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Recommendations for Japan's Long-Term Growth Strategy Under the Paris Agreement

Expansion of Japan's Zero Carbon Market is Necessary to Achieve Net-Zero Emissions

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Japan Climate Leaders' Partnership (JCLP)

Executive Summary

Factors that should be considered when establishing Japan's long-term growth strategy:

Climate change threatens human life and prosperity: Damages from climate change are becoming increasingly serious and could give rise to situations that threaten the stability of society.

To avoid the most serious risks, we need to achieve "net zero emissions": To limit the rise in temperature, we must reduce global greenhouse gas (GHG) emissions to zero as quickly as possible, as the Intergovernmental Panel on Climate Change (IPCC) suggests.

The transition to a zero-carbon society will transform markets and determine corporate and national competitiveness: Factors such as policy changes will transform global markets. Responses to such changes will determine corporate and national competitiveness.

Japan is advantageously positioned for the transition to a zero-carbon society: With such strengths as an abundance of resources for clean energy and considerable technological capabilities, Japan is advantageously positioned to realize a zero-carbon society.

Recommendations for Japan's Long-Term Growth Strategy Under the Paris Agreement

The long-term growth strategy plays a role of particular importance in building a shared vision of a zero-carbon society among all actors in Japan - national government, companies, local governments, and civil society - and enabling long-term decision making by these actors. To this end, the strategy must offer a clear signal of the sustained commitment to the goal of decarbonization and chart pathways toward the goal. From this perspective, we at the Japan Climate Leaders' Partnership make the following recommendations.

- 1. Ensure that all citizens are clearly aware of the threat posed by climate change:** The realization of a zero-carbon society is a national endeavor that requires the alignment of all actors toward the shared goal. It is essential that the entire society understands and agrees with the reasons why a zero-carbon society must be achieved.
- 2. Set a vision to "become a global leader in the decarbonized economy":** The long-term strategy needs to clearly set a vision for Japan to become a global leader in the decarbonized economy. By achieving a zero-carbon society and developing high-quality decarbonized products and services as a forerunner, Japan can reap the most economic benefits and be a positive driving force in the global pathway of decarbonization at the same time.
- 3. Articulate the goal of zero domestic GHG emissions*¹ by 2050:** It is essential to commit to a clear national goal of zero emissions by 2050. Articulating the scale and time frame of emissions reduction required to avoid serious damage from climate change will enable all actors to align their actions.
- 4. As a path to net zero emissions, commit to introducing carbon pricing as well as developing infrastructure through public investment that together prompts the expansion of Japan's decarbonized market:** To allow for the development and extensive adoption of decarbonized products and services required for a zero-carbon society, a positive feedback loop needs to be generated in the economy. This feedback loop is a process where innovation and cost reduction brought about by companies' investment of their resources trigger market expansion, leading to further innovation. One prerequisite for this positive feedback loop is the creation of a market for decarbonized products and

¹ This means net zero emissions, considering emissions and sequestration. See details in footnote on page 6.

services to induce companies' investment of their resources. Carbon pricing, which ensures that the competitiveness of products and services with zero (or low) carbon footprints, is an essential and effective tool for this market creation. Also, in addition to the introduction of carbon pricing, we need public investment for the infrastructure necessary to increase the uptake of decarbonized products and services.

- 5. Create frameworks and mechanisms to manage the transition:** Our society needs to have frameworks and mechanisms that will enable a smooth and steady overall transition to a zero-carbon society. More specifically, we must use Plan-Do-Check-Act (PDCA) mechanisms based on scientific knowledge and provide assistance measures as well as grace periods to sectors that have a greater difficulty in decarbonizing their businesses.

Preface

Repeated scenes of climate disaster and devastation around the world are forcing us to realize that we live today in a critical era that will determine the future of humankind.

The Intergovernmental Panel on Climate Change (IPCC) has stated that climate change will significantly impact the very foundation of human livelihoods, and to minimize that impact, it has urged the world to limit the temperature rise to 1.5 degrees by implementing bold and immediate measures for decarbonization and achieving zero global GHG emissions by 2050.

These warnings imply profound challenges for us. However, we ought not to shy away but instead accept and act upon the message that now is our last chance to avoid the severest impacts of climate change.

The world is coming together around the goal of decarbonization on a scale never previously experienced. After seeing the historic Paris Agreement achieved by the world's nations, companies are innovating business solutions to achieve an effective response to climate change and profitability at the same time. Investors are integrating climate-related risks and opportunities in investment analysis and decisions and are directing unprecedented levels of funding into zero-carbon technologies and services.

Responses to climate change are increasingly leading to business opportunities and greater competitiveness, and efforts are being made across the globe to further accelerate these changes, so that it will be still possible to avoid a catastrophe.

In this context, the Japanese government is currently working to develop a long-term growth strategy for the realization of a zero-carbon society under the Paris Agreement. Noting Japan's significant technological capabilities and its position as the world's third largest economy and fifth largest GHG emitter, the eyes of the world are upon this strategy.

To reflect our acute awareness that Japan's long-term growth strategy will have a significant impact on the future of the climate change issue and Japan's own international competitiveness, the Japan Climate Leaders' Partnership (JCLP) makes the following recommendations on the desired direction for the strategy. These recommendations are made from the perspective of corporations, drawing on our experience in working toward a zero-carbon society, and are directed to Japanese policymakers, companies, and society as a whole.

Acknowledging that all companies and citizens share the responsibility for realizing a zero-carbon society, we sincerely hope that these recommendations will be useful for policy discussions.

Factors that should be considered when establishing Japan's long-term growth strategy

Climate change threatens human life and prosperity

Extreme heat events have threatened human health, typhoons have destroyed basic infrastructure, and disasters have disrupted corporate supply chains. People can no longer avoid feeling the impacts of climate change, such as historic levels of damage from heavy snow, heavy rain, and typhoons in recent years. Scientific knowledge suggests that this damage could intensify and, after passing a certain threshold, threaten the basic stability of society. It is no exaggeration to say that climate change is already a serious threat to human life and prosperity.

To avoid the most serious risks, we need to achieve "zero emissions" - Carbon budget and the Paris Agreement

There are quantitative guidelines we can follow to avoid climate change catastrophe, underpinned by scientific findings. Scientists have informed that global warming is happening in proportion to post-industrial cumulative emissions of greenhouse gases (GHGs), while warning us of the critical need to establish an upper limit for the cumulative sum of emissions to prevent further warming (i.e. carbon budget).

Following these knowledge, the international community including Japan reached consensus – the Paris Agreement. The Agreement commits us to achieve net-zero or net-negative emissions in the second half of this century and limit global temperature rise to well below 2 degrees as well as to the pursuit of efforts to limit the increase to 1.5 degrees. Furthermore, this year's IPCC report revealed that the impacts and costs of a 2 degrees temperature rise would be far more devastating than expected and indicated that, in order to limit warming to 1.5 degrees, it would be necessary to reach zero global emissions by 2050.

The transition to a zero-carbon society will transform markets and determine corporate and national competitiveness

In recent years, through discussions at major international meetings including the G20 and the World Economic Forum, the world's political and business leaders have shared a sense of climate crisis. As a result, rapid progress is being made in the introduction of policies for a zero-carbon future, the impacts of which are already visible in the transformation of economic regulations, social infrastructure, and corporate procurement activities.

This trend is a critical matter from the corporate perspective, because they entail significant market changes. Changes are already happening in various markets around the world. In energy markets, renewable energy providers are increasingly becoming competitive and growing, while coal-related businesses with high carbon emissions are facing an uphill struggle. In financial markets, Task Force on Climate-related Financial Disclosures (TCFD), established by the Financial Stability Board as part of its efforts to stabilize the international financial system, is encouraging corporate disclosure of the risks and opportunities presented by climate change to enable their consideration in investment decisions. Institutional investors such as pension funds, including those in Japan, are already using climate-related risks and opportunities as important assessment indicators of long-term losses and returns in investment decisions. Companies like Google and Apple that lead the world in market capitalization are promoting initiatives to use 100% renewables for the electricity they use in their own operations and supply chains, and are building their new factories and data centers in locations where they can easily access renewables.

In response to these changes in markets, next-generation services are emerging that will help realize a zero-carbon society while offering greater convenience, as seen in the example of the integration of decentralized energy sources, information technologies, and the electric vehicle. The industrial revolution replaced the horse-drawn carriage with the automobile and the information revolution replaced the land-

line phone with the smartphone. Similarly, the imminent decarbonization revolution can be expected to replace existing products and services with zero-carbon products and services.

The world's markets are transforming rapidly on the premise of a zero-carbon society. Responding quickly to this change will increase corporate and national competitiveness.

Japan is advantageously positioned for the transition to a zero-carbon society

Japan is an island country whose infrastructure is built predominantly along coastal areas, which are vulnerable to climate change. At the same time, Japan also has a good foundation for transitioning to a zero-carbon society: significant technological capabilities, abundant resources for clean energy, environmental awareness from having successfully dealt with industrial pollution, and experiences of having turned challenge into competitiveness, as in the case of creating fuel-efficient cars following multiple oil shocks.

Moreover, the benefits Japan can attain from decarbonization are considerable. The societal shift toward renewables will not only strengthen the country's energy security but also reduce the outflow of several trillion yen being spent annually to import fossil fuels. Those funds can be recirculated back to local and regional economies. Also, many decarbonized products and services, once created, can be supplied worldwide using the trade networks that Japan has built to date.

Hence, multiple opportunities are available to Japan to achieve decarbonization and reap its economic benefits. It is rare for a country to possess the combination of these strengths, and one could even say that Japan is in a very favorable position for driving the realization of a zero-carbon society.

Recommendations for Japan's Long-Term Growth Strategy under the Paris Agreement

Significance of a long-term growth strategy

The sum of the current nationally determined GHG emissions reduction targets are considered insufficient to achieve the Paris Agreement's 2 degrees target, making the devastating damages of climate change increasingly imminent. To get beyond this situation, it is essential that all actors, including businesses, local governments, and civil society, share a common direction of realizing a zero-carbon society and align their decisions. To this end, a long-term growth strategy is expected to effectively communicate this direction to society and stimulate the enhancement of emissions reduction targets and the introduction of appropriate policies in each country.

The Japan Climate Leaders' Partnership (JCLP) thus believes that for Japan's long-term growth strategy to be meaningful, it must establish a shared vision of a zero-carbon society among all actors in Japan and enable their long-term decision-making. To achieve this, the strategy needs to offer a clear signal of the sustained commitment to the goal of decarbonization and chart pathways toward the goal.

Based on this premise, we make the following recommendations.

1. Ensure that all citizens are clearly aware of the threat posed by climate change

The realization of a zero-carbon society is a national endeavor that requires the alignment of all actors including government, business, and civil society, for the next few decades. It is a prerequisite of this alignment that all Japanese citizens understand and agree with the reasons why a zero-carbon society must be achieved. Hence, it is essential to incorporate concrete policies and measures through which the government can effectively communicate to the public (1) that climate change is posing threats to human life and prosperity, (2) the link between climate change and recent increases in climate disasters, (3) the concept of a 2 degrees or 1.5 degrees target, and the carbon budget for each target, (4) a scale and time frame for the required responses (the requirement to act urgently to achieve zero emissions within the next few decades).

2. Set a vision to "become a global leader in the decarbonized economy"

Japan as a global leader in the decarbonized economy, one that balances decarbonization with economic prosperity, should be envisioned in the long-term strategy. If Japan boldly invests human, material, financial and policy resources for a zero-carbon future before other countries and develops products and services of proven quality, it can secure a leading position in the global decarbonized market. Additionally, it should be noted that demonstrating Japan's leadership in the area of climate action could be an effective approach to maintaining its respected status within the international community.

3. Articulate the goal of zero domestic GHG emissions by 2050²

The Japan Climate Leaders' Partnership (JCLP) believes that a quantitative and time-bound commitment to reducing domestic emissions to zero by 2050 is crucial for aligning actions of various actors and achieving the reductions necessary to avoid the threats of climate change.

It is also important that the long-term strategy translates this 2050 goal into intermediate numerical targets that serve as milestones for major sectors. The Japan Climate Leaders Partnership (JCLP) believes that at a minimum, it is imperative to completely decarbonize the electricity sector. This, in turn, would require a

²This refers to net zero, counting emissions and sequestration. As scientists have pointed out the need to achieve net-negative emissions, together with the importance of showing clear direction, and in order to stimulate innovation, we take the position that we ought to pursue the efforts to achieve a reduction of carbon emissions to zero to the extent possible.

commitment to have renewables account for a majority of the energy mix by 2050. In addition, the current national emissions reductions target for the year 2030, which currently stands at a 25.4% reduction compared to 2005, needs to be enhanced, so that it will be compatible with the 2050 goal (in May 2015, the Japan Climate Leaders Partnership proposed a 36% reduction compared to 2005 as the 2030 target for Japan, considering the 2 degrees target and Japan's responsibilities, economic capacity, and feasibility.).

4. As a path to net zero emissions, commit to introducing carbon pricing as well as developing infrastructure through public investment that together prompts the expansion of Japan's decarbonized market:

Companies are the key players in the innovation and mainstreaming of products and services. If companies invest their resources into decarbonization, we can anticipate the emergence of many promising businesses. For that to occur, it is important that decarbonized products and services can be expected to sell competitively; in other words, markets for such products and services of a certain scale must exist, and the infrastructure needed to use those products and services must be in place to spur investment. Thus, for the creation and expansion of these markets, there needs to be a commitment to (1) introducing carbon pricing, and (2) developing infrastructure suitable for decarbonized products and services through public investment.

- ***Introduce carbon pricing that supports expansion of the decarbonized market***

By generating markets for zero-carbon products and services, it becomes practical for companies to aggressively engage in research and development as well as capital investment. The expected result will be decarbonized products and services that offer competitive price as well as other values, such as convenience, and this will create a positive feedback loop resulting in further expansion of those markets.

In Japan, it is not uncommon for products with superior performance to fail at gaining wide market adoption because of an inability of manufacturers to shift to mass production and achieve competitive pricing. When manufacturers face this situation and non-decarbonized products are sold instead, the implication is that consumers have no choice but to contribute to the exacerbation of climate change regardless of their intentions. Internationally, there is a move toward displaying products' levels of burden on the climate, such as carbon footprint labelling. This trend suggests that if such displays become common practice and consumers have a choice between decarbonized and non-decarbonized products, underperforming Japanese products might decline in competitiveness. Carbon pricing, which ensures competitive prices for zero- (or low-) carbon products by attaching a price to carbon emissions, is an essential and effective tool to address this challenge.

When introducing carbon pricing, some issues will require careful consideration, such as the difficulty of the transition for certain sectors (discussed below). However, for the long-term growth strategy, we believe that sending a clear signal of the commitment to carbon pricing to society is vital. Hence, the strategy should still clearly mention the introduction of carbon pricing while highlighting some issues that demand attention in designing it.

It is now assumed that carbon pricing will be widely implemented across the world in the near future. This is evident as more and more investors see the impacts of carbon pricing as an important indicator for evaluating long-term corporate sustainability, and as TCFD encourages corporations to analyze the risks and opportunities for their businesses in a scenario where carbon pricing is introduced.

- ***Develop infrastructure for decarbonized products and services through public investment***

For many citizens to use zero-carbon products and services (in other words, to expand the market), appropriate infrastructure is needed, including power grids that enable the effective use of renewables as well as power storage equipment and facilities that encourage the use of EVs. Facilities closely associated with our daily life, such as housings and buildings, can also be considered infrastructure. As with roads, waterworks and sewage systems, which serve as lifelines to protect human life and prosperity, there are

many kinds of such infrastructure that the private sector cannot establish alone. For example, most of Japan's power grid was set up during the nation's postwar period of rapid economic growth and has now become obsolete, since it does not have the flexibility to respond to an increase in renewable energy production. This is one example where it would be difficult for the private sector working alone to make improvements.

As stated above, responding to climate change means protecting human life and prosperity. Upgrading power grids to enable the use of renewables and realize a sustainable society that is more resilient to disasters is effective for energy security as well as for stimulating regional and local economies that produce renewables. As a target for public investment, it is essential to prioritize the upgrading of basic infrastructure vital for the operationalization of a decarbonized market.

5. Create frameworks and mechanisms to manage the transition.

The realization of a zero-carbon society and the departure from fossil fuels, which have supported Japan's prosperity since the Meiji Restoration (1868), could be described as an enormous transformation in societal structure. Just as the new occupation of driver was created when the horse-drawn carriage and *kago* (basket with two bearers carrying a passenger) were replaced by the automobile during the industrial revolution, there needs to be a transition from the fossil fuel-related businesses that will disappear as a result of the decarbonization revolution, to decarbonization-related businesses. While striving to make a quick transition, the following schemes and mechanisms will be needed to reduce disorder and promote a smooth and steady transition for society as a whole.

- ***Introduce PDCA mechanisms based on new scientific knowledge.***

The appropriate key performance indicator (KPI) for efforts to limit the temperature rise is not the amount of emissions at one specific point in time, but rather the *cumulative amount of post-industrial emissions*. It is also essential to take into account new scientific knowledge such as the IPCC's recent "Global Warming of 1.5 degrees" special report, and to monitor the degree of progress being made with each type of innovation and business. Such PDCA mechanisms need to be installed to regularly review progress and revise intermediate targets and measures based on the reviews.

- ***Support sectors that face a high level of difficulty in decarbonizing.***

The difficulty of decarbonizing products and services will differ sector by sector. Sectors like electricity, where alternative technologies such as renewables exist, can be expected to make progress with the introduction of policies that encourage the expansion of renewables and with the upgrading of infrastructure. In sectors where alternative technologies do not yet exist, however, it may be necessary to create new technologies and businesses and allow a grace period for commercialization. Considering this point, it is necessary to consider how to avoid counterproductive disorder and the placing of excessive burdens on certain sectors.

Taking into account both the difficulty of transition for certain sectors as well as the remaining amount of carbon budget, we need to start a decarbonization process in sectors where alternative technologies already exist. This will save the remaining carbon budget to be utilized by the sectors that require more time to make the transition. In other words, sector-specific transition measures are crucial and the design of those measures calls for a careful consideration of an efficient use of a finite resource (i.e. the carbon budget).

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