City	Tama City	Ogasawara City	Kanazawa City	Hamamatsu City	Minamie Town	Higashiosaka City	Nambu Town	Takamatsu City	Saga City	Usa City		
Niseko Town	Tsuru Village	Tsugaru City	Kozu City	Noda City	Abiko City	Setagaya Ward	Kamakura City	Hakusan City	Otaru Village	Shizuoka City	Izumiotsu City	Yonago City	Higashikagawa City	Kiyama Town	Hita City		
Ishikari City	Yakumo Town	Daisen City	Yuki City	Minakami Town	Urayasu City	Toshima Ward	Kawasaki City	Komatsu City	Karuzawa Town	Makinohara City	Taki Town	Osaka City	Tottori City	Muragami City	Ogi City	Kunisaki City	
Wakkanai City	Hamanaka Town	Sal Village	Yuzawa City	Oizumi Town	Yotsukaido City	Musashino City	Kaisei Town	Kahoku City	Tatehina Town	Fujiomya City	Miwa Town	Hannan City	Sakaminato City	Sakaide City	Kashima City	Beppu City	
Kushiro City	Shikabe Town	Geshogawara City	Yamagata Pref.	Takahagi City	Chiba City	Chofu City	Miura City	Nonoichi City	Minaminowada Village	Omaezaki City	Odai Town	Toyonaka City	Nichinan Town	Utazu Town	Nagasaki Pref.	Kitsuki City	
Akeshi Town	Kyogoku Town	Iwate Pref.	Kitabaraki City	Tsumagoi Village	Narita City	Adachi Ward	Sagamihara City	Tsuzuba Town	Saku City	Fujieda City	Taki Town	Bufo City	Kurayoshi City	Kanojo City	Hirado City	Miyazaki Pref.	
Kimobetsu Town	Makiri Village	Kuji City	Yonezawa City	Ueno Village	Yachyo City	Kunitachi City	Yokohama City	Suzu City	Komoro City	Yuzui City	Kihoku Town	Takahishi City	Shimane Pref.	Miki Town	Goto City	Kushima City	
Shikaoi Town	Bifuka Town	Ninohe City	Yamagata City	Chiyoda Town	Kisarazu City	Minato Ward	Fujisawa City	Washizu City	Tom City	Izunakuni City	Watabai Town	Nose Town	Matsue City	Tadotsu Town	Nagasaki City	Miyazaki City	
Rausu Town	Wassamu Town	Kuzumaki Town	Asahi Town	Maebashi City	Choshi City	Komae City	Atsugi City	Nanso City	Matsumoto City	Shimada City	Owase City	Kawachinagano City	Onan Town	Ehime Pref.	Nagayo Town	Tsuono Town	
Furano City	Shari Town	Fudai Village	Takahata Town	Midoru City	Funabashi City	Chuo Ward	Hadano City	Fukui Pref.	Fuji City	Tamakicho	Sakai City	Kawachi City	Misato Town	Matsuyama City	Togitsu Town	Gokase Town	
Tobetsu Town	Higashikagura Town	Kurumi Town	Shonal Town	Takayama Village	Narita City	Shinjuku Ward	Hayama Town	Sakai City	Takamori Town	Iwata City	Inabe City	Yao City	Izumo City	Izumi City	Nichinan City		
Otaru City	Nakagawa Town	Noda Village	Iide Town	Nakata City	Tateyama City	Arakawa Ward	Chigasaki City	Fukui Pref.	Ono City	Kozai City	Tsu City	Izumizaki City	Kumatori Town	Tsuwano Town	Yasuyo City	Kijo Town	
Monbetsu City	Atsuma Town	Kanoha Village	Nanyo City	Katashika Village	Mimamboso City	Kita Ward	Sankuwa Town	Ono City	Susono City	Susono City	Tain Town	Kunatori Town	Tsuwano Town	Iyetsuhama City	Sasabi City	Takanabe Town	
Tomakomai City	Eribetsu Town	Hirono Town	Kawanishi Town	Shimoda Town	Kimitsu City	Koto Ward	Manazumi Town	Sabae City	Fukuroi City	Suzuki City	Kishiwada City	Umen City	Kochi Pref.	Tsushima City	Kobayashi City		
Ashoro Town	Biei Town	Ichohino Town	Tsuruoka City	Sakuragawa City	Saitama Pref.	Sosa City	Sumida Ward	Matsuda Town	Tsurgu City	Suzuka City	Numazu City	Taishi Town	Kuroshio Town	Shimanto City	Kumamoto Pref.	Nobeoka City	
Sarabetsu Village	Oobu Town	Hachimandaira City	Oobanzawa City	Tsukubamiri City	Shiomi City	Toshima Village	Isehara City	Isehara City	Chichibu City	Mishima City	Shiga Pref.	Izumisanjo City	Okayama Pref.	Sakumo City	Kawaninawa Town		
Shimizu Town	Takinoue Town	Miyako City	Shirataka Town	Omitama City	Saitama City	Ichihika City	Nakano Ward	Zushi City	Katsuyama City	Sabaki Town	Oyama Town	Konan City	Mariva City	Nanokou City	Kikuchi City	Mimata Town	
Numata City	Shihoro Town	Ichinoseki City	Mogami Town	Ibaraki Pref.	Tokorozawa City	Matsudo City	Suginami Ward	Zama City	Awara City	Ogawa Town	Izu City	Omihaichiman City	Ibaraki City	Okayama City	Kochi City	Kagoshima Pref.	
Asahikawa City	Nakafurano Town	Shiwa Town	Tendo City	Shiroato Town	Fukaya City	Kashiwa City	Chiyo Ward	Oi Town	Bedu Town	Tatayama Village	Atami City	Karasatsu City	Mitsui Town	Tsytana City	Uki City	Hagashima City	
Muroran City	Nanan Town	Kamatsi City	Sagae City	Toikai Village	Ogawa Town	Narashino City	Fuchu City	Ayase City	Yamanashi Pref.	Shirano Town	Aichi Pref.	Nagahama City	Kanan Town	Tamano City	Aso City	China Town	
Nayoro City	Obihiro City	Iwazumi Town	Kaminoyama City	Goka Town	Hanno City	Kanagawa City	Koganei City	Hiratsuka City	Mitsunomiyasu City	Ogawa Village	Toyouka City	Otsu City	Iwada City	Soja City	Yoshihara Town	Ibusuki City	
Taki Town	Alibetsu Town	Ofunato City	Kahoku Town	Sakai Town	Sayama City	Mobara City	Machida City	Yamato City	Kai City	Izumi Town	Miyoshi City	Kofu City	Katano City	Bizen City	Hidaka Village	Satsumaseedai City	
Chippubetsu Town	Simukappu Village	Morioka City	Kaneyama Town	Toride City	Iruma City	Itabashi Ward	Itabashi Ward	Minamishiraga City	Fuefuki City	Okaya City	Handa City	Kadoma City	Setouchi City	Ino Town	Gyokuto City	Setouchi Town	
Kushiro Town	Minamifurano Town	Yahaba Town	Fukushima Pref.	Shimozuma City	Hidaka City	Meguro Ward	Meguro Ward	Ebina City	Utsunohara City	O Town City	Kyoto City	Osazaki City	Akaiwa City	Kami City	Ozu Town	Kimotsuki Town	
Teshikaga Town	Kenbuchi Town	Myagi Pref.	Koriyama City	Hitachinaka City	Kasukabe City	Nerima Ward	Nerima Ward	Nagatsuta City	Chuo City	Suwa City	Obu City	Yosano Town	Hyogo Pref.	Wake Town	Fukuoka Pref.	Nimamosi Town	
Mikasa City	Eniwa City	Kasennuma City	Okuma Town	Kasama City	Kuki City	Kodaira City	Kodaira City	Sado City	Ichikawamatsuo Town	Tagaki Village	Tahara City	Miyazu City	Akashi City	Hayashima Town	Okii Town	Takamoto Town	
Moseushi Town	Kamifurano Town	Tomiyama City	Namie Town	Tsukuba City	Koshigaya City	Bunkyo Ward	Bunkyo Ward	Awashimura Village	Fujigawa Town	Ibusaka Village	Taketoyo Town	Oyamazaki Town	Kobe City	Kumenuma Town	Fuokou City	Nishihara Village	
Kamishihoro Town	Mukawa Town	Misato Town	Fukushima City	Hitachi City	Kusaka City	Hachioji City	Hachioji City	Myoko City	Showa Town	Minowa Town	Inuyama City	Kyotango City	Nishinoonja City	Misaki Town	Kitayasu City	Nagashima Town	
Rusutsu Village	Sendai City	Hirono Town	Yachiyo Town	Misato City	Misato City	Ota Ward	Ota Ward	Yokohama City	Shikama City	Nagawa Town	Gamagori City	Kyotabane City	Humote City	Kibichou Town	Kunume City	Mifune Town	
Tomamae Town	Inanuma City	Naraha Town	Ami Town	Yoshikawa City	Akiruno City	Nigata City	Nigata City	Nigata City	Kofu City	Iijima Town	Komaki City	Kameoka City	Kasai City	Kurashiki City	Osojo City	Kashima Town	
Shiranuwa Town	Natori City	Motomiya City	Daigo Town	Yashio City	Yashio City	Kokubunji City	Kashiwazaki City	Fujuyoshida City	Gifu Pref.	Kasuga City	Fukuyama City	Toshoyoka City	Nagicho	Kurazute Town	Mashiki Town	Minamiyuku City	
Chitose City	Kitakata City	Hitachida City	Hitachida City	Matsubushi Town	Matsubushi Town	Taito Ward	Tsunan Town	Tsuru City	Ashya City	Tokoname City	Ashyu City	Nishiwakura Village	Kotake Town	Kota Town	Kanoya City		
Eesashi Town	Tomé City	Shirikawa City	Ishioke City	Kawagoe City	Kawagoe City	Nishitokyo City	Murakami City	Yamanashi City	Gujjo City	Chiba City	Joyo City	Mita City	Niimi City	Dazifu City	Yanato Town	Shibushi City	
Kitami City	Shiogama City	Aizuwakamatsu City	Tochigi Pref.	Honjo City	Honjo City	Oume City	Shirata City	Obuchi City	Hakshima City	Utsunomiya City	Hachiman City	Amagasaki City	Takahashi City	Miyama City	Arao City	Minamisatsuma City	
Neorobetsu City	Watari Town	Iitaba Village	Nasuhibara City	Mitsui Town	Mitsui Town	Alkheim City	Tainai City	Nirasaki City	Nakatsugawa City	Toyohashi City	Kyotamba Town	Takarazuka City	Hiroshima Pref.	Sasaguri Town	Kum Village	Uken Village	
Shibetsu City	Shiobara City	Minamisoma City	Otawara City	Ageo City	Ageo City	Kiyose City	Ojya City	Koshiu City	Ono Town	Nagakute City	Uji City	Takagago City	Onomichi City	Munakata City	Asagiri Town	Osaki Town	
Hakodadi City	Kakuda City	Mashima City	Nasukarasayama City	Konosu City	Konosu City	Mashinirayama City	Tsubame City	Hayakawa Town	Seki City	Kariya City	Kariya City	Away City	Hiroshima City	Koga City	Yatsushiro City	Izumi City	
Otofuke Town	Rifu Town	Iwaki City	Nasu Town	Olegawa City	Olegawa City	Oshima Town	Toyama Pref.	Muroto Town	Minokamo City	Nishio City	Nagokakyo City	Tanbasayama City	Osakishirajima Town	Miyako Town	Itsakimura	Aira City	
Setana Town	Toma Town	Bihoro Town	Nakagawa Town	Yoshimi Town	Yoshimi Town	Nanto City	Hino City	Naruto Town	Uzoo City	Chiryu City	Mujio City	Kagawa City	Higashihiroshima City	Yoshimoto Town	Hibohyoshi City	Minamitane Town	
Horokanai Town	Shibecha Town	Shimokawa Town	Higashikawa Town	Nikko City	Nikko City	Kitamoto City	Ranzan Town	Toyama City	Asahi Town	Nara City	Dochi Village	Shikano City	Nakama City	Kamiakakusa City	Satsuma Town		
Pippi Town	Kamikawa Town	Takasu Town	Urakawa Town	Hokuryu Town	Hokuryu Town	Sano City	Niiza City	Sakado City	Fujimino City	Kumagaya City	Nachikatsuura Town	Hidakagawa Town	Kanda Town	Shime Town	Buzen City	Kasuga City	

* Prefectures indicated in red are those that made the commitment. Prefectures and municipalities indicated in other colors are those that made the commitment jointly. Prefectures with municipalities that have not made the commitment are omitted.

Regional vitalization based on carbon neutrality



Artist's impression of an environment-friendly cultivation house

Regional business creation
Regional economy vitalization through new jobs and renewable energy

Maximum introduction of renewable energy (ex. solar power, wind, biomass) using local resources

Decarbonization of everyday life through energy saving houses/buildings and sharing of electric vehicles

Decentralized energy system (self-sufficient using renewable energy and storage batteries)



Comfortable living

Saving of electricity charges, safe and secure living (preventing heat shock and heat stroke) and ensured means of transport in the region

Secured even during a disaster

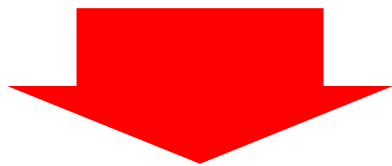
Development of communities free from power outage due to typhoon, earthquake, etc.



Energy balance by municipalities

- 90% of municipalities are **in deficit in terms of energy balance**. For municipalities of small economic scale, in particular, the impact of energy charges that are a basic expense is not small.
- The whole nation **annually pays about 20 trillion yen for fossil fuel from abroad** (in 2021)*

About 20 trillion yen /year for Japan → about 7.5 billion yen for a municipality with a population of 50,000



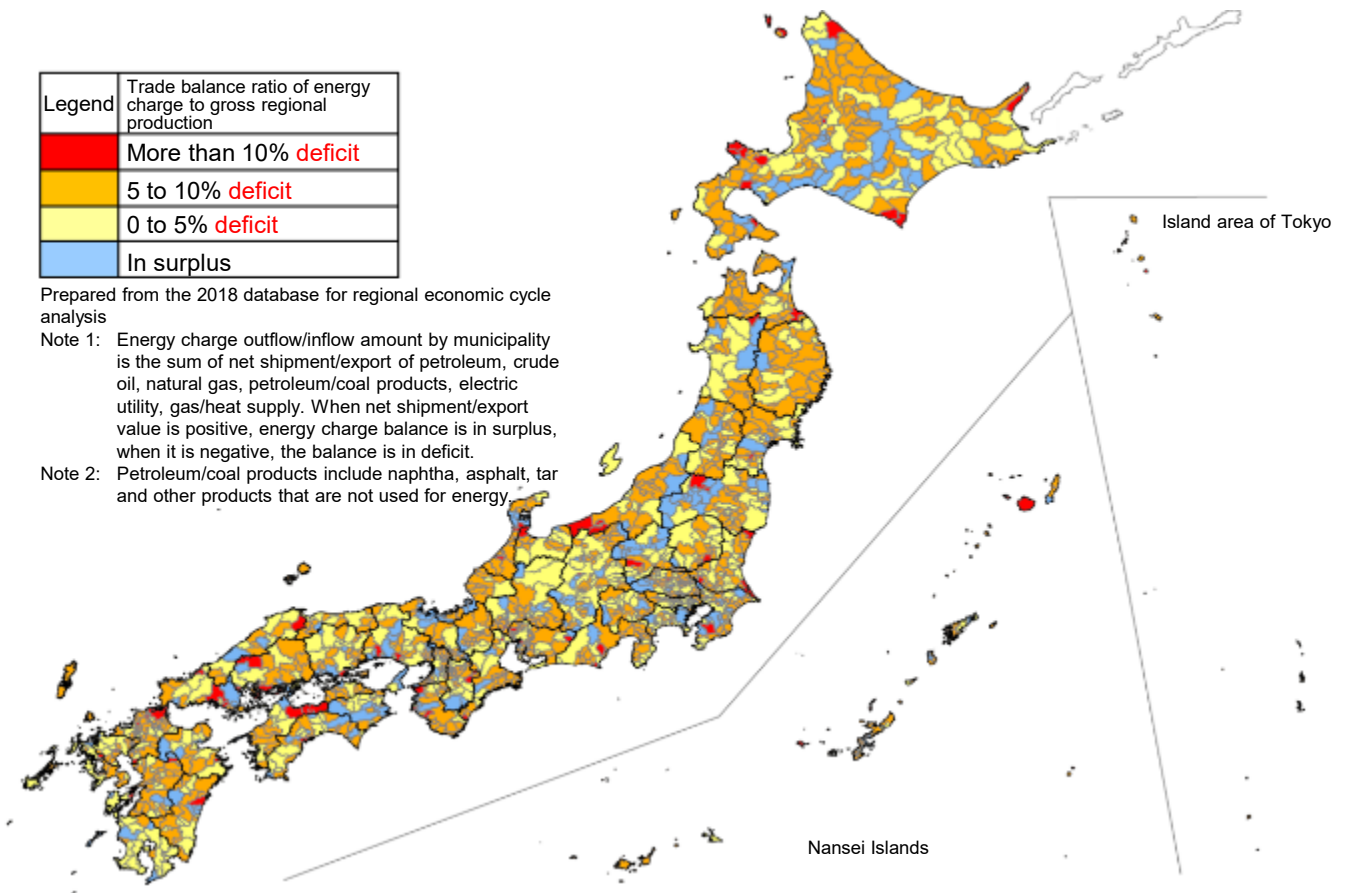
It is important to build a system to circulate money within the regions.

Legend	Trade balance ratio of energy charge to gross regional production
	More than 10% deficit
	5 to 10% deficit
	0 to 5% deficit
	In surplus

Prepared from the 2018 database for regional economic cycle analysis

Note 1: Energy charge outflow/inflow amount by municipality is the sum of net shipment/export of petroleum, crude oil, natural gas, petroleum/coal products, electric utility, gas/heat supply. When net shipment/export value is positive, energy charge balance is in surplus, when it is negative, the balance is in deficit.

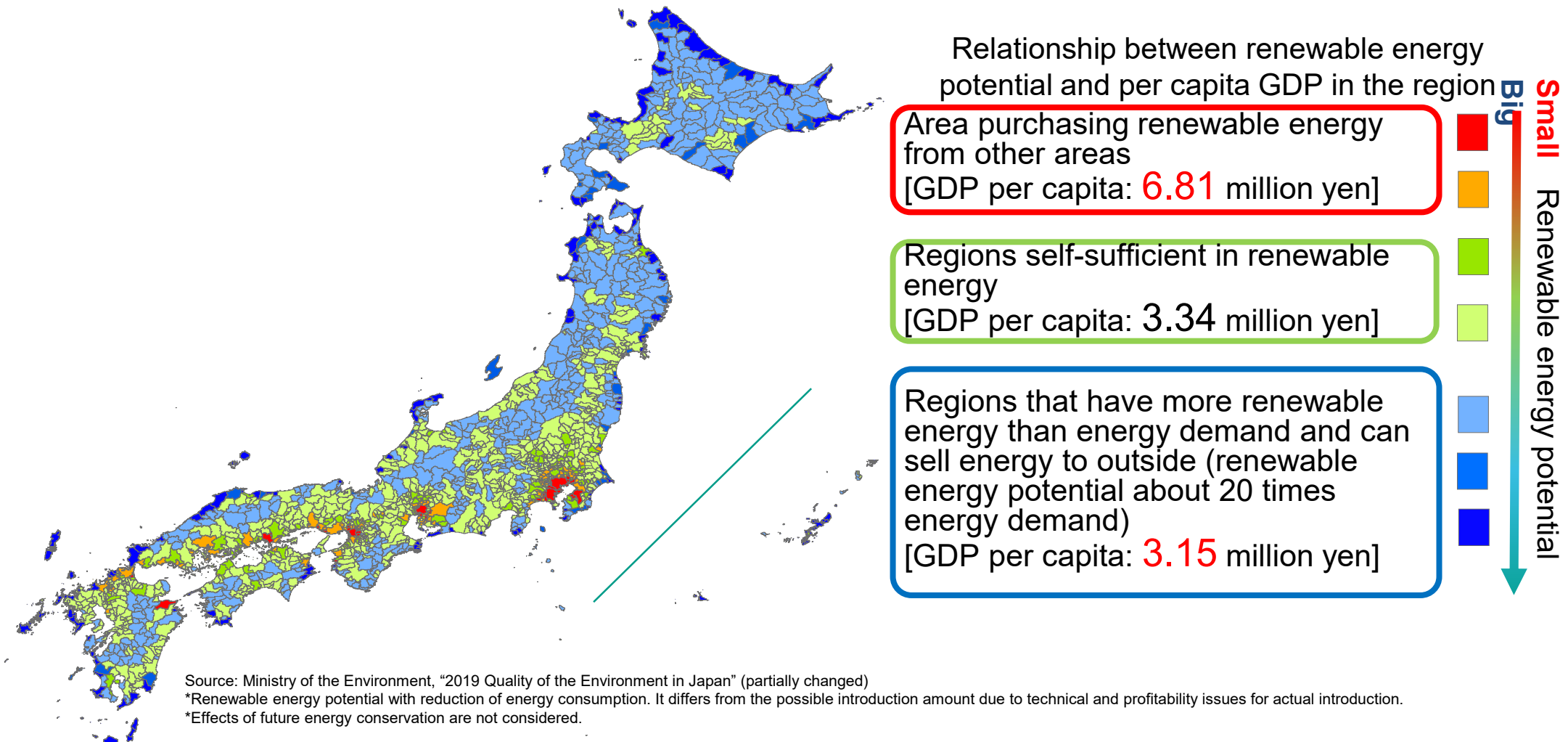
Note 2: Petroleum/coal products include naphtha, asphalt, tar and other products that are not used for energy.



Source: data of “mineral fuel” of “import by major products” of the FY2021 Foreign Trade Statistics of the Ministry of Finance (https://www.customs.go.jp/toukei/shinbun/trade-st/2021/2021_216.pdf)

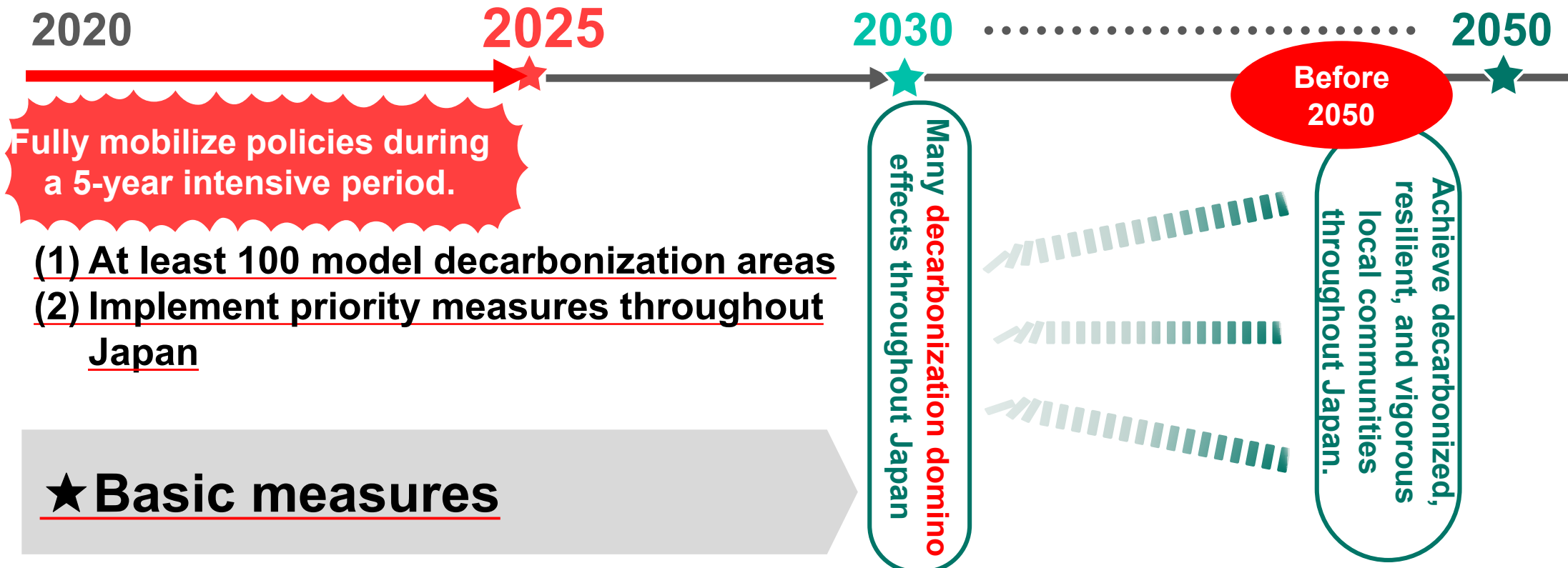
Renewable energy introduction potential by municipality

- Japan's renewable energy potential is **1.8 times** its energy demand.
- **It is important for local areas to effectively use their rich renewable energy potential, while at the same time to cooperate with urban and other areas** with high energy demand.



Overview of the measures of the Regional Decarbonization Roadmap

- Fully mobilize policies **over the next 5 years** and proactively support human capital, technologies, information, and funds.
 - [i] Create at least **100 “model decarbonization areas”** by FY2030.
 - [ii] Implement priority measures throughout Japan (solar energy for personal consumption, energy-saving houses, electric vehicles, etc.).
- Implementing three basic measures ((1) continuing and comprehensive support, (2) lifestyle innovation, and (3) system reforms)
- Spread the model across the country and accomplish decarbonization before 2050 (**decarbonization domino effect**)



In coordination with other policy programs including: “Green Food System Strategy,” “MLIT Green Challenge” and “Green Growth Strategy in line with Carbon Neutrality in 2050”.

Model decarbonization areas

- Based on the regional decarbonization roadmap, **set a course for model projects in accordance with regional characteristics toward decarbonization** in more than 100 model decarbonization areas by **fiscal 2025 and implement the projects by fiscal 2030.**
- In diverse areas, including farming/fishing/mountain villages, remote islands and city blocks, show the direction of projects toward decarbonization while at the same time **solving regional challenges and improving quality of life for residents.**

Model decarbonization area is

an area to achieve net-zero emissions of CO₂ from power consumption in consumer sectors (household, business and other sectors) while at the same time reducing other GHG emissions, including transportation and heat utilization

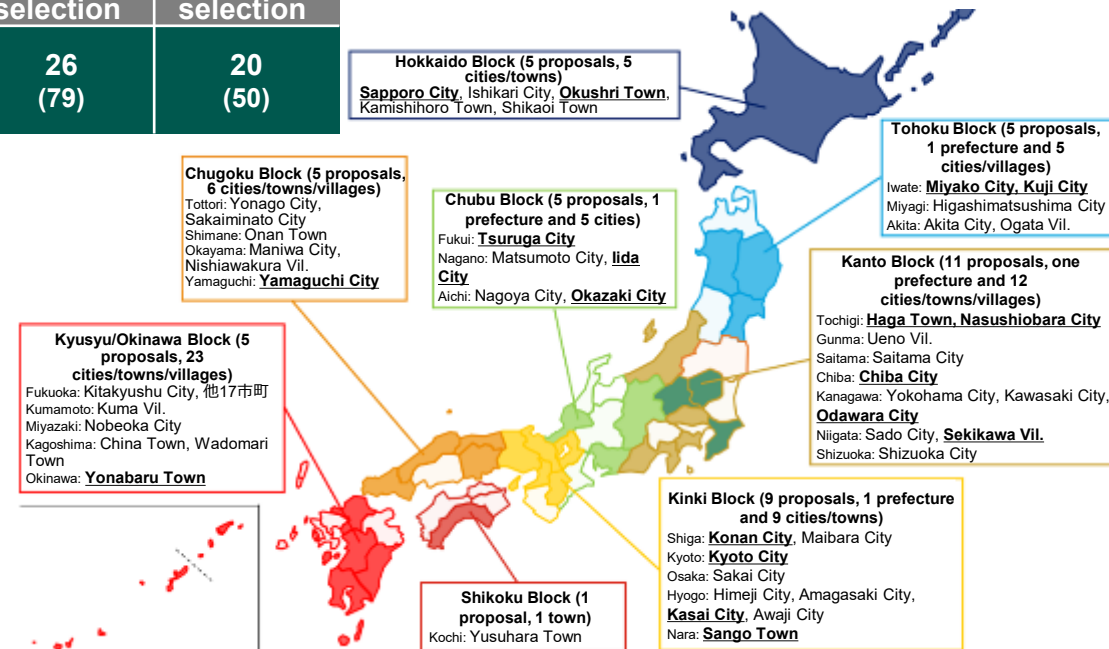
$$\boxed{\text{Power demand of the consumer sector}} = \boxed{\text{Renewable energy and other power supply}} + \boxed{\text{Electric power use reduction through energy saving}}$$

Types of the scope of model decarbonization area

Whole area	Whole area of a municipality, specific administrative division, etc.
Living area	Residential section/housing complex
Business/commercial area	Inner city (big cities, local cities) Universities, industrial parks, ports, airports and other specific sites
Natural areas	Farming/fishing/mountain villages, remote islands, tourist spots, natural parks, etc.
Facility clusters	Group of public and other facilities where it is reasonable to unify energy management

Number of selection proposals by fiscal year
(Municipalities selected jointly are counted as one proposal. The number of the proposals is in parentheses)

2022	
1st selection	2nd selection
26 (79)	20 (50)



3. "Growth-oriented Carbon Pricing Concept in Japan"

GX Implementation Council



- **GX Implementation Council was set up at the Prime Minister's Office** to implement Green Transformation (GX), that is, to transition the economic, social and industrial structure that has been focused on fossil fuels since the Industrial Revolution to one focused on green energy, and to consider the measures needed to implement GX across economic and social systems as a whole **(on July 27, 2022)**.
- **Major points of the discussions** at the GX Implementation Council (from Material 3 of the 1st meeting)
 - **Measures necessary for the rebuilding of a stable energy supply for Japan**
 - **10-year roadmap for reform of the economic, social and industrial structure toward decarbonization based on the measures**

Composition of the GX Implementation Council

Chair: Prime Minister

Vice-Chair: Minister responsible for GX Implementation, Chief Cabinet Secretary

Members: Minister of Foreign Affairs, Minister of Finance, Minister of the Environment and experts below:

- (1) AWAJI Mutsumi, Managing Executive Officer at Chiba Bank Ltd.
- (2) ITOH, Motoshige, Professor Emeritus, The University of Tokyo
- (3) OKAFUJI Yuji, President, MITSUBISHI CORPORATION ENERGY SOLUTIONS LTD.
- (4) KATSUNO Satoru, Chairman of the Board of Directors, Chubu Electric Power Co Inc.
- (5) KONO Yasuko, director, Japan Consumers' Association
- (6) KOBAYASHI Ken, Special Advisor, Japan Chamber of Commerce and Industry, and Corporate Advisor, Mitsubishi Corporation
- (7) SAITO Takeshi, Representative Director, President, ENEOS Holdings, Inc.
- (8) SHIGETAKE Naoki, Managing Director & Senior Partner, Boston Consulting Group
- (9) SHIRAIISHI Takashi, Chancellor, Prefectural University of Kumamoto
- (10) TAKEUCHI Sumiko, Senior Fellow / Member of the Board of Directors, International Environment and Economy Institute
- (11) TOKURA Masakazu, Chairman, Keidanren
- (12) HAYASHI Reiko, Director and Deputy President of BofA Securities Japan Co., Ltd.
- (13) YOSHINO Tomoko, President of the Japanese Trade Union Confederation (RENGO)

Outline of the Basic Policy for the Realization of GX (Green Transformation)

Background

- ✓ More countries and regions are declaring carbon neutrality with **timeline** (more than 90% on a GDP basis), and there is intensifying long-term, large-scale investment competition for GX, which delivers both emissions reduction and economic growth. The era has arrived where the success or failure of GX initiatives is directly linked to the competitiveness of companies and nations. Russia's aggression against Ukraine has again highlighted Japan's energy security issues.
- ✓ In the midst of this, Japan will take full advantage of its strengths by **accelerating GX** and create new demand and markets in the fields of **stable energy supply** and decarbonization, leading to the competitiveness of its industries and economic growth.
- ✓ The Government of Japan **submits the relevant bills necessary to achieve GX** to the 211th Session of the Diet (underlined parts are to be included in the bills)

(1) GX initiatives based on the premise of ensuring a stable energy supply

1) Thorough energy conservation promotion

- Strengthening support for small and medium-sized enterprises to save energy, **establishing energy-saving subsidies for multi-year investment plans**.
- The relevant ministries and agencies will work together to strengthen **support for energy-efficient housing** converting to **insulated windows for high energy efficiency**.
- Based on the revised Act on the Rational Use of Energy, the government set a **guideline for the transition to non-fossil fuel energy to five major industries** (steel, chemical, cement, paper, and automobile), promoting further energy conservation.

2) Making renewable energy a mainstay power source

- Aiming to achieve a renewable energy ratio of 36% to 38% by FY2030, based on the national master plan, **in the next ten years or so, we will accelerate the establishment of the power grid system on a scale more than eight times that of the previous ten years. We will establish undersea direct current power transmission cables from Hokkaido Prefecture with the aim of completing them by FY2030. We will prepare a financial environment necessary for these system investments**.
- To increase the deployment of offshore wind power, we will **establish the Japanese version of centralized system** and begin a public offering with **new public offering rules**.
- We will **strengthen business rules to introduce renewable energy in coexistence with local communities**. We will socially implement next-generation solar cells (Perovskite solar cells) and floating offshore wind power.

3) Utilization of nuclear power

- We will make the **rebuilding of the next-generation advanced reactors at the sites where the nuclear power plant will be decommissioned**, on the premise of ensuring safety. We will discuss other development and construction projects, considering the situations of restart in each region, gaining of understanding by local communities, and other future developments.
- **Subject to a strict safety review, additional extensions will be allowed only for certain shutdown periods, with an operating period limit of 40 years plus 20 years**. In addition, we will **promote nuclear fuel cycles, develop a mechanism sharing knowledge and securing funds for steady and efficient decommissioning, promote public understanding under the initiative of the national government, and drastically reinforce strengthen measures to actively encourage local governments and other parties**.

4) Other important matters

- In order to construct hydrogen and ammonia production and supply networks, we will implement **a support system that focuses on their price differences with existing fuels**. We will design a comprehensive system and compile a national strategy in order to lead the world in the hydrogen field.
- In order to secure supply capacity in the electricity market, we will steadily operate the capacity market and **promote systematic investment into decarbonized energy sources by implementing a power reserve system and long-term decarbonized power source auction**.
- We will maintain interests in international projects such as Sakhalin-1 and -2 under current conditions given the importance of energy security.
- In light of the growing uncertainty in the LNG market, we will build **a mechanism to strategically secure surplus LNG** and support the development of technologies such as those related to methane hydrate.
- In addition, we will promote research and development, capital investment, demand creation, and other GX efforts in the areas of carbon recycled fuels (e.g., Methanation, SAF, synthetic fuels), batteries, resource recycling, next-generation automobiles, next-generation aircraft, zero-emission ships, investment into digital technology for decarbonization, housing and buildings, harbors and other infrastructure, food and agriculture, forestry, and

(2) Realization and implementation of the "Pro-Growth Carbon Pricing Concept" and other initiatives

- Last May, Prime Minister Kishida announced that more than 150 trillion yen of public and private GX investments would be made over the next decade. In order to achieve this, **the government has compiled a comprehensive strategy**, and will swiftly achieve and implement the following pillars.

1) Upfront investment support utilizing new government bonds

- We will **establish new government bonds** (with the aim of issuing them in a new form that conforms to international standards) and implement **upfront investment support of 20 trillion yen over the next ten years** in order to form long-term support measures and increase predictability for private companies. For the cases that **are very difficult for the private sector to make investment decisions alone**, we will build **integrated regulations, systems, and measures** for investments in areas that will contribute to **the strengthening of industries' competitiveness, economic growth, and emission reductions**.

2) GX investment incentives through "Pro-Growth Carbon Pricing Concept"

- We will position carbon emission prices through growth-oriented carbon pricing and increase the value added of GX-related products and businesses.
- We will indicate ahead of time a policy of implementing GX efforts as we **reduce the total energy-related burden in the medium- to long-term after setting a certain amount of time to make GX efforts** instead of implementing them immediately.

⇒ In addition to the support measures, we will **establish a mechanism to give incentives to businesses on the forefront of GX efforts**.

<Specific examples>

- GX League to be developed in stages → Full-scale operation of carbon emissions trading system by companies, including those in industries with high emissions [FY2026 onward]
- We will implement **allowance auctioning*** similar to those in Europe for **power generation businesses in gradual stages [FY2033 onward]**
*: Fixed contributions based on CO₂ emissions
- We will implement a **"GX-Surcharge" (Surcharge on fossil fuel supply)** for companies such as **fossil fuel importers [FY2028 onward]**

* In addition, **GX Promotion Organization will be established** to carry out the above in a unified manner

3) Utilization of new financial instruments

- **The GX Promotion Organization will consider and implement supplementary measures to address risks during the gradual social implementation of GX technologies in order to accelerate investment into GX**.
- We will **create an environment with measures to promote sustainable finance**, including disclosures of information related to climate change, in addition to strengthening efforts to **foster international understanding** of transition finance.

4) International strategy, Just Transitions, and GX of small and medium enterprises and other businesses

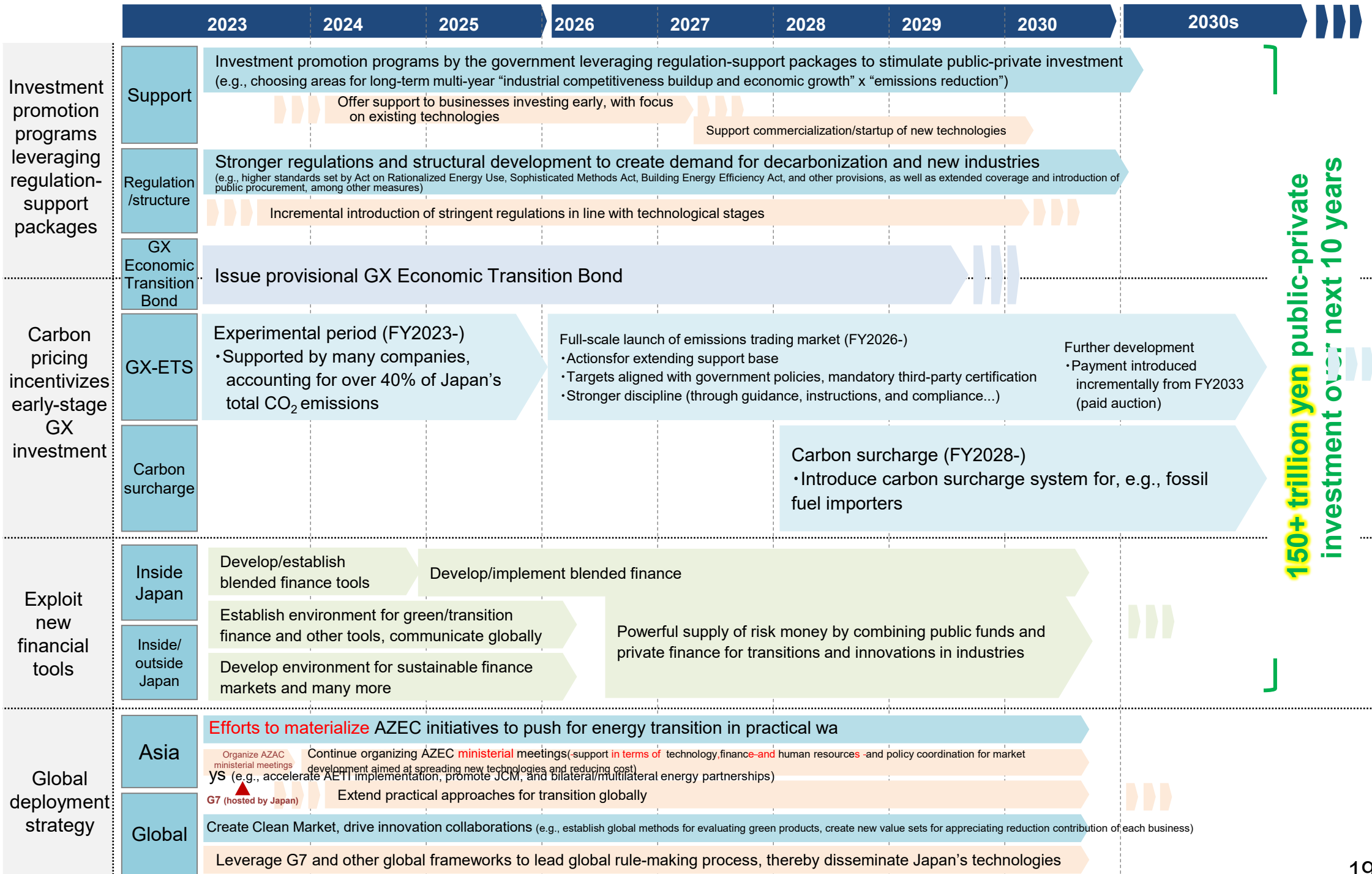
- We will achieve the **"Asia Zero Emissions Community"** vision and further promote GX in Asia.
- We will promote **skill acquisition** and **smooth labor mobility** in growth areas such as green ones through reskilling support and other measures.
- In addition to the creation of leading regions of decarbonization and the nationwide deployment, local governments will utilize financial support and take the initiative in decarbonizing of the administrative operations. We will launch a new national movement and **stimulate demand for decarbonized products**.
- We will promote efforts for entire supply chains including those of SMEs through support that uses subsidies including **subsidies for business restructuring, training of human resources for SME support organizations that provide push-type support, further expansion of the Declaration of Partnership Building**, and other measures

(3) Progress evaluation and necessary reviews

- The GX Implementation Council and others will regularly conduct progress evaluations and do necessary reviews effectively taking into account progress in GX investments, global trends, impacts on the economy, and other factors.
- We will clarify the items that require legislative measures in a bill that will be submitted to the 211th Session of the Diet and be sure to implement them.

End-to-end roadmap for the next 10 years

2050



150+ trillion yen public-private investment over next 10 years

"Growth-oriented Carbon Pricing Architecture" (draft)

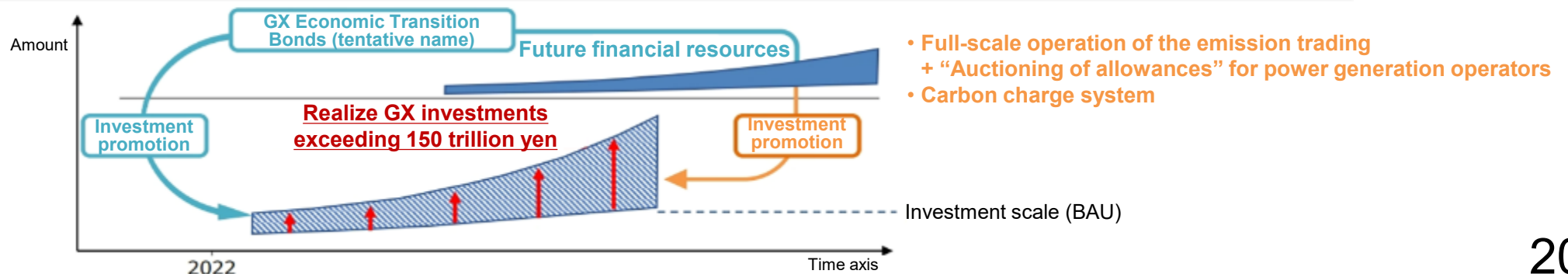


Handout at the 11th Joint Meeting of the Subcommittee on Green Transformation Promotion, Committee on Industrial Science and Technology Policy and Environment, Industrial Structure Council, and the Subcommittee on the Long-term Energy Supply and Demand Outlook toward 2050 Carbon Neutrality, Basic Policy Subcommittee, Agency for Natural Resources and Energy (December 14, 2022)

"Growth-oriented Carbon Pricing Architecture" (draft)

- In order to **achieve both 2050 carbon neutrality and other international commitments on one hand and strengthening of industrial competitiveness and economic growth**, Japan will **implement over 150 trillion yen public-private investments** in the next 10 years. ⇒ We will promptly embody and implement **"Growth-oriented Carbon Pricing Architecture"** consisting of the following pillars:
 - (1) **Prior investment support** using **"GX Economic Transition Bonds" (tentative name) * (20 trillion yen in the next 10 years)**
 - * **to be redeemed by 2050.**
 - **Investment promotion combined with regulatory and support measures (P.17)**
 - Multiple-year support for innovative R&D and facility investments contributing to decarbonization of energy and transformation of the industrial structures
 - (2) **Prior incentive for GX investments through carbon pricing (P.56)**
 - It is not introduced at once but **will start at a low burden during the initial phase of GX activities and the burden will be gradually raised.**
 - The basic principle is **to introduce the system while gradually reducing the total cost pertaining to energy in the medium- to long-term.**
 - **Increase value added of GX-related products/businesses through pricing of carbon emissions**
 - (i) **Full-fledged operation of "emission trading system"** based on an ambitious reduction target considering the circumstances of individual enterprises, including high-emission industries **[from around fiscal 2026]**
 - + **Introduce "auctioning of allowances" similar to that of EU by steps to power generation operators [from around fiscal 2033]** → Acceleration of **power source decarbonization**
 - (ii) **Introduce a carbon charge system [from around fiscal 2028]**
 - Impose on importers, etc. in accordance with CO₂ emissions by fossil fuel type. Introduce at a low level and raise gradually
 - (3) **Use of new financial methods (P.67)**
 - Strengthening of financial support in public-private cooperation, promotion of sustainable finance, fostering of international understanding of the transition, etc.

⇒ **Establish a system to give an incentive for advancing GX investments by presenting these policies.**



4. Evolution into Regional Circular and Ecological Sphere

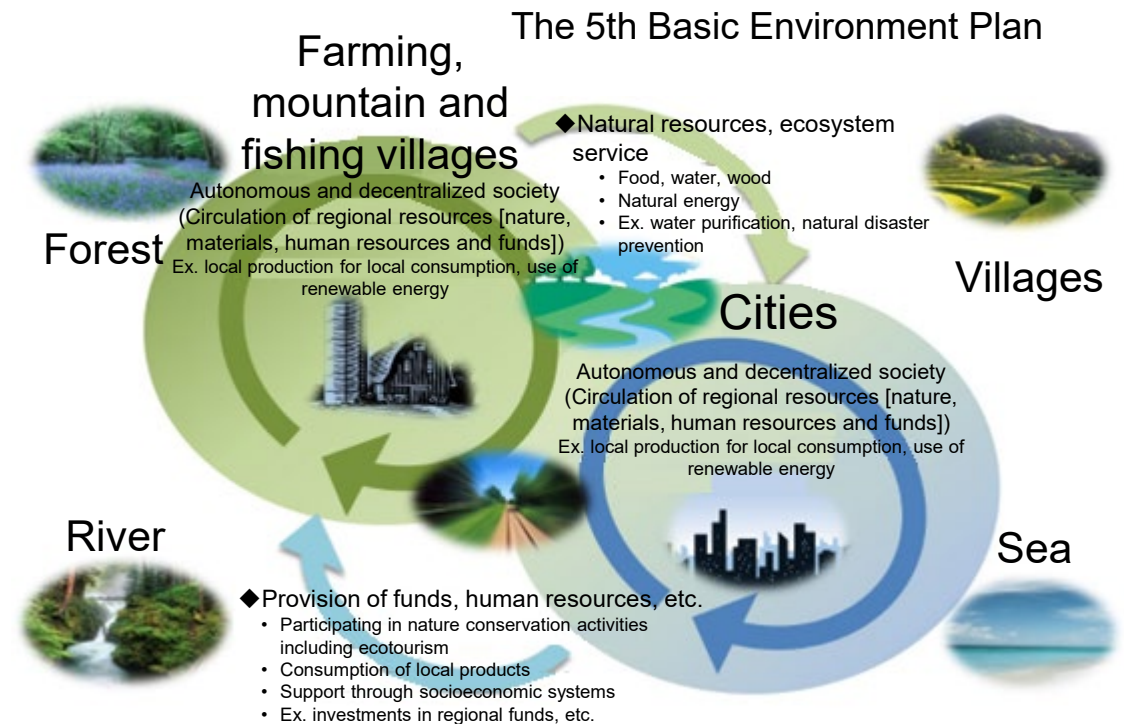
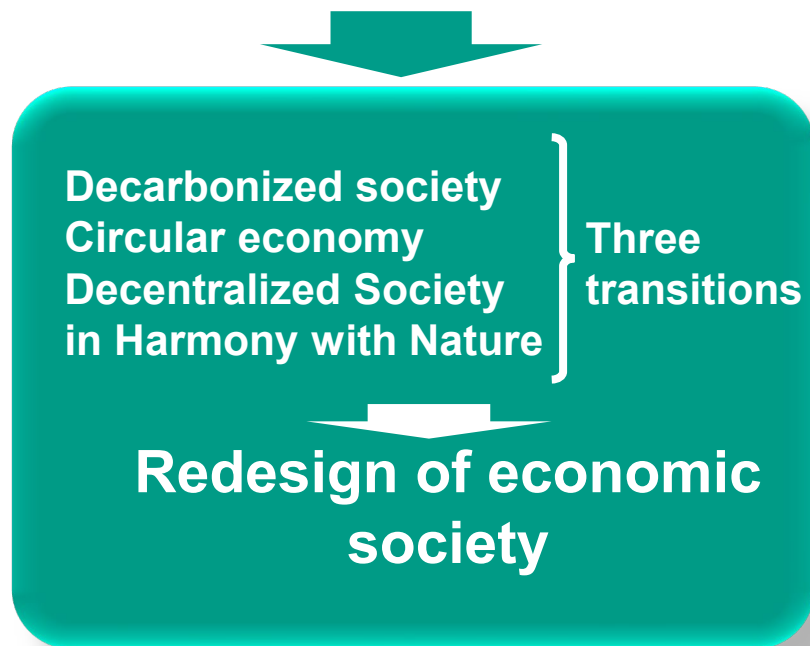
Regional Circular and Ecological Sphere = Local SDGs



Aiming to maximize the vitality of the regions

- Form an **autonomous and decentralized society** by taking advantage of local resources.
- **Supporting each other** through complementation according to the regional characteristics

- ✓ **Integrated improvement of the environment, economy and society**
- ✓ **Create innovations from every aspect**
- ✓ **Enhance broad partnerships**

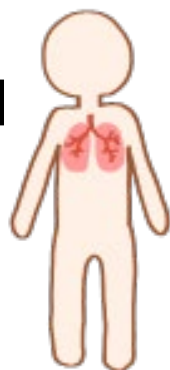


Regional revitalization, sustainable regional environment, realization of a civilized society centered on the environment and life

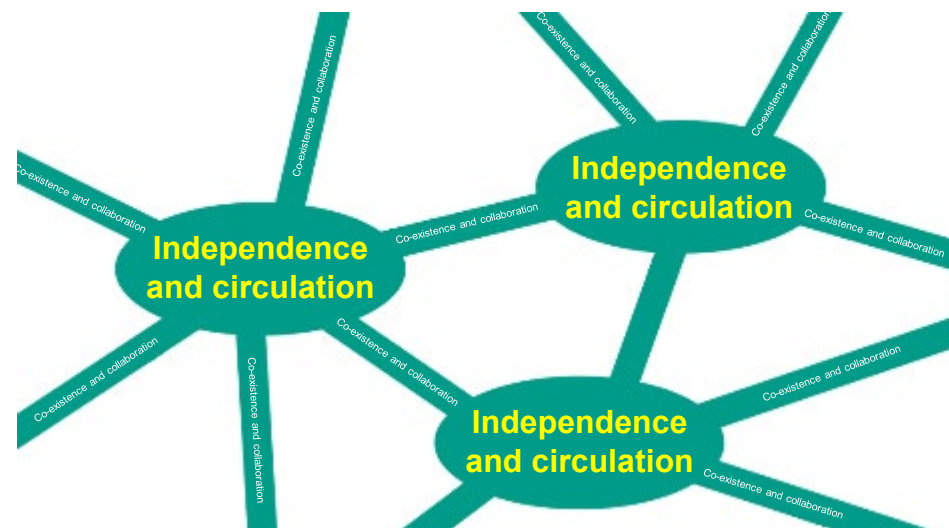
Concept of “Regional Circular and Ecological Sphere”



- **Human** =
Cells and tissues are dispersed and function independently.



- **Regional Circular and Ecological Sphere** = “Independent” regions that sustain themselves through cyclic use of resources mutually cooperate to function.



- **SDGs** =
No one will be left behind.
No one will be left behind (every individual plays an active role)

SUSTAINABLE DEVELOPMENT GOALS
17 GOALS TO TRANSFORM OUR WORLD



Source: United Nations Information Center

Circulation of regional resources at the optimal scale according to the characteristics of the region and the nature of the resources

- Resources suitable for circulation in a small area
⇒ Cycle in a small area, such as communities and municipalities
- Resources suitable for circulation in a broad area
⇒ Cycle in a broader area, such as river basins, prefectures and the country

Circulation of regional resources in the town, the region, the country and the world

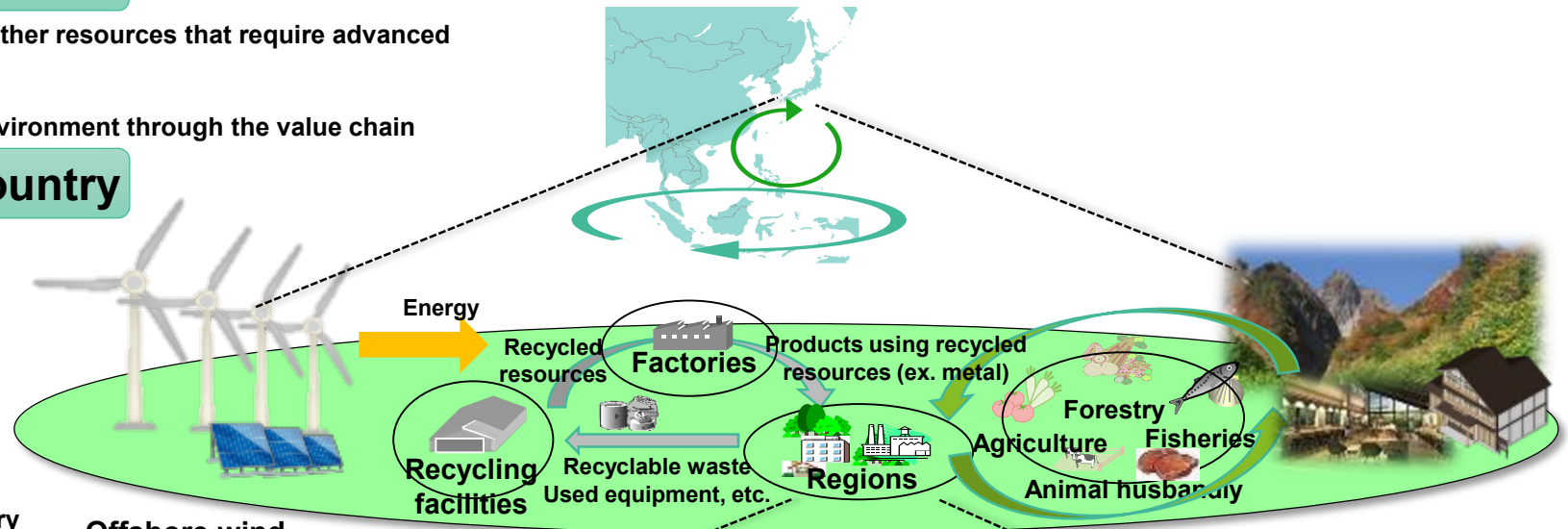


International

- Cyclic use of rare metals and other resources that require advanced recycling technology
- Exchange of inbound tourism
- Reduction of burden on the environment through the value chain

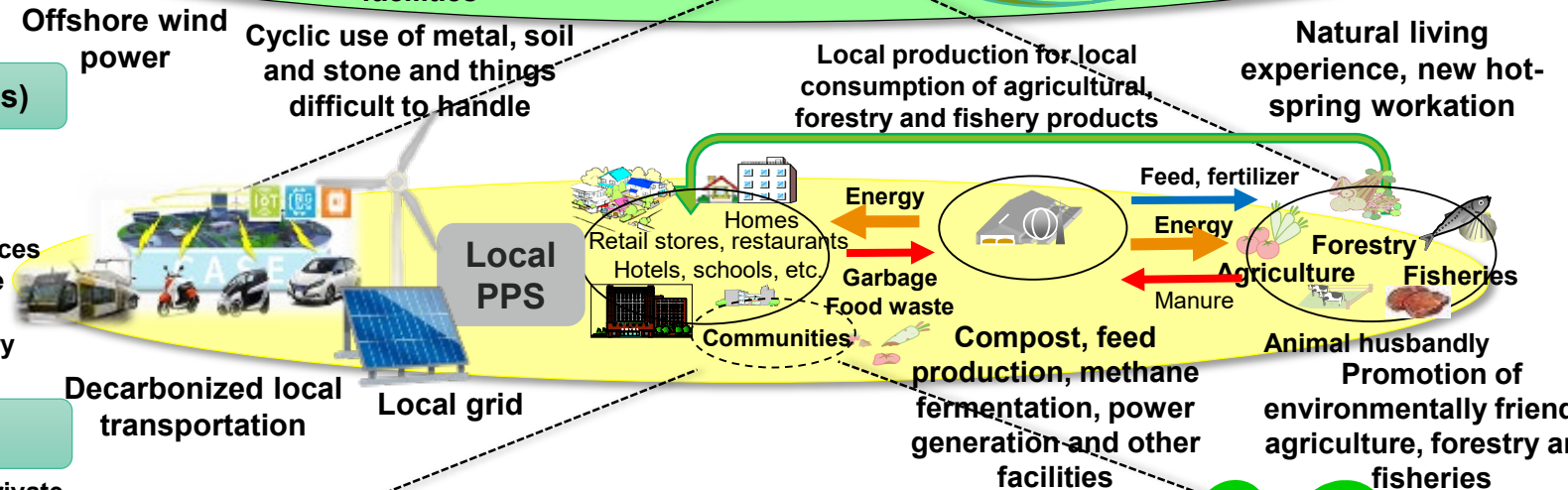
Within the block/country

- Interregional provision of renewable energy
- Cyclic use of metal, soil and stone and things difficult to handle
- Urban-rural exchange
- Exchange for reason for living/job satisfaction
- Domestic consumption of agricultural, forestry and fishery products



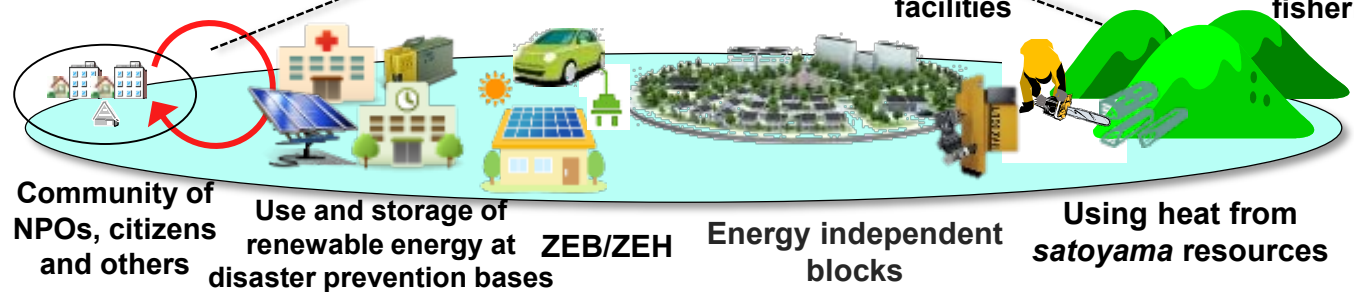
Regions (municipalities, basins)

- Local production for local consumption of energy, local PPS
- Decarbonized local transportation
- Use of energy from biomass resources
- Environmentally friendly agriculture
- Local production for local consumption of agricultural, forestry and fishery products

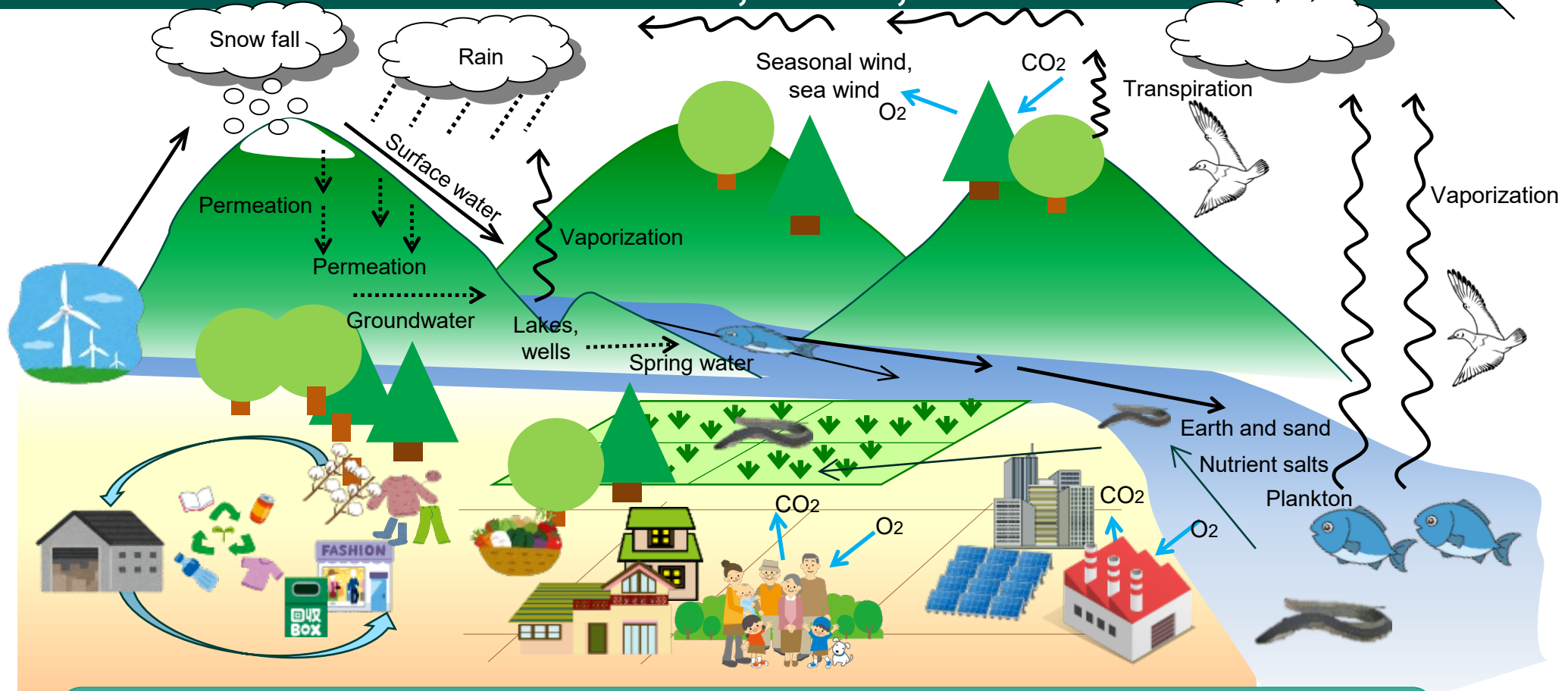


Communities (settlements, school districts)

- Energy-independent blocks using private electricity lines
- ZEB/ZEH
- Use and storage of renewable energy at disaster prevention bases
- Reuse, repair and recycling in living spheres
- Use of bio fuel from waste food oil
- Use of heat from wood biomass in *satoyama* (village-vicinity hills)



Cyclic use of blessings and resources created from connections between forests, rivers, seas and villages



Resources generated from water/matter cycle in forests, villages, rivers and seas (ecosystem service)

Underground resources already used above ground

- Pure and rich water, clean air, preserved soil, stable climate, safe and delicious food, local specialties, culture rooted in the natural environment of the region, renewable energy (solar power, wind, water, biomass), wood, bamboo and other forest resources
- Metal resources already used above ground, plastic, etc.

Toward post-coronavirus age



Three transitions toward economic and social redesign in response to the COVID-19 pandemic and climate crisis: a decarbonized society, a circular society, and a decentralized society in harmony with nature

The regional circular and ecological sphere is the embodiment of those three transitions

Its realization will be supported by open innovations by people in various fields, including administration, residents, enterprises, universities, NPOs, researchers, engineers and investors.

Draw out human and natural capital potential from individual regions through the fusion of cyberspace and physical space by taking advantage of IoT and digital transformation.

Thank you for your attention.