



Green Watch

A Civil Society Environmental White Paper
2019

Green Alliance Japan
(GAJ)



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Preface

Green Alliance Japan

1. Why “Green Alliance Japan”?

Nearly half a century has passed since the convening of the United Nations Conference on the Human Environment (Stockholm Conference, 1972), and almost a quarter of a century since the United Nations Conference on Environment and Development (Rio de Janeiro Earth Summit, 1992).

Over the years, various measures have been taken to tackle with emerging environmental issues all over the world. These global movements as well as the enactment of the Japanese Act on Promotion of Specified Non-profit Activities (to support the formation of a sound civil society in Japan) became a driving force for Japanese people to establish a number of environmental NPOs/NGOs in various parts of the country. It also served to promote various initiatives including environmental conservation activities at the community level or advocacy actions at the national and global level. These NPOs/NGOs have strived to find solutions through a diverse range of activities making full use of their expertise and their positions as independent entities.

Meanwhile, however, global warming and resulting climate change have gradually intensified, causing serious damage around the globe. Significant biodiversity loss dubbed as the ‘sixth mass extinction’ and the widespread chemical pollution has resulted in the widespread degradation of our precious environment - the very basis of human/social life as well as economic activities. Moreover, the Fukushima Daiichi Nuclear Power Plant disaster in 2011 was a wake-up call for Japan and the rest of the world to address energy transition, and raised the fundamental question of how we perceive “richness” in our current civilisation. We now have come to a critical stage where the very existence of our society is being threatened.

These issues stem from past values, lifestyles, technologies, socio-economic systems that we have pursued, seeking for further economic expansion without con-

sidering the finite nature of the earth. To solve these issues, fundamental policy changes will be needed based on ethical, political and science-based decision-making, and for that purpose, our wisdom will be more important to ensure the successful paradigm shift of our civilisation.

Unfortunately, fundamental policy changes have only inched forward in Japan, as the Japanese government continues to neglect sustainability and prioritise policies that emphasise the short-term economic growth.

Deeply concerned these lamentable policy trends, environmental NPOs/NGOs in Japan have arrived at a common understanding that, to overcome various environmental issues and to build a democratic, fair and sustainable society based on the “environment” (the foundation for all life and human activities), it is of vital importance to act together - going beyond the difference of their respective missions and objectives - and to advocate together for the benefit of both the present and future generations.

For these reasons, we established the Green Alliance Japan (GAJ) on 5 June 2015 to network various environmental NPOs/NGOs in Japan and to spark a great surge in Japanese society toward a sustainable and affluent society. We chose to work together for the conservation of the critical global environment, collating knowledge and experiences accumulated to date.

The Alliance currently has 85 member NGOs/NPOs.

2. Major Activities

- Draft possible policies that promote the transition to a sustainable society and propose them to the general public
- Make recommendations to strengthen the organisational foundation of environmental NGOs/NPOs and encourage actions
- Support enhancing the policy advocacy power of environmental NGOs/NPOs

- Disseminate information through the publication of Green Watch: A Civic Society Environmental White Paper and other media, based on independent studies and analysis
- Organise national gatherings of environmental NGOs/NPOs, and promote international communication
- Exchange information with policymakers, media, business community, researchers, and other stakeholders
- Share information with non-environmental NGOs/NPOs and their networks that aim to build a sustainable society, and organise collaborative activities with them

3. Publication of Green Watch

As part of its activities, GAJ, from the year of its establishment, started to compile Green Watch for two reasons.

The first is to analyse the current state of environmental problems in Japan as well as their countermeasures from a non-governmental perspective, and disseminate the analysis to a wider audience.

Each year, the government publishes an environmental white paper, Annual Report on the Environment in Japan. This document evaluates the state of the environment from the government's perspective and explains the relevance and legality of their policy measures to the public. As such, their views do not necessarily coincide with those of environmental NGOs/NPOs, non-profit expert groups working on various environmental issues. If the difference is of no substantial importance, it would be fine to see it as just two differing points of view due to the difference of the status. However, under the current situation, the difference cannot be overlooked because several key contents of the government white paper may not help people make appropriate decisions, or mislead their understanding/evaluation of issues, or are not in alignment with mid- to long-term national benefits. Therefore, in order to promote sound environmental

policies in Japan, we decided to publish Green Watch and deliver it to as many stakeholders as possible because we strongly believe it is necessary for people to gain knowledge and perspectives that are different from those of the government.

Secondly, through providing information that differs from the perspective of the government, we hope to raise awareness on environmental problems and encourage people to participate in NGO/NPO activities and act themselves for solutions. Environmental problems are issues that involve each and every one of us, but still very few people take actions to find solutions. In Japan, we still face many other issues of life such as unstable employment, economic disparities, child poverty, and education and welfare issues. Under these pressures, people may be hesitant to take action on environmental issues where the effects and actual value of actions are not clearly seen. However, the environment is the foundation for the existence of all living creatures, our day-to-day lives, as well as social and economic activities. As this very foundation now faces a perilous situation, we cannot leave it all up to politicians, bureaucrats and a limited number of experts to find solutions. All stakeholders need to have an accurate understanding of the current state of the environment and make appropriate contributions in their respective fields. We hope that Green Watch will spark this action.

Given the fact that ever-more serious environmental degradation emerging all over the world, and that young people have recently been standing up to stop global climate change, we wrote up the Green Watch 2019 to convey truthful information to a diverse range of audience, including the young generation, so that we can create a sustainable society where all can lead safe, secure, and fulfilling lives. It is this **truthful information** that forms the basis for a sustainable society.

Konoe Fujimura



Chapter 1

Recent Trends toward a Decarbonised Society

Section 1. Climate Change Issues

The summer of 2018 in Japan was one marked with extreme weather events, including record-breaking heavy rains, extreme heat, droughts, and forest fires. To mitigate risks that have emerged as a result of intensifying climate change, energy transition away from fossil fuels to renewable sources has been taking place at an unprecedented rate all over the world. However, in Japan, although greenhouse gas emissions such as CO₂ have decreased slightly to 1.294 billion tonnes in 2017 (down 1.0% from the previous fiscal year), no transformative measures have been taken at the national level, resulting in almost no change in emissions. (In fact, compared to the Kyoto Protocol baseline FY 1990 levels, emissions have increased by 1.5%.)

1. Global Trends since the Paris Agreement and COP24

In October 2018, the Intergovernmental Panel on Climate Change (IPCC) published its Special Report entitled “Global Warming of 1.5°C”. According to this report, global temperatures have already risen about 1°C from pre-industrial levels and are expected to reach 1.5°C by about 2040 at the current pace. The report also revealed that in order to keep temperature rise within the 1.5°C target, global net anthropogenic CO₂ emissions must be reduced by about 45% by 2030 and reach net zero by around 2050.

At COP24 in December 2018, national governments were called on to “step up ambition” in response to the agreement on the implementation guidelines of the Paris Agreement, as well as the in the IPCC 1.5°C Special Report and during the Talanoa Dialogue, which evaluated the progress of global warming countermeasures around the world. Many have expressed that moving away from coal is essential to achieving the “1.5°C target”. Waves of efforts to create a carbon-free society are stronger than ever, as the world gradually shifts away from coal and other fossil fuels. Yet, still unable to make a dramatic transition away from coal, Japan kept a low profile and seemed indifferent at the conference.

2. Delayed Response by the Japanese Government / Trends in Corporate and Financial Institutions

Japan lags far behind other G7 countries to submit long-term low greenhouse gas emission development strategies to the secretariat of the United Nations Framework Convention on Climate Change (UNFCCC) by 2020 in order to achieve the goals of the Paris Agreement. The Japanese government set up a series of expert meetings to put together a governmental draft proposal for a “long-term strategy” in April 2019, but there has been criticism that the issue of “decarbonisation” was not taken up and that the draft proposal emerged from a process that lacked transparency.

On the flip side, movements by the business community have been attracting attention, including the launch of the Japan Climate Initiative (JCI), a network of organizations that are voicing their intention to voluntarily achieve the goals of the Paris Agreement. Furthermore, the Japan Climate Leaders’ Partnership also issued a proposal on Japan’s “long-term growth strategy under the Paris Agreement,” calling for the government to “articulate the goal of zero domestic greenhouse gas emissions by 2050”.

Major banks in Japan, such as Mitsubishi UFJ Financial Group, Sumitomo Mitsui Banking Corporation, and Mizuho Financial Group, have also launched sectoral policies for coal power generation. However, environmental NGOs point out that there are loopholes in these policies, providing exceptions that enable financing.

Insurance companies, such as Dai-ichi Life, Nippon Life, and Meiji Yasuda Life, have announced that they would cease loans for project finance related to coal power generation. Of these, Nippon Life’s policy is the most in-depth in that it prohibits project finance, both in Japan and overseas. However, projects in Japan are exceptions under the

policy of Dai-ichi Life. Further, Meiji Yasuda Life accepts applications for new loans for coal-fired ultra-supercritical plants (USC) as an exception to their lending policy, and similar to Japan's three major banks, also allows loans to coal power plants in the country.

Within the international community, it is said that the reason why financial institutions in Japan cannot make a bold statement on "decarbonising" policies is that the national government itself promotes the use of coal power. However, environmental NGOs are recommending that financial institutions issue decarbonisation policies ahead of the government.

3. Issues with the New Construction of Coal Power Plants, Signalling Changes

Since 2012, plans have emerged to construct 50 coal power units in Japan. However, signs of change in construction plans are starting to be seen amid the increasingly unfavourable winds against coal power, such as protest movements by residents and communities, increased movements for injunction proceedings on coal power plants, the rapidly accelerating global trend towards decarbonisation, and international divestment.

As of 11 March 2019, 13 units out of the 50 units planned for new construction identified in 2012 and onwards, have been cancelled or converted to alternative fuels such as biomass. In the case of Chiba Prefecture, construction plans for the Soga coal power plant in Chiba City were suspended in December 2018, followed by the cancellation of the construction plans for the Chiba Sodegaura coal power plant in Sodegaura city in January 2019. This means that all three new coal power projects in the prefecture (in the cities of Chiba, Sodegaura, and Ichihara (in 2017)) have been suspended.

On the other hand, 12 units below 112 MW that are not subject to environmental impact assessment (EIA) process are still in operation. Therefore, if the remaining 25 units are subsequently constructed and put into operation, the annual CO₂ emissions will hover at around 85.108 million tonnes. We need to keep a close watch on this trend going forward.

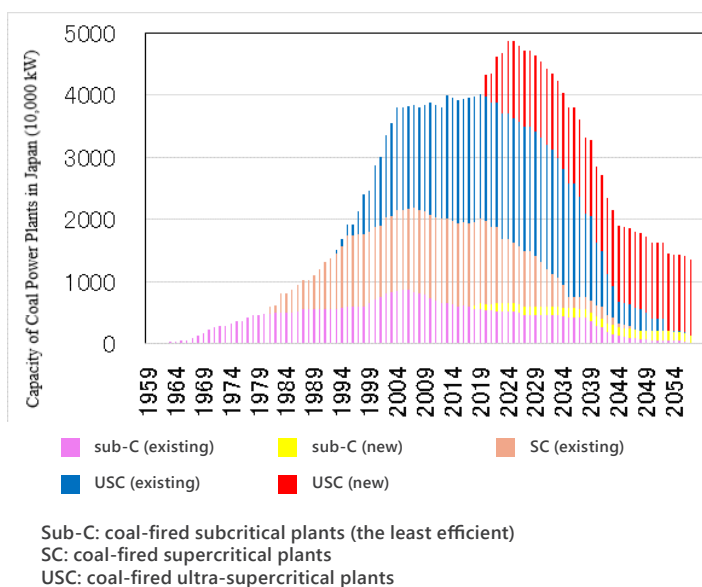
In order to achieve the goals of the Paris Agreement, it is

essential to move away from the use of fossil fuels as soon as possible. Coal power in particular needs to be phased out, which obviously means halting the construction of new coal plants and also strategically decommissioning existing plants. Above all, developed countries are expected to completely phase out coal power plants by 2030. It is imperative that Japan cancel all current plans and new construction, as well as retire all existing coal power plants by 2030.

According to the Japan 2030 Coal Phase-Out Plan compiled by the Kiko Network in November 2018, if all 117 of the existing coal-fired power plants are to be abolished by 2030, the Plan is entirely achievable without threatening Japan's electrical power supply and without relying on nuclear power, taking into account the available capacity of liquefied natural gas (LNG) and other power generation options, as well as the spread of renewable energy and improvements in energy efficiency.

The number of countries, mainly European countries and Canada, that are declaring their intent to phase out coal power plants, is on the rise. Japan must also decide to phase out coal power by 2030, formulate a phase-out plan, and increase its greenhouse gas emission reduction targets to be consistent with the goals of the Paris Agreement.

Figure 1.1.1



Source: Kiko Network

Section 2. Renewable Energy

Starting with solar and geothermal, renewable energies are being introduced as sustainable forms of energy, not only in developed countries, but across the entire world. The United Nations Sustainable Development Goals (SDGs), agreed upon in September 2015, also emphasise the use of renewable energy, as evident in Goal 7 (Affordable and Clean Energy). The Paris Agreement, adopted soon after to address climate change through decarbonisation, has galvanised efforts toward 100% renewable energy. While efforts to transition to renewable energy in Japan have finally started to gain ground after the Great East Japan Earthquake (on 11 March 2011), many issues have since emerged.

The share of renewable energy in Japan was about 10% until 2010, but, by 2018, the share of renewable energy¹ in total domestic power generation² grew to about 17%. This came as a consequence of the adoption of the Feed-in Tariff (FIT) scheme in July 2012, which led to the introduction of renewable energy, mainly solar power. Meanwhile, the March 2011 Great East Japan Earthquake and the nuclear accident at Tokyo Electric Power Company's Fukushima Daiichi Nuclear Power Plant kept nuclear power in FY 2014 at 0%, and this value has been consistently low (5%), as of 2018. On the other hand, although the percentage of electricity generated through fossil fuels was over 90% in FY 2012, power generation from fossil fuels has fallen since FY 2013 due to a decrease in the overall amount of power generated in the country and as well as an increase in renewable energy. Consequently, CO₂ emissions have generally declined since FY 2014. Since FY 2013, the gross domestic product (GDP) has risen steadily, suggesting that Japan may also be experiencing decoupling, the phenomenon in which the economy continues to grow in spite of decreasing CO₂ emissions and generated power.

Japan's current 2030 interim target (aiming towards a 26% reduction in greenhouse gas emissions from FY 2013 levels) is based on the energy mix target set in 2015 by METI, prior to the Paris Agreement. To achieve this target, Japan aims to promptly reduce its dependency on nuclear power as much as possible and to move ahead with efforts towards using renewable energy as a major power source. However, the plan does not reflect the rapid rise

of renewable energy around the world and the large wave to promote the use of 100% renewable energy as galvanised by the Paris Agreement. The plan does not appear to be able to support various initiatives for energy transition triggered by the 2011 disaster.

The current administration claims that it is considering all decarbonisation technologies moving forward towards the long-term 2050 target (an 80% reduction in greenhouse gas emissions, no base year). However, it seems that the intentions of industries that were late to begin cutting their carbon emissions are overly considered, and unrealistically high expectations are placed on the future technological developments of Japanese companies. In this way, they may be choosing deliberately to disregard the currently available policies and technologies that have already proven their efficacy, including the full-scale introduction of renewable energies with ambitiously high targets, extensive energy-saving schemes, and the full-scale introduction of carbon pricing. This approach has contributed to further delays in response.

Based on the premise of a nuclear-free society, it is also necessary to accelerate investment in electric power system infrastructure, which has not moved forward because of the vested interests of existing electric power companies. There is also an urgent need to stop the rush to construct coal power plants, which tramples on climate change countermeasures aiming to reach the target of a less than 1.5°C rise in global temperatures. Not limiting its efforts to the current long-term 2050 target, the national and local governments, as well as companies are ultimately expected to set a zero emissions target for greenhouse gas emissions and an energy mix of 100% renewables.

With the full-scale dissemination of renewable energy, it will be necessary to address environmental impacts in terms of land use and issues with consensus building head-on. Problems regarding the development of large-scale solar power generation ("mega-solar") have emerged throughout the country. The conversion of farmland for development is regulated from the perspective that the land will be used for a different purpose than its original intent. Therefore, development is currently being carried out for mega-solar projects on forest land,

1: Including large-scale hydropower.

2: Including private power generation.

on which it is relatively easy to do development projects. However, forests play a diverse set of roles in biodiversity conservation, global environmental conservation, prevention of sediment disaster and soil conservation, and conservation of watersheds forests and Satoyama. Current regulations and policies do not adequately consider the vast ecosystem services that forests provide, which raises concerns that land conversion will be driven forward without sufficient regard for the diverse functions of forests.

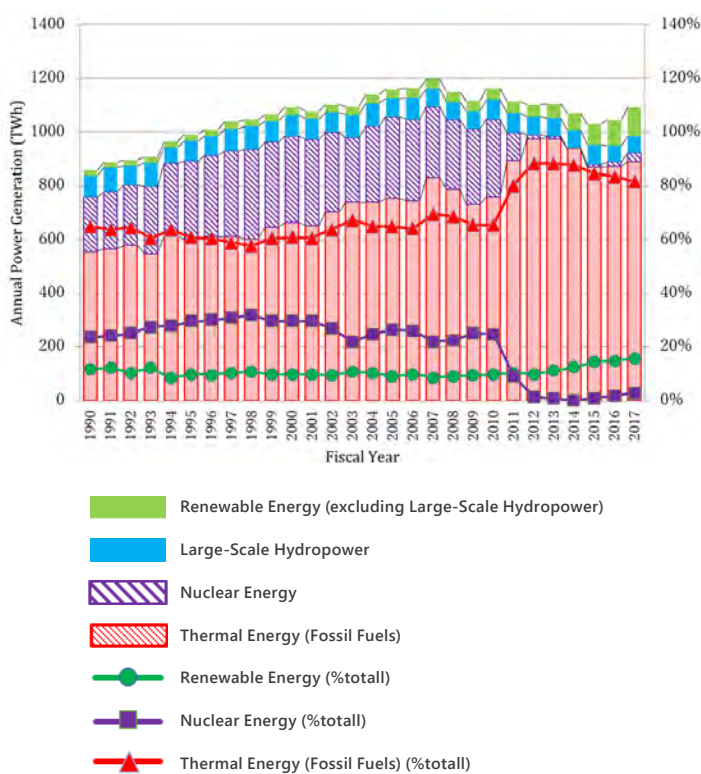
It is also necessary to think about the area's industrial and economic development, as well as how land is used long-term in order to promote smooth social consensus building between local residents and local governments. In particular, it is important for local governments to create a "place" where the local residents and stakeholders can engage and to formulate ordinances related to the development of power generation projects and consensus building guidelines. It is crucial for local governments to promote projects led by local residents and companies ("community power") and to spend enough time to explain and discuss together with local companies, financial institutions (such as credit unions and banks), and residents in these "places."

In Japan, under the Cropland Act (1952), farmland is protected as a valuable resource for individuals and communities of today and tomorrow, because they form the basis of agricultural production, as well as the culture, landscape and lifestyles of regions. For this reason, the use of farmland for any other purpose has been severely restricted, although, due to the decrease in the number of farmers and the increase in abandoned farmland, methods of conserving farmland are being revisited in recent years. Meanwhile, the introduction of "Agrivoltaics³" has been promoted as a new method for renewable energy projects to co-exist alongside the conservation of farmland and continued practice of farming. Developed in Chiba Prefecture after 2011, this system has been introduced nationwide, and, as of the end of March 2017, about 1,200 projects have been approved for implementation. This system, which implements solar power generation projects on the same land that will continue to be used for agriculture, is being carried out with various restrictions and conditions stipulated by the Ministry of Agriculture, Forestry and Fisheries in Japan. However, in May 2018, the

regulations were made less stringent, which allowed projects that meet certain criteria to receive longer permits (changed from three years to ten years) for temporary land use conversion.

As for biomass power, by the end of FY 2016, more than 90% accredited were under the fuel category of 'general woody material,' including agricultural residue. However, the majority of this is biomass such as PKS (palm kernel shells) and palm oil imported from Southeast Asia, creating major sustainability concerns in fuel procurement. These materials are accredited as agricultural residue, not woody biomass. Under the revised FIT law, all biomass power plants need to meet the fuel procurement methods defined in business plan formulation guidelines. The law further requires the ensured legality and traceability of fuel purchased from abroad. For palm oil in particular, a new category, 'liquid fuel', was established in FY 2018 and a bidding system has been adopted for the accreditation of all new facilities. (As for 'general woody material', facilities with at least 10,000 kW electricity generation capacity are subject to bidding.)

Figure 1.2.1



Source: Created based on data from the Agency for Natural Resources and Energy

3: Refers to "photovoltaic agriculture," which is the practice of combining photovoltaic power generation and agriculture on the same land.

Section 3.

All Talk and Excessively Slow Action in Introduction of Carbon Pricing

With extreme weather events continuing unabated around the world, record-setting heat and heavy rains have started to be observed in various areas of Japan, a sign that climate change has become reality. It is amid this state of affairs that the world has started taking action under the Paris Agreement in order to make net-zero emissions a reality. With the introduction of carbon pricing (CP) in particular, some progress has been observed, proving evidence for CP's effectiveness. This economic scheme of revealing the cost of carbon emissions has been discussed in Japan for almost 30 years, and from 2012, an environment tax has been introduced as a tax for climate change mitigation and prevention of global warming (Climate Change Tax). However, this tax rate, a modest JPY289 per tCO₂, is excessively low compared to those in other countries that have introduced a carbon tax, calling into question the actual effect of Japan's environment tax on reducing CO₂ emissions. For this reason, the Ministry of the Environment Japan has started to re-examine the policy for the full-fledged introduction of CP, but the incessant debate continues with no path for effective climate change mitigation/global warming prevention measures in sight.

As mentioned, the Japanese government has discussed CP over many years. Therefore, environmental NPOs/NGOs and experts in climate change problems believe that the issues related to CP have already been discussed at length, contending that the only issue that remains is implementation. As such, they have lobbied the government to begin implementing this scheme. However, there has been consistently strong opposition from industries, especially energy-intensive industries such as steel and electric power. Even the current administration, which has focussed on short-term economic policies, places a heavy weight on the intentions of these wealthy and political powerhouse industries. In consequence, this has derailed the introduction of CP in this country.

Under these circumstances, Japan's greenhouse gas emissions in recent decades have hardly decreased; in FY2017, greenhouse gas emissions totalled 1.292 billion tonnes, down 1% from the previous fiscal year, but slightly higher than the 1990 base year for the Kyoto Protocol (1.272

billion tonnes). It is clear that substantial reduction of CO₂ emissions as required by the Paris Agreement will not be possible only through conventional activities, which include voluntary efforts by companies and enthusiastic energy-saving actions by individuals, as well as the current Climate Change Tax. If only these activities continue, it seems that mitigating the intensity of various extreme weather events associated with climate change will be very difficult.

In June 2016, the Ministry of the Environment set up a "Panel of Experts" to consider how CP should work in Japan and published a report in March 2018. The report concluded that explicit CP would be the most effective means required to achieve reduction targets. However, at a "Subcommittee on Utilisation of CP" held after the publication of this report, industry members came out with the outdated view that "discussions with a foregone conclusion on the introduction of CP should be avoided" and the Ministry of the Environment became preoccupied in dealing with this view. Further, the Japan's Long-term Strategy under the Paris Agreement, which was announced in June 2019, was limited to including short statements that did not even touch on the past discussions on CP, but leaving it as a matter "under continued consideration", due to the fact that the Ministry of the Environment has less clout than the Ministry of Economy, Trade and Industry which is backed by the business community. This might bring inevitable criticism from the rest of the world.

However, the industrial community in Japan is not necessarily monolithic, and an increasing number of companies are viewing decarbonisation as a business opportunity. The Japan Climate Leaders' Partnership (JCLP), a corporate group that aims to realise a sustainable, decarbonised society, announced recommendations for Japan's Long-term Strategy in November 2018. The recommendations include a proposal to introduce CP and develop decarbonised infrastructure through public investment.

As the world speeds towards a decarbonised society, the continued opposition to CP, an effective reduction method, is a mistake that will leave industries in Japan, as well as Japanese society as a whole and even future genera-

tions, with a large bill that cannot be paid back. The Ministry of the Environment and the Government of Japan must have a policy in place to support the many companies that are striving to positively take the lead in developing a decarbonised society, instead of giving excessive concessions to some industries that are opposed to this idea.

In response to these lamentable situations, Green Alli-

ance Japan (GAJ) maintains that taking actions on climate change issues is critically important in building a sustainable society that allows all people to lead safe, secure, and fulfilling lives. GAJ believes that CP is a solution. Furthermore, it is carbon tax in particular that is essential, as it promotes behavioural changes in every corner of society, including in citizens. The GAJ recommendations can be found below.

Proposals on Early Introduction of Carbon Tax to Halt Climate Change and Promote Changes in Social Structures

1. Basic Points

- A Carbon Tax to promote change in social structure including the current economic and tax systems, as well as to provide a solution to climate change issues by reducing CO₂, and thereby contribute to building sustainable, decarbonised society
- Based on the polluter-pays principle, the Tax to be levied in a fair and equitable manner, rewarding environmentally correct behaviours
- The Tax to be fair and equitable for all people, having less burden for the socially vulnerable and future generations
- The tax rate to be set JPY5,000 per tCO₂ or higher by 2030 at the latest, with an eye on its CO₂ reduction effects as well as on global trends
- The objective of the Carbon Tax to be clearly defined as the tax for the well-being of all citizens and sustainability of society. Before the actual implementation of the Tax, an extensive national debate to be developed inviting future generations at all stages
- To avoid wasteful spending, the Tax to ensure transparency of its levying and allocating processes and how the Tax is used.

2. Use of Carbon Tax

(1) The Carbon Tax itself has a significant impact on reducing CO₂ emissions. Therefore, the Tax, as a climate change countermeasure, should be used in such ways as a large number of people can feel the merit of the tax and welcome its introduction.

Specifically, the Tax should be applied to the following:

- The social welfare sector, such as medical and educational support and tax returns for low-income earners, personal income tax reductions and alleviating the cost of social security.

- Disaster recovery projects due to extreme weather as well as maintenance of aging infrastructure, in particular, school and public facilities, social infrastructure and public transportation that will effectively bring about energy use reduction.

- The promotion of school education for the creation of a sustainable society, and related capacity development in the political, philosophical, technical and scientific fields.

- The support for technological development/research and capacity development for small- and medium-sized enterprises (SMEs) that will contribute to the realization of a low-carbon society.

(2) The Carbon Tax should be distributed more to local communities so as to revitalise civic society organisations. It also should be applied to mitigation, adaptation and disaster prevention activities where the local governments, residents and companies play key roles.

(3) The Tax can also be applied for the development and maintenance of transmission grids and environmental conservation in installation areas as a way to promote renewable energy.

【 Miscellaneous Issue of the CO₂ Emission Reduction 】

The emission trading system, another measure for CO₂ emission reduction, set a target of fifteen percent (15%) of global CO₂ emissions (with an expected increase to 20% in 2020). Particularly in Japan, large emitters for which this scheme applies account for over 62% of the country's greenhouse gas emissions (based on a study conducted by the Kiko Network). To utilise this system effectively, it will be essential to reduce total emissions by setting emission caps. Stakeholders should engage in urgent dialogue to discuss the introduction of such regulations.



Chapter 2

Emerging Issues

Section 1. The Issue of Plastics

1. Challenges for Japan's "Resource Circulation Strategy for Plastics"

In recent years, the global-scale pollution of marine plastic litter has reached a critical level and become the focus of intense attention on the international stage. Marine plastic litter has also become a policy issue for the G7 and G20. The Ocean Plastics Charter was proposed at the G7 Charlevoix Summit in 2018, but two signatures—from Japan and the United States—were missing. In Japan, the recycling of plastic waste from containers and packaging is being promoted under the Basic Act for Establishing a Sound Material-Cycle Society, as well as the Containers and Packaging Recycling Law. However, with a recycling rate of 27.8% in contrast to a thermal recovery rate of 58.0%, it is difficult to say that true resource circulation is being practiced. In addition, with 22.7 billion PET bottles sold in 2017, the current reality is that emission control has not progressed.

In August 2018, after the Charlevoix Summit, the Ministry of the Environment in Japan belatedly started formulating the "Resource Circulation Strategy for Plastics" (hereinafter referred to as the "Strategy"), finally drawing up the "Strategy" on 31 May 2019. However, this "Strategy" (1) does not consider the basic question of how the human race should deal with plastic; (2) includes no specific measures to control emissions; (3) lacks regulations on eliminating toxic chemical substances; and (4) legitimises the current situation where thermal recovery significantly exceeds recycling.

2. How the human race should cope with "plastic"?

Plastic is the human race's first man-made material and it has a number of benefits: it is lightweight, water resistant, and has a high degree of plasticity. Many types of plastic are also highly resistant to acids and alkalis, and cheap.

Because of this, while only a century has passed since it was first invented, plastic has appeared at every corner of our modern-day lives. However, these advantages are actually disadvantages in disguise. The following are the main concerning issues of plastic.

① One benefit of plastic is that it is "cheap and lightweight," but this can equally be a drawback in that it can easily be thrown away. Combined with plastic's durability (resistance to water, acids, and alkalis), these properties bring about the current issue of marine plastic litter. Recently, it has been found that plastics break down further and turn into microplastics, which stay in the environment for a long time and become a carrier for toxic chemical substances such as polychlorinated biphenyls (PCBs). Furthermore, it is becoming clear that ecosystems may eventually be adversely affected via the food chain, as microplastics are absorbed by wildlife. The environmental impact of plastic as mentioned above is very similar in nature to persistent organic pollutants (POPs), such as PCBs, and despite the many advantages, their impact has become a serious challenge that should not be overlooked when creating a sustainable society. Therefore, unless we improve on the properties of plastic or discover a method to completely prevent release into the oceans, we have no choice but to steer ourselves in the direction of completely eliminating or, at the very least, significantly reducing plastic, in the same way that we have restrictions on POPs. This is a material that has gone beyond the control of humans.

② Another benefit of plastic—that it has a high degree of plasticity and is easy to process—is possible because of the various additives that plastics contain. A considerable amount of these additives are endocrine-disrupting toxic chemicals. There is a risk that we are exposed to these toxic chemical substances when they dissolve out of plastic products. In addition, they may be absorbed by wildlife

when the substances decompose in seawater after becoming marine litter. This may have adverse consequences for humans and ecosystems. Every time plastic products are recycled, the toxic chemical substances contained in these products are released into the environment. Therefore, regulations to eliminate toxic chemical substances are essential, not only for plastic raw materials, but also for additives, including during the recycling stage.

③ Many plastics are made from petroleum, which is a fossil fuel. At the very least, plastics made from petroleum are incompatible with efforts to create a decarbonised society. Therefore, petroleum-derived plastics should be abolished in principle, and at the very least, single-use plastics should be reduced on a significant scale.

3. Recommendations for Strategies to Deal with Plastics

While Japan may have been slow to respond, it now needs to make up for lost time. At the same time, from the perspective of a circular economy, Japan must aim to develop new and alternative products, and create new systems by utilizing its technological capabilities. This will also contribute to the revitalization of the Japanese economy. In order to do so, there is a need to adopt a comprehensive inter-ministerial strategy that incorporates the following content, with a drastic review of production, consumption, and disposal methods, based on the entire product lifecycle.

① The strategy should aim to abolish or substantially reduce the use of plastic, clearly outlining the discontinuation period and the amount by which it will be reduced when being phased out.

② The strategy should prompt the enactment of new legislation and the revision of existing laws and regulations. The immediate enactment and revision of the following laws should be implemented:

a. Revision of the Basic Act for Establishing a Sound Material-Cycle Society

It should be clearly stated that the aim is not only the creation of a sound material-cycle society, but also a low-carbon and plastic-free society. The act should be revised to establish the basic principles and measures of a circular economy, including production and disposal methods.

b. Revision of the Containers and Packaging Recycling Law

(i) Relax collection requirements for local governments and strengthen collection requirements for business operators based on the extended producer responsibility (EPR) principle

(ii) Ban the sale of PET-bottled drinking water and introduce a deposit system

(iii) Require that all plastic shopping bags be available only at an additional charge by 2020 and aim to achieve a refusal rate of 90% by 2025

(iv) Evaluate the need for other types of plastic packaging and ban the use of plastic packaging when another material with the same functionality is available

(v) Reach 100% collection and recycling of plastic containers and packaging by 2030

(vi) Introduce regulations on toxic chemical substances and a positive list system for additives in plastics used for containers and packaging

c. Enactment of new legislation for other plastic products

It is necessary to promptly enact legislation to mandate the introduction of regulations that gradually restrict plastic use, taking into consideration the need and possible alternatives for each application. Moreover, new legislation must mandate the establishment of recycling systems for plastics that have been approved for use, as well as the introduction of restrictions on toxic chemical substances.

Section 2. The Ongoing Disaster of the Fukushima Nuclear Accident

1. Problem of releasing contaminated water into the ocean

In the eight years that have elapsed since the Fukushima nuclear accident, the government has been moving forward with decontamination and efforts to lift evacuation orders, making the recovery of Fukushima its top priority. However, the reality is that very few young people are electing to return even after evacuation orders have been lifted, making it difficult for these cities to recover. Making matters worse, work to decommission the Fukushima Daiichi Nuclear Power Plant has also not been progressing according to plan. Out of the major movements that occurred in 2018, we have examined the issues regarding policies related to releasing water contaminated by decommissioning work into the ocean, and ongoing efforts by the Ministry of the Environment of Japan (MOEJ) on recycling and landfilling of soil generated from decontamination.

- What is contaminated water?

Water is injected to keep the melted reactor cores cool. Groundwater is also seeping into the damaged reactor building. It is water from these sources that becomes contaminated by radiation. About 400 tonnes of contaminated water had been generated in the early stages post-accident, but this amount has been reduced to about 100 tonnes because of the installation of a frozen soil wall ("ice wall") to block the inflow of groundwater into the reactor buildings. However, the amount of contaminated water can fluctuate significantly due to heavy rainfall, such as during the typhoon season. According to materials compiled by Tokyo Electric Power Company Holdings, Inc. (TEPCO HD) and the Ministry of Economy, Trade and Industry (METI), the average amount of contaminated water generated in FY2017 was 220 tonnes/day.

Most radioactive substances can be removed from contaminated water using removal equipment (such as the Simplified Active Water Retrieve and Recovery System (SARRY) and the Advanced Liquid Processing System (ALPS)). However, tritium (radioactive hydrogen) cannot be removed. For this reason, contaminated water has been stored in tanks since 2011. Currently, the amount of contaminated water has reached about 1.1 million tonnes. Although TEPCO HD plans to secure a storage capacity of 1.37 million tonnes based on estimates of the amount of water that will be generated until the end of 2020, no decisions have been made for after 2020. TEPCO HD's policy is to release contaminated water into the ocean, but only with consent from fishermen. However, the Fukushima Prefectural Federation of Fisheries Co-operative Association strongly opposes the release of contaminated water into the ocean, saying that the possibility for the fisheries

industry to resume operations becomes increasingly remote due to damaging misinformation, and thus far, no agreement has been reached.

- METI steering policies on releasing contaminated water into the ocean through decisions made by its sub-committee

Backing this approach is METI, which has established a "sub-committee on handling water treated using an advanced liquid processing system (ALPS)". The sub-committee examined five different disposal options: ground injection, ocean release, discharge as steam, discharge as hydrogen, and underground burial. They concluded that releasing water into the ocean was the most reasonable option in terms of both cost and time. However, continuous storage was not included as an option. Then, at the end of August 2018, public hearings were held in three locations in Fukushima and Tokyo to gather feedback from the public.

- Public hearings crowded with critical viewpoints regarding the release of contaminated water into the ocean

Of the 44 speakers at these public hearings, 42 were opposed to releasing contaminated water into the ocean. The two in favour were stakeholders involved with measuring radioactivity. Almost immediately, it became clear that decontamination functionalities were inadequate and that the contaminated water contained various radioactive substances other than tritium. The additional contamination was because there was a period in which the filters of the removal processing equipment were not changed as frequently. Many of those who opposed the release of contaminated water into the ocean petitioned for continued storage. Additionally, a plan to construct a large 100,000-tonne tank was proposed to enable long-term storage and encasing contaminated water in concrete. Given these past events, it seems even less likely that an agreement will be reached on the release of contaminated water into the ocean.

In the end, METI took back the feedback from the public hearings and decided that the sub-committee would discuss each proposal.

2. Reuse and landfilling policies for contaminated soil

- What are the policies on recycling contaminated soil?

Twenty-two million cubic metres of contaminated soil has been generated through the remediation of the contaminated area outside the plant, according to MOEJ estimates (as of January 2015). Originally, the government planned

to bring in interim storage facilities, but it was difficult to secure land for this large amount of soil, it sought to reduce the volume of soil. As such, MOEJ decided on a policy to reuse contaminated soil in April 2016, following discussions at a series of “review meetings” held from July 2015 on technology development strategy for volume reduction and recycling of the removed soil.

Specifically, after contaminated soil with readings below 8,000 Becquerels (Bq) per kg is treated to prevent scattering or is covered with soil, it is reused around the country in public projects and farmland reclamation. Its application in public projects includes options such as its use as banking materials for roads, railways, coastal disaster prevention forests and seawalls, interim covering materials, materials for land and water reclamation, and materials for elevating farmland. To control exposure, policy measures have been put in place; notably, “additional radiation doses for nearby residents, facility users and construction workers must not exceed 1 millisievert (mSv) per year” during construction, and “measures must be taken at the time of service including securing the cover of appropriate thickness to confine additional exposure (excluding the case of damage and corruption) to keep levels in which no measures are required to prevent damage from radiation (set at 0.01 mSv/year)”.

- Problems with recycling

Policies on the reuse of soil generated from decontamination efforts pose a number of problems from the following perspectives. The use of contaminated soil for public projects allows radioactive substances to leach into the environment. The standard for reusing radioactive substances that result from dismantling nuclear facilities is 100Bq/kg based on the Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors. It takes about 170 years for a level of 8,000 Bq/kg to fall to that of regulatory standards. On the other hand, the useful life expectancy of embankments is 70 years and MOEJ has yet to answer the question of what to do after this time. In the event of a disaster, it is possible that roads will collapse and embankment materials will seep out, which poses a concern about the effects of extensive soil contamination.

- Demonstration project in Nihonmatsu City that was forced to shut down

MOEJ is trying to develop demonstration projects in several areas. One of those demonstration projects was suspended due to opposition from the public. This project, planned for implementation in Nihonmatsu City, was suspended by residents who knew about the details of the process behind the scenes. The plan itself was to use con-

taminated soil generated during decontamination efforts in the area as roadbed material to pave agricultural roads. There was no rationale for spending JPY 350 million to use contaminated soil to pave a 200-meter farm road, a project that would usually only cost JPY 5.2 million. Strong opposition from the area’s residents called on the mayor to take action and the plan was ultimately suspended. Even though the plan has been virtually abandoned, MOEJ still takes the position that it is under suspension.

- Demonstration project in the Nagadoro area of Iitate Village

A plan for a demonstration project on the use of contaminated soil for developing farmland is underway in the Nagadoro area of Iitate Village. This area has been designated as a “difficult-to-return zone”. Therefore, residential areas will be decontaminated once farmland has been designated by the government under the “reconstruction and revitalisation plan for specified reconstruction and revitalisation zones”. In other words, decontamination efforts and the use of contaminated soil were combined in a single plan, so district residents who wanted the area to be decontaminated had no choice but to accept this plan.

The plan includes a proposal to spread contaminated soil from Iitate Village on farmland at a height of about one meter, then cover the soil and revitalise the land as farmland. Floriculture and grain for feed will be grown on this reclaimed farmland. There are many issues going forward, including the safety of agricultural products and those responsible for farming.

- Plan to use contaminated soil to widen roads

A demonstration plan is currently underway using contaminated soil in construction work to widen the Joban Expressway in Minamisoma City (to four lanes). This plan has not moved forward due to opposition from area residents.

- Demonstration project on landfilling contaminated soil in Nasu Town, Tochigi Prefecture

This is a demonstration project being implemented outside of Fukushima prefecture. Municipalities are responsible for treatment and disposal of soil generated through decontamination efforts.

The demonstration project targeted Nasu Town, Tochigi Prefecture where soil from decontamination efforts in Iono Sanson Park had been packed in flexible containers and had been buried temporarily at an adjacent tennis court. MOEJ went ahead with a demonstration project to dig up the bags, take out the soil, and rebury it. They have already completed this project without fully briefing the

local residents.

These are “demonstration projects” in name only; contaminated soil is being reused substantially. After implementing several of these projects in different areas, MOEJ wants to develop rules and regulations and go on to implement projects nationwide.

Instead of spreading radiation-contaminated water and soil to the wider environment, it is necessary to move forward with centralized management of these contaminated substances.

3. Considering the future of Fukushima from the perspective of experiences in Chernobyl

- Released radiation and environmental pollution

Green Watch has continued to address issues related to Fukushima since its 2016 edition. The 2019 edition compares the impacts from both the nuclear disasters at Chernobyl and the Fukushima Daiichi Nuclear Power Plant. The following table compares the amount of radiation leaked with a focus on caesium and areas of soil contaminated with that radiation. In Chernobyl, nuclear fission progressed rapidly in No. 4 reactor, creating a “nuclear runaway” to an explosion. This was followed by a graphite fire that burned for 10 days, during which a large amount of radioactivity was released. Because this nuclear power plant was located inland, soil has been contaminated across national borders as a result of widespread radioactivity.

In Fukushima, on the other hand, a meltdown occurred when the reactor had lost its coolant, resulting in a hydrogen explosion. A large amount of radiation was released along with the explosion. It is believed that most radioactivity flowed out to the Pacific Ocean because of the reactor’s location along the coast.

- What happened in Chernobyl?

Both governments were reluctant to provide information about the accidents. In Chernobyl, children picked flowers in the fields and people continued to work on the farms. In Fukushima, the results of predictions on diffusion by SPEEDI were not released, causing people to evacuate directly in the direction of radiation flow.

However, in Chernobyl, the government conducted frequent investigations on exposure, taking environmental radiation dose measurements the day immediately after the accident. In the Ukraine, thyroid exposure tests were conducted nationwide on 130,000 children (under the age of 18) in the month following the accident. Those participating in the health survey included 264,857 people who worked to bring the accident under control, 49,887 evacuees from the 30 km zone, 1,554,269 residents from contaminated areas, and 428,045 children born to people from these groups. This is far more people than those tested in Fukushima. In the Ukraine, cases of childhood thyroid cancer started to rise from the third year after the accident, and in affected areas, the occurrence of various diseases such as heart disease, infections from immune deficiencies (such as tuberculosis), blood disease and cancer have also increased.

- Childhood thyroid cancer in Fukushima

According to a survey conducted by the Prefectural Oversight Committee for Fukushima Health Management Survey, 278 cases of thyroid cancer (as of March 2019) were detected through testing about 360,000 children under the age of 18 and born in the year of the accident. However, the committee denied that there was a causal relationship between increases in thyroid cancer and radiation exposure, citing lower radiation doses in comparison with Chernobyl and the fact that thyroid cancer increased in Chernobyl five years after the accident. In fact, as stated

Table 2.2.1 Released radiation and contaminated areas

(PBq: Petabecquerel = equivalent to 10¹⁵ Becquerels)

	Released radiation (PBq)			Areas contaminated by Cs-137 (km ²): [1]	
	I-131	Cs-137	Cs-134	> 37,000 Bq/m ²	> 555,000 Bq/m ²
Chernobyl No. 4 reactor [2]	1,760	85	54	145,000	10,300
Fukushima Daiichi, No. 1-4 reactors [3]	473	18.4	14.3	8,424	768

earlier, the Japanese government's claim that the increase in childhood thyroid cancer was five years after the Chernobyl disaster was incorrect, as the rise in cases could be observed three years after the accident. In addition, the incidence rate of thyroid cancer per 100,000 people has more than doubled from 28 people in 2013 to 68 people in 2018.

In Japan, surveys carried out after the accident were less than satisfactory; thyroid exposure tests for children were limited to 1,080 people between 26 and 30 March 2011. In addition, there was a problem in the survey methodology. Although the maximum thyroid exposure dose is regarded as 35 mSv, background radiation levels were too high in the contaminated radioactive environment and accurate measurements could not be taken. In addition, the Japanese government did not measure atmospheric Iodine-131, although there was a method to estimate initial exposure dose from respiration volume by measuring concentrations of Iodine-131 in the air right after the accident. Therefore, for this, the Japanese government arguably bears significant responsibility.

- Support for evacuees: Chernobyl legislation and Japan

In 1991, five years after the accident, two laws were enacted in the Ukraine: the law "on the legal status of territory subjected to radioactive contamination as a result of the Chernobyl catastrophe" and the law "on the status and social protection for the citizens who suffered as a result of the Chernobyl catastrophe". These were referred to as the "Chernobyl legislation" and similar laws were enacted in Belarus and Russia. According to the Chernobyl legislation, areas within a 30-km radius from an accident reactor are forced evacuation areas. Furthermore, contaminated areas where the annual exposure dose exceeds 5mSv are designated as mandatory evacuation areas, and those above 1mSv are regarded as areas where residents have the right to evacuate. Citizens affected by the disaster have various rights, including free health checks and public transportation, the right to recuperate in non-contaminated areas, and free provision of non-contaminated food.

On the other hand, in Japan, the Nuclear Accident Child Victims' Support Law enacted in 2012 states that "victims will be supported properly regardless of whether victims decide to reside in the area where support will be provided, move to other areas, or return to the areas they inhabited before the evacuation, so that each victim can make their own decision freely." However, the reality is that there is a push to get victims to return to their pre-accident areas. As evacuation orders have been lifted

in areas where the radiation dose is 20 mSv/year or less, support has been discontinued for those who do not want to return to the areas where they had lived prior to the evacuation.

[1] Imanaka, T. (2016, March). "Cherunobuiri to Fukushima: Jiko puroseshu to houshanouosen no hikaku [Chernobyl and Fukushima: A Comparison of the Process of the Accidents and Radiation Contamination]." *Kagaku [Science (Iwanami Magazine)]*, 86. [In Japanese only]

[2] Ministry of Ukraine of Emergencies and Affairs of population protection from the consequences of Chornobyl Catastrophe, & All-Ukrainian Research Institute of Population and Territories Civil Defense from Technogenic and Natural Emergencies. (2006). *20 Years After Chornobyl Catastrophe: Future Outlook (National Report of Ukraine) (Rep.)* (V. I. Baloga, Ed.). Kyiv.

[3] Calculated based on Tables 8 and 9 In: Tokyo Electric Power Company. (2012, May). *Fukushima dai-ichi genshiryoku hatsudensho jiko niokeru houshanoubushitsu no taikichu-e no houshutsuryou nitsuite [Estimation of Atmospheric Radiation from Radioactive Substances Released from the Fukushima Dai-Ichi Nuclear Reactor Accident]*. (Rep.) [In Japanese only]

Green Alliance Japan Members Involved in Green Watch 2019

Citizens' Nuclear Information Center

Website: www.cnic.jp/english/ Phone number: +81 3 6821 3211 Email: cnic@nifty.com

Activity description: With a position independent from the government or industry, the Citizens' Nuclear Information Center (CNIC) works towards building a society that is not dependent on nuclear power. We collect materials relating to the dangers or issues with nuclear energy, conduct investigative research, and provide the resulting insights for use in civil anti-nuclear movements. We also proactively disseminate our comments on policy. CNIC collaborates with groups within and outside of Japan to conduct research and organise international conferences.

FoE Japan

Website: <http://foejapan.org/en/> Phone number: +81 36909 5983 Email: info@foejapan.org

Activity description: FoE is an international environmental NGO focusing on environmental issues at a planetary scale. Pulling from the support of two million members across 75 countries, FoE Japan began its work in 1980. The organization engages in a wide range of advocacy work in such fields as energy (energy transition and anti-nuclear movements), climate change and deforestation, and environmental and human rights issues arising from large-scale development. Working towards the creation of a peaceful, sustainable society, FoE Japan envisions a world where all life is respected, where humans and all other organisms can live in harmony.

Japan Association of Environment and Society for the 21st Century (JAES21)

Website: http://www.kanbun.org/katudo_n/about_us.html Phone number: +81 3 5483 8455 Email: info@kanbun.org

Activity description: Acknowledging that 'environmental problems are civilization's problems,' JAES21 was established in 1993. The organisation seeks to use citizens' power to build a sustainable civilisation that balances the environment, economy, individuals, and society, one that ensures the health and wealth of the next generation. With this mission in mind, JAES21 is working towards transformations in social systems, lifestyles, and values that allow for progress towards a new and better form of civilisation. JAES21 engages in a wide range of activities, including: i) investigative research such as "Making an Environment and Society Roadmap", "Approaches toward a Green Economy," and "Looking for Japan's Wisdom on Sustainability," ii) policy recommendations such as "Include the Environmental Clause in the Japanese Constitution!" and support for passing legislation for environmental education, and iii) support for regional policy recommendations.

Japan Endocrine-Disruptor Preventive Action (JEPA)

Website: http://kokumin-kaigi.org/?page_id=168 Phone number: +81 3 5875 5410 Email: kokumin-kaigi@syd.odn.ne.jp

Activity description: Environmental pollution by hazardous chemicals such as dioxins and other endocrine disruptors has dire implications not only for humankind, but also for all living creatures on the planet. In addition to providing citizens with information related to chemical substances, JEPA communicates its stance on policies regarding chemical substances to the national government, local governments, and businesses. JEPA also creates pamphlets and reading materials to educate the public about various chemical substances and their adverse effects, as well as hold both domestic and international symposia. Since 2009, the organisation has also worked to tackle the problem of neonicotinoid pesticide use in agriculture. Other initiatives include providing information about the dangers of household chemicals. Ultimately, working to meet the WSSD 2020 Chemical Management target, JEPA engages in various activities to protect future generations through hazardous chemical reduction.

Kiko Network

Website: <https://www.kikonet.org/?cat=54> Phone number: +81 75 254 1011 Email: kyoto@kikonet.org

Activity description: Kiko Network is an NGO/NPO that proposes, comments, and acts on behalf of civil society to stop global warming. Rather than solely focusing on changing the behaviour of each individual, the organisation strives to make all aspects of society (industry and economy, energy, lifestyle, localities, etc.) more sustainable. Incorporating research on global warming mitigation, policy commentary, and information dissemination, Kiko Network creates campaigns, strengthens networks, creates local global warming mitigation models, and engages in human resources development and education. Envisioning a world where all can lead secure lives in a low-carbon and sustainable future, the organisation works to transform our current society and economy toward greater fairness, peace, and prosperity. Furthermore, as a national network of civil society and environmental NGO/NPOs in the global warming mitigation space, Kiko Network also engages and cooperates with a wide range of organisations and sectors.

National Network for the Three Rs for Containers and Packaging

Website: <http://citizens-i.org/gomi0/index.html> (in Japanese only) Phone number: +81 3 3234 3844 Email: reuse@citizens-i.org

Activity description: The network, initially comprised of 215 groups and 182 individuals nationwide, was established in 2003 as the National Network Working to Amend the Japanese Containers and Packaging Recycling Law and renamed as the National Network for the Three Rs for Containers and Packaging three years later. In 2011, the network collected 400,000 signatures for a petition to the National Diet, which was adopted. This prompted the network to draft a citizens' proposal that incorporated topics such as the responsibility of large producers, promotion of the two Rs (reduce and reuse), and streamlined garbage segregation. The organisation worked with this policy proposal to pave the way for the planned 2016 reform of the Containers and Packaging Recycling Law.

Institute for Sustainable Energy Policies (ISEP)

Website: <https://www.isep.or.jp/en/> Phone number: +81 3 3355 2200 Email: <https://www.isep.or.jp/en/about/contact>

Activity description: Working toward society powered by renewable energy, ISEP produces energy policy research and commentary, as well as the development of renewable energy. This includes commentary and activities regarding strategies for transformative energy policy as well as specific energy plans. ISEP's four areas of utmost importance are Energy Policy, Energy Business, Financing, and Community. Furthermore, the organisation capitalises on its networks with affiliated groups in and outside of Japan to share information and knowledge. ISEP also uses its connections with prominent international renewable energy-related groups to engage in international conferences and research activities.

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