Call for immediate action to stabilize the climate
~An urgent appeal from scientists to citizens~

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People of Japan:

The climate is undergoing dramatic change. That this climate change is attributable to anthropogenic greenhouse gas emissions has been demonstrated scientifically beyond a doubt. If emissions continue unchecked, it is clear that there will be significant impacts on the foundation underpinning mankind's very existence—the global environment.

Scientists have articulated fears along these lines and appealed to the various sectors of society to take action to stabilize the climate. The process of scientific review requires the accumulation of knowledge sufficient to draw conclusions and as such, scientists have been cautious with their warnings. Consequently, the social transition to a "low carbon society" has made little headway. During this time, climate change has progressed in areas and ways unseen that have only recently become apparent. Climate systems have momentum and once they have been destabilized, bringing them back into balance is an extremely difficult proposition. The recently released Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report reaffirmed the role of human activity in climate change and at the same time established that changes in the cryosphere are progressing faster than forecast. Moreover, if greenhouse gas emissions continue at the current rate, the world will be thrust into an era of warming the like of which mankind has never experienced. Given the finite capacity of nature to absorb greenhouse gas emissions, the report states that greenhouse gas emissions need to be cut to less than half of current levels if the climate is to be stabilized.

To ensure that the negative effects of climate change do not reach dangerous levels, we must immediately begin to reduce greenhouse gas emissions. It is time to face what science has been telling us and for our citizens to band together and mobilize, while calling on the rest of the world to take action, to achieve a "low carbon society" with an eye to stabilizing the climate. This is especially a duty that is incumbent upon scientists involved in climate change research.

1. IPCC Fourth Assessment Report: Important scientific affirmation based on Working Group I report

In Paris, Working Group I concluded its work on the IPCC Fourth Assessment Report resulting in acceptance of and a shared understanding of the following scientific knowledge:

1) Climate change is accelerating and its effects are becoming manifest

The recently announced IPCC Fourth Assessment Report made clear that the average surface temperature has increased by 0.74°C over the past 100 years. Since 1850, 11 of the 12 hottest years have taken place over the past 12 years, indicating

that the pace of warming is accelerating. In addition, the increase in the planet's thermal energy was affirmed to be primarily contributing to higher ocean temperatures, which result in thermal expansion that has led to a sea-level rise of roughly 17 centimeters during the 20th century. Moreover, ice coverage in the Arctic Ocean is decreasing at an accelerating pace in recent years and the thawing of permafrost is also progressing. Recent detailed monitoring has confirmed that Greenland's ice sheet is melting and removed any doubt that the planet is getting warmer.

Heavy precipitation is increasing in frequency globally in tandem with rising temperature and more water vapor in the air, while a greater ranger of regions are being subject to droughts. In addition, data suggests that tropical cyclones (hurricanes in the North Atlantic Ocean) are increasing in intensity.

2) Human impact is clear

Our understanding of the impact of human activities on the climate has deepened since the release of the Third Assessment Report (TAR). It has been shown that it is likely that the warming of global temperatures observed in the second-half of the 20th century is attributable to increases in anthropogenic greenhouse gas emissions. It has also been found very unlikely that the climatic changes observed over the past 50 years are solely attributable to natural causes alone.

3) Continued emissions at this pace will engender a crisis

Instability in the global climate is expected to increase as warming continues and extreme weather is predicted to increase in frequency. In its forecast for the future, the IPCC found that if the world continues to rely on fossil fuels and records high levels of economic growth, then by the end of this century the mean global temperature is predicted to rise by 4.0°C (2.4~6.4°C). While it is predicted that there is a low possibility of large-scale, sudden changes during this century, it is very likely that as warming progresses and temperatures rise, that the deep ocean circulation in the Atlantic Ocean will weaken or slow. In addition, a good deal of research suggests that climate change will spawn a vicious cycle that further increases the release of greenhouse gases. If this were to continue for millennia, it would nearly eliminate the Greenland ice sheet and trigger the addition of enough water to the oceans to raise sea level by about 7 meters.

2. Coexistence: People and the planet

Based on the knowledge contained in the IPCC report, it is clear that atmospheric warming poses a serious threat to mankind as well as society.

In light of the 0.74°C rise in temperature observed over the last 100 years and various resulting effects globally, clearly continuing to emit greenhouse gases at current levels is dangerous. Ecosystems the world over will not be able to adapt to

the ensuing speed of change and the number of species exposed to the risk of extinction will increase. It is likely that an array of negative effects will occur, including large-scale water shortages, significant agricultural damage, a rise in infectious diseases and intensification of natural disasters. Furthermore, these issues could compound one another. The resulting situation could imperil the existence of mankind and this not a future that we can leave our children in good conscious.

This brings us the question of why we find ourselves in this position. The answer is that the carbon dioxide emitted into the atmosphere has substantially exceeded nature's ability to absorb it. Currently, mankind collectively releases around 7 billion tons of carbon annually and this is forecast to increase in the future. There is a limit to the amount of carbon that the environment can absorb in a year and this is estimated to be about 3 billion tons from human activity, or anthropogenic sources. To prevent exacerbation of the negative impacts of climate change, and to stabilize the climate, mankind's greenhouse gas emissions must be brought into balance with nature's capacity to absorb them. In addition, when potential sources of additional greenhouse gas emissions are taken into account, even greater emission cuts will be needed.

In short, the 21st century must be an era that marks a shift to a "low carbon society." Per capita emissions in developed countries are several times those of developing countries. As such, it is clear that Japan and other developed nations must lead by example and drastically cut greenhouse gas emissions. To make a "low carbon society" a reality, nothing short of a revolution in the awareness of citizens as well as our socioeconomic system will be required. Achieving the 6 percent emissions reduction pledged under the Kyoto Protocol is only the first step on the road to becoming a "low carbon society."

Emission reductions will require time to take effect making global warming unavoidable for the foreseeable future (the IPCC has forecast a 0.2°C rise in temperature for every 10 years through 2030). At the same time, as it will be difficult to prevent the negative effects of global warming, preparation on adaptation measures should begin.

3. Act now to protect the future of our children

Global warming is progressing at a speed that far exceeds our forecasts. Moreover, its effects are already starting to appear. We are past the time when unfounded excuses about the sufficiency of science and its underpinnings can be allowed to hinder action. Immediate steps need to be initiated to slash greenhouse gas emissions.

We ourselves hold the key to preventing global warming--as consumers, as producers, as educators and as taxpayers. We can make our opinions on curbing global warming known by participating in the policy-making process and in an

array of capacities. It is the sum of these efforts that will lead industry and the government to move Japan in the direction of a transition to a “low carbon society.”

Industry can contribute to cuts in greenhouse gas emissions, not only through activities as manufacturers, but also through improvements in the products and services offered. Reducing greenhouse gas emissions is an important duty and, as such, decisions and investments need to be made with a long-term perspective to achieve a “low carbon society.”

The government, for its part, must clearly articulate national targets for the “realization of a low carbon society” and should show leadership in greenhouse gas reduction efforts by introducing policy instruments that are effective in reducing emissions. Toward this end, long-term policy targets need to be established as soon as possible and it is incumbent upon the government to formulate a roadmap to direct us to “realizing a low carbon society.”

Prefectures and municipalities must also shoulder responsibility and should also address the shift to “realizing a low carbon society” by proactively responding to the challenge.

Moreover, following the conclusion of the first commitment period of the Kyoto Protocol in 2013, our country’s leadership will be integral to ensure that meaningful measures are taken internationally and that a framework that entails substantial cuts by key emitters of greenhouse gases, including the United States, China and India, can be put into place. In conjunction with this, a socioeconomic system that is equitable both internationally and domestically and which rewards corporations that endeavor to cut greenhouse gas emissions needs to be forged.

We renew our call for the people of Japan, one and all, to rethink their lifestyles and evaluate what they can do to take action and help lead the world toward our shared goal of “realizing a low carbon society.” If we act now, we can still save the future of our children and mankind.

(End)