The 21st Century Public Policy Institute
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Working paper

Proposal for a Post-Kyoto Framework

Interim report on the research project entitled
"Japan's Strategy and International Cooperation Measures for a Post-Kyoto Framework"

(Akihiro Sawa, Senior Executive Fellow)

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The 21st Century Public Policy Institute

Executive Summary

The first commitment period of the Kyoto Protocol will begin in 2008. However, the United States, the world's largest emitter of greenhouse gases, has not ratified the Kyoto Protocol, and developing nations such as China and India are not required to reduce emissions. The Kyoto Protocol also lacks a mechanism for promoting the development of the innovative technology required to fundamentally resolve the global warming problem. Further, major emitters such as the United States and Australia are not expected to ratify the Kyoto Protocol, and developing countries are not expected to make substantial efforts to reduce greenhouse gases. Taken together, all this means that the Kyoto Protocol is not an effective framework for addressing global warming. As the host country of the Conference of Parties in Kyoto (COP3), Japan is still working to develop the best possible proposal for combating global warming.

Chapter 1. Current Status of the Debate on a Post-Kyoto Framework—Overview of the Main Actors' Positions on a Post-Kyoto Framework

The EU wishes to maintain the Kyoto Protocol framework (setting binding, country-specific, quantitative targets) and to make EU ETS a global standard.

The U.S. calls for promoting a strong and transparent system, distinct from the Kyoto Protocol, under which each country sets different targets, and focuses on technological solutions.

The major developing countries continue to insist that responsibility lies with the developed nations, but there are some signs of a more proactive approach.

Former Prime Minister Shinzo Abe of Japan has proposed a "flexible and diverse framework" for the post-Kyoto framework. The outcome of the G8 summit in Heiligendamm represents the current middle ground and a starting point for negotiations.

At the subsequent APEC Economic Leaders' Meeting, common quantitative targets for energy efficiency were agreed upon in the form of a non-binding declaration. This declaration is significant in that it demonstrates that the concept of energy efficiency can be given a central role in measures against global warming and that major emitters, excluding the EU, can join in an agreement between developed and developing nations when based on the concept of energy efficiency.

Chapter 2. Proposal for a Post-Kyoto Framework—Commit and Act

1. Necessary elements for a post-Kyoto framework

A framework that:

(1) Is premised on a long-term perspective and sustainable, in the sense that it ensures the continued efforts of both governments and the domestic entities responsible for emissions

(2) Identifies the potential reductions in the various countries (particularly major emitters of greenhouse gases) through scientific methods and an objective process, and shares information on these potential reductions among countries

(3) Includes internationally legally-binding commitments made to policies and actions that governments can definitely implement

2. Six principles of the new framework

A: **Environmental effectiveness**—Ensure that greenhouse gases are actually reduced

B: **Science-based analysis**—Data on potential for reductions and costs should be based on scientific analysis

C: **Equity**—In accordance with "common but differentiated responsibilities and respective capabilities of countries and their social and economic conditions" (UNFCCC)

D: **Inclusiveness**—Broaden participation to include non-governmental entities as actors in the new agreement

E: **Political feasibility**—Required to enable all countries to participate in the framework

F: **Sustainable, long-term perspective**—A reasonable amount of lead time should be provided for innovative technology development and diffusion

A new protocol should be agreed on in discussions based on Article 4, paragraph 2 (d) of the UNFCCC. It should be examined based on Article 9 of the Kyoto Protocol, and should replace the Kyoto Protocol after the first commitment period expires at the end of 2012 (or when a COP decision is made to shift to a new protocol). In 2013, the new protocol,

comprised of the following three categories as major elements in its structure, should go into effect based on Article 17 of the UNFCCC.

The commitment period should last 50 years beginning in 2013, and every five years negotiations should be held on revising Category I commitments and updating Categories II and III based on the most recent scientific, technical, economic and social information.

Category I

Shared Commitments to Binding Actions by Major Emitters' Governments

(1) Internationally legally-binding provisions are stipulated for major emitters including developing countries (the contents are determined by negotiating a series of policy templates through the "request and offer" negotiation process in order to build an agreed-upon policy matrix)
(2) Provisions to ensure compliance and deal with countries in violation

Category II

Individual Commitments to Non-binding Actions by All Governments

(1) Individual governments make political commitments to policies and measures (the new protocol stipulates the kind of items that should be included in the commitments)
(2) Measures to ensure implementation

Category III

Participatory Commitments to Individual Actions by Private Sector Entities

(1) Commitments to actions to combat global warming by private sector entities that are in accord with the object of the new protocol
(2) Procedures to register, validate and verify those actions and their achievements

Table 1. **Policy Matrix (Example)**

Field / **Country**	Measures for thermal power plants	Alternative fuels for auto-mobiles	Energy efficiency (iron and steel)	Energy efficiency (cement etc.)	Nuclear power	Methane	….	Measures to restore forest cover	Greenhouse gas reduction volume
U.S.	Mandates adoption of minimum thermal efficiency standards	Mandates use of bio-ethanol	….	….	….	….	…..	….	….
Japan	Mandates adoption of minimum thermal efficiency standards	….	…..	…..	…..	…..	…..	…..	…..
U.K.	Mandates adoption of minimum thermal efficiency standards	…..	…..	…..	…..	…..	…..	…..	…..
Germany	Froze construction of new coal-fired power plants	…..	…..	…..	…..	…..	…..	…..	…..
Russia	…	…..	…..	…..	…..	…..	…..	…..	…..
China	Mandates adoption of minimum thermal efficiency standards after 5 years	…..	…..	…..	…..	…..	….	…..	…..
Brazil	…	Mandates use of bio-ethanol	….	….	….	….	…..	….	….
…	…	….	…..	…..	…..	…..	….	…..	…..
Greenhouse gas reduction amount	…..	….	….	….	….	….	….	….	Total greenhouse gas reduction amount

Note: The columns above represent examples of the various types of policy templates. A newly agreed column would be added upon the conclusion of each negotiation to achieve a complete policy matrix. (The new protocol should stipulate whether the addition of a new column would necessitate an amendment to the protocol itself, which in turn would necessitate ratification procedures every time an agreed-upon policy template is added, or not).

Further, the technology development and diffusion and the financial assistance for this, which we maintain in this report should be dealt with under separate agreements distinct from the new protocol, could become another policy template, depending on the way in which negotiations develop.

3. International cooperation for innovative technology development

An international cooperation program should be established and an appropriate system developed for handling intellectual property rights and assigning public-private roles. This program should distinguish between short-term practical research on energy conservation and the development and use of new energy and long-term basic research that will lead to innovative technology development.

4. Financial issues in developing countries' measures against global warming (mitigation and adaptation)

Under the new framework, a system could be designed to encourage independent efforts by the major emitters with steadily developing economies. Specifically, conditions on use of the original CDM should be imposed on major emitters among the developing countries in the aforementioned Category I, by requiring that those countries commit to internationally legally-binding measures to reduce greenhouse gases and actually implement them.

With this as a prerequisite, developed countries should preserve financial mechanisms used for CDM, and developed countries' governments should commit the funds used to purchase emissions credits generated by CDM to Category I policies through negotiations. In this case, one option would be to require that developed countries purchase enough emission credits to compensate for their shortfall in meeting the Kyoto Protocol targets.

Chapter 3. Structural Problems of the Kyoto Protocol

1. The greatest failure of the Kyoto Protocol is its lack of adequate consideration for technology.

2. A regulatory approach based on setting quantitative targets, as required by the Kyoto Protocol, makes negotiations a diplomatic game rather than a science-based dialogue. Further, developing countries can evade requirements to reduce greenhouse gases in perpetuity as long as the Kyoto Protocol remains in force.

3. There is such a wide range of greenhouse gas-emitting entities that the quantitative targets that the Kyoto Protocol imposes will be very difficult to achieve without regulating a broad range of national economic activity and daily activity.

4. The Kyoto Protocol places obligations on developed countries but does not require developing countries to reduce emissions, leaving no guarantee of its effectiveness.

5. The Kyoto Protocol sets penalties for non-compliance with quantitative targets committed to by the developed countries that have ratified the Kyoto Protocol, but does not provide any type of disincentive for developed countries that do not ratify the Kyoto Protocol.

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The first commitment period of the Kyoto Protocol will begin in 2008. However, the United States, the world's largest emitter of greenhouse gases, has not ratified the Kyoto Protocol. Moreover, developing nations such as China and India are not required to reduce emissions, even though their emissions are expected to rise sharply as their economies grow dramatically in the future. Further, the Kyoto Protocol also lacks a mechanism for promoting the development of the innovative technology required to fundamentally resolve the global warming problem. Some countries have begun to propose post-Kyoto frameworks that would ameliorate these problems. Among these, former Prime Minister Shinzo Abe of Japan offered a proposal called "Invitation to Cool Earth 50," which has attracted attention around the world, and served as the basis for the declaration on global warming at the recent G8 summit in Heiligendamm, Germany. Following the thirteenth session of the Conference of the Parties (COP13) to the United Nations Framework Convention on Climate Change (UNFCCC) in Bali, Indonesia, the 2008 G8 summit at Toyako in Hokkaido, Japan, and COP14 in Warsaw next year are the next critical diplomatic opportunities for negotiations on a post-Kyoto framework.

Based on this diplomatic itinerary, this research team recommends the diplomatic initiatives that Japan should take to bring former Prime Minister Abe's proposal to fruition.

Chapter 1. Current Status of the Debate on a Post-Kyoto Framework

To begin, we provide here an overview of the positions the main players hold on a post-Kyoto framework.

1. EU position: Maintain the Kyoto Protocol framework (setting binding country-specific, quantitative targets) and make EU ETS a global standard

The European Union (EU) solidified its common position in the months from January to March 2007. The agreement reached by the European Council (and European Summit) in March the same year is described below.[1]

This position was notable for its insistence that environmental policies alone cannot resolve the global warming problem, and therefore, that economic policies and energy policies must also be closely coordinated. At the same time, the document sets out the aim to

[1] http://www.env.go.jp/council/32tokubetsu21c/y320-03/ref03.pdf (in Japanese only)

"develop a sustainable integrated European climate and energy policy," with the following features.

(1) It is vitally important to achieve the strategic objective of limiting the global average temperature to not more than 2ºC above pre-industrial levels.

(2) Given that energy production and use are the main source for greenhouse gas emissions, the Energy Policy for Europe will pursue the following three objectives:

(a) Increasing security of supply;

(b) Ensuring the competitiveness of European economies and the availability of affordable energy; and

(c) Promoting environmental sustainability and combating climate change.

(3) International collective action will be critical in addressing climate changes, and a global and comprehensive post-2012 agreement should build upon and broaden the Kyoto Protocol and provide a fair and flexible framework for the widest possible participation. To this end, negotiations need to be launched at the UNFCCC beginning at the end of 2007 and should be completed by 2009.

(4) Developed countries should continue to take the lead by committing to collectively reducing their emissions of greenhouse gases in the order of 30% by 2020 compared to 1990 and by 60 to 80% by 2050 compared to 1990.

(5) The European Council endorses an EU objective of a 30% reduction in greenhouse gas emissions by 2020 compared to 1990 as its contribution to a global and comprehensive agreement for the period after 2013, provided that other developed countries make comparable reductions and economically more advanced developing countries contribute to the total reduction adequately according to their responsibilities and respective capabilities. Until a global and comprehensive post-2012 agreement is concluded, and without prejudice to its position in international negotiations, the EU makes a firm independent commitment to achieve at least a 20% reduction of greenhouse gas emissions by 2020 compared to 1990.

(6) The European Energy Action Plan for 2007-2009 adopted by the European Council emphasizes the following goals:

(a) Increase energy efficiency so as to achieve the objective of saving 20% of the EU's energy consumption compared to projections for 2020.

(b) A binding target of a 20% share of renewable energies in overall EU energy consumption by 2020;

(c) A 10% binding minimum target to be achieved by all EU member states for the share of biofuels in overall EU transport petrol and diesel consumption by 2020.

In addition to the above, the document previously released[2] provides the following points indicative of the EU's future positions in diplomatic negotiations.

(1) The post-2012 framework should build upon and broaden the Kyoto Protocol architecture, and provide a fair and flexible framework for the widest possible participation. The post-2012 framework must contain binding and effective rules for monitoring and enforcing commitments.

(2) In countries like the United States and Australia that have not ratified the Kyoto Protocol, businesses active in those countries are expected to call on their governments to take action. To support such developments, the EU will propose a link between these non-EU countries' domestic emissions trading schemes and the European Union Greenhouse Gas Emission Trading Scheme (EU ETS).

(3) By 2020, emissions by developing countries will surpass those of developed countries, and they will have to reduce greenhouse gas emissions as an absolute value from 2020. Impact assessments estimate that overall GDP of developing countries "with climate policy" in 2020 should be a tiny fraction (1%) lower than GDP "without climate change policy."

(4) Developing countries should increase energy efficiency, use renewable energy sources, and set policies on improving air quality and sequestering methane. There are several policy options for engaging the fuller participation of developing countries: expanding the scope of the clean development mechanism (CDM); augmenting financial measures; introducing emissions trading schemes to industries that are large energy consumers in developing countries; and a graduated system (assessments as to extent of development, per capita emissions, potential to reduce emissions and technical and financial capacities).

(5) International research and technology cooperation

(6) Emissions resulting from the net loss of forest cover must come to a halt in the next 20 years and be reversed afterward.

(7) Assistance for adaptation

[2] http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/envir/92864.pdf and http://europa.eu/press_room/presspacks/energy/comm2007_02_en.pdf.

(8) An international agreement on energy efficiency standards among major appliance-producing countries.

2. U.S. position: Promoting a strong and transparent system, distinct from the Kyoto Protocol, under which each country sets different targets

U.S. President George W. Bush proposed the following measures on May 31, 2007.[3]

(1) By the end of 2008, the U.S. and other countries will set long-term objectives for greenhouse gas reduction. For this purpose, the U.S. will convene a series of major emitters' meetings.

(2) In addition to the aforementioned long-term objectives, each country will devise medium-term national targets and programs reflecting its own energy supply structure and future demand. Industry leaders in the electricity, alternative fuels and transportation sectors will meet to explore shared measures for green energy technology and best practices.

(3) To ensure results, a strong, transparent system will be established to assess each country's performance. This system will help ensure that responsibilities under the UNFCCC are met.

(4) The U.S. will adapt to climate change, secure clean and energy-efficient technology and cooperate with countries striving to promote sustainable agriculture and forestry.

(5) Technology is the answer to climate change. Clean coal technology is particularly important.

(6) Safe nuclear power is an environmentally friendly, renewable energy source. Developing alternative automobile fuels (hybrid, hydrogen-based, clean diesel, biodiesel, ethanol) is also vital.

(7) Under the "Twenty in Ten Goal," which calls for reducing fuel consumption by 20% in the next 10 years, it will become mandatory for 35 billion gallons of renewable and alternative fuels to be produced.

(8) Government investment in research and development will be expanded.

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[3] http://www.whitehouse.gov/infocus/environment/.

(9) Trade measures will be taken, such as repealing tariffs on clean energy technologies and services.

As shown in (1) and (2) above, the U.S. has still not assented to legally-binding quantitative targets for greenhouse gas reduction, and instead proposes a combination of voluntary targets (which would not necessarily require that quantitative targets be set) and a strong, transparent system.

In addition, the U.S. Senate has proposed a number of laws aiming to introduce emissions trading, which some businesses also favor. This has recently given strength to the view, even in Japan, that the introduction of an emissions trading scheme is simply a matter of time. However, the intention and potential outcome of these laws is not clear: a closer look shows inadequate consideration of the speed at which greenhouse gases would be reduced (in all cases, at a much slower rate than that required of the U.S. in the Kyoto Protocol) and of methods for allocating allowances. Another issue is the political implications of the presidential election. Not all businesses are in favor of such laws, however, and most support them only because they expect the initial allocation to benefit them and/or they want to stymie the patchwork of regulations established by individual states. The majority of companies are extremely dubious of government intervention in the economy.

3. Position of major developing countries: Continuing to insist that responsibility lies with the developed nations, but there are some signs of a more proactive approach

Although there are slight differences in nuances among major developing countries, they tend to interpret the principle of "common but differentiated responsibilities, respective capabilities and their social and economic conditions" as permission to take no action to reduce their emissions. It is safe to conclude that developing nations are not yet motivated to aggressively tackle climate change. Moreover, since, under the structure of the Kyoto Protocol, developing nations are not required to reduce greenhouse gases but are given efficient energy technology and financing through CDM, there is no incentive for them to shift to any framework significantly different from the Kyoto Protocol.

India takes the most uncompromising stand of the developing nations, insisting that it will not reduce greenhouse gases at the expense of its own economic growth, which is lifting the country out of poverty, that developed nations should make steep cuts in their own emissions, and that it will pursue economic growth policies until its per-capita emissions are on a par with those of developed countries.[4]

China's National Climate Change Program (CNCCP) was released[5] on June 4, 2007. This program outlines China's intentions to promote measures based on a 20% reduction in

[4] http://www.telegraph.co.uk/earth/main.jhtml?xml=/earth/2007/06/12/eaindia12.xml
[5] http://english.gov.cn/2007-06/04/content_636052.htm

energy consumption per unit GDP by 2010, an increase in the proportion of renewable energy in primary energy supply up to 10% by 2010, and an increase in carbon sequestration by 50 million tons over 2005 levels by 2010. This program also specified the amount of greenhouse gas emissions that China could reduce by diversifying its energy sources and promoting energy conservation programs. However, China still adheres to the principle of "common but differentiated responsibilities," and is not greatly different from India in its insistence that developed countries should take the lead in reducing emissions.

After the U.S. released the aforementioned new proposal, Brazil's president, Luiz Inácio Lula da Silva, dismissed it as "voluntarism" and called it an attempt to avoid any legally-binding commitment. He indicated that Brazil would refuse to participate in a new group to debate these issues.[6]

Nevertheless, the Chairman's Summary for the Midnight Sun Dialogue on Climate Change, which was held in Sweden and brought together environmental ministers from 20 countries in June 2007, recognized the need for the developing countries to become more fully engaged in addressing climate change.[7] The document specifies that developed countries should be required to commit to stricter legally-binding quantitative targets, and that, though developing countries should not be expected to make such commitments, they should be given incentives to take "measurable and reportable actions of different kinds, such as sustainable development policies and measures (SD PAM), intensity goals or sectoral benchmarks." South Africa submitted the original draft of this text (which included the term "verifiable"). Brazil and Mexico agreed, China agreed in principle but had reservations on verification and reporting, and India disagreed.[8]

Also, at the Ad Hoc Working Group held in Vienna in late August 2007, the rift between two camps of developing countries deepened. Some, like China and South Africa, were concerned that, if developed countries were required to set strict quantitative targets and global emission reduction targets were agreed in future negotiations, they would then be pressured to set quantitative emissions targets. Others, like India, persisted with the unbending stance that developed countries should submit to quantitative targets. The former concern was expressed in a statement by an NGO for developing countries, Third World Network, at the Dialogue Plenary Session at the UNFCCC Vienna Climate Talks on August 29.[9]

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[6] http://www.guardian.co.uk/international/story/0,,2094690,00.html

[7] http://www.sweden.gov.se/content/1/c6/08/42/80/d1db5962.pdf

[8] http://premium.nikkeibp.co.jp/em/column/nishimura/01/index.shtml (in Japanese only)

[9] http://www.climatenetwork.org/climate-change-basics/by-meeting/awg-vienna-august-2007/TWN-Statement/view

4. Proposal by former Prime Minister Shinzo Abe of Japan: A "flexible and diverse framework"

On May 24, 2007, former Prime Minister Shinzo Abe of Japan submitted a proposal entitled "Invitation to Cool Earth 50" for the G8 summit. It can be summarized as follows:

Pillar 1: Advocate a long-term strategy to reduce the emissions of greenhouse gases globally

- Propose a long-term target of cutting global emissions by half from the current level by 2050
- Present a long-term vision of developing innovative technologies and building a low carbon society to achieve this goal.

Pillar 2: Three principles for establishing an international framework to address global warming from 2013 onwards

- Japan proposes to the world "3 principles" in designing a concrete framework for addressing global warming beyond 2013.
  1. All major emitters must participate, moving beyond the Kyoto Protocol, leading to the global reduction of emissions.
  2. The framework must be flexible and diverse, taking into consideration the circumstances of each country.
  3. The framework must achieve compatibility between environmental protection and economic growth by utilizing energy conservation and other technologies.
- Japan will create under international cooperation a new financial mechanism to extend support to developing countries with high aspirations.
- Japan will expand the endeavor for improving energy efficiency to the entire world. Japan will promote international efforts to expand the use of nuclear power, as well as providing assistance such as infrastructure development.
- Japan will study methods such as an integrated approach to fighting pollution and global warming; emissions trading; and economic incentives.

Pillar 3: Launch a national campaign for achieving the Kyoto Protocol target

- The Kyoto Protocol Target Achievement Plan will be revised to ensure Japan achieves its Kyoto Protocol objective of reducing emissions by 6%.
- The Japanese government will promote initiatives and urge municipalities and major business entities to accelerate their actions for reduction of emissions.
- Japan will launch a national campaign and call for efforts and creative ideas with the motto of reducing greenhouse gases by "1 person, 1 day, 1 kg."

The government will also solicit and incorporate new proposals in expanding the national campaign.

Pillar 2 is the most important aspect in terms of future diplomatic negotiations.

5. Outcome of the G8 summit in Heiligendamm: Represents the current middle ground and a starting point for negotiations

The developed countries at the G8 summit in Heiligendamm debated the positions outlined above. The outcome of this process is summarized below. The debate at the summit was recognized as the middle ground at this point for developed countries. There was a consensus that it represents the starting point from which negotiations will unfold over the next two years through the end of 2009, the date which all countries recognize is the deadline for coming to an agreement on the next framework.

(1) In setting a global goal for emissions reductions, the G8 will consider seriously the decisions made by the EU, Canada and Japan which include at least a halving of global emissions by 2050. The G8 commits to achieving these goals and invites the major emerging economies to join in this endeavor.

(2) The summit participants agreed that the UN climate process is the appropriate forum in which to negotiate future action on climate change, and called on all parties to participate in this year's COP to come to a comprehensive post-2012 agreement that would include all major emitters. This major emitters' process should include, inter alia, national, regional and international policies, targets and plans, in line with national circumstances, an ambitious work program within the UNFCCC, and technology development and transfer.

(3) A meeting of major emitters will make a substantial contribution to a new global framework by the end of 2008.

These three points were the gist of the G8 summit's Economic Communiqué as taken up by the governments and media, but from the prior standpoints of the countries involved, several other important points were (or were not) agreed to, as outlined below. As this is closely related to our own proposals presented later, we will discuss these points at some length.

(4) The EU's goal of limiting climate change to less than 2°C will not be addressed, but rather the UNFCCC's statute (greenhouse gas concentration levels) will be applied. (Declaration 49)

(5) There was no agreement on a long-term target to halve global emissions by 2050. Rather, the statement declared that increases in greenhouse gases should come to a halt and subsequently global emissions will be reduced by a reasonable amount. (Declaration 49)

(6) The summit participants recognized the importance of a balance between the environment, energy and the economy and the need for consistent policy tools. It recognized that addressing climate change is a long-term issue that will require global participation and a diversity of approaches to take into account differing circumstances. (Declaration 42)

(7) The summit participants reaffirmed previous agreements in the energy sector such as the Global Energy Security Principles[10] and called on major developing countries to adopt it. (Declaration 45)

(8) Complementary national, regional and global policy frameworks that co-ordinate rather than compete with each other will strengthen the effectiveness of the measures.. (Author's note: There is still a chance that efforts for the Asia-Pacific Partnership on Clean Development and Climate (AP6) will be given a role in UNFCCC.) (Declaration 50)

(9) The summit participants stressed that further action should be based on the UNFCCC principle of common but differentiated responsibilities and respective capabilities. It recognized however, that the efforts of developed economies would not be sufficient and that new approaches for contributions by other countries are needed. Against this background, the summit invited notably the emerging economies to address the increase in their emissions by reducing the carbon intensity of their economic development. Action of emerging economies could take several forms, such as SD PAM, an improved and strengthened CDM, and the setting up of plans for the sectors that generate most pollution so as to reduce their greenhouse gas emissions compared with a business as usual (BAU) scenario. (Declaration 51)

(10) The summit participants only agreed that market mechanisms such as emissions-trading within and between countries, tax incentives, performance-based regulation, fees or taxes and consumer labeling should be employed in parallel and that information should be shared on the effectiveness of different policy instruments. (No focus on EU ETS) (Declaration 55)

(11) Measures counteracting deforestation and illegal logging will be reinforced. (Declaration 56)

[10] http://en.g8russia.ru/docs/11.html

(12) The summit participants agreed to strengthen cooperation and the sharing of best practices at all levels. (Declaration 57)

(13) Strong expectations were expressed for energy conservation and promotion of international cooperation, both financially and institutionally. (Declaration 63)

(14) The Statement called on major emitters also to conserve energy. It also called on them to promote the appropriate policy approaches and instruments, including inter alia economic incentives and sound fiscal policies, minimum standards for energy efficiency, sound and ambitious energy performance labeling, information campaigns aimed at consumers and industry that enhance national awareness, sector-based voluntary commitments agreed with industry, investment in research and development and guidelines for public procurement. (Declaration 65)

(15) There was agreement on measures to improve the energy efficiency of buildings. (Declaration 67)

(16) There was agreement on measures to improve energy efficiency in the transportation sector; in particular, in alternative fuels development and its possible negative side-effects. (Declaration 68)

(17) The summit participants recognized that the electricity sector is the largest source of greenhouse gas emissions. (Declaration 69) Investments in highly efficient power stations and renovations to existing power stations can improve average power plant efficiencies. (Declaration 70) Measures to raise efficiency of fossil fuel power stations in developing countries and technology transfer will be considered, with the International Energy Agency (IEA) taking a central role. (Declaration 71)

(18) There was agreement on accelerating development and deployment of carbon capture and storage (CCS) and establishment of legal infrastructure for CCS. The summit participants agreed to encourage its own member governments to design mechanisms to stimulate the construction and operation of a growing number of large-scale demonstrations of sustainable fossil fuel technologies in commercial power generation. They also agreed to encourage industry to consider the concept of capture ready when developing new fossil fuel power plants. (Declaration 72)

(19) The Statement underlined the importance of clean coal, renewable energy sources and nuclear power in diversifying energy sources. (Declaration 76)

Compared to the economic communiqués at previous summits, this summit's statement is very specific and detailed information, and the current common understanding among key developed nations can be seen as the starting point for future negotiations.

6. Setting quantitative targets at the APEC Economic Leaders' Meeting

The APEC Economic Leaders' Meeting held September 8-9, 2007, adopted the Sydney APEC Leaders' Declaration on Climate Change, Energy Security and Clean Development, which can be outlined as follows.

(1) Affirm the importance of comprehensiveness with the participation of all countries sharing global targets, respect for different domestic circumstances and capacities and the role of alternative energy, including nuclear power, in a post-2012 framework.

(2) Improve energy efficiency within the APEC region by more than 25% by 2030 compared to 2005.

(3) Increase forest cover in the APEC region by at least 20 million hectares by 2020.

(4) Establish an Asia-Pacific Network for Energy Technology (APNet) and an Asia-Pacific Network for Sustainable Forest Management and Rehabilitation to research renewable energy sources.

The context to this declaration is that, with Japan, the United States and Australia asking developing nations to tackle global warming, APEC members won some compromise from China, which wanted to deflect criticism that it was slow to act in combating global warming due to its fears that such measures could restrict its economic growth. As a result, the declaration makes quantitative targets for developing countries non-binding. These quantitative targets have not been committed to at other international conferences, but APEC members shared a positive view of implementing an action plan consistent with the aforementioned measures against global warming.

This declaration is significant in that it demonstrates that the concept of energy efficiency can be given a central role in measures against global warming and that major emitters, excluding the EU, can join in an agreement between developed and developing nations when based on the concept of energy efficiency.

In the next section, we will review our proposal for a new framework aimed at giving Japan a leading role in building a new post-Kyoto framework, predicated on diplomatic efforts to combat global warming as well as the individual countries' respective positions.

Chapter 2. Proposal for a Post-Kyoto Framework—Commit and Act

We are proposing a new framework here to replace the Kyoto Protocol because, as Chapter 3 will describe, the Kyoto Protocol has significant structural problems as an international commitment to address the global warming problem, and has failed to result in substantive greenhouse gas reductions on a global scale.

1. Necessary elements for a post-Kyoto framework

A new framework must be devised to replace the Kyoto Protocol, which leaves much to be desired as a means of addressing the global warming problem. The necessary elements when considering a “flexible and diverse framework” that is also politically feasible and incorporates the current positions of the various countries involved, which were discussed in Chapter 1, are outlined below.

A framework that:

(1) Is premised on a long-term perspective and sustainable, in the sense that it ensures the continued efforts of both governments and the domestic entities responsible for emissions

Such a framework would enable long-term efforts that take into account the lead-time required for technology development, from basic research to diffusion, while at the same time providing the predictability needed to drive decision-making on investments in the private sector.

(2) Identifies the potential reductions in the various countries (particularly major emitters of greenhouse gases) through scientific methods and an objective process, and shares information on these potential reductions among countries

Unless individual countries disclose information on their potential for reducing emissions, negotiations could lead to mutual distrust and simply become a propaganda battle aimed at ingratiating the public. This lesson has taught us the need to disclose and share objective data.

(3) Includes internationally legally-binding commitments made to policies and actions that governments can definitely implement

The framework of the Kyoto Protocol, which allows emitters to purchase emission credits to achieve their targets, even if those emission rights are derived from so-called “hot air,”

created concerns that such a framework would not actually result in greenhouse gas reductions, since purchasing emission credits could weaken efforts to meet numerical targets for greenhouse gas reductions.

Rather, it is very important that countries commit to policies that lead to an actual reduction in greenhouse gases. The framework should incorporate mechanisms by which each government's implementation of its domestic measures can be monitored and verified, without fail. This is tantamount to a mechanism that enables the infallible reduction of greenhouse gases. (For a counterexample, a certain European country decided in 1990 to cut CO_2 by 25-30% of 1987 levels by 2005, but there has been no verification that this has actually been achieved.)

Actual reductions in greenhouse gases can be achieved through international debates on energy policy that focus on the development, use and diffusion of technology; national reductions in energy-derived CO_2 via policies aimed at reducing the use of fossil fuels; and sharing information on best practices for the requisite policies and measures in agriculture and industry to reduce methane, N_2O and chlorofluorocarbon alternatives.

2. Overview of new framework

(1) Rationale for making a new proposal

Major emitters such as the United States and Australia are not expected to ratify the Kyoto Protocol, and developing countries are not expected to make substantial efforts to reduce greenhouse gases. This means that the Kyoto Protocol is not an effective framework for addressing global warming.

As the country holding the chairmanship of COP3, Japan will strive to develop the best possible proposal for combating global warming, based on the following six principles.

A: **Environmental effectiveness—**Ensure that greenhouse gases are actually reduced

B: **Science-based analysis—**Data on potential for reductions and costs should be based on scientific analysis

C: **Equity—**In accordance with "common but differentiated responsibilities and respective capabilities of countries and their social and economic conditions" (UNFCCC)

D: **Inclusiveness—**Broaden participation to include non-governmental entities as actors in the new agreement

E: **Political feasibility—**Required to enable all countries to participate in the framework

F: **Sustainable, long-term perspective—**A reasonable amount of lead time should be provided for innovative technology development and diffusion

(2) Proposal content

A new protocol, as described below, should be agreed on in discussions based on Article 4, paragraph 2 (d) of the UNFCCC. It should be examined based on Article 9 of the Kyoto Protocol, and should replace the Kyoto Protocol after the first commitment period expires at the end of 2012 (or when a COP decision is made to shift to a new protocol). This is because a new protocol would not only change the regulations and methods for reducing greenhouse gas emissions under the Kyoto Protocol, but, regarding the obligation of developing countries to limit and/or reduce greenhouse gas emissions, should also be premised on the need for major emitters among developing countries to accept some kind of legally-binding commitment as well as the need for the countries that withdrew from the current Kyoto Protocol to participate. As a result, the potential to satisfy these premises significantly depends on a new legal framework that is distinct from the Kyoto Protocol. Further, it would be practically difficult for a new legal framework and the Kyoto Protocol to exist simultaneously.

In 2013, the new protocol, comprised of the following three categories as major elements in its structure, should go into effect based on Article 17 of the UNFCCC. To take effect it must be ratified by two-thirds of the major emitters (refer to the explanation of Category I for the definition) and must cover two-thirds of the total emissions by major emitters so that it satisfies both requirements: that the new framework be effective and that it encourage universal participation.

Technology development and transfer, addressed below in section 3 of this chapter, and international cooperation in these efforts should be agreed on as a COP decision based on Article 4, paragraph 1 (g) and Article 5 of the UNFCCC, or this article could be amended and related provisions added.

Also, the financial mechanisms discussed in section 4 of this chapter could be based on a revision to Article 11, paragraph 4 of the UNFCCC or a COP decision, but it could also be a commitment under Category I, as described below.

Structure of the New Protocol

COMMIT AND ACT

Category I

Shared Commitments to Binding Actions by Major Emitters' Governments

(1) Internationally legally-binding provisions are stipulated for major emitters including developing countries (the contents are determined by negotiating a series of policy templates through the "request and offer" negotiation process in order to build an agreed-upon policy matrix) (refer to pages 18 to 20 for the definition of policy template and policy matrix)
(2) Provisions to ensure compliance and deal with countries in violation

Category II

Individual Commitments to Non-binding Actions by All Governments

(1) Individual governments make political commitments to policies and measures (the new protocol stipulates the kind of items that should be included in the commitments)
(2) Measures to ensure implementation

Category III

Participatory Commitments to Individual Actions by Private Sector Entities

(1) Commitments to actions to combat global warming by private sector entities that are in accord with the object of the new protocol
(2) Procedures to register, validate and verify those actions and their achievements

Organizations Carrying Out Scientific Analysis—Expert Group

(1) Regulations establishing and governing organizations that conduct a scientific analysis of each country's potential for reducing emissions and the cost of its measures, as well as validate and verify Category III commitments, while coordinating lines of authority with a Subsidiary Body for Scientific and Technological Advice (SBSTA)
(2) Rules for accumulating and disclosing information obtained through the above activities

Effective Life of New Protocol and Regulations on Revisions

The commitment period should last 50 years beginning in 2013, and every five years negotiations should be held on revising Category I commitments and updating Categories II and III based on the most recent scientific, technical, economic and social information.

Features of New Framework

A: **Environmental effectiveness—**Internationally binding mandates requiring that individual governments adopt measures to reduce greenhouse gases more infallibly allow for greenhouse gases to be reduced than a scheme such as the Kyoto Protocol that can be circumvented by buying emissions credits in the event of non-compliance. This is consistent with Article 3, paragraph 1 of the UNFCCC principles.

B: **Science-based analysis—**Negotiations based on scientific analyses of the potential for reductions can be expected to help countries to avoid a political and diplomatic game marked by competition over quantitative targets without specifying the measures by which to achieve them. This is consistent with Article 3, paragraph 1 of the UNFCCC principles.

C: **Equity—**The principle of "common but differentiated responsibilities and respective capabilities of countries and their social and economic conditions" ensures common responsibility to fight global warming while differentiating between the extent of obligation in Categories I and II. This is consistent with Article 3, paragraphs 1 and 4 of the UNFCCC principles.

D: **Inclusiveness —**Opening the new framework to the voluntary efforts of private entities in work to address global warming, which is difficult for governments alone to address sufficiently, is a method that improves the awareness and elicits the active engagement of emitting entities, including non-governmental bodies.

As a result, this ensures that private entities could voluntarily commit to measures against global warming, even measures that would not have been possible by aligning domestic political interests regarding measures against global warming. This is based on the understanding that consumers' increasing environmental awareness will ensure that highlighting environmental awareness becomes an important aspect of companies' competitiveness.

Even NGOs that are very concerned about climate change should not limit themselves to advocacy work demanding that governments take measures to combat global warming, but

should also be encouraged to take action on their own that will actually reduce greenhouse gases.

This is consistent with Article 3, paragraphs 1, 2 and 3 of the UNFCCC principles.

E: **Political feasibility—**It is politically feasible that even developing countries that are major emitters but remain vehemently opposed to setting quantitative targets are persuaded to commit to set energy and economic policies that help combat global warming, because there should be some such measures that do not necessarily hinder their economic growth. This is consistent with Article 3, paragraphs 2 and 4 of the UNFCCC principles.

F: **Sustainable, long-term perspective—**With a 50-year commitment period for the new protocol and reviews every five years, adequate time is ensured for innovative technologies to emerge, and measures can be accelerated or modified with flexibility. This is consistent with the UNFCCC objective spelled out in Article 2.

Description of Categories I, II and III in the Proposed New Protocol

Category I

Shared Commitments to Binding Actions by Major Emitters' Governments

(1) Major emitters should be defined as the countries that account for 70% of the total emissions of the six greenhouse gases. These major emitters are the United States, China, the EU, India, Russia, Brazil, Japan, Indonesia, Canada, Mexico, Australia and South Korea (larger emitters listed first, according to IEA data).

How to treat the EU requires further discussion, but the basic idea is that the EU can be taken as a whole when the EU 25 is able to adopt common measures for the entire region. On the other hand, in fields such as energy policy where national authority supersedes that of the EU, each EU member should be expected to make a commitment to measures in that policy field.

(2) Policies and measures requiring agreement should be such that they have a domestic legal or quasi-legal mandate or are allocated an appropriate portion of government budgets. Provisions in the new protocol should stipulate that "appropriate and necessary steps be taken, including legislative proceedings." Nevertheless, countries that emphasize the need to set quantitative targets as in the Kyoto Protocol would certainly be able to commit internationally to the steps that they would have taken to ensure that their targets were met, and it is possible that policies and measures requiring agreement could be limited to those with legal or quasi-legal mandates or that are allocated an appropriate portion of government budgets.

(3) The respective policy fields and items for negotiation should be called "policy templates" (refer to Table 1 policy matrix on page 21) and major emitter countries should negotiate each policy template separately in a process that will complete the policy matrix with agreed-upon policy templates. The greenhouse gas reduction amounts shown in this matrix should be interpreted as reference values only, rather than quantitative targets.

Three principles must be followed when negotiating each policy template, as follows.

(a) Raising the level of energy efficiency

There is a shared view that improved energy efficiency is related to energy security and economic growth, and is thus a measure to combat global warming that can be taken with "no regret."

(b) Stimulating technology development

There is a shared view that the conflict between the environment and the economy can only be resolved through technological developments.

(c) Ensuring “policy coherence”

There are policies with other objectives that conflict with measures against global warming, and there must be a shared recognition that these policies must be changed so that they do not conflict with measures against global warming.

When it appears that the policy template negotiations will not all be resolved simultaneously, the measures in the policy template should be sequentially added to the Category I list in the new protocol.

Policies and measures in a policy template should be limited to those which can calculate greenhouse gas reduction volume from BAU. This ensures that the policy matrix shows the total greenhouse gas reduction volume for all major emitters and for each major emitter.

(4) The act of implementing those measures in policy templates or taking the domestic procedures necessary for implementing them should be internationally legally-binding.

(5) Policies and measures can be either worldwide or region-wide.

(6) Negotiations should be held by forming a contact group for each policy template. Contact groups for each gas, other than energy-derived CO_2, should be formed, and negotiations on reduction measures held based on the situation of each gas. That is, negotiations should adopt a gas-by-gas approach, unlike the Kyoto Protocol’s method of regulating total emissions of all greenhouse gases, in order to clarify the potential for reductions of each kind of greenhouse gas and identify appropriate measures that should be taken.

In the residential and transportation sector, contact groups should be formed for each type of product, such as home appliances and automobiles

(7) Regarding provisions to ensure compliance and to deal with countries in violation, a panel should be established under the UNFCCC where proceedings could be taken against governments that do not take the measures agreed to in the policy matrix. Alternatively, the dispute resolution scheme laid out in Article 14 of the UNFCCC could be incorporated in the new protocol.

In this case, it would be difficult to establish an optimum dispute resolution scheme from a bilateral frame of reference, since climate change is a global problem. Accordingly, there

are two options: (1) a complaint procedure could be set up so that “a country that believes another country has violated the new protocol could submit a complaint to the panel established in the new protocol”; or (2) dispute resolution procedures engineered to reflect the global nature of this problem could be newly devised.

(8) The issues outlined in the “Growth and Responsibility in the World Economy” economic communiqué of the G8 summit at Heiligendamm and the Sydney APEC Leaders’ Declaration on Climate Change, Energy Security and Clean Development should be the primary candidates for negotiation.

(9) Negotiations should be conducted by having a third party (a suitable research organization or international organization that can be agreed on by the negotiating countries) scientifically calculate the emissions reduction potential of each country and identify the best available technology (BAT). Based on this data, the “request and offer” negotiation process should be used for the policy measures that countries mutually agree on. This process should fully incorporate the achievements of the research to date on sectoral approaches.

(10) After an agreement is reached on long-term goals such as desirable density of greenhouse gases, and a schedule of action to reach these goals is drawn up, major emitter governments should compare those long-term goals with the total greenhouse gas reduction showing in the lower-right-hand cell of the policy matrix. If gaps are discovered, and if major emitter governments agree to take the additional actions needed to fill the gaps between them, negotiations should be restarted on an expanded range of policy fields (each one representing a new policy template). This feedback loop of negotiation is essential to the successful functioning of the concept of Category I.

Table 1. **Policy Matrix (Example)**

Field / **Country**	Measures for thermal power plants	Alternative fuels for auto-mobiles	Energy efficiency (iron and steel)	Energy efficiency (cement etc.)	Nuc-lear power	Methane	N_2O	Measures to restore forest cover	…	Greenhouse gas reduction volume
U.S.	Mandates adoption of minimum thermal efficiency standards	Mandates use of bio-ethanol	….	…..	….	….	….	….	…	….
Japan	Mandates adoption of minimum thermal efficiency standards	….	…..	….	….	….	….	…	….	….
U.K.	Mandates adoption of minimum thermal efficiency standards	….	…..	….	….	….	….	…	….	….
Germany	Froze construction of new coal-fired power plants	….	…..	….	….	….	….	…	….	….
Russia	…	….	…..	….	….	….	….	…	….	….
China	Mandates adoption of minimum thermal efficiency standards after 5 years	….	…..	….	….	….	….	…	….	….
Brazil	…	Mandates use of bio-ethanol	….	…..	….	….	….	….	…	….
…	…	….	…..	….	….	….	….	…	….	….
Greenhouse gas reduction amount	….	…..	….	….	….	….	…	….	….	Total greenhouse gas reduction amount

Note: The columns above represent examples of the various types of policy templates. A newly agreed column would be added upon the conclusion of each negotiation to achieve a complete policy matrix. (The new protocol should stipulate whether the addition of a new column would necessitate an amendment to the protocol itself, which in turn would necessitate ratification procedures every time an agreed-upon policy template is added, or not).

Further, the technology development and diffusion and the financial assistance for this, which we maintain in this report should be dealt with under separate agreements distinct from the new protocol, could become another policy template, depending on the way in which negotiations develop.

Example of possible policy template

- Make minimum thermal efficiency rate standards mandatory for new or replacement thermal power plants and provide incentives to adopt BAT (if this can be achieved, greenhouse gas reduction amounts can be calculated)
- Take measures for early replacement of obsolete thermal power plants
- Abolish subsidies and special tax allowances to industries that are CO2 unfriendly, such as the coal industry (environmentally harmful subsidies)
- Take measures to help fund equipment for coal-fired power plants in accordance with CCS potential
- Take legal measures for adoption of alternative automobile fuels
- Assess greenhouse gas reductions based on the establishment of energy conservation laws, the setting of sector-specific energy efficiency targets (results of sector-specific approach used efficiently here) and compliance with targets
- Bring schedule forward with a view to abolishing alternative chlorofluorocarbons
- Take measures to reduce non-energy-derived CO2
- Take measures to reduce dinitrogen monoxide
- Take measures to restore forest cover rate
- Establish international cooperation and financial mechanisms for nuclear power development; coordinate with IAEA
- Take legal measures to support the adoption of renewable energy
- Take measures based on the carbon-footprint concept[11]

[11] Carbon footprint is a concept that identifies emission amounts at the consumption stage to encourage policymakers and consumers to choose low-carbon raw materials for the manufacturing process and transportation. Specifically, organizations that review and operate international criteria and standards, such as the ISO, standardize methods for evaluating and publicizing individual products' carbon footprint (information disclosure on life cycle assessment by product). Governments, businesses and organizations commit to using these criteria and standards and implementing programs and policies that display greenhouse gas emissions at the product manufacturing and transportation stage, regardless of whether the product is imported or domestic at the consumption stage.

Category II

Individual Commitments to Non-binding Actions by All Governments

(1) This category should cover all States party to the UNFCCC (including the major emitters defined as members of Category I above).

(2) The actions to which the countries commit would not have to be legal or quasi-legal measures, nor would governments have to allocate a budget for them. The quantitative value of the effect of the greenhouse gas reduction expected to be achieved through implementation of these measures should be provided as a reference value.

(3) Implementation of measures in this category would not have to be internationally legally-binding, but would be political commitments instead.

(4) Policies and measures can be either worldwide or region-wide.

(5) The measures that are committed to should all be established by the deadline for negotiations on the new protocol, and included in the text of the protocol.

(6) Every five years an expert group, whose role would be spelled out in the new protocol, should verify implementation of commitments and give advice on policy to encourage implementation.

Governments that are extremely remiss in implementing measures should be “named and shamed” by COP.

(7) Measures for commitment should be listed in the new protocol. For example, see the items listed below, which are adapted from Japan’s Kyoto Target Achievement Plan. In addition, such important premises as the population growth rate and economic growth rate should be clearly specified.

(8) Category II is equivalent to the oft-mentioned “pledge and review” process.

Examples of measures for Category II

(1) Policies and measures for reducing and absorbing emissions, by type of greenhouse gas and sector

- Energy-derived CO_2
  - a. Strategy for building CO_2-conserving regions and cities and developing a low-carbon socio-economic system
  - b. Policies and measures for individual facilities and entities
  - c. Policies and measures for individual equipment
- Non-energy-derived CO_2
- Methane and dinitrogen monoxide
- Three CFC substitute gases
- Carbon sink measures

(2) Cross-sectional measures

- Systems to calculate greenhouse gas emission amounts
- National education campaigns
- Efforts by public institutions
- Promotion of technology development to address global warming
- Promotion of research on climate change and strengthening of monitoring and observation system
- Adaptation strategies

Category III

Participatory Commitments to Individual Actions by Private Sector Entities

(1) Given that human beings are the source of greenhouse gas emissions, governments should not be the only ones expected to reduce greenhouse gases. Rather, we must recognize that all entities must participate in programs aimed at combating global warming. International treaties premised on the nation-state system to date have been unable to resolve the global warming problem, and international agreements of a new kind that recognize the participation of NGOs/NPOs, international industry groups, national industry groups, individual companies, and multinational corporations should be crafted.

In particular, such agreements would also be very effective in combating the "leakage" problem, if those international industry groups make a commitment to using BAT when investing in any country.

(2) With global consumers becoming more aware of the need to protect the global environment, and corporate social responsibility (CSR) affecting companies' ability to raise funds in the market, etc., a growing number of companies recognize that developing environmentally friendly products and services and adopting environmentally friendly production methods are important elements of their own competitiveness. Although, these companies are starting to take the lead voluntarily, regardless of the measures embraced by government policies, they are not adequately appreciated by environmentalists.

In this respect, insistence on incorporating Category III in the new protocol itself carries the message that industry seriously intends to tackle global warming.

(3) Many NGOs/NPOs are not only involved in advocating policies, but actually carry out various actions aimed at reducing greenhouse gases. These NGO/NPO activities contribute a great deal to enhancing awareness of environmental preservation among people who find it difficult to modify their lifestyle.

(4) It could be effective to give a specific role in the new protocol to private sector entities engaged in activities aimed at combating global warming in order to help popularize these activities and raise motivation. For this purpose, entities wishing to commit to tackle global warming should be allowed to register their own measures against global warming in the new protocol

(5) Accordingly, Article 6 of the UNFCCC should be amended, or a new article added based on Article 4, paragraph 1, (i) to provide a tangible basis for participation by private groups. Any private sector entity that has set greenhouse gas reduction and curbing targets

(individuals excluded) should be able to participate, and the list of registered activities and their descriptions should be entered into a database and made public on the UNFCCC website.

(6) Each entity should be able to enter the achievements of their registered activities, based on their own assessment, on the website for disclosure. They should also be allowed to state whether their activities have been verified by a third party, including the expert group stipulated in the new protocol.

(7) Entities with extremely impressive achievements should be rewarded by COP after verification by the expert group. Conversely, in the event of suspicion of false reports, such activities should be reviewed by the expert group or an organization commissioned by the expert group and the results disclosed.

Specific examples of register-able activities

- Commitment by international industry groups to use BAT when making international investments
- Policies of industry groups such as the United States Climate Action Partnership (USCAP)
- World Business Council for Sustainable Development (WBSCD) activities, etc.
- Targets set for greenhouse gas reductions and measures for their achievement by national industry groups
- Targets set for greenhouse gas reductions and achievement by individual companies
- Individual companies' targets to improve energy efficiency of products
- Individual companies' targets for technology development for combating global warming
- Activities such as Japan's "CO_2 diet" and "Team Minus 6%" … etc.

3. International cooperation for innovative technology development

Striking a balance between resolving the global warming problem and the demands of economic growth and energy security will require technology that can drastically raise energy efficiency. It will also require applied technology that uses energy which emits no greenhouse gases and serves as a substitute for fossil fuels. Development of these technologies cannot be achieved without major discoveries by scientists that bring entirely new technologies to the world stage, in addition to improvements to existing technology.

The Kyoto Protocol focused resources on the development of applied technologies capable of making short-term improvements, rather than medium- to long-term basic research, due to the short commitment period. When devising a post-Kyoto framework, this point should be kept in mind and an emphasis put on ensuring a balance between basic R&D and practical technology development through international cooperation.

It is also important that the major developed nations with advanced research skills agree to a system of cooperation for technology development that is distinct from the new protocol, and that these countries share the burden in providing the necessary resources.

The system of cooperation should have the following characteristics.

(1) An international cooperation program should be established and an appropriate system developed for handling intellectual property rights and assigning public-private roles. This program should distinguish between short-term practical research on energy conservation and the development and use of new energy and long-term basic research that will lead to innovative technology development.

(2) The IEA, which has experience in coordinating international cooperation relating to energy issues, should be given the role of coordinator for the energy-related international joint research project.

(3) After short-term practical research on energy conservation and the development and use of new energy bears fruit, it is vital that the relevant technology be quickly passed on. For this purpose, policy measures for technology transfer and diffusion should be coordinated among major emitters by putting the results of short-term practical research into context with the aforementioned policies in Categories I and II.

(4) An arrangement regarding research that is directly linked to a country’s industrial competitiveness, such as fuel cells and solar batteries, should be sought between a limited number of countries to ensure an appropriate exchange of information and research between major countries.

(5) When setting the amount of financial burden borne by each country, negotiations over this apportionment should be conducted by taking into account the cumulative amount of the related R&D investment that each government has made to date.

(6) As mentioned in the notes to the policy matrix, an agreement on this issue could become one policy template if it allows for the amount of greenhouse gas reduction to be calculated.

4. Financial issues in developing countries' measures against global warming (mitigation and adaptation)

(1) One of the biggest challenges in shifting to a new protocol will be ensuring the flow of funds needed for developing countries to carry out measures against global warming. The flexibility mechanism in the Kyoto Protocol tended to be explained as the most cost-effective way of reducing greenhouse gases, but in reality this was the way to ensure that funds flowed from developed countries to developing countries.

In developing countries, even some of the BAU projects that are certainly necessary to accompany economic growth are being made candidates for CDM projects by defining them as "unilateral CDM projects" in recent years, and this is one of the problems caused by the Kyoto Protocol's structure.

(2) Further, funding problems for adaptation in developing countries has emerged as a particular problem recently. Total adaptation funds needed for developing countries in 2030 is expected to total from US$28 to 67 billion (estimate by the UNFCCC; refer to Table 2 below.[12]

Table 2. Estimated additional investment and financial flows needed for adaptation in 2030

(Unit: US$ billion)

Sector	Global	Non Annex-I Parties
Agriculture, forestry and fisheries	14	7
Water supply	11	9
Human health	5	5
Coastal zones	11	5
Infrastructure	8 to 130	2 to 41

[12] http://unfccc.int/files/cooperation_and_support/financial_mechanism/application/pdf/potential_for_enhanced_investment_and_financial_flows.pdf

(3) There are three points to consider when addressing these financing problems. First, should all developing countries be treated in the same way? As analysis by the IPCC becomes more detailed, the regions that are suffering from global warming, and their special characteristics, are coming into focus. Further, there exists a sharp divide between some developing countries that are now able to take some domestic measures against their increasing greenhouse gases, and other developing countries whose economies are still developing with low emissions, but who are expected to suffer more from global warming in the future.

These differences become extremely important in discussing a new framework because, in the former type of country, projects adapted to CDM such as hydraulic power plants spring up one after the other as electricity demand rises in tandem with economic development. At the same time, in countries such as the latter, there are very few projects that are suitable for CDM. As a result, in the method whereby the Kyoto mechanism is applied between Annex I Parties currently determined by the Kyoto Protocol framework and the other parties, funds do not flow to countries that really need it, and instead money repeatedly goes only to countries that can be expected to make direct investments as their economies develop, even if not for CDM projects. In other words, the disparities between developing countries are widening.

Second, there is a division between adaptation and mitigation. The former is a measure primarily necessary for least developed countries (LLDCs) with low emissions, while the latter is a measure required for strong developing countries whose economies are expanding. Adaptation is an important measure, and we must apply more and more international effort toward this end in the future.

Third is the appropriate division between the government and the private sector. The Kyoto mechanism has been effective in increasing the flow of private funds. However, this mechanism is hobbled by the fact that precisely because these are private funds, the money will only flow to projects that generate profits. As noted above, it is difficult to determine whether the CDM projects that the private sector entities engage in are equivalent to BAU or satisfy “additionality,” leading to actual reduction of greenhouse gases. CDM have rather complex procedures for examining whether a project has actually resulted in additional reductions, but recently many have spoken out strongly in favor of simpler procedures. Lobbying for easier regulations will only strengthen as long as private companies are entrusted with funding greenhouse gas reduction projects in developing countries, and it is vital to be aware of the risk that the true purpose of measures against global warming could be distorted.

(4) Given the aforementioned points, under the new framework, a system could be designed to encourage independent efforts by the major emitters with steadily developing economies. Specifically, conditions on use of the original CDM should be imposed on major emitters

among the developing countries in the aforementioned Category I, by requiring that those countries commit to internationally legally-binding measures to reduce greenhouse gases and actually implement them.

With this as a prerequisite, developed countries should preserve financial mechanisms used for CDM, and developed countries' governments should commit the funds used to purchase emissions credits generated by CDM to Category I policies through negotiations. In this case, one option would be to require that developed countries purchase enough emission credits to compensate for their shortfall in meeting the Kyoto Protocol targets.

(5) The new protocol should also continue to give a role to the Global Environment Facility (GEF), Strategic Priority on Adaptation (SPA), Least Developed Country Fund (LDCF), Special Climate Change Fund (SCCF) and Adaptation Fund (AF) from the Kyoto Protocol. Also, a fundraising scheme should be developed using funds from the World Bank, which has carbon funds, regional development banks and export financing institutions in countries. In this case, consideration should be given to securing the funds needed for adaptation in the LLDC in particular, not just for mitigation.

(6) Moreover, there is no guarantee that fund transfers alone will ensure that greenhouse gases are limited or reduced. In this situation, it is important to recall that there is a strong possibility that technology transfer on the supply side alone will not lead to actual reductions in greenhouse gases. Focusing on the demand side of energy, developed countries should commit themselves to help developing countries build their legal capacity by introducing energy conservation laws, renewable portfolio standard (RPS) laws, and other steps. Based on this understanding, Japan should launch a project to support the formation of an energy conservation law system for use in Asian countries (reminiscent of regulations governing automobile gasoline mileage and energy conservation standards for home appliances in China).

Additional Argument—Differences Compared to Original "Pledge and Review" Process

The "pledge and review" process has been proposed for the post-Kyoto framework. The United States' proposal also fits into this category. The "pledge and review" process is a flexible and diverse framework, and should be valued as an idea that takes each country's individual circumstances into account.

The basic concept is as follows:

(1) Pledges can vary depending on each country's circumstances.

(2) All types of targets can be included.

(3) On the other hand, necessary components can be set and differences established between developed nations and developing nations.

(4) Experts and specialized institutions review implementation of pledges and measures for improvements.

(5) Possible measures to guarantee results are public announcements including policy recommendations, additional reviews, and measures providing incentives to promote compliance.

At the same time, several aspects of this "pledge and review" process can be criticized:

(1) Voluntary pledges are not rigorous in terms of implementation and do not guarantee that greenhouse gases will be reduced.

(2) The EU does not accept methods that go against the foundation of EU ETS (which are premised on country-specific caps).

(3) Developing countries also oppose the "pledge and review" process for deviating from the principle of "common but differentiated responsibilities."

(4) The "pledge and review" process is seen as a way for Japan to avoid the Kyoto Protocol, which is difficult to comply with.

(5) An emissions credit trading system gives the private sector more incentive to invest in technology development than the “pledge and review” process.

Our new proposal, outlined earlier in this chapter, addresses these criticisms.

In our “commit and act” proposal, the commitment itself is to be negotiated, thus addressing the first criticism. Domestic debate over Japan’s environmental diplomacy focuses exclusively on what Japan can offer, as mentioned above, and does not include an analysis of factors causing greenhouse gases to increase in overseas countries and their potential for reducing emissions or analysis of policies that stand in the way of environmental protection due to domestic situations. Simply put, attention is focused squarely on negotiations over quantitative targets, at the expense of pursuing effective policy measures in other countries. Possible policies that could be requested are listed in the specific examples for Category I provided earlier.

For example, while coal-fired power plants with poor efficiency are still operating in certain EU countries, there are plans to build more coal-fired power plants in the future that do not meet the highest thermal efficiency standards. This kind of energy policy, which actually fosters global warming, is strongly criticized by environmental protection groups within those countries.

A global comparison of energy efficiency in major energy-consuming industries shows that Japan is on the cutting edge, but playing political games over quantitative targets for total greenhouse gas emissions will lead to compromises that could result in a failure to achieve the real potential for reductions, without supporting countries lagging behind in terms of energy efficiency.

In Japan, the proportion of dinitrogen monoxide making up overall greenhouse gases is small, and this does not receive much attention. However, it does account for a large proportion of greenhouse gases in the EU and U.S. Requiring measures such as environmentally friendly agricultural practices and appropriate waste disposal presents good opportunities for these countries to take measures in line with “no regret” policy.

Further, while the forest cover rate is still high in Japan at 68.2%, it is only 38.7% in the EU-15. This is the result of deforestation to create farmland in the EU, but setting quantitative targets with the aim of restoring forests would likely align with Germany’s particular circumstances, as Germany professes to value forests.

In contrast to the “pledge and review” process, which represents a unilateral form of engagement, our “commit and act” (by request and offer) proposal enables negotiations that could result in an international commitment by governments to substantially reduce emissions. The Kyoto Protocol gave States parties discretion in determining domestic measures to implement their obligations, so as not to impinge on national sovereignty.

However, in light of the gravity and significance of the global warming problem, the "commit and act" (by request and offer) proposal represents a ground-breaking attempt to take the "pledge and review" process one step further. It makes countries' domestic measures internationally legally-binding, based on a common policy that still allows for some flexibility, while fostering a shared awareness on energy policy and technological innovation. This structure will likely attract objections from proponents of national sovereignty, but it is still worthwhile to initiate a process aimed at achieving agreement among countries to limit their own sovereignty to some extent, by steadily and widely sharing the concept of maintaining the supply of public goods at an unprecedented scale, that is, to protect the earth from global warming.

This process must analyze each country's technological potential for reducing emissions and share information on these results to ensure that it is underpinned by science. Even if it is impossible to analyze all countries, it is feasible to analyze major emitters.[13]

Next we will examine the second criticism. In our "commit and act" (by request and offer) proposal, one of the policy templates could be an emissions trading system. Therefore, our proposal does not exclude the possibility of an emissions trading system like EU ETS.. Also, countries that want to reduce emissions using a domestic cap-and-trade emissions trading system can commit to doing so by forming a shared policy with the EU in Category I. Demanding an extension of the Kyoto Protocol to protect the emissions trading system could represent an erroneous sense of priorities, if the reason for doing so is merely to maintain the quantitative target method of the Kyoto Protocol as a necessary condition for keeping EU ETS.

As described above, industries and companies generating wealth by trading via the emissions trading system want to introduce and continue this system, and are not concerned about the level of the cap itself as a measure against global warming. We should not forget that environmentalists criticized emissions credits as "rights to pollute" from the Kyoto Conference until the sixth session of the Conference of the Parties in Bonn (COP6). The debate over "supplementarity" (the idea that the Kyoto mechanism should be a

[13] Reference: Estimates are from "Estimates for Major Emitters' Post Kyoto Protocol Quantitative Targets from Sector Differentiation" (Taishi Sugiyama, Yuko Hoshino, Central Research Institute of Electric Power Industry, July 3, 2007)

The 2050 quantitative targets taking into account equitability and reduction potential aim for a 29% reduction in emissions compared to 2004 levels in Japan, a 72% reduction in the 15 EU nations, 108% in the U.S., 4% in China, 105% in Brazil, 88% in Russia and 114% (an increase of 14%) in India, with a global reduction of 52%.

(1) The potential to reduce greenhouse gases other than energy-derived CO_2, (2) technological potential for renewable energy, (3) and factoring in disparities in technological potential for CCS retention volume are more important than disparities in energy efficiency here. Specifically, countries have great technical potential in the five fields of wind power, biomass, CCS, methane and dinitrogen monoxide, and carbon sinks, so a strong appeal should be made to realize this potential to the fullest extent. If the Stern Review is correct, the costs required to reduce emissions on a large scale could be positive for a country's economic activity or extremely minimal.

supplementary measure to domestic policy) was fueled by skepticism about emissions trading actually being effective in protecting the environment.

The third criticism voiced by developing countries can be contested by noting that developed countries' obligations are actually heavier, as stated in the section on the purpose of the "commit and act" (by request and offer) proposal. Nevertheless, developed countries should negotiate for the inclusion of developing countries that are major emitters in Category I. Developing countries will likely emphasize that developed countries should carry on with the Kyoto Protocol's quantitative target method, but developed countries should make a sharp distinction between the negotiating position of developing countries that are major emitters and other developing countries, taking a stricter stance on the former. At the same time, the extent to which financial and technical aid can be given to developing countries will be an important issue to be negotiated.

As regards the fourth criticism, the failure of the Kyoto Protocol's method to provide effective measures against global warming is sufficient reason to devise a new proposal as a better method, as we have explained at length above.

Turning to the fifth criticism, the current emissions trading system tends to invite high price volatility, which can discourage long-term investments in technology development and actually destabilize the business environment. In reality, it has become a money game on the EU trading market, raising uncertainty for the commodities industry, particularly the manufacturing industry. Moreover, overly strict initial allocation of emission allowances would likely cause energy-intensive industries to move operations abroad, and they would not remain in their home country, investing in technology development.

(Reference: Impact of emissions trading system on EU industry)

The introduction of the cap-and-trade emissions trading system has had a negative impact on industry, but the extent of the impact differs depending on the system's design and the allocation of initial emission amounts. In particular, the impact felt by industry differs depending on whether the cost-increasing impact caused by the initial allocation amounts to the electricity industry can be passed on in electricity charges.

Naturally, heavy energy consuming industries, including electricity, are heavily impacted. Table 3 shows the energy consumption by industry in the EU-15.

Table 3. Energy consumption by industry (2000)

(Petroleum conversion, 1 million tons)

Industry	Consumption
Iron and steel	51.49
Cement, glass, etc.	34.88
Science	45.33
Food, tobacco	25.02
Paper, printing	31.12
Non-ferrous metals	10.44
Textiles, leather goods	8.45
Engineering, etc.	24.51
Other	37.64
Total	271.68

In the first stage of EU ETS allocation, allocations are made to the five industries believed to have high energy consumption, including the electricity, iron and steel, and cement industries. In addition to these heavy energy-consuming industries, the aluminum industry, which does not have high-energy consumption in a direct sense but does indirectly consume high amounts of energy, is indirectly affected by emissions trading.

In the initial stage when EU ETS started, the IEA analyzed the impact of emissions trading on the industries. Table 4 shows the rise in costs due to the impact on industries in the event that the cost of emissions credits is 10 euro per ton of CO_2 and that this raises electricity charges by 11%.

Table 4. Estimates of rise in costs from direct and indirect impact of emissions credit prices

Industry	Iron & steel (blast furnace)	Iron & steel (electric furnace)	Cement	Printing
2%	0.7%	0.8%	1.9%	1.1%
10%	1.3%	0.9%	3.4%	1.6%

Note: 2% and 10% refer to the respective necessary amounts for initial allocation of emissions credits.
Source: Julia Reinaud, IEA

On the other hand, the EU ETS Review predicted that, assuming that the price of emissions credits is 20 euro per ton of CO_2 and the resulting rise in electricity charges is 10 euro per MWh, costs for aluminum refining would rise 11.4% in the aluminum industry, which is a major consumer of electricity and will be heavily impacted if electricity prices rise. In addition, a very small proportion of the aluminum refining industry owns private electrical power generators, and there is no means of avoiding the impact of higher electricity charges.

In the first stage of EU ETS, the price of emissions credits would stay low at 10 euro cents, and despite a rise in electricity charges, very few industries would be affected. However, from the second stage, allocation of emissions credits to each business site would become stricter, which is expected to encourage industries affected by a sharp rise in costs, such as cement and aluminum refining, to transfer out of EU ETS. When considering the global warming problem, this could undermine the effect of emissions trading.

Chapter 3. Structural Problems of the Kyoto Protocol

The previous chapters presented our proposal for a new framework. Here, we will discuss the five major problems inherent in the Kyoto Protocol that led us to design such a proposal.

1. The greatest failure of the Kyoto Protocol is its lack of adequate consideration for technology.

In both production activities and daily life, human beings inevitably burn fossil fuels and dispose of waste. Accordingly, as long as people (particularly in developing countries) pursue economic development and a better standard of living, emissions of greenhouse gases are bound to increase. Given the reality that most people are unlikely to prioritize long-term utility at the expense of short-term utility, artificially attempts to restrain their efforts to improve their standard of living are not a sustainable tactic.

Ultimately, if human beings are to realize better standards of living and sustained productive activities while also limiting and even reducing greenhouse gases, it will require the type of breakthroughs that only revolutionary new technologies can deliver. However, as of this point, no one has been able to apply a practical technology that isolates and stabilizes the CO_2 that is emitted with the burning of fossil fuels. Development of technologies that drastically increase the supply of alternative energies to fossil fuels as well as technologies that deliver dramatic advancements in energy efficiency has also been insufficient thus far.

Further, technological innovations are subject to uncertainty—an inability to predict when a scientific truth will be identified and paradigm shifts in technology structures will occur. As a result, it takes considerable time before a new technology and the new products and services it engenders reach users. For example, in the case of energy technology, about 60 years passed between the discovery of nuclear radiation (1896) and the start of operations at the world's first nuclear power plant (1954), about 100 years from the discovery of the photoelectric effect (1887) to the commercialization of the first solar energy system for home use (1992) and just under 130 years between the Grove fuel cell experiment (1839) to actual utilization of fuel cells in man-made satellites (1965).

As such, when factoring in the lead time needed for groundbreaking technological innovation, any international agreement to combat global warming will fail as a solution unless it is based on a long-term framework. In this respect, the five-year commitment period of the Kyoto Protocol from 2008 to 2012 is an arbitrary term that is far too short to allow for the production of revolutionary technologies. As a result, the States parties to the Kyoto Protocol tend to prioritize short-term measures to reduce emissions when considering policy options for their domestic measures against global warming. For example, countries defer investments in the basic research that is so vital to achieving technology breakthroughs, and

prioritize technology development that yields short-term effects. Moreover, with short periods in which the technology structure is fixed, debates rage over whether policies (like cap & trade) that curb energy consumption are really ideal.

An international agreement that sacrifices economic growth for short-term reductions in greenhouse gases can never be sustainable.

2. A regulatory approach based on setting quantitative targets, as required by the Kyoto Protocol, makes negotiations a diplomatic game rather than a science-based dialogue. Further, developing countries can evade requirements to reduce greenhouse gases in perpetuity as long as the Kyoto Protocol remains in force.

A global environment without global warming would be a public good for the entire world,[14] but the Kyoto Protocol's negotiating approach does not ensure that the costs of supplying this public good are shared equitably. The challenge to equitable burden-sharing of the costs of supplying the public good when it comes to the global environment is simply the fact that there is no global government. The people of a given country may follow the democratic decision-making process and the government then levies taxes and supplies public goods. However, the United Nations, which is an assembly of sovereign nations, lacks both this authority and function.[15] Strictly speaking, the concept of public goods has not yet been established in international law. However, this concept provides the persuasion and logic for countries to work together and consider in both legal and political terms a scheme in which countries share equitably the responsibility of protecting the environment and then enjoying the benefits.

Under the Kyoto Protocol, countries consider the utility of enjoying a global environment without global warming, and undertake an internal analysis of the cost they are willing to assume to maintain this environment, while playing a political and diplomatic game with other countries over quantitative targets. The negotiator's skill is measured by his ability to push more of the burden onto other countries and reduce his own country's burden. As a result, a country's quantitative target ends up representing a political agreement over quantitative targets that has no relation to the country's prior negotiating position, technical potential for reducing emissions, energy supply/demand structure, or actual costs. Treaties

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[14] If an appropriate concentration of greenhouse gases is maintained in the atmosphere, the earth is capable of keeping temperatures within a certain range, and the world's countries and people can reap the benefits of this stability across the generations. The utility of a global environment without global warming is available to anyone of any generation, and is something from which no specific country or person can be excluded (non-exclusiveness). Further, the total supply does not change with consumption by other countries and other people (non-competitiveness). Considering these factors, an environment without global warming typically is a public good.

[15] There have been proposals that the UN should allocate and manage emissions credits in the next framework, but this would require major changes in the UN's decision-making process, authority and function, and is not realistic.

configured to require repeated political agreements that ignore emissions reduction potential are certainly not an internationally sustainable proposition. The fact that the U.S. and Australia have not ratified the Kyoto Protocol and that Canada has publicly announced that it cannot achieve its targets highlights the problems with this negotiation method.

Moreover, in the midst of these diplomatic games, disclosing information on one's own assessment would clearly be strategically disadvantageous, so it is only logical for all countries to conceal this information. The EU has sometimes proposed quantitative targets in advance, but the extent to which these numbers take into careful consideration the EU's actual emissions compared to its technical potential to reduce emissions, and the extent to which costs are factored in, are not at all clear. On the other hand, Japan, which strives to reduce emissions as much as it can (taking no account of costs), is publicly discussing the extent to which it actually expects to reduce emissions. The misunderstanding that such quantitative reduction targets are essential to diplomatic negotiations ends up weakening Japan's own negotiating position.

The EU has taken the position that its own reduction targets can be increased, depending on the outcome of negotiations. At COP3 in 1997, the EU's position was to reduce emissions by 15% if other countries would do likewise. Now, the EU plans to reduce emissions by 20%, but has expressed a willingness to reduce by 30% depending on other countries' responses. But these moving reduction targets offer clear evidence that they are not based on the EU's actual technological potential to reduce emissions as demonstrated by scientific data. This is not the kind of serious negotiating stance that should be taken when addressing a problem such as global warming that affects the future of the entire human race.

There is yet another serious issue if negotiations premised on the Kyoto Protocol continue. The Kyoto Protocol was settled in negotiations based on the Berlin Mandate agreed on at COP1 after the UNFCCC went into effect in 1994. The Berlin Mandate emphasized the right of developing countries to grow and absolved them of additional responsibilities (the requirement to reduce greenhouse gases). As revealed in the aforementioned Heiligendamm Summit's statements, where the need to involve the major developing countries became an essential issue, the Kyoto Protocol is not, in fact, an effective or sustainable solution.

3. There is such a wide range of greenhouse gas-emitting entities that the quantitative targets that the Kyoto Protocol imposes will be very difficult to achieve without regulating a broad range of national economic activity and daily activity.

Total greenhouse gases are generated by a wide range of economic activities and the daily actions of every person. As a result, assuming a free economy, it is extremely difficult for any government to control total emissions (less the amount absorbed). The Japanese government strongly repudiates the use of numerical targets for the share of foreign-made semiconductors

in the Japanese market in the Japan-U.S. Semiconductor Agreement, a bilateral agreement, and for opening markets such as the automobile market in Japan-U.S. economic negotiations, based on the rationale that Japan has a free-market economy. As long as these products are traded in the market, it is self-evident that no government could both advocate a free economy and make an agreement on predefined market share—even for a single product—and thus, the Japanese government's negotiating position was correct.

So one must ask: what does the government think about the Kyoto Protocol, which it signed in a promise to reduce the greenhouse gases emitted from all economic activities and daily actions? If it is to meet these mandates with any certainty, Japan would have to adopt methods characteristic of a planned economy, unless it tries to meet its shortfall by purchasing emissions credits internationally. This structural problem inherent in the Kyoto Protocol is also seen in proposals to introduce domestic emissions trading systems in various countries,[16] which would require the government's forcible intervention in private production and investment activities.

In addition, emissions in the household sector and emissions generated through the use of personal automobiles are on the rise in countries around the world. Forcing reductions in these emissions would require that governments intervene in the way of life their people are accustomed to, and could directly confront the very foundation of democracy—the notion that individual liberties should be protected, not violated, by state power.

It is certainly true that public opinion firmly holds that some degree of regulation, whether it governs lifestyle or economic activities, will be essential to protect that public good which is the global environment from excessive warming. Nevertheless, the problem of who pays for supplying this public good clearly raises the issue of free riders—there are many emitters who will not cooperate without being forced. Indeed, some of the lifestyle changes recommended in Japan's Outline for Promotion of Efforts to Prevent Global Warming (subsequently the Kyoto Target Achievement Plan), established along with ratification of the Kyoto Protocol, were criticized as government interference in the private lives of the people.

[16] Whether or not the adoption of a domestic emissions trading system would actually lead to the definite achievement of reduction targets, it is very uncertain that targets could be achieved by introducing such a system solely to the manufacturing sector, in which most of the gas emitted is energy-derived CO_2. Many want an emissions trading system that emphasizes the "trade" part of "cap & trade," but only caps are significant when it comes to achieving the Kyoto Protocol's numerical targets. In the emissions trading system currently being proposed, greenhouse gases such as non-energy-derived CO_2 and methane could not be included, and Land-Use, Land-Use Change and Forestry (LULUCF) (sink) would also be addressed elsewhere, which would narrow coverage for the caps. Introducing such a system would be fine, but it is not clear who would be responsible for policies in the event of failure to comply with the national target under the Kyoto Protocol. Who would provide the financial resources needed to obtain the international emissions credits needed for compliance?

4. The Kyoto Protocol places obligations on developed countries but does not require developing countries to reduce emissions, leaving no guarantee of its effectiveness.

For example, in countries such as Japan where the costs of limiting and reducing emissions are high, excessive measures to curb emissions at companies' manufacturing facilities could encourage these companies to move their operations to countries where they do not face such requirements. In this case, even if Japan were to meet its reduction requirements, countries that are not subjected to reduction requirements would continue to emit the CO_2 that Japan had cut, and the effort to halt global warming would not prove effective. This is known as the "leakage" problem, and is considered one of the issues with the Kyoto Protocol.

5. There are problems with the compliance mechanism of the Kyoto Protocol.

The Kyoto Protocol sets penalties for non-compliance with quantitative targets committed to by the developed countries that have ratified the Kyoto Protocol, but does not provide any type of disincentive for developed countries that do not ratify the Kyoto Protocol. The Montreal Protocol on Substances that Deplete the Ozone Layer and treaty systems to protect fishing resources are examples of treaties that provide for the possibility that non-ratifying countries would suffer disadvantages, including non-legal measures. The compliance mechanism of the Kyoto Protocol, by covering only States party, can actually end up discouraging measures against global warming. In other words, developed countries that feel it would be difficult to achieve the quantitative targets allocated have an incentive to choose simply not to ratify the treaty (as in the case of the U.S.). Further, developed countries that ratified the treaty but now realize they will not meet their targets face fewer disadvantages as a result of withdrawing from the Protocol than remaining within it, which encourages withdrawal.

Even if a country decided to remain within the Protocol due to the high political cost of withdrawal, countries that failed to meet their targets would have to add a 30% interest penalty to their shortfall starting in the next commitment period, and they could be stripped of their right to use the Kyoto mechanism. This could make it even harder to meet targets. Under-performing countries would likely give up on their efforts to meet targets in the next term, and could contemplate delaying compliance permanently.[17]

[17] Some feel that, far from encouraging restraint, the Kyoto Protocol actually provides perverse incentives to destroy the environment. The Kyoto Protocol only gives credit when forests that have been cut down or had their use changed are restored, while countries that maintain their forests without logging do not receive any credits. There have been reports that some countries might purposely start logging to receive credits in the future.
（http://www.wbcsd.org/plugins/docsearch/details.asp?txtDocTitle=Carbon%20market%20encourages%20cutting%20trees&DocTypeId=32&CharValList=32;&ObjectId=MjU3ODM&URLBack=result%2Easp%3FtxtDocTitle%3DCarbon+market+encourages+cutting+trees%26DocTypeId%3D32%26CharValList%3D32%3B%26SortOrder%3D%26CurPage%3D1）

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The 21st Century Public Policy Institute (21PPI) is a think tank established in 1997 by Keidanren (Japan Business Federation). The 21PPI renewed its organization in April 2007. Mr. Fujio Mitarai, Chairman of Keidanren, became the new chairman of the institute and Mr. Kenji Miyahara assumed the presidency.

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(Akihiro Sawa, Senior Executive Fellow)

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