

(The EU-Japan Centre's Event)  
EU and Japan Long-term Climate  
Change Strategies

# Progress of Japan's long-term low GHG emission development strategy under the Paris Agreement



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Ministry of the Environment, Japan

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1 . Discussion progress of Japan's long-term low GHG emission development strategy by MoE, Japan

## Discussion progress of Japan's long-term low GHG emission development strategy by Ministry of the Environment, Japan

- ❑ Since July 2015, meeting for Long-term Strategy on Climate Change has been established as Minister of the Environment's private consulting group, and have been discussing.
  - In the meeting in February 2016, a proposal was made that the goal should be to simultaneously achieve drastic reduction of GHG emissions and structural economic and social problems.
- ❑ Since July 2016, it was discussed in the Global Environment Committee of the Central Environment Council, Subcommittee on Long-term low-carbon vision.
  - In March 2017, "long-term low-carbon vision" which shows the direction of measures on image of long-term, significant reduction (e.g. low-carbon power source is more than 90%) was summarized at the Global Environment Committee of the Central Environment Council.
- ❑ After the "long-term low-carbon vision" summary, the committee continued to discuss the path for achieving long-term significant reduction, and Ministry of the Environment presented its view based on the result.
  - In March 2018, "Basic concept towards long-term significant reduction" was published based on the "long-term low-carbon vision". It summarizes the importance of "socio economy system" and innovation of "innovative technologies" that are not on the conventional extended line, big chances for private sectors towards decarbonization, etc.

# Background of long-term significant reduction

- The Paris Agreement is a turning point for the construction of decarbonated society throughout the world. All the countries of the world have made a big steering towards decarbonized society, and activities such as ESG investment and divestment have expanded. It is important to take advantage of our strengths to contribute to the drastic reduction of domestic and global GHG emissions and to lead to further economic growth at this turning point.
- It is also important to utilize global warming countermeasures as one of the pillars for measures to support creating affluent future, keeping in mind simultaneous solution of social problems such as declining birth rate / aging society, regional issues, international affairs, and implementation of SDGs.
- Decarbonization is a fundamental issue for the construction of a sustainable society (circular and ecological society that realizes healthy substance/circulation of life, coexistence of nature and human, etc.). It is necessary to utilize global warming countermeasures and lead to simultaneous solution of economic and social problems for a definite direction of a shift toward decarbonized society.

## Transformation of business environment in the world

➤ Management strategy towards climate change will affect participation to global supply chain and assessment of investment decision.

### Investment (Emergence of promising markets)

- Appx 3 trillion USD market for energy saving in buildings, industries, and transportation and appx 9 trillion USD market for decarbonization of electricity sector is expected (IEA, Yr2016-2050 cumulative)
- 5-7 trillion USD market is expected to achieve SDGs (UNCTAD, untilbYr2030)

### Production and consumption (Intention towards sustainability)

- Production/consumption intention towards globally large scale sustainability such as renewable energy and EV evolved. The number of companies engaged in SBT to set corporate reduction targets aiming at 2°C, and those declaring "RE 100" supplying with 100% renewable energy are increasing.

### Finance (System supporting the market)

The size of ESG investment is 22.9 trillion USD. Japan was 473.6 billion USD (2016), and has potential.

## Simultaneous solution of economic and social problems, driven by climate change countermeasures

**Society where everyone shines**  
in declining birthrate / aging society

**Future designing by measures against climate change** (e.g.)

- With realization of a super smart society, housekeeping became more efficient, and working styles have diversified.
- A safe life with insulated housing and ICT health management /watch over.

**Bustling region**  
on the future of locality

**Future designing by measures against climate change** (e.g.)

- Collaboration between production and consumption by utilizing regional resources.
- Increasing value of cites with biomass resources and functional buildings.

**Reliable country**

against unstable international affairs

**Future designing by measures against climate change** (e.g.)

- Fuel shift with no insecurity about the price increase of petroleum fuel.
- Improvement of self-sufficiency rate and outflow of national wealth through resource circulation.

## 1. Acquire business opportunities with solid direction of decarbonization and various strengths

- It is important to ensure "resilience" against future uncertainty by having "solid direction" of decarbonization and Japan's "strength of various technologies" towards this direction. This will be the source of international competitiveness, leading to win decarbonization market.
- It is a big business opportunity in the process of achieving significant reduction by upgrading the stage of Japan's strengths from individual technology to "demonstrating the collective strength" including cooperation between different industries = taking opportunities and facing challenges = necessity to overcome problems.

## 2. Create innovation through measures to make maximum use of private vigor

- Innovation of "socio economic system" to disseminate innovation of "technology" is important to make use of our technology. To that end, policies are necessary to take full advantage of private vigor.

## 3. Take measures "now" and establish the basis for significant reduction by around 2040

- While widely sharing public awareness that the climate change problem is a theme to deal with a sense of danger (danger of losing this beautiful earth to future generations, danger of being left out of the global supply chain, etc.), we will take measures "now" to create  
(For example, to consistently support Japan's unblurred policy of decarbonization, to encourage popularization through internalization of environmental values, and to consistently support research, development, demonstration and dissemination of promising technologies)
- This will enable a society in which supply and demand of decarbonized / low-carbon products and services are established, and basis of significant reduction is established by 2040 at latest, along with infrastructure of decarbonization.

Formulate a long-term strategy as a development strategy for the future that will drive decarbonization, based on this basic concept

\*Particularly important points based on the basic idea, vision picture, and direction of policy presented in the long-term low-carbon vision.

## 1. Actions based on science is fundamental

- It is necessary to keep **cumulative emissions** below a certain amount, to achieve the **Paris Agreement target**. Based on the best available science, Japan will **continue to promptly reducing the emissions while managing its progress**.

## 2. Contribution to global GHG reduction as well as domestic reduction

- Continuously polishing our diverse technologies and know-hows in line with the direction of decarbonization in the domestic market will lead to **winning decarbonized markets** in the world, which are expected to become huge.
  - **Massive GHG reduction in Japan**
- Japan will introduce new **technological innovations** and **socio economy system innovation** to promote technologies, to meet the social needs of a decarbonized society, and realize significant reduction, by taking **measures to make maximum use of private vigor**, such as internalization of environmental value and disclosure of environmental information that evoke new demand.
  - **Contribute to global GHG reduction**
- Japan will **expand** environmental technologies and high-quality infrastructure, products and services **to the world**, which are the strengths of Japan, as well as create innovation that is beneficial to both parties (**co-innovation**) through collaboration with our partner countries.

## 3. Key to long-term significant reduction is innovation

- In order to realize a sustainable society that brings high-quality living in the future, Japan will **pursue innovation of technologies and social systems** that are not conventional extension at our best effort, and work together with diverse stakeholders to combat climate change and economic / social problems simultaneously.

## Countermeasures direction towards long-term significant reduction

- The main pillars of measures are **energy efficiency** (not only improvement of efficiency process but also fundamental energy saving such as promotion of use of recycling products), **utilization of low-carbon power supply** based on renewable energy and **energy shift** such as electrification and low-emission fuel.
- It is important to realize with a concrete picture with a path for each sector, such as **carbon emissions of the nation's lives (home and private cars)** shown in the "long-term low carbon vision" **should be almost zero**, and **more than 90% of the power sources should be decarbonized** (renewable energy, nuclear power and thermal power with CCS).

## Policy direction towards creating innovation

- For significant reduction, it is considered that there is a considerable reduction potential through radical dissemination of countermeasure technologies currently introduced, and **policies to create innovation of socio economic systems** that promote countermeasure technology are important.
- Specifically, to maximize the market vitality by **price signals**, strengthen efforts to encourage **selection by customers**, **environmental information disclosure** and training of **actors**. These appropriate combinations are important.
- Technology innovation is also important, and it is important to have predictability by indicating a **consistent policy** of long-term significant reduction, and **consistent support** from R&D to dissemination etc.
- **Sharing the direction** of science technology and innovation policy (**integrated innovation strategy**) in government, measures will be implemented in close cooperation with the ministries and agencies to implement concrete strategies that will make us win in the world and actively contribute to SDGs towards a decarbonized society.



## 2. Discussion at the Meeting on a Long-Term Strategy under the Paris Agreement as Growth Strategy in Japan

# Meeting summary

- It has been held four times since August 2018.
- Future agenda (plan) is the discussion of draft proposal for the recommendation.

## Meeting summary

- 1st meeting (March 3, 2018)
  - Agenda: Admin of the meeting, remarks from the committee
  - Attendees: Committee members, Prime Minister, Chief Cabinet Secretary, Minister of the Environment, etc.
- 2nd meeting (September 4, 2018)
  - Agenda: Explanation from each ministry minister, External experts hearing No.1 ("Innovation"), exchange of opinions
  - Attendees: Committee members, external experts, Minister of the Environment, Minister of Economy, Trade and Industry, etc.
- 3rd meeting (November 19, 2018)
  - Agenda: Expert hearing No.2 ("Green finance", "Green business / overseas development" and "Region"), exchange of opinions
  - Attendees: Committee members, external experts, Minister of the Environment, Minister of Economy, Trade and Industry, etc.
- 4th meeting (December 21, 2018)
  - Agenda: Free discussion for draft proposal for the recommendations.
  - Attendees: Committee members, Chief Cabinet Secretary, Minister of the Environment, Minister of Foreign Affairs, Minister of Economy, Trade and Industry



(1<sup>st</sup> Meeting)

## Future agenda (plan)

- the discussion of draft proposal for the recommendation.

# Discussion in the meeting so far (summary)

- Perspectives of committee members' feedback

- ✘ Extracted from the free discussion paper submitted to the 4th meeting and the opinion of the members at the meeting

## 1. Recent situation surrounding global warming countermeasures

## 2. Point of view in planning long-term strategy

- Necessity of long-term vision and goal
- Direction of long-term strategy (virtuous cycle of environment and growth, SDGs, speed)

## 3. Our country's overall long-term vision

## 4. Long-term vision and measure/scheme of each sector

- Energy (electric power, hydrogen, renewable energy, distributed energy system, Coal-fired power, CCUS)
- Industrials
- Transportation
- Local community/Livelihood

## 5. Cross sectoral measures/schemes

- Innovation (importance of cross sectoral innovation, innovation for social implementation / dissemination, direction of policies, scientific review)
- Green Finance (importance of green finance, direction of policies)
- Business-led international development (importance of Business-led international development, direction of policies)
- Others

# Discussion in the meeting so far (Details①)

- Perspectives of committee members' feedback

## 1. Recent situation surrounding global warming countermeasures

## 2. Point of view in planning long-term strategy

### I. Necessity of long-term vision and goal

- (1) Ambitious vision is necessary to achieve targets of the Paris Agreement. In order to dramatically develop the style of socio economy, it is important to set an ultimate goal as "what it should be", and pursue all possibilities by challenging towards it.
- (2) It is important to present a big picture for significant reduction as a goal of the Japanese government, have all stake holders to seek for all possibilities, and work towards implementation. Note that long-term target(vision/goal) and mid-term target (target) are different. We should discuss by clearly separating "vision" and "process". etc.

### II. Direction of Long-term strategy

#### 1. General

- (1) New vision to drive future international trend, and direction of new unconventional policies are necessary. It is important to take a view for sustainable growth not only for Japan, but also for global as a whole.
- (2) The Japanese government should indicate vision and image of hopeful future, which many people can sympathize with. etc.

# Discussion in the meeting so far (Details②)

- Perspectives of committee members' feedback

## 2. Virtuous cycle of environment and growth

- (1) Global warming measures are no longer costs for companies, but a source of competitiveness.
- (2) It is important to turn the virtuous cycle of the environment and growth more and more and to shift from defending the climate change problem to attacking it. etc.

## 3. SDGs

- (1) Definition of "happiness" is changing, and lifestyle could value not only GDP, but also sustainability, humanity and sociality. The Japanese government should aim to improve quality of life on the base of SDGs concept.
- (2) With the social system that mix and match interregional network, the Japanese government should implement integrated improving SDGs model at local level which is comprised of not only de-carbonization, but also "economy", "society", and "environment" . etc.

## 4. Speed

Should show procedures to quickly realize large scale transformation towards decarbonization. etc.

## 3. Our country's overall long-term vision

- (1) Ambitious target of long-term strategy is the direction, vision and goal to be aimed for. The meaning differs greatly between long-term strategy and Mid-term target.
- (2) The Japanese government should hold high vision for Yr2050 long-term strategy 【80% / decarbonization / unwavering target / 1.5°C / net zero emissions beyond Yr2050】 etc.

# Discussion in the meeting so far (Details③)

- Perspectives of committee members' feedback

## 4. Long-term vision and measure/scheme of each sector

### I. Energy

#### 1. General

- (1) 90% of Japan's greenhouse gas emissions arise from energy consumption. Energy policies and global warming measures are two sides of the same coin, and Japan should lead the global energy transition and decarbonization.
- (2) Policies that is taking in account the 3 E+S balance is vital; e.g. energy security assurance and improving energy self-sufficient rate, environmental adaptation, and implementation of low cost international competitiveness. etc.

#### 2. Electric Power

- (1) Electrification for various usage is necessary. From securing autonomous investment point of view, creating electricity demand is a challenge.
- (2) Decarbonization of electric sector (carbon free electric supply) by Yr2050 should be realized, whose main source would be renewable energy. etc.

#### 3. Hydrogen

- (1) For the first time in the world, Hydrogen Ministerial Meeting was held in Japan in October 2018. The Japanese government should hold large-scale goal like realization of hydrogen society through such meetings, and with international cooperation and industry-academic-government should tackle affordable/stable/mass production technology of carbon free hydrogen, and technology development for supply infrastructure maintenance. This kind of effort should be the main pillar of Japan's long-term strategy.
- (2) Global expertise and system to attract risk money is definitely necessary towards realization of hydrogen society. Specific process would be supporting policies to encourage technology innovation, excavate potential demand, and work on a bold regulatory reform with global partnership, which would produce breakthrough. etc.

# Discussion in the meeting so far (Details④)

- Perspectives of committee members' feedback

## 4. Long-term vision and measure/scheme of each sector (Continuation)

### 4. Renewable Energy

- (1) To further promote renewable energy among local community and houses towards main power supply, it is important to dramatically reduce cost for international competitiveness, secure flexibility, promote and invest in terms of technology / system that would lead to maximum usage of distributed electric power.
- (2) Renewable energy has almost no issue in terms of technology, however has systematic or intercarrier issues. It is necessary to overcome such barriers one by one towards main power supply. etc.

### 5. Decentralized Energy System

- (1) Utilization of distributed energy by leveraging renewable energy such as biomass and hydropower in regions is vital. the Japanese government should aim for local community led distributed zero emission society. Society to support new demand such as smart mobility should be created, by locals owning and structuring renewable energy and distributed grid, thus have electric as their local production.
- (2) It is therefore important for the government to support construction of local production/consumption energy system, to construct so by inducing high versatility technologies through ESG investment, enabling high efficiency of renewable energy, and producing new business model linking renewable energy with EV or storage battery through VPP technology. etc.

# Discussion in the meeting so far (Details⑤)

- Perspectives of committee members' feedback

## 4. Long-term vision and measure/scheme of each sector (Continuation)

### 6. Coal-fired power plant

- (1) The Japanese government should demonstrate to the world and companies that coal-fired power plant is heading toward zero in a long term, if not immediate.
- (2) Message such as (taking in account the use of Carbon dioxide Capture and Storage (CSS)) “reduce emission from coal-fired power plant, in line with the Paris Agreement long-term target” and “as a principle, there will be no public capital and support for coal-fired power plant going forward” should be sent out as a manifestation for coal-fired power plant, which is becoming a reputation risk in Japan. etc.

### 7. CCUS

- (1) R&D such as CCS which capture CO<sub>2</sub> and immobilizing it, and CCU which capture CO<sub>2</sub> and create something useful, are necessary as an innovation.
- (2) Should commercialize CCUS by 2030, and export it from Japan to the world. etc.

## II. Industry

- (1) With the extension of current iron-making technology, it is most efficient to reduce iron ore from carbon, and need to continue using coal as its material. It is necessary in the future to produce hydrogen carbon free, and iron manufacturing using such hydrogen reduction, and aggressively challenge CCU with such as artificial photosynthesis. Japan Iron and Steel Federation (JISF) intend to challenge “zero carbon steel” by hydrogen reduction iron manufacturing etc., according to its “long-term global warming counter measure vision”. Regardless of regulatory approaches, JISF will promote environmental improvement by collaborating with public and private sectors
- (2) Along with the decarbonization as a process to manufacture material, including usage of hydrogen, Japan should make decarbonization of material itself including carbon, as our strength, and lead the world. etc.



# Discussion in the meeting so far (Details⑥)

- Perspectives of committee members' feedback

## 4. Long-term vision and measure/scheme of each sector (Continuation)

### III. Transportation

At the "Automobile new era strategy meeting", the Japanese government have set a goal to reduce 80% GHG per Japanese car by 2050, compared to 2010. Japan especially aim 90% GHG emission per passenger vehicle, as well as having all cars EV by 2050. On the base of such goal, the Japanese government set "Well to Wheel Zero Emission", which makes total emission zero from fuel to driving in tandem with other global energy supply. etc.

### IV. Local community / Livelihood

- (1) Decrease /aging of Japanese population will advance, thus growth strategy to increase local power matters. The Japanese government should demonstrate growth strategies that would lead to local rejuvenation, showing that people can keep living in the area.
- (2) The Japanese government should adopt the idea of "Regional CES (Circular and Ecological Sphere)" that maximizes utilization of region's abundant resources and lead to growth of Japan even more. etc.

# Discussion in the meeting so far (Details⑦)

- Perspectives of committee members' feedback

## 5. Cross sectoral measures/schemes

### I. Innovation

#### 1. Necessity of cross sector innovation

- (1) To achieve long-term substantial reduction, it is necessary to originate innovation which is not on the conventional extended line.
- (2) In doing so, interactions beyond sectors such as energy, mobility, and digitalization are causing global change and innovation. Promotion of wide range innovation to realize Society 5.0, not only in the field of global warming, will create technological innovation necessary to drastically reduce GHG emission. For example, hydrogen is a cross-cutting type of innovation that contributes to reducing emissions not only in the steel industry but also in automobiles, public welfare and other various sectors. It is therefore necessary for ministries and industries as cross sector to engage in public and private sector interdisciplinary innovation. etc.

#### 2. Innovation for social realization / promotion

- (1) In order to realize a decarbonized society along with innovation that creates state-of-the-art technologies, "Innovation for social implementation / dissemination" that implements technology on society is essential.
- (2) To that end, innovation that reduces the "cost" of technology, and innovation of markets, infrastructure, systems / regulations are important. Through such innovation, Japan will enhance the versatility of technology, promote technology in every corner of society, and lead to decarbonization. Prompt actions are also important to win the market. etc. 17

# Discussion in the meeting so far (Details⑧)

- Perspectives of committee members' feedback

## 5. Cross sectoral measures/schemes (Continuation)

### 3. Direction of policies

- (1) With the cooperation of the public and private sectors, government draws out the prospects for a sustainable energy industry, aims for development support to encourage technological innovation, protects creative business models, and discovers potential demand to work on environmental improvement including bold regulatory reform which create true breakthroughs. Also, by playing a role of supplementing the risks that cannot be taken only by the private sector, the Japanese government should encourage R&D and investment by improving the domestic investment environment and boost business-driven innovation.
- (2) Speed and cost of achieving innovation are keys to improving the development and sales capabilities of new products and services. To that end, it is necessary to clarify the roles of the public and private sectors and have them fulfill their roles. etc.

### 4. Scientific review mechanism

- (1) Future is unstable and uncertain. In order to realize innovation that leads to long-term substantial reduction in such circumstances, it is necessary to analyze from the magnitude of impact when realizing various technologies and to introducing it from those with high priority (example: next generation storage battery, hydrogen production / storage / utilization, next generation solar light, next generation geothermal power, next generation nuclear power generation, CCS/CCUS, ocean current power generation, vertical shaft type Magnus wind power generation, etc.)
- (2) Considering the 2050 vision and multi-track scenario in mind, pursue all options, assessing the state of technological innovation and uncertainty, evaluating social value scientifically and objectively ("Scientific Review Mechanism") is necessary. etc.

# Discussion in the meeting so far (Details⑨)

- Perspectives of committee members' feedback

## 5. Cross sectoral measures/schemes (Continuation)

### II. Green Finance

#### 1. Importance of green finance

- (1) Utilizing finance is extremely important to create technologies, economics, social systems, and innovation that make full use of private vigor.
- (2) Divestment cannot deal climate change. From now on the world move on to the era of competition for ESG funds to positively evaluate capital investment and innovation for decarbonization. Economic mechanism to collect fund needs to be structured for companies that tackle decarbonization innovation.  
etc.

#### 2. Direction of policies

- (1) In order to promote business-led innovation, the Japanese government will work to improve the environment to maximize private vitality so that private investment resources are maintained and expanded, leading to incentives for R&D and capital.
- (2) There is also a business risk that innovation toward decarbonization cannot be burdened by private sector alone. From the standpoint of ensuring a stable and diverse energy source, the Japanese government also consider support for corporate risk taking and a scheme to share the huge risk among public and private sectors. For example, in the case of ultra-long-term projects towards 2050, Japan will integrate expertise from public and private sectors, such as encouraging public finance and supporting policies on tax preferential treatment, and create an attractive business model gathering green investment from the world.  
etc.

# Discussion in the meeting so far (Details⑩)

- Perspectives of committee members' feedback

## 5. Cross sectoral measures/schemes (Continuation)

### III. Business led international development

#### 1. Importance of business led international development

- (1) Japan has been contributing to satisfy both strengthening of international competitiveness through excellent energy efficiency and environmental technologies, providing a rich life for the world, and global environmental problems. Japan will continue to create new business with its strength; "technology", and will lead the world. Japan will view Japanese products in the life cycle, make contribution to reduction throughout the value chain "visible", and appeal it.
- (2) Structuring new business models and oversea expansion are important in developing/selling new products/services. For oversea expansion, public and private sectors, through public and private workshops in each country within the fields where Japan has a technical advantage, introduction of international rules for CO2 reduction efficiency standards, business-led international development of energy efficiency labels and international standard linked with scheme construction, and furthermore, infrastructure improvement using low-carbon technology are required. It is important to contribute to worldwide emission reduction by developing products and services at attractive prices by reducing costs, enhancing international competitiveness, and expanding it in international markets. Simultaneously, Japan should improve business by increasing sales volume and making it a sustainable one. etc.

#### 2. Direction of policies

- (1) Japan should lead innovative technology and spread it, and take initiative in creating international rules such as scheme to promote the world's best decarbonization technology.
- (2) Japan will establish a social model that can be exported to the world, and simultaneously realize growth and international contribution by providing solid solutions to the goals listed in the Paris Agreement. etc.

### IV. Others

#### 1. Capacity building

#### 2. Carbon pricing